Certification Report

Foxborough Sanitary Landfill Closure
Foxborough, Massachusetts

December, 2000

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

One Cambridge Place
50 Hampshire Street
Cambridge, Massachusetts 02139
Tel: 617 452-6000 Fax: 617 452-8000

December 28, 2000

Mr. David Ellis
Chief, Division of Solid Waste Management
Department of Environmental Protection
20 Riverside Drive
Lakeville, Massachusetts 02347

Subject: Certification Report for Foxborough
Sanitary Landfill Final Closure
Foxborough, Massachusetts

Dear Mr. Ellis:

Attached please find one copy of the certification report for the final closure construction of the Foxborough Sanitary Landfill in Foxborough, Massachusetts. It is being forwarded to your office for review and approval.

As detailed in the attached report, the final cap for the landfill was constructed in substantial compliance with the plans and specifications approved by your office.

Please do not hesitate to contact me at (617) 452-6541 if you have any questions.

Very truly yours,

CAMP DRESSER & McKEE INC.

Bruce W. Haskell

Bruce W. Haskell, P.E.

BWH/gfi

cc: Bob Swanson, Highway Department
Andy Gala, Town Administrator

10905-30844-CG.MON\F:\Grace\Foxboro\Cert. Report\certrptltr.doc

Contents

Section 1 Project Description

1.1 Background 1-1
1.2 Project Overview 1-1
1.3 General Contractor 1-3
1.4 Construction Quality Control/Quality Assurance 1-3
1.5 Summary 1-4

Section 2 Construction Quality Control/Quality Assurance

2.1 Introduction 2-1
2.2 Site Preparation and Grading 2-1
2.3 Gas Collection system 2-2
2.4 Gas Vent Layer and Drainage Layer 2-2
2.4.1 Sand Source 2-2
2.4.2 Testing 2-2
2.5 Flexible Membrane Liner 2-4
2.5.1 General 2-4
2.5.2 Liner Manufacturer and Installer 2-4
2.5.3 Liner Installation 2-4
2.5.4 Installation Testing 2-4
2.6 Topsoil and Seed 2-5
2.7 Stormwater Controls 2-7
2.8 Groundwater Monitoring Well Abandonment 2-7

Appendices

Appendix A - Correspondence
Appendix B - Record Drawings
Appendix C - Sand Test Results
Appendix D - HDPE Submittals
Appendix E - HDPE Panel Layout
Appendix F - HDPE Seam Test Results
Appendix G - Top Soil Test Results

Figures

1-1 Project Location Map 1-2

Tables

2-1 Summary of Quality Control Testing on Gas Venting and Drainage Sand 2-3
2-2 Summary of Topsoil Testing 2-6

Section 1
Project Description

1.1 Background

This report summarizes the construction of the final cap system for the Foxborough Sanitary Landfill in Foxborough, Massachusetts. The site is located off East Belcher Road, on a 91-acre parcel (see Figure 1-1 - Project Location Map). The site is bordered by Spring Brook, undeveloped woods, and wetlands to the north, east and south, and East Belcher Road to the west. The Town operated the landfill as an open face dump in the 1960s and 1970s and a sanitary landfill beginning in May 1973. The landfill accepted commercial refuse, as well as construction and demolition debris until January 1, 1996. After that time, the landfill only accepted town-generated municipal solid waste (MSW) until its closure on December 31, 1998. Waste oil and scrap metal were also accepted and disposed of offsite.

The closure construction consisted of regrading, relocating of waste, installation of a passive gas flaring and stormwater control system, and final capping of the landfilled area. The closure was completed in accordance with the administrative consent order between the Town of Foxborough (Town) and the Massachusetts Department of Environmental Protection (DEP). The design plans and specifications were approved by the DEP in a letter to the Town dated April 27, 1999. A copy of the approval letter is included in Appendix A.

1.2 Project Overview

The approved final closure consisted of capping approximately 23 acres of the landfill and installing a gas flaring and stormwater system. The cap was designed to establish the following controls:

- minimize the amount of stormwater infiltration into the landfill (which leads to the production of leachate);
- prevent erosion of the cap;
- promote and control stormwater runoff;
- combust landfill gas; and
- isolate the waste from the environment.

Town of Foxborough, Massachussetts
Foxborough Landfill Final Closure

CDM Camp Dresser & McKee

Figure 1-1
Project Location Map

The cap consists of the following layers, from top to bottom:

- vegetation and erosion control blanket
- 8-inch topsoil layer
- 12-inch coarse sand drainage layer
- 40-mil thick textured HDPE layer
- 6-inch sand gas venting layer

In addition to the cap, the following components were constructed:

- a passive gas flaring system consisting of shallow gas collection trenches, deep wells and candlestick flares; and
- a stormwater control system including swales and two detention basins.

The landfill cap was constructed over the existing intermediate/daily cover soil layer on the landfill.

1.3 General Contractor

Eirco Environmental (Eirco) of Hampton, New Hampshire was awarded the construction contract for the Foxborough Sanitary Landfill final closure. Eirco subcontracted with New Lining Solutions, Corporation of Seattle, Washington to install the HDPE liner. Hydrograss Technologies of North Oxford, Massachusetts was subcontracted to perform all hydroseeding of topsoil. Recovery Drilling Services, Inc. of Sterling, Massachusetts was subcontracted to drill and install the gas collection wells. Eirco performed the remainder of the project work.

Eirco mobilized to the site on August 4, 1999. Construction was substantially completed in January 5, 2000. Some additional cap maintenance items have been completed during the winter and spring of 2000.

1.4 Construction Quality Control / Quality Assurance

Camp Dresser & McKee Inc. (CDM) provided a full-time resident engineer to maintain construction quality assurance for the duration of construction.

Quality control testing on all materials was provided by Eirco and their laboratory Tibbetts Engineering Corporation, Taunton, Massachusetts. Quality assurance testing for seam testing during the HDPE liner installation was provided by CDM's Geotechnical Engineering Laboratory in Cambridge, Massachusetts. Direct shear testing was completed by GZA GeoEnvironmental Inc. of Newton Upper Falls,

Massachusetts. Test results are summarized in Section 2 of this report, and the laboratory results are attached in the Appendices.

1.5 Summary

The construction of the Foxborough Sanitary Landfill final closure was completed in conformance with the design plans and specifications approved by MDEP, and the State of Massachusetts Solid Waste Regulations (310 CMR 19.000). As of the date of this report, all ancillary systems designed for the landfill are functioning as intended in accordance with the project specifications.

Section 2
Construction Quality Control/ Quality Assurance

2.1 Introduction

The construction of the Foxborough Sanitary Landfill final closure cap was completed in accordance with the quality control/quality assurance (QA/QC) plan approved as part of the construction permit. The purpose of the construction QA/QC plan was to present a set of guidelines which would be followed to document that all landfill closure activities were performed in compliance with the design plans and specifications. When used to describe construction activities, the following definitions are commonly used for quality control and quality assurance.

- *Quality Control* - those actions taken by the manufacturer or installer to ensure that their methods, materials and workmanship are accurate and correct and meet the requirements of the design plans and specifications.
- *Quality Assurance* - those actions employed by the owner to ensure conformity with the design plans and specifications. This is typically performed by a third party independent of the owner or contractor.

In summary, quality control techniques are commonly those employed by the contractor, and quality assurance is usually performed by the owner through a third party engineer.

The overall QA/QC plan for this site contained provisions for monitoring the installation of all aspects of the landfill closure system. Specific attention was paid to the HDPE geomembrane, gas venting sand, drainage sand, topsoil, seeding, gas collection and flare piping, and related components of the cap system. The following sections detail the QA/QC of the Foxborough Sanitary Landfill final closure.

2.2 Site Preparation and Grading

Eirco started construction with the installation of silt fences and hay bales for erosion control. The Contractor removed trees and shrubbery in the areas of the detention basins and other areas. The grading of the site waste and silt removal proceeded generally as proposed in the design plans. The final grading of the landfill cover system met the requirements of the design standards for landfill cover systems by having a final top slope of not less than 5 percent and side slopes no greater than 3 horizontal to 1 vertical (3:1). As proposed in the design plans, all solid waste material excavated from areas adjacent to the wetlands was relocated under the landfill cap. The final grades for the final closure area are presented on the Record Drawings in Appendix B.

2.3 Gas Collection System

After regrading of the site was completed, a passive gas venting system consisting of shallow vents and deep wells was installed. The shallow gas vents consisted of a 6-inch diameter slotted PVC pipe extending three feet below the bottom of the gas venting layer. In the original design, the shallow gas vents were going to be passively vented to the atmosphere through a ventilator. However, after the Town received odor complaints, the Town asked the contractor to retrofit candlestick flares onto the gas vents to combust any gases that were being collected.

Deep gas wells were also installed and consisted of a candlestick flare connected to a 6-inch slotted PVC pipe extending to the bottom of the landfill waste or to the top of the static groundwater table. The shallow gas vents at the top of the landfill were connected with a gas trench which consisted of geotextile wrapped 2-foot by 3-foot section of crushed stone with a 6-inch corrugated perforated gas collection pipe. The vents and wells were installed to prevent the migration of gas and prevent gas buildup beneath the landfill cap, thus protecting the integrity of the cap. The flares/wells and vents were installed at the locations shown on the Record Drawings in Appendix B.

2.4 Gas Vent Layer and Drainage Layer

2.4.1 Sand Source

Coarse sand was used for both the 6-inch thick gas venting layer and the 12-inch thick drainage layer. About 82,000 cubic yards of this material was required for the project. The sand was required to have a minimum permeability of 8.0 x 10-3 cm/sec, and a minimum friction angle of 26 degrees between the sand and the textured HDPE geomembrane. The source of the sand material was the Route 44 Sand and Gravel. The sand for the drainage layer was installed using low ground pressure bulldozers to prevent damage to the HDPE liner during installation.

2.4.2 Testing

Source testing was conducted on the sand material by Tibbetts Engineering under subcontract with Eirco. In accordance with project specifications, soil tests were conducted for grain size analysis (ASTM D422) with a frequency of every 1,500 cubic yards, and for permeability (ASTM D2434) with a frequency of every 3,000 cubic yards. One direct shear test (ASTM D5321) was performed on the drainage layer sand for every 3,000 cubic yards as required. A total of 55 grain size distribution analyses and 34 permeability tests were performed on the gas and drainage layer sand. In addition, 15 direct shear tests were performed on the drainage layer sand. Direct shear tests on the gas venting layer sand were not required.

A summary of grain size, permeability, and direct shear test results are shown in Table 2-1. The laboratory results reports are attached in Appendix C. With the exception of three sand samples, all permeability test results for the sand exceeded the minimum permeability requirement of 8.0 x 10-3 cm/sec. The three samples which

Table 2-1
Foxborough Landfill
Summary of Quality Control Testing on Gas Venting and Drainage Sand

Permeability Sample ID	Grain Size Sample ID	Date Received	Material Quantity (cy)	Max. Grain Size (in.)	% Passing No. 200	Permeability (cm/s)	Friction Angle (degrees)
PE9270A	MA9270A	9/30/1999	0-1500	0.375	3.3	2.5E-02	
PE9273A	MA9273A	9/30/1999	1500-3000	0.375	1.2	6.3E-02	
PE9273B	MA9273B	9/30/1999	3000-4500	0.375	2.1	3.4E-02	
PE9277A	MA9277A	10/3/1999	4500-6000	0.375	1.6	2.3E-02	
PE9278A	MA9278A	10/4/1999	6000-7500	0.375	1.3	5.0E-02	
PE9278B	MA9278B	10/4/1999	7500-9000	0.375	1.7	2.9E-02	
PE9279A	MA9279A	10/5/1999	9000-10500	0.375	2.7	2.4E-02	
PE9281A	MA9281A	10/7/1999	10500-12000	0.375	1.9	9.3E-02	
PE9281B	MA9281B	10/7/1999	12000-13500	0.500	1.8	4.9E-02	
PE9281C	MA9281C	10/7/1999	13500-15000	0.375	1.0	7.8E-02	
PE9285A	MA9285A	10/12/1999	15000-16500	0.375	2.5	3.3E-02	
PE9286A	MA9286A	10/13/1999	16500-18000	0.375	2.5	3.2E-02	
PE9287A	MA9287A	10/14/1999	18000-19500	0.375	2.4	2.9E-02	
PE9289C	MA9289C	10/20/1999	19500-21000	0.375	1.1	2.5E-02	
PE9295B	MA9295B	10/22/1999	21000-22500	0.500	1.7		
PE9300C	MA9300C	10/26/1999	22500-24000	0.375	1.6	1.6E-02	
	MA9305A	11/1/1999	24000-25500	0.375	3.0		
	MA9305B	11/1/1999	25500-27000	0.375	3.6		
PE9305C	MA9305C	11/1/1999	27000-28500	0.375	3.8	1.7E-02	
	MA9307B	11/3/1999	28500-30000	0.375	4.2		
PE9308B	MA9308B	11/2/1999	30000-31500	0.500	4.9	1.8E-02	
	MA9308C	11/2/1999	31500-33000	0.500	3.0		
PE9313A	MA9313A	11/8/1999	33000-34500	0.375	3.5	2.8E-02	
	MA9313B	11/9/1999	34500-36000	0.500	1.7		
PE9313C	MA9313C	11/9/1999	36000-37500	0.375	1.5	1.4E-02	
	MA9314B	11/10/1999	37500-39000	0.375	1.8		28.3
PE9314C	MA9314C	11/10/1999	39000-40500	0.500	1.9	1.4E-02	
	MA9315A	11/10/1999	40500-42000	0.500	1.9		29.6
PE9316B	MA9316B	11/12/1999	42000-43500	0.375	2.4	1.7E-02	
	MA9316C	11/12/1999	43500-45000	0.500	3.6		26.6
PE9316D	MA9316D	11/12/1999	45000-46500	0.500	4.1	1.2E-02	
	MA9319A	11/15/1999	46500-48000	0.375	3.9		28.0
PE9321A	MA9321A	11/15/1999	48000-49500	0.375	1.1	1.4E-02	
	MA9321B	11/15/1999	49500-51000	0.375	3.9		26.7
PE9321C	MA9321C	11/16/1999	51000-52500	0.375	3.6	7.8E-03	
	MA9321D	11/16/1999	52500-54000	0.375	3.5		28.0
PE9321E	MA9321E	11/17/1999	54000-55500	0.375	3.6	1.2E-02	
	MA9321F	11/17/1999	55500-57000	0.375	4.6		27.4
PE9321G	MA9321G	11/17/1999	57000-58500	0.375	3.8	1.1E-02	
	MA9323B	11/19/1999	58500-60000	0.375	3.9		28.7
PE9323C	MA9323C	11/19/1999	60000-61500	0.375	2.7	1.7E-02	
	MA9323D	11/19/1999	61500-63000	0.375	4.2		28.5
PE9323E	MA9323E	11/19/1999	63000-64500	0.375	2.3	7.7E-03	
	MA9323F	11/19/1999	64500-66000	0.375	3.6		28.8
PE9323G	MA9323G	11/23/1999	66000-67500	0.375	4.0	1.4E-02	
	MA9328A	11/23/1999	67500-69000	0.375	4.1		29.1
PE9328B	MA9328B	11/23/1999	69000-70500	0.375	4.3	7.9E-03	
	MA9335A	11/26/1999	70500-72000	0.375	3.3		29.2
PE9335B	MA9335B	11/26/1999	72000-73500	0.375	3.2	1.7E-02	
	MA9335C	11/29/1999	73500-75000	0.375	4.4		29.4
PE9337A	MA9337A	11/29/1999	75000-76500	0.375	3.1	1.8E-02	
	MA9337B	11/30/1999	76500-78000	0.500	2.7		28.4
PE9339A	MA9339A	11/30/1999	78000-79500	0.500	3.5	1.5E-02	
	MA9339B	12/7/1999	79500-81000	0.375	4.6		29.5
PE9349C	MA9349C	12/7/1999	81000-81942	0.500	3.8	1.3E-02	

Note:
Gas venting sand layer 0-37,500 cy; drainage sand layer 37,500 - 81,942 cy

Requirements:
Maximum grain size of 3/4 inch
Maximum of 5% passing the No. 200 sieve.
Permeability greater than 8×10^{-3} cm/s.
Friction angle greater than 26 degrees

gassand.xls

did not meet the requirement had permeabilities of 7.7 x 10-3 to 7.9 x 10-3 cm/sec, slightly lower than the requirement. All direct shear test results exceeded the specification of a minimum friction angle of 26 degrees between the soil and the textured HDPE cap. All samples met the grain size requirements.

2.5 Flexible Membrane Liner

2.5.1 General

The flexible membrane liner (FML) used on the landfill closure construction was a 40-mil textured high density polyethylene (HDPE) material. The HDPE was placed over the sand gas venting layer.

2.5.2 Liner Manufacturer and Installer

The HDPE used for the Foxborough Sanitary Landfill final closure was manufactured by Agru America of Kingwood, Texas. The installation of the HDPE liner was subcontracted by Eirco to New Lining Solutions of Seattle, Washington.

The rolls of HDPE were approximately 23 feet wide and 600 feet long. A total of 79 rolls were delivered to the site. Each roll was accompanied by certification testing to confirm that the material met the specifications. In addition, test results were submitted for the resin used in the HDPE manufacturing. The resin and roll certificates are included in Appendix D.

2.5.3 Liner Installation

New Lining Solutions started the liner installation on October 8, 1999. The installation began on the northwestern corner of the landfill and proceeded in a clockwise direction. New Lining Solutions installed the liner in accordance with the project specifications noting areas of panel placement, damage and all component penetrations. A copy of the panel layout as-built drawing is included in Appendix E.

Welding of the HDPE was accomplished using a double track hot wedge (fusion) welding machine on all areas of the liner where possible. Areas inaccessible to the hot wedge unit (repairs, pipe boots, etc.) were welded using an extrusion welding machine. The hot wedge method fuses the liner material together using a combination of heat and pressure, where the extrusion process fuses the panels together by the addition of a molten extrudate of the same composition as the liner material (HDPE).

2.5.4 Installation Testing

Strict quality control procedures were followed during the installation of the HDPE, as required by the specifications. Start-up testing was conducted at the beginning of each shift and once every four hours during the day by the personnel operating each specific piece of welding equipment. Start-up samples were tested for both peel and shear on-site by Atlantic Lining using a tensiometer, in accordance with ASTM D-4437 methods.

Non-destructive testing was performed on 100 percent of the liner seams by a quality control technician from New Lining Solutions. This testing was observed by CDM s on-site engineer. Air pressure testing was conducted on all hot wedge welded seams. Vacuum box testing was conducted on all extrusion-welded seams.

In addition to the non-destructive testing, CDM s on-site engineer conducted a complete walk-over of the FML to observe any defect, damage, or suspect area on the panels. These areas were repaired by either patching or covering the area with extrudate, as needed. All repairs were vacuum tested by New Lining Solutions, and repair locations are shown on the panel layout plan in Appendix E.

Destructive testing was performed by cutting a 12-inch by 36-inch sample from the actual field seam. A sample was cut every 500 feet of seam length or as directed by the site engineer. A total of 85 destructive samples were collected from the project, and delivered to CDM s laboratory for peel and shear testing. All samples met the seam strength requirements listed in the project specifications. The location of the samples are shown on the panel layout plan, and a copy of the test results are included in Appendix F.

2.6 Topsoil and Seed

A topsoil capable of supporting vegetation was placed over the sand drainage layer of the cap system. Approximately 29,000 cubic yards of topsoil was required for the project. The topsoil was required to have a gravel content of 10 percent, USDA classification of sandy loam, organic content between 8 and 10 percent, and pH between 6 and 8.

Source testing was conducted on the topsoil material by Tibbetts Engineering under subcontract with Eirco. In accordance with the project specifications, soils tests were conducted for USDA classification, organic content, pH, and gravel content with a frequency of 1 test per 1,000 cubic yards. A total of 29 topsoil samples were tested.

A summary of grain size, pH and organic content test results is shown on Table 2-2. The laboratory results reports are attached in Appendix G. As shown on this table, Eirco had difficulties producing topsoil that met all of the topsoil requirements. 17 of the samples had gravel contents that exceeded the 10 percent requirement. All of the 29 samples were classified as sandy loam, and all of the 29 samples did have the required organic content.

As of October 1, 2000, the final closure areas are fully vegetated. The vegetation has been established in all areas, and no erosion during the spring and summer has been noted. Since the ultimate test of the topsoil is to support and maintain vegetative growth, it would appear that although the topsoil did not meet all of the requirements, the intent of the topsoil was met.

Table 2-2

Table 2-2
Foxborough Landfill
Summary of Topsoil Testing

Sample ID	Date Sample Received	Volume of Topsoil Sample Represents	Gravel Content (%)	Sand Content (%)	Silt Content (%)	Clay Content (%)	USDA Classification	pH	Organic Content (%)
GS9319A	11/15/1999	1000-2000	8.5	66.8	31.1	2.1	sandy loam	6.9	8.7
GS9319B	11/15/1999	2000-3000	12.4	67.1	29.3	3.6	sandy loam	7.0	8.5
GS9320A	11/15/1999	3000-4000	11.4	54.4	40.6	5.0	sandy loam	7.7	9.1
GS9320B	11/16/1999	4000-5000	13.4	63.0	33.4	3.6	sandy loam	7.6	9.6
GS9321A	11/16/1999	5000-6000	13.4	65.8	30.7	3.6	sandy loam	6.8	9.0
GS9321B	11/17/1999	6000-7000	9.7	60.8	34.2	5.0	sandy loam	6.2	8.6
GS9323A	11/22/1999	7000-8000	12.4	66.0	30.9	3.1	sandy loam	6.0	8.2
GS9329A	11/29/1999	8000-9000	13.8	69	31	0	sandy loam	6.7	9.1
GS9329B	11/29/1999	9000-10000	10	68	32	0	sandy loam	7.4	8.7
GS9329C	11/30/1999	10000-11000	4.4	64	34	2	sandy loam	7.6	9.7
GS9333A	11/30/1999	11000-12000	6.8	67	32	2	sandy loam	7.1	9.0
GS9333B	11/30/1999	12000-13000	5.4	66	32	2	sandy loam	6.7	8.6
GS9333C	12/1/1999	13000-14000	12.4	63	35	2	sandy loam	6.9	8.2
GS9333D	12/1/1999	14000-15000	10	69	28	3	sandy loam	7.1	8.9
GS9333E	12/2/1999	15000-16000	12.6	67	30	3	sandy loam	7	9.2
GS9334A	12/2/1999	16000-17000	11	64	33	3	sandy loam	6.7	8.6
GS9334C	12/2/1999	17000-18000	14.6	63	35	2	sandy loam	6.1	8.2
GS9334D	12/6/1999	18000-19000	10	64	33	3	sandy loam	6.7	8.0
GS9336A	12/6/1999	19000-20000	9	62	35	3	sandy loam	7.2	8.9
GS9336B	12/6/1999	20000-21000	9	67	31	2	sandy loam	6.2	9.5
GS9336C	12/7/1999	21000-22000	11.9	65	33	2	sandy loam	6	9.0
GS9336D	12/7/1999	22000-23000	12.9	66	31	3	sandy loam	6.9	8.7
GS9337B	12/7/1999	23000-24000	10.8	63	34	3	sandy loam	7.9	8.4
GS9337C	12/8/1999	24000-25000	7.4	67	32	1	sandy loam	7.1	8.9
GS9337D	12/8/1999	25000-26000	6.4	66	33	1	sandy loam	7.8	9.7
GS9344G	12/15/1999	26000-27000	13.6	64	33	2	sandy loam	7.3	8.6
GS9345A	12/16/1999	27000-28000	14.8	63	35	2	sandy loam	6.7	9.6
GS9349F	12/16/1999	28000-29000	13.6	67	31	2	sandy loam	7.1	9.0
GS9349J	12/21/1999	29000-29072	11.9	69	30	1	sandy loam	5.9	9.7

Requirements:
Gravel content less than 10 percent.
USDA classification of sandy loam.
Organic content between 8 and 10 percent.

After the topsoil was installed, hydroseed was applied and an erosion control blanket consisting of netted straw was installed on all cap areas with slopes steeper than 4:1.

2.7 Stormwater Controls

A series of swales and culverts were constructed on the landfill to control stormwater runoff from the site. The flow was directed to two sedimentation basins which were constructed as part of this project. The swales were graded at a minimum slope of 2 percent to ensure that flow did not collect in the swales and was directed away from the landfill. All stormwater controls were constructed in accordance with the project drawings and specifications.

2.8 Groundwater Monitoring Well Abandonment

Two groundwater monitoring wells were abandoned because they were located in areas where the cap was being constructed. The groundwater monitoring wells that were abandoned included MW-5S and MW-5D. All abandoned wells were grouted and capped with concrete in accordance with the project specifications.

APPENDIX A

Correspondence

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-94[illegible]-270[illegible]

COPY

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

September 7, 1999

Mr. Andrew Gala, Town Administrator
Town of Foxborough
40 South Street
Foxborough, Massachusetts 02035

RE: REQUEST FOR INFORMATION
STORMWATER CONTROL AND
EROSION CONTROL AND MITIGATION

AT: FOXBOROUGH SANITARY LANDILL
EAST BELCHER STREET
FOXBOROUGH, MA

Dear Mr. Gala:

On April 27, 1999 the Department of Environmental Protection, Solid Waste Management Section (the "Department") issued a Conditional Approval for the Final Closure Design of the Foxborough Sanitary Landfill. Condition 5 of the approval requires that the Town consult the Foxborough Conservation Commission to determine the appropriate short-term and long-term actions to mitigate impacts to wetlands.

The Department has received a series of public inquiries into the landfill's impact on nearby wetlands and streams. A particular concern has been raised regarding sedimentation of a small pond located south of the landfill on the north side of East Belcher Street where the road jogs east and a small stream crosses the road. A concern has also been raised that flow in the stream has ceased since commencement of final cap construction.

At this time the Department requests that the Town submit a written update regarding the following:

- ongoing actions to prevent erosion during construction,
- investigate and report on the quantity and quality of sediment in the wetlands, stream and the East Belcher Street pond,
- determine if the lack of flow in the stream is due to natural conditions or related to construction activities.

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

DEP on the World Wide Web: http://www.magnet.state.ma.us/dep
Printed on Recycled Paper

The Department further requests that you immediately contact Mr. Mark Hannon, 92 East Belcher Street regarding his concerns and copy Mr. Hannon in any correspondence regarding these issues.

The Department requests that the Town respond within 10 days summarizing information available to date and specifying planned future actions. If you have any questions regarding this issue, please contact me at (508) 946-2833 or Dan Connick at (508) 946-2884 or at the letterhead address.

Very truly yours,

David B. Ellis, Chief
Solid Waste Management Section

E\DC\re

cc: Foxborough Board of Selectmen
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Foxborough Board of Health
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Foxborough Conservation Commission
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Camp, Dresser & McKee, Inc.
10 Cambridge Center
Cambridge, MA 02142
ATTN: Paul Boyajian

Mr. Mark Hannon
92 East Belcher Street
Foxborough, MA 02035

DEP-Boston
ATTN: J. Doucett

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-946-2700

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

COPY

September 1, 1999

Mr. Andrew Gala, Town Administrator
Town of Foxborough
40 South Street
Foxborough, Massachusetts 02035

RE: MODIFICATION OF LANDFILL FINAL CLOSURE DESIGN
BWPSW25 - CORRECTIVE ACTION DESIGN

AT: FOXBOROUGH SANITARY LANDFILL
EAST BELCHER STREET
FOXBOROUGH, MA

Dear Mr. Gala:

The Department of Environmental Protection, Solid Waste Management Section (the "Department") has reviewed the August 30, 1999 correspondence prepared on your behalf by Camp, Dresser & McKee Inc. (CDM) regarding final closure of the Foxborough Sanitary Landfill. Based on its review, the Department has determined that the proposed modification to the Landfill final cover configuration is appropriate subject to the conditions contained herein.

Proposal

On April 27, 1999 the Department issued a Conditional Approval of the Corrective Action Design for final closure of the Landfill. On August 19, 1999, CDM notified the Department that during closure activities it was determined that a limited portion of the landfill's eastern side has a slope of approximately one horizontal to one vertical over a vertical distance of 5 to 10 feet. CDM states that re-grading this area to achieve a 3 horizontal to 1 vertical slope from the existing toe of slope would require excavation over a 20,000 square foot area potentially creating significant odors. The Landfill has been the subject of odor complaints in the past.

CDM has proposed an alternative closure design configuration in which the toe of slope would extend up to approximately 25 feet from the existing limit and encompass an additional footprint area of approximately 3700 square feet. Approximately 800 cubic yards of waste material would be relocated through re-grading. Re-grading to achieve a 3 horizontal to 1 vertical sideslope is required to meet the Department's regulations, to mitigate the potential for erosion of the final

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

DEP on the World Wide Web: http://www.magnet.state.ma.us/dep
Printed on Recycled Paper

Appeal

The Department has issued this permit pursuant to M.G.L., C.111, §150A. Any person aggrieved by this decision may appeal it pursuant to M.G.L., C.30A, §14. An appeal must be commenced no later than thirty (30) days from the date of this notice. Notice of an action or proceeding to appeal, including a statement of reasons, shall be served on the Department upon commencement of the appeal. In the event of an appeal, the Department reserves the right to reopen the permit proceedings, supplement the record and modify the approval.

If you have any questions or comments regarding this approval letter, please contact me at (508) 946-2833 or Dan Connick at (508) 946-2884 or at the letterhead address. In any correspondence regarding this approval, please reference permit Transmittal Number 93902.

Very truly yours,

David B. Ellis, Chief
Solid Waste Management Section

E\DC\re

cc: Foxborough Board of Selectmen
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Foxborough Board of Health
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Camp, Dresser & McKee, Inc.
10 Cambridge Center
Cambridge, MA 02142
ATTN: Paul Boyajian

DEP-Boston
ATTN: J. Doucett

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

EDWARD P. KUNCE
Acting Commissioner

COPY

April 27, 1999

Mr. Andrew Gala, Town Administrator
Town of Foxborough
40 South Street
Foxborough, Massachusetts 02035

RE: CONDITIONAL APPROVAL
OF FINAL CLOSURE DESIGN
APPLICATION FOR: BWPSW25
CORRECTIVE ACTION DESIGN

AT: FOXBOROUGH SANITARY LANDFILL
EAST BELCHER STREET
FOXBOROUGH, MA

Transmittal Number: 93902

Dear Mr. Gala:

The Department of Environmental Protection, Solid Waste Management Section (the "Department") has completed its review of the permit application listed above in regard to final closure of the Foxborough Sanitary Landfill ("Landfill") on East Belcher Street and determined the application is technically complete. The application was prepared and submitted on behalf of the Town of Foxborough (the "Town") by Camp, Dresser & McKee ("CDM") in order to complete final closure of the Landfill in accordance with Administrative Consent Order ACO-SE-97-4006 entered into between the Town and the Department in August 1997.

Submittals

The following submittals represent the complete application reviewed by the Department under 310 CMR 19.000 *Solid Waste Management Regulations* and the Department's *Landfill Technical Guidance Manual, May 1997* (the "Manual").

A. Permit application form BWP-SW-25 and Transmittal Form #93902 received by the Department on January 27, 1999.

B. A Final Closure Report entitled, Town of Foxborough, Massachusetts, Foxborough Sanitary Landfill, January 26, 1999 prepared by CDM and received by the Department on January 27, 1999.

C. Five (5) design drawings entitled, Town of Foxborough, Massachusetts, Foxborough Sanitary Landfill, Final Closure, dated January 1999 prepared by CDM and received by the Department on January 27, 1999.

D. Supplemental information entitled, Comment Response Letter, submitted by CDM dated April 1, 1999, in response to Department comments.

E. A document entitled, Town of Foxborough, Massachusetts, Foxborough Sanitary Landfill, Final Closure, Notice of Intent Under the Wetlands Protection Act, dated April 1999, prepared by CDM and received by the Department on April 8, 1999

F. Five (5) revised design drawings entitled, Town of Foxborough, Massachusetts, Foxborough Sanitary Landfill, Final Closure, dated April 1999 prepared by CDM and received by the Department on April 8, 1999 superseding the drawings submitted on January 27, 1999 (Item C above).

Final Closure Design

The application documents define the design and construction of the final cover, gas venting, and stormwater management systems for the Landfill. The existing Landfill footprint is approximately 20 acres on a 91-acre Town owned parcel. A Comprehensive Site Assessment (CSA) completed by Weston & Sampson, Inc. in January 1998 indicates that the landfill consists of up to 60 feet of municipal solid waste. The CSA concluded that the types and concentrations of contaminants do not warrant groundwater remediation. As reported in the April 1, 1999 response to comments, a ten-inch pipe underlies the landfill and the results of sampling groundwater flowing from this pipe indicate no exceedances of Massachusetts Maximum Contaminant levels. The pipe will be plugged during final cover construction.

The application plans also indicated that an area of the site has been used as a shooting range. The Department's regulations state that no site on which a facility was operated shall be used for any other purpose without prior written approval of the Department. A condition of this permit will require that a post closure use application be submitted to the Department should the Town desire to use the site for any purpose.

The **final cover system** is designed with a minimum top-slope of five percent (5%) and side-slopes not to exceed 3:1. The final cover system will include the following layers from bottom to top;

- a six-inch (6") minimum sub-grade layer,
- a six-inch (6") minimum gas venting layer with a minimum hydraulic conductivity of ~~6~~ 8x10^{-3} centimeters per second (cm/sec),
- a 40-mil textured HDPE flexible membrane liner (FML) barrier layer,
- a twelve-inch (12") minimum sand drainage layer with a minimum hydraulic conductivity of 8x10^{-3} cm/sec, and
- an eight-inch (8") minimum loam/compost vegetative support layer with a minimum organic content of 8 percent.

The **gas venting system** is designed with a six-inch gas venting sand layer, twelve (12) deep vertical gas venting wells and nine (9) shallow gas vents. The deep gas wells will be constructed of 6 inch diameter perforated schedule 80 PCV pipe set in a stone-filled, 36-inch diameter borehole extending down to the higher of the base of waste or groundwater. The deep wells will be constructed with the pipe perforations terminating approximately 5 feet below the HPDE FML to facilitate conversion of the vents from passive vents to an active system should the need arise. The shallow gas vents will be constructed of 6 inch diameter perforated schedule 80 PCV pipe set in a stone filled, 36 inch diameter borehole extending two (2) feet into the waste material. Four shallow vents are designed to be located at the landfill crown and interconnected with a 6-inch horizontal gas collection pipe constructed within a 24-inch wide by 36-inch deep trench backfilled with crushed stone. The remaining five (5) shallow vents are designed to be located in areas of shallow waste deposition. Each shallow gas vent and deep gas well will be topped by a 6-inch solid PVC pipe extending approximately 8-feet above grade and capped with a ventilator.

The Landfill has a history of odor complaints from nearby residents and it is anticipated that the final capping of the landfill will alleviate odor conditions. As a condition of this approval, the Town will be required to prevent offsite migration of landfill gas from creating nuisance odor conditions and from creating a risk to human health and safety. Should landfill gas generation result in off-site migration, corrective measures may require conversion of the passive system to an active gas collection system. The Town has not proposed an active gas collection system at this time, however, the gas venting design incorporates deep gas wells designed to be converted to an active system.

The **storm water management system** will control stormwater run-off from the 20 acre Landfill and has been designed for up to the 100-year, 24-hour rainfall event. Calculations provided in the Application indicate that post closure peak discharge will be less than existing peak discharges. The stormwater system will direct run-off from the Landfill to two detention basins located at the southwest and southeast areas of the Landfill via a series of swales, downslope chutes, and pipes. Each basin is equipped with a rip-rap lined inlet, an interior rip-rap berm to limit short circuiting, a perforated pipe riser low-flow outlet and a rip-rap high-level-flow overflow spillway. The southwest basin has a design storage capacity of 0.4 acre-feet below the spillway elevation and the southeast basin has a design storage capacity of 1.74 acre-feet below the spillway elevation. The basins will be maintained in accordance with a post-closure landfill maintenance plan.

Approval Conditions

The Department has determined the application is satisfactory and in accordance with the authority granted pursuant to Massachusetts General Laws, Chapter 111, Section 150A (M.G.L., C.111, §150A), hereby approves the Landfill final closure design subject to the following conditions:

1. The Town shall notify the Department when the final closure construction begins in order that periodic inspections can be scheduled. The Town shall again notify the Department when installation of FML commences.

2. The final closure construction shall proceed in compliance with Department regulations, requirements, the Manual, or as required by this permit. There shall be **no** deviation from the approved plan without prior written approval from the Department.

3. During the closure construction the Town shall continue to comply with the applicable items in 310 CMR 19.130 *Operation and Maintenance Requirements* and 310 CMR 19.043 *Standard Conditions*. During the construction process, odors, dust, erosion, noise or other nuisance conditions shall be kept to a minimum and shall be prevented from creating a threat to human health and safety and the environment. In the event a nuisance condition develops, abatement measures shall be implemented immediately. Due to the increased potential for odor producing gas emissions during gas well and vent drilling, the Town shall require that the final cover construction contractor notify the Highway Department and the Board of Health prior to commencement of drilling. The Town shall require that measures to avoid offsite nuisance odor conditions are implemented which may include, but is not limited to, the immediate removal and covering of excavated waste, liming of excavations, and collection and flaring of landfill gas emitted from boreholes.

4. The application documents included calculations relating to stormwater management and detention basin design. Within 30 days of the date of this approval, the Town shall supplement the design calculations by simulating the 2 year and 10 year 24-hour storm events and by providing the discharge characteristics of the basin outlets. Basin outlet calculations should include the outlet capacity of the riser pipe at intervals of 0.1 feet, 0.5 feet, 1 foot an 2 feet.

5. The perimeter silt-fence barriers and other applicable stormwater and erosion control devices shall be completely installed at the Landfill prior to initiating the final closure construction. These devices shall be maintained throughout the project until adequate vegetation has been established. Should silt enter any wetlands area, the Town shall immediately consult the Foxborough Conservation Commission to determine appropriate short-term and long-term actions to mitigate impacts. Upon completion of the landfill final cover, the Town shall request a Certification of Compliance from the Conservation Commission and submit a copy to the Department.

6. The edge of waste shall be clearly delineated in the field to ensure the final cover system will completely cover all areas of waste. If large areas of previously unknown waste are identified during the final closure construction, the Department shall be notified and waste relocation and extended soil testing may be required by the Department. All windblown litter and other waste materials existing beyond the limits of the landfill final cover must be collected and properly disposed prior to completion of final cover construction. Whole tires discovered during final cover construction shall not be disposed in the Landfill.

7. The Town shall provide adequate venting of landfill gas during the final cover installation. In particular, the permanent gas vents must be operating or temporary venting must be provided during placement of the FML barrier layer.

8. Stability factors of safety have been estimated by CDM based upon anticipated materials and maximum landfill slopes. The Contract Documents require Quality Assurance/ Quality Control measures by the contractor including testing of the drainage sand and selected FML material. The Construction Certification Report should include an updated calculation of the slope stability factor of safety based on actual construction conditions.

9. Pursuant to 310 CMR 19.130(23) the Town is required to provide sufficient fences or other barriers to prevent unauthorized access to the facility. The Town has proposed to limit perimeter fencing to the East Belcher Street side of the Landfill at this time. The Town must continually monitor and evaluate the potential for unauthorized access and institute all appropriate actions to prevent unauthorized access during the closure and post-closure period.

10. Based on the results of the CSA performed by Weston and Sampson, a Corrective Action Alternative Analysis is not required at this time. Should the results of future sampling indicate the need for remediation, the Town shall perform any required investigation or remediation as required by the Department. A ten-inch pipe underlying the landfill is scheduled to be plugged during landfill final cover construction. The Town shall ensure that the pipe is accessible after capping to facilitate utilizing the pipe during any required remediation.

11. Within sixty (60) days of completion of the final closure construction, a Construction Certification Report shall be submitted to the Department in accordance with 310 CMR 19.106. The Report shall include as-built drawings, quality assurance/quality control data, and written certification from the supervising engineer demonstrating that the construction was performed in accordance with Department regulations, requirements, the Manual, and the approved design. The Town should review the Manual, Table 2-2, "Elements of Construction Documentation Report" and Chapter 2 Section IV. C regarding FML. The certification shall also include a plan stamped by a registered land surveyor demonstrating that the limit of capped waste is within the site assigned area and the Town property lines.

12. Within ninety (90) days of the issuance of this permit, the Town shall submit a post-closure maintenance plan for review and approval. The Town shall continue to perform environmental monitoring of the Landfill and submit the results in accordance with the approved CSA.

13. Pursuant to 310 CMR 19.141, Record Notice of Landfill Operation, notification that a landfill has been operated at the site shall be recorded in the registry of deeds, or in the registry section of the land court for the district wherein the landfill lies. A copy of this notification shall be forwarded to the Department within 60 days of completion of the final cover system.

14. Pursuant to 310 CMR 19.143, no site on which a facility was operated shall be used for any other purpose without prior written approval of the Department. Should the Town desire to use the site for any purpose, a Post-Closure use application must be submitted and Department approval granted prior to commencement or continuation of any use of the facility.

The issuance of this conditional approval is limited to the Landfill final closure and does not relieve the Town from the responsibility to comply with all other regulatory or permitting requirements. The Department reserves the right to require additional assessment or action, as deemed necessary to protect and maintain the environment free from nuisance conditions, dangers or threats to public health, safety or the environment.

Appeal

The Department has issued this permit pursuant to M.G.L., C.111, §150A. Any person aggrieved by this decision may appeal it pursuant to M.G.L., C.30A, §14. An appeal must be commenced no later than thirty (30) days from the date of this notice. Notice of an action or proceeding to appeal, including a statement of reasons, shall be served on the Department upon commencement of the appeal. In the event of an appeal, the Department reserves the right to reopen the permit proceedings, supplement the record and modify the approval.

If you have any questions or comments regarding this approval letter, please contact me at (508) 946-2833 or Dan Connick at (508) 946-2884 or at the letterhead address. In any correspondence regarding this approval, please reference permit Transmittal Number 93902.

Very truly yours,

David B. Ellis, Chief
Solid Waste Management Section

E\DC\cb

cc: Foxborough Board of Selectmen
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Foxborough Board of Health
Foxborough Town Hall
40 South Street
Foxborough, MA 02035

Camp, Dresser & McKee, Inc.
10 Cambridge Center
Cambridge, MA 02142
ATTN: Paul Boyajian

DEP-Boston
ATTN: J. Doucett

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

EDWARD P. KUNCE
Acting Commissioner

DATE: APR 15 1999 Municipality: FOXBOROUGH

RE: NOTIFICATION OF WETLANDS PROTECTION ACT FILE NUMBER
The Department of Environmental Protection has received a Notice of Intent filed in accordance with the Wetlands Protection Act (M.G.L. c.131, §40):

Applicant: Town of Foxborough
Project Location: East Belcher Road, Landfill

Please submit the below additional required information and include your assigned file number on all correspondence.

( ) *Proof of abutter notification pursuant to M.G.L. c. 472 of the Acts of 1993.*
(*) *Stormwater management form* – *Applicant should submit a copy of the response to Stormwater Issues raised by the DEP Solid Waste Management Staff on 4/12/99 to DEP Wetlands and the Conservation Commission.
Comments: Commission please refer to 310 CMR 10.53(3)(p) regarding landfill closures. 310 CMR 10.53(3)(p)f. requires that temporary structures and work areas in resources areas be restored to preexisting hydrology and topography; and, at least 75% restored vegetatively as wetland. 310 CMR 10.53(3)(p)g. regarding direct impacts to resource areas caused by the final cap. In addition, refer to 314 CMR 9.06(6) "Stormwater discharges shall be provided with best management practices to attenuate pollutants and to provide a set back from the receiving water or wetland." Refer to Sheet C-1 of plans, it appears that several of the discharges and riprap are within delineated wetlands. Care should be taken to avoid the spreading of the seed mix described in Notice into wetland areas. If restoring BVW, then DEP recommends the use of wetland seed mix, not highway or conservation mix, to supplement wetland plantings.

This project has been assigned the following file #: **SE 157-305**

ISSUANCE OF A FILE NUMBER INDICATES ONLY COMPLETENESS OF SUBMITTAL, NOT APPROVAL OF APPLICATION

For more information please contact: Dorothy Blickens (508) 946-2781

(X) PLEASE SEE OTHER SIDE FOR POTENTIAL ADDITIONAL APPLICABLE REQUIREMENTS

cc: Conservation Commission
(X) Board of Health
(X) U.S. Army Corps of Engineers (Minor)
( ) Mass. Division of Marine Fisheries
( ) DWW - Boston - ATTN: Judy Perry
(X) U.S.E.P.A. - Region 1
(x) DEP - SERO - SWM ATTN: Dave Ellis, Dan Connick
(X) DEP - SERO - BRP - ATTN: Jack Hamm

20 Riverside Drive • Lakeville, Massachusetts 02347 • FAX (508) 947-6557 • Telephone (508) 946-2700

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

DEP on the World Wide Web: http://www.magnet.state.ma.us/dep

Printed on Recycled Paper

R2

IF CHECKED, THE FOLLOWING ITEM(S) APPLY TO THIS NOTICE OF INTENT:
( ) Please send copy of Notice of Intent and Plans to Massachusetts Division of Marine Fisheries, ATTN: Sports Fisheries Biologist at 50A Portside Drive, Pocasset, MA or if Nantucket or Martha's Vineyard to MDMF, ATTN: Greg Skomal at P.O. Box 68, Vineyard Haven, MA 02568.

_X_ Other Regulatory Jurisdiction

( ) Chapter 91 license may be required. Please complete enclosed application and submit to this office or provide information why license is not required.

( ) Applicant is advised to forward a copy of the Notice of Intent to the Corps of Engineers for review (call 1-800-362-4367 for information).

(X) Applicant is advised to contact U.S. Environmental Protection Agency at (617) 565-3909 regarding need for Stormwater permit.

_X_ 401 Water Quality Certification (314 CMR 9.00) may be required. See below for further details:

(X*)**Based upon the information submitted in and with your Notice of Intent a separate 401 Water Quality Certification application form is not required.**
***See Comments on Page 1 of this Notification Form.**
Provided that the project meets the following conditions, summarized below from 310 CMR 9.03 and 9.04, and the conditions under the Corps of Engineers Programmatic General Permit for Massachusetts (PGP), the project qualifies for 401 Certification as certified under the PGP:

(a) activities are conducted in compliance with MGL c.131, §40 (the Wetlands ProtectionAct) and the Final Order of Conditions permitting the activities does not result in the loss of more than 5,000 square feet cumulatively of bordering and isolated vegetated wetlands and Land Under Water and/or the dredging of more than 100 cubic yards of Land Under Water;

(b) the Final Order of Conditions requires at least 1:1 replacement of Bordering Vegetated Wetlands pursuant to 310 CMR 10.55(4)(b);

(c) The project is not listed in 314 CMR 9.04(1) through (11) including: discharge of dredged or fill material to any Outstanding Resource Water; any part of a subdivision **unless deed restricted**, so long as the discharge is not to an Outstanding Resource Water see 314 CMR 9.04(3); activities exempt from MGL c.131, §40 (except for normal maintenance and improvement of land in agricultural or aquacultural use); discharge of dredged or fill material to an isolated vegetated wetland identified as rare and endangered species habitat; loss of any salt marsh; activities subject to an individual 404 permit.

Information and a copy of the PGP can be obtained from the Corps of Engineers at 1-800-362-4367. If impacts to resource areas or project size increases beyond that described in the Notice of Intent or there are discrepancies therein, you must notify the Department and request a determination that the criteria of 310 CMR 9.03 have been met before the activity may begin.

( ) Before the activity described in the Notice of Intent can commence, you must obtain a Water Quality Certification from this Regional Office. **Please complete the enclosed 401 Water Quality Certification application form and file it with this Regional Office for review.**

( ) Your project involves dredging of greater than 100 cubic yards of Land Under Water. **Please complete the enclosed 401 Water Quality Certification application form and submit to the Department of Environmental Protection, Waterways Regulation Program, One Winter Street, Boston, MA 02108.** Call the Waterways Regulation Program at 617-292-5695 with any questions.

fnum.abb

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

TRUDY COXE
Secretary

DAVID B. STRUHS
Commissioner

October 20, 1998

Dan Connick - P.M.

508-996-2884

Robert Federico, Superintendent
Department of Public Works
Town of Foxborough
Town Hall, 40 South Street
Foxborough, Massachusetts 02035

Post-it® Fax Note 7671
To Bruce Haskell
Co./Dept. CSM
Phone #
Fax # (617) 621-2545
Date 10-26-98
From Bob Federico
Co. Foxborough DPW
Phone # (508) 543-1228
Fax # (508) 543-1227
# of pages ▶ 5

RE: APPROVAL WITH CONDITIONS
Application for: BWPSW23
COMPREHENSIVE SITE ASSESSMENT

AT: Foxborough Sanitary Landfill
East Belcher Road
Foxborough, Massachusetts

Transmittal Number: W001165

Do we have this permit application? and comments

Dear Mr. Federico:

The Department of Environmental Protection, Solid Waste Management Section (the "Department"), has completed its technical review of the Comprehensive Site Assessment permit application (the "Application") for the Municipal Landfill located on East Belcher Road in Foxborough (the "Landfill"). The Application consists of the documents titled *Comprehensive Site Assessment - Foxborough Sanitary Landfill, Volumes I and II* ("CSA"), dated January 1998. The Application was prepared by Weston and Sampson Engineers, Inc., on behalf of the Town of Foxborough and was received by the Department on February 2, 1998.

The Department reviewed the CSA pursuant to 310 CMR 19.000, *Solid Waste Management Facility Regulations* and the Department's *Landfill Technical Guidance Manual*, revised May 1997 ("Manual").

Summary of Previous Correspondence

The Department reviewed the draft CSA and issued a Technical deficiency letter on October 31, 1995. In a February 26, 1996, Letter Report the Town responded to the Department's October 31, 1995, technical deficiency letter. The Town satisfactorily addressed many of the Department's comments included in the October technical deficiency letter. In the Feb. 26, 1996, letter report it was stated that additional groundwater sampling rounds would be conducted and a final CSA would be submitted.

Do I need these Correspondence?

The Department and the Town entered into an Administrative Consent Order (ACO) which became effective on August 28, 1997. The ACO specified the assessment and closure schedules for the landfill. The ACO required the CSA be submitted by Jan. 15, 1998, which was extended to February 2, 1998, based upon a request by the Town.

In accordance with the authority granted pursuant to M.G.L. c.111, s150A and 310 CMR 19.000, the Department hereby approves Comprehensive Site Assessment subject to the following conditions:

O.K., what does this mean?

Sampling locations Not Shown on Survey. Do we have Regs?

A. Comments on Section 1 "Summary and Recommendations" presented in the CSA

1. Groundwater monitoring: The Department agrees that environmental monitoring shall continue in accordance with Department regulations. Specifically, groundwater samples should continue to be collected on a semi-annual basis as specified at 310 CMR 19.132(1)(d) from the following monitoring wells; MW-1S,-1D,-2S,-2D,-3D,-4S,-4D,-6S,-6D,-7D and MW-8D. Groundwater samples shall be analyzed for the parameters specified at 310 CMR 19.132(1)(h)1,2,3. Monitoring well couplet MW-5S,D may be eliminated from the groundwater monitoring plan for the time being. Groundwater monitoring well couplet MW-5 shall not be abandoned.

for how long?

Check this

Check this

Check W&S Report for last round

Surface water samples shall continue to be collected on a semi annual basis at surface water sampling locations (SUR-1, SUR-2, SUR-3, SUR-4) depicted on the site plan included with the CSA report.

Landfill gas monitoring shall continue to be conducted on a quarterly basis and in accordance with 310 CMR 19.132(4) *Gas Monitoring* (b)3 at soil gas probes SGP-4,-5,-6,-7, and -8. Landfill gas probes shall be analyzed for percent methane, volatile organic compounds, hydrogen sulfide and percent oxygen under initial conditions and then again under steady state conditions.

for how long

Check W&S report for last round

2. The Department agrees that surface water samples should be analyzed for the dissolved metals fraction and not for totals fraction.

3. The Department agrees that the Town should proceed with the preparation of the closure plans in accordance with 310 CMR 19.000, the Manual and the Administrative Consent Order (ACO-SE-97-4006) executed between the Town and the Department on August 28, 1997.

4. The Department agrees that additional gas sampling at the weigh station building should be conducted. Permanent landfill gas monitoring well(s) shall be located between the landfill and on-site structures. It is required that gas monitoring well(s) be installed to determine if landfill gas is migrating under the building and scale.

   Additionally, since the submittal of the CSA, the Department has received a letter report dated June 5th, 1998, which indicates the Town has already installed additional landfill gas probes between SGP-3 and SGB-4, which was recommended in the CSA.

   Seems like they have been insta already. But we are responsible to monitor?

5. The Department agrees that a quantitative risk assessment is not required at this time. The Department reserves the right to require additional assessment and investigation of the landfill area based on a review of the study and/or environmental monitoring results.

B. Underdrain Pipe

A ten (10) inch diameter perforated corrugated metal pipe (CMP) is located beneath the landfill, as depicted on the site plan included in Appendix A of the CSA. According to the information in the Department files, the pipe was installed in 1974 as "groundwater control piping". The inlet for the pipe is located on the northern side of the landfill, approximately one hundred feet south of monitoring well MW-3S and the outlet is located on the southern side of the landfill, approximately one hundred and fifty feet west northwest of piezometer PZ-3. Manganese is present in downgradient surface water samples collected from Spring Brook at two to three orders of magnitude greater than in upgradient surface water samples. Alkalinity, a leachate indicator parameter, is present in downgradient surface water samples collected from Spring Brook at an order of magnitude greater than in upgradient surface water samples. This pipe may act as a conduit for groundwater contamination from the landfill to the wetlands and the Spring Brook. Alternatives to the continuing discharge of water from the pipe should be explored. The Department requires that an evaluation of the pipe and its discharge be conducted that includes, but is not limited to, the following:

Not shown on drawing direction of flow?

1. Discuss the original purpose of this pipe and provide construction details, if available. Site History?

2. Discuss the effects the pipe discharge has had on wetlands vegetation, the quality of surface water, and groundwater and flow patterns. wetland person site visit; Surface water sample results

3. The Department requires that samples of the discharge from the underdrain pipe be collected and submitted for laboratory analysis for two (2) sampling rounds. The Department recommends that one surface water sample be collected during a period of high groundwater conditions, if possible. The surface water sample should be analyzed for the parameters specified at 310 CMR 19.132(1)(h)1,2,3, EPA Method 8270 as amended, and EPA Method 8080 as amended, at a minimum. Discuss the results of the two surface water samples collected from the discharge and indicate if it is evident that leachate is entering the pipe. ⇒ 2 rounds w/in 90 days of 10/26/98. W/in 45 days of last sample, submit report ⇒ see D.3.

   Same time as wetland visit

4. Provide recommendations on how the Town intends to address the discharge from this pipe to the wetlands and Spring Brook. Discuss future storm water control plans as they relate to the pipe, the detention ponds on the south side of the landfill,

this pipe to the wetlands and Spring Brook. Discuss future storm water control plans as they relate to the pipe, the detention ponds on the south side of the landfill, the Department's *Stormwater Management Policy* and the Corrective Action Design.

C. The Extent of Waste

Test pits?

The extent of refuse shall be determined. Determination of the extent of waste is crucial to developing closure plans. The Department specifically is concerned that the extent of waste, and its location relative to any wetlands resource areas, be defined in accordance with 310 CMR 10.000. All proposed work, in and adjacent to the wetland resource area, shall be conducted in accordance with 310 CMR 10.000 and all applicable local, state, and federal regulations or statues. This item may be addressed in the corrective action design permit.

Needs to be performed immediately

Need copy

what's this, I thought this was the permit

D. Future Submittals

1. In accordance with ACO-SE-97-4006, the Town has until November 1st, 1998, to submit a Corrective Action Alternative Analysis (CAAA) and until January 1, 1999, to submit final closure plans (CAD permit). ⇒ Monday.

2. The Town shall complete the two (2) surface water sampling rounds from the drain pipe within ninety (90) days from receipt of this letter.

3. Within forty-five (45) days of collection of the second surface water sample from the drain pipe, a report shall be submitted to the Department. The report shall include, but not be limited to, the Department's recommendations/comments provided in this letter and the following:

   a). The CSA risk assessment shall be revised, as necessary, based on the additional data collected.

   b). Recommendations for additional assessment work, if necessary, and of the need for additional risk reduction measures.

The Department reserves the right to require additional assessment and investigation of the landfill area based on a review of the study and/or environmental monitoring results. It is the applicant's responsibility to comply with all other applicable federal, state, and local statutes and regulations as a prerequisite to conducting assessment and corrective action design at the Foxborough Landfill.

The Department has issued this permit pursuant to M.G.L. C.111, S.150A. Any person(s) who are aggrieved by this decision may appeal it pursuant to Chapter 30A. An appeal must commence no later than thirty (30) days from the date of this approval. Notice of an action or proceeding to appeal, including a statement of reasons, shall be served on the Department upon the commencement of the appeal. In the event of an appeal, the Department reserves the right to reopen the permit proceedings, supplement the record, and modify the permit.

Appeal?

Please direct any questions regarding this matter to me at (508) 946-2833 or to Mark Dakers at (508) 946-2847, or write to the letterhead address. Refer to **Transmittal Number W001165** in any correspondence to this office regarding this project.

Very truly yours,

David B. Ellis, Chief
Solid Waste Management Section

E/MD/ka

cc: Michael J. Hanlon, P.E
Weston and Sampson Engineers, Inc.
5 Centennial Drive
Peabody, Massachusetts 01960

Board of Health
40 South Street
Foxborough, Massachusetts 02035

Board of Selectpersons
40 South Street
Foxborough, Massachusetts 02035

DEP - Boston
ATTN: Jamie Doucett

cc: Lavnla

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

TRUDY COXE
Secretary

DAVID B. STRUHS
Commissioner

August 28, 1997

Mr. Andrew Gala Jr.
Town Administrator
Town of Foxborough
40 South Street
Foxborough, MA. 02035

Re: Town of Foxborough
Foxborough Landfill
ACO-SE97-4006

Dear Mr. Gala:

Enclosed please find one (1) original signed copy of the Administrative Consent Order (ACO-SE97-4006) for the closure of the Foxborough Landfill.

Please contact me at (508) 946-2708 if you have any further questions.

Sincerely,

David Johnston
Deputy Regional Director

DJ/BC

CC: David Ellis
DEP/SERO/Solid Waste
Original Copy #2

DEP/SERO
Paul A. Taurasi
Donald Nagle
Cathy Dors
Mark Dakers
Bradley Lacouture

Geri Lambert
Office of Enforcement
DEP/Boston

20 Riverside Drive • Lakeville, Massachusetts 02347 • FAX (508) 947-6557 • Telephone (508) 946-2700

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of the Town of **FOXBOROUGH**	)	Administrative Consent Order Number: **SE 97-4006**

I. THE PARTIES

1. The Department of Environmental Protection (hereinafter the "Department") maintains its principal offices at One Winter Street, Boston, Massachusetts and also operates a regional office at 20 Riverside Drive, Lakeville, Massachusetts. The Department's authority to issue this Administrative Consent Order (hereinafter "CONSENT ORDER"), is conferred by Massachusetts General Law, Chapter 111, Section 150A (hereinafter "M.G.L., C.111, §150A") and Chapter 21, Section 44 and Chapter 30A, Section 10.

2. The Town of Foxborough (hereinafter the "Municipality") is a municipal corporation located in Norfolk County and duly organized under the laws of the Commonwealth of Massachusetts, with its principal offices located at the Town Hall, Foxborough, Massachusetts.

II. STATEMENT OF FACTS

1. The Department is a duly constituted agency of the Commonwealth of Massachusetts, established pursuant to M.G.L., C.21A, §7, and is responsible for the implementation and enforcement of M.G.L., C.111, §150A and §150A1/2 and the regulations promulgated thereunder at 310 CMR 16.00 (Site Assignment Regulations for Solid Waste Facilities) and 310 CMR 19.000 (Solid Waste Management Facility Regulations). The Department is also authorized to assess civil administrative penalties pursuant to M.G.L., C.21A, §16 and the regulations promulgated thereunder at 310 CMR 5.00.

2. The Municipality owns and/or operates the disposal site (hereinafter the "Landfill" or "Dump" if not site assigned) located off East Belcher Road, Foxborough, Massachusetts. The current daily tonnage for the unlined Landfill, total of approximately 20 acres uncapped, is 30 tons per day for operations 3 days per week (residential only), with a maximum final elevation of 320' msl. This CONSENT ORDER only applies to the unlined portion of the landfill.

3. On or about May 2, 1973, the Department approved plans for the operation of the site as a sanitary landfill.

4. On or about June 4, 1992, the Municipality filed a statement of intent to continue operation of the Landfill after January 1, 1994 in accordance with M.G.L., C. 111, §150A as amended.

5. On or about July 1, 1992, the Department received an application on behalf of the Municipality for an Existing Facility Permit ("EFPA") for the Landfill. The application was designated as # 37757. According to the information contained in the EFPA, the landfill was predicted to operate for 2-3 more years.

6. On or about January 19, 1993, the Municipality submitted an Initial Site Assessment/Comprehensive Site Assessment Scope of Work ("ISA/CSASOW") regarding the landfill. The application was submitted by Weston and Sampson Engineers on behalf of the Municipality, and was designated as #37766.

7. On or about March 1, 1993, the Department issued a conditional approval for the ISA/CSASOW.

8. On or about March 16, 1993, the Municipality submitted a proposed work plan regarding the performance of a Hydrogeological Study. The submittal was made as a component of the ISA/CSA.

9. On or about March 25, 1993, the Municipality submitted an application regarding the proposed lateral expansion of the landfill. The application was designated as #37772. According to the application, the landfill would be expanded into two - eight acre phases (i.e. 16 acres total), thereby providing solid waste disposal capacity for the municipality for approximately twenty years.

10. On or about April 8, 1993, the Department approved the work plan for the Hydrogeological Study.

11. Given the scope of the proposed expansion project, it was determined that it was subject to the Massachusetts Environmental Policy Act (hereinafter "MEPA") (301 CMR 11.00), and that an Environmental Notification Form (hereinafter "ENF") was required to be filed with the MEPA Unit of the Executive Office of Environmental Affairs.

12. On or about August 9, 1993, the Municipality filed a statement of intent to continue the operation of the landfill after January 1, 1994, in accordance with M.G.L., C.111, §150A as amended.

13. On or about January 3, 1994, the Municipality submitted an ENF to MEPA. The ENF was designated as EOEA #9785.

14. On or about February 24, 1994, the Secretary of Environmental Affairs (hereinafter the "Secretary") determined that an Environmental Impact Report (hereinafter "EIR") was required to be prepared/submitted for the proposed landfill expansion project.

15. On or about January 25, 1995, the Municipality submitted a *Project Change Notice* to MEPA regarding a proposal to downsize the project from a two phase-16 acre expansion, to a one phase-8 acre expansion.

16. On or about March 1, 1995, the Secretary determined that the proposed project still required the preparation of an EIR.

17. On or about July 10, 1995, the Municipality submitted a DRAFT Comprehensive Site Assessment (hereinafter "CSA"). The project was designated as #102561.

18. On or about August 22, 1995, the Municipality submitted a DRAFT EIR to MEPA concerning the proposed landfill expansion project.

19. On or about September 8, 1995, the Municipality submitted a second permit application to the Department regarding the proposed lateral lined expansion of the landfill - approximately 32 tons per day for operations 5 days per week. This application was designated as #106393. A conceptual closure plan was also included with this submission.

20. On or about September 28, 1995, the Secretary determined that additional information is necessary to complete the Draft EIR, however, the Final EIR may incorporate this information. Consequently, the Final EIR would need to be more sufficient in addressing assorted environmental issues which were outlined in previous determinations.

21. On or about October 18, 1995, the Department, having received a revised application concerning the proposed lateral expansion of the landfill, determined that the initial application (#37772), was no longer valid, and issued a correspondence to the Municipality which terminated the initial proposal.

22. On or about October 31, 1995, the Department having reviewed the DRAFT CSA (project #102561), issued a technical deficiency letter to the Municipality regarding the site assessment of the landfill.

23. On January 1, 1996, the Town banned the disposal of all commercial refuse, as well as construction and demolition debris at the Landfill for an "undetermined" period of time.

24. As directed by M.G.L., C.111, §150A as amended, the Department classified the Landfill as posing a potential threat to the public health, safety, or the environment.

III. DEFINITIONS

The terms in this CONSENT ORDER shall have the same meaning as provided in M.G.L., C.111, §150A and 150A1/2, and the regulations promulgated thereunder at 310 CMR 16.00 and 310 CMR 19.000, unless the context clearly indicates otherwise, or are otherwise defined.

IV. DISPOSITION AND ORDER

1. As a result of discussions which have taken place between the Department and the Municipality (collectively "the parties") and without adjudication of any fact or law set forth above, the parties have agreed to negotiate this CONSENT ORDER rather than expend the time and

resources necessary to adjudicate this matter, specifically the procedure and schedule to close and cap the Landfill. This CONSENT ORDER represents the full and final agreement between the parties concerning the closure of the Landfill. This CONSENT ORDER shall not constitute, be construed as, or operate as an admission that the Municipality has violated any law or regulation and shall not constitute any evidence or implication of any such violation. The decision of the Municipality to enter into this CONSENT ORDER shall not be construed as an admission by the Municipality that it agrees with the Department's determination that the Landfill poses a potential threat.

2. Nothing in this CONSENT ORDER shall be construed as or operate as, barring, diminishing, adjudicating, or in any way affecting any legal or equitable right of the Department to issue any future Order with respect to the subject matter covered by this CONSENT ORDER, or in any way affecting any other claim, action, suit, cause of action, demand or issuance of administrative or civil penalties in accordance with M.G.L. C.21A, §16, which the Department may initiate, provided, however, that any such future order, legal or equitable right, claim, action, suit, cause of action, or demand arises or is related to matters or conditions occurring after the date of execution of this CONSENT ORDER.

3. The Municipality consents to the issuance of CONSENT ORDER and admits to the jurisdiction and authority of the Department to issue such CONSENT ORDER. The Municipality understands, and hereby waives any right to an administrative hearing before the Department, a tentative decision, judicial review, rehearing, re-argument and reconsideration of the issuance and/or the terms of this CONSENT ORDER and to notice any rights or review. This waiver does not extend to any other order issued by the Department or any other claim, action, suit, cause of action or demand which the Department or any other person may initiate with respect to the subject matter of this CONSENT ORDER.

4. The Department hereby determines, and the Municipality hereby agrees, that the deadlines set forth in this CONSENT ORDER constitute reasonable times to perform the acts expressly agreed to in this CONSENT ORDER and that the activities required pursuant to this CONSENT ORDER otherwise meet the requirements of 310 CMR 19.000.

5. The activities conducted pursuant to this CONSENT ORDER are subject to approval by the Department and shall be performed in accordance with M.G.L., C.111, §150A and 310 CMR 19.000, and all other applicable federal, state and local laws. Any non-compliance with the requirements and provisions of applicable federal, state and local laws, regulations and approvals which delays the achievement of any performance deadline set by this CONSENT ORDER shall constitute a violation of this CONSENT ORDER except as set forth in Section V.

6. All engineering work performed pursuant to this CONSENT ORDER shall be under the general direction and supervision of a qualified (experienced in solid waste management and design), registered professional engineer. Any contractual relationship between the Municipality and the engineer subsequent to this CONSENT ORDER shall require the engineer, as a condition of the contract, to implement work consistent with the provisions of this CONSENT ORDER. The Municipality shall provide the

Department with a signed copy of any existing contractual agreements between the Municipality and the engineer within thirty (30) days of the effective date of this CONSENT ORDER. And the Municipality shall provide the Department with a signed copy of any subsequent contractual agreements between the Municipality and the engineer or between the Municipality and any subsequent engineer within thirty (30) days of execution.

7. This CONSENT ORDER shall apply to and be binding upon the Municipality and its successors and assigns. No change in ownership of the Landfill will alter in any way the responsibility of the Municipality under this CONSENT ORDER. The Municipality agrees to provide a signed copy of this CONSENT ORDER to any successor or assign.

8. The Municipality will not violate this CONSENT ORDER and will use its best efforts to see that its successors, agents, or contractors do not violate this CONSENT ORDER.

9. The Municipality shall comply with the landfill assessment process as set forth in 310 CMR 19.150 and in the Department's corresponding guidance manual and shall implement any remedial responses approved by the Department.

10. The Municipality shall undertake the landfill assessment and closure design according to the following schedule:

10A. **By September 30, 1997,** the Municipality shall submit to the Department a report (which may consist of copies of documents/contracts, previous evaluations) for alternative disposal of municipal solid waste as well as any residuals (sludge) or alternate waste stream that are disposed at the Landfill, a conceptual closure plan, and cost estimates for closure and post closure. The report shall evaluate long-term and short-term disposal alternatives for all of the Municipality's solid waste, and consider the establishment of a recycling program with either curbside recycling or a drop-off recycling center and the establishment of funding mechanisms that reflect the true cost of financing solid waste management. The recycling options evaluated in the report shall incorporate ways to effectuate a cost-effective program for reducing the amount of waste generated and methods to comply with the waste restrictions pursuant to 310 CMR 19.017. Funding mechanisms could include the establishment of user fees, enterprise funds or other alternatives.

Department records indicate a strong desire to establish a lined sanitary landfill. However, in the event that this "alternative" does not come to fruition within the timeframes established in this CONSENT ORDER, the Municipality must have appropriate contingency(ies) in place to address the solid waste disposal needs for the community.

10B. **By January 15, 1998,** the Municipality shall submit a FINAL CSA in accordance with the regulations at 310 CMR 19.000 and corresponding guidance manual.

10C. **By June 30, 1998**, the Municipality shall appropriate funds to commence Corrective Action Alternative Analysis (hereinafter "CAAA") and final landfill closure design.

10D. **By July 1, 1998**, the Municipality shall execute a contract(s) for the CAAA and for final closure design services for capping and remediation of the Landfill that the Department and the Municipality agree to and shall submit documentation of such to the Department within seven days of execution.

10E. **By November 1, 1998**, the Municipality shall submit a FINAL CAAA in accordance with the regulations.

10F. **By January 1, 1999**, the Municipality shall submit the final closure plans and specifications for the Landfill.

11. **By December 1, 1998**, the Municipality shall have taken such actions, including and without limitation, the placement of a ballot question and the inclusion on a Town warrant of a Town meeting article which will seek to authorize the debt exclusion and appropriation for the closure and remediation of the Landfill based upon the results and recommendations of the CAAA and final design closure plans as approved by the Department. The passage of such appropriation and authorization shall serve as an adequate Financial Assurance Mechanism (hereinafter "FAM") for the closure cost of the Landfill. Where such authorization is not adopted, the Municipality must notify, within 30 days of the date stated within this paragraph, the Department and thereafter seek, in good faith, to secure an alternative FAM based upon the results and recommendations of the CSA and CAAA as approved by the Department.

12. **By December 1, 1998**, the Municipality shall authorize the appropriation of funds to complete the closure and remediation of the Landfill that the Department and the Municipality agree to based upon the results and recommendations of the CSA and CAAA as approved by the Department.

13. **By December 31, 1998**, the Municipality shall cease accepting solid waste at the Landfill.

14. **By May 1, 1999**, the Municipality shall award a contract for final capping of the Landfill.

15. **By June 30, 2000**, the Municipality shall complete capping of the Landfill. The Municipality shall submit a Landfill closure certification report within 60 days of the completion of the construction of final cover.

16. **Within 60 days of notification by the Department, and as agreed to the Municipality**, the Municipality shall implement any required remedial action that the Department and the Municipality agree to.

17. If excavate and clay (hereinafter "excavate") from the Central Artery (hereinafter "CA") Project becomes available to the Municipality for grading, shaping, and capping the Landfill, the CONSENT ORDER shall be modified as follows:

17A. The Department may allow the use of excavate if the excavate becomes available to the Municipality in accordance with Department approved procedures and protocols established for the central artery project.

17B. The Municipality may pursue the potential use of excavate for grading, shaping and/or capping by submitting the following, **within 90 days of receiving approval**, to the Department for its approval: 1) documentation as to whether the Municipality is able to obtain the excavate in sufficient quantities and within a reasonable period of time for grading, shaping and/or capping purposes; 2) a proposed schedule for delivery of the excavate to the Municipality; and 3) a revised schedule for bringing the Landfill to final grades using excavate and for awarding a contract and completing the capping of the Landfill.

17C. If the Municipality obtains the Department's approval to use excavate, Section IV of this CONSENT ORDER shall be modified as follows:

i. Paragraphs 1 through 13 and paragraphs 17 through 22 of Section IV, inclusive, and all other sections of this CONSENT ORDER shall remain in effect.

ii. Paragraphs 14, 15, and 16 of Section IV of this CONSENT ORDER shall be superseded by the following paragraphs:

14A. The Municipality shall place intermediate cover over all waste within 30 days of final municipal solid waste deposition in accordance with 310 CMR 19.130(15)(c)2.a. The approved excavate may be utilized as intermediate cover, where it meets the Department's requirements for such purposes.

14B. The Municipality shall accept excavate without interruption and on a continuous basis until the design closure grades approved by the Department are attained.

14C. The Municipality shall begin construction of the final cover within 30 days of reaching approved final grades using excavate. Closure of the Landfill shall proceed according to the schedule submitted in paragraph 17B above and as approved by the Department.

15. The Municipality shall submit a Landfill closure certification report within 60 days of the completion of the construction of final cover.

16. The Municipality shall initiate any required remedial action no later than the completion of capping.

18. The Municipality shall submit to the Department a report indicating the steps it has taken to comply with the requirements of this CONSENT ORDER within thirty (30) days of the scheduled date of completion of each requirement in Paragraphs ten (10) through seventeen (17).

19. The Municipality shall conduct post-closure maintenance and monitoring in accordance with the approved plan.

20. The Municipality shall conduct landfill gas monitoring and collection as required pursuant to state or federal regulations, as amended.

21. The Department and its agents and employees shall have the right to enter upon the Landfill, without notice, to monitor the Municipality's compliance with this CONSENT ORDER and all applicable environmental laws and regulations.

22. If, at any time, there exists at the Landfill a condition that results in a threat to the public health, safety, or the environment, the Department may seek any relief it deems appropriate.

V. FORCE MAJEURE

1. If any event occurs which delays or will delay a performance date established by this CONSENT ORDER, which event was beyond the control and without the fault of the Municipality and any entity it controls, including its contractors and consultants, and which event could not have been prevented or avoided by the exercise of due care, foresight, or due diligence on the part of the Municipality or any entity it controls, including its contractors and consultants, the Municipality shall immediately, and in any event within fifteen (15) days of such occurrence, notify the Department in writing of the anticipated length of the delay, the cause of the delay and the steps or measures to be taken to prevent or minimize the delay, including a timetable by which the Municipality intends to implement such steps or measures. Upon receiving the approval of the Department, the Municipality shall implement such steps or measures as are approved by the Department to avoid or minimize any delay. Nothing in this Paragraph shall excuse any noncompliance by the Municipality with the provisions of this CONSENT ORDER.

2. If the Municipality notifies the Department of the occurrence of an event which delays or will delay a performance date established by this CONSENT ORDER, and if the Municipality otherwise complies with the requirements of Paragraph 1 of this Section, and if the Department determines that the delay has been or will be caused by circumstances beyond the control and without the fault of the Municipality, or any entity it controls, including its contractors and consultants, and can not or could not have been overcome by the exercise of due diligence, due care or foresight, the Department shall extend the time for performance hereunder for a period of time equal to the length of the delay.

3. If the Municipality disagrees with the Department's determination pursuant to Paragraph 2 of this Section, and if the parties are unable to reach an agreement that the delay has been or will be caused by circumstances beyond the control and without the fault of the Municipality or any entity it controls, including its contractors and consultants, and can not or could not have been overcome by the exercise of due diligence, due care or foresight by the Municipality or any entity it controls, including its contractors and consultants, then the Municipality may invoke the provisions of Article VIII herein.

4. In any proceeding pursuant to Paragraph 3 of this Section, the Municipality shall bear the burden of proving: 1) that the delay has been or will be caused by circumstances beyond the control and without the fault of the Municipality and any entity controlled by the Municipality, including its consultants and contractors; 2) and that neither the Municipality, nor any entity controlled by the Municipality, including its contractors and consultants, could have prevented or avoided such delay by the exercise of due care, foresight, or due diligence on the part of the Municipality or any entity controlled by the Municipality, including its contractors and consultants; and 3) the number of days of the delay caused by such circumstances.

5. Unanticipated or increased costs or expenses associated with the implementation of the actions required under this CONSENT ORDER or changed financial circumstances shall not, for the performance of the actions required by this CONSENT ORDER, be considered circumstances beyond the control and without the fault of the Municipality.

VI. STIPULATED PENALTIES

1. In the event the Municipality, or its employees, agents, or contractors, fails to meet the requirements contained in Section IV, paragraphs thirteen (13) and fifteen (15) of this CONSENT ORDER, the Municipality agrees to pay stipulated penalties in accordance with the following schedule:

   A. For each day of each violation of schedules set forth above in Section IV, Paragraphs thirteen (13) and fifteen (15) inclusive, the Municipality shall pay stipulated penalties as follows:

Period of Violation	**Penalty per day**
1st through 30th day	$250 per day
31st through 90th day	$500 per day
91st day and thereafter	$1000 per day

2. All stipulated penalties shall be paid without demand before the fifteenth (15th) day of the month following the month in which the violations occurred by means of a certified check payable to the Commonwealth of Massachusetts Environmental Challenge Fund at the following address:

Department of Environmental Protection
Commonwealth Lockbox
Post Office Box 3584
Boston, MA 02241-3584

The name of the Municipality and the CONSENT ORDER reference number shall be printed clearly on the face of the check.

VII. EXTENSIONS

The Municipality may, in writing, request an extension for any of the deadlines in this CONSENT ORDER. All requests should detail the basis for requesting an extension. Any grants or denials of the extension shall be in the discretion of the Department.

VIII. DISPUTE RESOLUTION

1. The Department and the Municipality shall attempt to resolve informally any disagreements concerning implementation of this CONSENT ORDER or any work required hereunder.

2. If the Municipality objects to any written approval, disapproval, claim, demand or determination of the Department (including a determination pursuant to the force majeure section of this CONSENT ORDER) made in accordance with this CONSENT ORDER, the Municipality shall notify the Department in writing of its specific objections within seven (7) days of receipt of the Department's writing. In response, the Department shall set a date for the completion of dispute resolution and notify the Municipality of such date either by writing, facsimile or oral communication followed by a writing; such date shall be no later than thirty (30) days after the Department receives the written notice of objections.

3. The Municipality and the Department then shall attempt to resolve the objections and may engage in discussions, meetings, fact-finding and any other activities which facilitate resolution of the objections. At any time, the Department may require the Municipality to submit to the Department a more complete written statement of its objections and the factual and legal basis for such objections. If the parties are able to resolve the objections through dispute resolution, than the parties shall enter into a settlement agreement that sets forth the resolution of the municipality's objection. The settlement agreement shall include a provision stating that the municipality understands and hereby waives any and all rights to an adjudicatory hearing before the Department on, and judicial review by the courts of, the final determination entered into consistent with the settlement agreement.

4. Upon entering into the settlement agreement, the Regional Director, or his/her designee, shall issue a written statement setting forth the agreement and the determination in the matter. Such agreement will be effective upon the receipt of such written statement by the Municipality.

5. If the parties do not engage in dispute resolution, or if the parties are not able to resolve the dispute through dispute resolution, the Regional Director, or his/her designee, shall issue a written statement setting forth his or her findings and the determination in the matter. Such determination will be effective upon the receipt of such written statement by the Municipality, but shall not be factually determinative on the town, nor diminish the municipalities rights under Paragraph 9 of this Section.

6. The Municipality shall undertake all the work required by the agreement or the Department's final determination. Failure of the Municipality to undertake such work shall be a violation of this CONSENT ORDER.

7. Entering objections pursuant to this section shall not be cause for delay of the implementation of any work not specifically the subject of the written notice of objections. Deadlines for other work which is specifically the subject of the written notice of objections shall be extended an amount of days equal to the number of days from the date of the Department's initial writing to the date of the agreement or the Department's final determination.

8. Any stipulated penalties due under this CONSENT ORDER shall not be subject to this Section. The Department's reservation of rights also shall not be subject to this Section. Determinations involving permits, approvals, orders, agreements and other actions by the Department under authority other than M.G.L., C.111, §150A and the regulations promulgated thereunder at 310 CMR 19.000 shall not be subject to dispute resolution pursuant to this Section.

9. If the Municipality disagrees with the Department's determination pursuant to paragraph 5. of this Section, then the matter may be submitted by any party to a court with competent jurisdiction for a declaratory judgement.

IX. NON WAIVER

Failure on the part of the Department to complain of action or non-action on the part of the Municipality shall not constitute a waiver by the Department of any of its rights hereunder. Furthermore, no waiver by the Department of any provision herein shall be construed as a waiver of any other provision herein.

X. SEVERABILITY

If any term or provision of this CONSENT ORDER, or the application thereof, to any person or circumstance, shall, to any extent, be invalid or unenforceable, the remainder of this CONSENT ORDER, and the application thereof, shall not be affected thereby, and each remaining term and provision shall be valid and enforceable to the fullest extent permitted by law.

XI. SUBMISSIONS

Submissions required by this CONSENT ORDER shall be made in writing to the following:

TO THE DEPARTMENT:

Paul A. Taurasi, P.E.
Regional Director for the Southeast Regional Office
Department of Environmental Protection
20 Riverside Drive
Lakeville, Massachusetts 02347

TO THE MUNICIPALITY:

Michael Coppola, Chairperson
Board of Selectpersons
40 South Street
Foxborough, Massachusetts 02035

XII. EFFECTIVE DATE

This CONSENT ORDER shall be effective on the date signed by the Department.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: DRD
for Paul A. Taurasi, P.E., Regional Director
Southeast Regional Office

Date: 8-28-97

FOXBOROUGH BOARD OF SELECTPERSONS
[FEDERAL EMPLOYER IDENTIFICATION NUMBER: 04-6001150]

By: Michael J. Coppola
Michael Coppola, Chairperson

By: Donald Schmidt
Donald Schmidt, Vice Chairperson

By: Gerald Rodman
Gerald Rodman

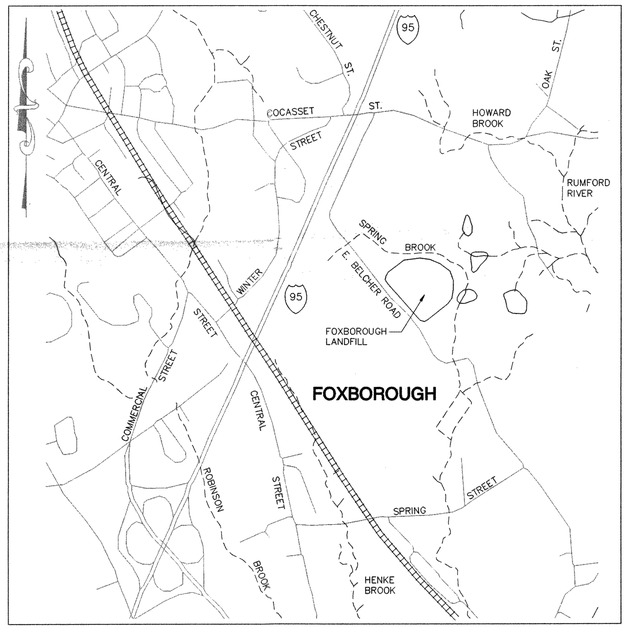
Date: August 26, 1997

APPENDIX B

Record Drawings

TOWN OF FOXBOROUGH, MASSACHUSETTS

FOXBOROUGH SANITARY LANDFILL FINAL CLOSURE PLANS



LOCATION PLAN

NTS

LIST OF DRAWINGS

SHEET NO.	TITLE
C - 1	EXISTING CONDITIONS PLAN
C - 2	FINAL CLOSURE PLAN
C - 3	DETAILS I
C - 4	DETAILS II

APRIL 26, 1999

(REVISED FOR RECORD DRAWING NOVEMBER 2000)

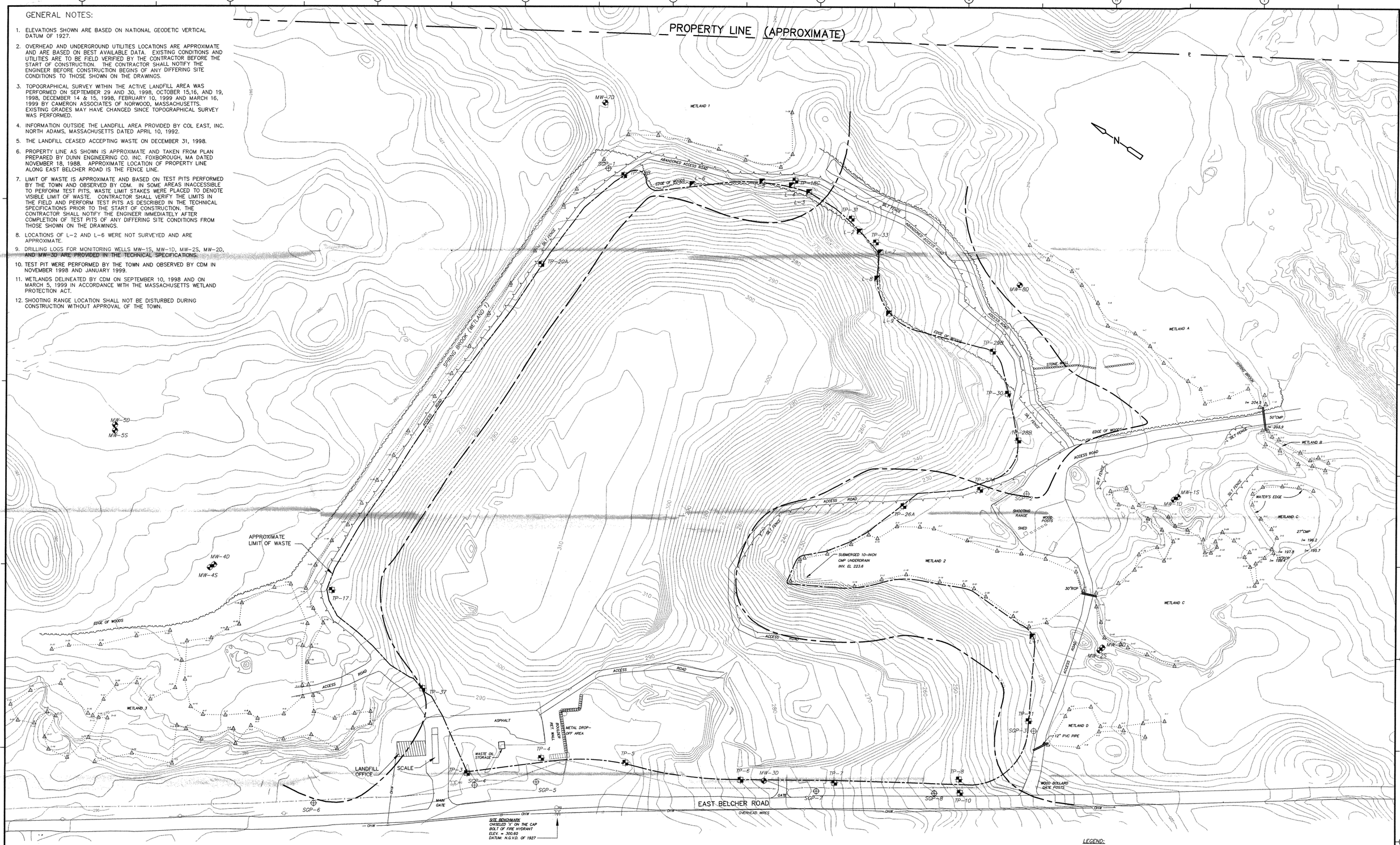
CAMP DRESSER & McKEE INC. • CONSULTING ENGINEERS • CAMBRIDGE, MASSACHUSETTS

P:\CAM_SOLI\FOXBORO\ASBPLCOV.DWG

10905

GENERAL NOTES:

1. ELEVATIONS SHOWN ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1927.
2. OVERHEAD AND UNDERGROUND UTILITIES LOCATIONS ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. EXISTING CONDITIONS AND UTILITIES ARE TO BE FIELD VERIFIED BY THE CONTRACTOR BEFORE THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE CONSTRUCTION BEGINS OF ANY DIFFERING SITE CONDITIONS TO THOSE SHOWN ON THE DRAWINGS.
3. TOPOGRAPHICAL SURVEY WITHIN THE ACTIVE LANDFILL AREA WAS PERFORMED ON SEPTEMBER 29 AND 30, 1998, OCTOBER 15,16, AND 19, 1998, DECEMBER 14 & 15, 1998, FEBRUARY 10, 1999 AND MARCH 16, 1999 BY CAMERON ASSOCIATES OF NORWOOD, MASSACHUSETTS. EXISTING GRADES MAY HAVE CHANGED SINCE TOPOGRAPHICAL SURVEY WAS PERFORMED.
4. INFORMATION OUTSIDE THE LANDFILL AREA PROVIDED BY COL EAST, INC. NORTH ADAMS, MASSACHUSETTS DATED APRIL 10, 1992.
5. THE LANDFILL CEASED ACCEPTING WASTE ON DECEMBER 31, 1998.
6. PROPERTY LINE AS SHOWN IS APPROXIMATE AND TAKEN FROM PLAN PREPARED BY DUNN ENGINEERING CO. INC. FOXBOROUGH, MA DATED NOVEMBER 18, 1988. APPROXIMATE LOCATION OF PROPERTY LINE ALONG EAST BELCHER ROAD IS THE FENCE LINE.
7. LIMIT OF WASTE IS APPROXIMATE AND BASED ON TEST PITS PERFORMED BY THE TOWN AND OBSERVED BY CDM. IN SOME AREAS INACCESSIBLE TO PERFORM TEST PITS, WASTE LIMIT STAKES WERE PLACED TO DENOTE VISIBLE LIMIT OF WASTE. CONTRACTOR SHALL VERIFY THE LIMITS IN THE FIELD AND PERFORM TEST PITS AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AFTER COMPLETION OF TEST PITS OF ANY DIFFERING SITE CONDITIONS FROM THOSE SHOWN ON THE DRAWINGS.
8. LOCATIONS OF L-2 AND L-6 WERE NOT SURVEYED AND ARE APPROXIMATE.
9. DRILLING LOGS FOR MONITORING WELLS MW-1S, MW-1D, MW-2S, MW-2D, AND MW-3D ARE PROVIDED IN THE TECHNICAL SPECIFICATIONS.
10. TEST PIT WERE PERFORMED BY THE TOWN AND OBSERVED BY CDM IN NOVEMBER 1998 AND JANUARY 1999.
11. WETLANDS DELINEATED BY CDM ON SEPTEMBER 10, 1998 AND ON MARCH 5, 1999 IN ACCORDANCE WITH THE MASSACHUSETTS WETLAND PROTECTION ACT.
12. SHOOTING RANGE LOCATION SHALL NOT BE DISTURBED DURING CONSTRUCTION WITHOUT APPROVAL OF THE TOWN.



LEGEND:

- MONITORING WELL
- WATERGATE VALVE
- TEMPORARY GAS PROBE
- WOOD UTILITY POLE
- WASTE LIMIT STAKE
- HYDRANT
- TEST PIT
- WETLAND FLAG
- LIMIT OF WETLAND
- EDGE OF WOODS
- EXISTING 2' CONTOUR
- 300 EXISTING 10' CONTOUR
- PROPERTY LINE (APPROXIMATE)
- EXISTING FENCE
- CULVERT
- EXISTING SILT FENCE AND HAYBALES
- APPROXIMATE LIMIT OF WASTE
- OHW OVERHEAD WIRES
- APPROXIMATE 100' WETLAND BUFFER ZONE

1" = 60'
30 0 60

REV. NO.	DATE	DRWN	CHKD	REMARKS
04	11/21/00	V.R.	T.M.H.	REVISED FOR RECORD DRAWING
03	4/26/99	M.C.	P.G.B.	CONSTRUCTION BID DOCUMENTS
02	4/5/99	M.C.	P.G.B.	NOTICE OF INTENT
01	1/26/99	B.Z.	P.G.B.	FINAL CLOSURE REPORT

DESIGNED BY: P. BOYAJIAN
DRAWN BY: M. CAUX
SHEET CHK'D BY: P. BOYAJIAN
CROSS CHK'D BY: B. HASKELL
APPROVED BY: B. HASKELL
DATE: APRIL 26, 1999

CDM Camp Dresser & McKee Inc.
environmental services offices worldwide

TOWN OF FOXBOROUGH
FOXBOROUGH, MASSACHUSETTS

FOXBOROUGH SANITARY LANDFILL FINAL CLOSURE

COMMONWEALTH OF MASSACHUSETTS BRUCE WILLIAM HASKELL No. 37461 REGISTERED PROFESSIONAL ENGINEER
12-18-00

EXISTING CONDITIONS PLAN

PROJECT NO. 10905-24333
FILE NAME: CEXST001

SHEET NO. 1

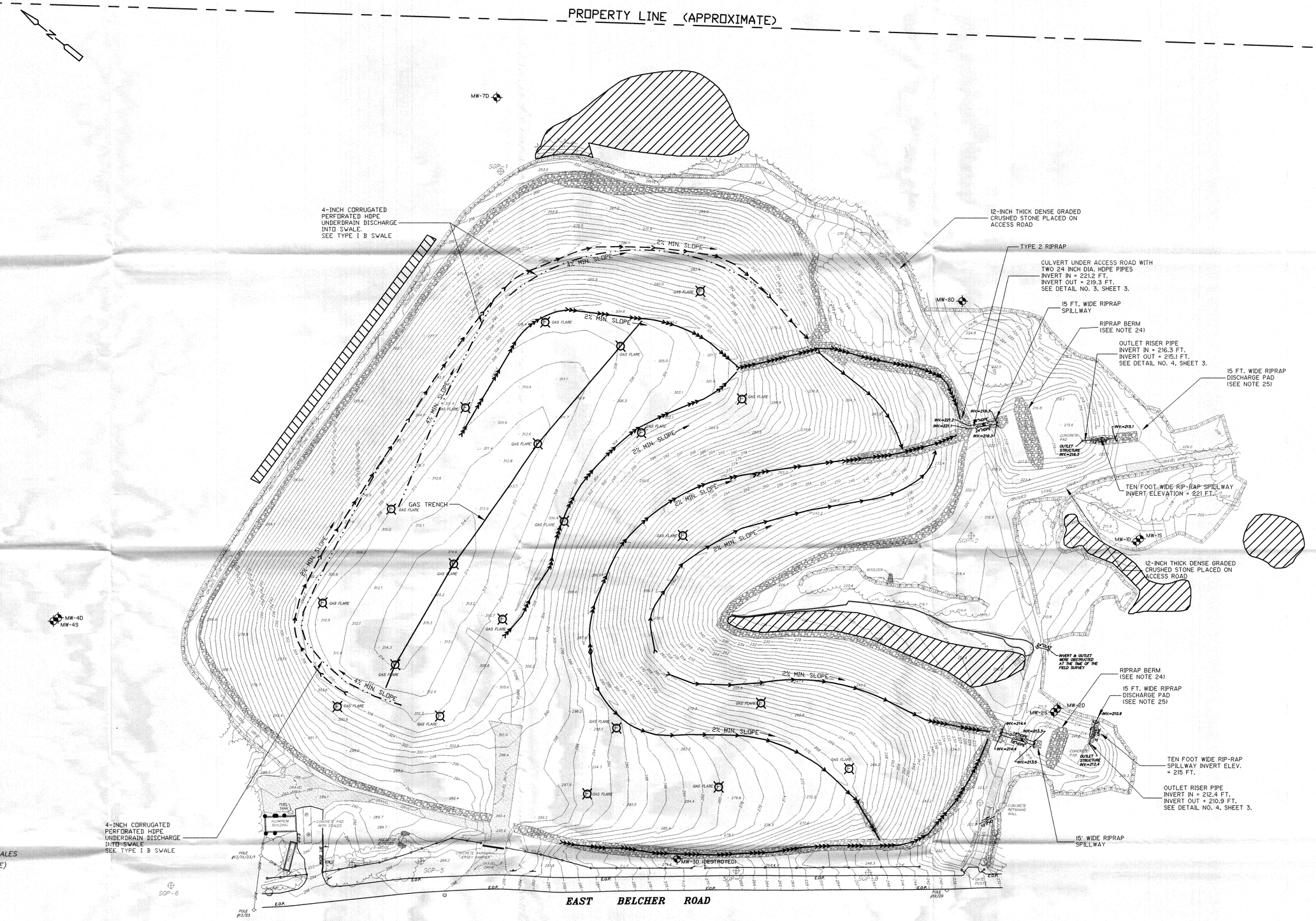
P:\CAM_SQL\FOXBORO\CEXST001.DWG

GENERAL NOTES:

1. ELEVATIONS SHOWN ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1927.
2. OVERHEAD AND UNDERGROUND UTILITIES LOCATIONS ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. EXISTING CONDITIONS AND UTILITIES ARE TO BE FIELD VERIFIED BY THE CONTRACTOR BEFORE THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE CONSTRUCTION BEGINS OF ANY DIFFERING SITE CONDITIONS TO THOSE SHOWN ON THE DRAWINGS.
3. TOPOGRAPHICAL SURVEY WITHIN THE ACTIVE LANDFILL AREA WAS PERFORMED ON SEPTEMBER 29 AND 30, 1998, OCTOBER 15,16, AND 19, 1998, DECEMBER 14 & 15, 1998, FEBRUARY 10, 1999 AND MARCH 16, 1999 BY CAMERON ASSOCIATES OF NORWOOD, MASSACHUSETTS. EXISTING GRADES MAY HAVE CHANGED SINCE TOPOGRAPHICAL SURVEY WAS PERFORMED.
4. INFORMATION OUTSIDE THE LANDFILL AREA PROVIDED BY COL EAST, INC. NORTH ADAMS, MASSACHUSETTS DATED APRIL 10, 1992.
5. THE LANDFILL CEASED ACCEPTING WASTE ON DECEMBER 31, 1998.
6. PROPERTY LINE AS SHOWN IS APPROXIMATE AND TAKEN FROM PLAN PREPARED BY DUNN ENGINEERING CO. INC. FOXBOROUGH, MA DATED NOVEMBER 18, 1988. APPROXIMATE LOCATION OF PROPERTY LINE ALONG EAST BELCHER ROAD IS THE FENCE LINE.
7. LIMIT OF WASTE IS APPROXIMATE AND BASED ON TEST PITS PERFORMED BY THE TOWN AND OBSERVED BY CDM. IN SOME AREAS INACCESSIBLE TO PERFORM TEST PITS, WASTE LIMIT STAKES WERE PLACED TO DENOTE THE LIMIT OF WASTE AS VISUALLY OBSERVED. CONTRACTOR SHALL VERIFY THE LIMITS IN THE FIELD AND PERFORM TEST PITS AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AFTER COMPLETION OF TEST PITS OF ANY DIFFERING SITE CONDITIONS FROM THOSE SHOWN ON THE DRAWINGS.
8. LOCATIONS OF L-2 AND L-6 WERE NOT SURVEYED AND ARE APPROXIMATE.
9. DRILLING LOGS FOR MONITORING WELLS MW-1S, MW-1D, MW-2S, MW-2D, AND MW-3D ARE PROVIDED IN THE TECHNICAL SPECIFICATIONS.
10. TEST PIT WERE PERFORMED BY THE TOWN AND OBSERVED BY CDM IN NOVEMBER 1998 AND JANUARY 1999.
11. WETLANDS DELINEATED BY CDM ON SEPTEMBER 10, 1998 AND ON MARCH 5, 1999 IN ACCORDANCE WITH THE MASSACHUSETTS WETLAND PROTECTION ACT.
12. SHOOTING RANGE LOCATION SHALL NOT BE DISTURBED DURING CONSTRUCTION WITHOUT APPROVAL OF TOWN.
13. WASTE OIL STORAGE AREA TO BE RELOCATED BY TOWN OF FOXBOROUGH PRIOR TO THE START OF CONSTRUCTION.
14. METAL DROP-OFF AREA TO BE REGRADED BY CONTRACTOR. BOULDER RETAINING WALL SHALL BE REMOVED AND DISPOSED OF ON SITE OUTSIDE THE LIMIT OF WASTE, AS DIRECTED BY THE TOWN OF FOXBOROUGH.
15. THE PROPOSED CONTOURS SHOWN ARE FINAL GRADES. CONTRACTOR SHALL CONSTRUCT DRAINAGE SWALES AT LOCATIONS SHOWN ON THE DRAWINGS. FINISHED SIDE SLOPES SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3H : 1V) AND FINISHED TOP SLOPES SHALL NOT BE SHALLOWER THAN 100 HORIZONTAL TO 5 VERTICAL (5%).
16. EXCESS MATERIAL FROM REGRADING SHALL BE PLACED ON THE TOP OF THE LANDFILL AS DIRECTED BY THE ENGINEER AT A SLOPE NO SHALLOWER THAN 100 HORIZONTAL TO 5 VERTICAL (5%) AND NO STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL.
17. ALL VEGETATED SWALES SHALL BE INSTALLED WITH SLOPES NO SHALLOWER THAN TWO PERCENT.
18. THE CONTRACTOR IS RESPONSIBLE FOR CLEARING AND GRUBBING ALL AREAS NEEDED TO CONSTRUCT FINAL CAP AND DETENTION BASINS. CONTRACTOR TO PLACE MINIMUM 6-INCHES OF COMMON FILL OVER ALL EXPOSED WASTE AREAS PRIOR TO INSTALLATION OF CAP. CONTRACTOR TO PLACE 6-INCHES OF TOPSOIL AND SEED OVER ALL DISTURBED AREAS OUTSIDE OF CAP LIMITS PER SPECIFICATIONS.
19. THE CONTRACTOR SHALL PROTECT ALL EXISTING MONITORING WELLS, GAS PROBES, AND FENCES FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
20. SUBMERGED 10-INCH CORRUGATED METAL PIPE UNDERDRAIN SHALL BE LOCATED AND PLUGGED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
21. EXISTING SILT FENCE AND HAY BALES SHALL BE MAINTAINED, REPAIRED, AND REPLACED AS NECESSARY AND AS DIRECTED BY THE ENGINEER.
22. PROPOSED SLIT FENCE AND HAY BALES SHALL BE INSTALLED AND MAINTAINED, REPAIRED, AND REPLACED AS NECESSARY AND AS DIRECTED BY THE ENGINEER.
23. CONTRACTOR SHALL REMOVE WASTE FROM WETLANDS AND RESTORE WETLANDS IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
24. CONTRACTOR TO CONSTRUCT RIPRAP BERM WITH 2H1V SIDE SLOPES AND A FINISH ELEVATION 1 FOOT BELOW TOP OF BERM. CONTRACTOR SHALL USE TYPE I RIPRAP.
25. BASIN-WEST'S RIPRAP DISCHARGE PAD TO EXTEND NO CLOSER THAN 10 FT. TO WETLANDS. BASIN-EAST'S DISCHARGE PAD TO EXTEND NO CLOSER THAN 40 FT. TO WETLANDS.
26. CONTRACTOR SHALL REMOVE SEDIMENT FROM WETLANDS AND RESTORE WETLANDS IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION.
27. AS-BUILT SURVEY COMPLETED ON JANUARY 6, 2000 BY MERIDIAN ENGINEERING, INC. OF DANVERS, MASSACHUSETTS.

LEGEND:

- MONITORING WELL
- WATERGATE VALVE
- SGP-6 TEMPORARY GAS PROBE
- WOOD UTILITY POLE
- HYDRANT
- OHW OVERHEAD WIRES
- EDGE OF WOODS
- EXISTING FENCE
- DRAINAGE PIPES
- GAS FLARE GAS FLARE
- LIMIT OF SILT FENCE & HAYBALES
- PROPERTY LINE (APPROXIMATE)
- 2' CONTOUR
- 270 10' CONTOUR
- TYPE I A SWALE
- TYPE I B SWALE
- TYPE II SWALE
- TYPE III SWALE
- TYPE IV SWALE
- TYPE V SWALE
- 4" UNDERDRAIN PIPE
- APPROXIMATE LIMIT OF WASTE OR SEDIMENT REMOVAL FROM WETLAND (± 1,000 SQ. FT.)
- RIPRAP



RECORD DRAWING

1" = 60'

REV. NO.	DATE	DRWN	CHKD	REMARKS
01	1/21/00	VMR	TMH	REVISED FOR RECORD DRAWING

DESIGNED BY: V. RECCHIA
DRAWN BY: V. RECCHIA
SHEET CHK'D BY: T. HEINO
CROSS CHK'D BY: B. HASKELL
APPROVED BY: B. HASKELL
DATE: NOVEMBER 2000

CDM Camp Dresser & McKee Inc.
environmental services
offices worldwide

TOWN OF FOXBOROUGH
FOXBOROUGH, MASSACHUSETTS

FOXBOROUGH SANITARY LANDFILL FINAL CLOSURE

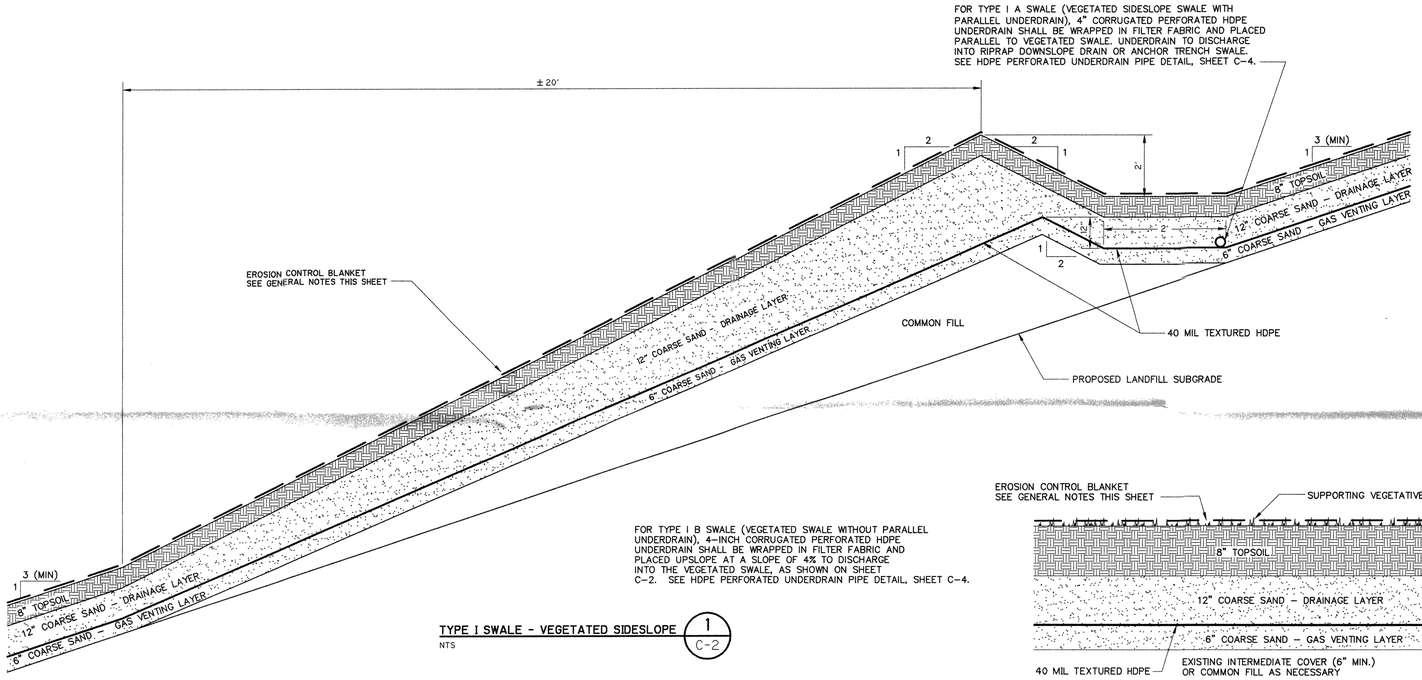
COMMONWEALTH OF MASSACHUSETTS BRUCE WILLIAM HASKELL No. 37461 REGISTERED PROFESSIONAL ENGINEER
12-18-00

FINAL CLOSURE PLAN

PROJECT NO. 10905-24333
FILE NAME: ASBPL001

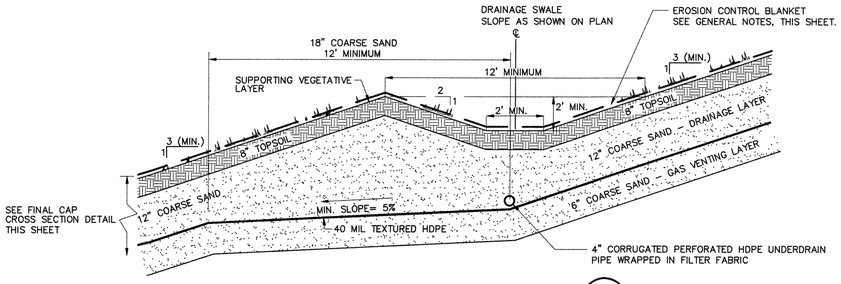
SHEET NO. 2

P:\CAM_SOL\FOXBORO\ASBPL001.DWG

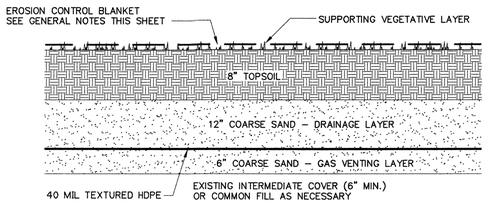


FOR TYPE I B SWALE (VEGETATED SWALE WITHOUT PARALLEL UNDERDRAIN), 4-INCH CORRUGATED PERFORATED HDPE UNDERDRAIN SHALL BE WRAPPED IN FILTER FABRIC AND PLACED UPSLOPE AT A SLOPE OF 4% TO DISCHARGE INTO THE VEGETATED SWALE, AS SHOWN ON SHEET C-2. SEE HDPE PERFORATED UNDERDRAIN PIPE DETAIL, SHEET C-4.

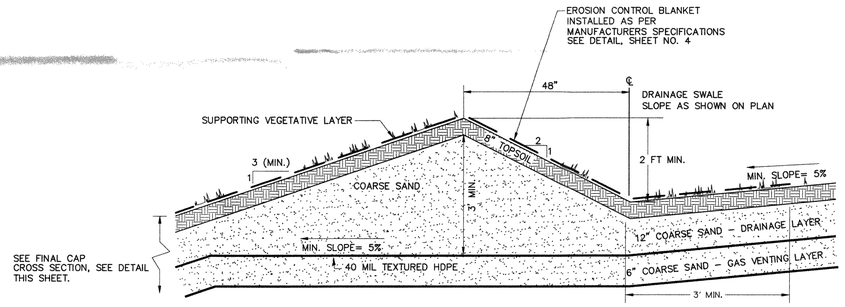
TYPE I SWALE - VEGETATED SIDESLOPE (1 / C-2)
NTS



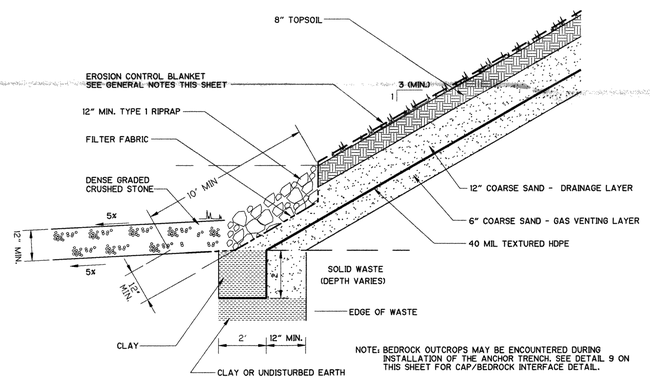
TYPE II SWALE - VEGETATED BENCH (3 / C-2)
NTS



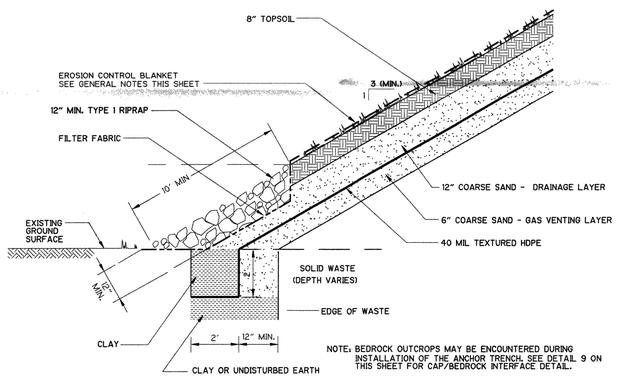
FINAL CAP CROSS SECTION (2 / C-2)
NTS



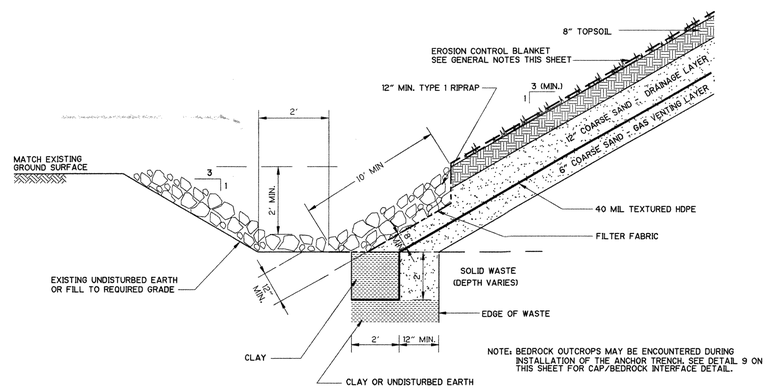
TYPE III SWALE - VEGETATED BERM (4 / C-2)
NTS



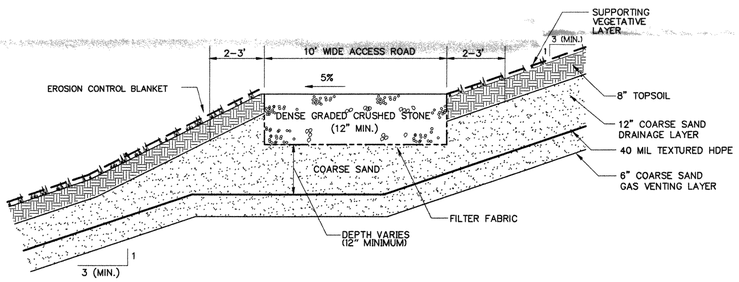
PERIMETER CAP ALONG ROAD (5 / C-2)
NTS



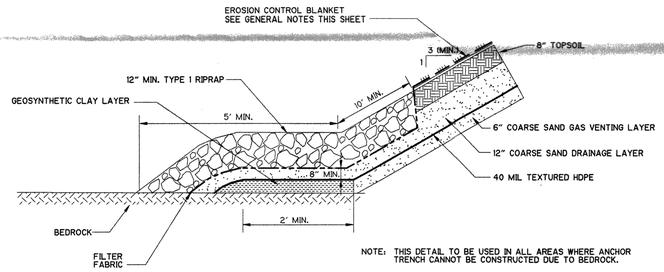
PERIMETER CAP AND ANCHOR TRENCH (6 / C-2)
NTS



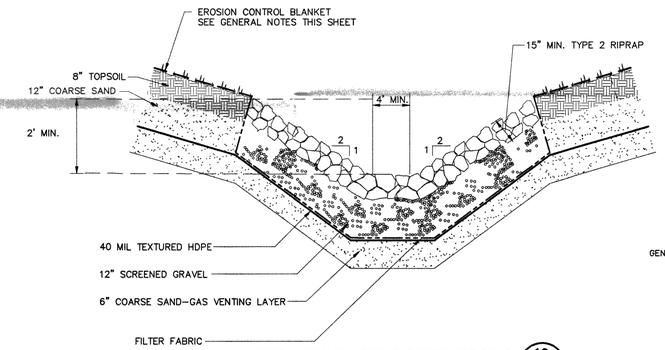
TYPE IV SWALE - ALONG ANCHOR TRENCH (7 / C-2)
NTS



ACCESS ROAD ON CAP (8 / C-2)
NTS



CAP/BEDROCK INTERFACE (9 / C-2)
NTS



TYPE V SWALE - RIPRAP DOWNSLOPE DRAIN (10 / C-2)
NTS

GENERAL NOTES:

1. EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES GREATER THAN OR EQUAL TO 4H:1V.
2. INSTALL EROSION CONTROL BLANKET IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
3. 3 (MIN.) / 1 INDICATES THAT SIDESLOPES SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL.

RECORD DRAWING

REV. NO.	DATE	DRWN	CHKD	REMARKS
04	11/21/00	VMR	TMH	REVISED FOR RECORD DRAWING
03	4/26/99	M.C.	P.G.B.	CONSTRUCTION BID DOCUMENTS
02	4/5/99	M.C.	P.G.B.	NOTICE OF INTENT
01	1/26/99	B.Z.	P.G.B.	FINAL CLOSURE REPORT

DESIGNED BY: P. BOYAJIAN
DRAWN BY: M. CAUX
SHEET CHK'D BY: P. BOYAJIAN
CROSS CHK'D BY: B. HASKELL
APPROVED BY: B. HASKELL
DATE: APRIL 26, 1999

CDM Camp Dresser & McKee Inc.
environmental services
cities worldwide

TOWN OF FOXBOROUGH
FOXBOROUGH, MASSACHUSETTS

FOXBOROUGH SANITARY LANDFILL FINAL CLOSURE

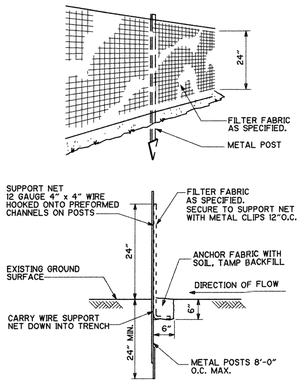
COMMONWEALTH OF MASSACHUSETTS BRUCE WILLIAM HANCHAR CIVIL No. 37463 REGISTERED PROFESSIONAL ENGINEER 12-18-00

DETAILS I

PROJECT NO. 10905-24333
FILE NAME: ASBPL002

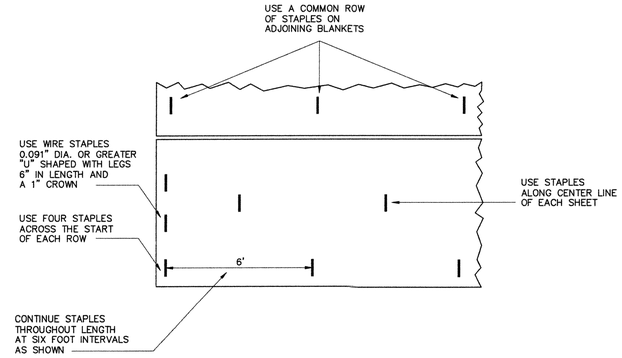
SHEET NO. 3

P:\CAM_SOLN\FOXBORO\DETL1.DWG



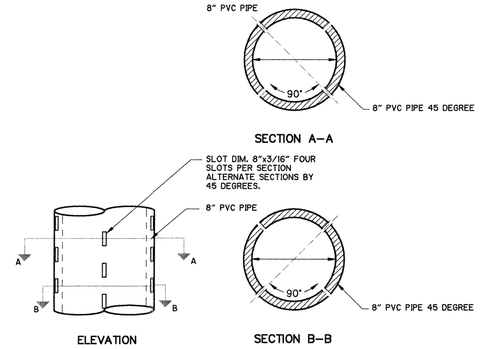
SILT FENCE

NTS



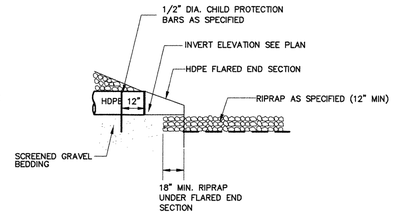
EROSION CONTROL BLANKET ALL SLOPES

NTS

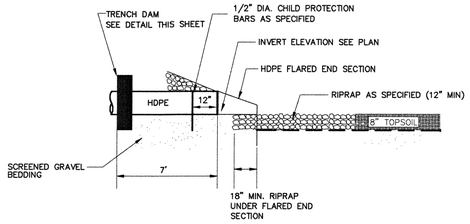


WELL SCREEN SLOTTING

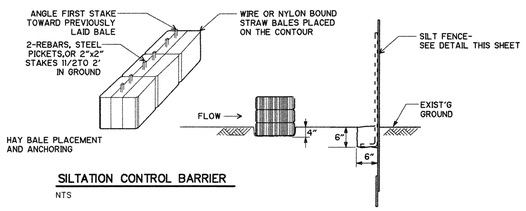
NTS



OUTLET SECTION

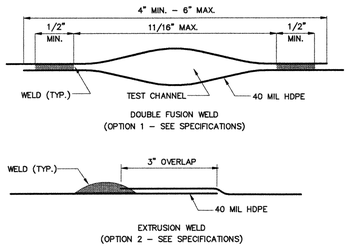


INLET SECTION



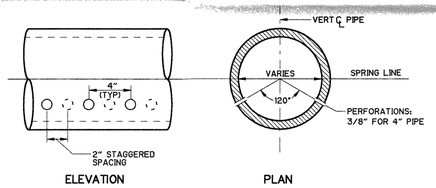
SILTATION CONTROL BARRIER

NTS



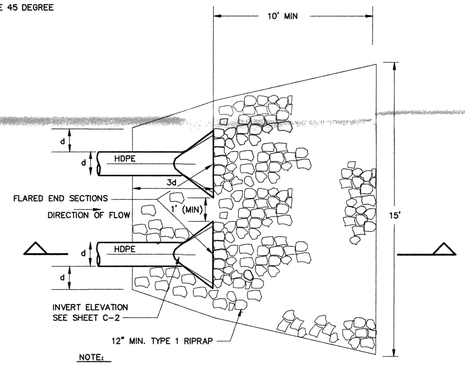
HDPE WELD

NTS



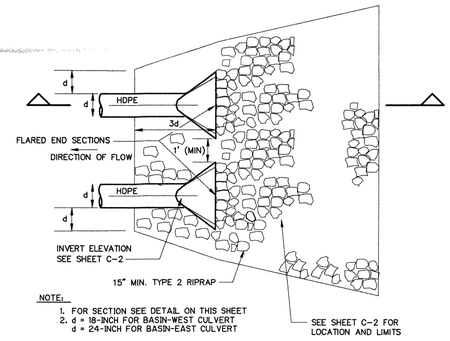
HDPE CORRUGATED PERFORATED UNDERDRAIN PIPE

NTS



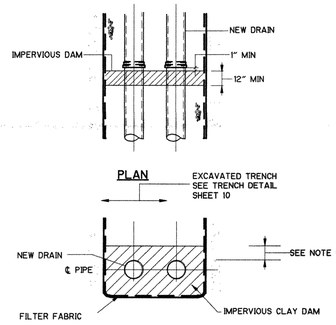
NOTE:
1. FOR SECTION SEE DETAIL ON THIS SHEET
2. d = 18-INCH FOR BASIN-WEST CULVERT
d = 24-INCH FOR BASIN-EAST CULVERT

OUTLET PLAN



NOTE:
1. FOR SECTION SEE DETAIL ON THIS SHEET
2. d = 18-INCH FOR BASIN-WEST CULVERT
d = 24-INCH FOR BASIN-EAST CULVERT

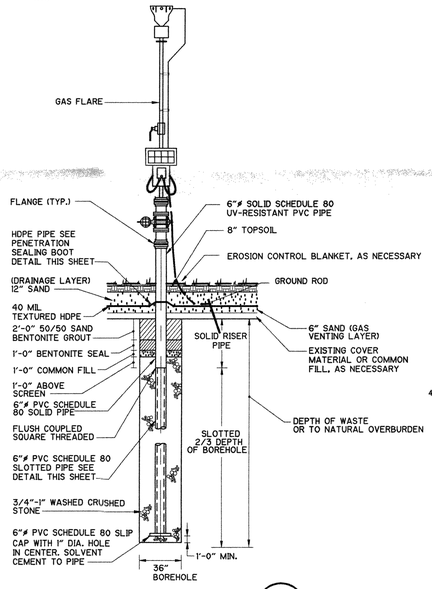
INLET PLAN



NOTE: 1. CLAY DAMS SHALL EXTEND UP TO 5" ABOVE CROWN OF PIPE.

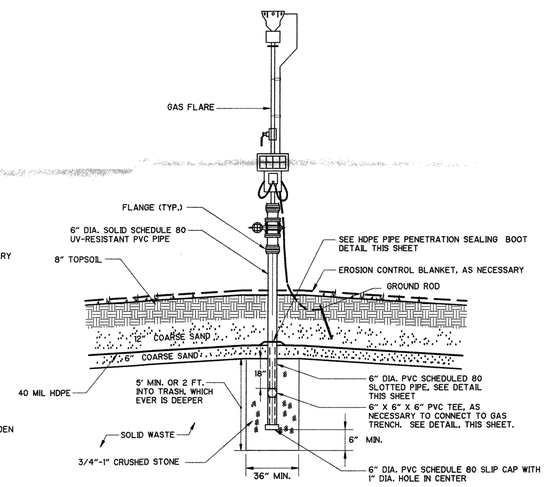
TRENCH DAM

NTS



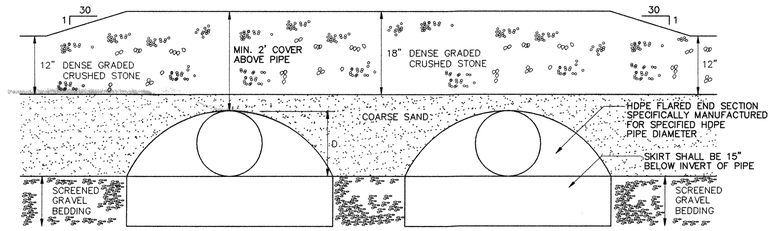
PASSIVE LANDFILL GAS WELL (1 / C-2)

NTS



LANDFILL GAS FLARE (2 / C-2)

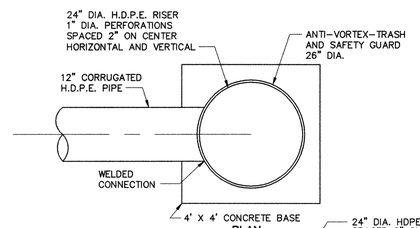
NTS

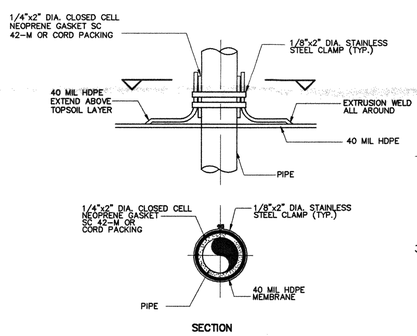


NOTE:
1. D = 18" FOR BASIN - WEST CULVERT
D = 24" FOR BASIN - EAST CULVERT

TYPICAL TWIN DRAIN PIPE (3 / C-2)

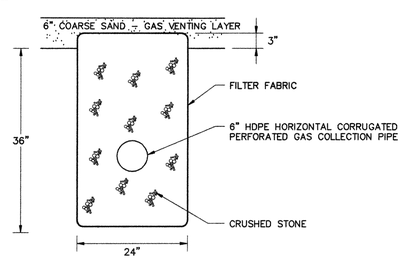
NTS





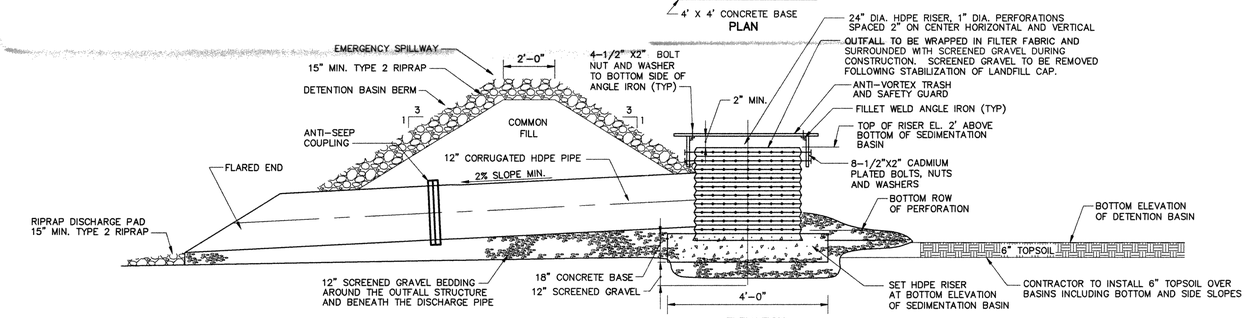
PIPE PENETRATION SEALING BOOT

NTS



GAS TRENCH

NTS



OUTLET RISER PIPE SECTION (4 / C-2)

NTS

RECORD DRAWING

REV. NO.	DATE	DRWN	CHKD	REMARKS
04	11/21/00	VMR	TMH	REVISED FOR RECORD DRAWING
03	4/26/99	M.C.	P.G.B.	CONSTRUCTION BID DOCUMENTS
02	4/5/99	M.C.	P.G.B.	NOTICE OF INTENT
01	1/26/99	B.Z.	P.G.B.	FINAL CLOSURE REPORT

DESIGNED BY: P. BOYAJIAN
DRAWN BY: M. CAUX
SHEET CHK'D BY: P. BOYAJIAN
CROSS CHK'D BY: B. HASKELL
APPROVED BY: B. HASKELL
DATE: APRIL 26, 1999

CDM Camp Dresser & McKee Inc.
environmental services
offices worldwide

TOWN OF FOXBOROUGH
FOXBOROUGH, MASSACHUSETTS

FOXBOROUGH SANITARY LANDFILL FINAL CLOSURE

COMMONWEALTH OF MASSACHUSETTS BRUCE WILLIAM HASKELL No. 37462 REGISTERED PROFESSIONAL ENGINEER 12-15-00

DETAILS II

PROJECT NO. 10905-24333
FILE NAME: ASBPL003

SHEET NO. 4

P:\CAM_SOL\FOXBORO\ASBPL003.DWG

APPENDIX C

Sand Test Results

TIBBETTS ENGINEERING CORP.

☐ 3090 Acushnet Avenue, New Bedford, MA 02745, (508) 998-3700
☐ 303 Rodman Street, Fall River, MA 02721, (508) 676-1710
☑ 716 County Street, Taunton, MA 02780, (508) 822-6934

LETTER OF TRANSMITTAL

DATE	JOB NO.
10/12/99	10650.010

ATTENTION: Glen Regan

RE: Foxboro Landfill

TO Eirco Environmental
P.O. Box 265
Hampton, NH 03842

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1		1	Permeability Test Report No. PE9281 - (3 Tests)
1		2	Washed Sieve Analysis Reports No's MA9278A & MA9281A
1		1	Max Density (Proctor) Graph PR9270A

RECEIVED
OCT 15 1999
SHOP DRAWING DEPT.

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

Samples for 10/4, 10/7

COPY TO _____

SIGNED: [signature]

If enclosures are not as noted, kindly notify us at once.

tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650/010
Date: 10/8/99
Report No. PE9281

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of three samples of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 7,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered samples were first compacted in a permeability testing apparatus using a slight vibration effort. The samples were then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9281A = 9.3X10E-2 cm/sec @ 94% Compaction
Sample: PE9281B = 4.9X10E-2 cm/sec @ 95% Compaction
Sample: PE9281C = 7.8X10E-2 cm/sec @ 91% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: These samples met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6994

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH. 03842

JOB NO. 10650.010
DATE: 10-12-1999
REPORT NO. MA9278A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/ OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/4/99
TESTED BY: A.BEST — DATE: 10/7/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	0.0	100.0	-	-
NO. 4	60.4	95.2	-	-
NO. 10	83.2	88.6	-	-
NO. 50	898.0	17.2	-	-
NO. 100	170.0	3.6	-	-
NO. 200	29.2	1.3	0	5
PAN	16.6	0.0		

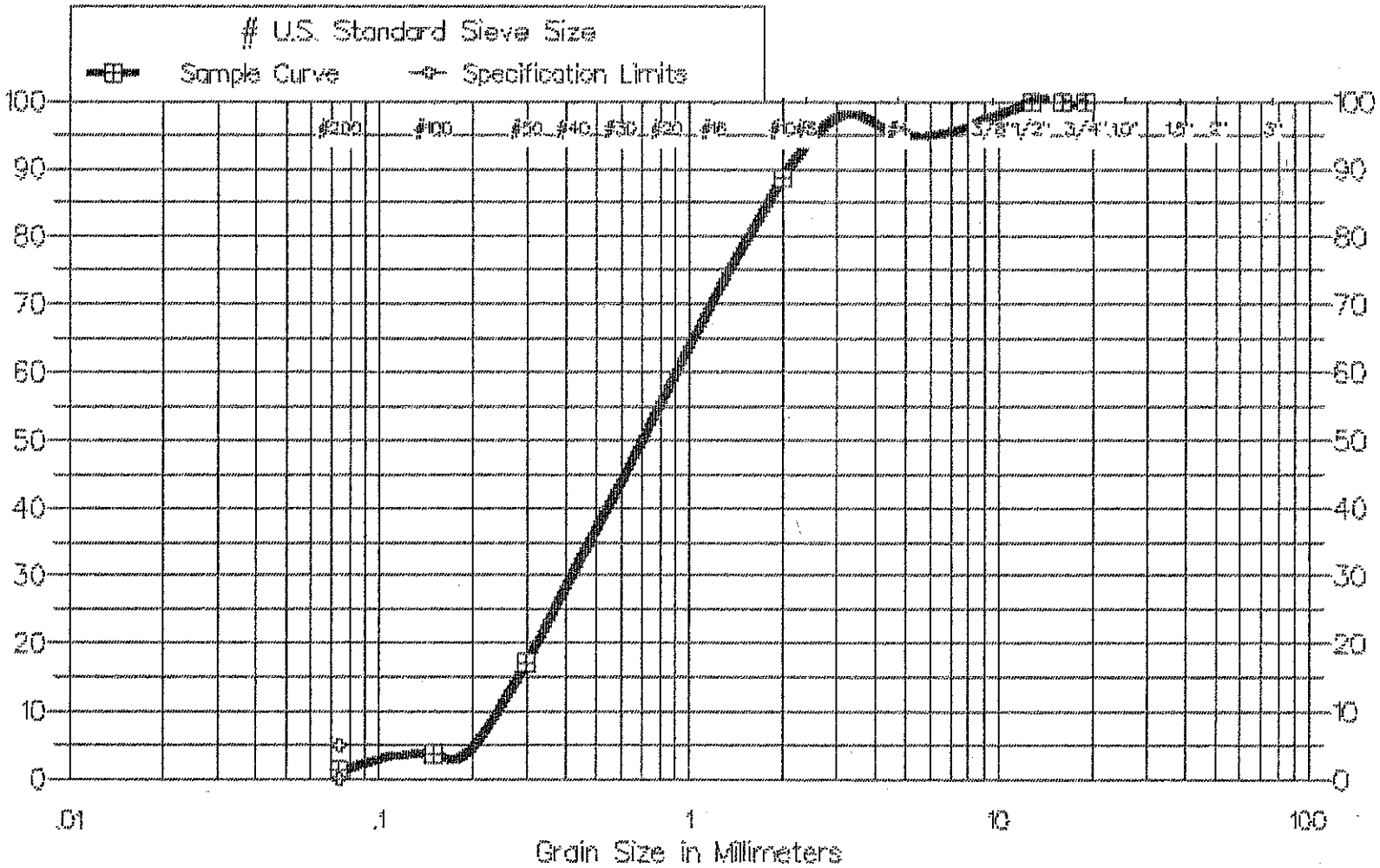
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS

Walter Galuska
WALTER GALUSKA
LABORATORY SUPERVISOR

AARON BEST
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using AASHTO T27 & T11 Date: 10/7/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9278A – Sand

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH 03842

JOB NO. 10650.010
DATE: 10-12-1999
REPORT NO. MA9281A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/7/99
TESTED BY: A.BEST — DATE: 10/8/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	- MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	0.0	100.0	-	-
NO. 4	4.4	99.6	-	-
NO. 10	107.0	90.4	-	-
NO. 50	752.2	25.4	-	-
NO. 100	221.2	6.3	-	-
NO. 200	50.8	1.9	0	5
PAN	22.2	0.0		

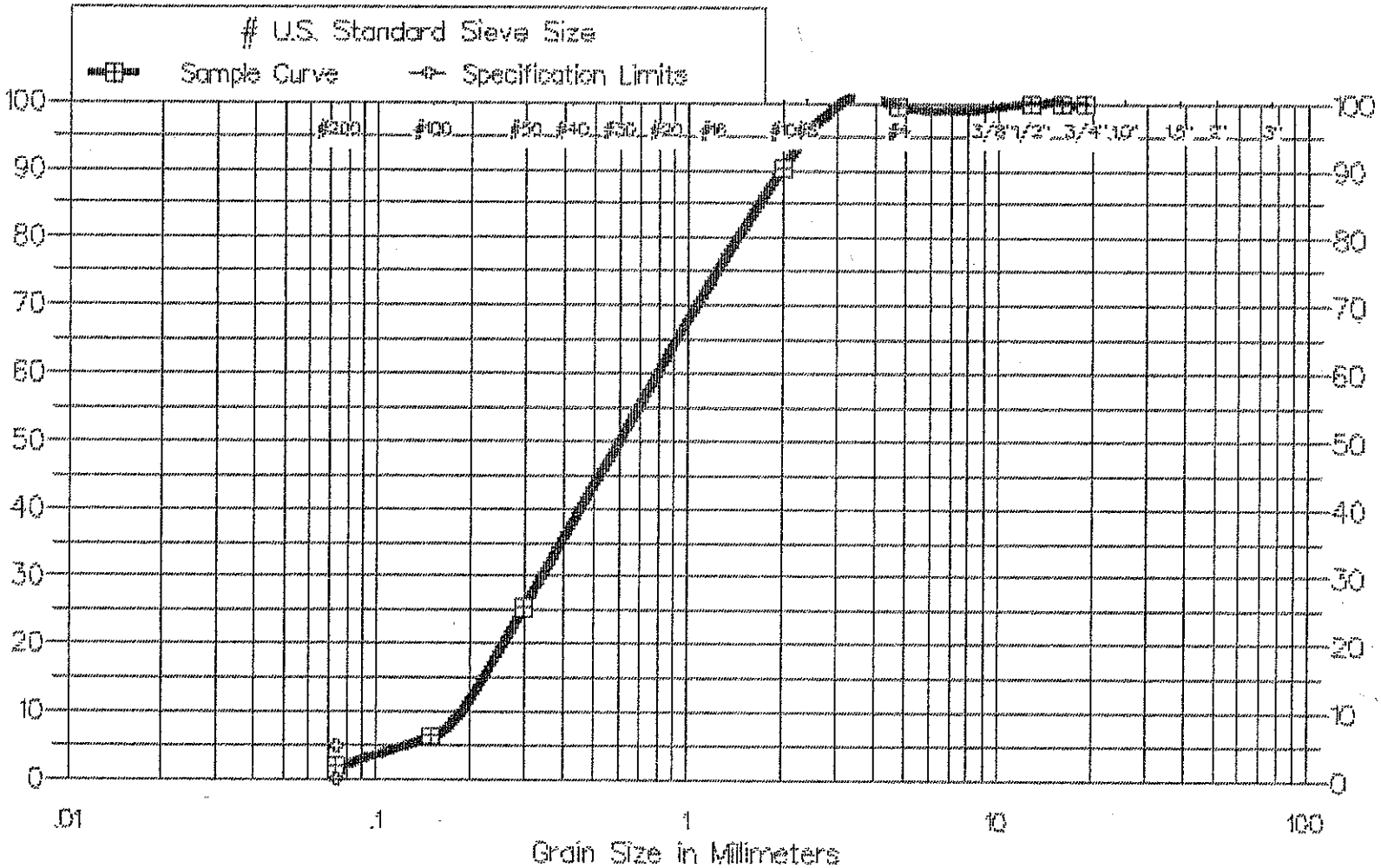
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS

Walter Galuska
WALTER GALUSKA
LABORATORY SUPERVISOR

AARON BEST
TECHNICIAN

TIBBETTS ENGINEERING CORP.

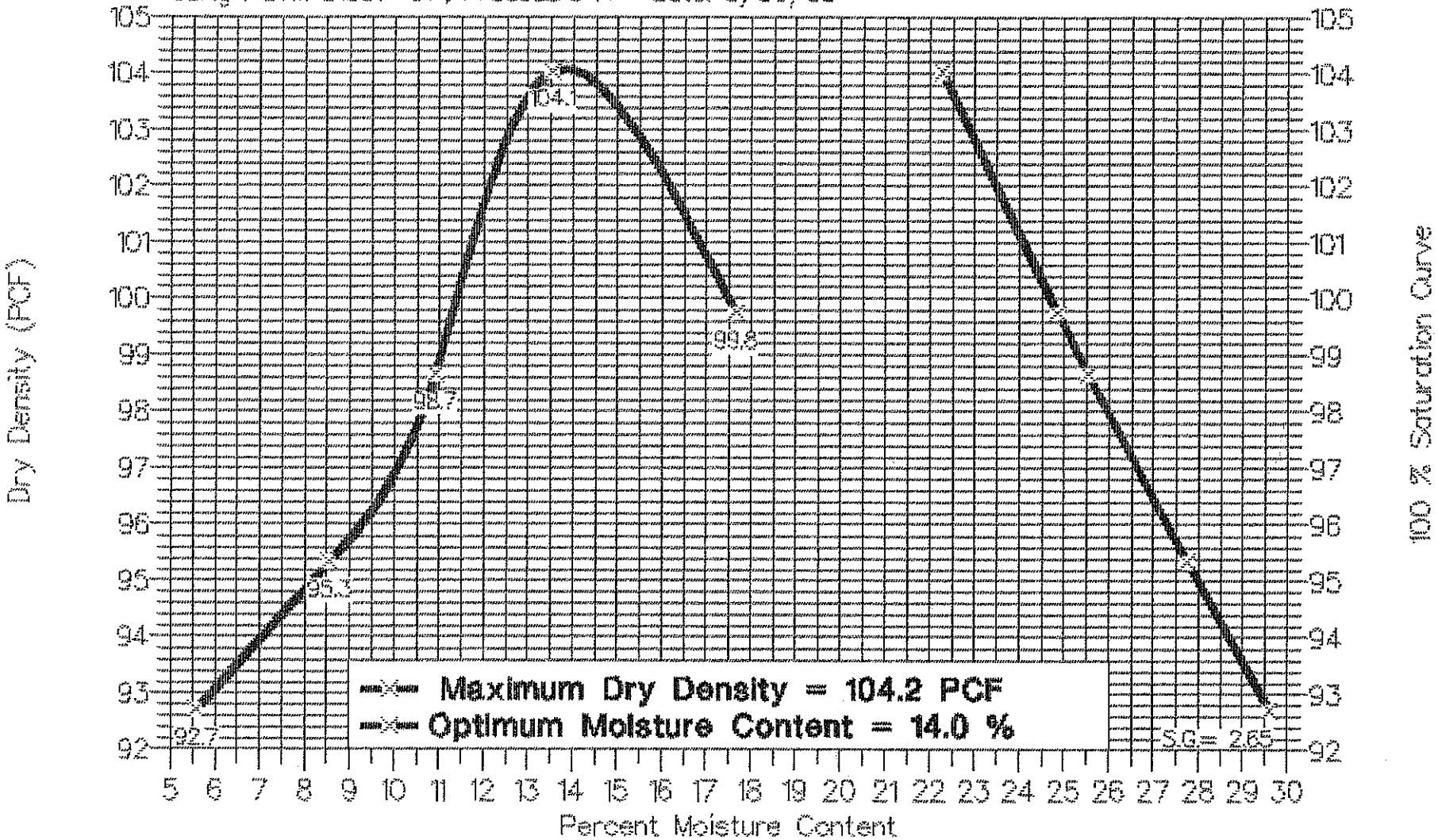
Report of Gravel Wet Sieve Analysis
Using AASHTO T27 & T11 Date: 10/12/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9281A – Sand

TIBBETTS ENGINEERING CORP.

Laboratory Density Relationship of Compacted Soil
Using ASTM D1557-91 ; Procedure A Date: 9/30/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA.
Test No. PT9270A - Trucked in Sand for Drainage layer

tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 9/27/99
Report No. PE9270A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on September 27,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9270A = 2.5X10E-2 cm/sec @ 91% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 9/30/99
Report No. PE9273A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of two samples of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on September 30,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered samples were first compacted in a permeability testing apparatus using a slight vibration effort. The samples were then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9273A = 6.3X10E-2 cm/sec @ 91% Compaction
Sample: PE9273B = 3.4X10E-2 cm/sec @ 90% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: These samples met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tec tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/4/99
Report No. PE9277A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 3,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9277A = 2.3X10E-2 cm/sec @ 100% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/5/99
Report No. PE9278

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of two samples of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 4,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered samples were first compacted in a permeability testing apparatus using a slight vibration effort. The samples were then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9278A = 5.0X10E-2 cm/sec @ 85% Compaction
Sample :PE9278B = 2.9X10E-2 cm/sec @ 89% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: These samples met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

RICHARD L. SILVIERA, P.E., R.L.S.
ROBERT C. VERKADE, P.E., R.L.S.
HENRY C. GOVONI
DUARTE M. ANDRADE
GERARD G. CHAREST, JR.
JOHN DeMELLO
JOSEPH DOMINGOS
RICHARD A. MUNROE, R.L.S.

716 COUNTY STREET
TAUNTON, MA 02780
TELEPHONE (508) 822-6934
FACSIMILE (508) 880-7811
E-MAIL: tectaunton@aol.com

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/6/99
Report No. PE9279A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 5,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9279A = 2.4X10E-2 cm/sec @ 87% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH 03842

JOB NO. 10650.010
DATE: 10-06-1999
REPORT NO. MA9270A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/ OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 9/27/99
TESTED BY: D.MELLO — DATE: 9/27/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	- MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	2.6	99.8	-	-
NO. 4	72.0	93.5	-	-
NO. 10	92.8	85.5	-	-
NO. 50	688.6	25.7	-	-
NO. 100	212.2	7.3	-	-
NO. 200	46.0	3.3	0	5
PAN	38.2	0.0		

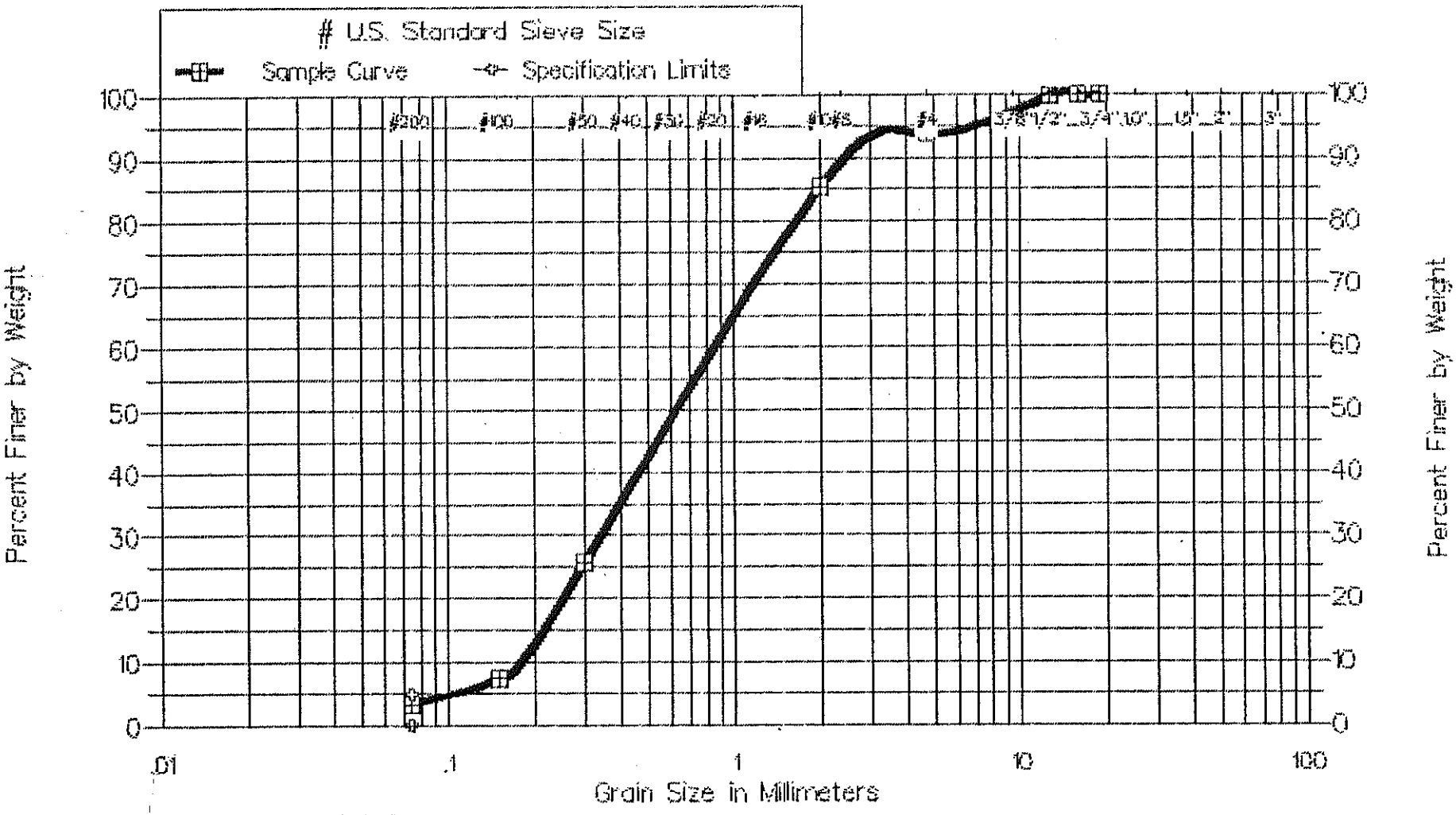
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS

Walter Galuska
WALTER GALUSKA
LABORATORY SUPERVISOR

DEREK MELLO
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using AASHTO T27 & T11 Date: 9/27/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9270A – Sand

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH 03842

JOB NO. 10650.010
DATE: 10-06-1999
REPORT NO. MA9273A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE /AND OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 9/30/99
TESTED BY: D.MELLO — DATE: 9/30/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	- MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	3.5	99.7	-	-
NO. 4	77.7	93.1	-	-
NO. 10	103.2	84.3	-	-
NO. 50	701.4	24.5	-	-
NO. 100	219.7	5.8	-	-
NO. 200	54.2	1.2	0	5
PAN	13.7	0.0		

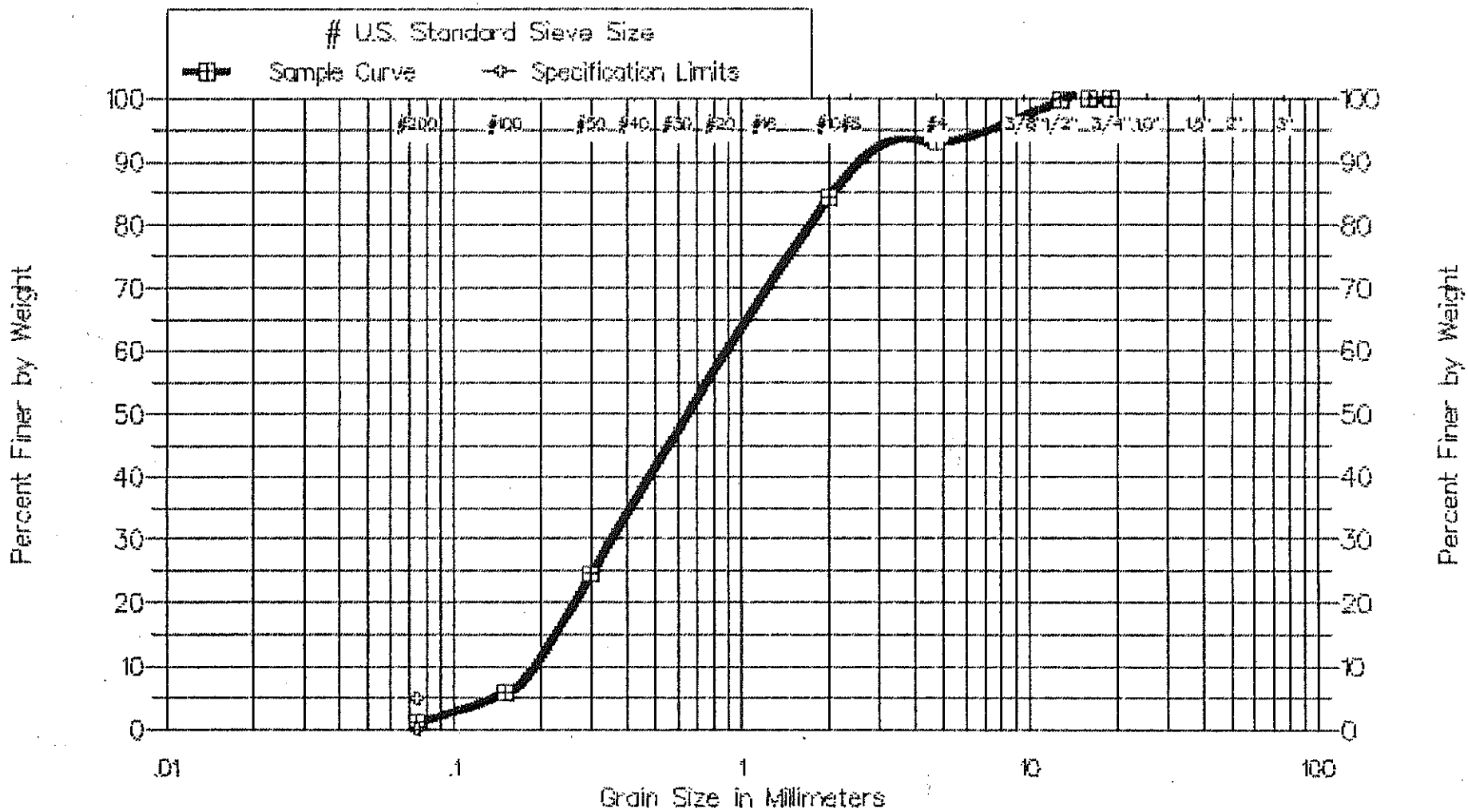
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS.

WALTER GALUSKA
LABORATORY SUPERVISOR

DEREK MELLO
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using AASHTO T27 & T11 Date: 9/30/99



Job No. 10650.010
Foxboro Landfill -- Foxboro MA
Report No. MA9273A -- Sand

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH. 03842

JOB NO. 10650.010
DATE: 10-06-1999
REPORT NO. MA9279A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/5/99
TESTED BY: A.BEST — DATE: 10/6/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	- MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	0.0	100.0	-	-
NO. 4	0.4	100.0	-	-
NO. 10	135.8	90.1	-	-
NO. 50	877.2	26.1	-	-
NO. 100	136.6	16.1	-	-
NO. 200	184.4	2.7	0	5
PAN	36.6	0.0		

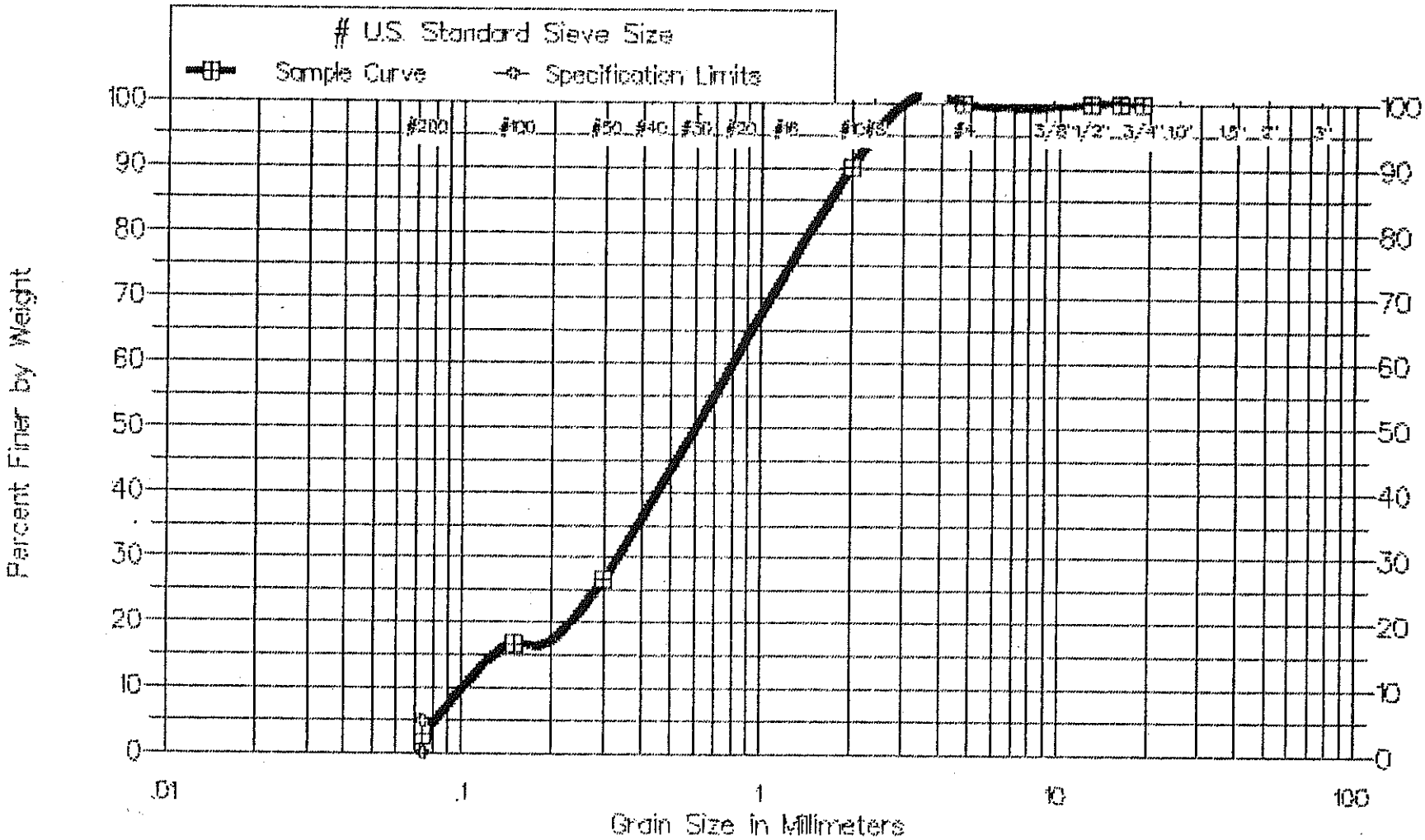
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS

Walter Galuska
WALTER GALUSKA
LABORATORY SUPERVISOR

AARON BEST
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using AASHTO T27 & T11 Date: 10/6/99



Job No. 10650.010
Foxboro Landfill -- Foxboro MA
Report No. MA9279A -- Sand

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/12/99
Report No. PE9285A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 12,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9285A = 3.3X10E-2 cm/sec @ 88.9% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/13/99
Report No. PE9286A

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 13,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9286A = 3.2X10E-2 cm/sec @ 95% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/14/99
Report No. PE9287A

PROJECT: Foxboro Landfill – Foxboro MA

==========

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 14,1999 in accordance with Corps of Engineers publication EM 1110-2-1906.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9287A = 2.9X10E-2 cm/sec @ 94.4% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTON NH 03842

JOB NO. 10650.010
DATE: 10-18-1999
REPORT NO. MA9285A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/12/99
TESTED BY: M.FINGLAS — DATE: 10/14/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	- MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	3.0	99.8	-	-
NO. 4	95.0	94.1	-	-
NO. 10	121.0	86.7	-	-
NO. 50	1090.0	20.6	-	-
NO. 100	73.2	16.2	-	-
NO. 200	225.0	2.5	0	5
PAN	41.6	0.0		

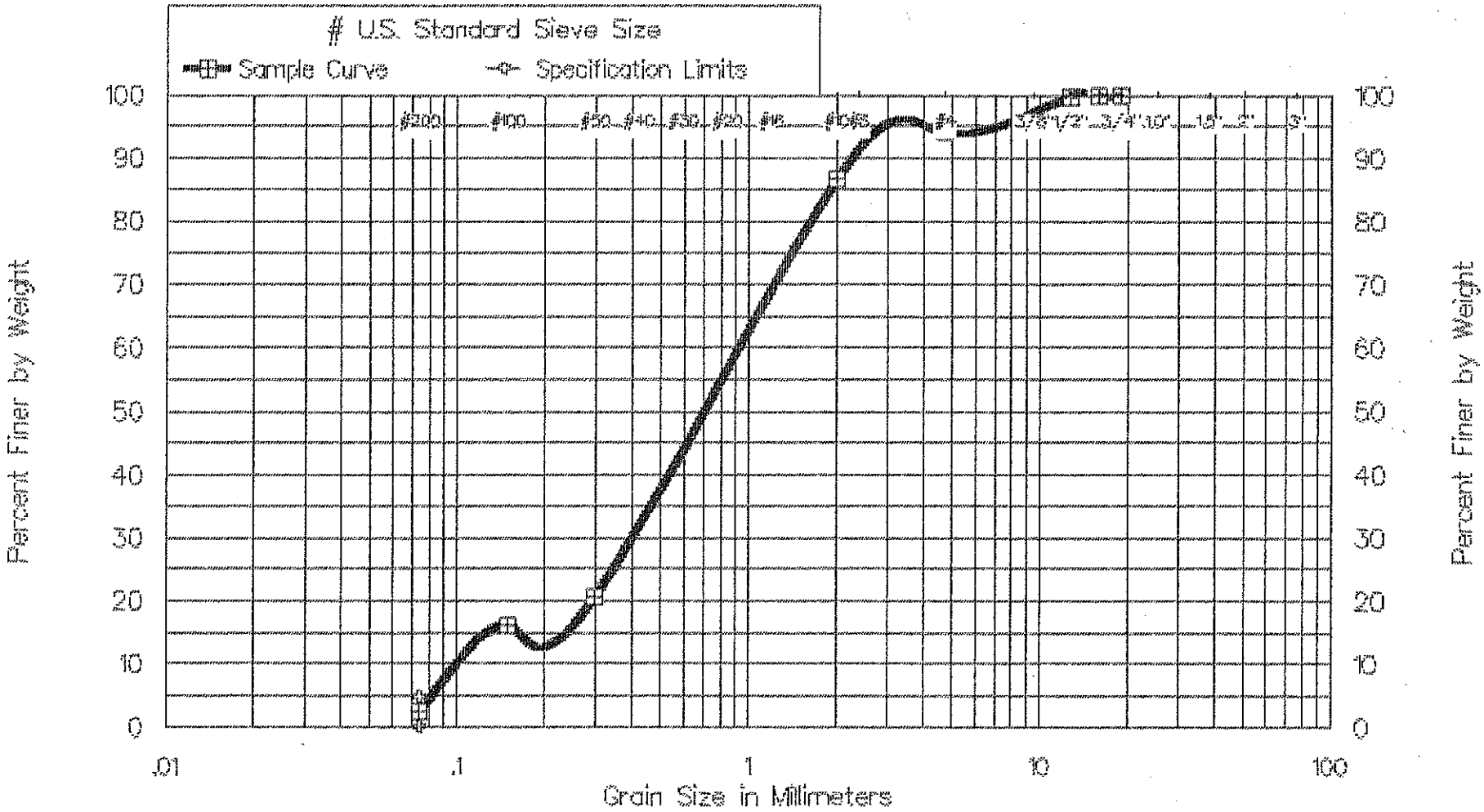
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS..

Walter Galuska
WALTER GALUSKA
LABORATORY SUPERVISOR

MICHAEL FINGLAS
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 10/14/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9285A – Trucked in Sand

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6794

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P.O. BOX 265
HAMPTOM NH 03842

JOB NO. 10650.010
DATE: 10-18-1999
REPORT NO. MA9286A

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/13/99
TESTED BY: M.FINGLAS — DATE: 10/14/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	0.0	100.0	-	-
NO. 4	84.2	94.7	-	-
NO. 10	106.0	88.1	-	-
NO. 50	1048.6	22.3	-	-
NO. 100	262.2	5.9	-	-
NO. 200	54.4	2.5	0	5
PAN	39.8	0.0		

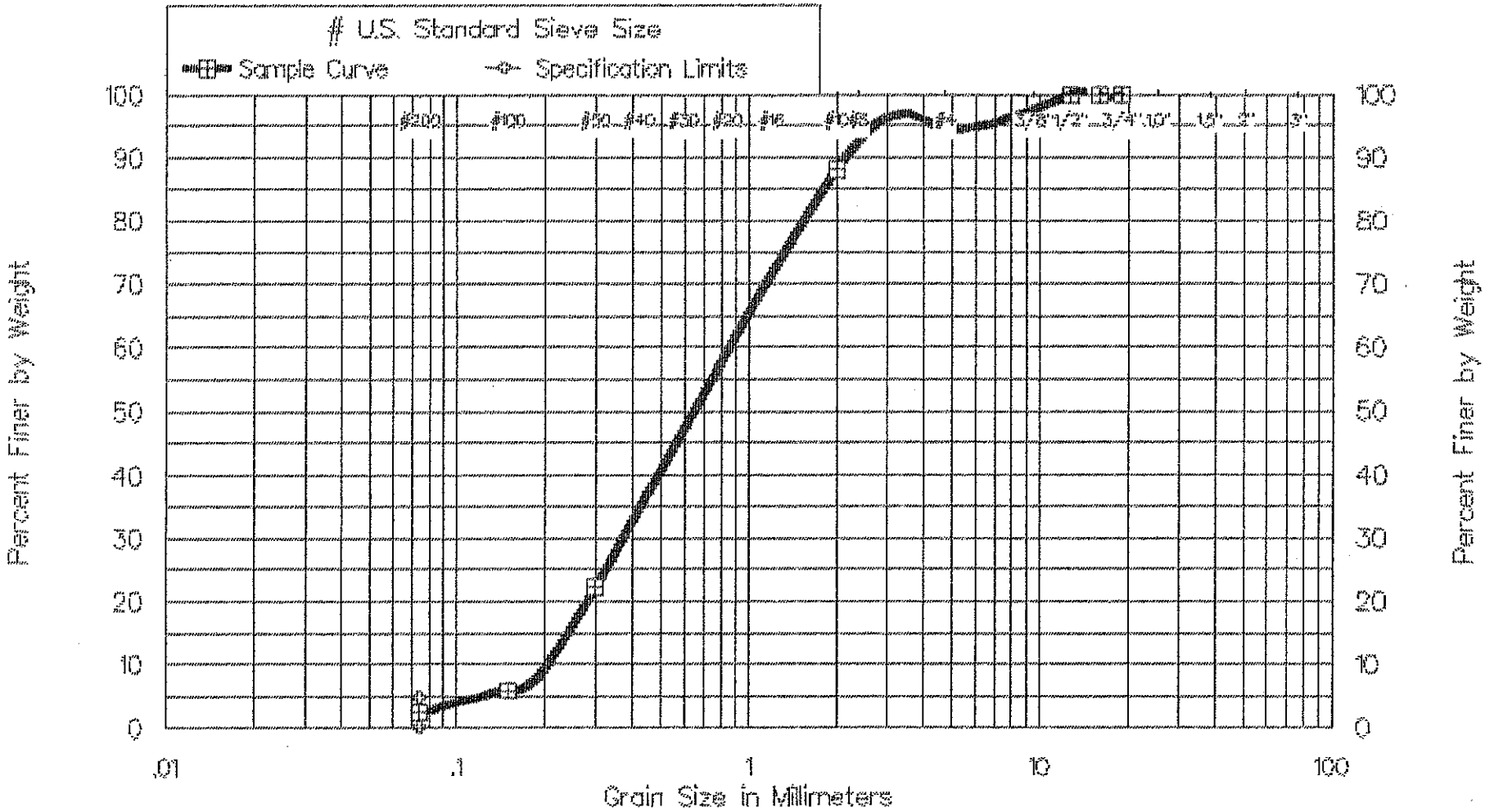
REMARKS:
THIS SAMPLE MET THE REFERENCED SPEC. LIMITS

WALTER GALUSKA
LABORATORY SUPERVISOR

MICHAEL FINGLAS
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 10/14/99



Job No. 10650.010
Foxboro Landfill – Foxboro, MA
Report No. MA928BA – Trucked in Sand

tibbetts engineering corp.
716 COUNTY STREET, TAUNTON, MASSACHUSETTS 02780
TELEPHONE (508) 822-6734

REPORT OF AGGREGATE WET SIEVE ANALYSIS (AASHTO T27 & T11)

CLIENT: EIRCO ENVIRONMENTAL
P..O. BOX 265
HAMPTON NH 03842

JOB NO. 10650.010
DATE: 10-18-1999
REPORT NO. MA9287B

MATERIAL: SAND

PROJECT: FOXBORO LANDFILL

LOCATION: @ PROJECT

SPECIFICATION: PROJECT SPEC. FOR DRAINAGE AND/OR GAS VENTING LAYER

SAMPLED BY: CLIENT — DATE: REC. 10/14/99
TESTED BY: M.FINGLAS — DATE: 10/14/99

ANALYSIS RESULTS:

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	% PASSING	% SPEC. REQUIRES MIN.	MAX.
3/4 INCH	0.0	100	100	
5/8 INCH	0.0	100.0	-	-
1/2 INCH	5.2	99.6	-	-
NO. 4	72.2	94.1	-	-
NO. 10	85.6	87.5	-	-
NO. 50	852.4	22.4	-	-
NO. 100	171.8	9.2	-	-
NO. 200	88.6	2.4	0	5
PAN	32.0	0.0		

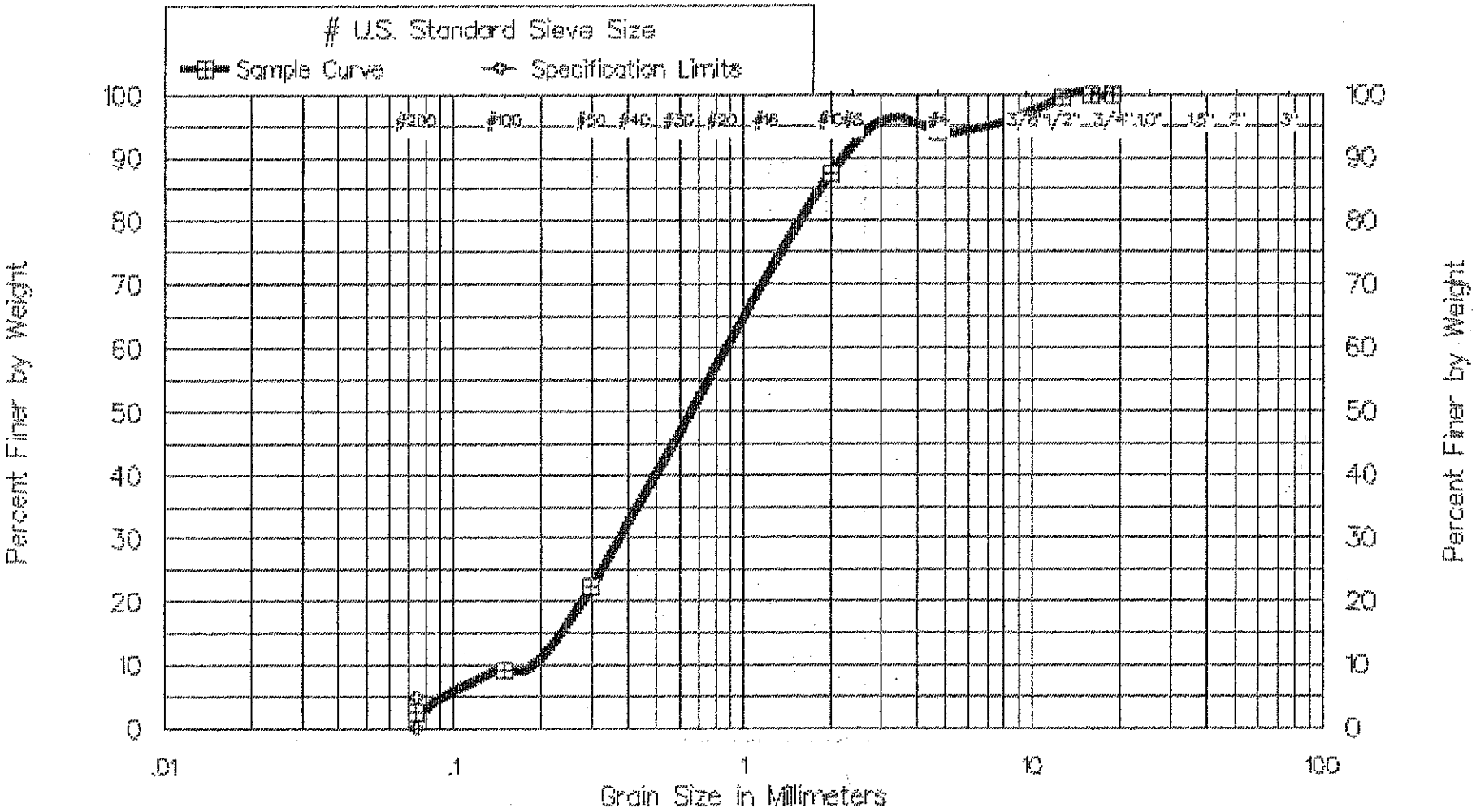
REMARKS:
THE GRADATION OF THIS SAMPLE MET THE REFERENCED SPEC. LIMITS.

WALTER GALUSKA
LABORATORY SUPERVISOR

MICHAEL FINGLAS
TECHNICIAN

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 10/14/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9278A

TIBBETTS ENGINEERING CORP.

☐ 3090 Acushnet Avenue, New Bedford, MA 02745, (508) 998-3700
☐ 303 Rodman Street, Fall River, MA 02721, (508) 676-1710
☑ 716 County Street, Taunton, MA 02780, (508) 822-6934

LETTER OF TRANSMITTAL

DATE: 11/19/99
JOB NO.: 10650.010
ATTENTION: Glenn Reagan
RE: Foxboro Landfill

TO Eirco Environmental
P.O. Box 265
Hampton, NH 03842

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1		1	Letter dated 11/19/99
1		1	Sand Testing Log dated 11/18/99
1		9	Permeability Test Reports PE9289C - PE9316D
1		24	Washed Sieve Analysis Reports MA9273B - MA9316D

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

Testing Log Represents Testing Done up to 11/19/99

COPY TO _____

SIGNED: W L Ollette

If enclosures are not as noted, kindly notify us at once.

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

November 19,1999
Job No. 10650.010

Mr. Glenn Reagan
Eirco Environmental, LLC
P.O. Box 265
Hampton, New Hampshire 03842

RE: Foxboro Landfill

Dear Glenn,

Enclosed are the test results for Gas Vent Drainage Sand. We have provided you with a testing log for all testing performed. This log should address the specific concerns of C.D.M. in reference to the sample Identification number and frequency of testing. In addition, the specific test report will now have the sample identification number and yardage of material represented.

If you have any questions, please feel free to call me at (508) 822-6934

Sincerely,

Derek G. Mello
Laboratory Field Supervisor

Reviewed By:

Walter P. Galuska
Laboratory Supervisor

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

JOB NO: 10650.010
DATE: 11/18/99

Drainage/or Gas Venting Sand Testing Log				
Sample No.	**Permeability Identification No.**	**Grain Size Analysis Identification No.**	**Date Received in Lab**	**Cubic Yards of Sand Represented**
1	PE9270A	MA9270A	9/30/99	0 – 1500
2	PE9273A	MA9273A	9/30/99	1500-3000
3	PE9273B	MA9273B	9/30/99	3000-4500
4	PE9277A	MA9277A	10/3/99	4500-6000
5	PE9278A	MA9278A	10/4/99	6000-7500
6	PE9278B	MA9278B	10/4/99	7500-9000
7	PE9279A	MA9279A	10/5/99	9000-10500
8	PE9281A	MA9281A	10/7/99	10500-12000
9	PE9281B	MA9281B	10/7/99	12000-13500
10	PE9281C	MA9281C	10/7/99	13500-15000
11	PE9285A	MA9285A	10/12/99	15000-16500
12	PE9286A	MA9286A	10/13/99	16500-18000
13	PE9287A	MA9287A	10/14/99	18000-19500
14	PE9289C	MA9289C	10/20/99	19500-21000
15	PE9295B	MA9295B	10/22/99	21000-22500
16	PE9300C	MA9300C	10/26/99	22500-24000
17		MA9305A	11/1/99	24000-25500
18		MA9305B	11/1/99	25500-27000
19	PE9305C	MA9305C	11/1/99	27000-28500
20		MA9307B	11/3/99	28500-30000
21	PE9308B	MA9308B	11/2/99	30000-31500
22		MA9308C	11/2/99	31500-33000
23	PE9313A	MA9313A	11/8/99	33000-34500
24		MA9313B	11/9/99	34500-36000
25	PE9313C	MA9313C	11/9/99	36000-37500
26		MA9314B	11/10/99	37500-39000
27	PE9314C	MA9314C	11/10/99	39000-40500
28		MA9315A	11/10/99	40500-42000
29	PE9316B	MA9316B	11/12/99	42000-43500
30		MA9316C	11/12/99	43500-45000
31	PE9316D	MA9316D	11/12/99	45000-46500

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/25/99
Report No. PE9289C

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 20,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9289C = 2.5X10E-2 cm/sec @ 94.5% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 10/27/99
Report No. PE9300C

PROJECT: Foxboro Landfill – Foxboro MA

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on October 26,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9300C = 1.6X10E-2 cm/sec @ 97.5% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/1/99
Report No. PE9305C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 19 (25,500 CY – 28,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 1,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9305C = 1.7X10E-2 cm/sec @ 96.8% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/4/99
Report No. PE9308B

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 22 (28,500 CY – 31,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 3,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9308B = 1.8X10E-2 cm/sec @ 97.8% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/9/99
Report No. PE9313A

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 24 (31,500 CY – 34,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 8,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9313A = 2.8X10E-2 cm/sec @ 93.8% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/9/99
Report No. PE9313C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 26 (34,500 CY – 37,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 8,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9313C = 1.4X10E-2 cm/sec @ 96.9% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/9/99
Report No. PE9314C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 28 (37,500 CY – 40,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 9,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9314C = 1.4X10E-2 cm/sec @ 99.5% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/12/99
Report No. PE9316B

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 30 (40,500 CY – 43,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 12,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9316B = 1.7X10E-2 cm/sec @ 90.1% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/12/99
Report No. PE9316D

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 32 (43,500 CY – 46,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 12,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9316D = 1.2X10E-2 cm/sec @ 92.6% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9273B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 3 (3000 Cy to 4500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.9/30/99
Date Tested: 11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1117.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	73.00	6.5	93.5			
No. 10	92.20	8.3	85.2			
No. 50	731.40	65.5	19.8			
No. 100	163.80	14.7	5.1			
No. 200	34.00	3.0	2.1	0		5
Pan	20.80					

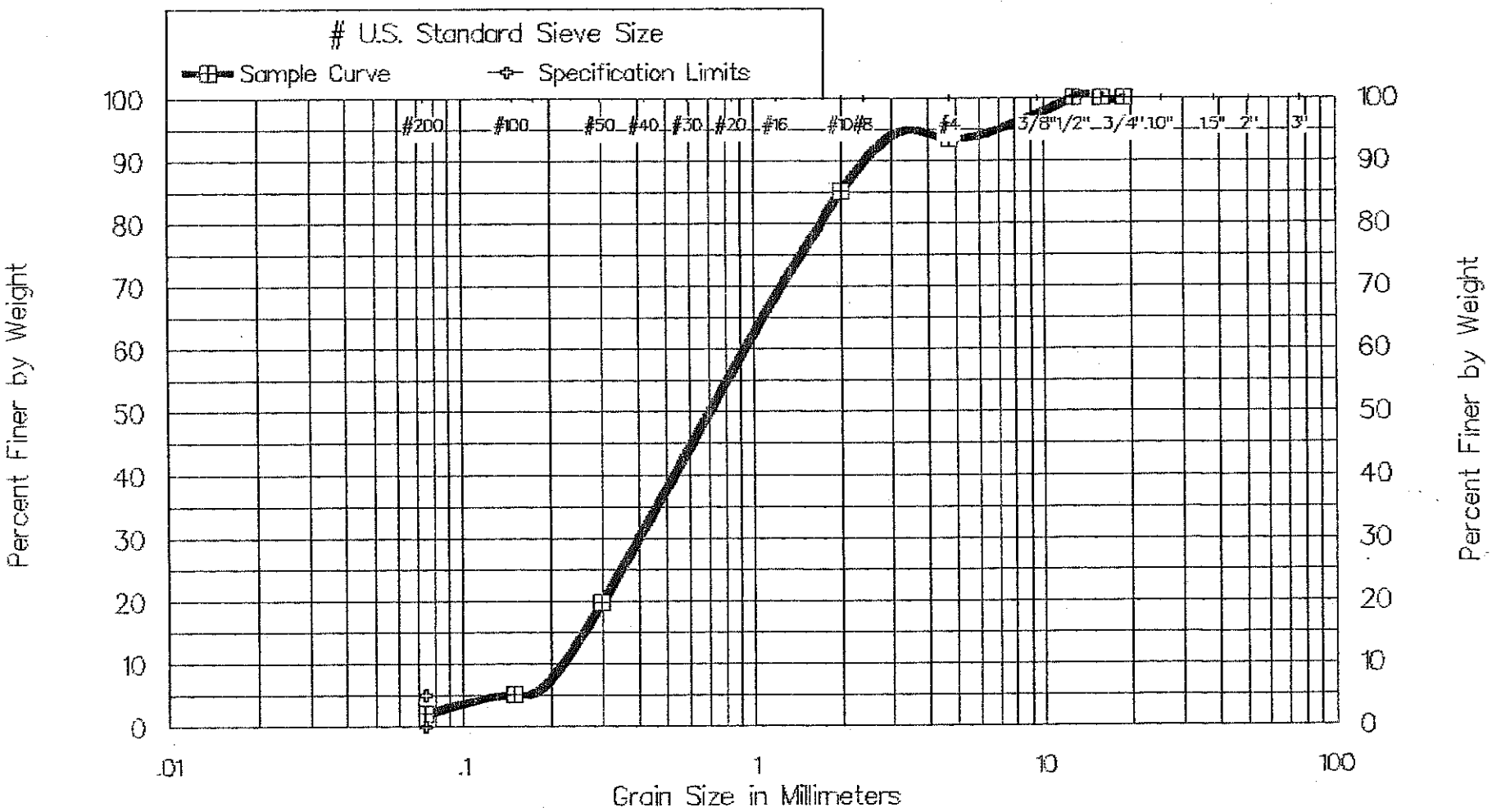
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9273B – Sand (Sample #3 3000 cy to 4500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9277A*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 4 (4500 Cy to 6000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.10/3/99
Tested By: A. Best — Date Tested: 11/11/99

ANALYSIS RESULTS — Sample Wt.(g) = 1028.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	72.80	7.1	92.9			
No. 10	81.60	7.9	85.0			
No. 50	677.20	65.8	19.1			
No. 100	150.20	14.6	4.5			
No. 200	30.00	2.9	1.6	0		5
Pan	15.00					

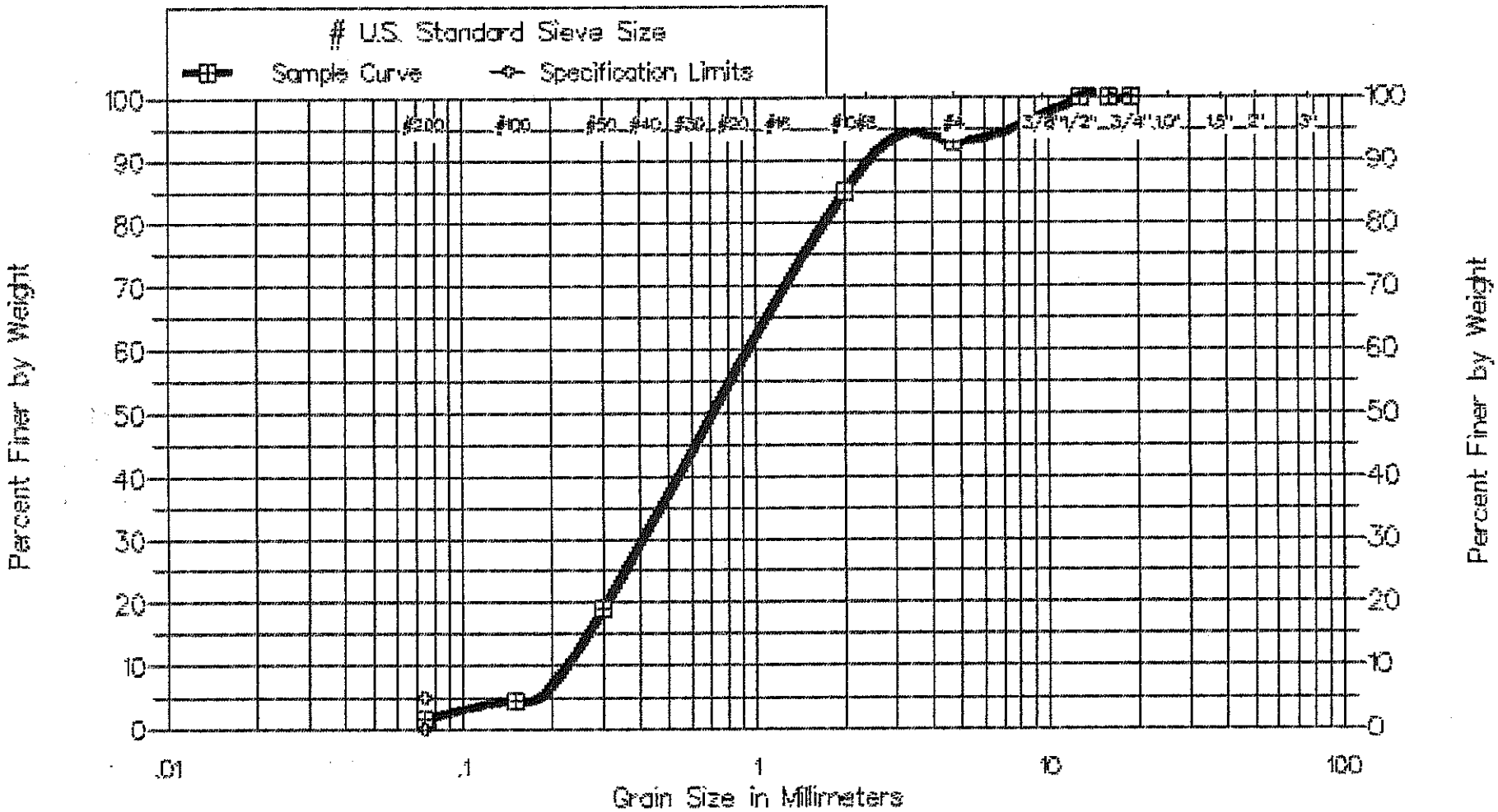
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9277A – Sample No. 4 (4500 cy – 6000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422))

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9281B*

==========

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 9 (12,000 Cy to 13,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.10/7/99
Tested By:	A. Best	Date Tested:	11/11/99

==========

ANALYSIS RESULTS — Sample Wt.(g) = 1160.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	16.40	1.4	98.6			
No. 4	84.80	7.3	91.3			
No. 10	108.60	9.4	81.9			
No. 50	765.40	66.0	15.9			
No. 100	135.40	11.7	4.3			
No. 200	28.80	2.5	1.8	0		5
Pan	20.60					

==========

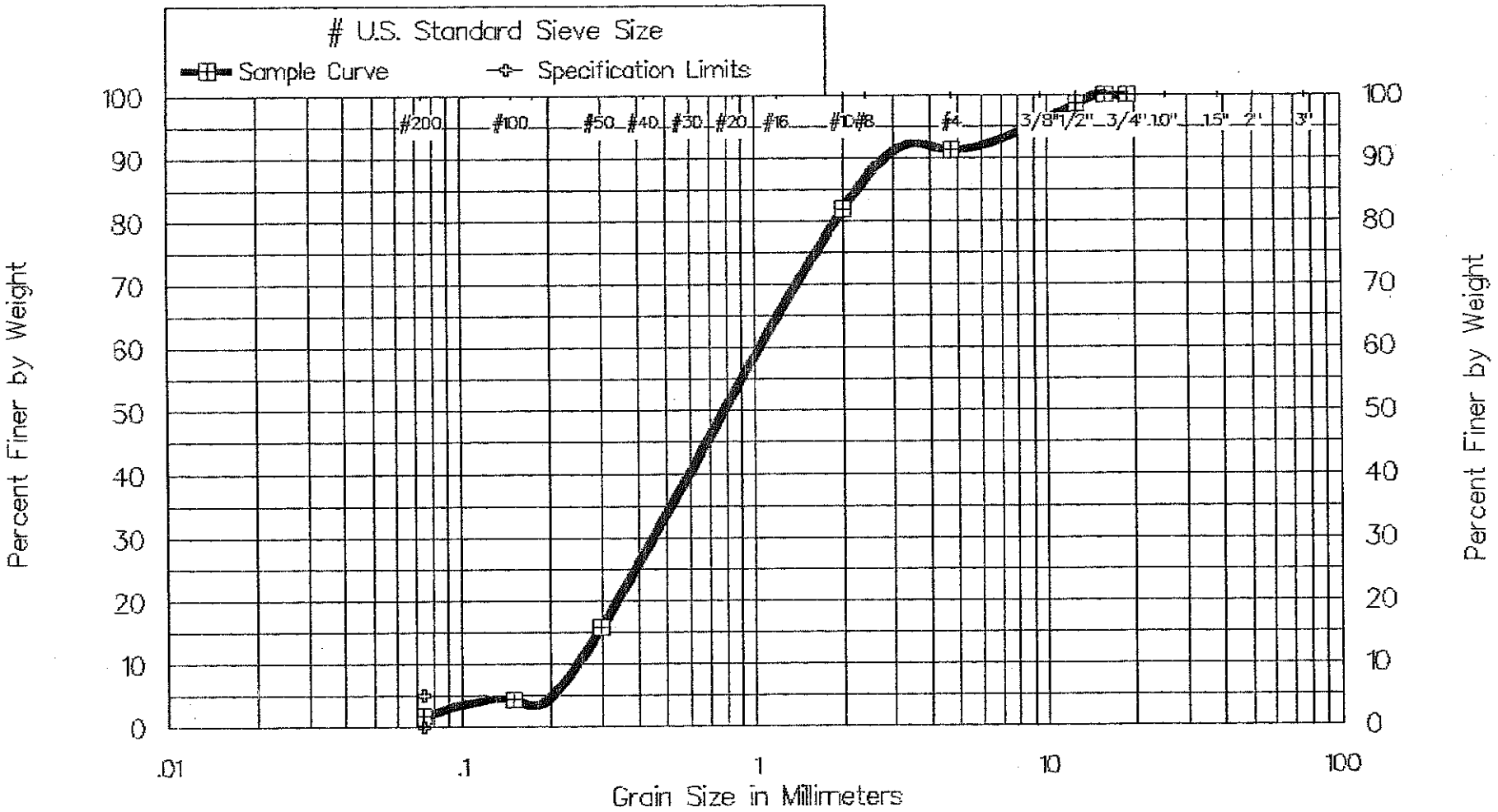
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9281B – Sand – (Sample #9 12,000 cy – 13,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9278B*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client Sample No. 6 (7500 Cy to 9000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.10/4/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1154.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	96.00	8.3	91.7			
No. 10	87.60	7.6	84.1			
No. 50	751.80	65.1	19.0			
No. 100	164.60	14.3	4.7			
No. 200	35.00	3.0	1.7	0		5
Pan	17.40					

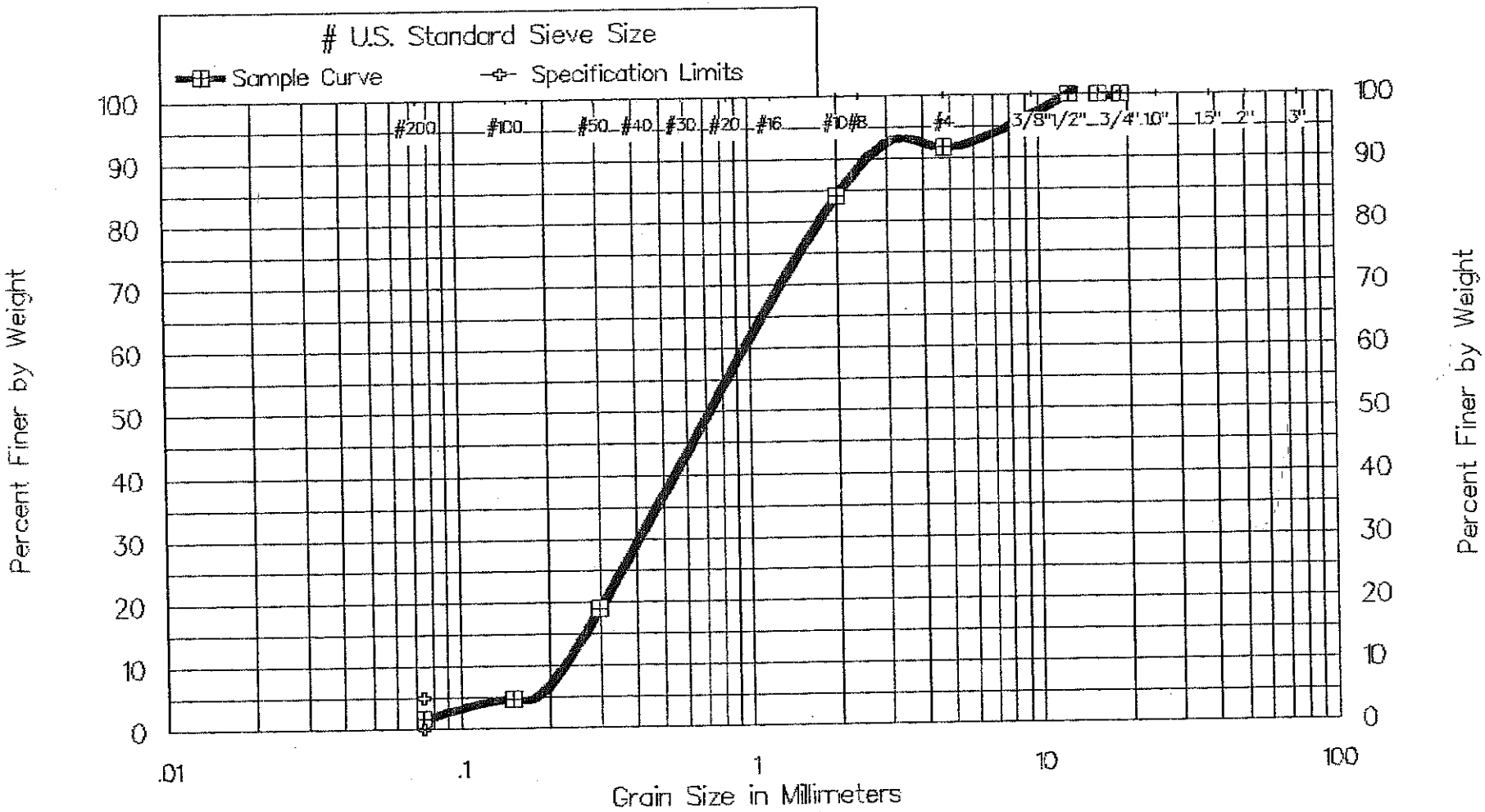
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D--422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9278B – Sand (Sample $6 (7500 cy – 9000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9279A*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 7 (9000 Cy to 10,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.10/5/99
Date Tested: 11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1138.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	8.20	0.7	99.3			
No. 4	81.60	7.2	92.1			
No. 10	106.20	9.3	82.8			
No. 50	760.00	66.8	16.0			
No. 100	135.80	11.9	4.1			
No. 200	26.80	2.4	1.7	0		5
Pan	19.00					

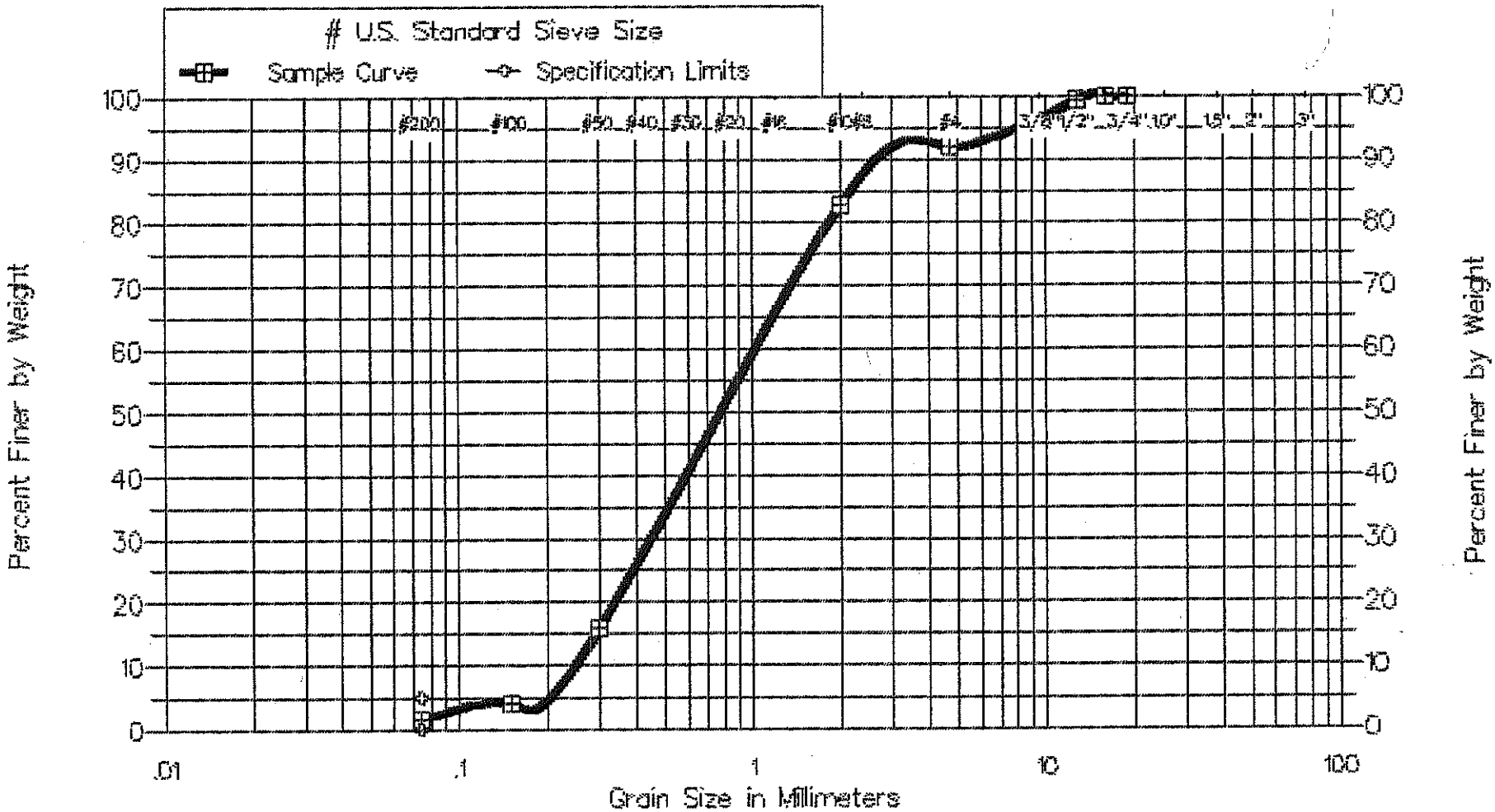
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9279A – Sand (Sample #7 9000 cy – 10,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9281C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 10 (13,500 Cy to 15,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.10/7/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1129.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	53.20	4.7	95.3			
No. 10	75.40	6.7	88.6			
No. 50	806.60	71.4	17.2			
No. 100	156.60	13.9	3.3			
No. 200	26.40	2.3	1.0	0		5
Pan	10.00					

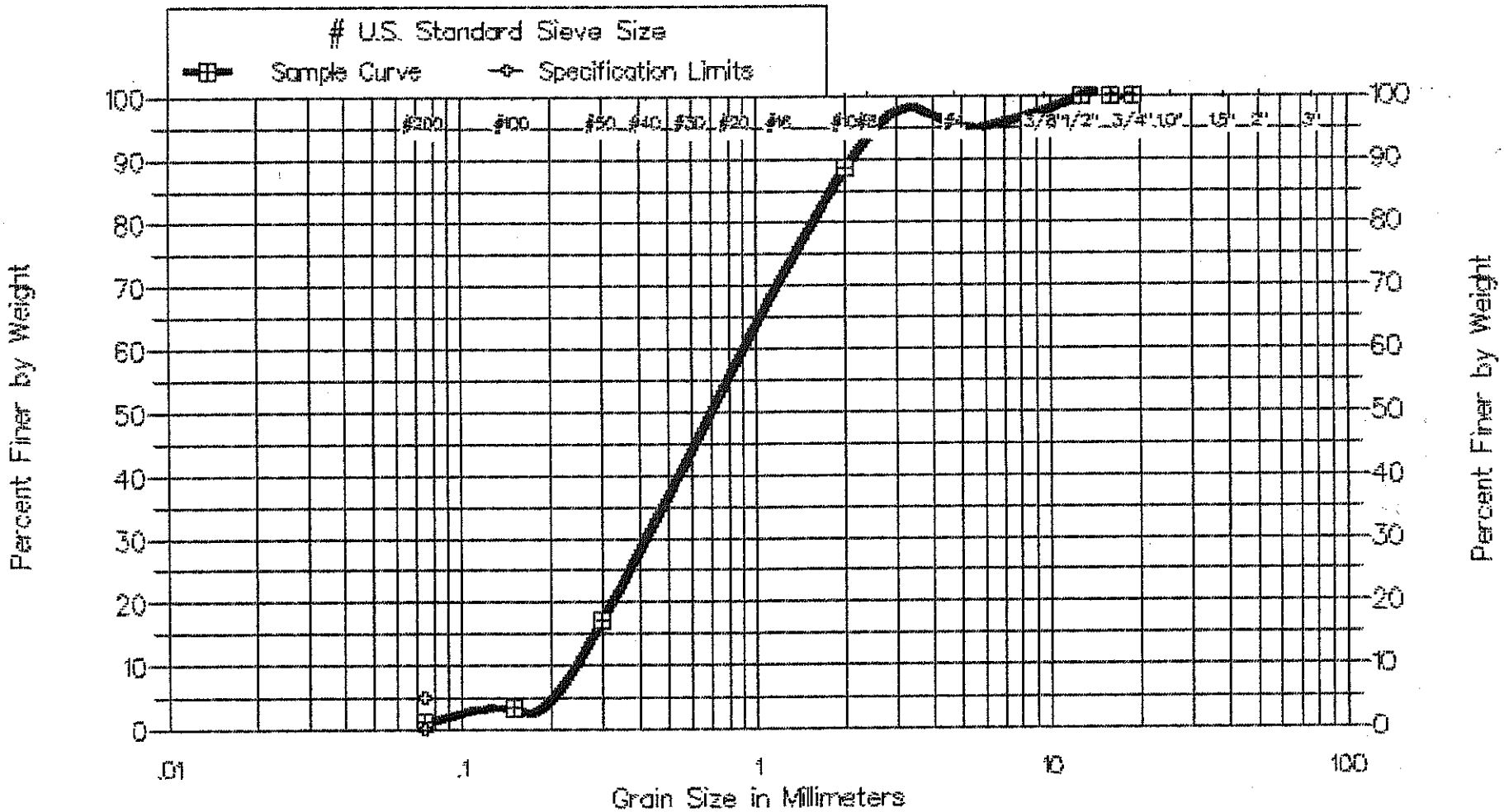
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. MA9281C - Sand (Sample #10 13,500 cy - 15,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9289C*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 14 (19,500 Cy to 21,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.10/20/99
Date Tested: 11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1041.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	44.60	4.3	95.7			
No. 10	67.00	6.4	89.3			
No. 50	750.80	72.1	17.2			
No. 100	142.80	13.7	3.5			
No. 200	25.60	2.5	1.1	0		5
Pan	10.00					

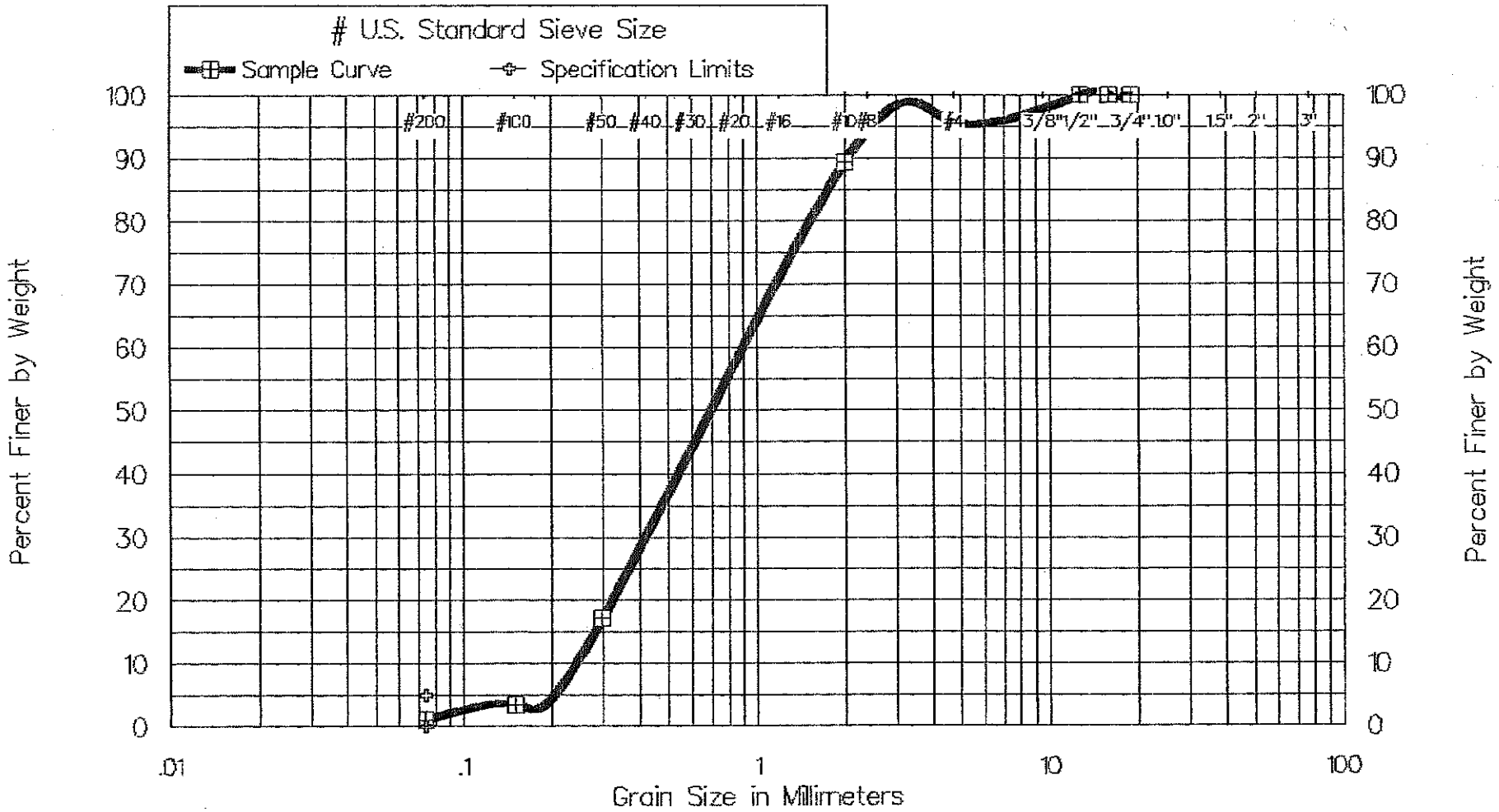
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9289C – Sand (Sample #14 19,500 cy – 21,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9295B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 15 (21,000 Cy to 22,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.10/22/99
Tested By: A. Best — Date Tested: 11/11/99

ANALYSIS RESULTS — Sample Wt.(g) = 1166.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	4.80	0.4	99.6			
No. 4	69.40	6.0	93.6			
No. 10	89.00	7.6	86.0			
No. 50	768.60	65.9	20.1			
No. 100	179.40	15.4	4.7			
No. 200	35.60	3.1	1.7	0		5
Pan	19.00					

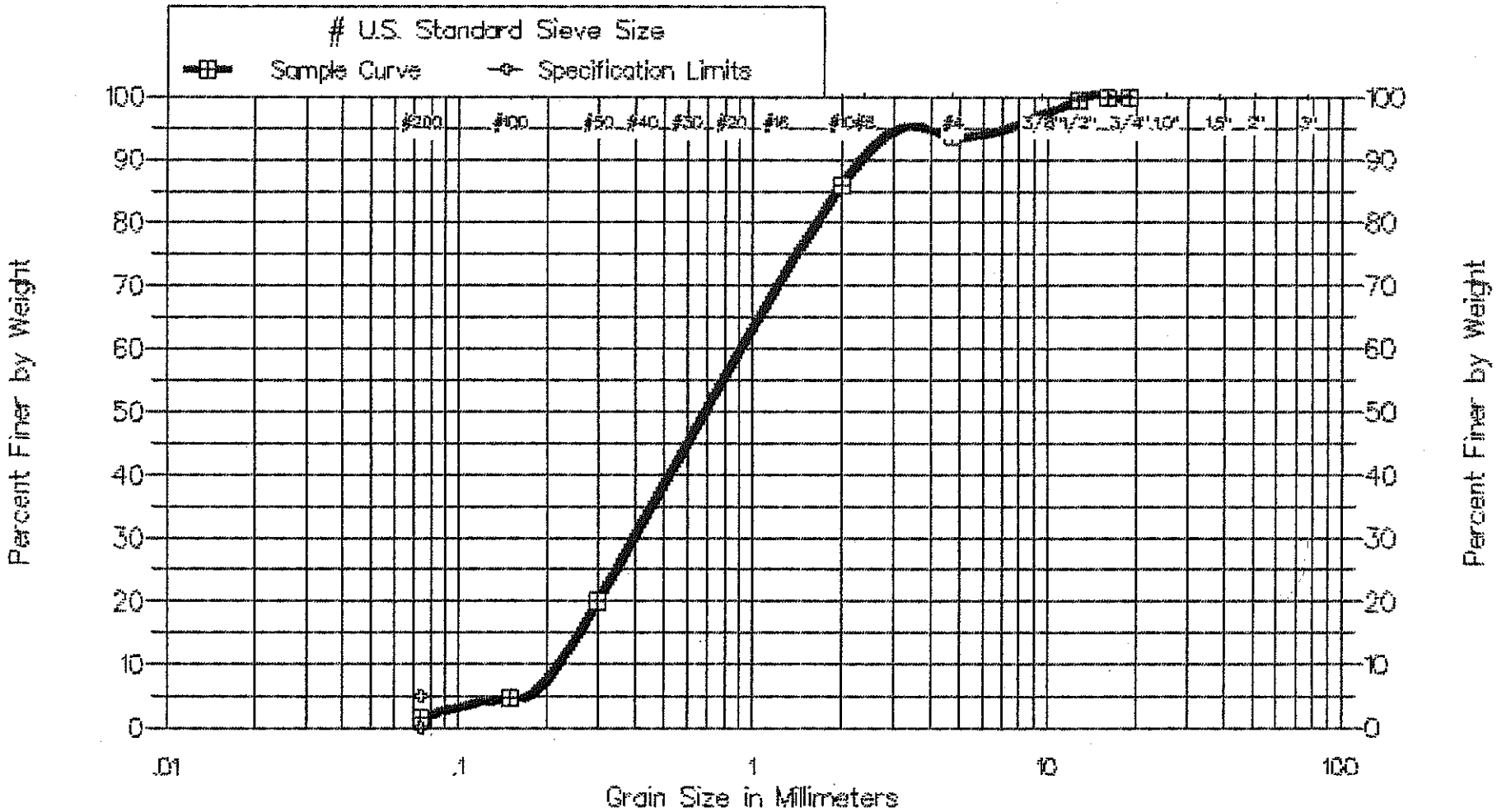
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9295B – Sand (Sample #15 21,000 cy – 22,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9300C*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 16 (22,500 Cy to 24,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.10/26/99
Tested By: A. Best — Date Tested: 11/11/99

ANALYSIS RESULTS — Sample Wt.(g) = 1143.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	70.00	6.1	93.9			
No. 10	80.60	7.0	86.8			
No. 50	743.20	65.0	21.9			
No. 100	194.80	17.0	4.8			
No. 200	36.80	3.2	1.6	0		5
Pan	19.00					

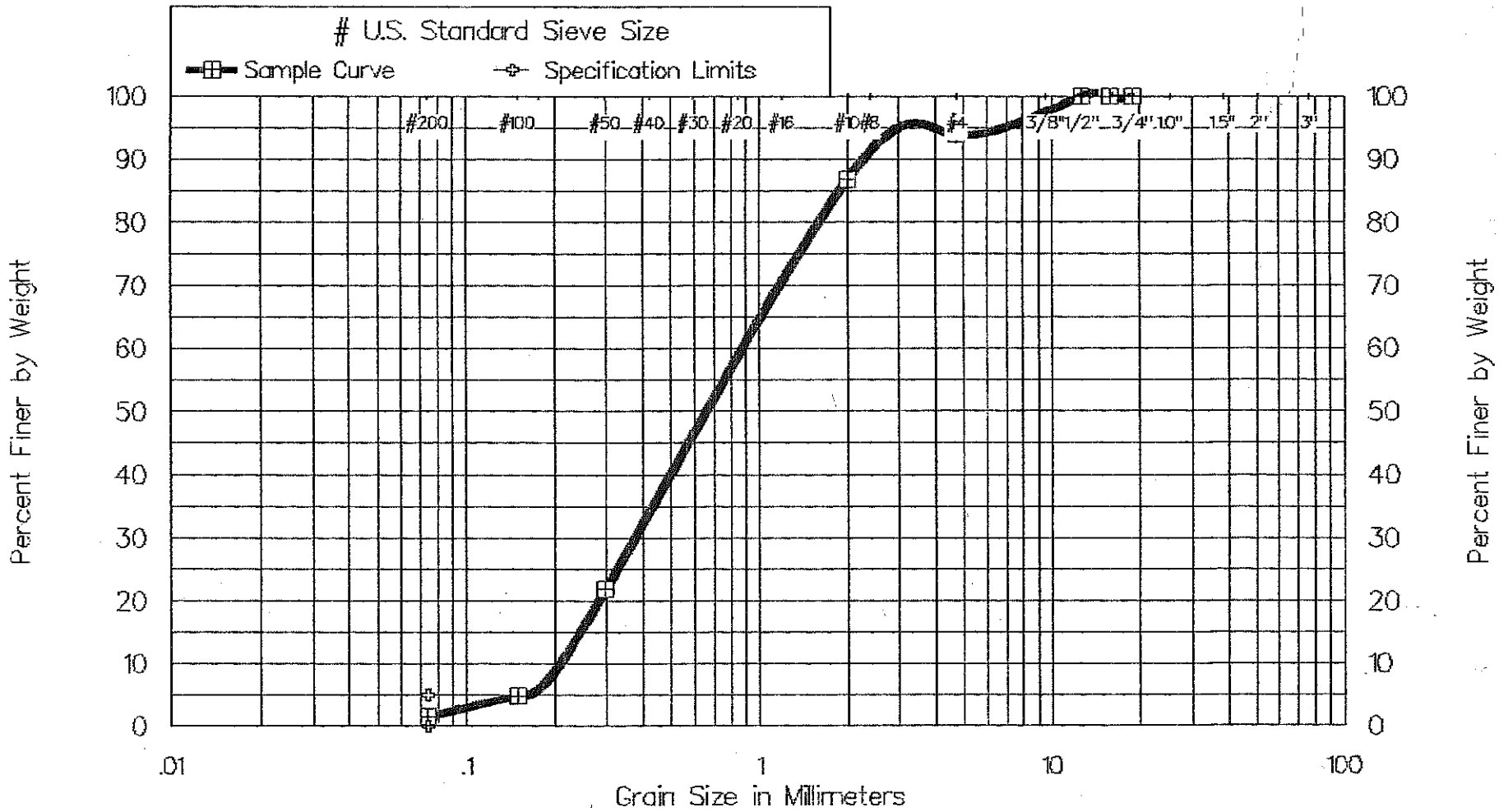
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9300C – Sand (Sample #16 22,500 cy – 24,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9305A*

==========

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 17 (24,000 Cy to 25,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.11/1/99
Date Tested: 11/11/99

==========

ANALYSIS RESULTS

Sample Wt.(g) = 1142.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	64.80	5.7	94.3			
No. 10	97.80	8.6	85.8			
No. 50	712.20	62.4	23.4			
No. 100	192.00	16.8	6.6			
No. 200	41.40	3.6	3.0	0		5
Pan	32.60					

==========

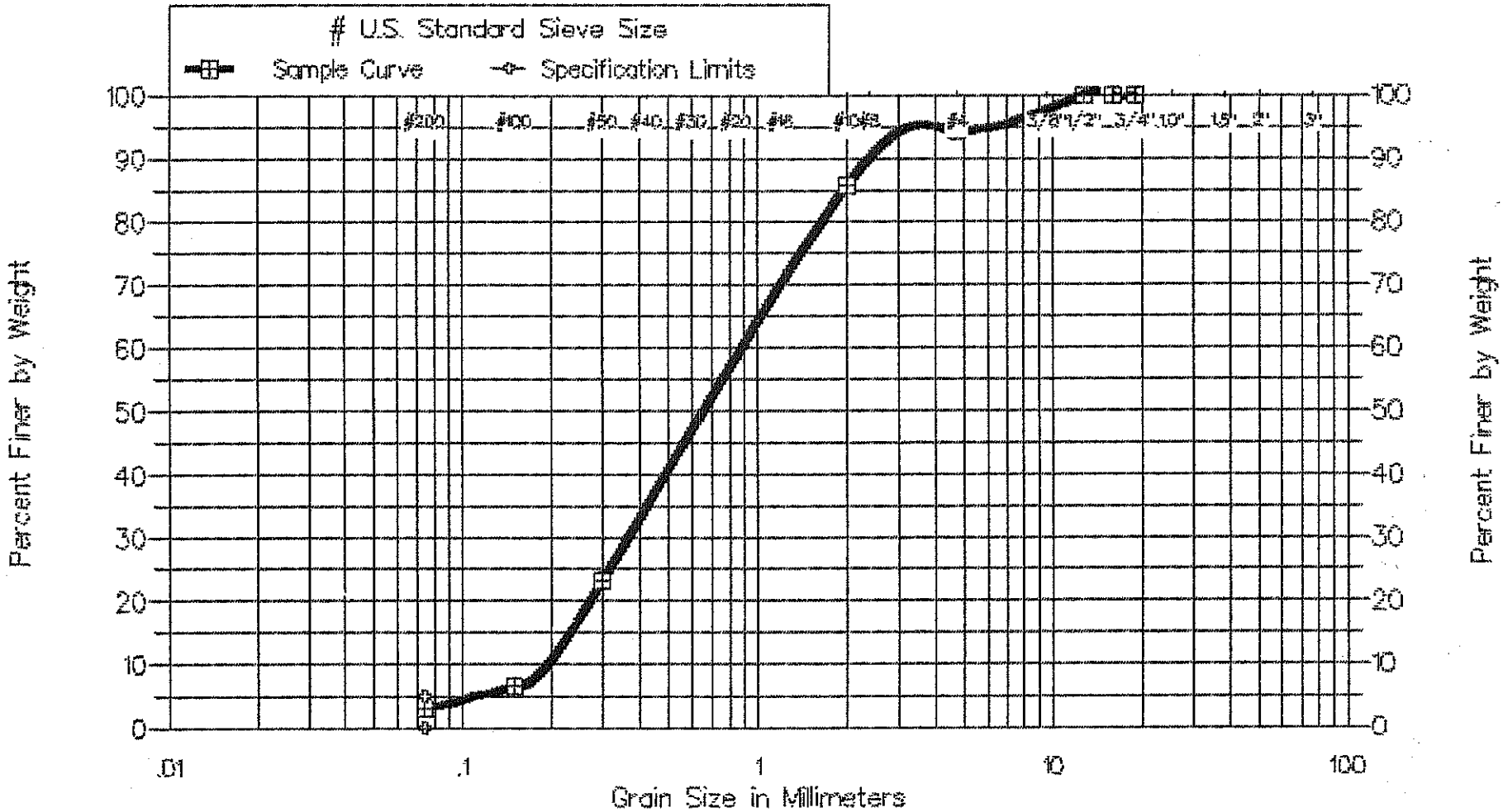
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9305A – Sand (Sample #17 24,000 cy – 25,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9305B*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 18 (25,500 Cy to 27,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.11/1/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1098.00

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	70.40	6.4	93.6			
No. 10	89.60	8.2	85.4			
No. 50	642.60	58.5	26.9			
No. 100	203.40	18.5	8.4			
No. 200	52.20	4.8	3.6	0		5
Pan	39.00					

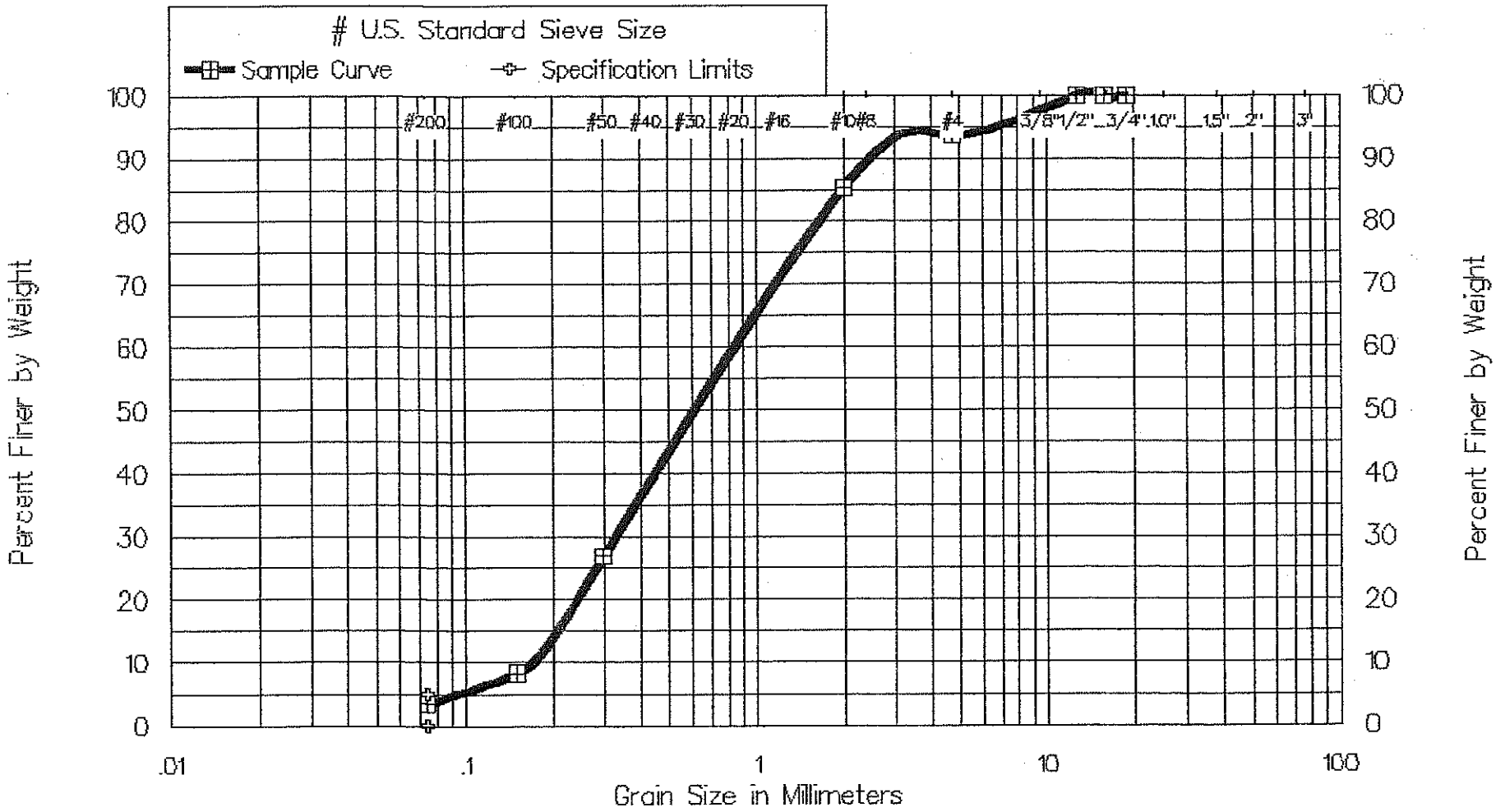
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9305B – Sand (Sample #18 25,500 cy – 27,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9305C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 19 (27,000 Cy to 28,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.11/1/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 999.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	64.60	6.5	93.5			
No. 10	102.60	10.3	83.3			
No. 50	634.60	63.5	19.8			
No. 100	125.60	12.6	7.2			
No. 200	33.80	3.4	3.8	0		5
Pan	37.40					

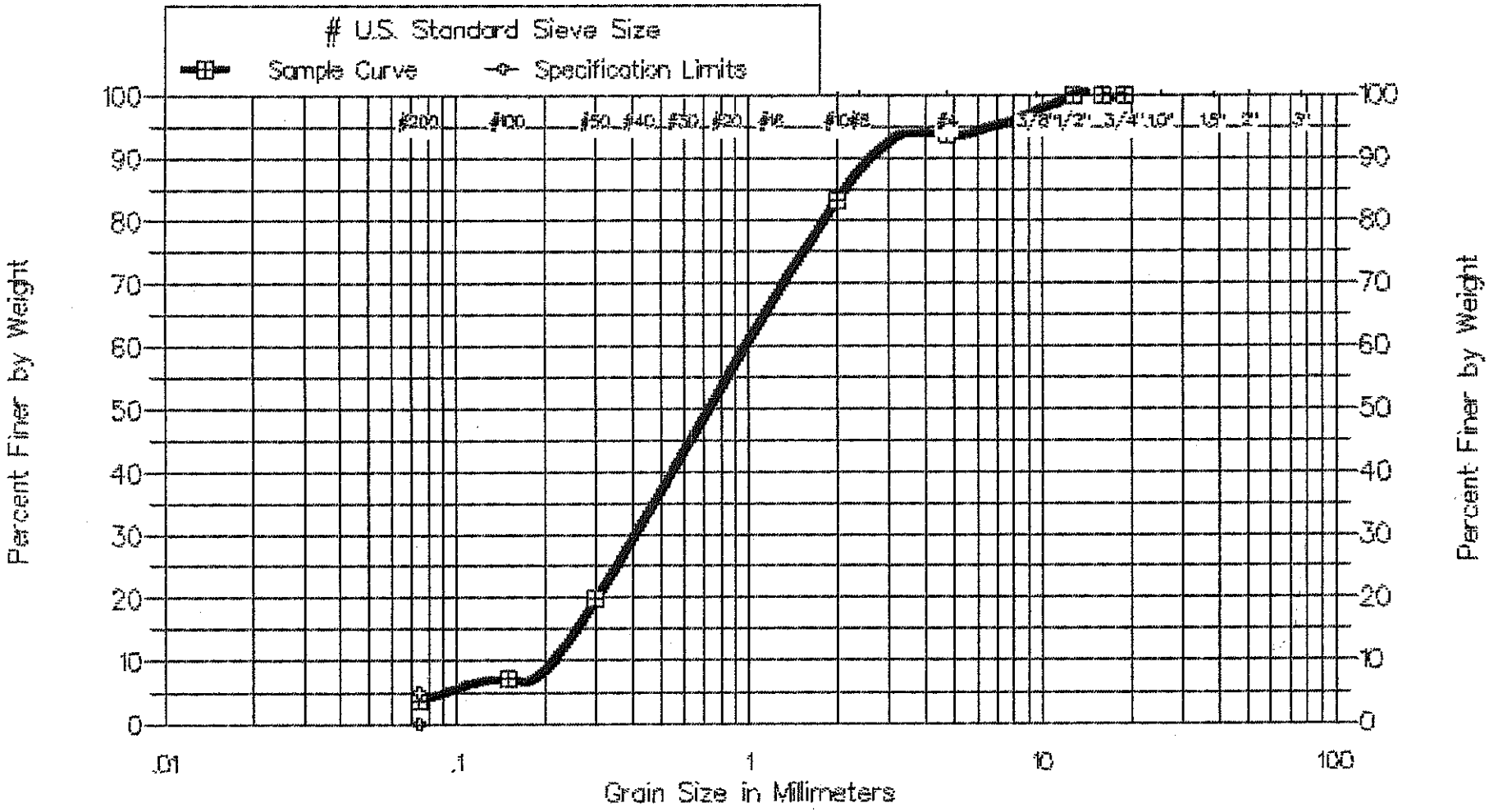
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9305C – Sand (Sample #19 27,000 cy – 28,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/08/99*
Report No.: *MA9307B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 20 (28,500 Cy to 30,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.11/3/99
Date Tested: 11/8/99

ANALYSIS RESULTS

Sample Wt.(g) = 1629.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	98.20	6.0	94.0			
No. 10	114.40	7.0	87.0			
No. 50	913.80	56.1	30.9			
No. 100	360.40	22.1	8.8			
No. 200	73.60	4.5	4.2	0		5
Pan	69.00					

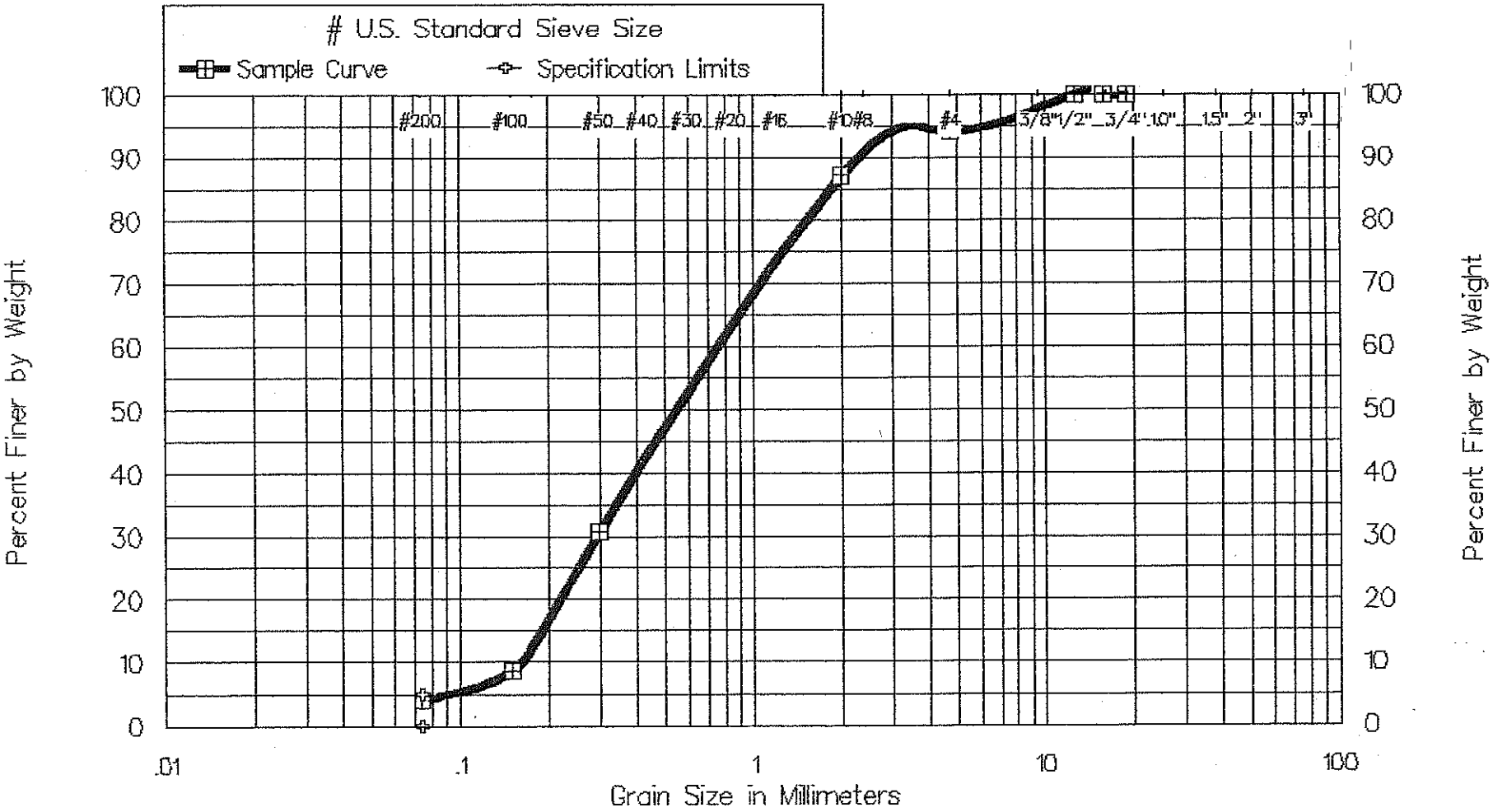
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 Date: 11/8/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9307B – Sand (Sample #20 28,500 cy – 30,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9308B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 22 (30,000 Cy to 31,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.11/2/99
Date Tested: 11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1110.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	3.20	0.3	99.7			
No. 4	69.40	6.2	93.5			
No. 10	108.80	9.8	83.7			
No. 50	642.80	57.9	25.8			
No. 100	181.80	16.4	9.4			
No. 200	50.80	4.6	4.9	0		5
Pan	52.60					

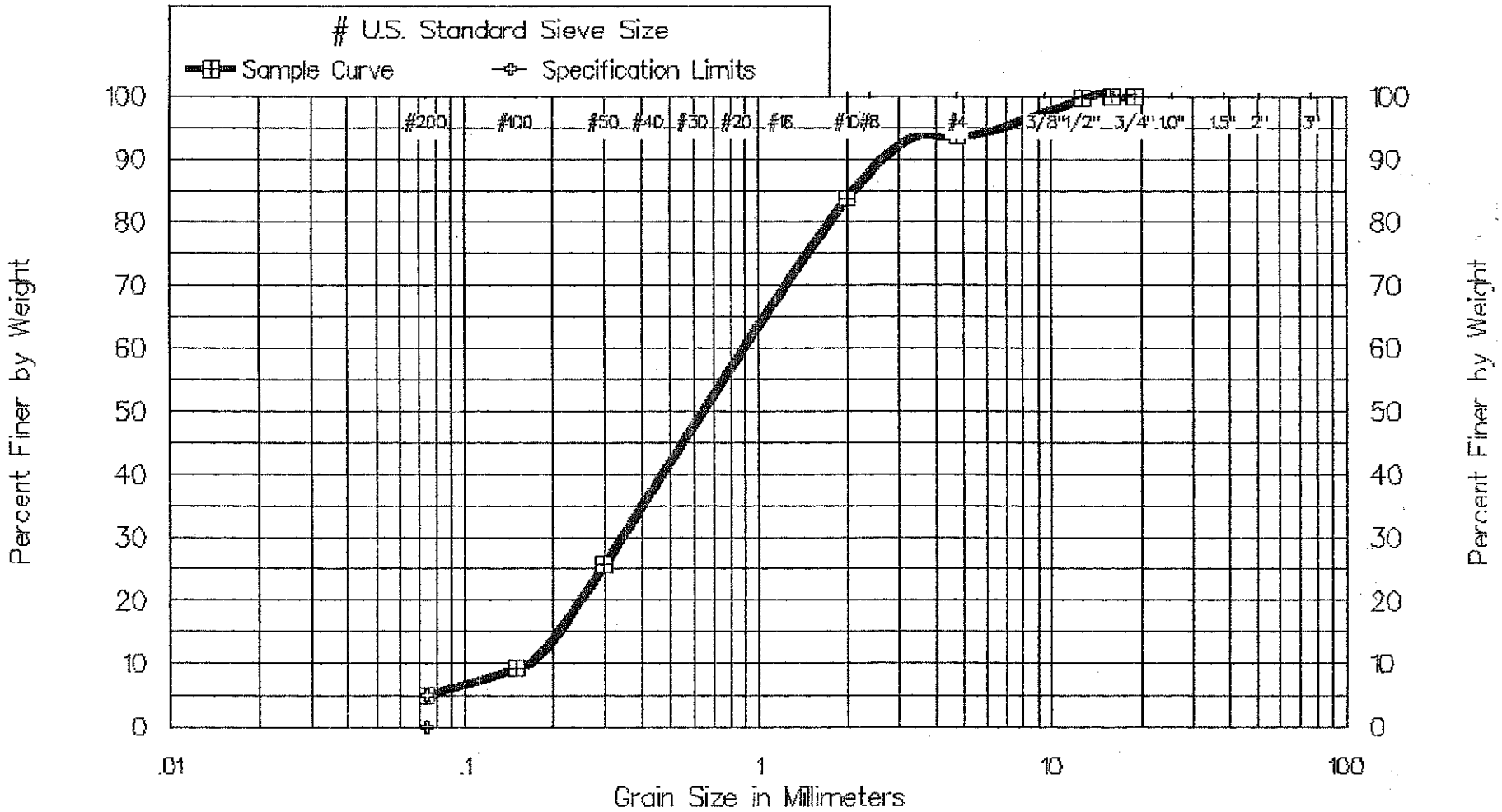
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9308B – Sand (Sample #22 30,000 cy – 31,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9308C*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 23 (31,500 Cy to 33,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.11/2/99
Tested By: A. Best — Date Tested: 11/11/99

ANALYSIS RESULTS — Sample Wt.(g) = 1111.00

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	8.00	0.7	99.3			
No. 4	65.60	5.9	93.4			
No. 10	92.60	8.3	85.0			
No. 50	660.20	59.4	25.6			
No. 100	205.80	18.5	7.1			
No. 200	45.60	4.1	3.0	0		5
Pan	33.00					

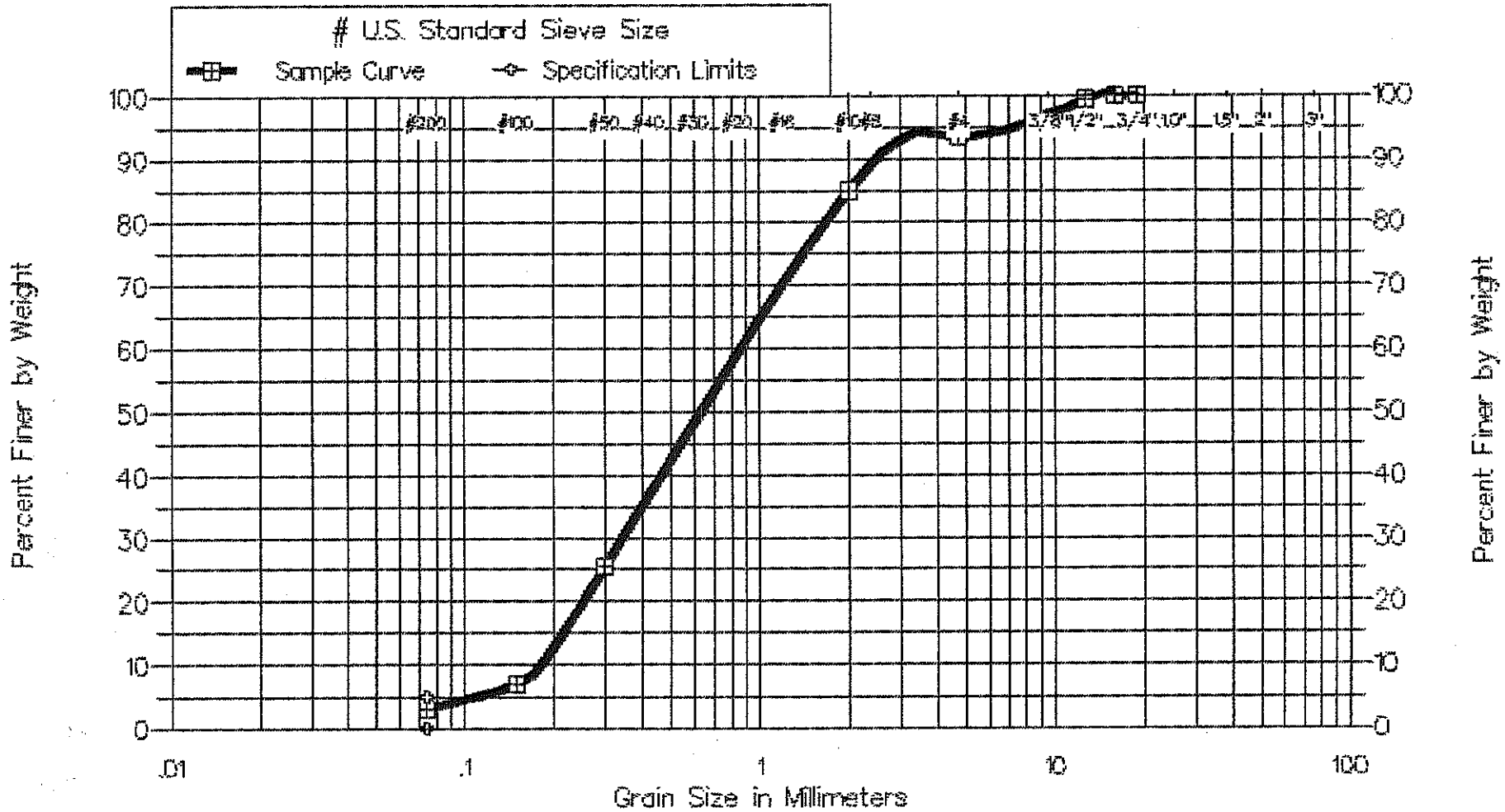
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA93080 – Sand (Sample #23 31,500 cy – 33,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9313A*

Project:	Foxboro Landfill - Foxboro, MA
Material:	Sand
Location:	Bag Sample provided by the Client
	Sample No. 24 (33,000 Cy to 34,500 Cy)
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer

Sampled By:	Client	Date Sampled:	Rec.11/9/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1142.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	54.80	4.8	95.2			
No. 10	93.60	8.2	87.0			
No. 50	667.80	58.4	28.6			
No. 100	233.40	20.4	8.2			
No. 200	53.60	4.7	3.5	0		5
Pan	38.80					

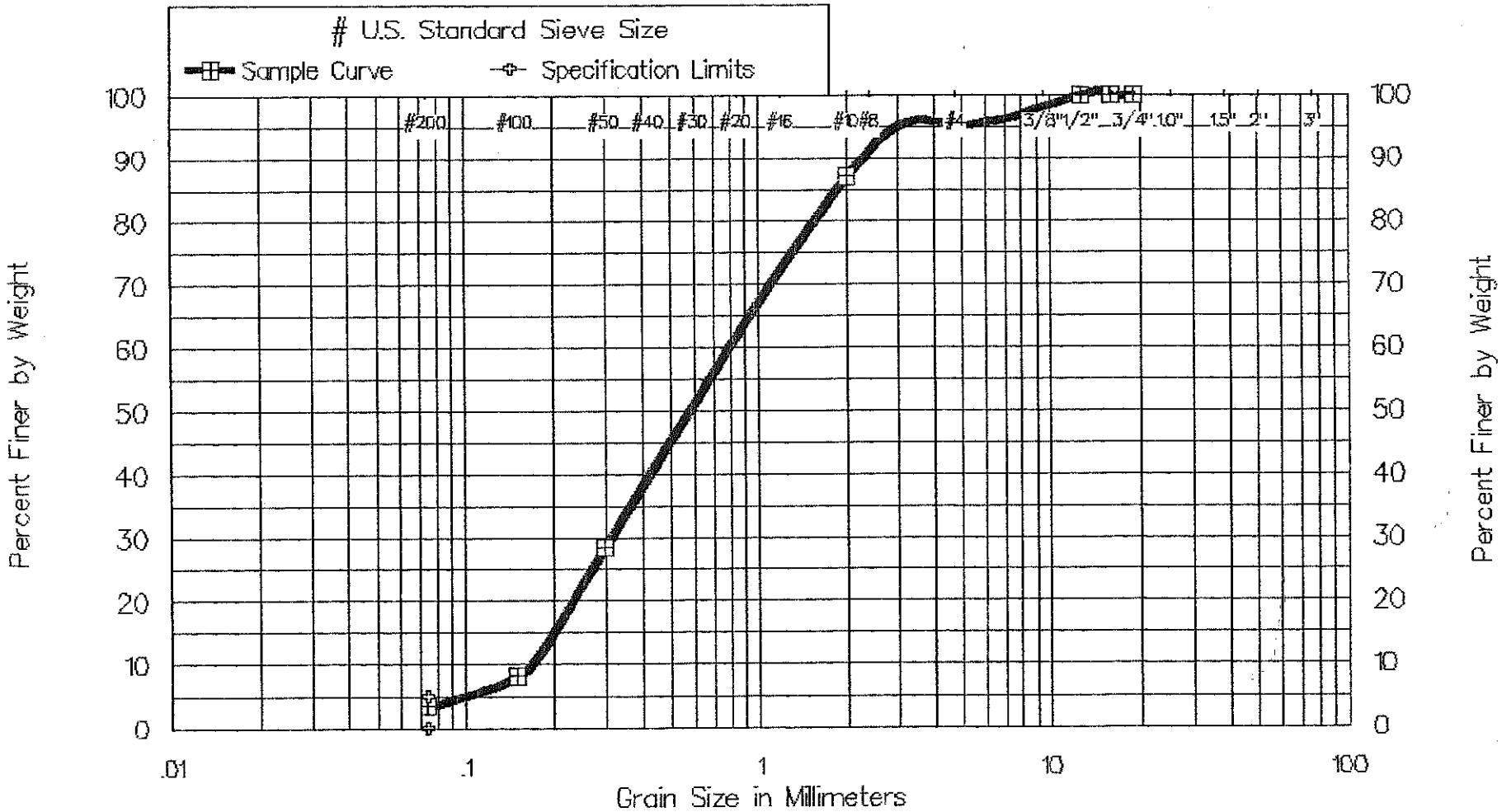
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9313A – Sand (Sample #24 33,000 cy – 34,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9313B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 25 (34,500 Cy to 36,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.11/9/99
Tested By: A. Best — Date Tested: 11/11/99

ANALYSIS RESULTS — Sample Wt.(g) = 1129.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	3.40	0.3	99.7			
No. 4	69.00	6.1	93.6			
No. 10	104.00	9.2	84.4			
No. 50	756.80	67.0	17.4			
No. 100	146.20	12.9	4.5			
No. 200	31.00	2.7	1.7	0		5
Pan	18.60					

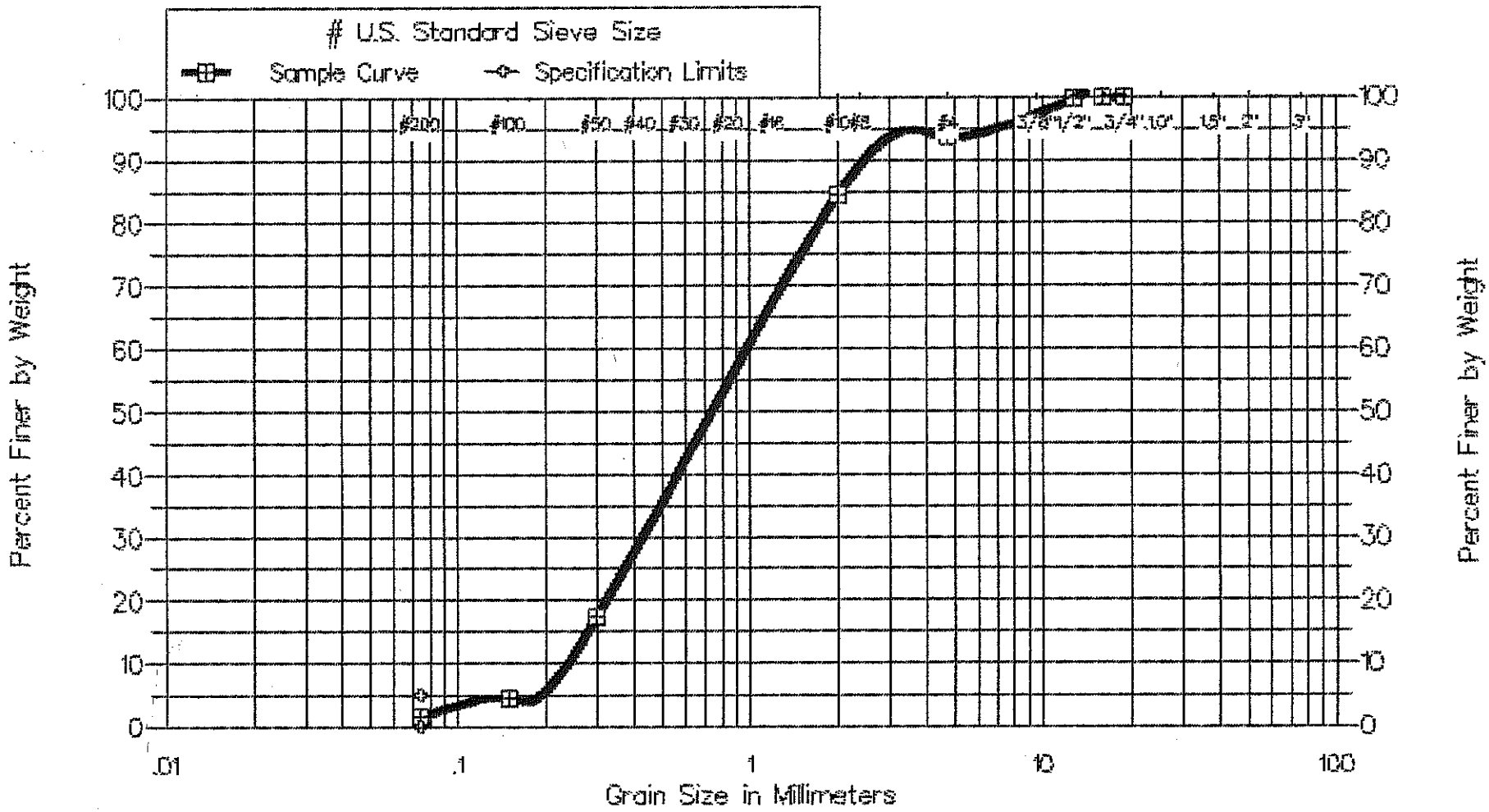
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. MA9313B - Sand (Sample #25 34,500 cy - 36,000cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9313C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client Sample No. 26 (36,000 Cy to 37,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.11/9/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1050.80

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	0.00	0.0	100.0		
No. 4	57.40	5.5	94.5		
No. 10	78.20	7.4	87.1		
No. 50	697.00	66.3	20.8		
No. 100	164.60	15.7	5.1		
No. 200	37.80	3.6	1.5	0	5
Pan	13.80				

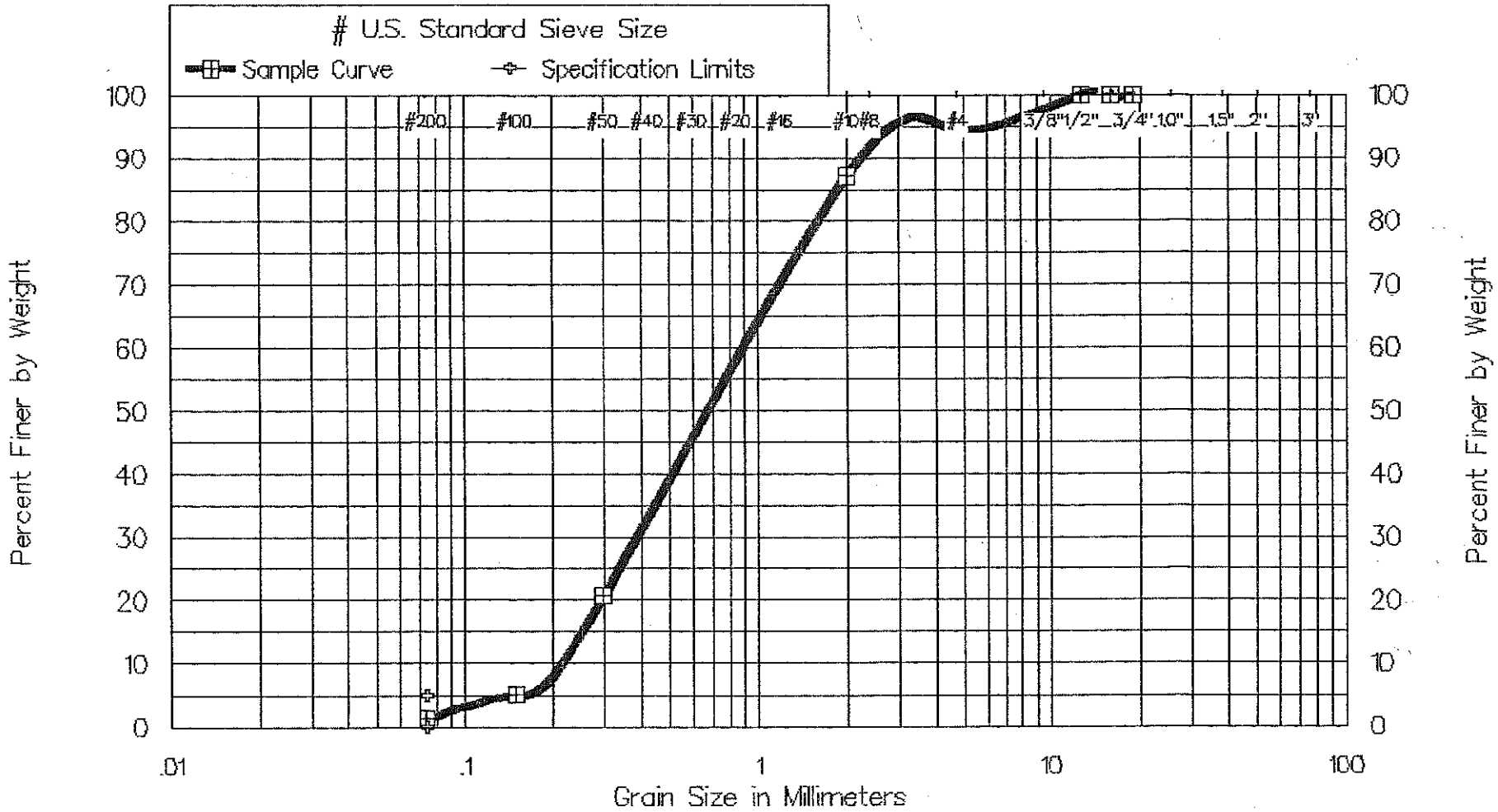
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9313C – Sand (Sample #26 36,000 cy to 37,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9314B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 27 (37,500 Cy to 39,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.11/10/99
Date Tested: 11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1163.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	79.40	6.8	93.2			
No. 10	116.00	10.0	83.2			
No. 50	755.20	64.9	18.3			
No. 100	156.60	13.5	4.8			
No. 200	35.60	3.1	1.8	0		5
Pan	19.00					

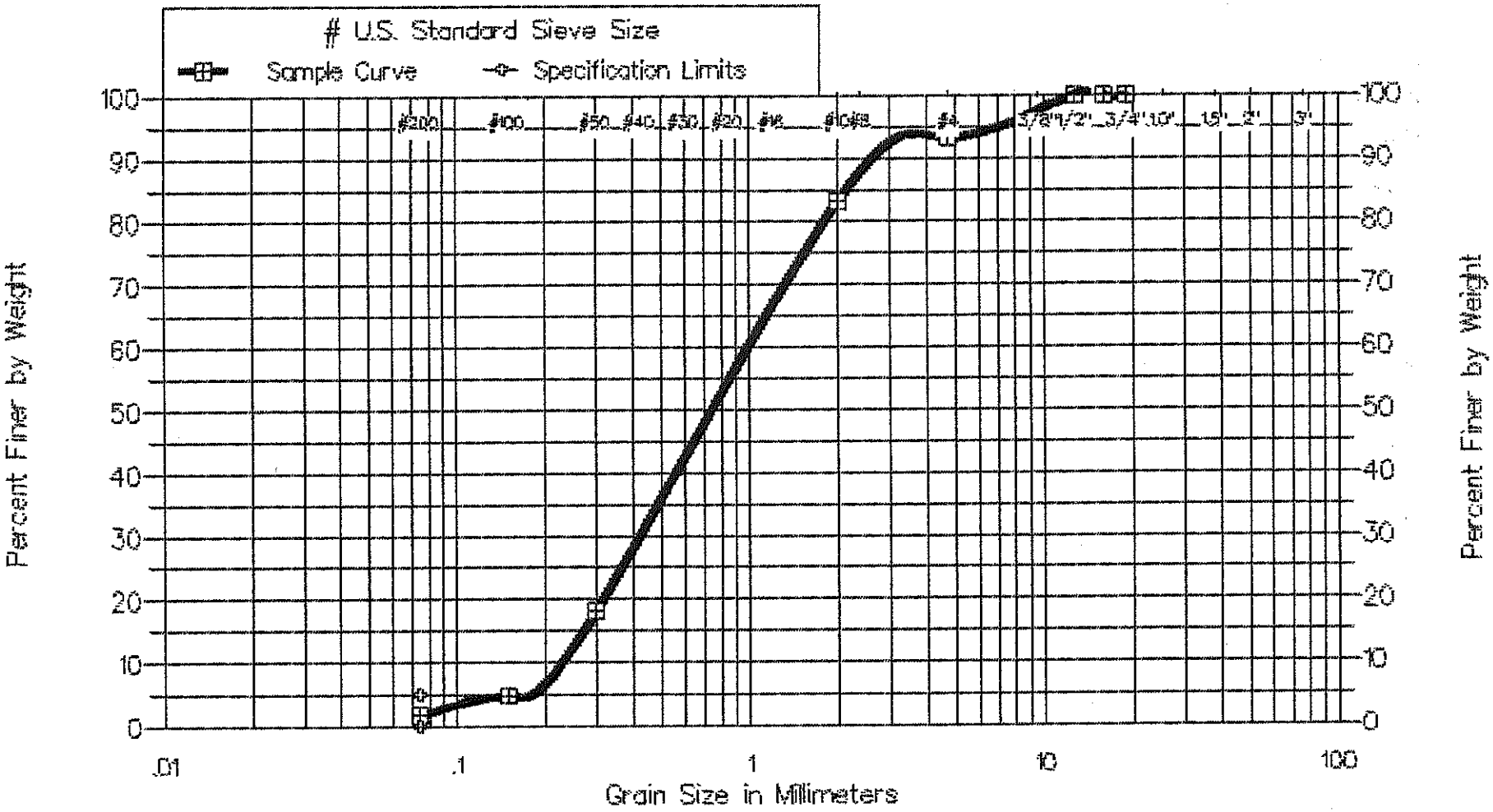
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9314B – Sand (Sample # 27 37,500 cy – 39,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9314C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 28 (39,000 Cy to 40,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.11/10/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1121.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	3.20	0.3	99.7			
No. 4	74.40	6.6	93.1			
No. 10	86.00	7.7	85.4			
No. 50	733.60	65.4	20.0			
No. 100	169.80	15.1	4.8			
No. 200	33.00	2.9	1.9	0		5
Pan	20.00					

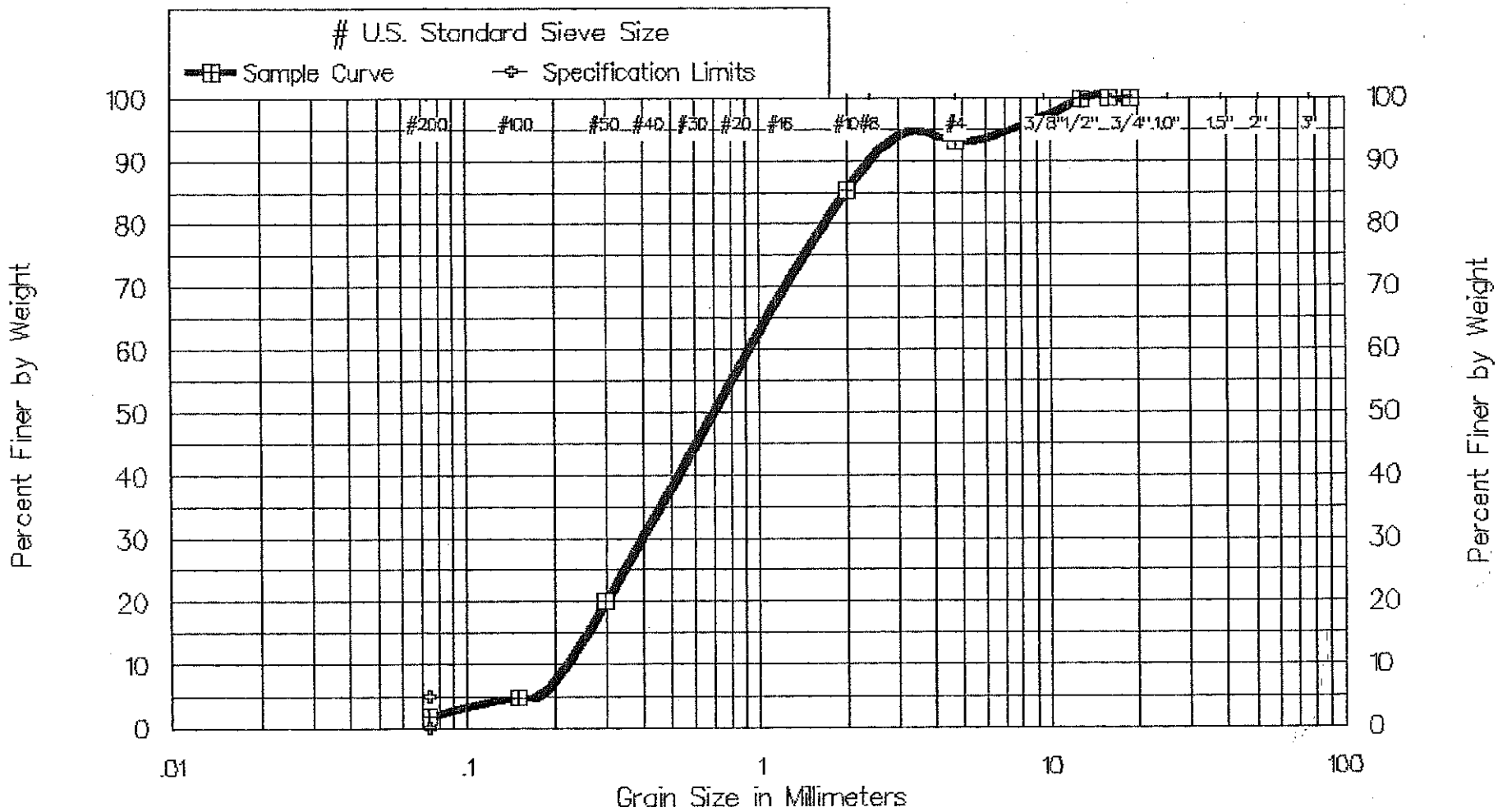
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9314C – Sand (Sample #28 39,000 cy – 40,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9315A*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 29 (40,500 Cy to 42,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec.11/10/99
Tested By:	A. Best	Date Tested:	11/11/99

ANALYSIS RESULTS

Sample Wt.(g) = 1144.20

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	9.20	0.8	99.2			
No. 4	72.80	6.4	92.8			
No. 10	90.00	7.9	85.0			
No. 50	745.80	65.2	19.8			
No. 100	173.00	15.1	4.7			
No. 200	32.20	2.8	1.9	0		5
Pan	19.00					

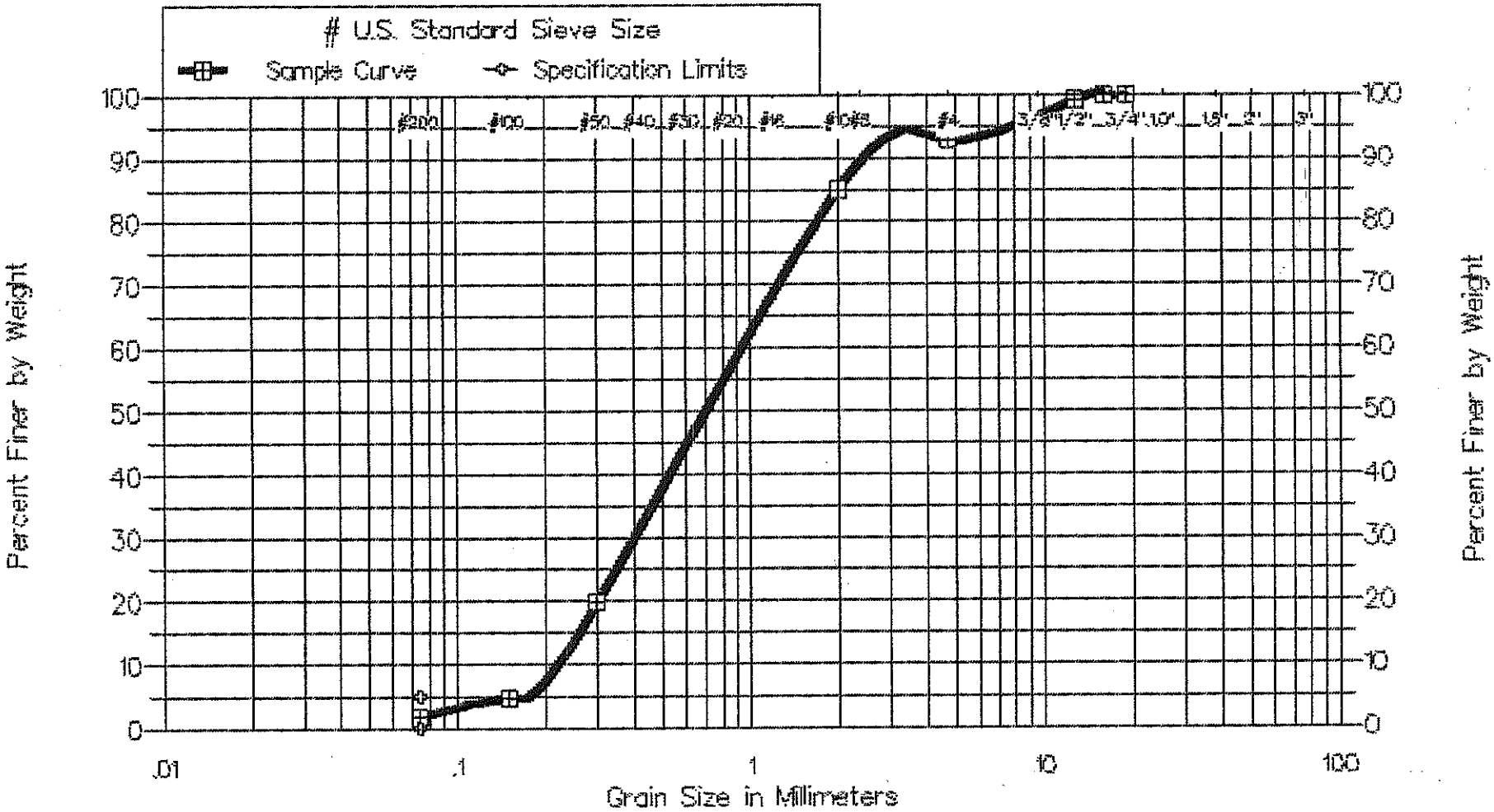
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9315A – Sand (Sample #29 40,500 cy – 42,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9316B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 30 (42,000 Cy to 43,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.11/12/99
Tested By: A. Best — Date Tested: 11/12/99

ANALYSIS RESULTS — Sample Wt.(g) = 1115.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	54.20	4.9	95.1			
No. 10	67.40	6.0	89.1			
No. 50	652.60	58.5	30.6			
No. 100	255.20	22.9	7.7			
No. 200	59.20	5.3	2.4	0		5
Pan	25.40					

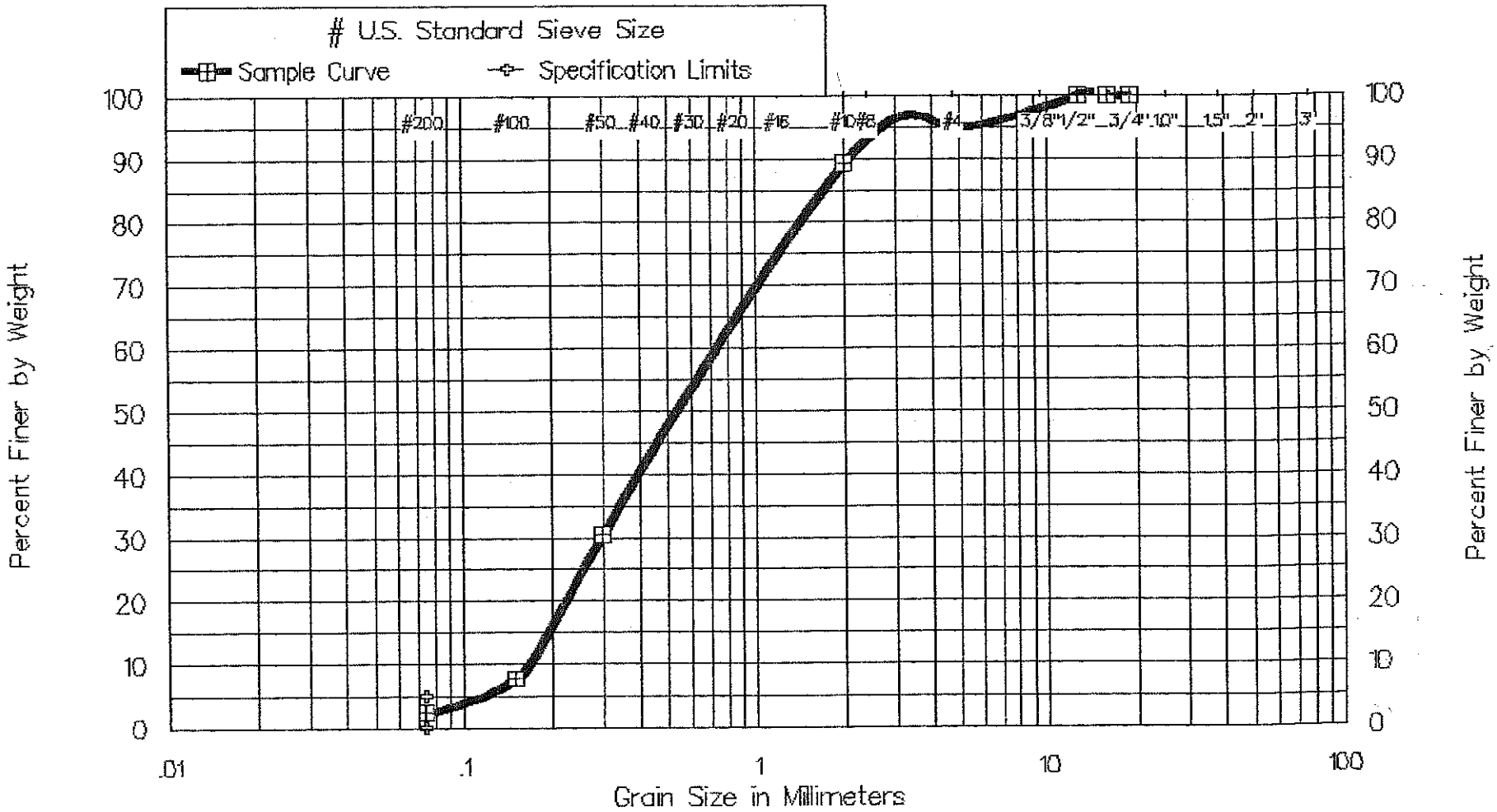
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9316B – Sand (Sample #30 42,000 cy – 43,500)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/13/99*
	Hampton, NH 03842	*Report No.:*	*MA9316C*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 31 (43,500 Cy to 45,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec.11/12/99
Tested By: A. Best — Date Tested: 11/12/99

ANALYSIS RESULTS — Sample Wt.(g) = 1244.56

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	8.39	0.7	99.3		
No. 4	65.20	5.2	94.1		
No. 10	47.60	3.8	90.3		
No. 50	755.20	60.7	29.6		
No. 100	275.80	22.2	7.4		
No. 200	47.60	3.8	3.6	0	5
Pan	31.20				

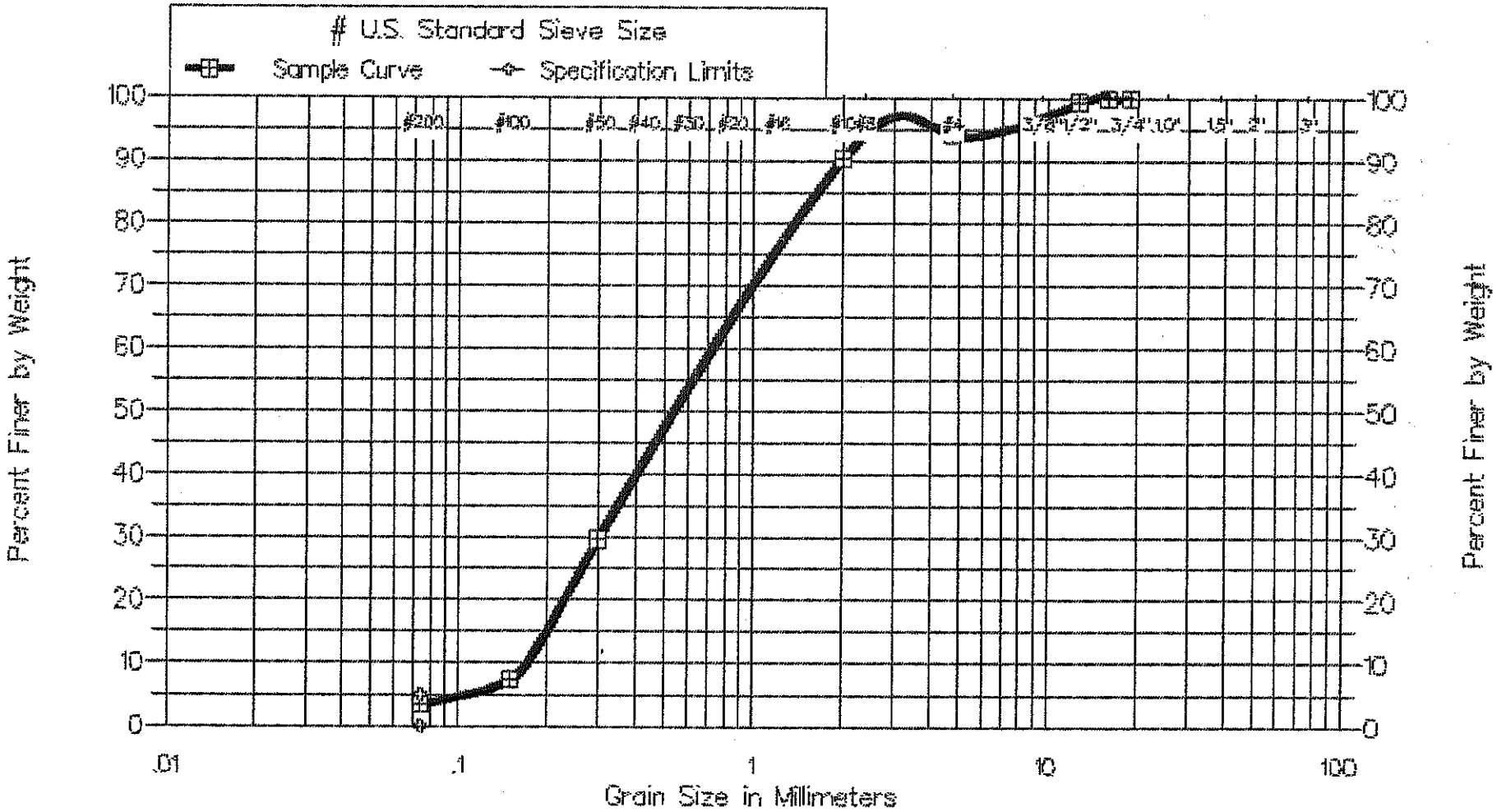
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9316C – Sample #31 43,500 cy – 45,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client: *Eirco Environmental*
P.O. Box 265
Hampton, NH 03842

Job No. *10650.010*
Date: *11/13/99*
Report No.: *MA9316D*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 32 (45,000 Cy to 46,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client
Tested By: A. Best

Date Sampled: Rec.11/12/99
Date Tested: 11/12/99

ANALYSIS RESULTS

Sample Wt.(g) = 1427.94

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	10.25	0.7	99.3		
No. 4	69.58	4.9	94.4		
No. 10	66.97	4.7	89.7		
No. 50	852.20	59.7	30.0		
No. 100	295.60	20.7	9.3		
No. 200	75.20	5.3	4.1	0	5
Pan	48.96				

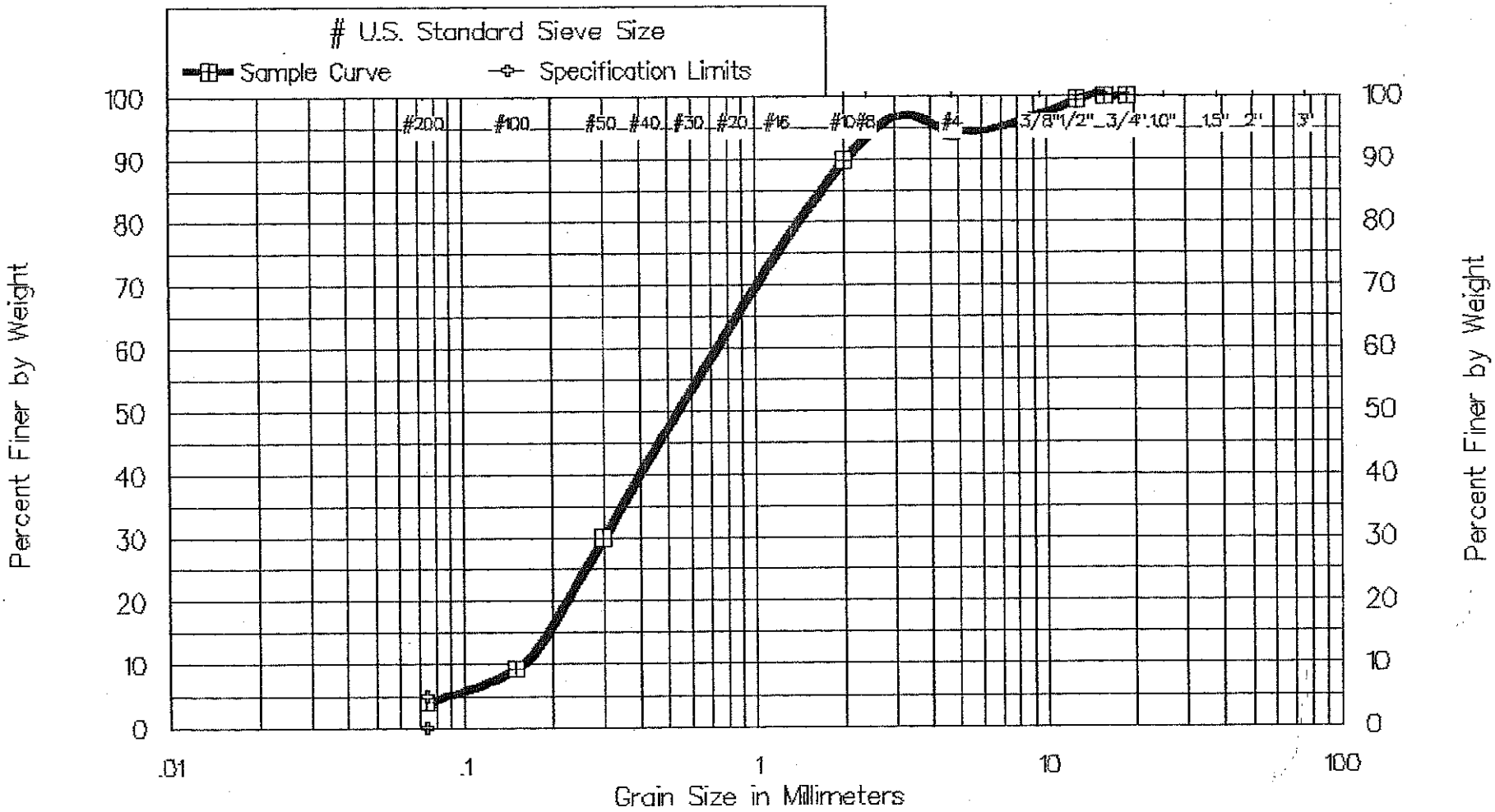
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Aaron Best
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 DatE: 11/13/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9316D – Sand (Sample #32 45,000 cy – 46,500 cy)

TIBBETTS ENGINEERING CORP.

☐ 3090 Acushnet Avenue, New Bedford, MA 02745, (508) 998-3700
☐ 303 Rodman Street, Fall River, MA 02721, (508) 676-1710
☑ 716 County Street, Taunton, MA 02780, (508) 822-6934

LETTER OF TRANSMITTAL

DATE	JOB NO.
12/3/99	10650.010

ATTENTION: Glen Reagan

RE: Foxboro Landfill

TO Eirco Environmental
P.O. Box 265
Hampton, NH 03842

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1		2	Testing Logs (Sand & Topsoil)
1		7	Loam Grainsize Analysis GS9319A+B, GS9320 A,B, GS9321A,B GS9323A
1		7	Loam Analysis (Organic's & PH) LAG319A,B LA9320A,B, GS9321A,B GS9323A
1		8	Permeability Test Reports PE9321A, PE9321C,E,G, PE9323,C,E,G,
1		16	Washed Sieve Analysis Reports MA9319A- MA9320B/PE9328B

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

SHOP DRAWING REVIEW

ENGINEER'S REVIEW	RESPONSE REQUIRED OF CONTRACTOR
Approved ☐ Approved As Noted ☑ Not Approved ☐ Comments Attached ☑	Confirm ☐ Resubmit ☐

The Engineer's review of this shop drawing is limited to the review of dimensions, equipment and materials as presented in the Contract Plans, specifications and for design concept. This review does not relieve the Contractor from errors or omissions in the submittal or from the Contractor's responsibility of approving any deviations from the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences or procedures of construction and performing his work in a safe manner.
CAMP DRESSER & McKEE, INC.

By _____ Date 12-27-99

COPY TO _____

SIGNED: _____

If enclosures are not as noted, kindly notify us at once.

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

JOB NO: 10650.010
DATE: 12/3/99

Drainage/or Gas Venting Sand Testing Log				
Sample No.	**Permeability Identification No.**	**Grain Size Analysis Identification No.**	**Date Received in Lab**	**Cubic Yards of Sand Represented**
32		MA9319A	11/15/99	46500-48000
33	PE9321A	MA9321A	11/15/99	48000-49500
34		MA9321B	11/15/99	49500-51000
35	PE9321C	MA9321C	11/16/99	51000-52500
36		MA9321D	11/16/99	52500-54000
37	PE9321E	MA9321D	11/17/99	54000-55500
38		MA9321F	11/17/99	55500-57000
39	PE9321G	MA9321G	11/17/99	57000-58500
40		MA9323B	11/19/99	58500-60000
41	PE9323C	MA9323C	11/19/99	60000-61500
42		MA9323D	11/19/99	61500-63000
43	PE9323E	MA9323E	11/19/99	63000-64500
44		MA9323F	11/19/99	64500-66000
45	PE9323G	MA9323G	11/23/99	66000-67500
46		MA9328A	11/23/99	67500-69000
47	PE9328B	MA9328B	11/23/99	69000-70500

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/27/99
Report No. PE9321A

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 33 (48,000 CY – 49,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 15,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321A = 1.4X10E-2 cm/sec @ 91.8% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/27/99
Report No. PE9321C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 35 (51,000 CY – 52,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 16,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321C = 7.8X10E-3 cm/sec @ 94.9% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/29/99
Report No. PE9321E

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 37 (54,000 CY – 55,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 17,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321E = 1.2X10E-2 cm/sec @ 94.1% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/29/99
Report No. PE9321G

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 39 (57,000 CY – 58,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 17,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321E = 1.1X10E-2 cm/sec @ 92.6% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. PE9323C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 41 (60,000 CY – 61,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 19,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9323C = 1.7X10E-2 cm/sec @ 88.7% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. PE9323E

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 43 (63,000 CY – 64,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 19,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9323E = 7.7X10E-3 cm/sec @ 96.6% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. PE9323G

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 45 (66,000 CY – 67,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 23,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9323E = 1.4X10E-2 cm/sec @ 87.6% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. PE9328B

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 47 (69,000 CY – 70,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 23,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321E = 7.9 X10E-3 cm/sec @ 95.8% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. PE9328B

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 47 (69,000 CY – 70,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 23,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9321E = 5.3 X10E-3 cm/sec @ 93.4% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Michael Finglas

Walter P. Galuska
Laboratory Supervisor

Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9319A*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 32 (46,500 Cy to 48,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/15/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1627.85

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	10.25	0.6	99.4			
No. 4	85.27	5.2	94.1			
No. 10	90.27	5.5	88.6			
No. 50	987.56	60.7	27.9			
No. 100	301.25	18.5	9.4			
No. 200	90.23	5.5	3.9	0		5
Pan	63.02					

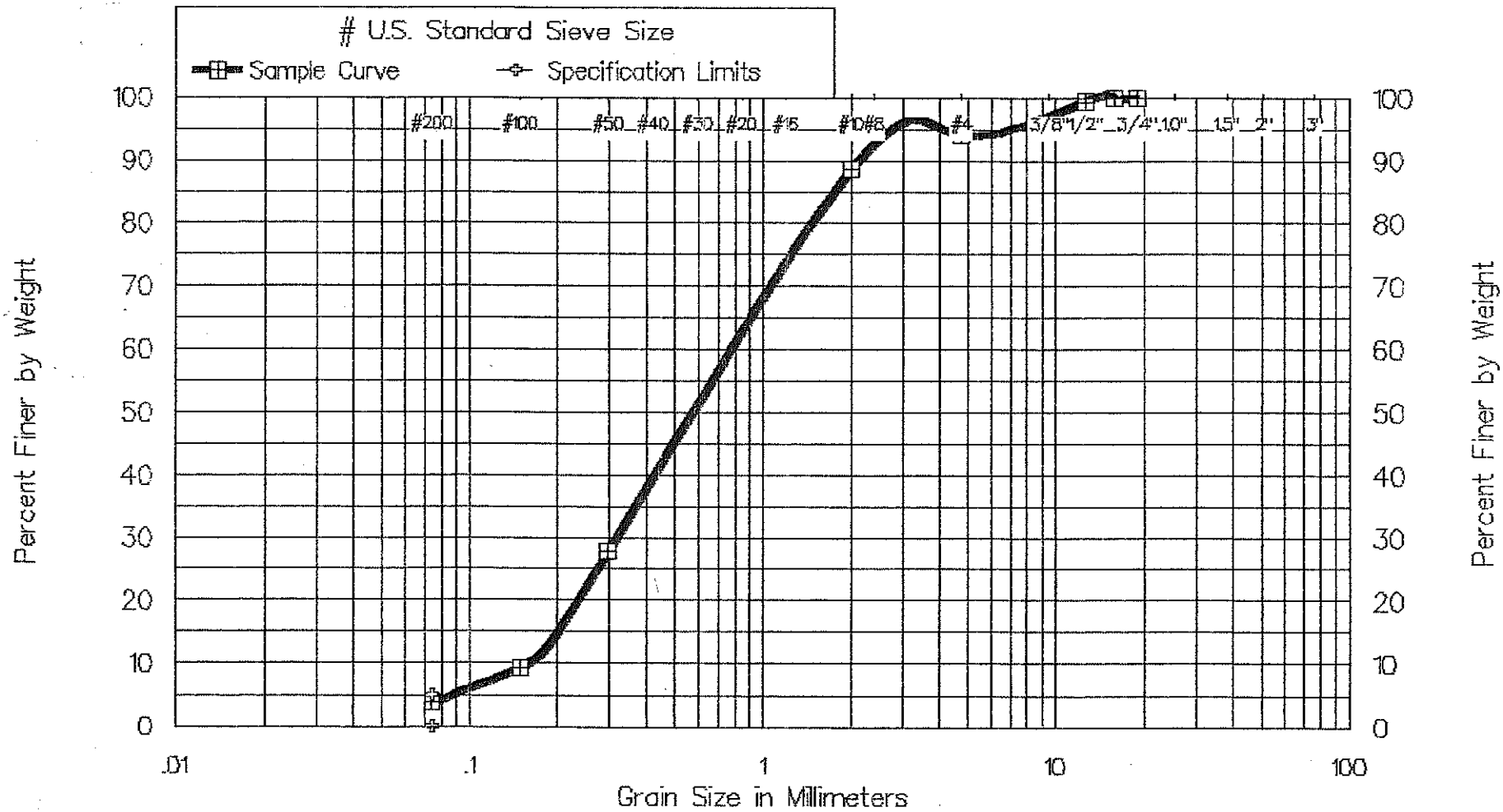
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9319A – Sand (Sample #32 (46,500 cy – 48,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321A*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 33 (48,000 Cy to 49,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/15/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1776.50

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	52.40	2.9	97.1			
No. 10	77.60	4.4	92.7			
No. 50	1061.80	59.8	32.9			
No. 100	460.00	25.9	7.0			
No. 200	106.00	6.0	1.1	0		5
Pan	19.10					

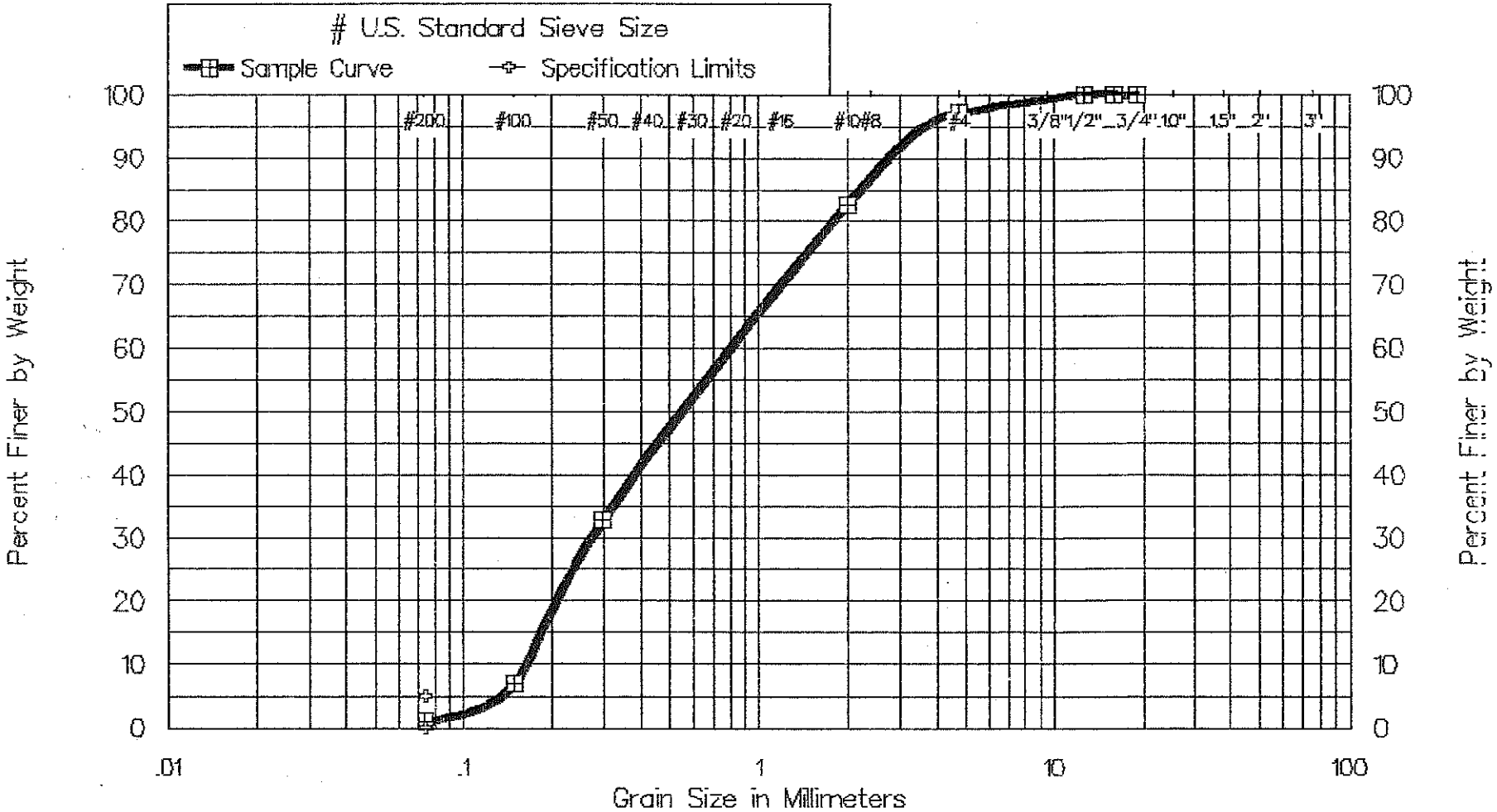
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using ASTM D–422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9321A – Sand (Sample #33 (48,000 cy – 49,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7311

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 34 (49,500 Cy to 51,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/15/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1956.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	4.00	0.2	99.8			
No. 4	66.60	3.4	96.4			
No. 10	85.00	4.3	92.0			
No. 50	1198.40	61.3	30.8			
No. 100	436.20	22.3	8.5			
No. 200	89.60	4.6	3.9	0		5
Pan	76.60					

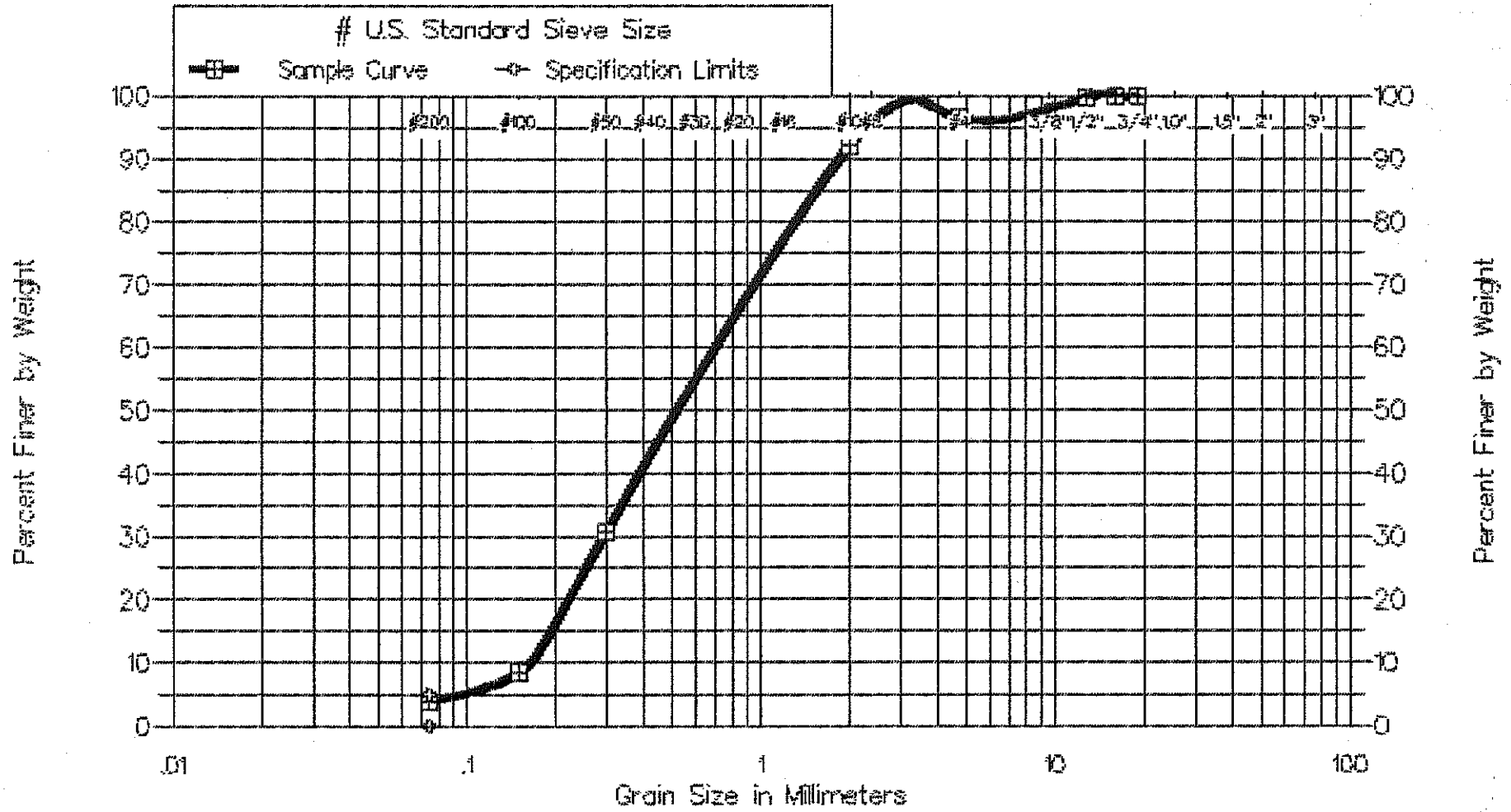
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill -- Foxboro MA
Report No. MA9321B -- Sand (Sample #34 49,500 cy - 51,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 35 (51,000 Cy to 52,500 Cy		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/16/99
Tested By:	M.Finglas	Date Tested:	11/19/99

ANALYSIS RESULTS

Sample Wt.(g) = 1419.00

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	55.20	3.9	96.1			
No. 10	75.00	5.3	90.8			
No. 50	806.40	56.8	34.0			
No. 100	356.40	25.1	8.9			
No. 200	75.20	5.3	3.6	0		5
Pan	50.80					

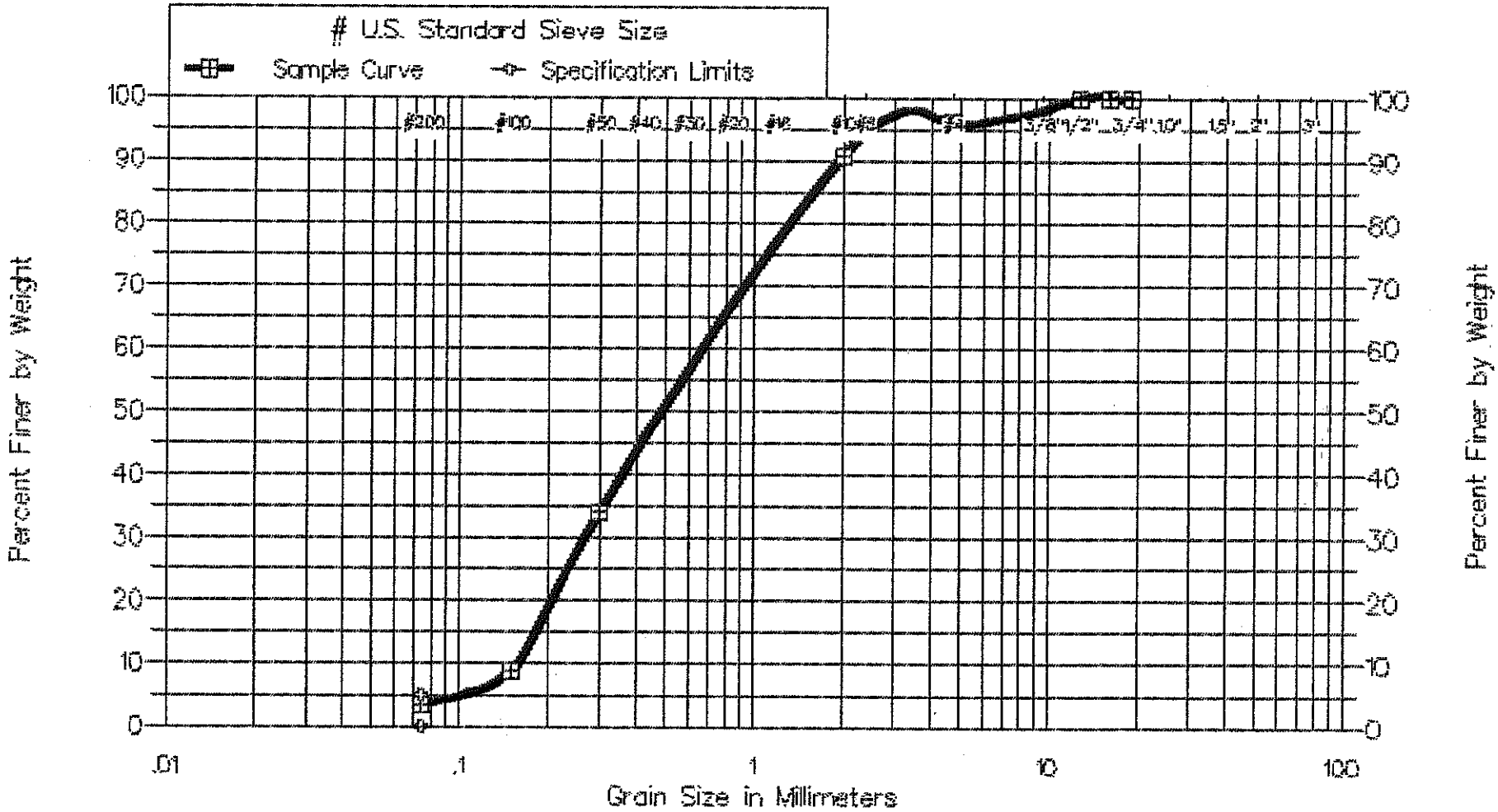
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9321C – Sand (Sample #35 51,000 cy – 52,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321D*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 36 (52,500 Cy to 54,000 Cy
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/16/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1761.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	63.00	3.6	96.4			
No. 10	95.20	5.4	91.0			
No. 50	1057.60	60.0	31.0			
No. 100	392.80	22.3	8.7			
No. 200	90.80	5.2	3.5	0		5
Pan	62.00					

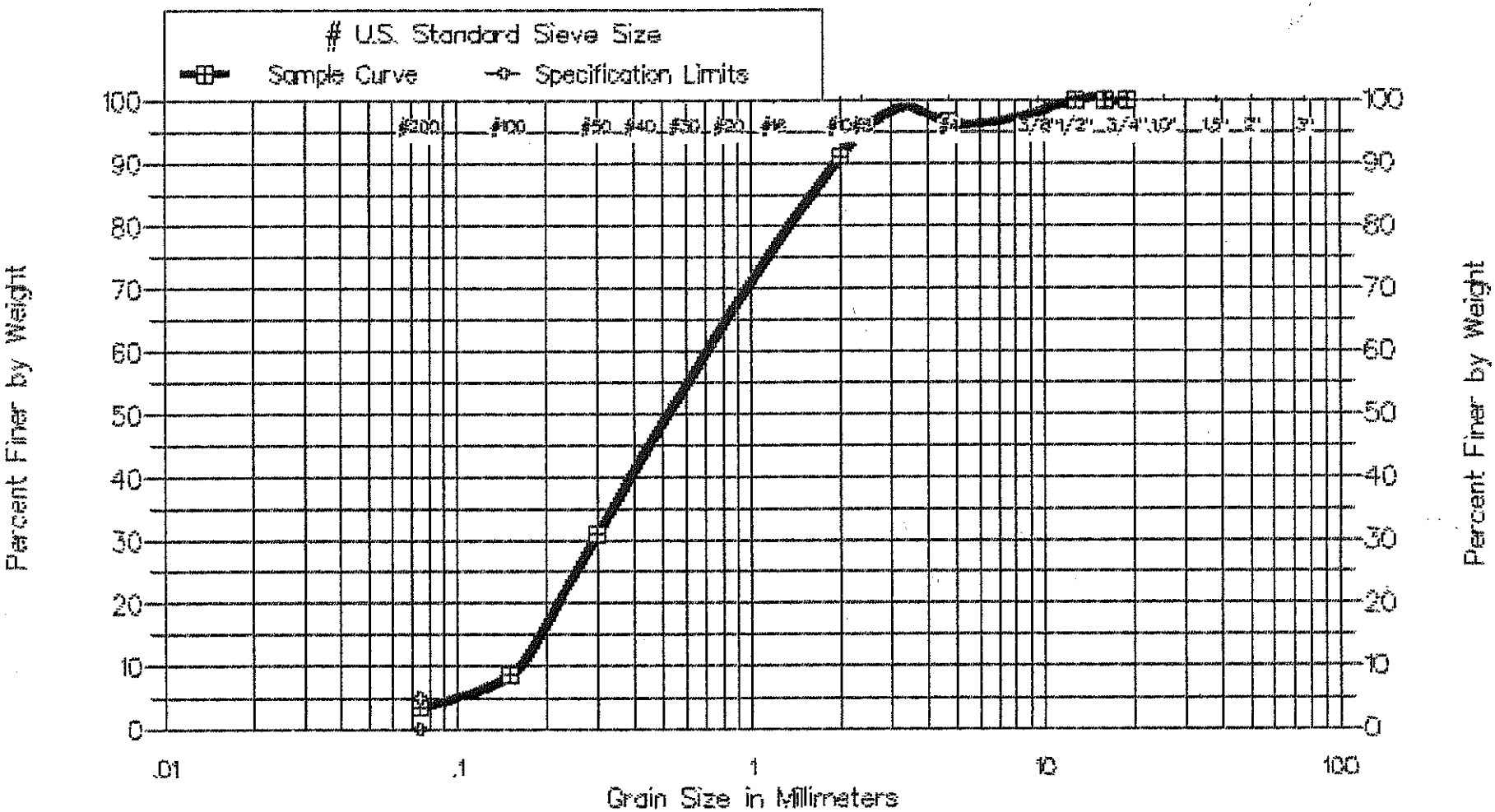
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. MA9321D - Sand (Sample #36 52,500 cy - 54,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321E*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 37 (54,000 Cy to 55,500 Cy
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/16/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1701.25

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	25.60	1.5	98.5		
No. 4	63.00	3.7	94.8		
No. 10	95.20	5.6	89.2		
No. 50	987.45	58.0	31.2		
No. 100	378.25	22.2	8.9		
No. 200	90.80	5.3	3.6	0	5
Pan	60.95				

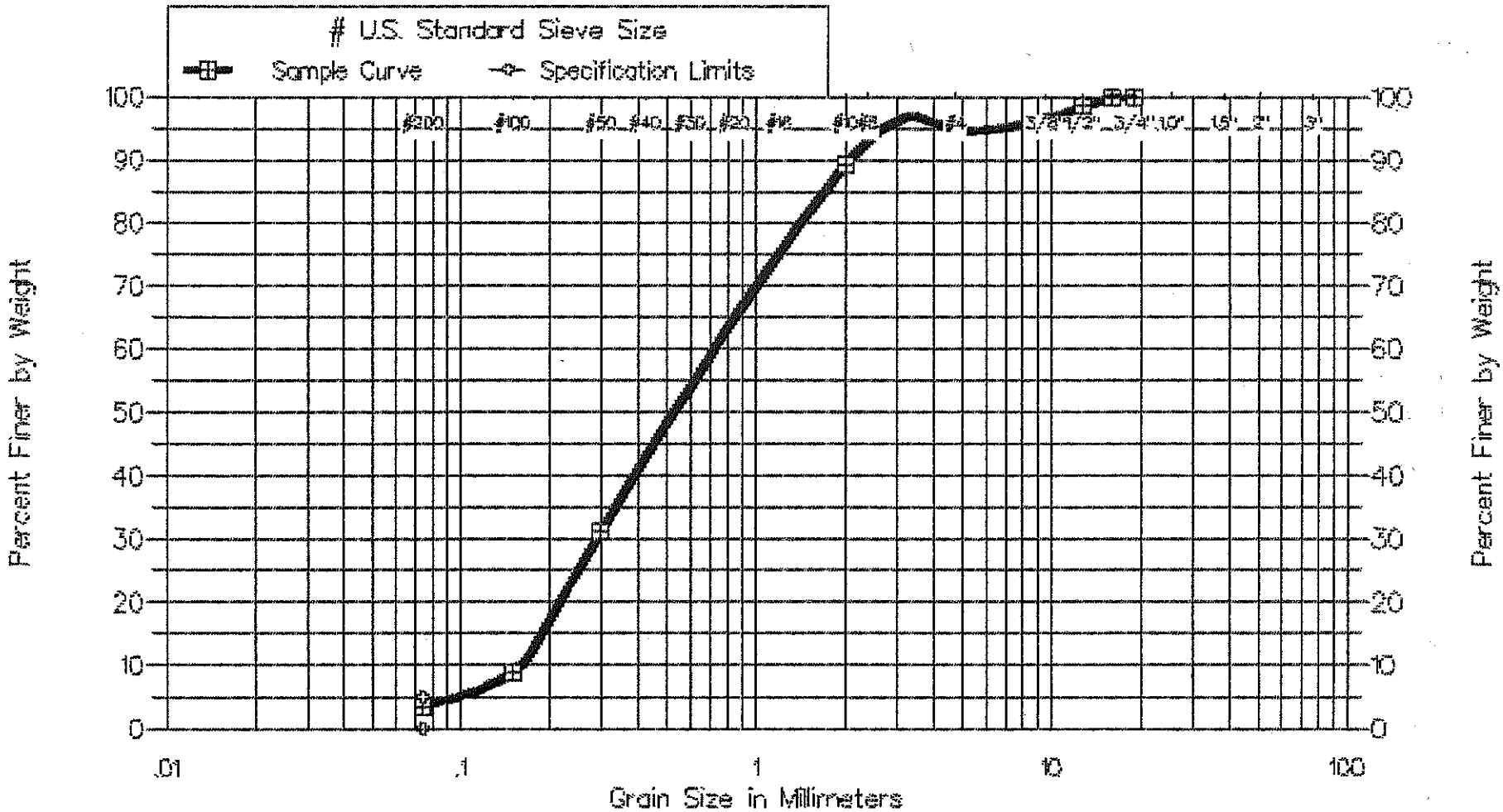
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9321E – Sand (Sample #37 54,000 cy – 55,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321F*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 38 (55,500 Cy to 57,000 Cy
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/17/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 2059.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	86.80	4.2	95.8			
No. 10	130.40	6.3	89.5			
No. 50	1197.00	58.1	31.3			
No. 100	417.40	20.3	11.1			
No. 200	133.60	6.5	4.6	0		5
Pan	94.20					

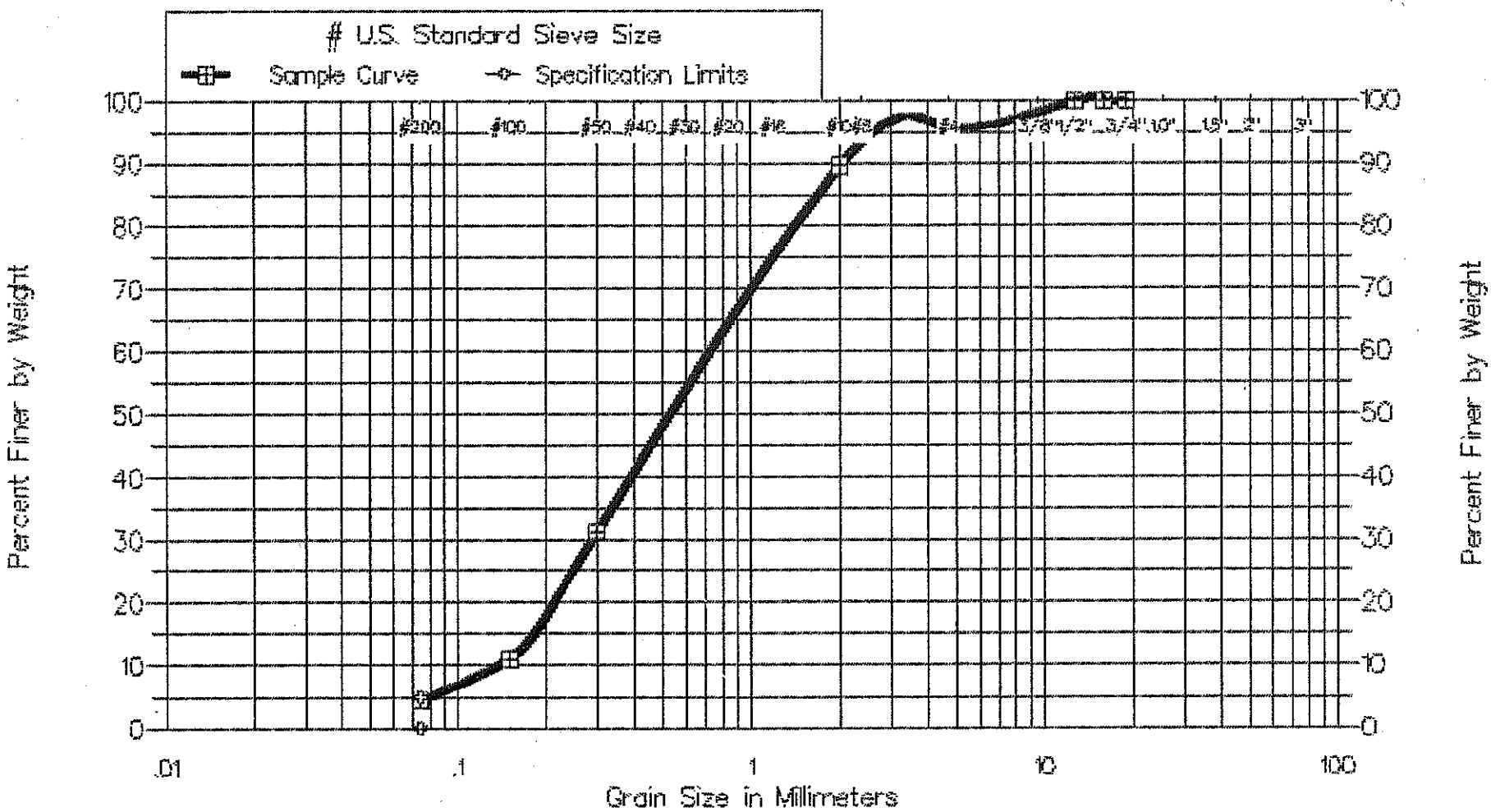
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. MA9321F - Sand (Sample #38 55,500 cy - 57,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/19/99*
	Hampton, NH 03842	*Report No.:*	*MA9321G*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 39 (57,000 Cy to 58,500 Cy
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/17/99
Tested By: M.Finglas — Date Tested: 11/19/99

ANALYSIS RESULTS — Sample Wt.(g) = 1989.70

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	0.00	0.0	100.0		
No. 4	86.80	4.4	95.6		
No. 10	119.80	6.0	89.6		
No. 50	1067.20	53.6	36.0		
No. 100	525.60	26.4	9.6		
No. 200	113.89	5.7	3.8	0	5
Pan	76.41				

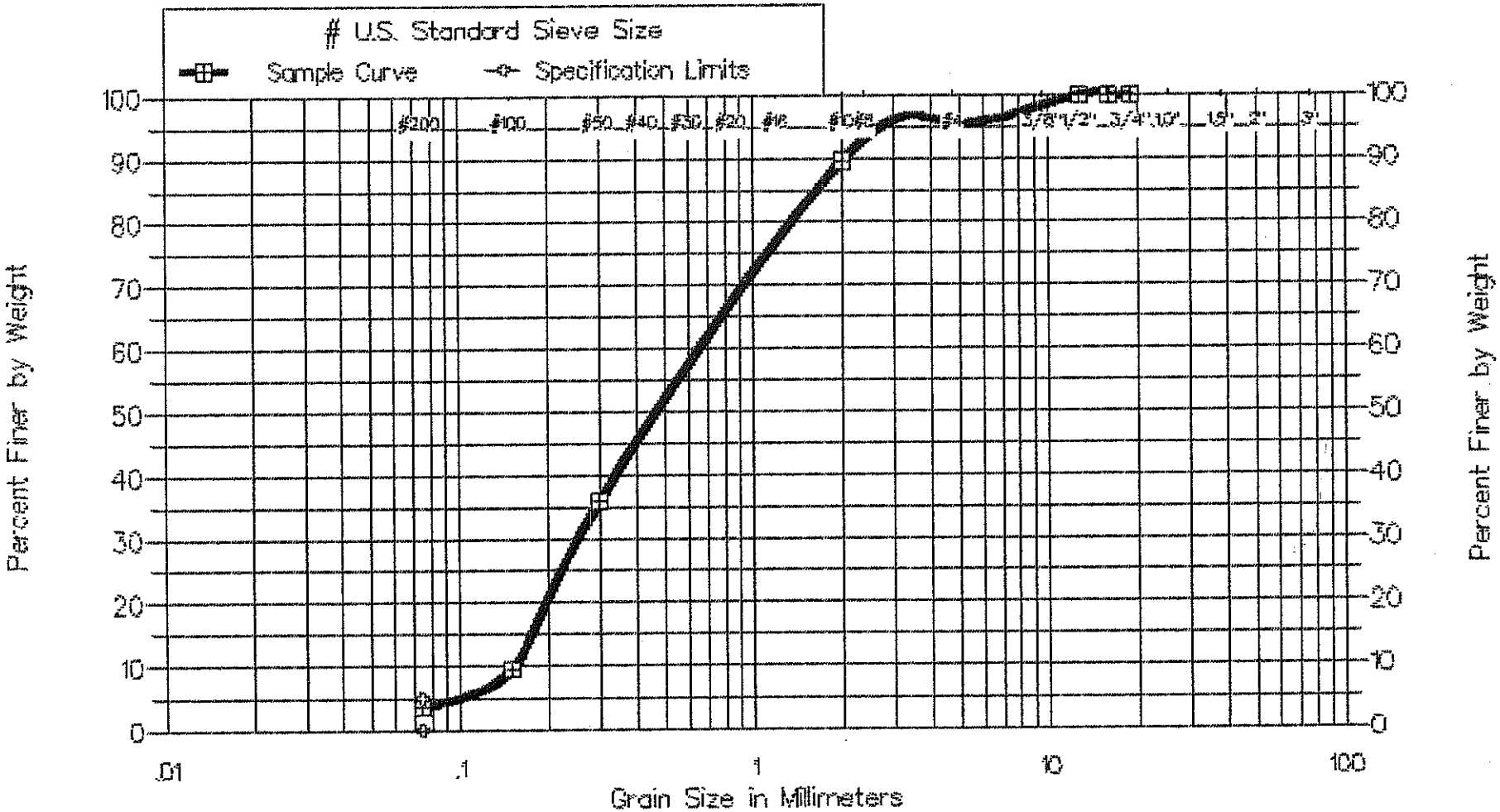
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9321G – Sand (Sample #39 57,000 cy – 58,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/22/99*
	Hampton, NH 03842	*Report No.:*	*MA9323B*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 40 (58,500 Cy to 60,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/19/99
Tested By: M.Finglas — Date Tested: 11/22/99

ANALYSIS RESULTS — Sample Wt.(g) = 1907.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	19.89	1.0	99.0			
No. 4	86.80	4.6	94.4			
No. 10	119.80	6.3	88.1			
No. 50	998.25	52.3	35.8			
No. 100	498.17	26.1	9.7			
No. 200	110.98	5.8	3.9	0		5
Pan	73.91					

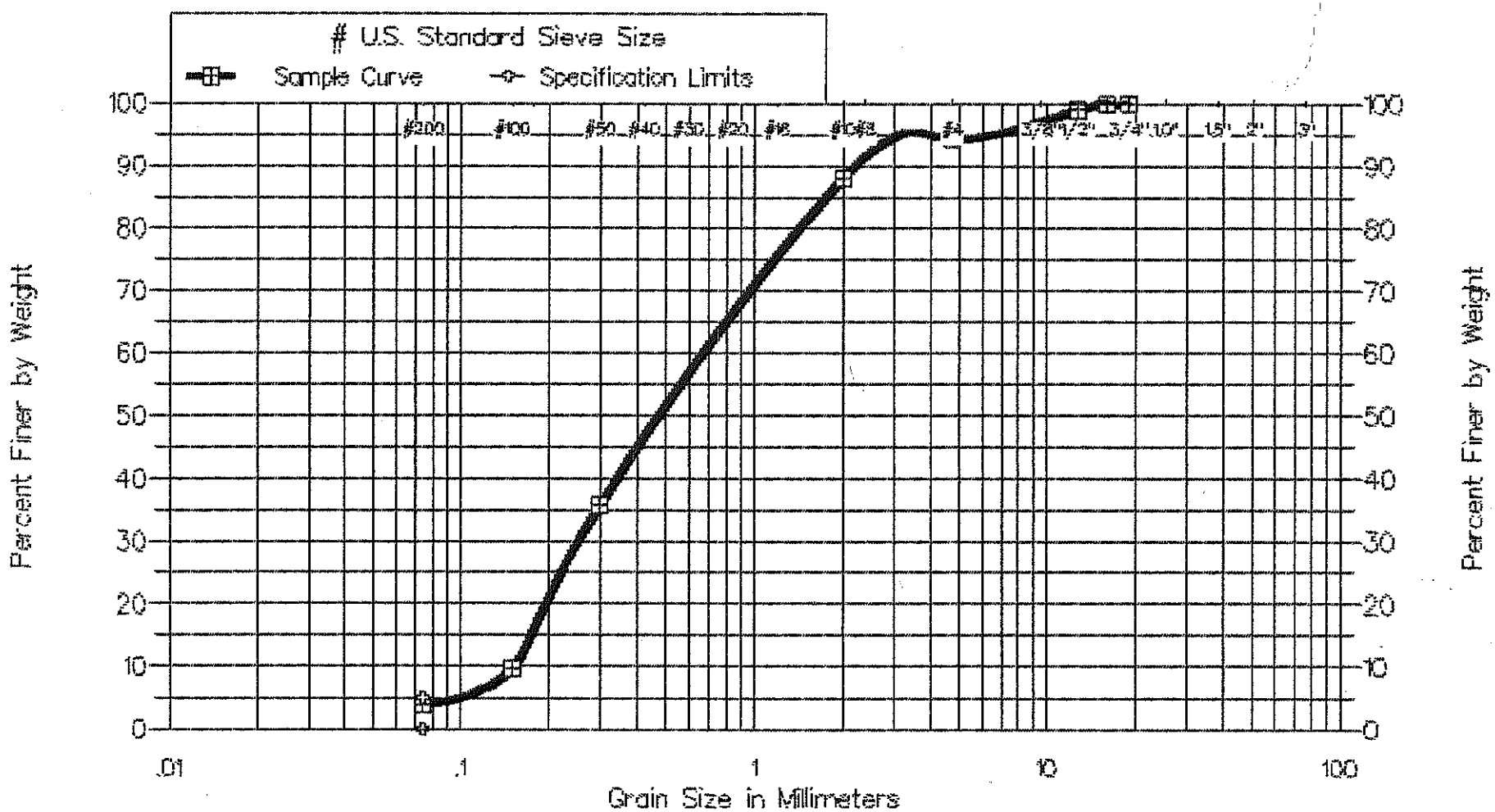
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/19/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA323B – Sand (Sample #40 (58,500 cy – 60,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/22/99*
	Hampton, NH 03842	*Report No.:*	*MA9323C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client Sample No. 41 (60,000 Cy to 61,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/19/99
Tested By:	M.Finglas	Date Tested:	11/22/99

ANALYSIS RESULTS

Sample Wt.(g) = 2197.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	28.98	1.3	98.7			
No. 4	97.89	4.5	94.2			
No. 10	129.87	5.9	88.3			
No. 50	1147.60	52.2	36.1			
No. 100	536.40	24.4	11.7			
No. 200	198.40	9.0	2.7	0		5
Pan	58.46					

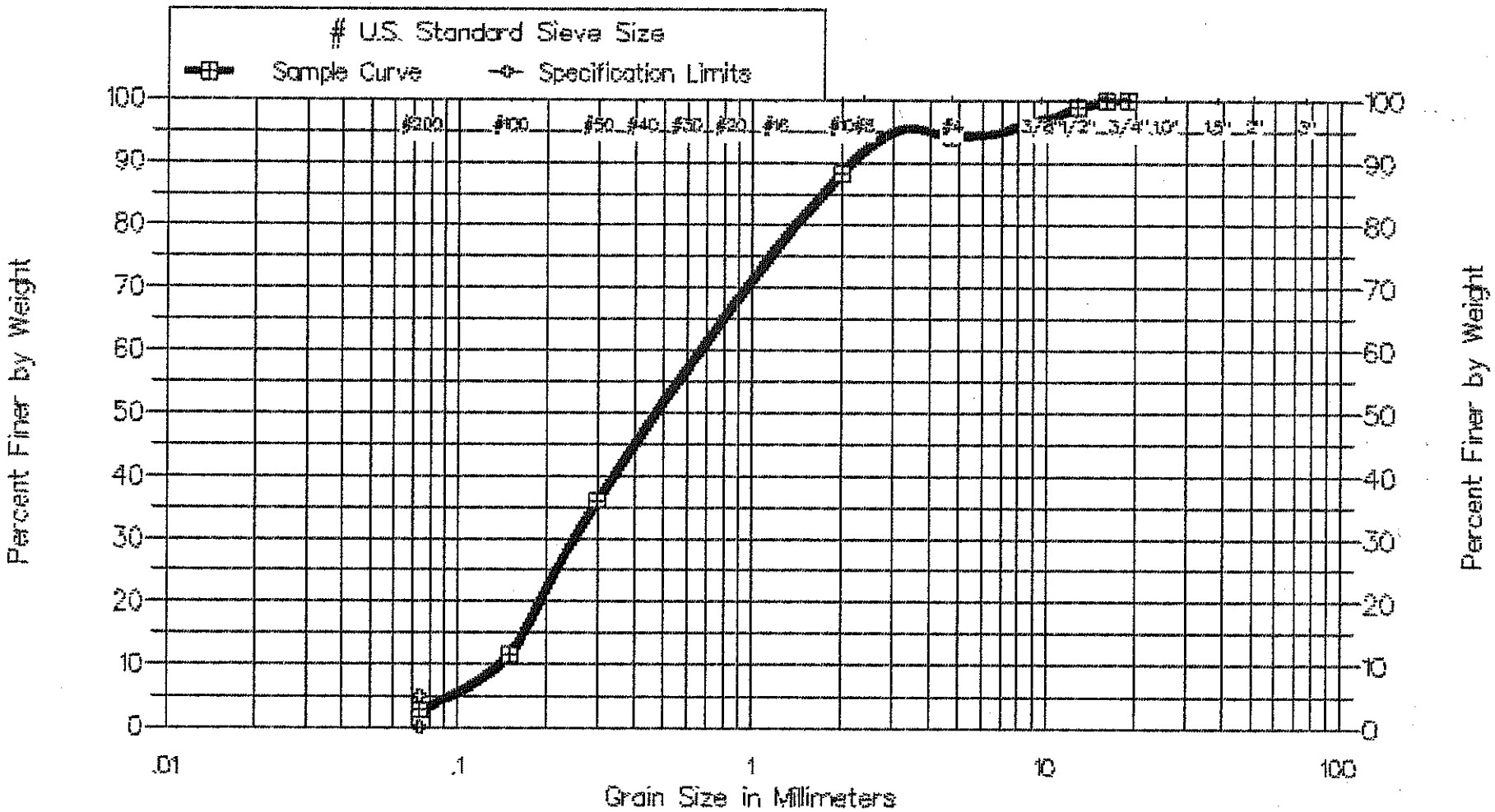
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/22/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. MA9323C - Sand (Sample #41 (60,000 cy - 61,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/22/99*
	Hampton, NH 03842	*Report No.:*	*MA9323D*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 42 (61,500 Cy to 63,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/19/99
Tested By: M.Finglas — Date Tested: 11/23/99

ANALYSIS RESULTS — Sample Wt.(g) = 3419.00

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	259.63	7.6	92.4			
No. 10	458.90	13.4	79.0			
No. 50	1587.60	46.4	32.5			
No. 100	689.50	20.2	12.4			
No. 200	278.65	8.2	4.2	0		5
Pan	73.91					

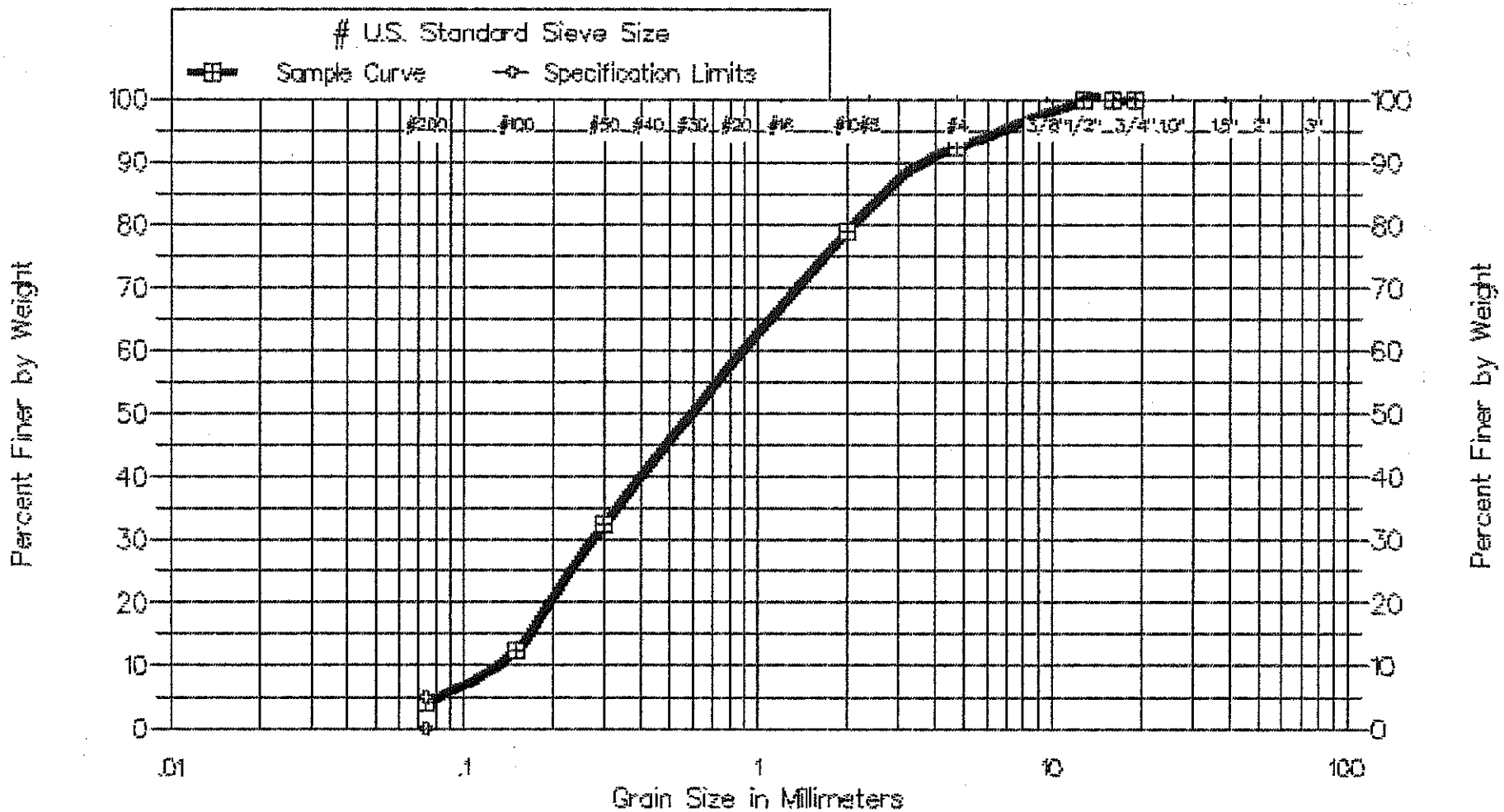
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/22/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9323D – Sand (Sample #42 61,500 cy – 63,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/23/99*
	Hampton, NH 03842	*Report No.:*	*MA9323E*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 43 (63,000 Cy to 64,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/19/99
Tested By:	M.Finglas	Date Tested:	11/23/99

ANALYSIS RESULTS — Sample Wt.(g) = 1872.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	0.00	0.0	100.0		
No. 4	45.69	2.4	97.6		
No. 10	178.90	9.6	88.0		
No. 50	1198.70	64.0	24.0		
No. 100	271.37	14.5	9.5		
No. 200	135.60	7.2	2.3	0	5
Pan	58.46				

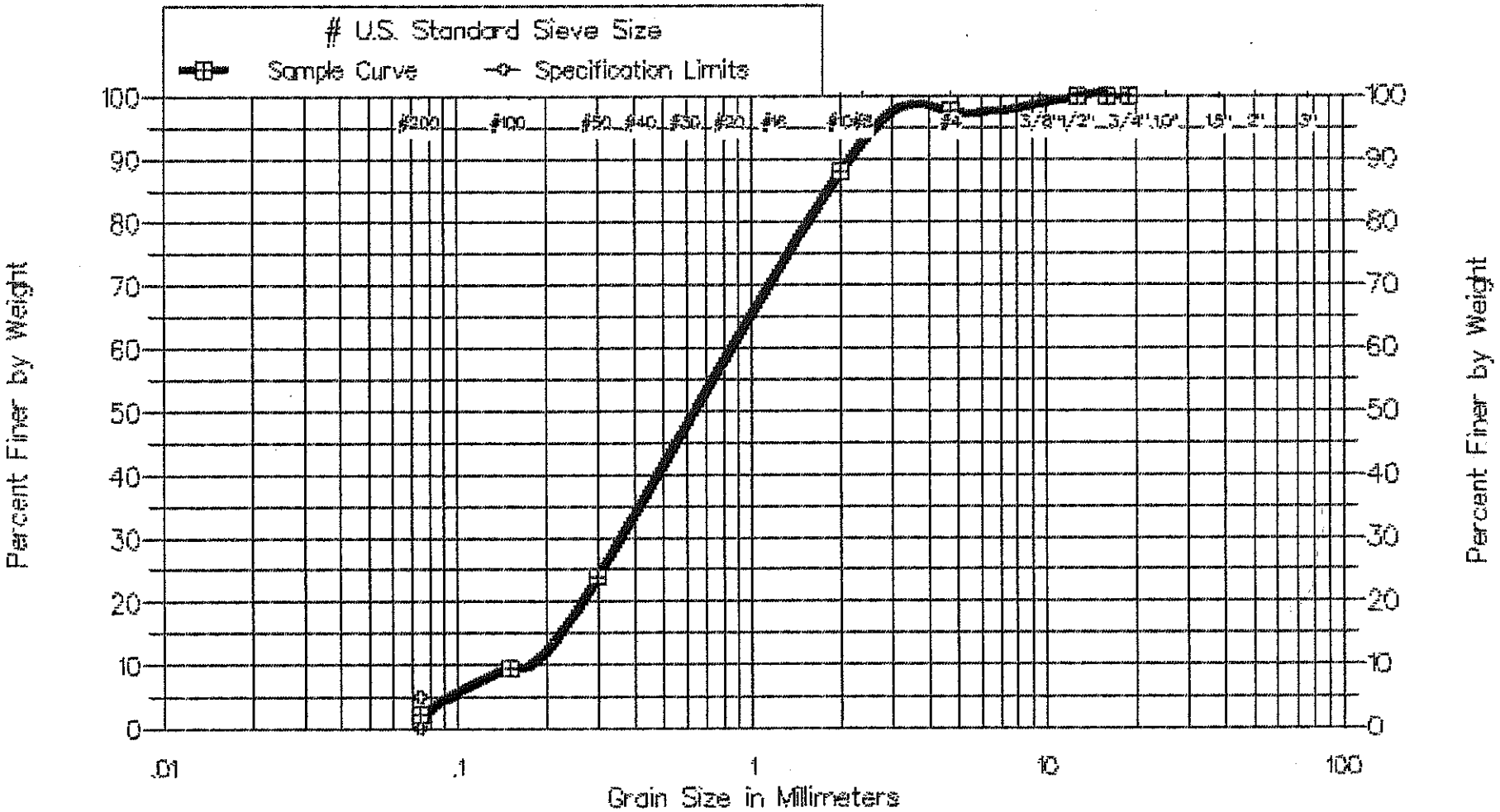
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/23/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9323E – Sand (Sample #43 63,000 cy – 64,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7211

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/24/99*
	Hampton, NH 03842	*Report No.:*	*MA9323F*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 44 (64,500 Cy to 66,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/19/99
Tested By: M.Finglas — Date Tested: 11/24/99

ANALYSIS RESULTS — Sample Wt.(g) = 1907.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	3.21	0.2	99.8			
No. 4	29.78	1.6	98.3			
No. 10	187.90	9.9	88.4			
No. 50	1187.60	62.3	26.2			
No. 100	297.80	15.6	10.6			
No. 200	131.85	6.9	3.6	0		5
Pan	58.46					

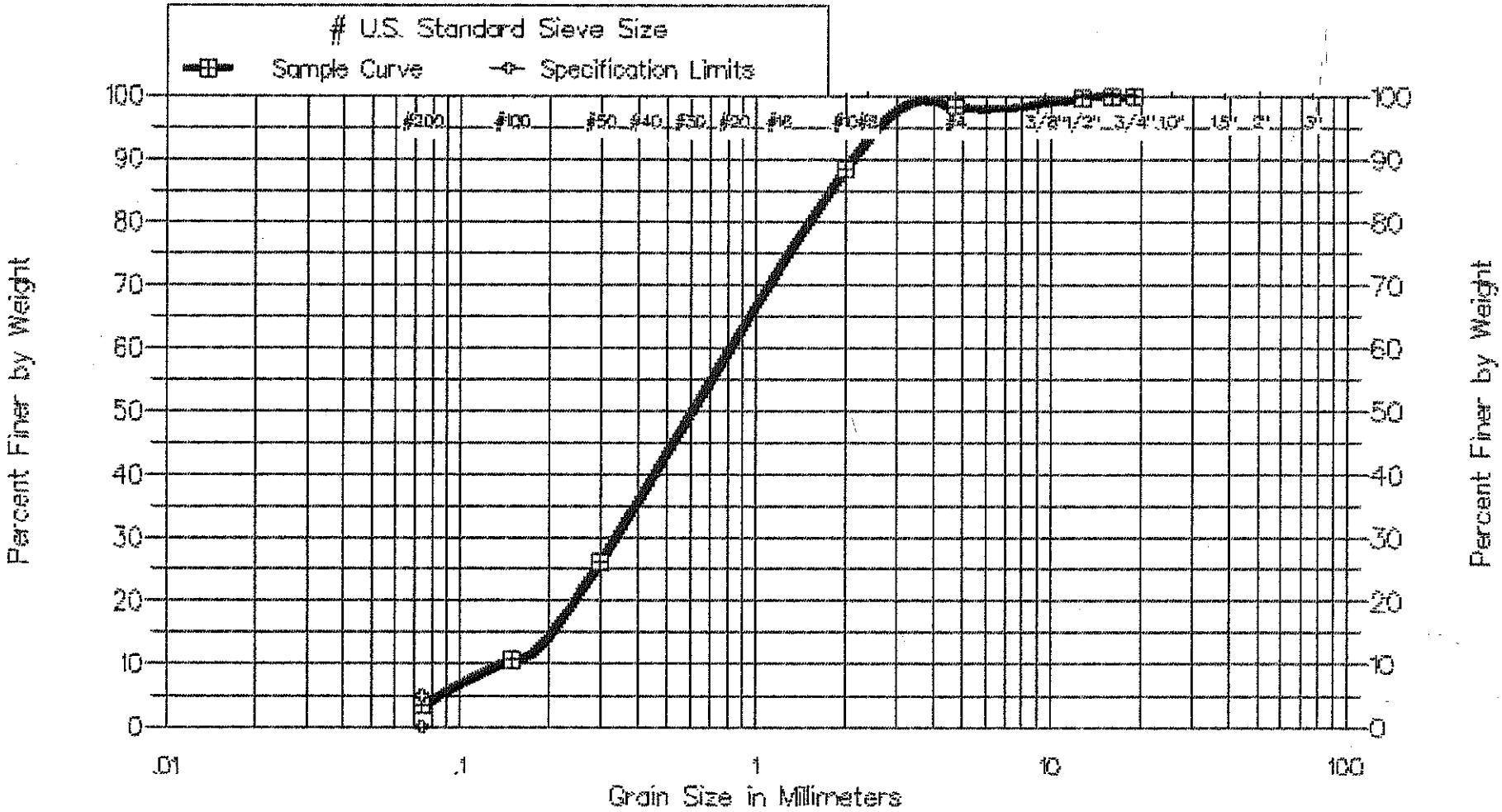
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/24/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9323F – Sand (Sample #44 64,500 cy – 66,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/24/99*
	Hampton, NH 03842	*Report No.:*	*MA9323G*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 45 (66,000 Cy to 67,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/23/99
Tested By: M.Finglas — Date Tested: 11/24/99

ANALYSIS RESULTS — Sample Wt.(g) = 1761.40

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	- Max.
3/4 Inch	0.00	0.0	100.0		100
5/8 Inch	0.00	0.0	100.0		
1/2 Inch	2.58	0.1	99.9		
No. 4	17.47	1.0	98.9		
No. 10	145.98	8.3	90.6		
No. 50	1092.36	62.0	28.6		
No. 100	299.40	17.0	11.6		
No. 200	133.89	7.6	4.0	0	5
Pan	69.72				

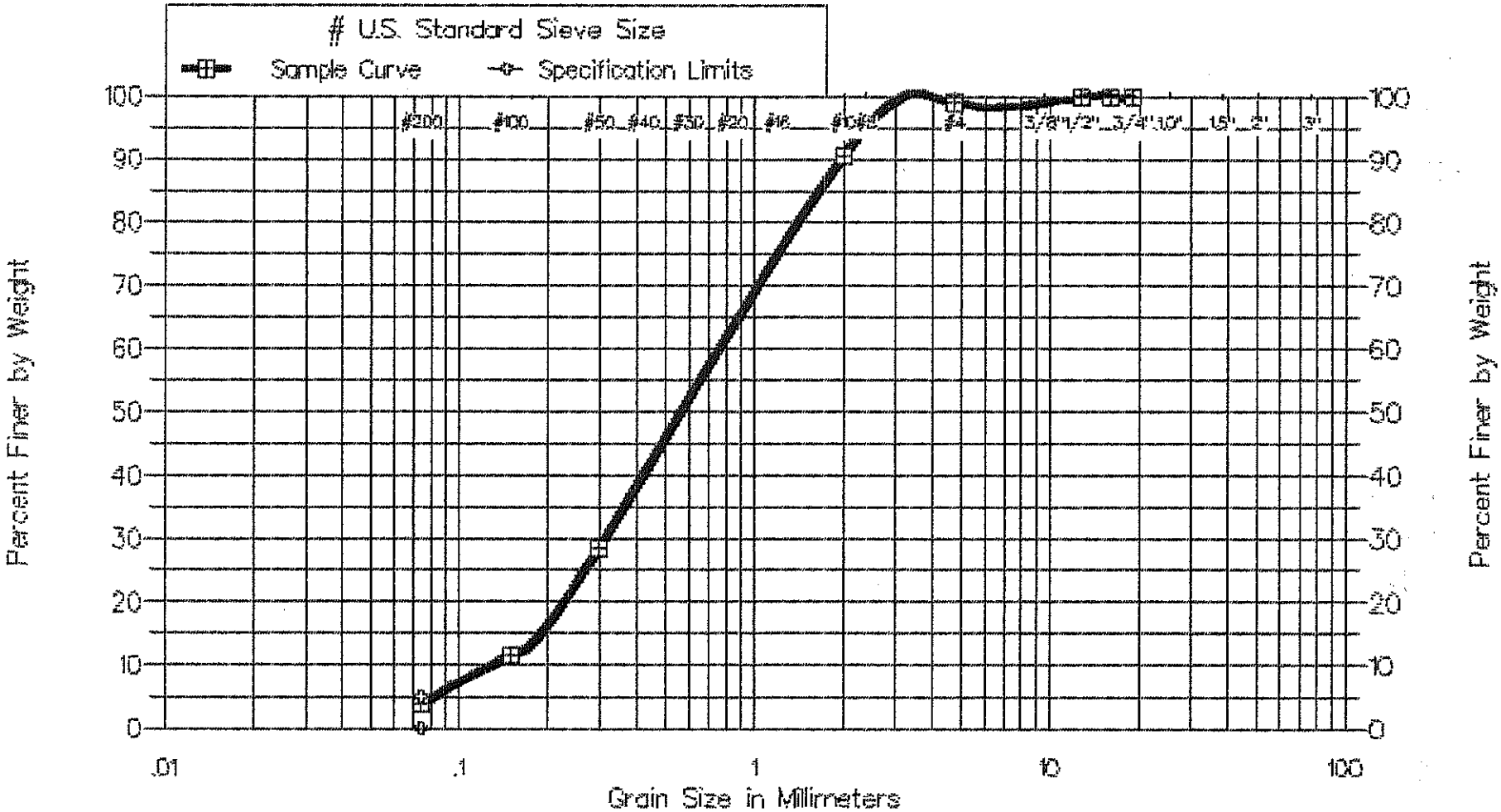
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/24/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9323G – Sand (Sample # 45 (66,000 cy – 67,500 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/24/99*
	Hampton, NH 03842	*Report No.:*	*MA9328A*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 46 (67,500 Cy to 69,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/23/99
Tested By:	M.Finglas	Date Tested:	11/24/99

ANALYSIS RESULTS

Sample Wt.(g) = 1927.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	4.58	0.2	99.8			
No. 4	54.89	2.8	96.9			
No. 10	127.89	6.6	90.3			
No. 50	1178.23	61.1	29.2			
No. 100	345.69	17.9	11.2			
No. 200	136.90	7.1	4.1	0		5
Pan	84.19					

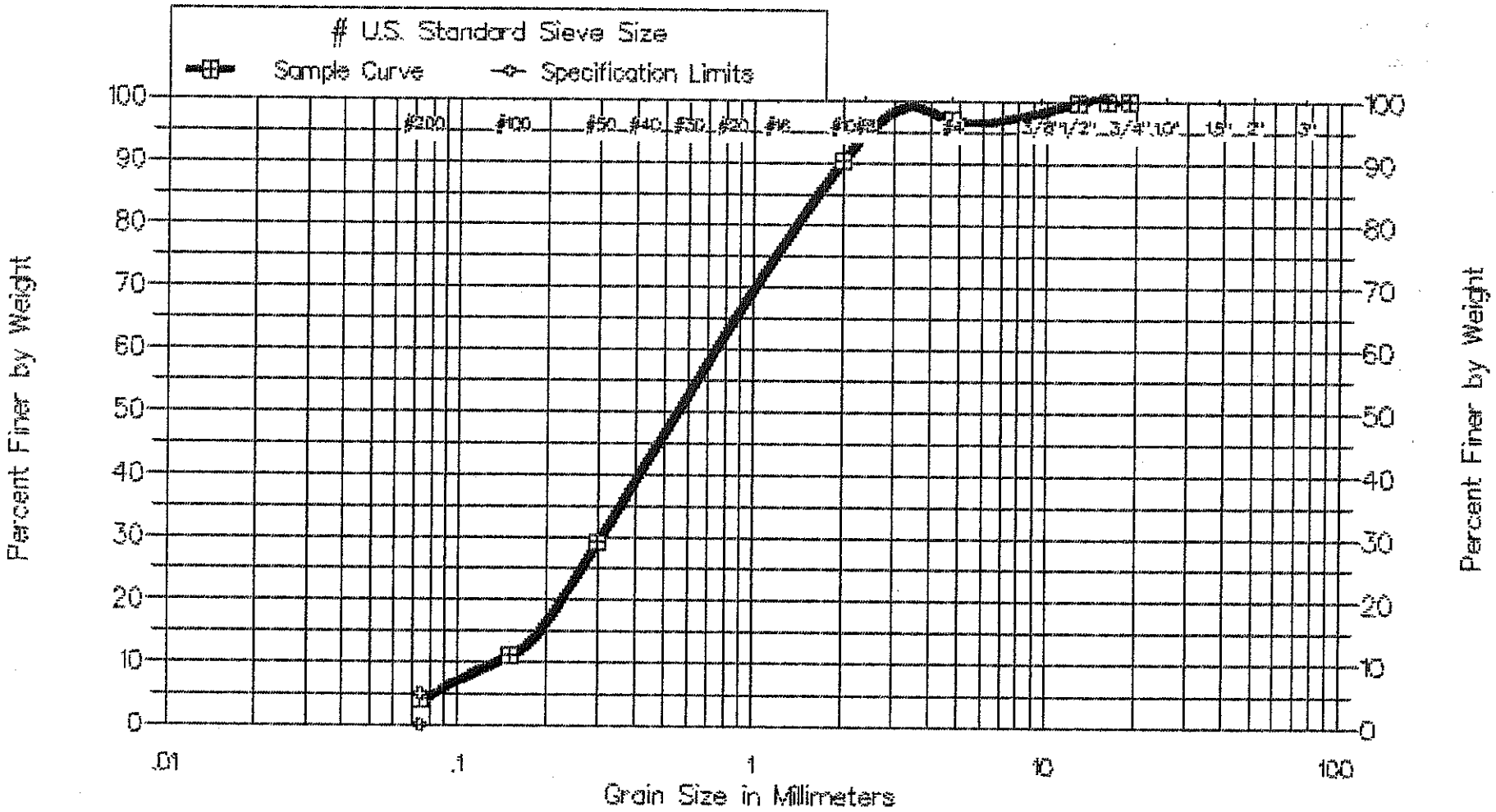
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/24/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9328A – Sand (Sample #46 67,500 cy – 69,000 cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/24/99*
	Hampton, NH 03842	*Report No.:*	*MA9328B*

Project:	Foxboro Landfill - Foxboro, MA
Material:	Sand
Location:	Bag Sample provided by the Client
	Sample No. 47 (69,000 Cy to 70,500 Cy)
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer

Sampled By:	Client	Date Sampled:	Rec. 11/23/99
Tested By:	M.Finglas	Date Tested:	11/24/99

ANALYSIS RESULTS

Sample Wt.(g) = 1939.46

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	78.96	4.1	95.9			
No. 10	178.56	9.2	86.7			
No. 50	1121.96	57.8	28.9			
No. 100	340.29	17.5	11.3			
No. 200	136.90	7.1	4.3	0		5
Pan	82.79					

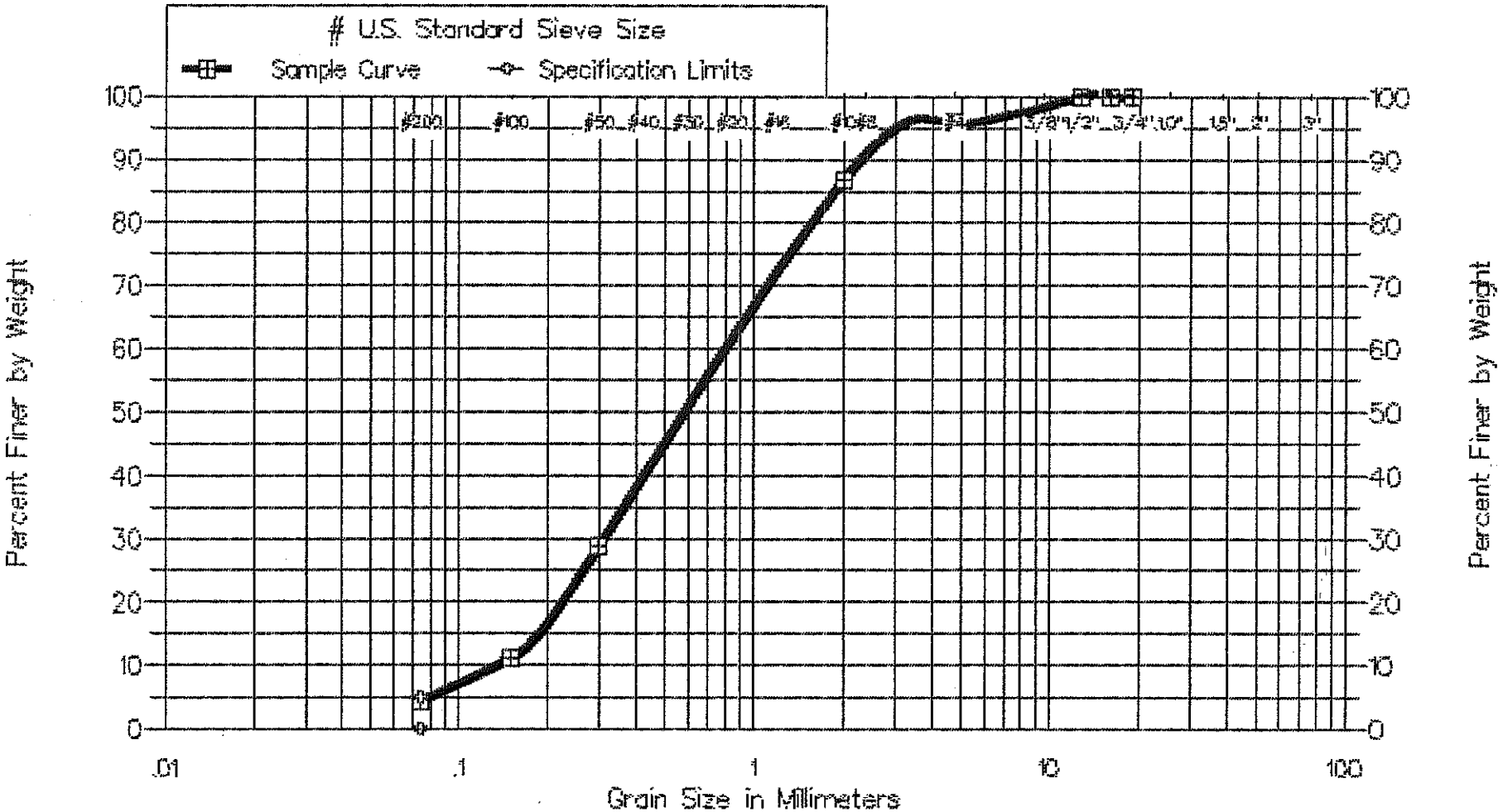
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Report of Gravel Wet Sieve Analysis
Using ASTM D-422 Date: 11/24/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9328B – Sand (Sample #47 (69,000 cy – 70,500 Cy)

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

JOB NO: 10650.010
DATE: 12/17/99

Drainage/or Gas Venting Sand Testing Log				
Sample No.	**Permeability Identification No.**	**Grain Size Analysis Identification No.**	**Date Received in Lab**	**Cubic Yards of Sand Represented**
48		MA9335A	11/26/99	70500-72000
49	PE9335B	MA9335B	11/26/99	72000-73500
50		MA9335C	11/29/99	73500-75000
51	PE9337A	MA9337A	11/29/99	75000-76500
52		MA9337B	11/30/99	76500-78000
53	PE9339A	MA9339A	11/30/99	78000-79500
54		MA9339B	12/7/99	79500-81000
55	PE9349C	MA9349C	12/7/99	81000-81942

SHOP DRAWING REVIEW

ENGINEER'S REVIEW	RESPONSE REQUIRED OF CONTRACTOR
Approved ☑ Not Approved ☐ Approved As Noted ☐ Comments Attached ☐	Confirm ☐ Resubmit ☐

The Engineer's review of this shop drawing is limited to the review of dimensions, equipment and materials as presented in the Contract plans, specifications and for design concept. This review does not relieve the Contractor from errors or omissions in this submittal or from the Contractor's responsibility of addressing any deviations from the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences or procedures of construction and performing his work in a safe manner.

CAMP DRESSER & McKEE, INC.

By _____ Date 2-9-00

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/27/99*
	Hampton, NH 03842	*Report No.:*	*MA9335A*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client Sample No. 48 (70,500 Cy to 72,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/26/99
Tested By:	M.Finglas	Date Tested:	11/27/99

ANALYSIS RESULTS

Sample Wt.(g) = 2045.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	98.70	4.8	95.2			
No. 10	198.54	9.7	85.5			
No. 50	1225.60	59.9	25.6			
No. 100	301.25	14.7	10.8			
No. 200	154.98	7.6	3.3	0		5
Pan	66.53					

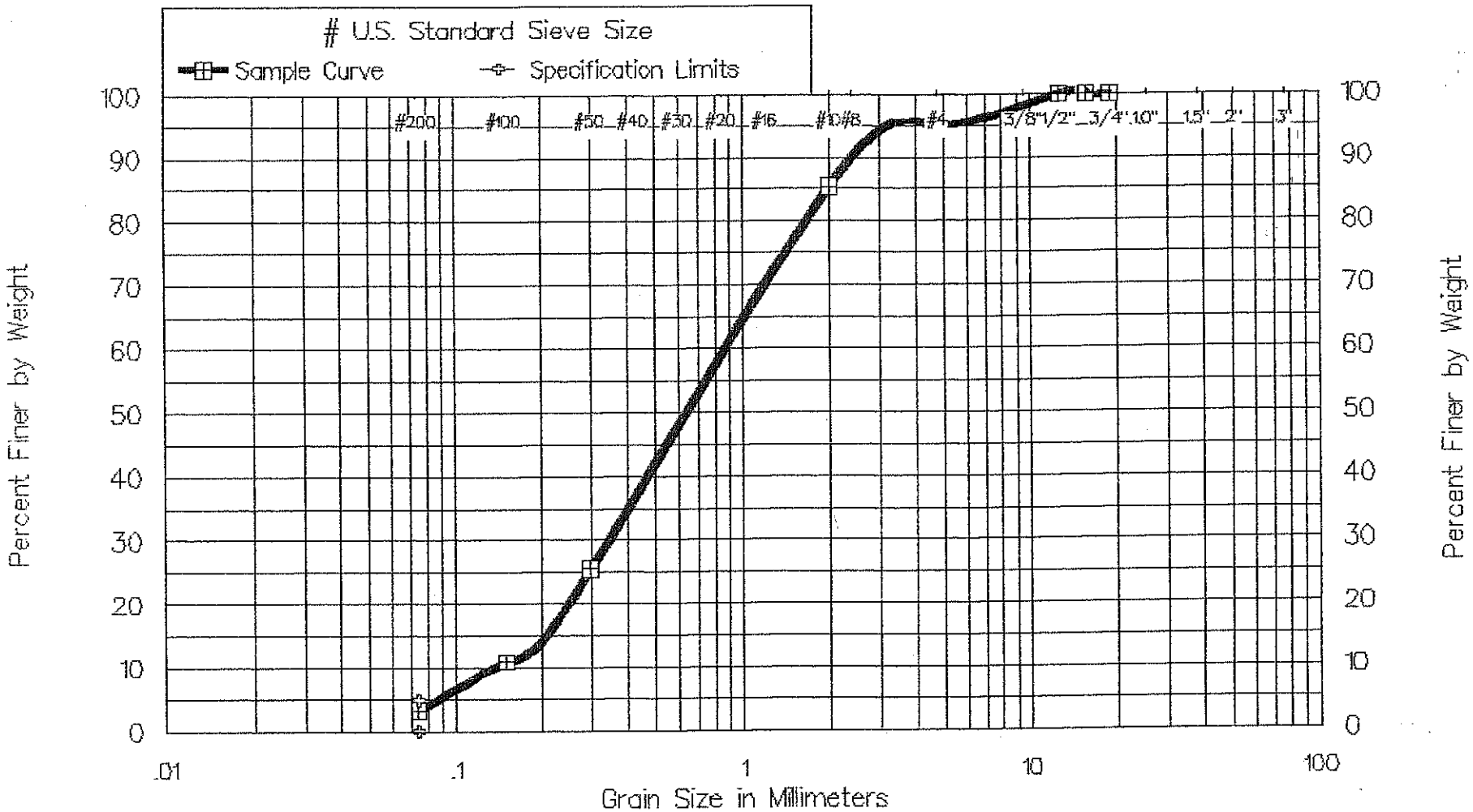
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 11/27/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9335A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/27/99*
	Hampton, NH 03842	*Report No.:*	*MA9335B*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 49 (72,500 Cy to 73,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/26/99
Tested By:	M.Finglas	Date Tested:	11/27/99

ANALYSIS RESULTS

Sample Wt.(g) = 2750.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	178.90	6.5	93.5			
No. 10	229.65	8.3	85.1			
No. 50	1785.60	64.9	20.2			
No. 100	322.52	11.7	8.5			
No. 200	145.60	5.3	3.2	0		5
Pan	88.33					

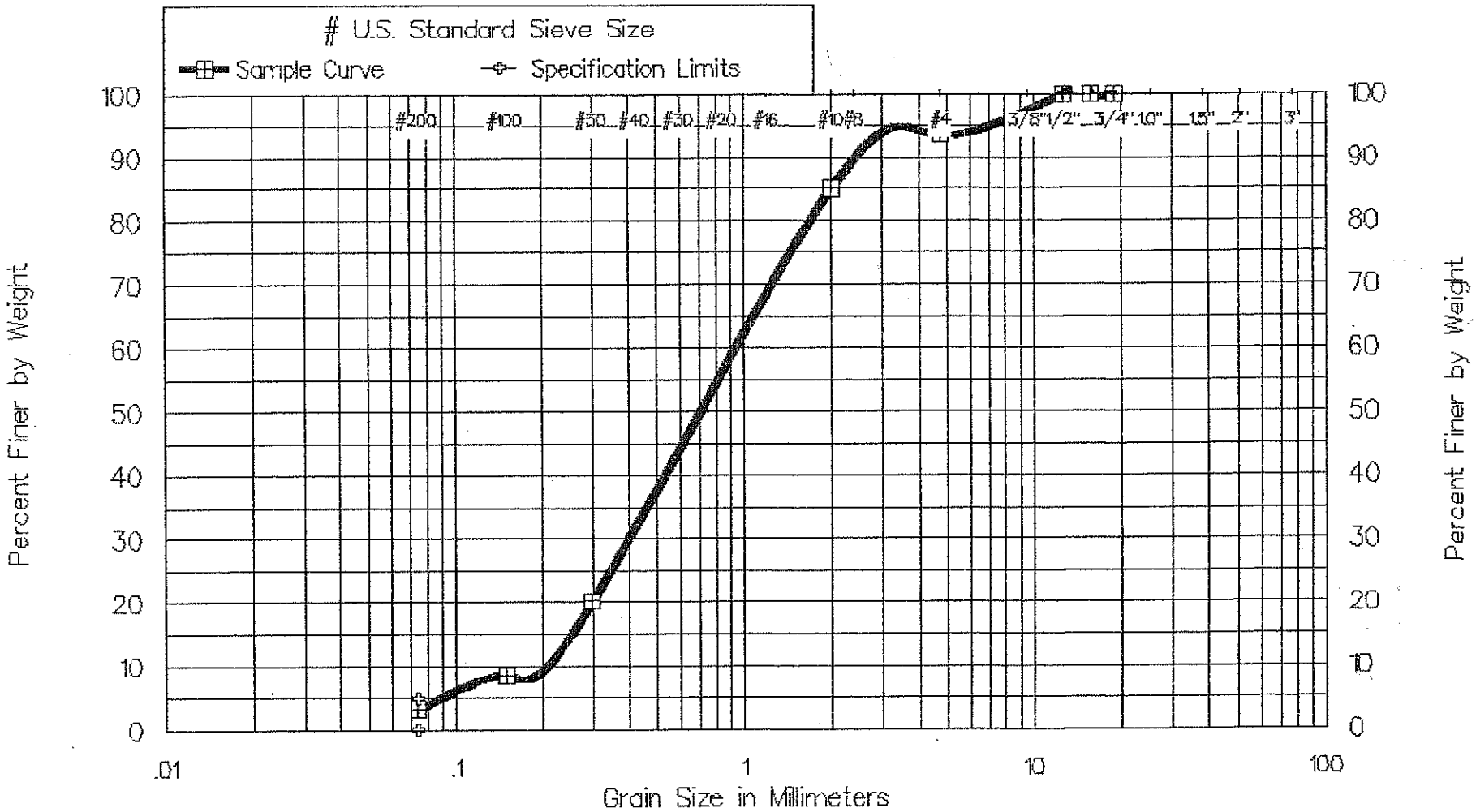
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 11/27/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9335B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. PE9335B

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 49 (72,000 CY – 73,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 26,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9335B = 1.7 X10E-2 cm/sec @ 95.5% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/30/99*
	Hampton, NH 03842	*Report No.:*	*MA9335C*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 50 (73,500 Cy to 75,000 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/29/99
Tested By: M.Finglas — Date Tested: 11/30/99

ANALYSIS RESULTS — Sample Wt.(g) = 2000.25

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	101.70	5.1	94.9			
No. 10	201.45	10.1	84.8			
No. 50	1358.90	67.9	16.9			
No. 100	174.58	8.7	8.2			
No. 200	75.40	3.8	4.4	0		5
Pan	88.22					

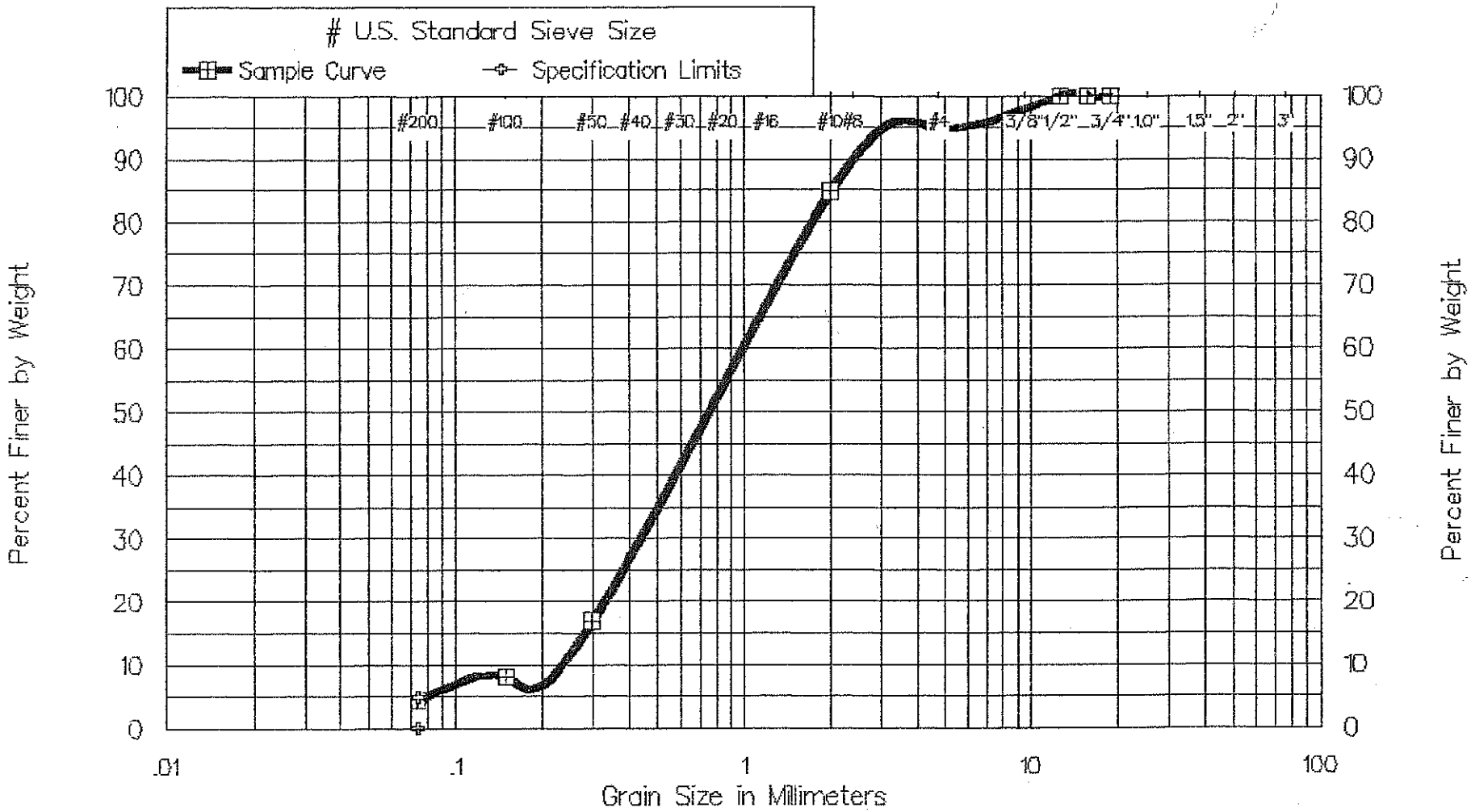
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 11/30/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9335C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*11/30/99*
	Hampton, NH 03842	*Report No.:*	*MA9337A*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client Sample No. 51 (75,000 Cy to 76,500 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/29/99
Tested By:	M.Finglas	Date Tested:	11/30/99

ANALYSIS RESULTS

Sample Wt.(g) = 1987.50

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	98.40	5.0	95.0			
No. 10	214.89	10.8	84.2			
No. 50	1399.90	70.4	13.8			
No. 100	101.25	5.1	8.7			
No. 200	111.20	5.6	3.1	0		5
Pan	61.86					

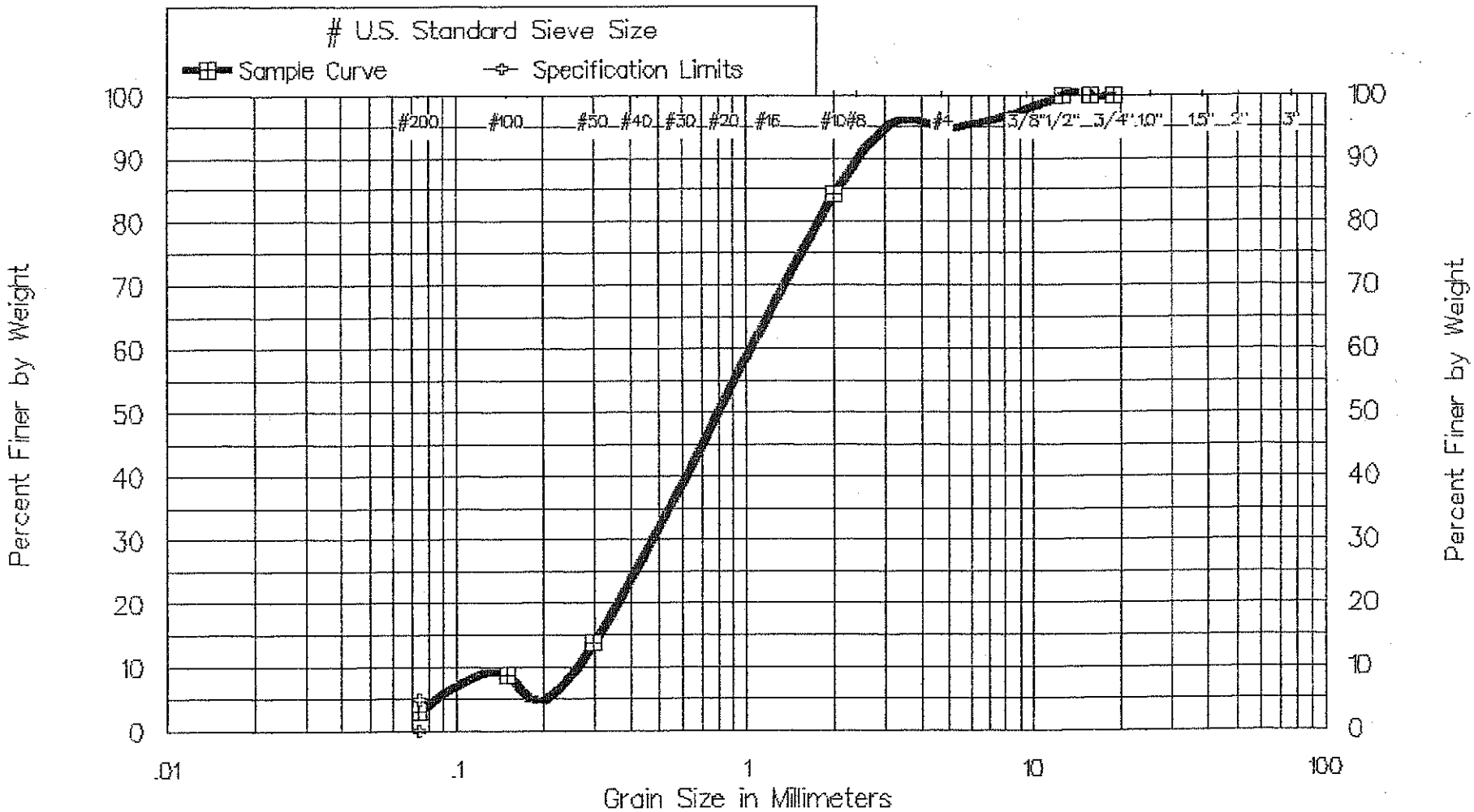
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 11/30/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9337A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. PE9337A

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 51 (75,000 CY – 76,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 27,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9337A = 1.8 X10E-2 cm/sec @ 98.4% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*12/03/99*
	Hampton, NH 03842	*Report No.:*	*MA9337B*

==========

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 52 (76,500 Cy to 78,000 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 11/30/99
Tested By:	M.Finglas	Date Tested:	12/2/99

==========

ANALYSIS RESULTS — Sample Wt.(g) = 2123.60

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	45.89	2.2	97.8			
No. 4	127.80	6.0	91.8			
No. 10	214.89	10.1	81.7			
No. 50	1406.90	66.3	15.5			
No. 100	125.80	5.9	9.5			
No. 200	145.60	6.9	2.7	0		5
Pan	56.72					

==========

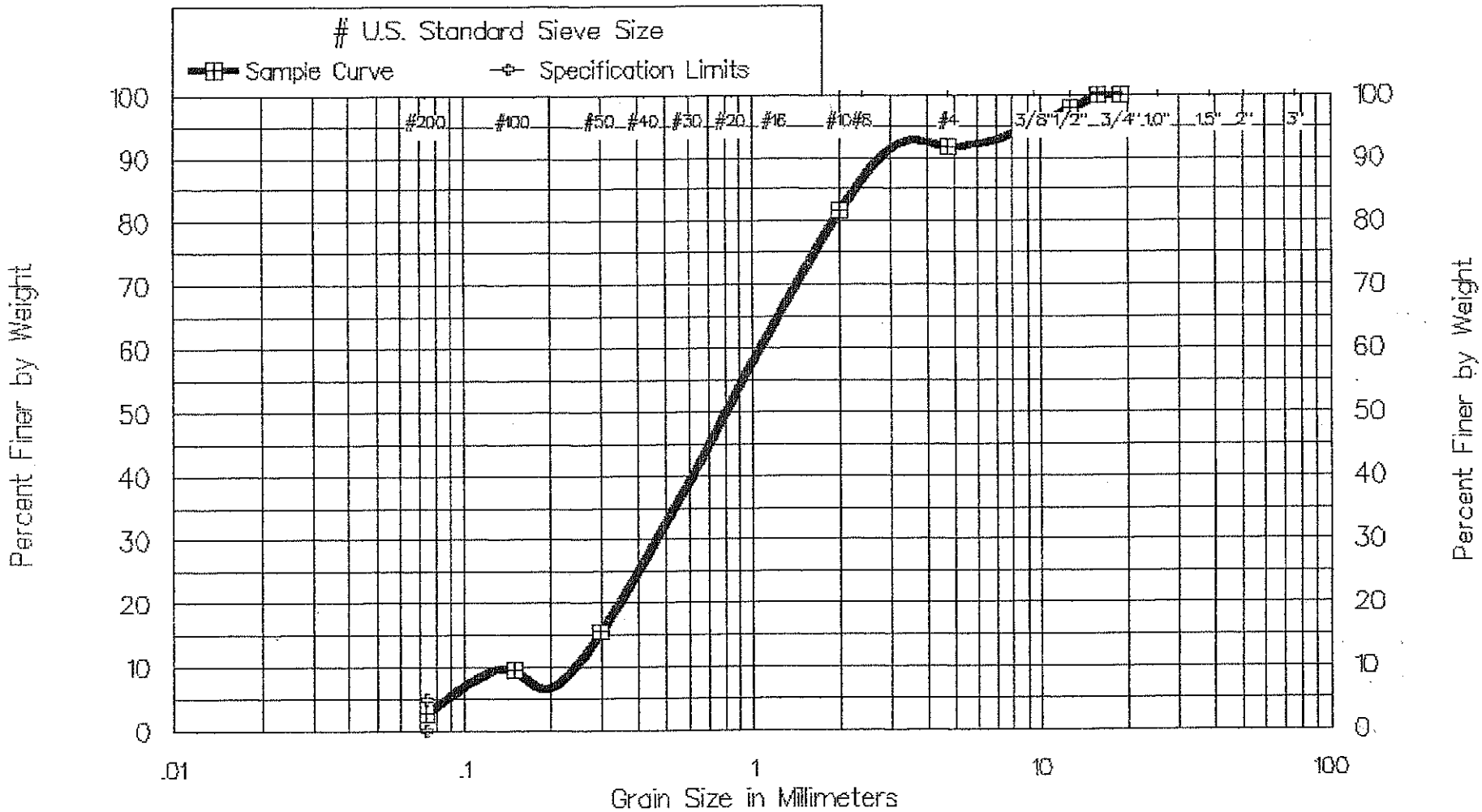
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 12/3/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9337B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*12/03/99*
	Hampton, NH 03842	*Report No.:*	*MA9339A*

Project: Foxboro Landfill - Foxboro, MA
Material: Sand
Location: Bag Sample provided by the Client
Sample No. 53 (78,000 Cy to 79,500 Cy)
Specifications: Project Spec. for Drainage and/or Gas Venting Layer

Sampled By: Client — Date Sampled: Rec. 11/30/99
Tested By: M.Finglas — Date Tested: 12/2/99

ANALYSIS RESULTS — Sample Wt.(g) = 2001.90

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	56.80	2.8	97.2			
No. 4	135.90	6.8	90.4			
No. 10	197.45	9.9	80.5			
No. 50	1247.90	62.3	18.2			
No. 100	136.90	6.8	11.3			
No. 200	155.90	7.8	3.5	0		5
Pan	71.05					

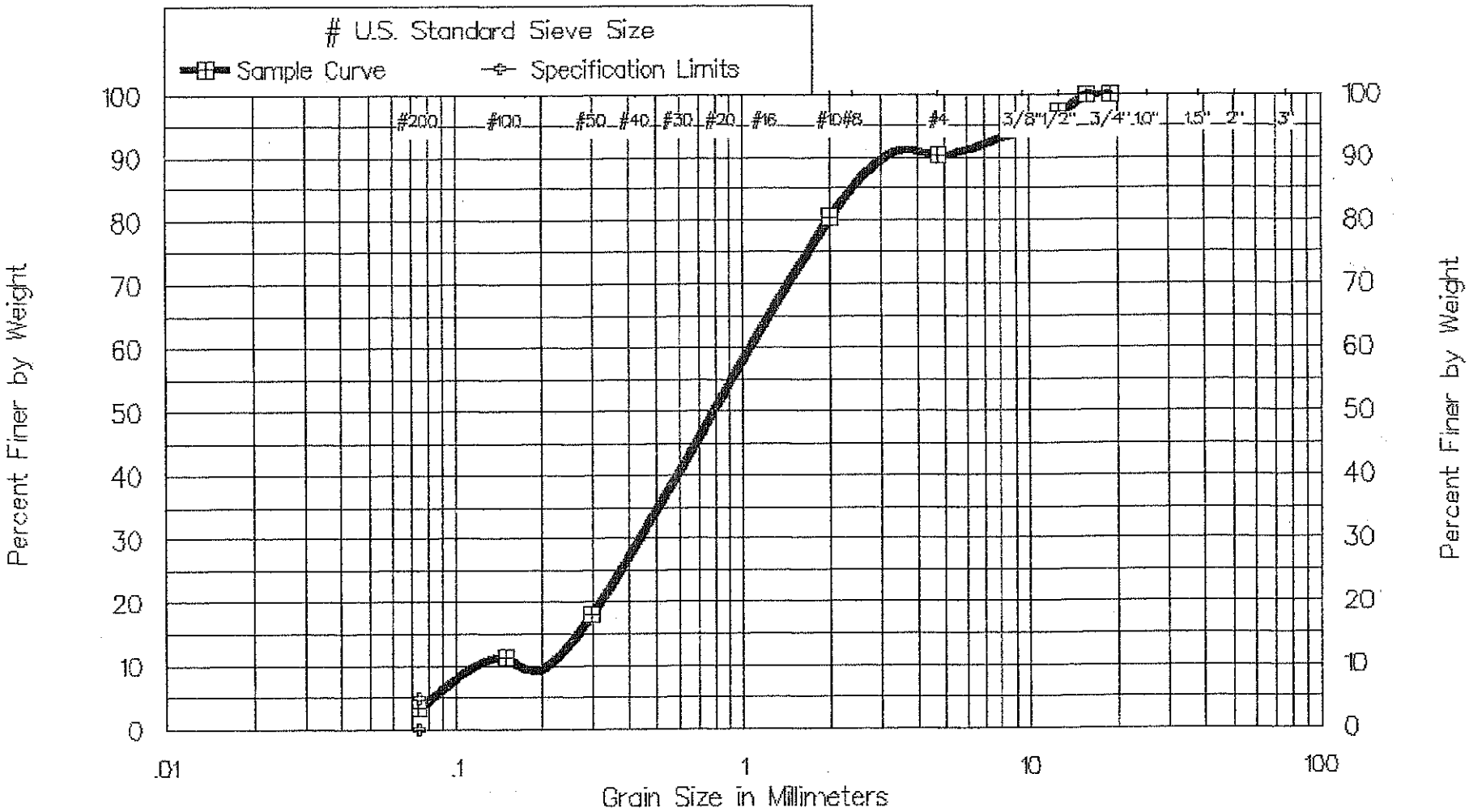
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 12/3/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9339A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*12/15/99*
	Hampton, NH 03842	*Report No.:*	*MA9339B*

Project:	Foxboro Landfill - Foxboro, MA
Material:	Sand
Location:	Bag Sample provided by the Client
	Sample No. 54 (79,500 Cy to 81,000 Cy)
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer

Sampled By:	Client	Date Sampled:	Rec. 12/7/99
Tested By:	M.Finglas	Date Tested:	12/10/99

ANALYSIS RESULTS

Sample Wt.(g) = 2147.90

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	0.00	0.0	100.0			
No. 4	155.90	7.3	92.7			
No. 10	224.96	10.5	82.3			
No. 50	1365.40	63.6	18.7			
No. 100	175.89	8.2	10.5			
No. 200	125.90	5.9	4.6	0		5
Pan	99.85					

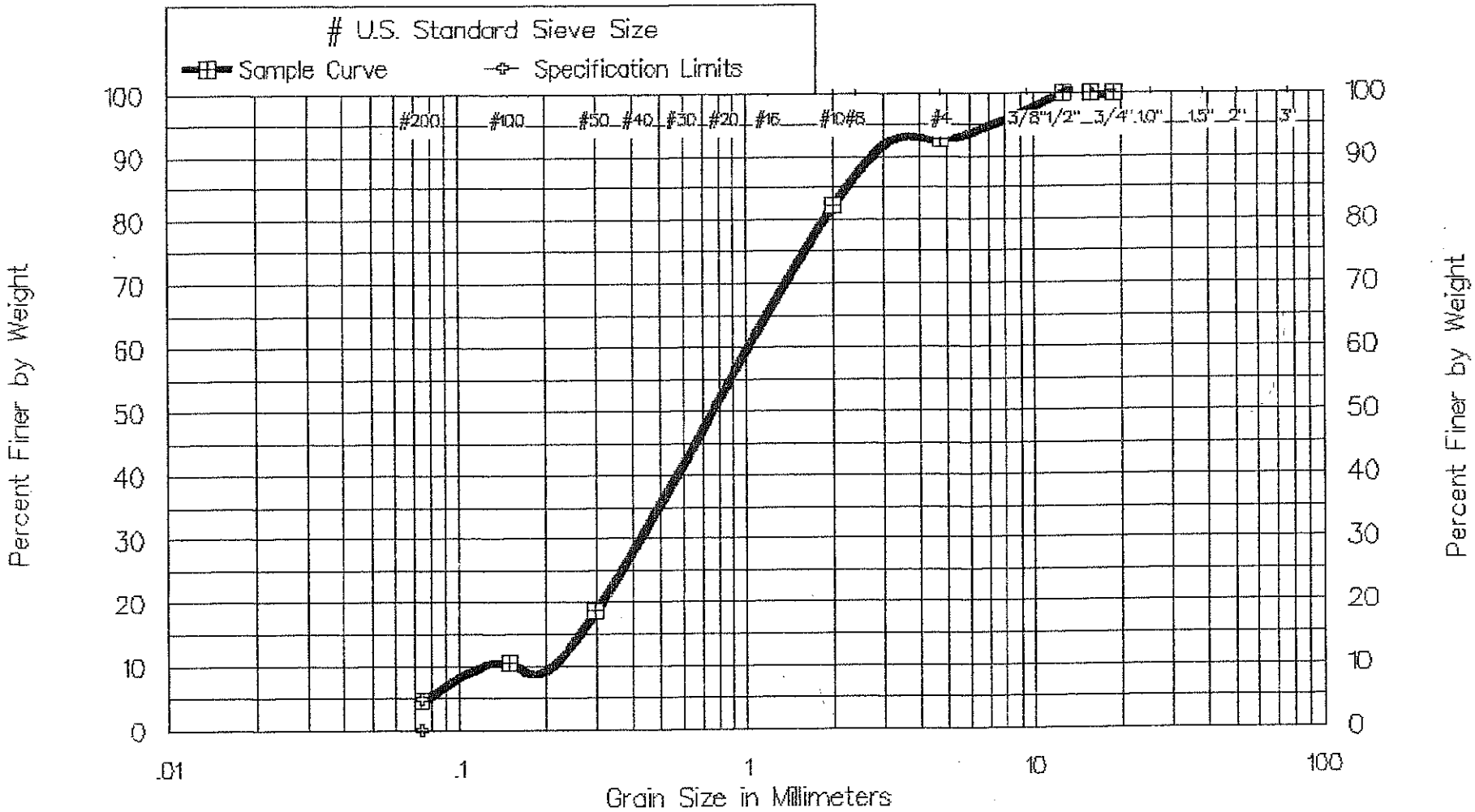
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 12/15/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9339B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. PE9339A

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 55 (78,000 CY – 79,500 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on November 30,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9339A = 1.5 X10E-2 cm/sec @ 94.2% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Report of Aggregate Grain Size Analysis (ASTM D-422)

Client:	*Eirco Environmental*	*Job No.*	*10650.010*
	P.O. Box 265	*Date:*	*12/15/99*
	Hampton, NH 03842	*Report No.:*	*MA9349C*

Project:	Foxboro Landfill - Foxboro, MA		
Material:	Sand		
Location:	Bag Sample provided by the Client		
	Sample No. 55 (81,000 Cy to 81,942 Cy)		
Specifications:	Project Spec. for Drainage and/or Gas Venting Layer		
Sampled By:	Client	Date Sampled:	Rec. 12/7/99
Tested By:	M.Finglas	Date Tested:	12/10/99

ANALYSIS RESULTS

Sample Wt.(g) = 1965.41

Sieve Size	Weight Retained (Grams)	% Retained	% Passing	Specification Gradation Limits Min.	-	Max.
3/4 Inch	0.00	0.0	100.0			100
5/8 Inch	0.00	0.0	100.0			
1/2 Inch	69.50	3.5	96.5			
No. 4	101.50	5.2	91.3			
No. 10	200.60	10.2	81.1			
No. 50	1204.50	61.3	19.8			
No. 100	189.60	9.6	10.2			
No. 200	125.00	6.4	3.8	0		5
Pan	74.71					

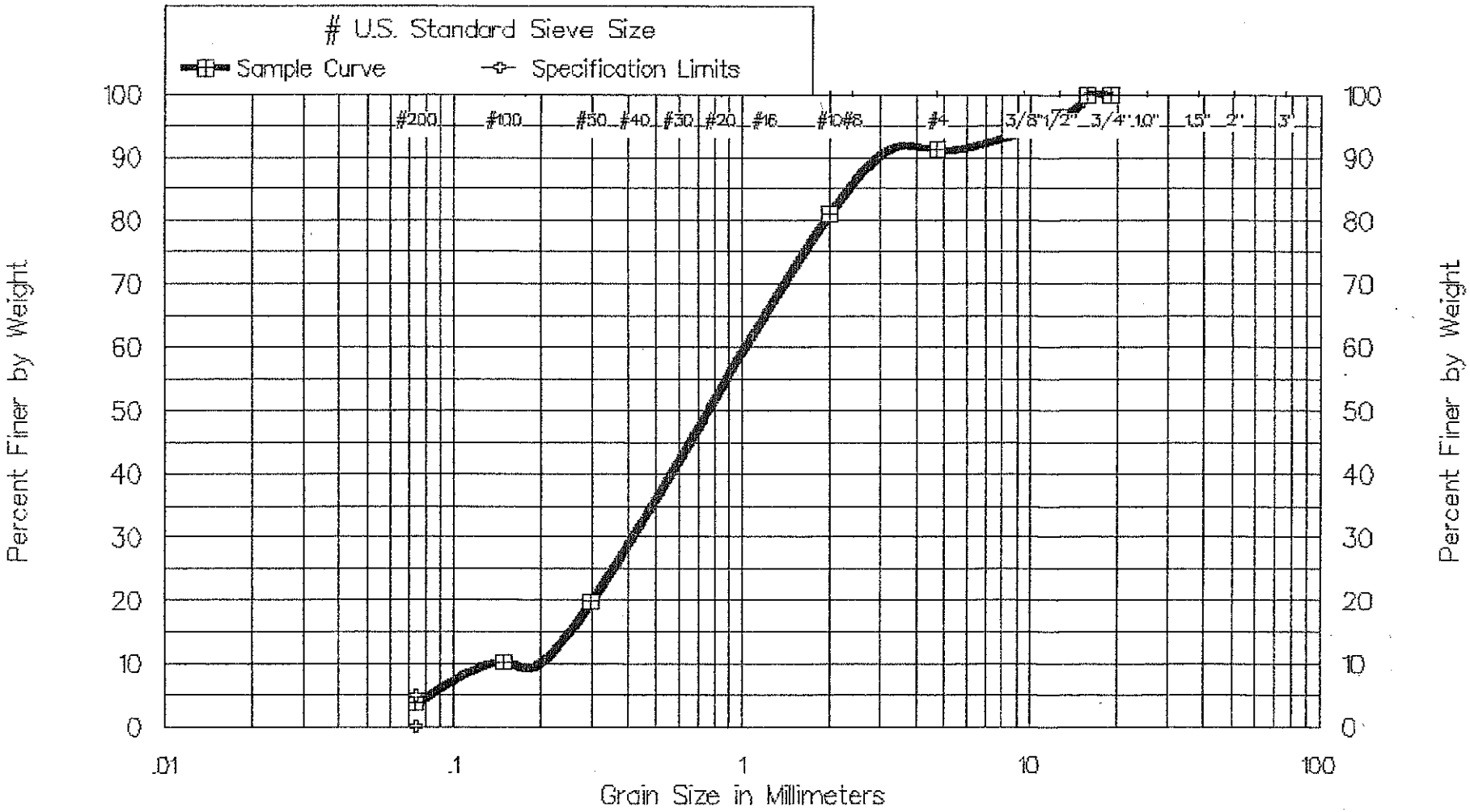
Remarks: The gradation of this sample met the project specification for Gas Venting Layer.

Walter P. Galuska
Laboratory Supervisor

Michael Finglas
Laboratory Technician

TIBBETTS ENGINEERING CORP.

Graph of Sandy Gravel Sieve Analysis Results
Using AASHTO T27 & T11 Date: 12/15/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. MA9349C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/7/99
Report No. PE9349C

PROJECT: Foxboro Landfill – Foxboro MA
SAMPLE NO. 55 (81,000 CY – 81,942 CY)

TEST PERFORMED:

Determine the permeability of a sample of "Gas Vent Drainage Sand" delivered to our Taunton Laboratory on December 7,1999 in accordance with ASTM D2434.

TEST PREPARATION:

The as-delivered sample was first compacted in a permeability testing apparatus using a slight vibration effort. The sample was then tested for permeability by the "constant head" method. The results are reported below.

RESULTS: Permeability @ 20 degrees C

Sample: PE9349C = 1.3 X10E-2 cm/sec @ 99.1% Compaction

SPECIFICATION: Project Specification for Drainage and/or Venting Layer (Coarse Sand)
8.0x 10E-3 cm/sec (Min.)

REMARKS: This sample met the specified permeability for gas venting layer.

Walter P. Galuska
Laboratory Supervisor

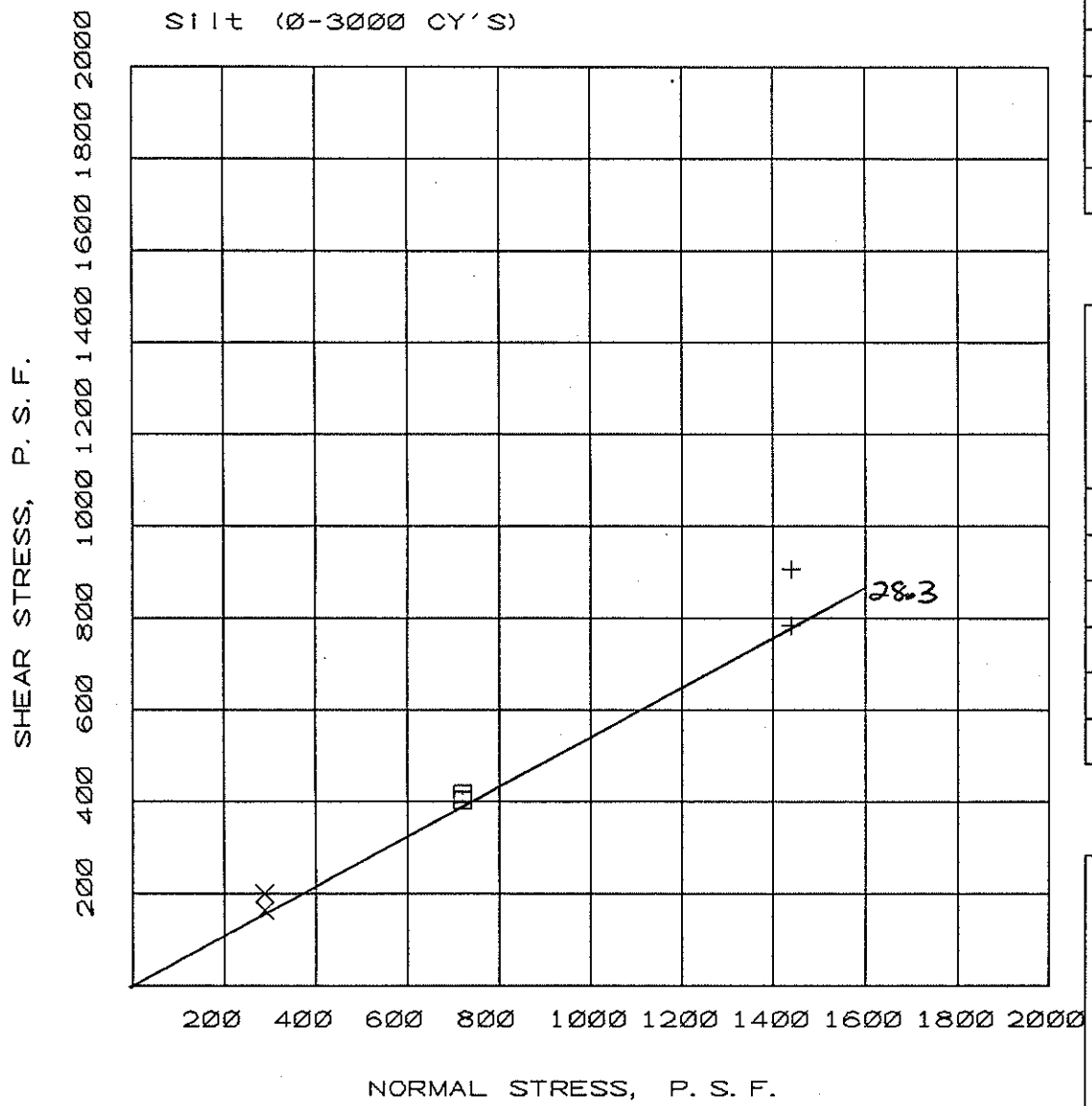
Derek Mello
Laboratory Technician

Membrane Type:

TEXTURED

Sample Description:

Grey-Brown f-m SAND, trace (-) Silt (Ø-3ØØØ CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS1.3	+	893	144Ø	771	144Ø
DS1.1	×	197	288	161	288
DS1.2	⊡	4Ø9	72Ø	397	72Ø

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS1.3	+				
DS1.1	×				
DS1.2	⊡				

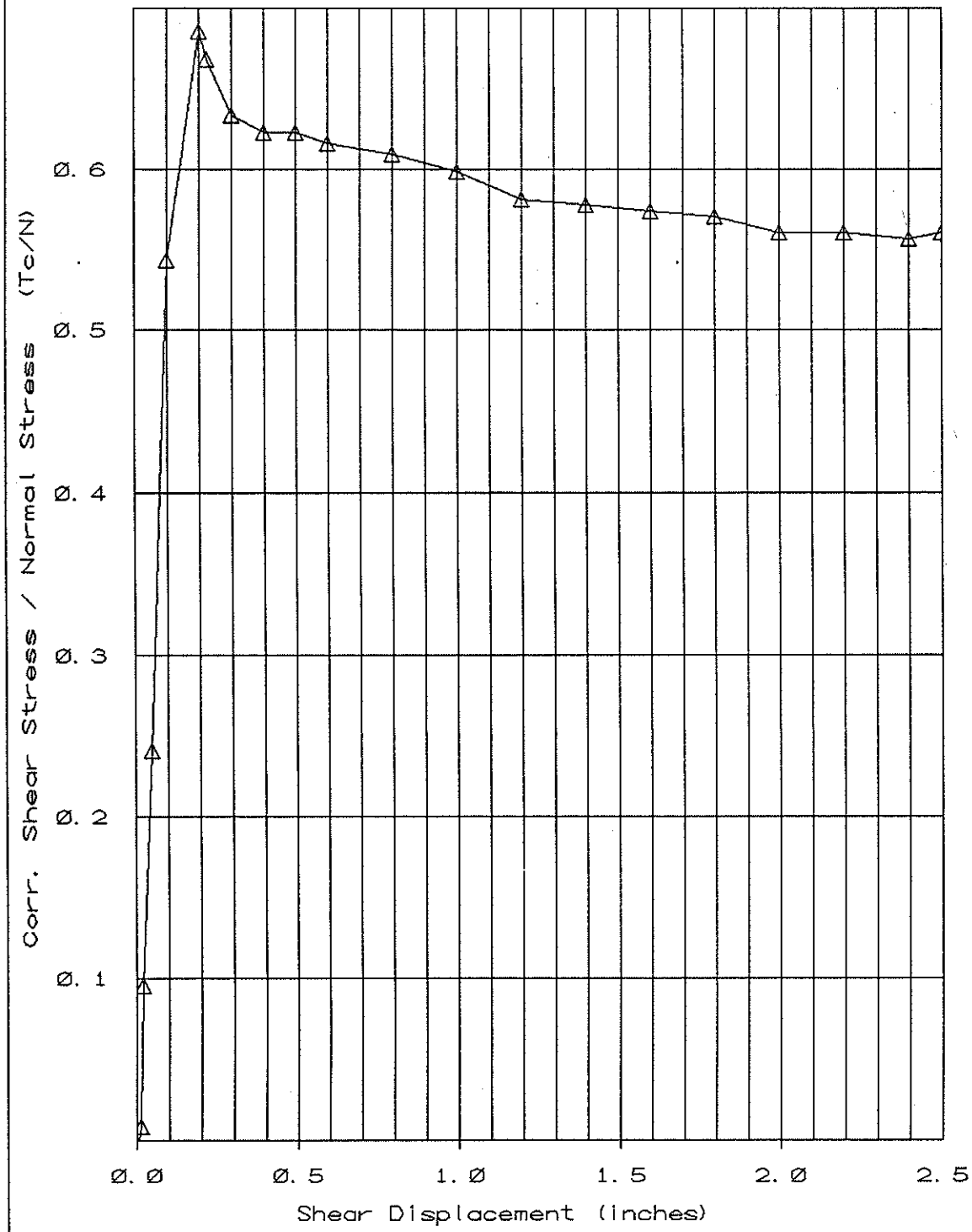
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-5-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS1.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.2 16.8
Dry Density Before Initial Consol (pcf):	106.8
Dry Density After This Stress (pcf):	107.2
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Grey-Brown f-m SAND, trace (-) Silt (0-3000 CY'S)

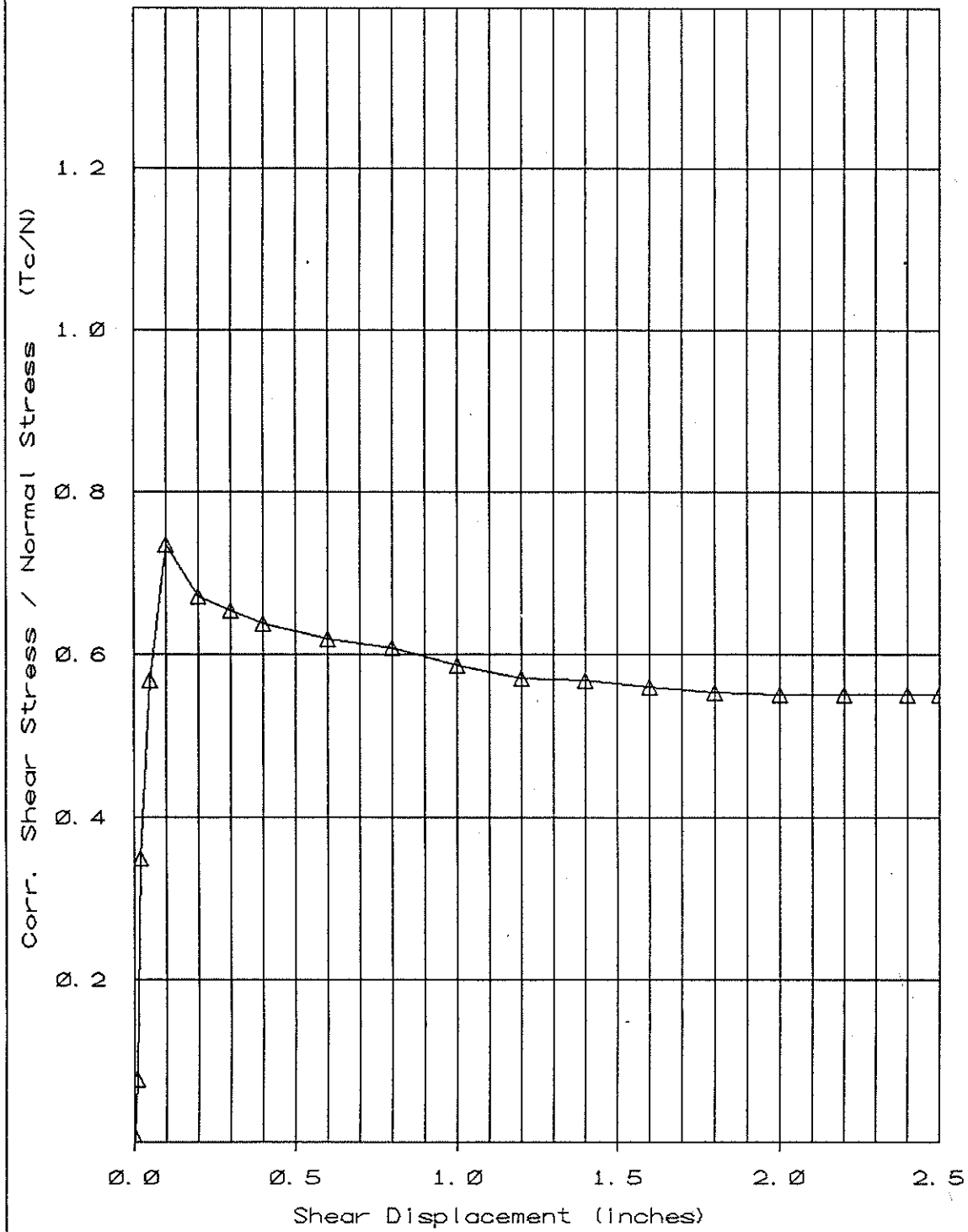
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-5-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS1.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.0 16.5
Dry Density Before Initial Consol (pcf):	106.6
Dry Density After This Stress (pcf):	108.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Grey-Brown f-m SAND, trace (-) Silt (0-3000 CY'S)

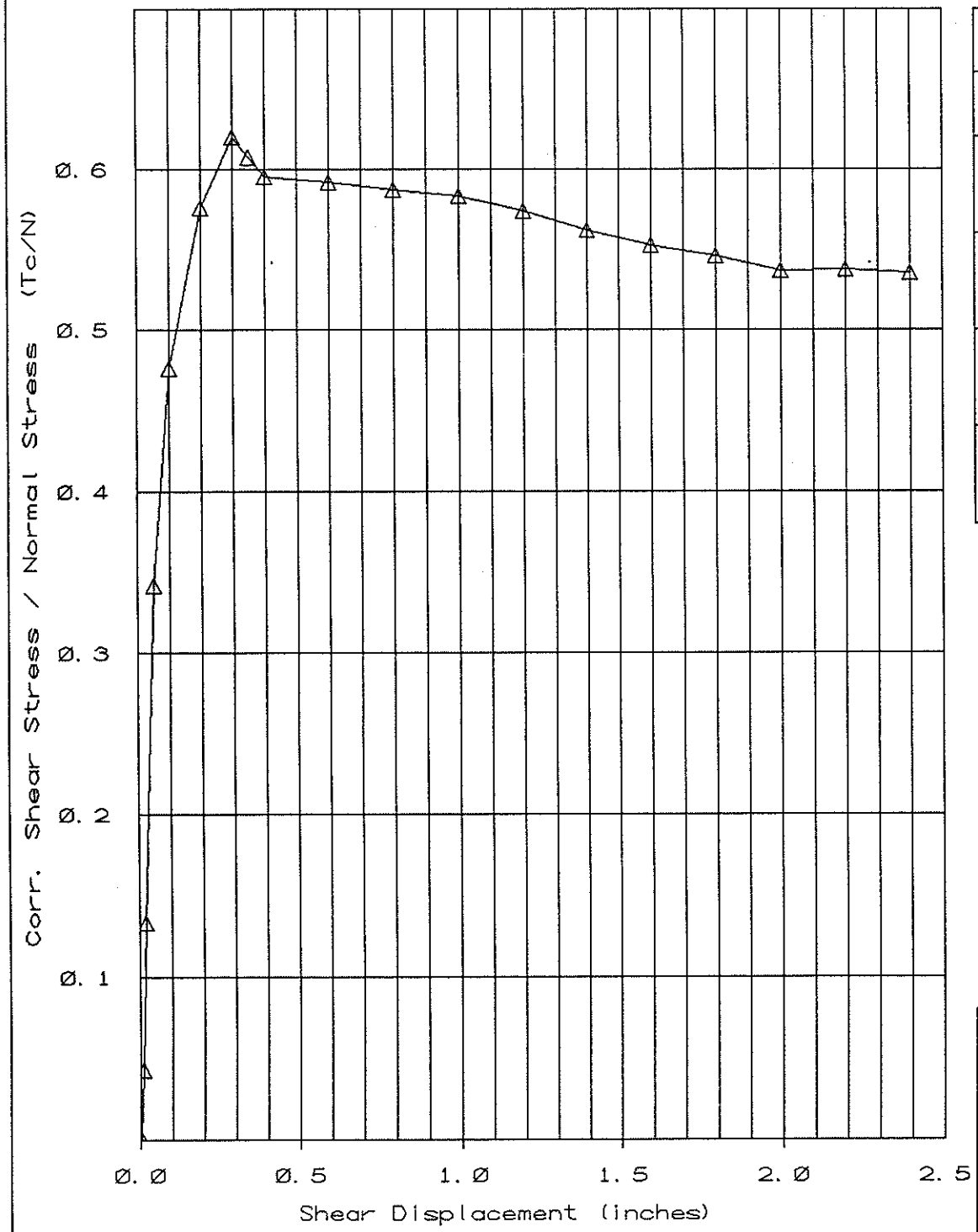
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-5-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS1.3
Normal Stress (psf):	1440.
IWc (%): FWc (%):	14.1 16.3
Dry Density Before Initial Consol (pcf):	106.5
Dry Density After This Stress (pcf):	108.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (0-3000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-5-99

Reviewer: MCM File No: L99999.2

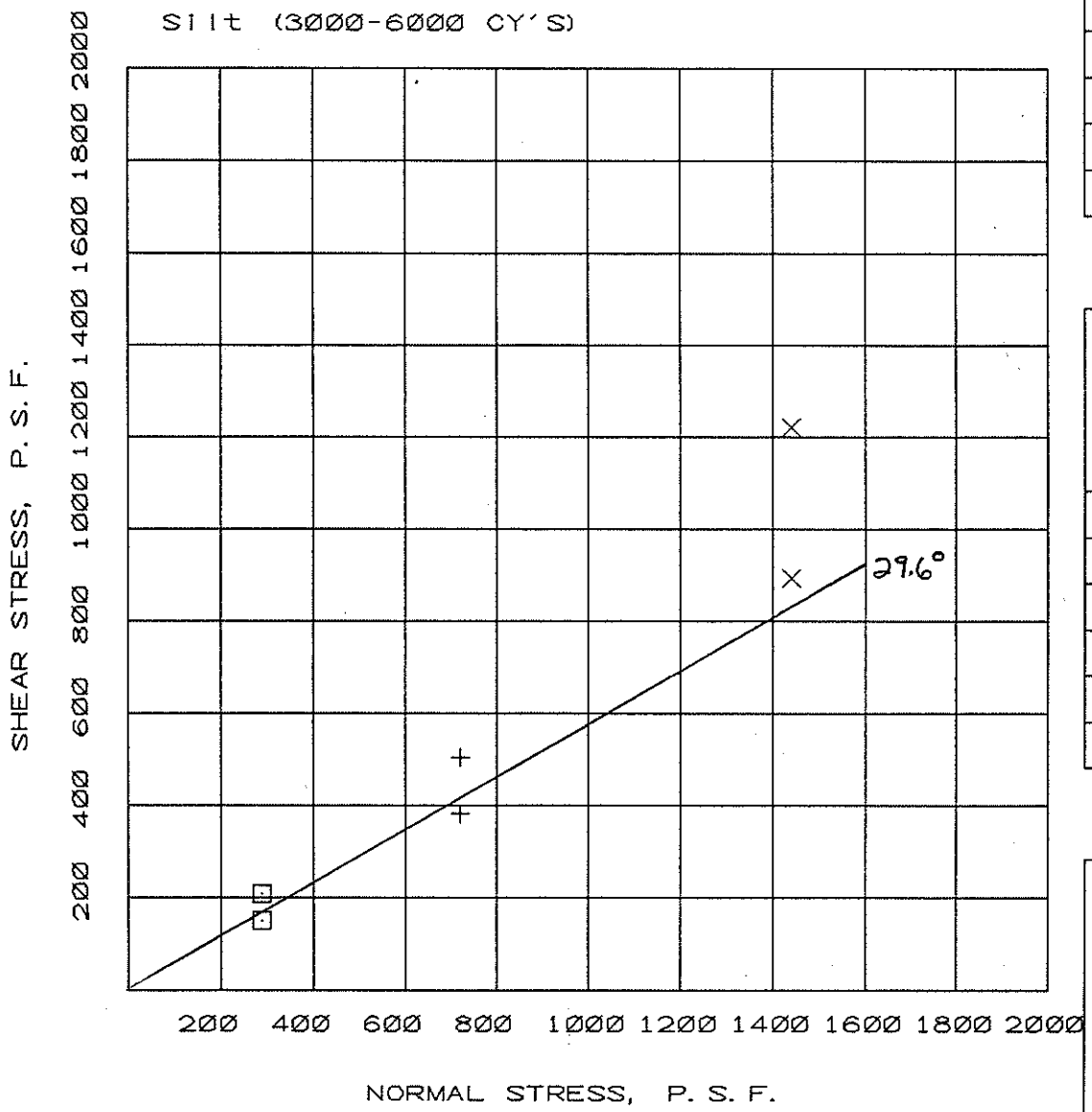
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (3000-6000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS2. 2	+	498	720	375	720
DS2. 3	×	1208	1440	880	1440
DS2. 1	⊡	204	288	146	288

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS2. 2	+				
DS2. 3	×				
DS2. 1	⊡				

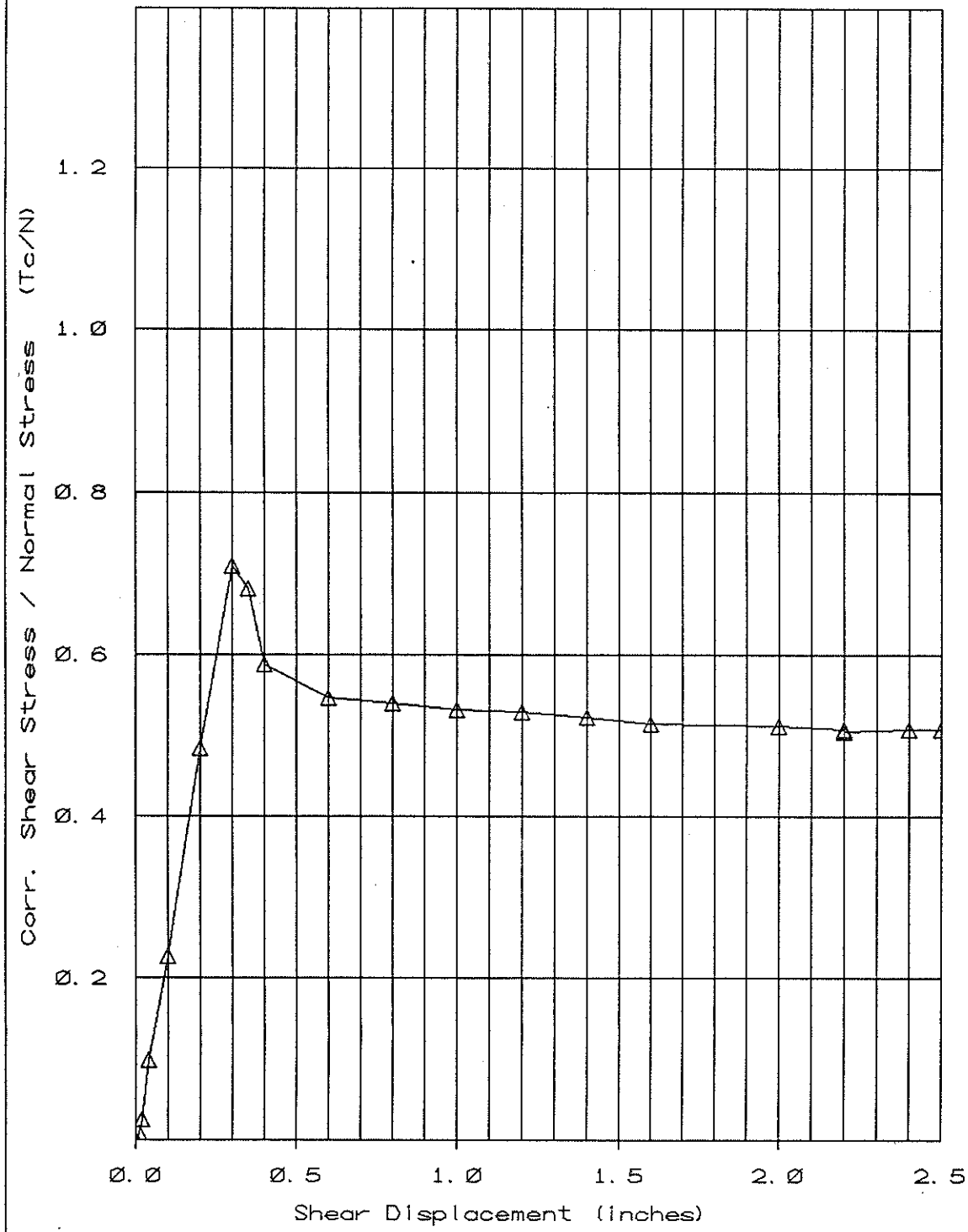
FOXOBORO LANDFILL
FOXOBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-7-99

Reviewer: MCM File No: L19999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS2.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.7
Dry Density Before Initial Consol (pcf):	107.0
Dry Density After This Stress (pcf):	107.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (3000-6000 CY'S)

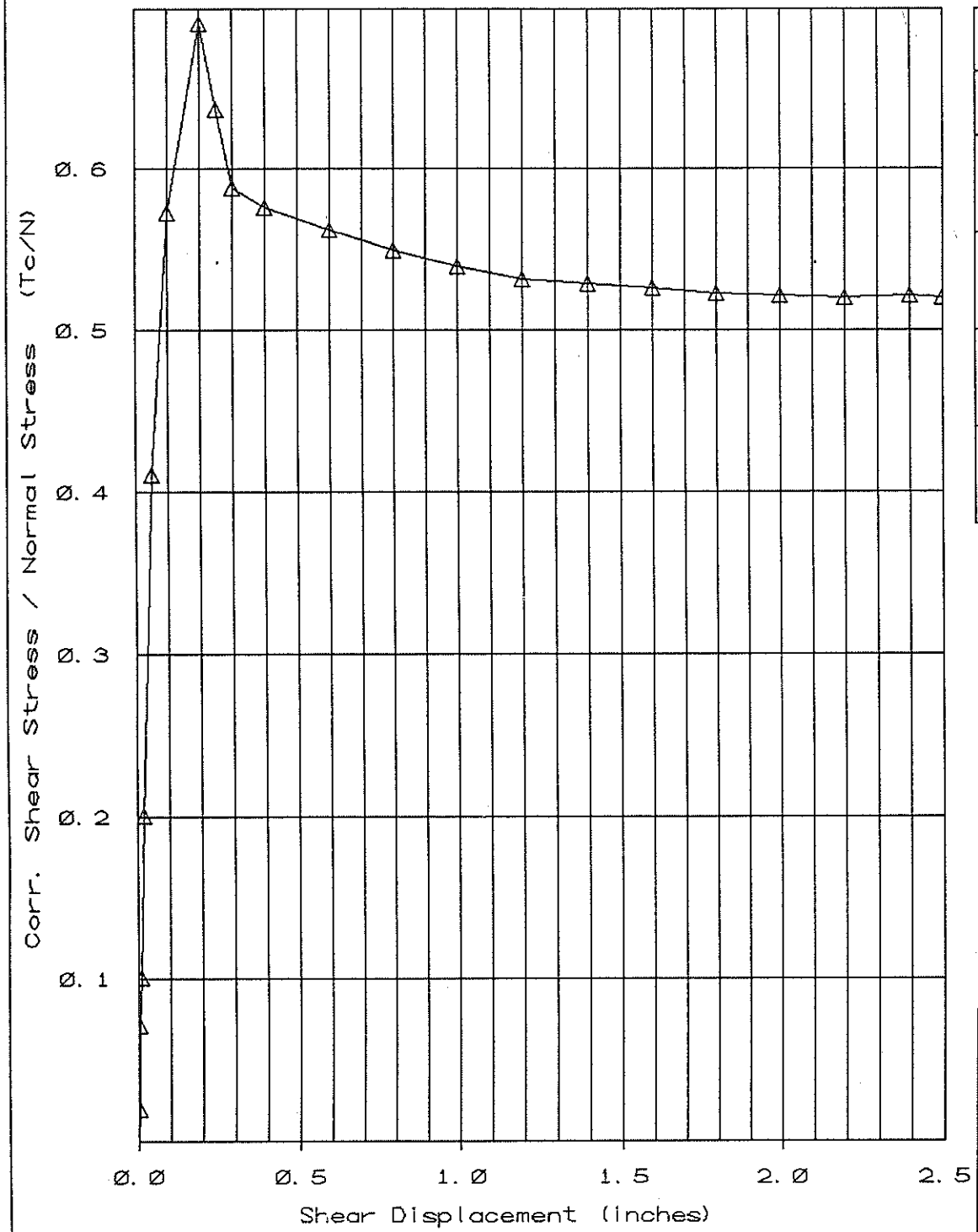
FOXOBORO LANDFILL
FOXOBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-7-99

Reviewer: MCM File No: L19999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS2.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.0 16.5
Dry Density Before Initial Consol (pcf):	106.9
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (3000-6000 CY'S)

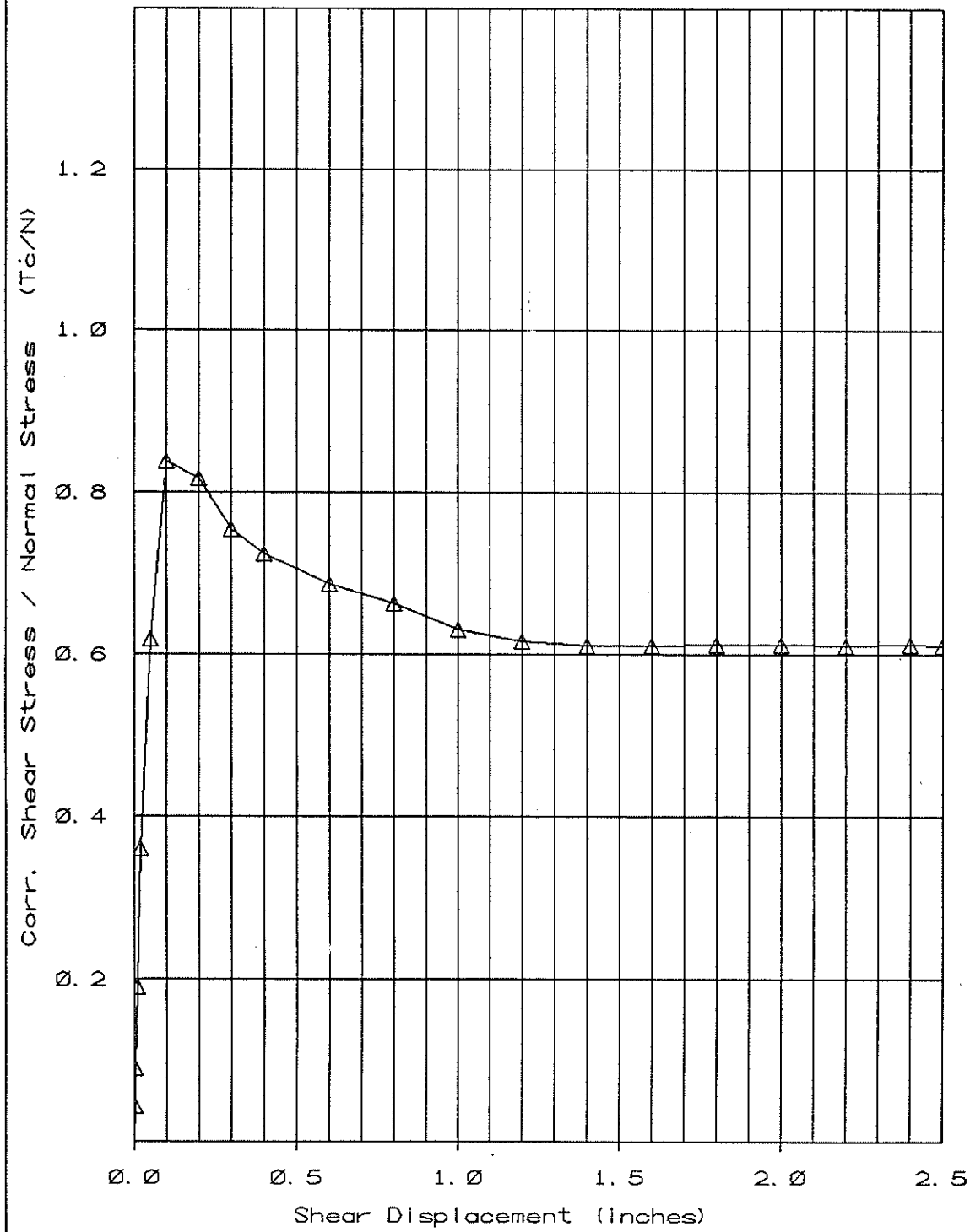
FOXBORO LANDFILL
FOXOBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-7-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS2.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.3 16.1
Dry Density Before Initial Consol (pcf):	107.3
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (3000-6000 CY'S)

FOXBORO LANDFILL
FOXOBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-7-99

Reviewer: DAS File No: L99999.2

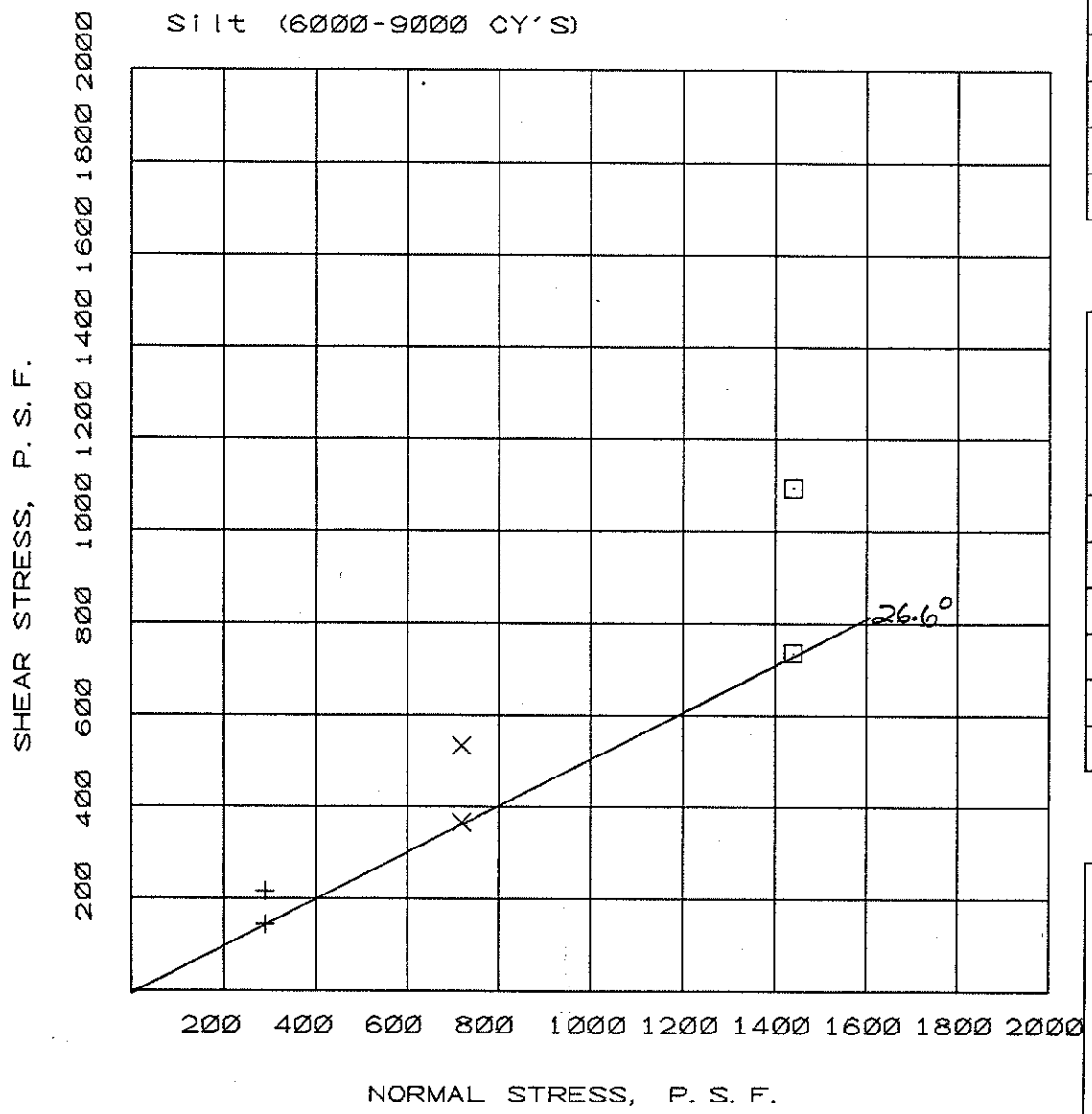
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (6000-9000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS3. 1	+	213	288	141	288
DS3. 2	×	527	720	360	720
DS3. 3	⊡	1081	1440	723	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS3. 1	+				
DS3. 2	×				
DS3. 3	⊡				

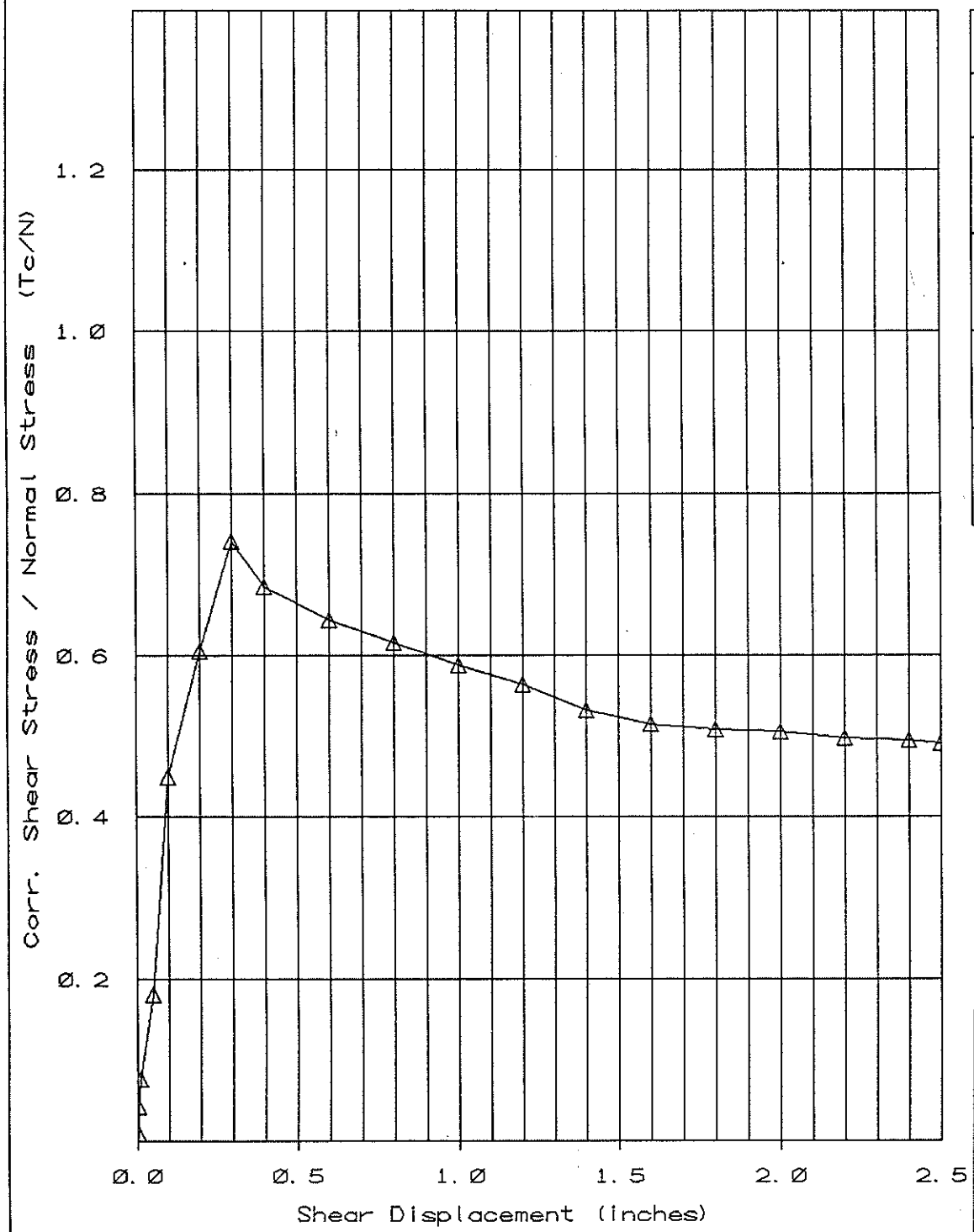
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-9-99

Reviewer: DAS File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS3.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.5 17.0
Dry Density Before Initial Consol (pcf):	106.8
Dry Density After This Stress (pcf):	107.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (6000-9000 CY'S)

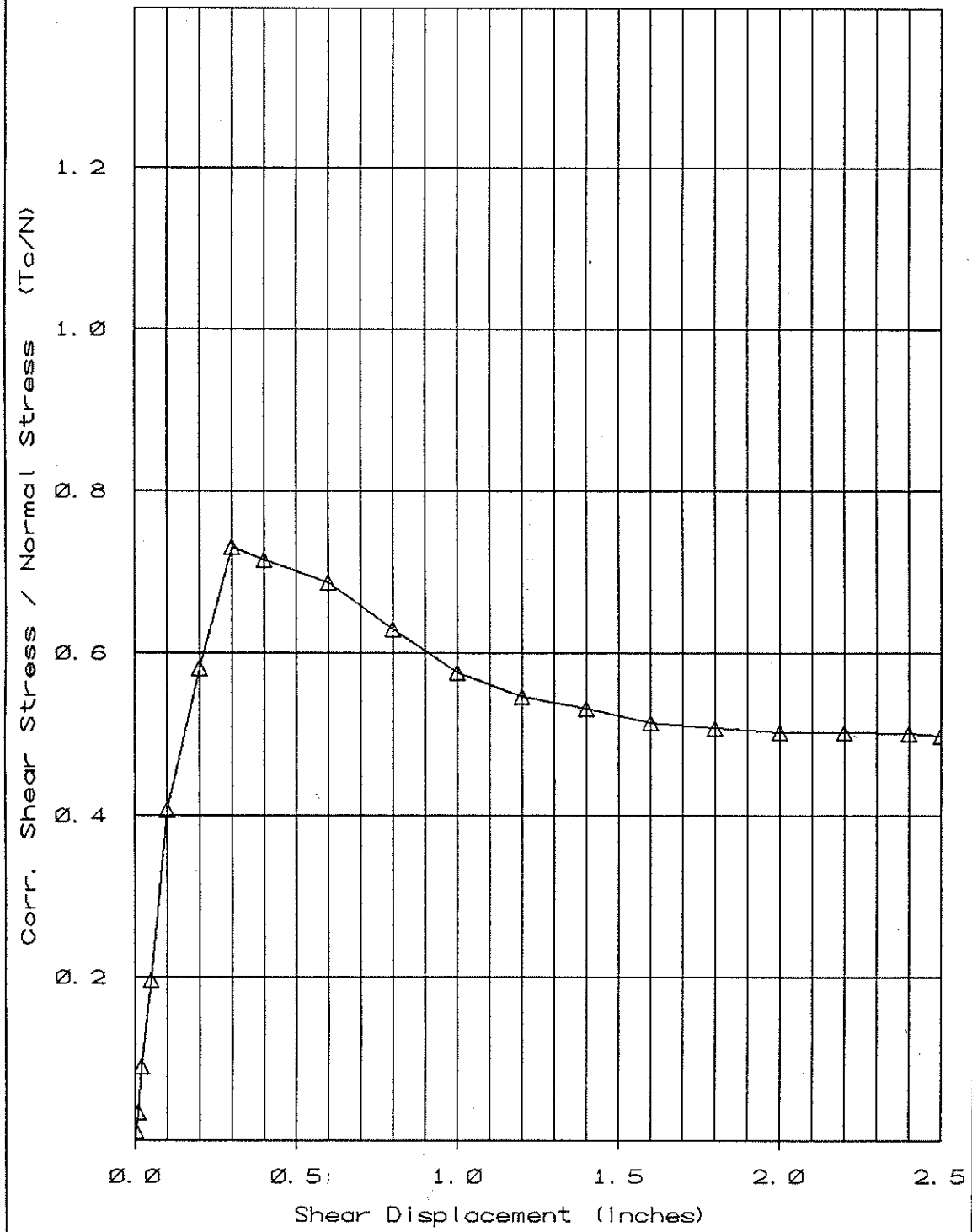
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-9-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS3.2
Normal Stress (psf):	720
IWc (%): FWc (%):	13.9 15.3
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (6000-9000 CY'S)

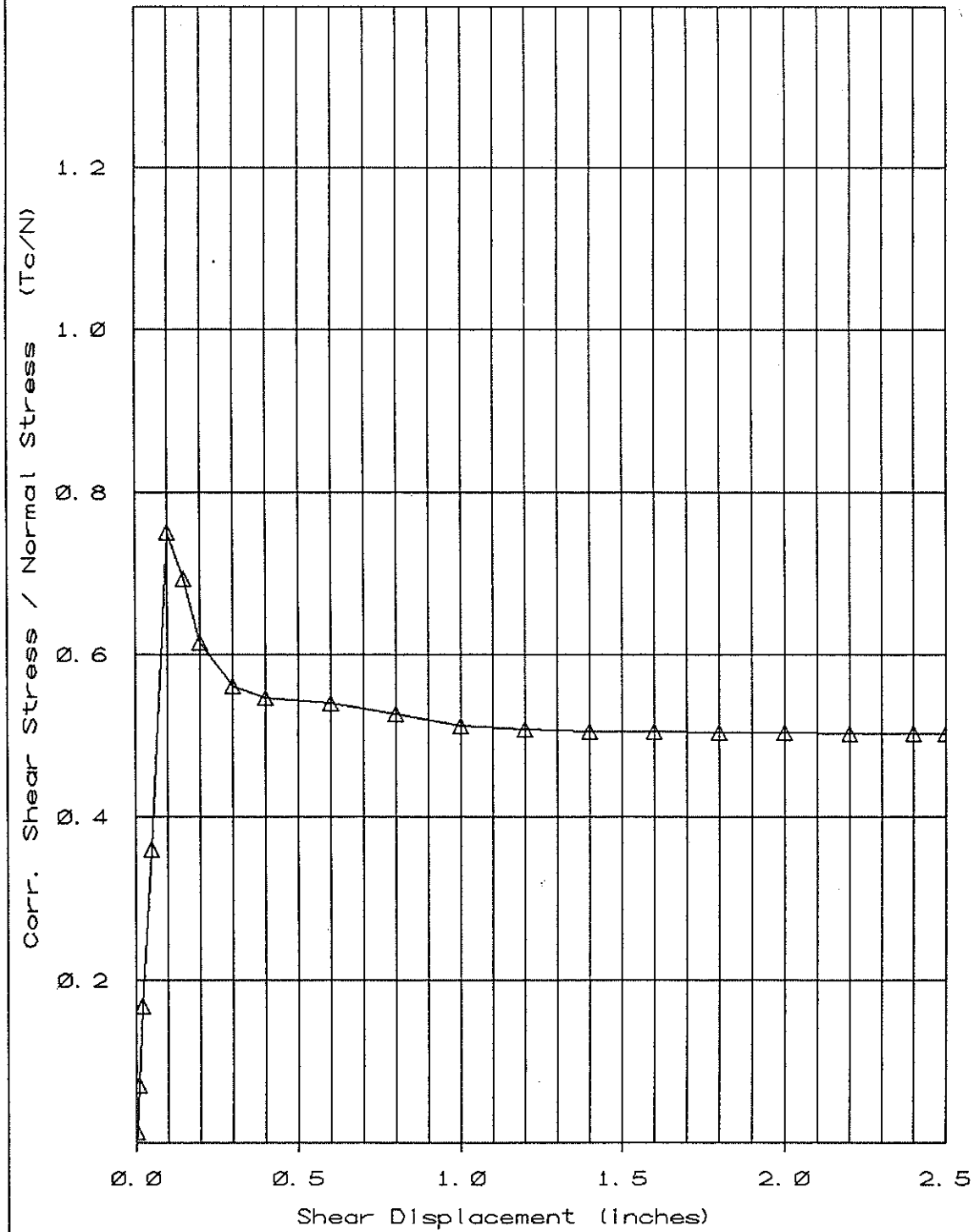
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-9-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS3.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 15.4
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (6000-9000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-9-99

Reviewer: DAS File No: L99999.2

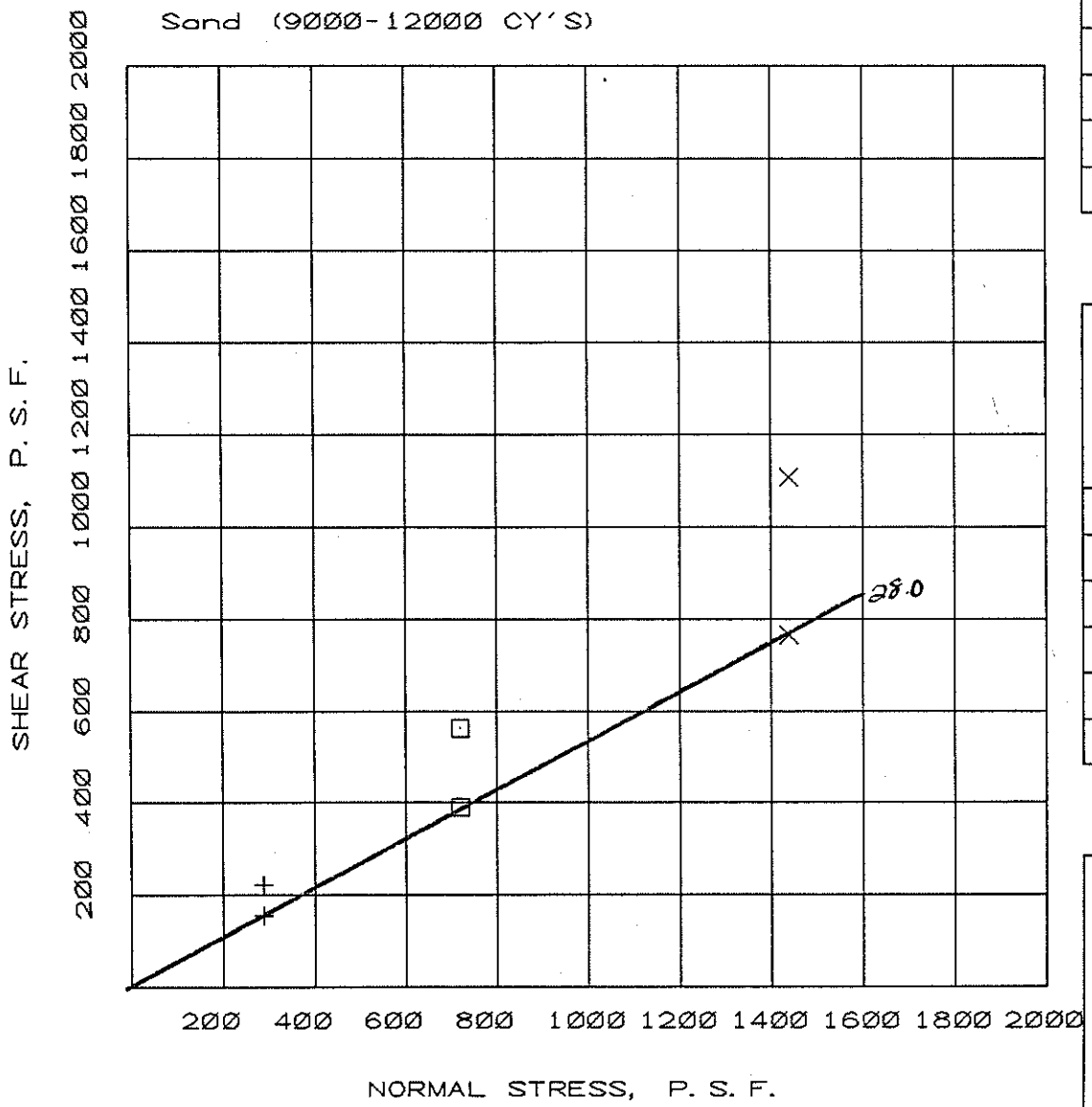
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Sand (9000-12000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS4. 1	+	219	288	153	288
DS4. 3	×	1095	1440	753	1440
DS4. 21	⊡	556	720	383	720

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS4. 1	+				
DS4. 3	×				
DS4. 21	⊡				

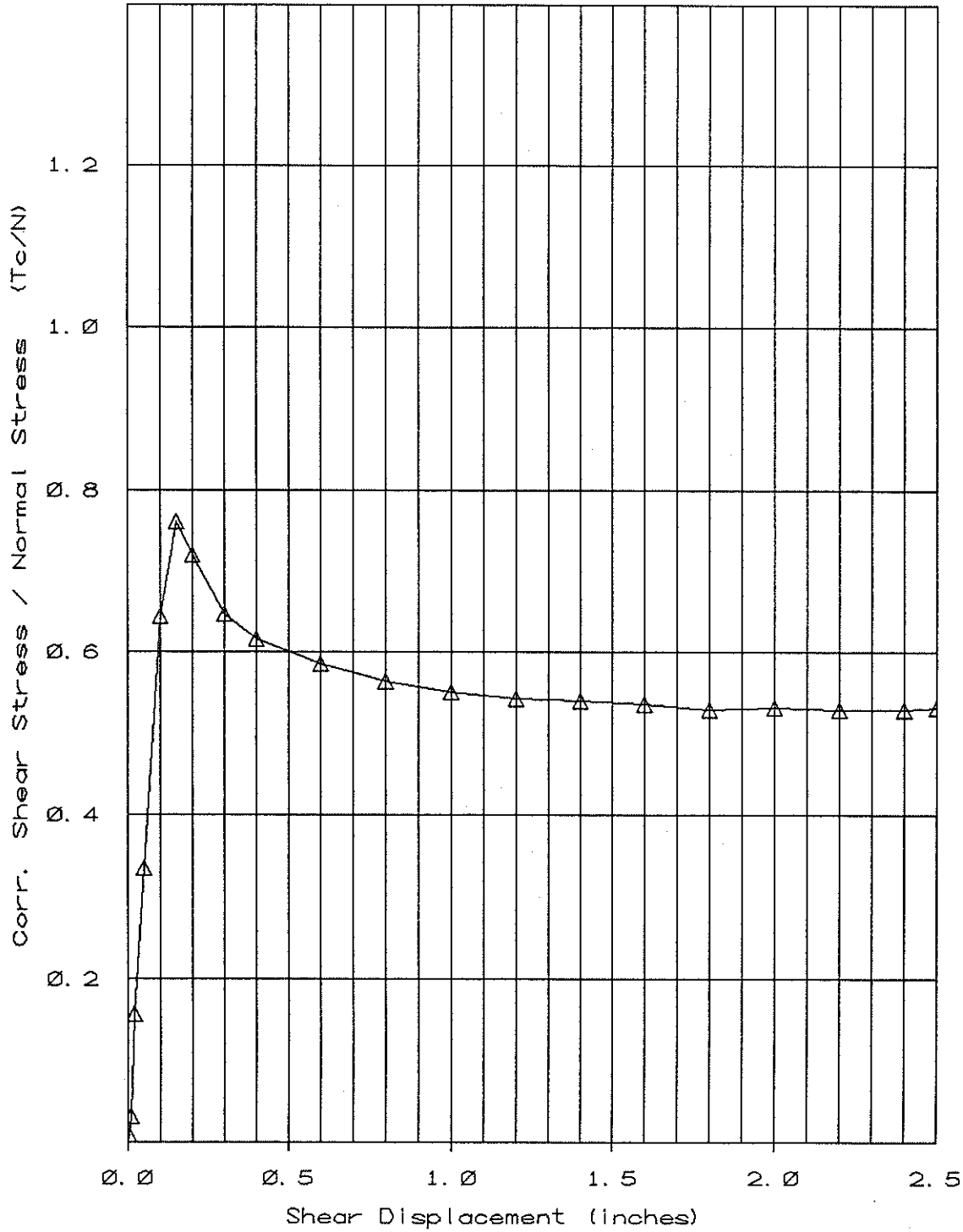
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-11-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS4.1
Normal Stress (psf):	288
IWc (%): FWc (%):	13.8 16.0
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.5
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (9000-12000 CY'S)

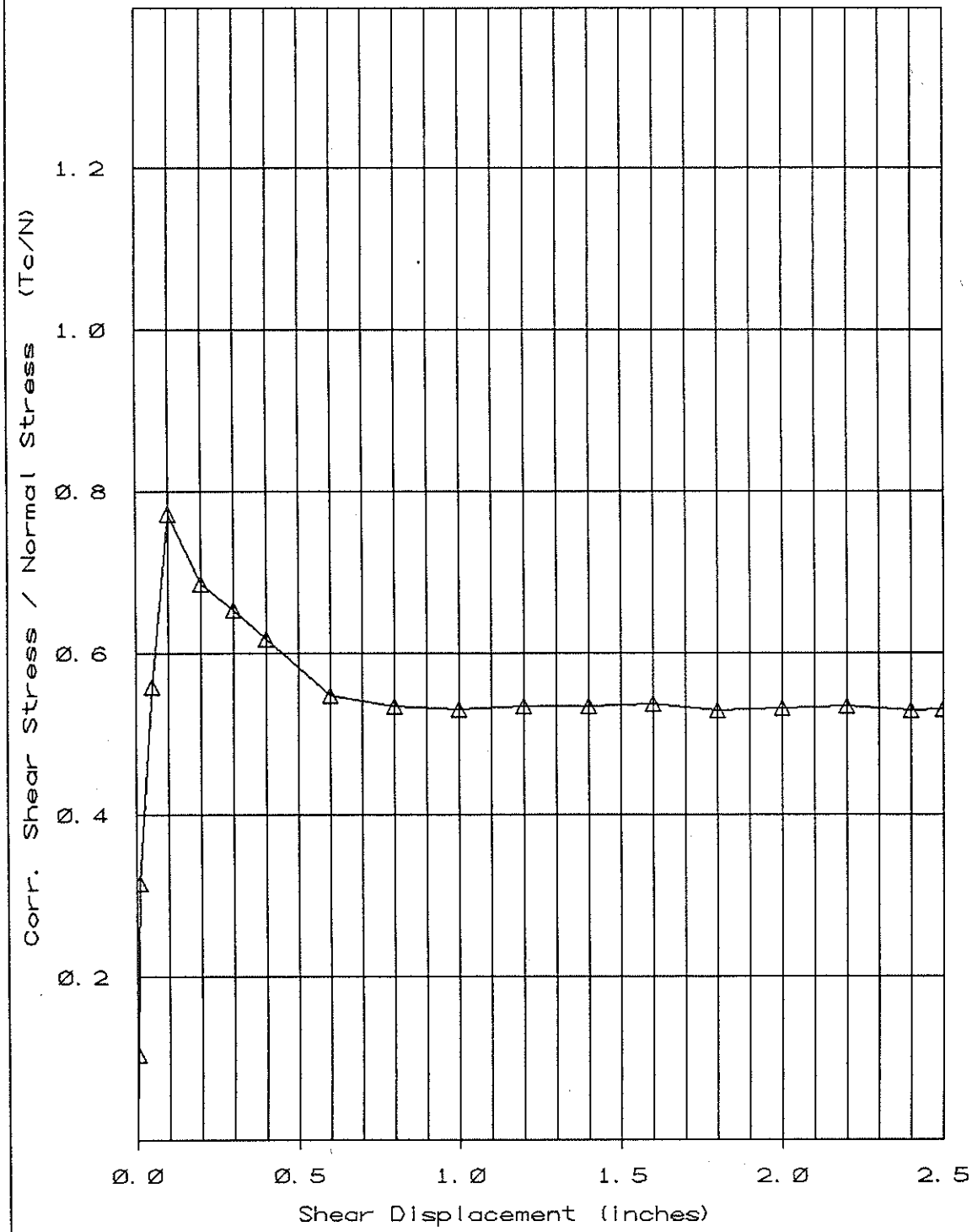
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-11-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS4.21
Normal Stress (psf):	720
IWc (%): FWc (%):	14.1 14.9
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Sand (9000-12000 CY'S)

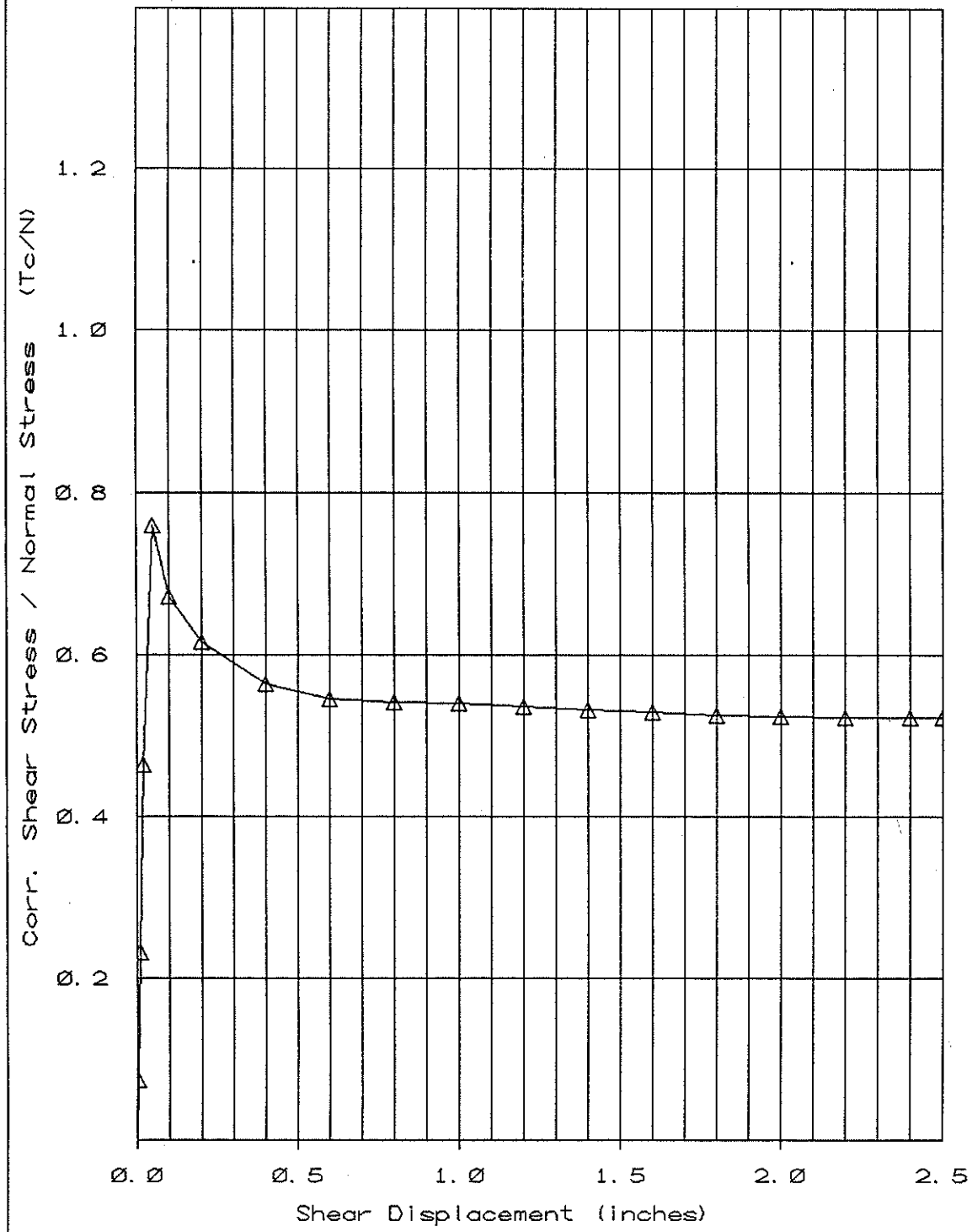
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-11-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS4.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 14.7
Dry Density Before Initial Consol (pcf):	107.0
Dry Density After This Stress (pcf):	108.6
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (9000-12000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-11-99

Reviewer: MCM File No: L99999.2

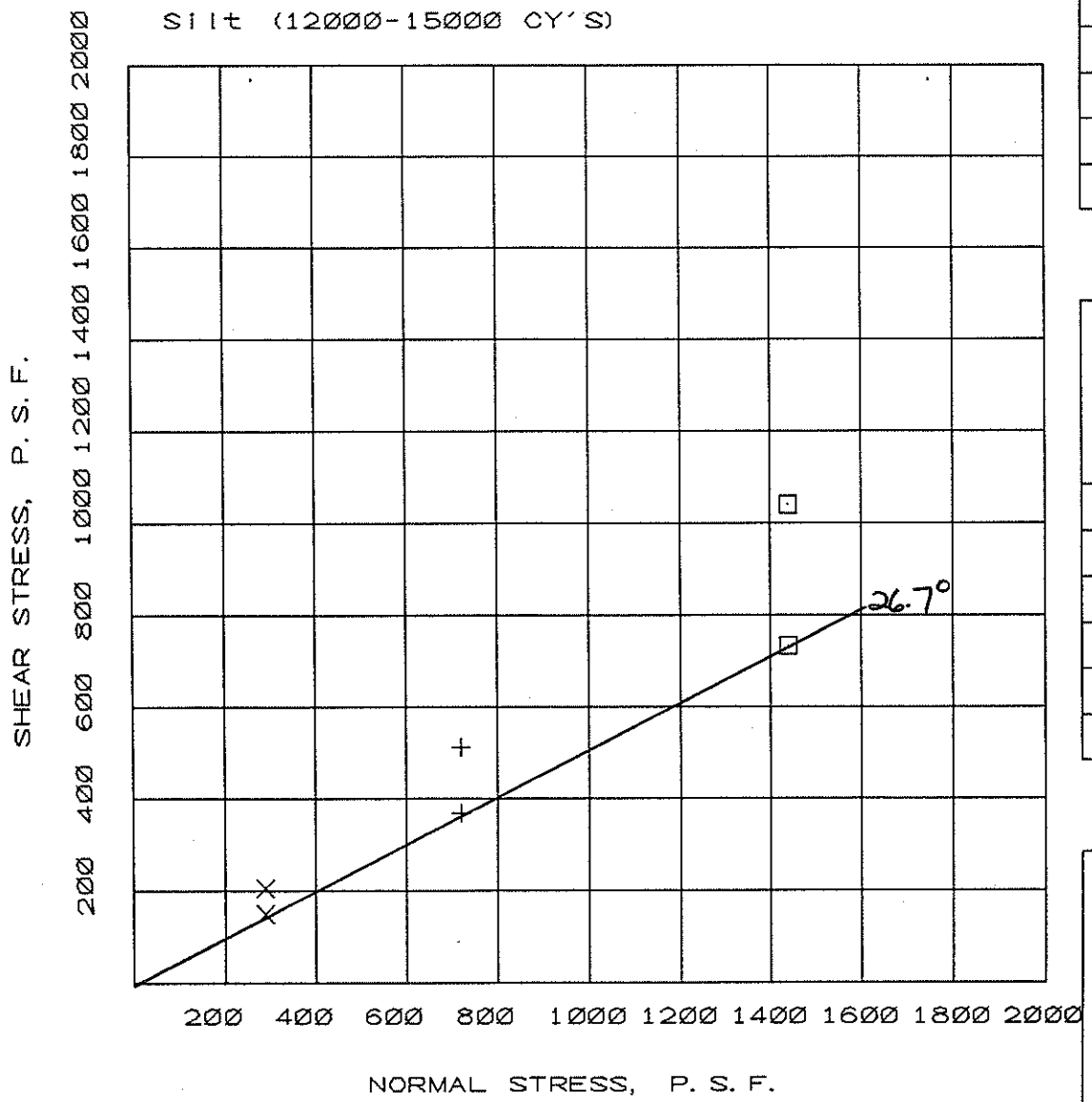
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (12000-15000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS5. 2	+	506	720	361	720
DS5. 1	×	202	288	147	288
DS5. 3	⊡	1026	1440	721	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS5. 2	+				
DS5. 1	×				
DS5. 3	⊡				

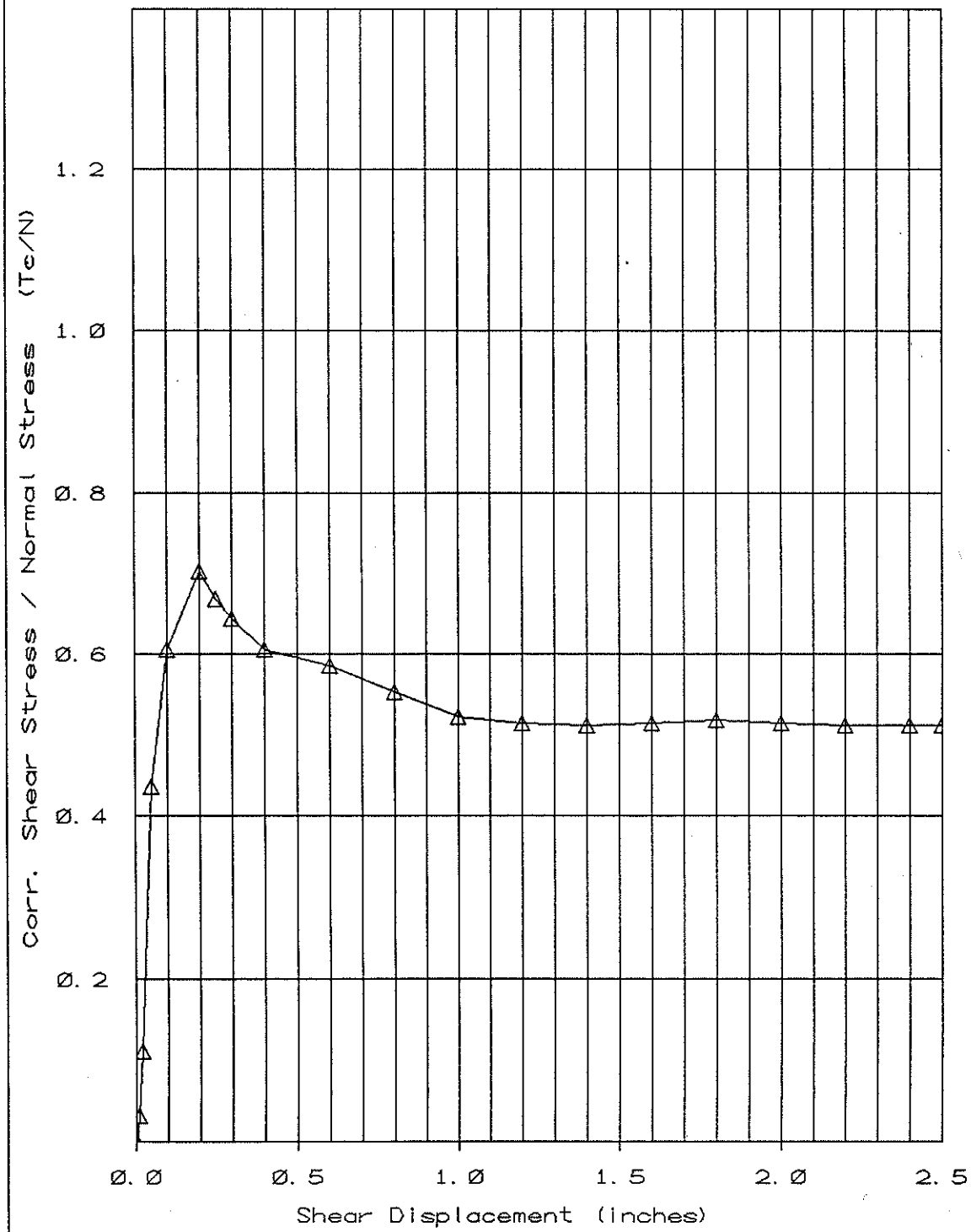
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-13-99

Reviewer: DAS File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS5.1
Normal Stress (psf):	288
IWc (%): FWc (%):	13.8 15.3
Dry Density Before Initial Consol (pcf):	106.9
Dry Density After This Stress (pcf):	107.1
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (12000-15000 CY'S)

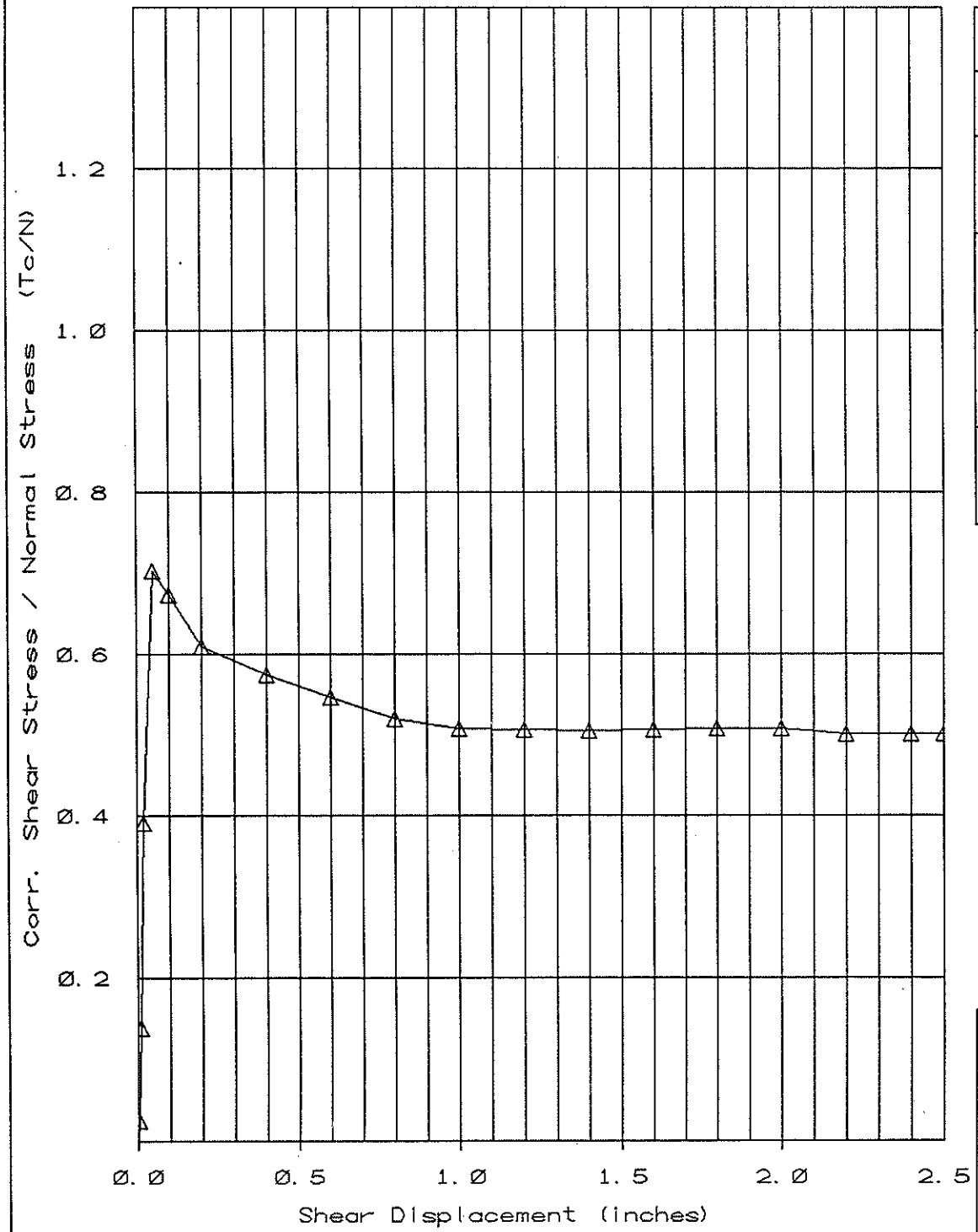
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-13-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS5.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.0 15.0
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	108.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (12000-15000 CY'S)

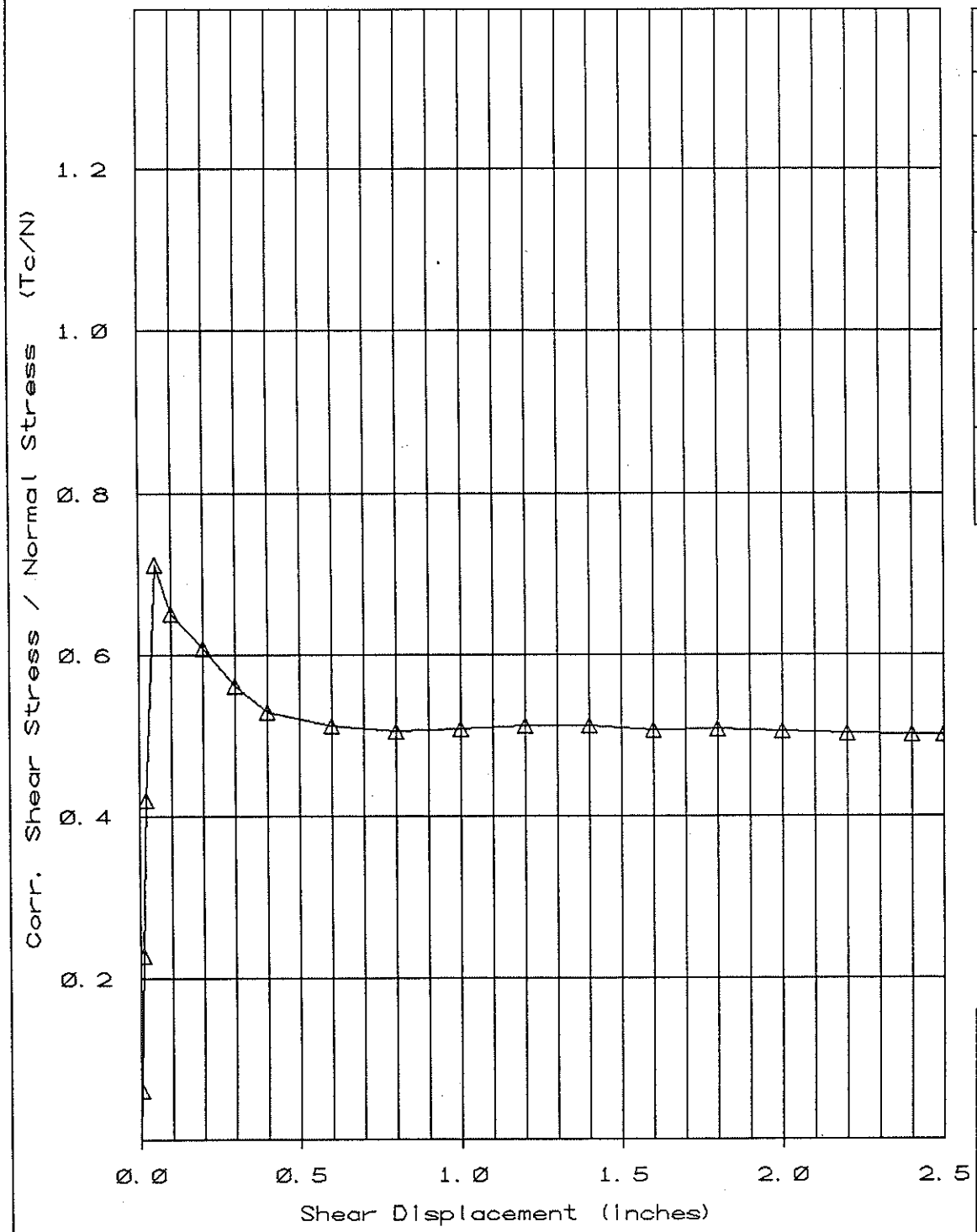
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-13-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS5.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.0 15.1
Dry Density Before Initial Consol (pcf):	107.0
Dry Density After This Stress (pcf):	108.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (12000-15000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-13-99

Reviewer: DAS File No: L99999.2

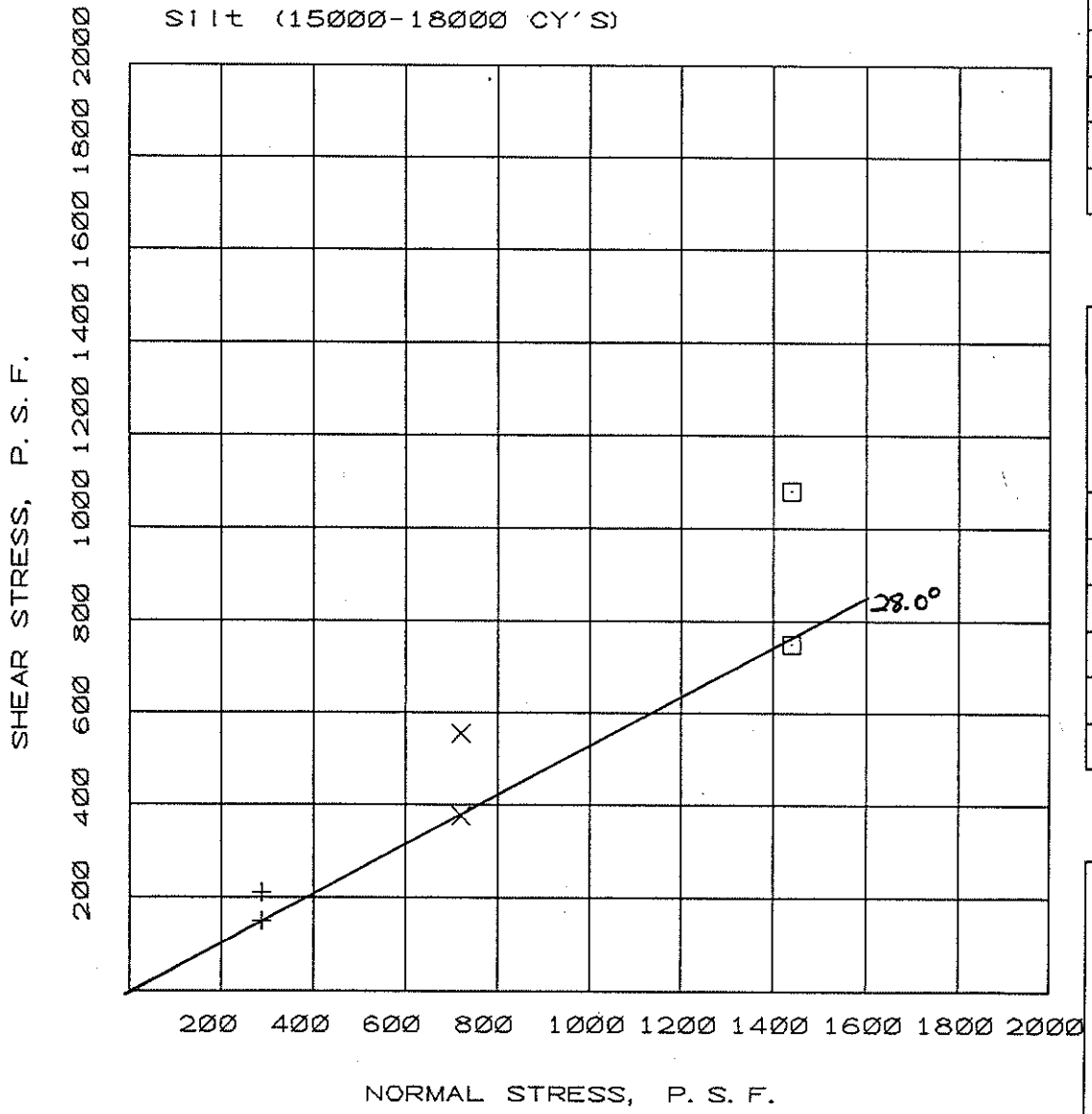
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (15000-18000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS6. 1	+	208	288	147	288
DS6. 2	×	549	720	369	720
DS6. 3	⊡	1067	1440	737	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS6. 1	+				
DS6. 2	×				
DS6. 3	⊡				

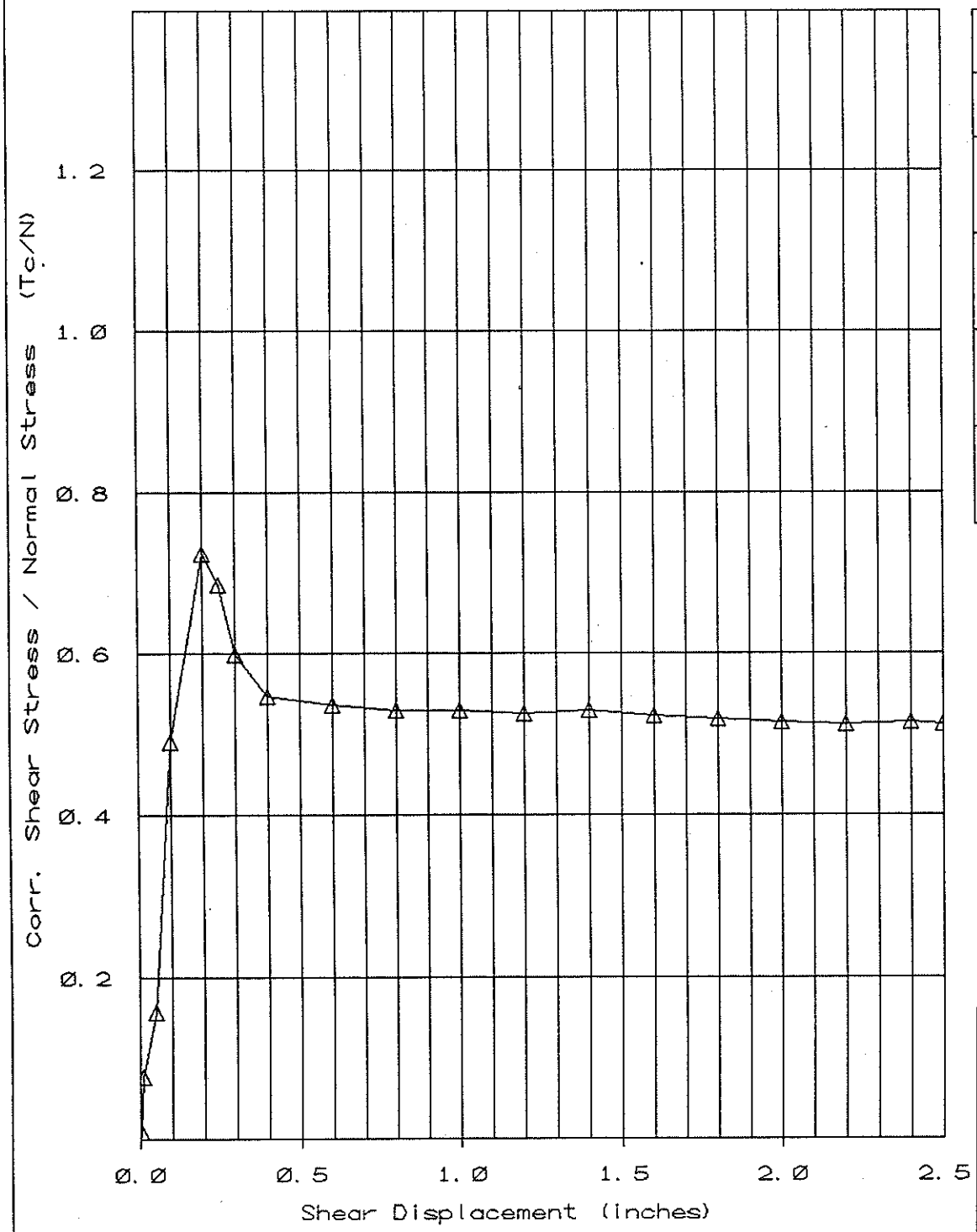
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-15-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS6.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.3 16.1
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (15000-18000 CY'S)

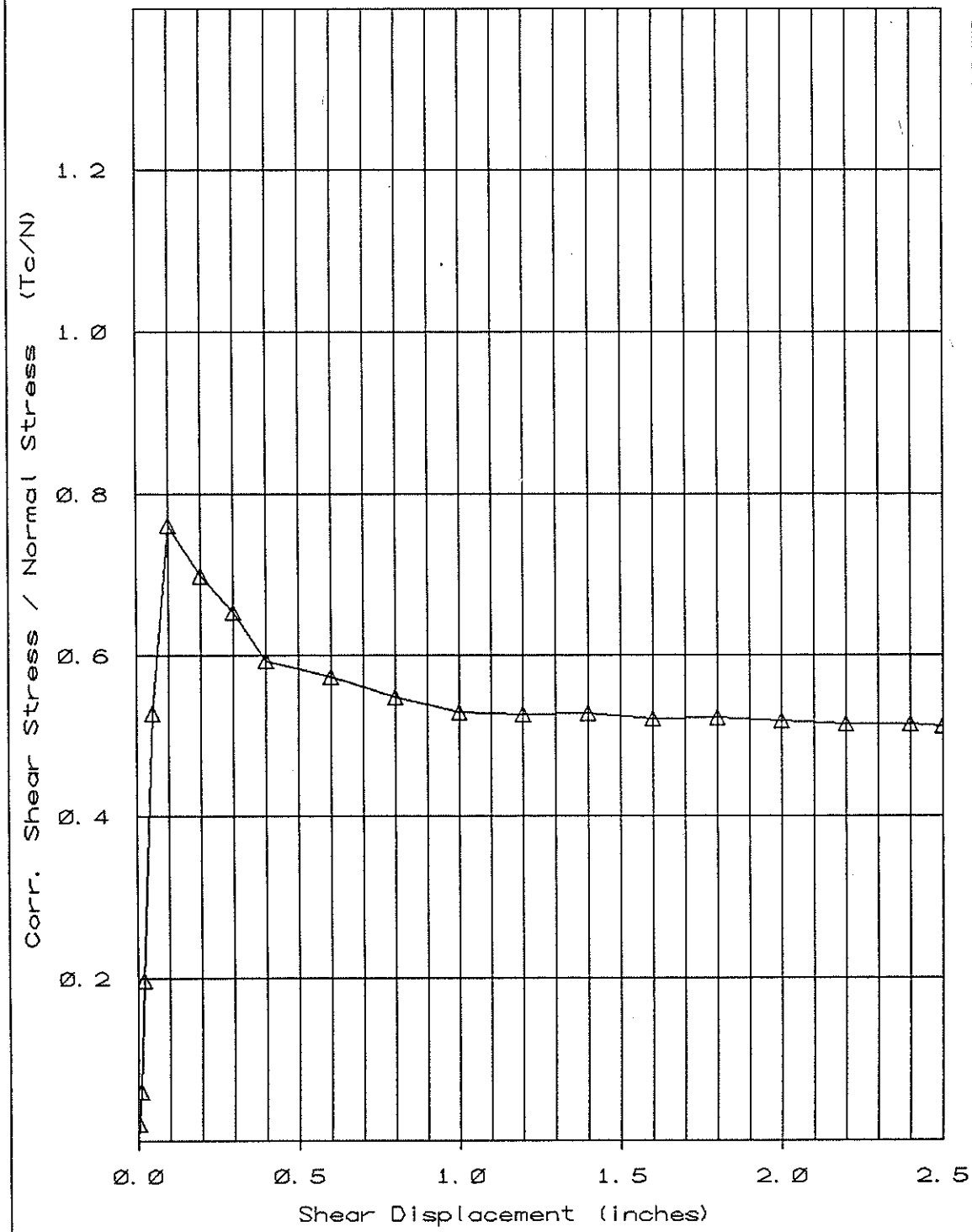
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-15-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS6.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.2 15.6
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.7
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (15000-18000 CY'S)

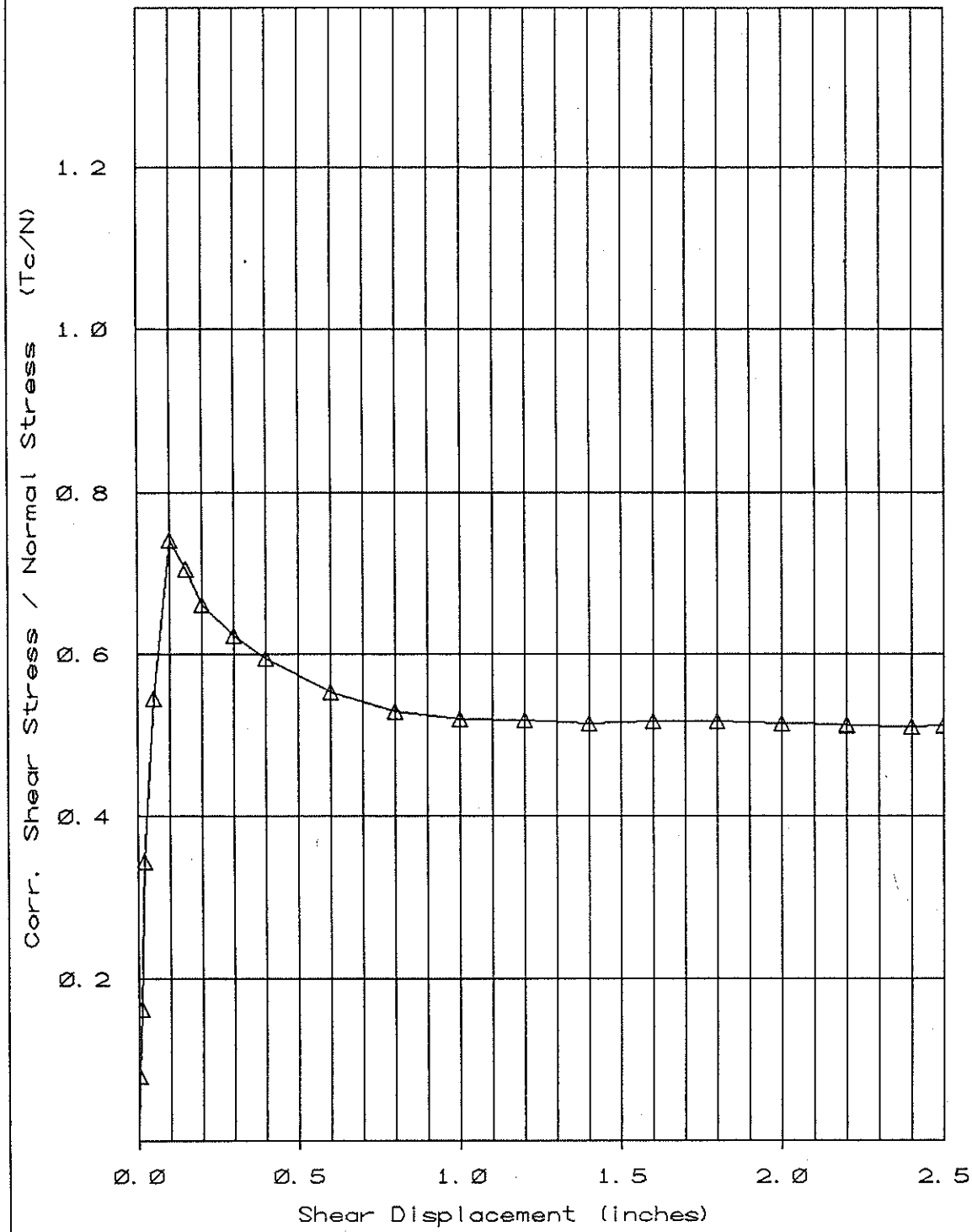
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-15-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS6.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 15.0
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	109.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (15000-18000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-15-99

Reviewer: MCM File No: L99999.2

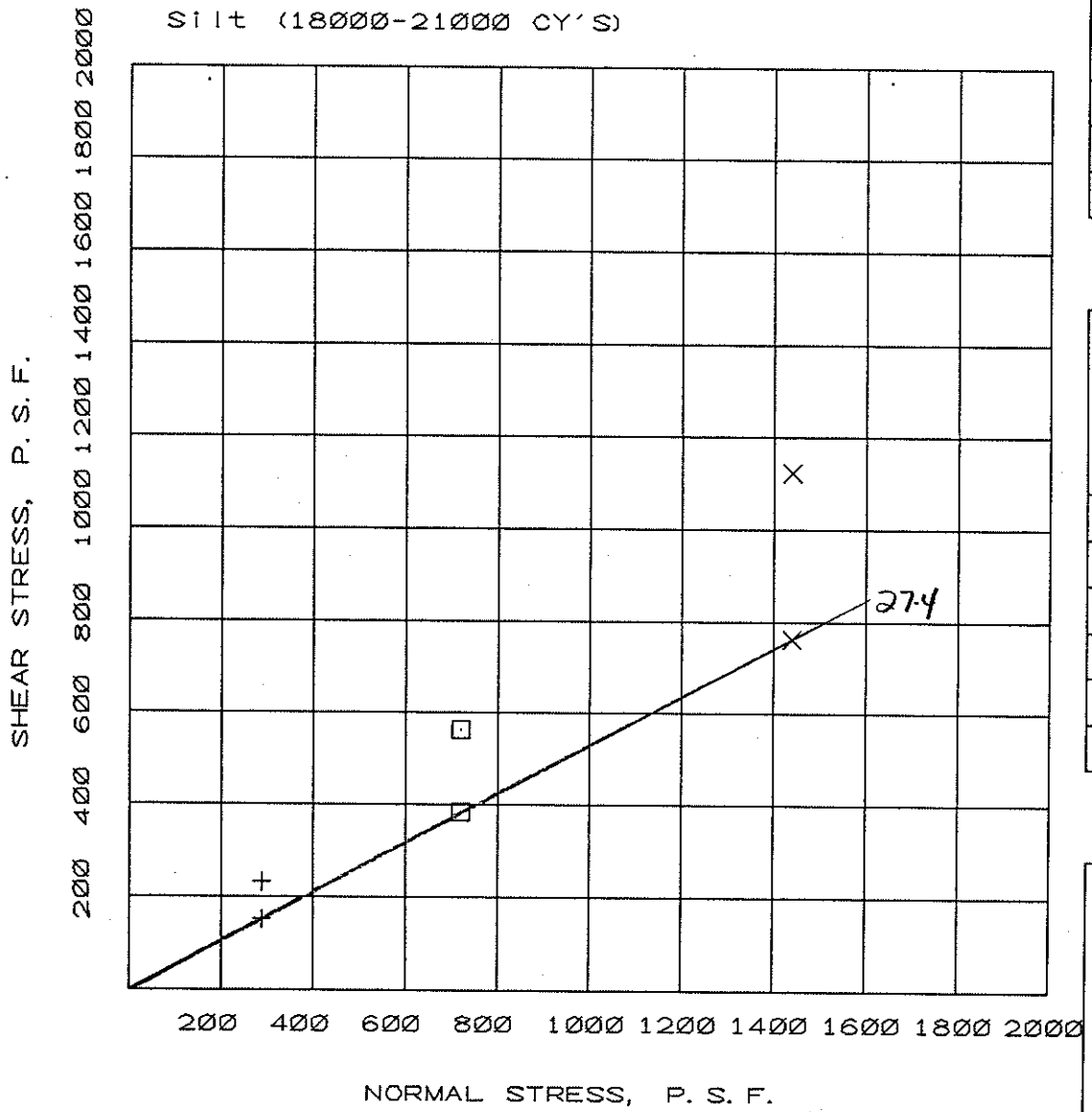
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-) Silt (18000-21000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS7. 1	+	228	288	149	288
DS7. 3	×	1110	1440	750	1440
DS7. 2	⊡	557	720	377	720

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS7. 1	+				
DS7. 3	×				
DS7. 2	⊡				

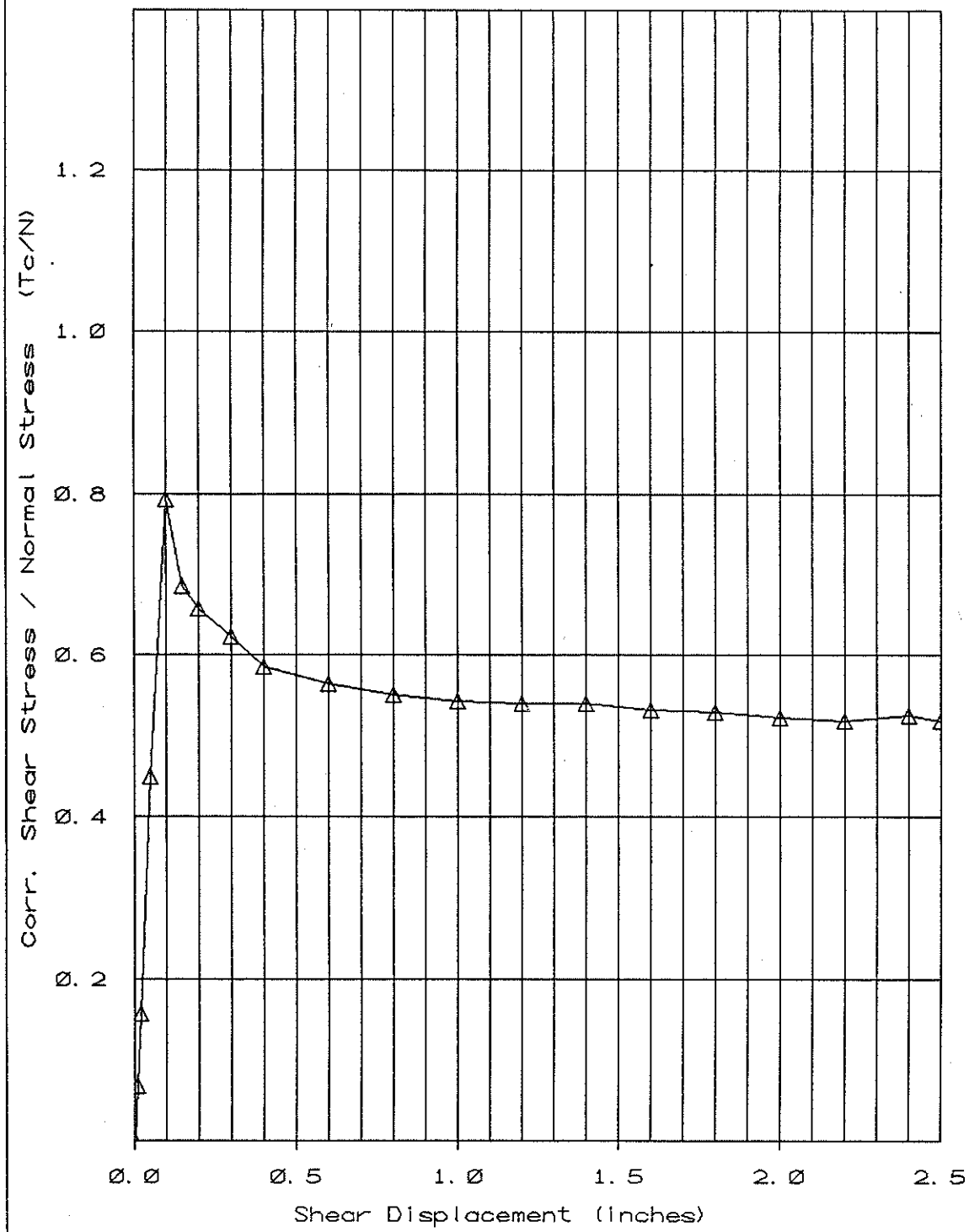
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-18-99

Reviewer: DAS File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS7.1
Normal Stress (psf):	288
IWc (%): FWc (%):	13.9 15.8
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (18000-21000 CY'S)

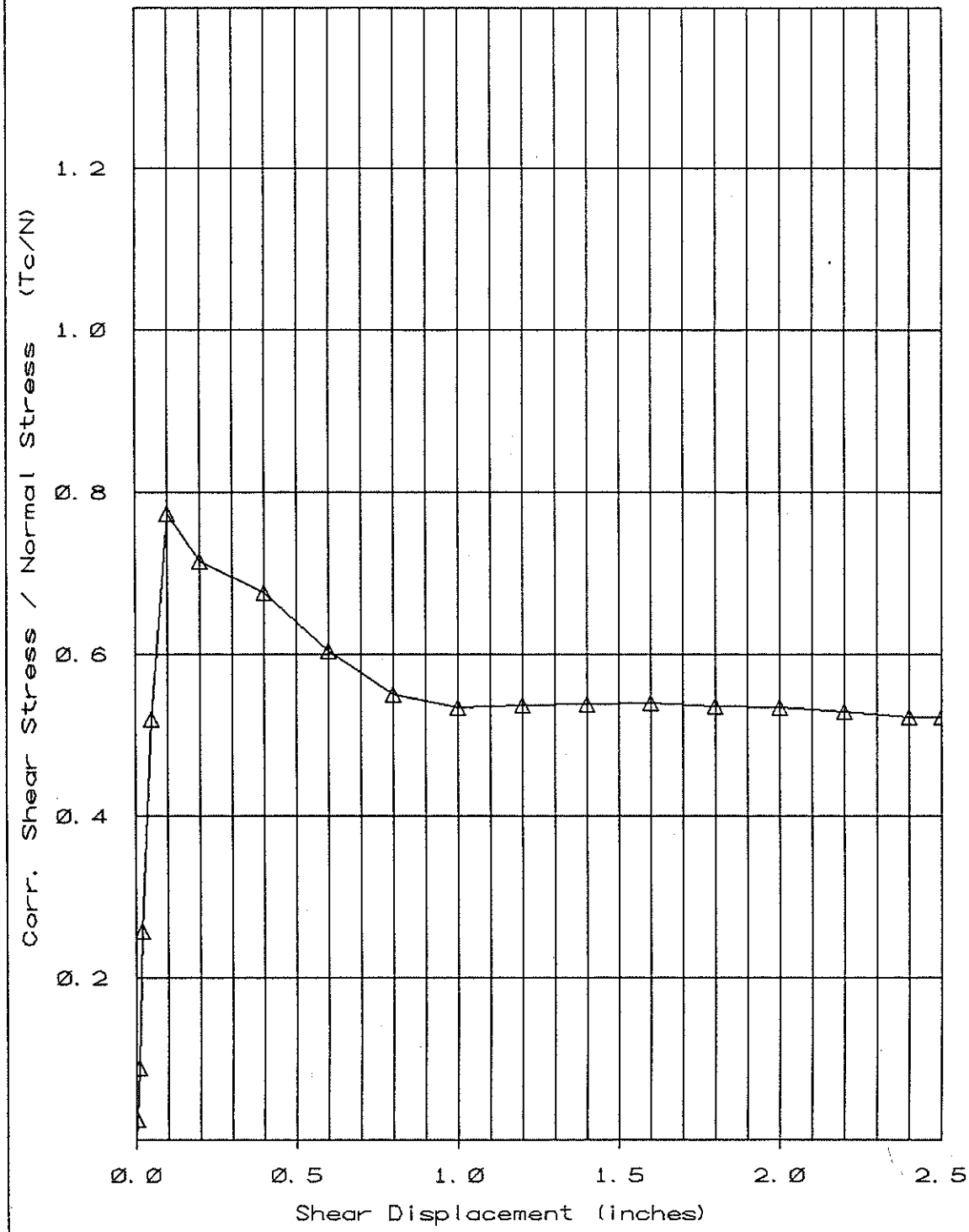
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-18-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS7.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.1 15.3
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.7
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (18000-21000 CY'S)

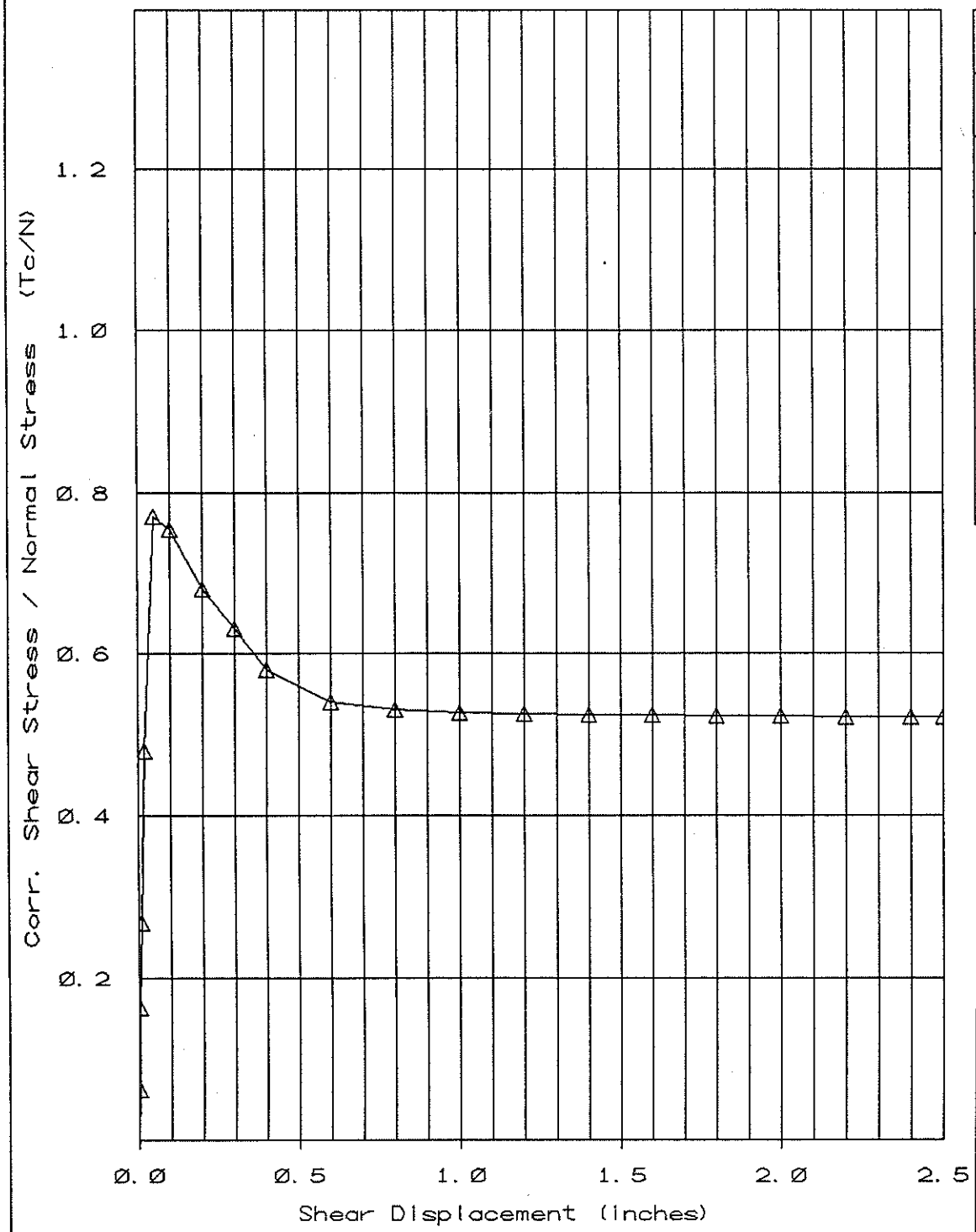
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-18-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS7.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.0 14.8
Dry Density Before Initial Consol (pcf):	107.0
Dry Density After This Stress (pcf):	108.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-18-99

Reviewer: MCM File No: L99999.2

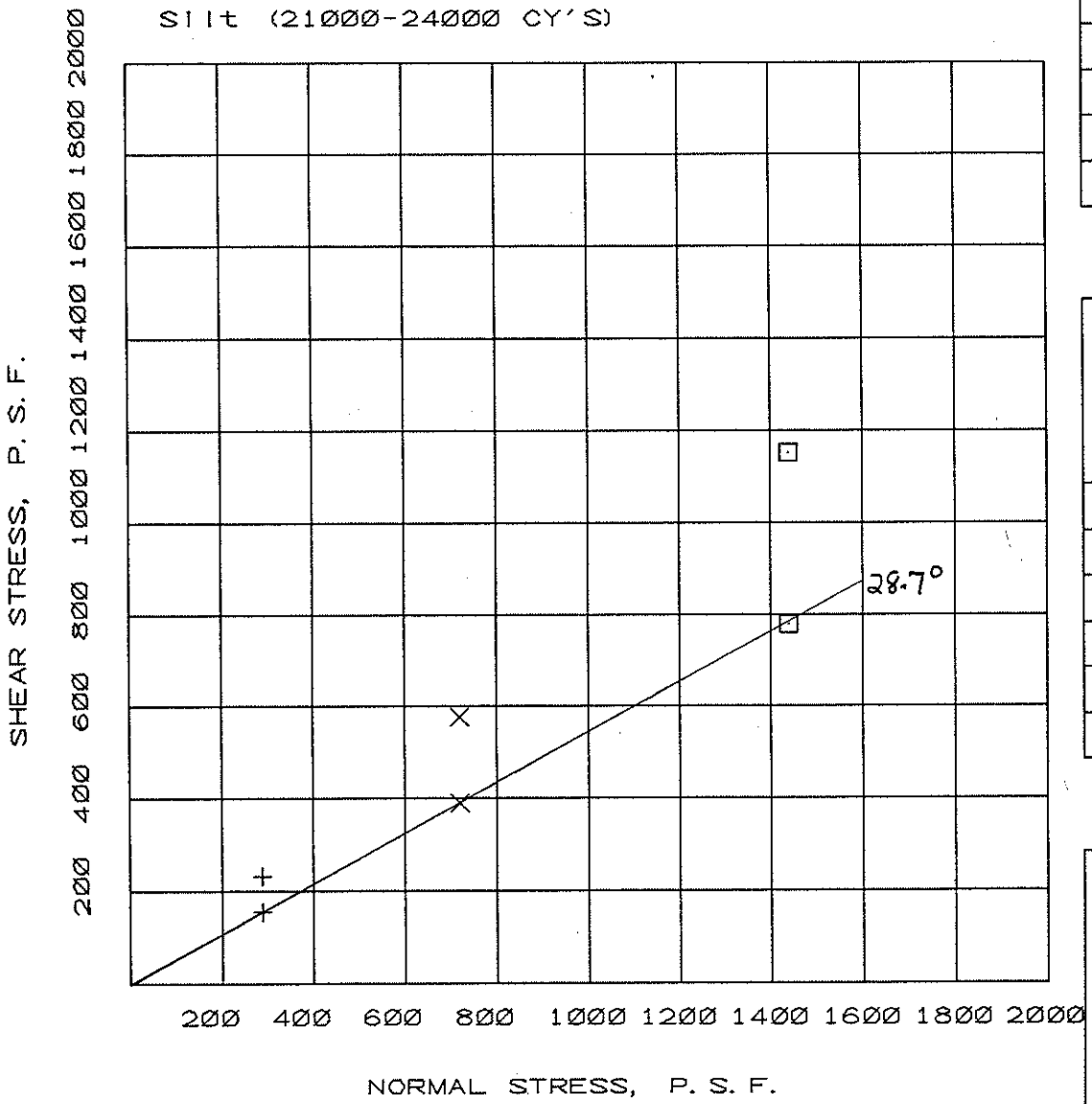
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (21000-24000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS8. 1	+	228	288	152	288
DS8. 2	×	570	720	383	720
DS8. 3	⊡	1139	1440	767	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS8. 1	+				
DS8. 2	×				
DS8. 3	⊡				

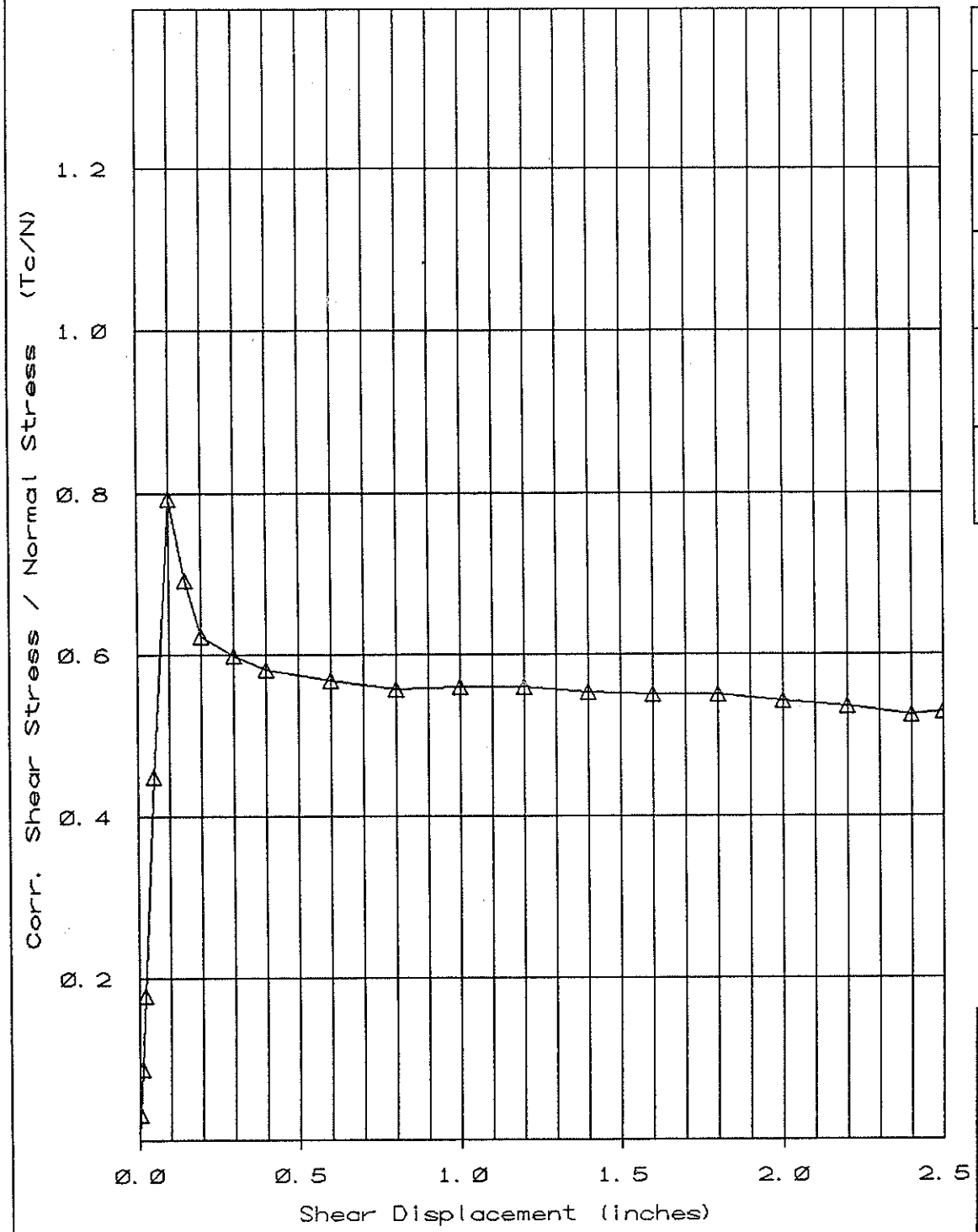
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-20-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS8.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.0
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (21000-24000 CY'S)

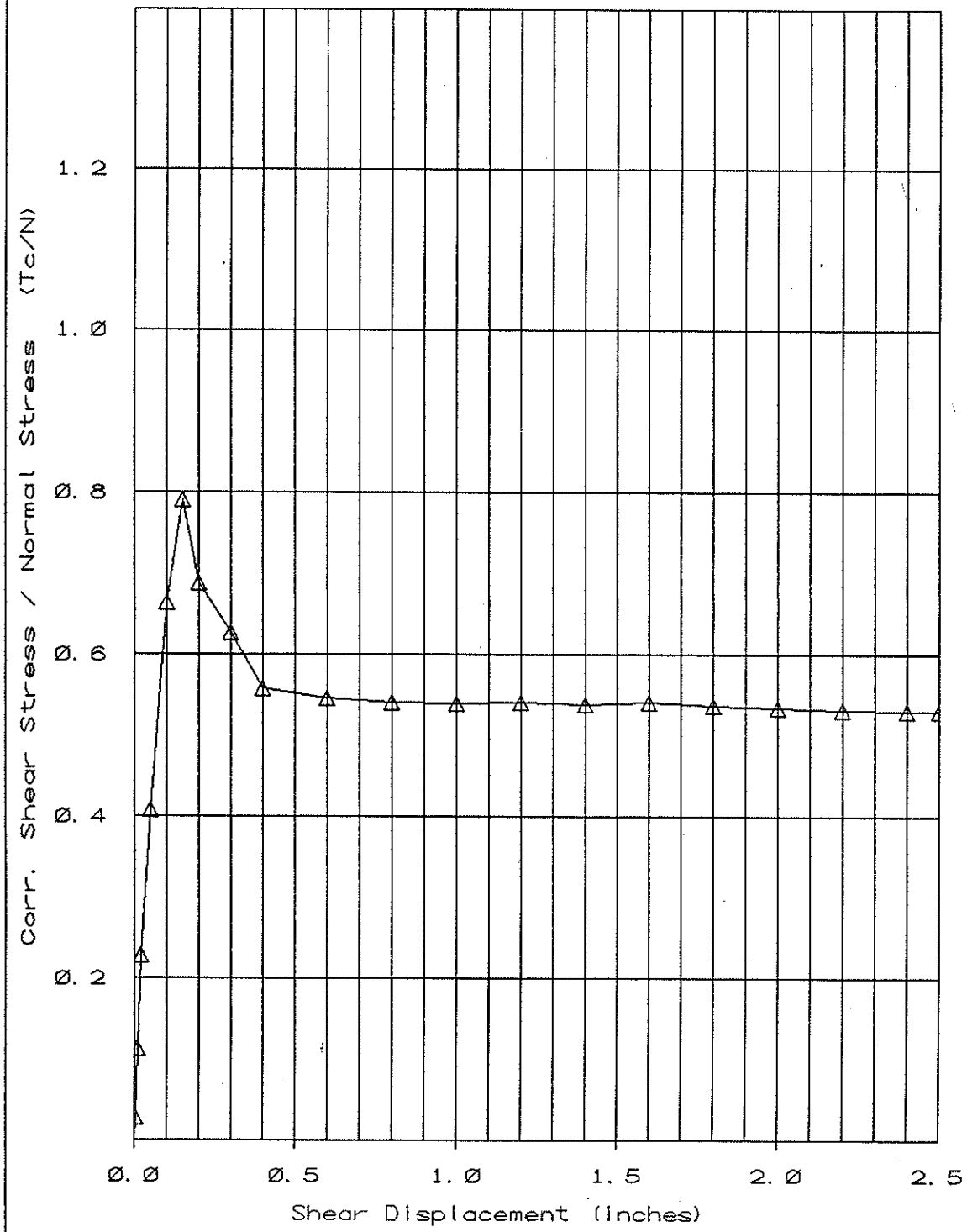
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-20-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS8.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.1 15.7
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	107.7
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (21000-24000 CY'S)

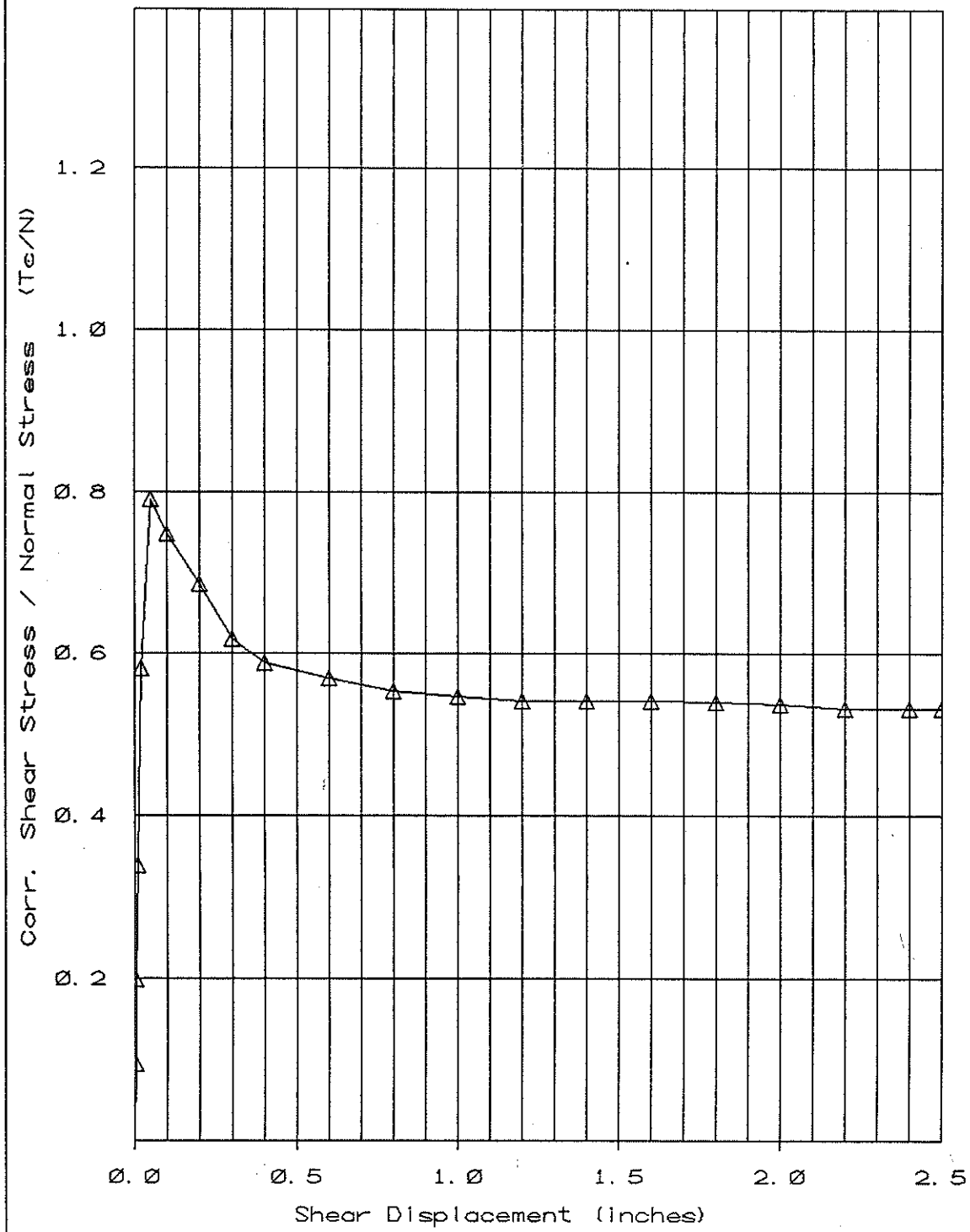
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-20-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS8.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 15.2
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	108.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (21000-24000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-20-99

Reviewer: MCM File No: L99999.2

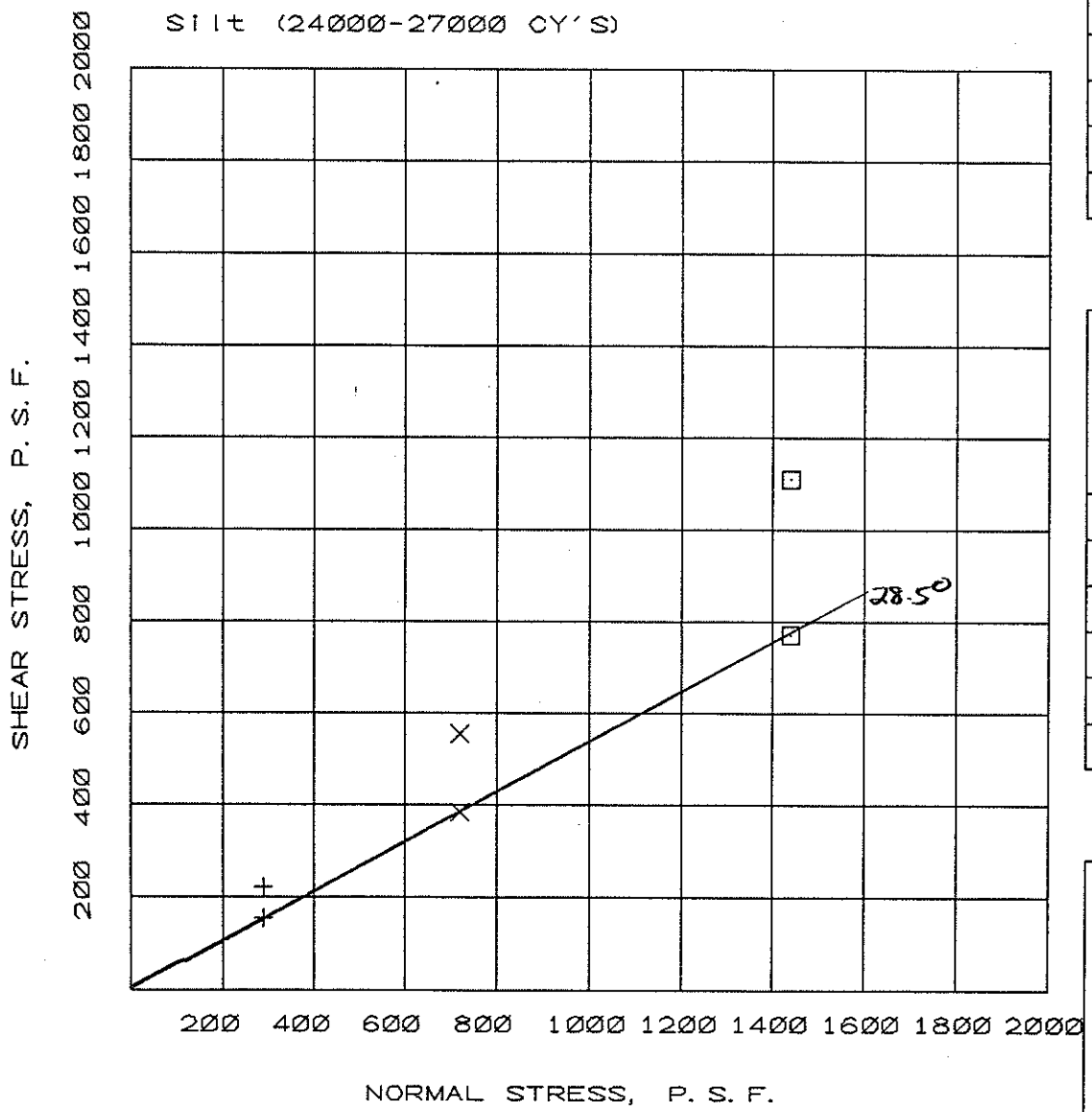
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (24000-27000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS9. 1	+	219	288	151	288
DS9. 2	×	548	720	379	720
DS9. 3	⊡	1097	1440	758	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS9. 1	+				
DS9. 2	×				
DS9. 3	⊡				

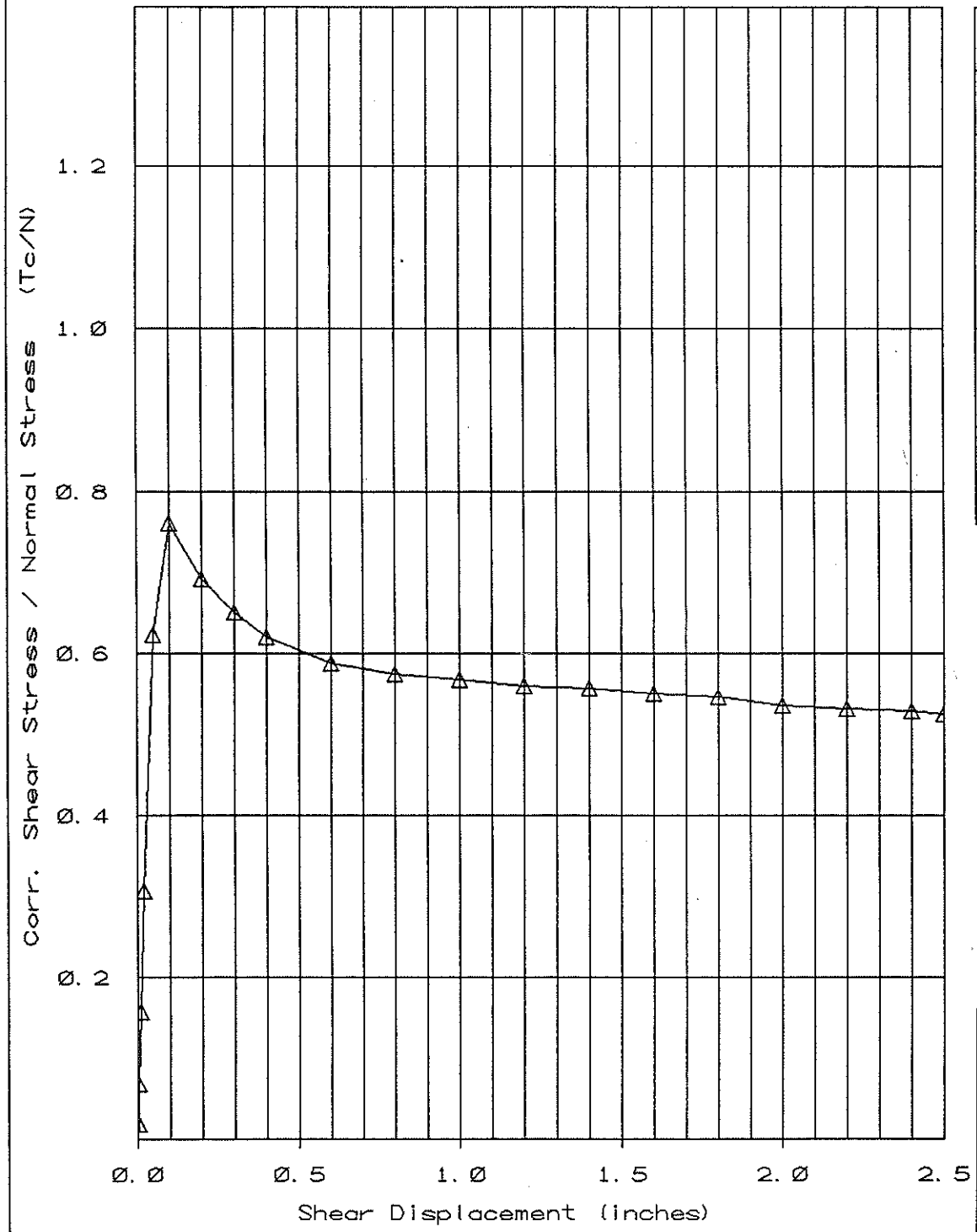
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-22-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS9.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.2
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	107.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (24000-27000 CY'S)

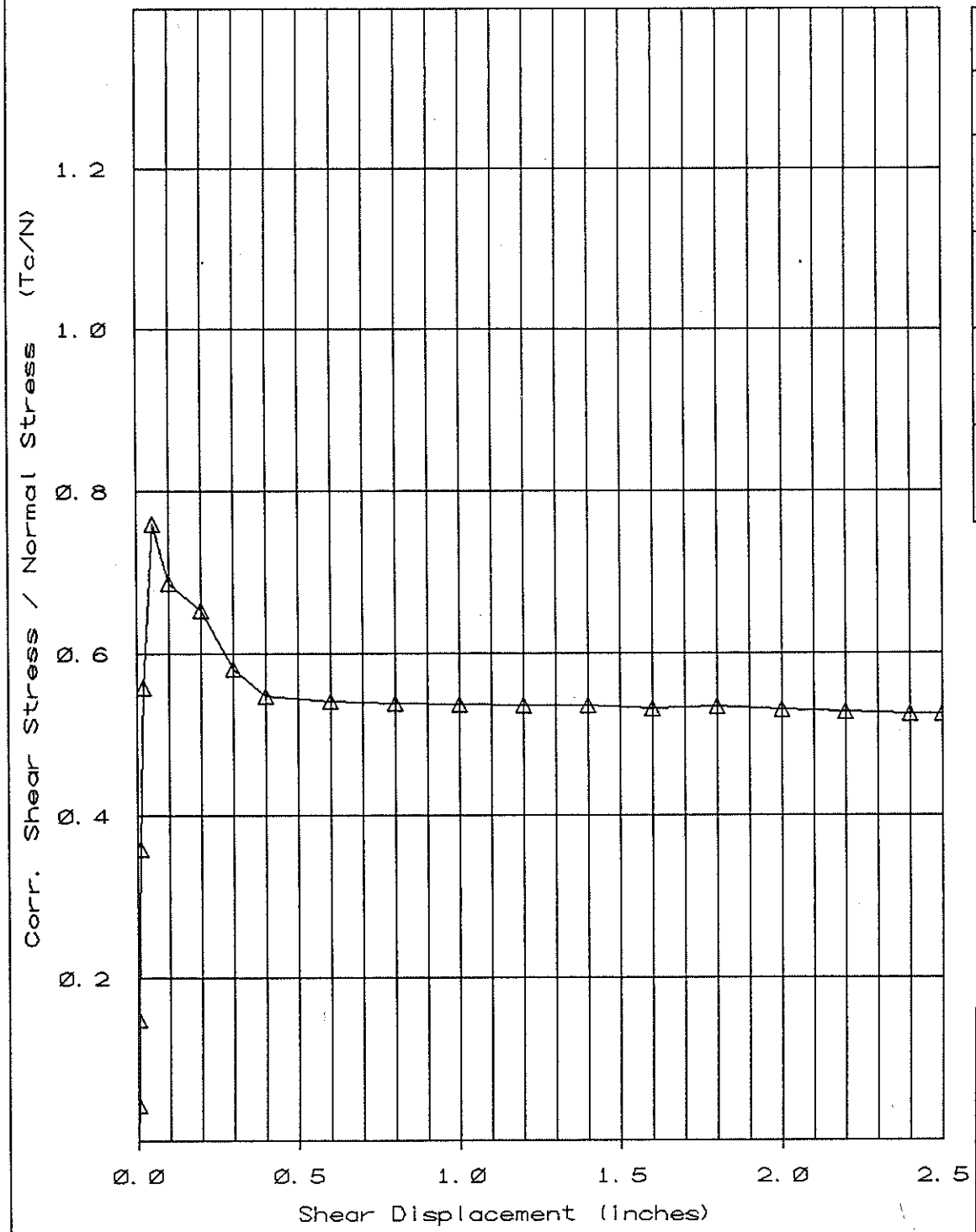
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-22-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS9.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.1 15.6
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	107.8
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (24000-27000 CY'S)

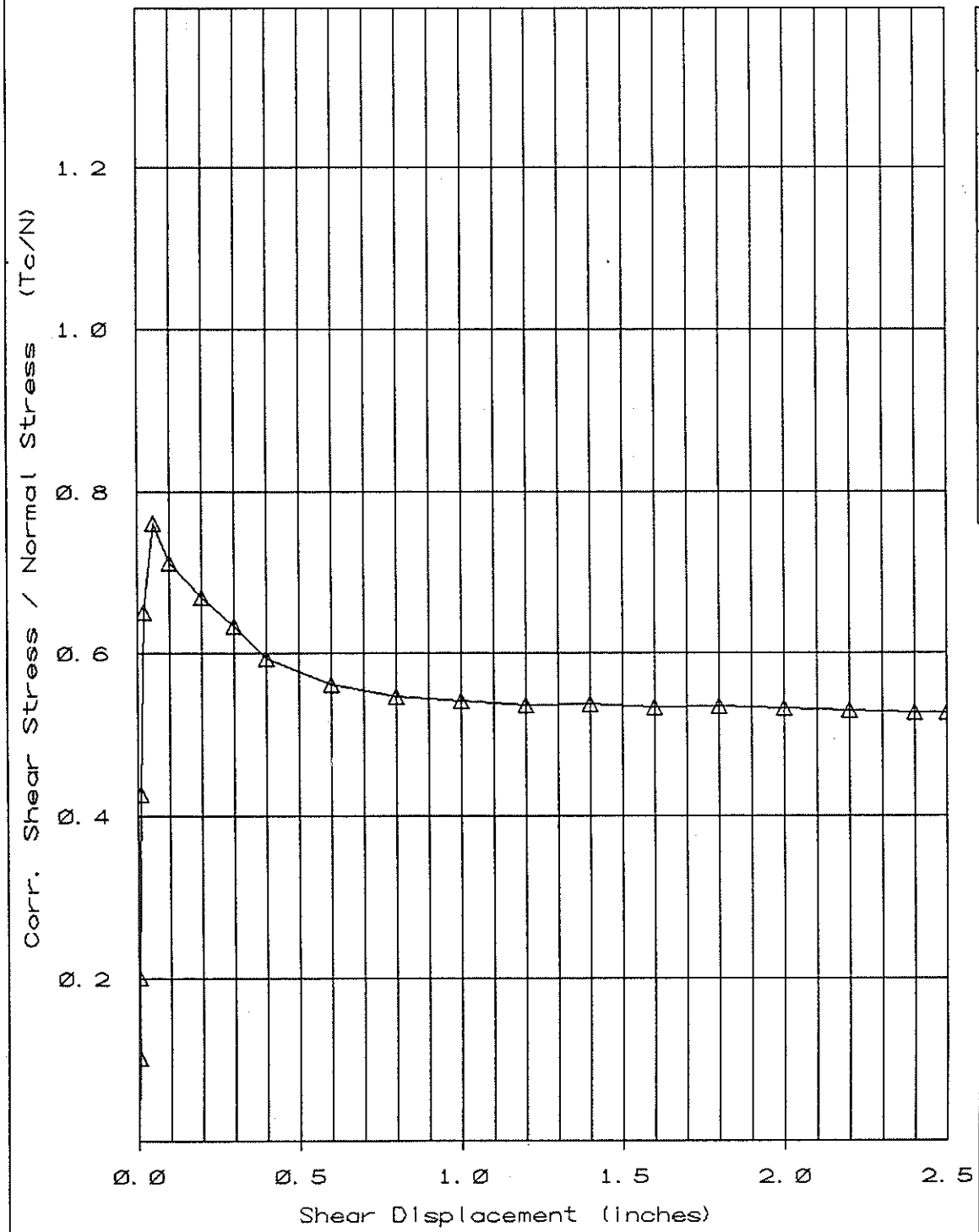
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-22-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS9.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 15.0
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	108.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (24000-27000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-22-99

Reviewer: MCM File No: L99999.2

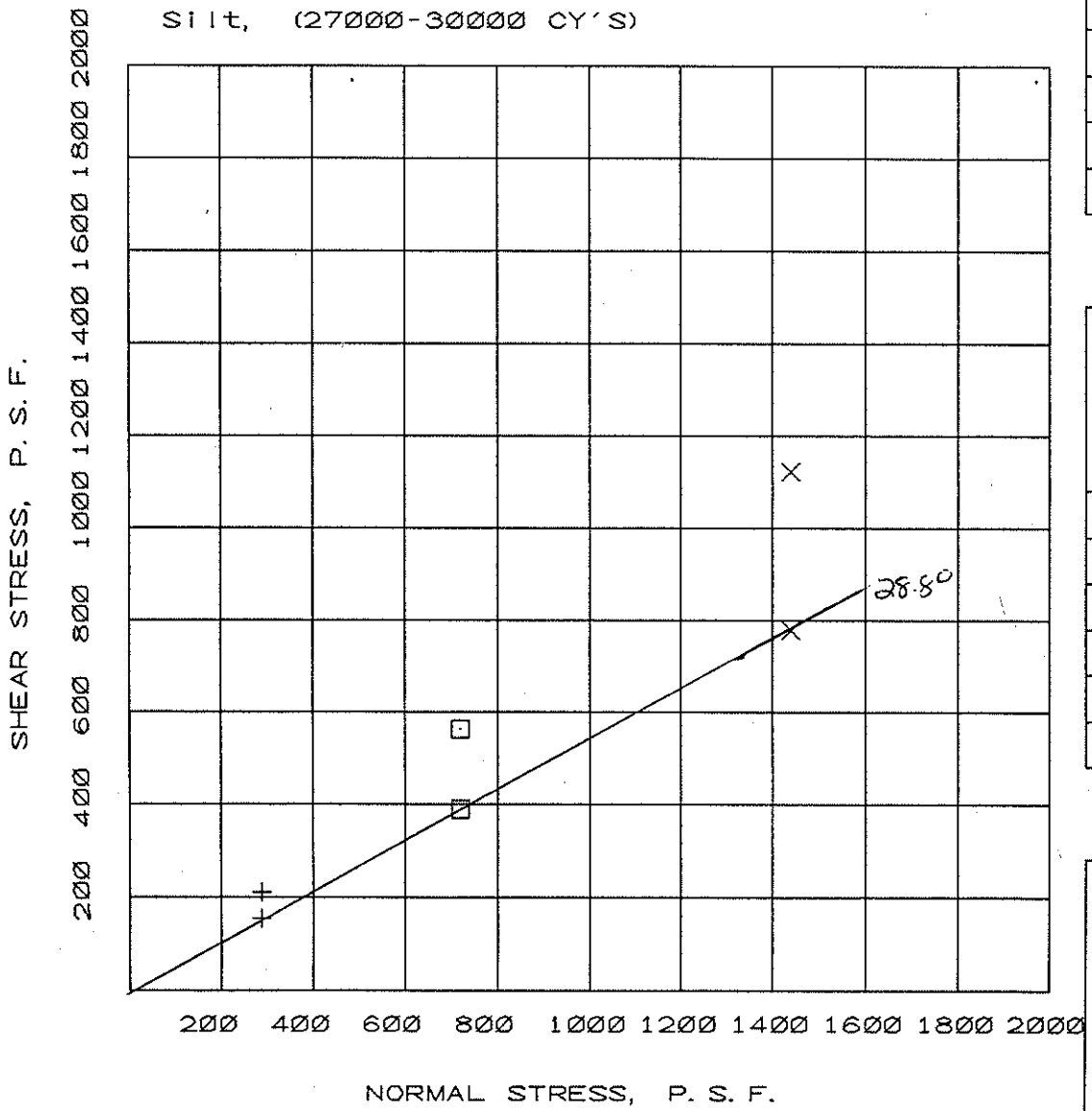
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt, (27000-30000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS10.1	+	207	288	153	288
DS10.3	×	1110	1440	765	1440
DS10.21	⊡	556	720	384	720

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS10.1	+				
DS10.3	×				
DS10.21	⊡				

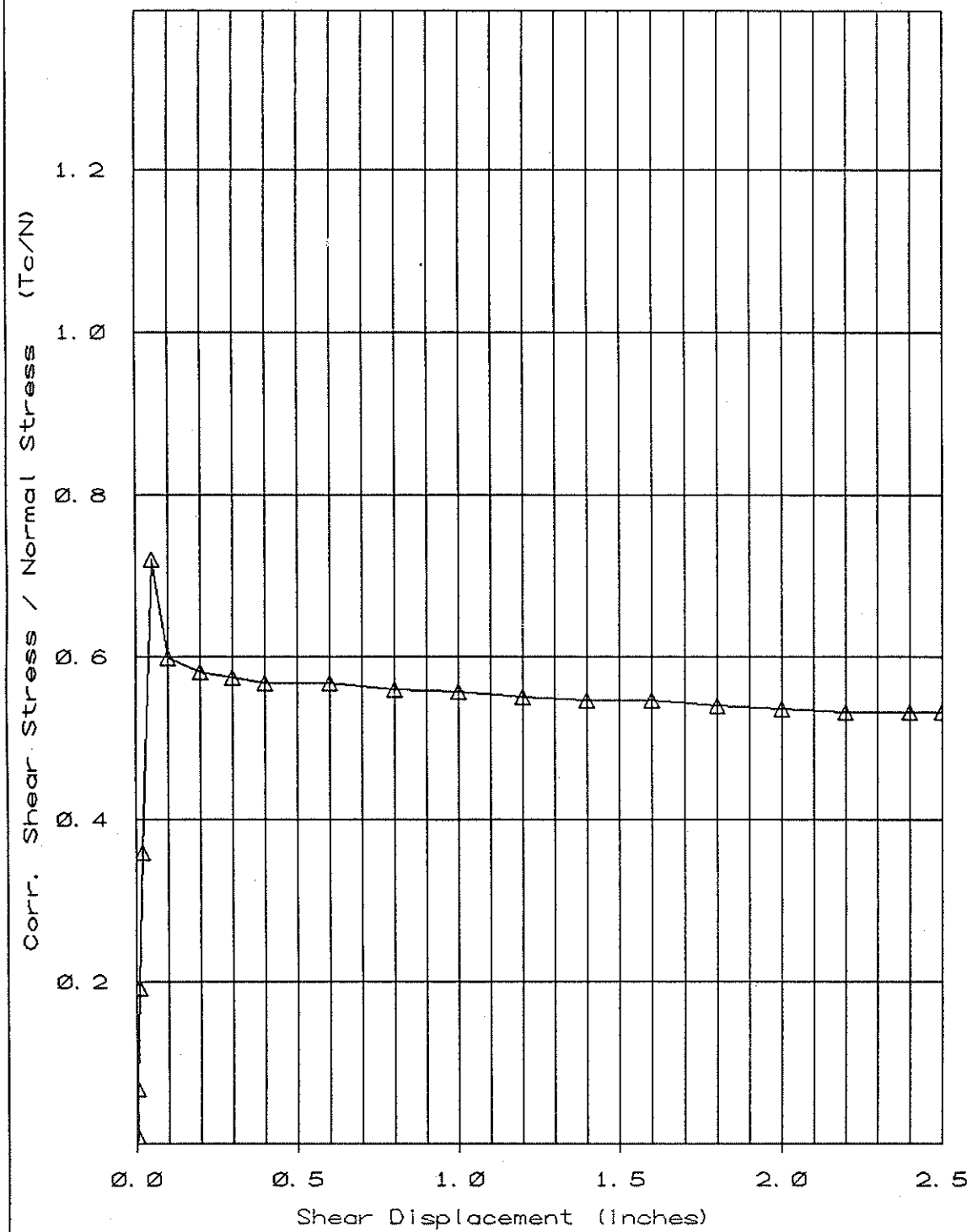
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-24-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS10.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.5 16.6
Dry Density Before Initial Consol (pcf):	107.1
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (27000-30000 CY'S)

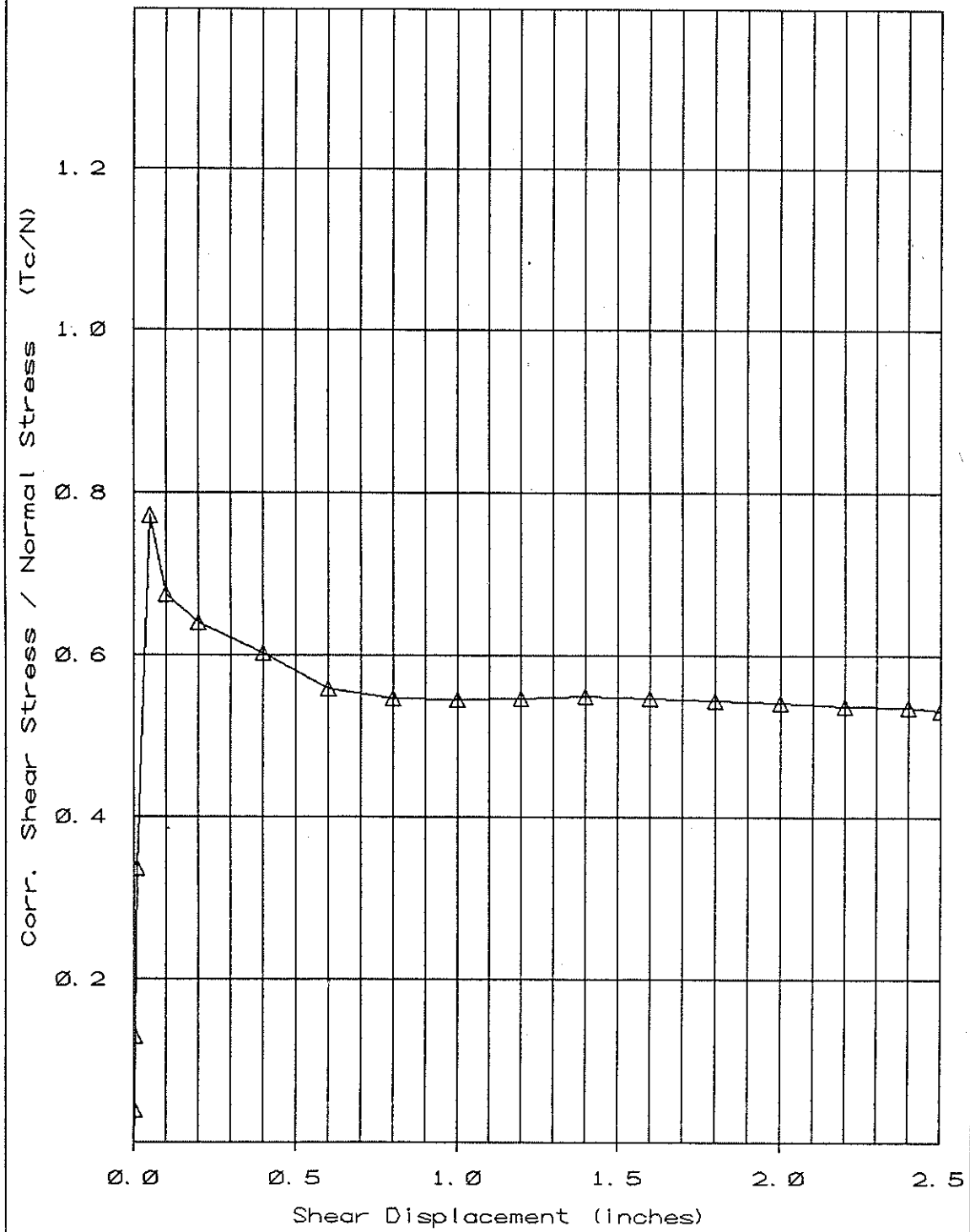
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-24-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS10.21
Normal Stress (psf):	720
IWc (%): FWc (%):	14.3 15.2
Dry Density Before Initial Consol (pcf):	107.3
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt, (27000-30000 CY'S)

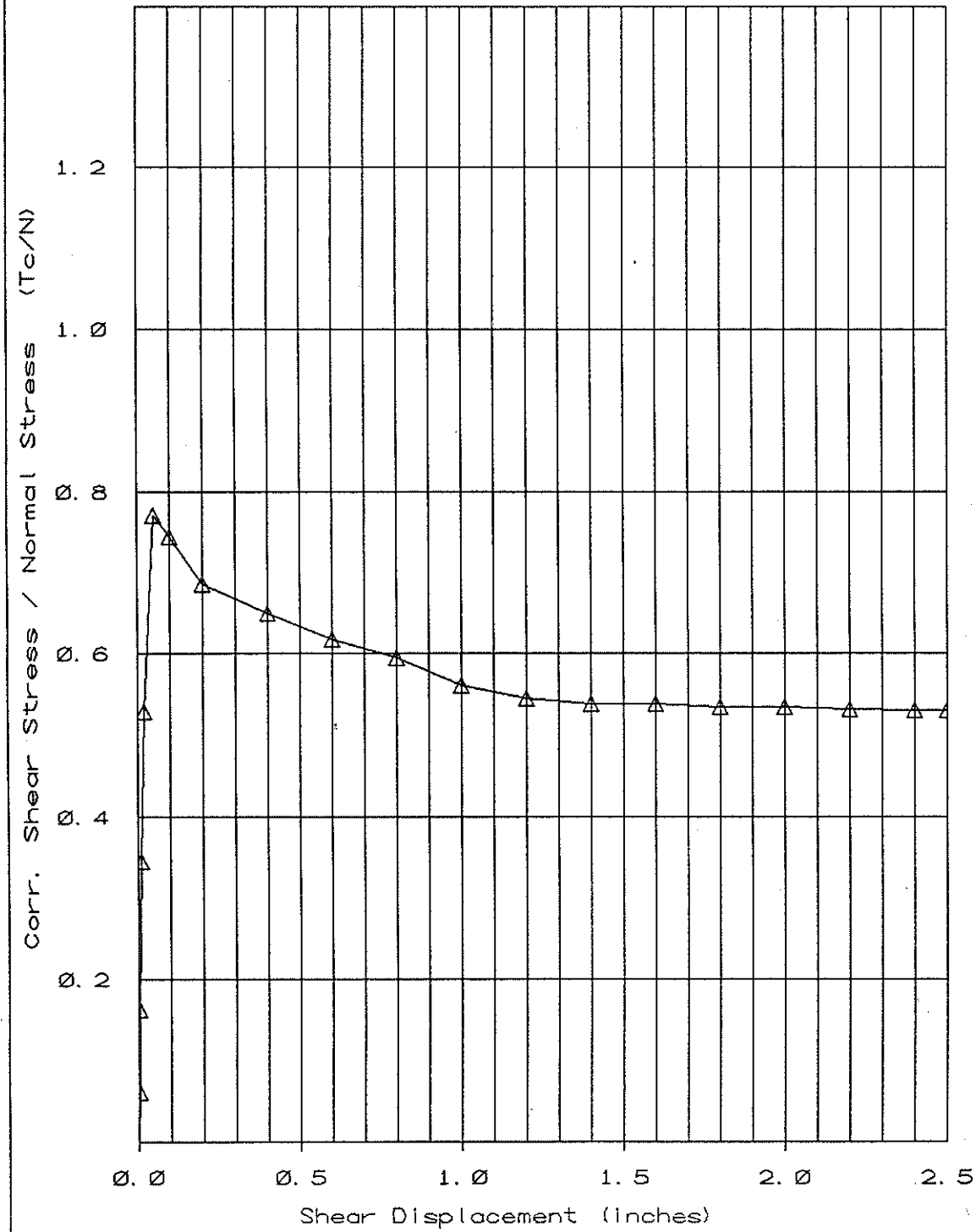
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-24-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS10.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 14.7
Dry Density Before Initial Consol (pcf):	107.2
Dry Density After This Stress (pcf):	108.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURTED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (27000-30000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-24-99

Reviewer: MCM File No: L99999.2

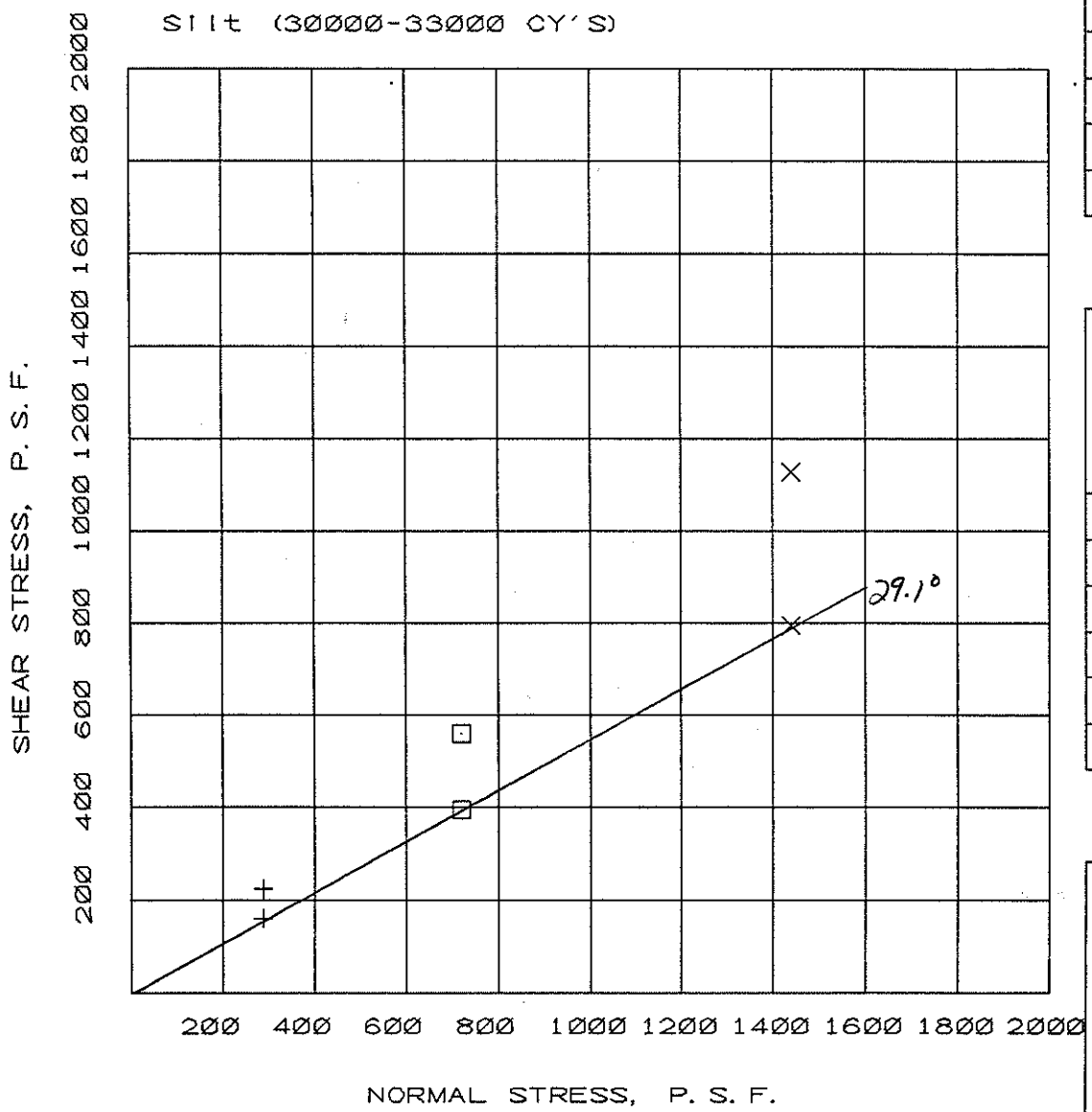
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (30000-33000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS11.1	+	220	288	156	288
DS11.3	×	1116	1440	782	1440
DS11.2	⊡	553	720	390	720

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS11.1	+				
DS11.3	×				
DS11.2	⊡				

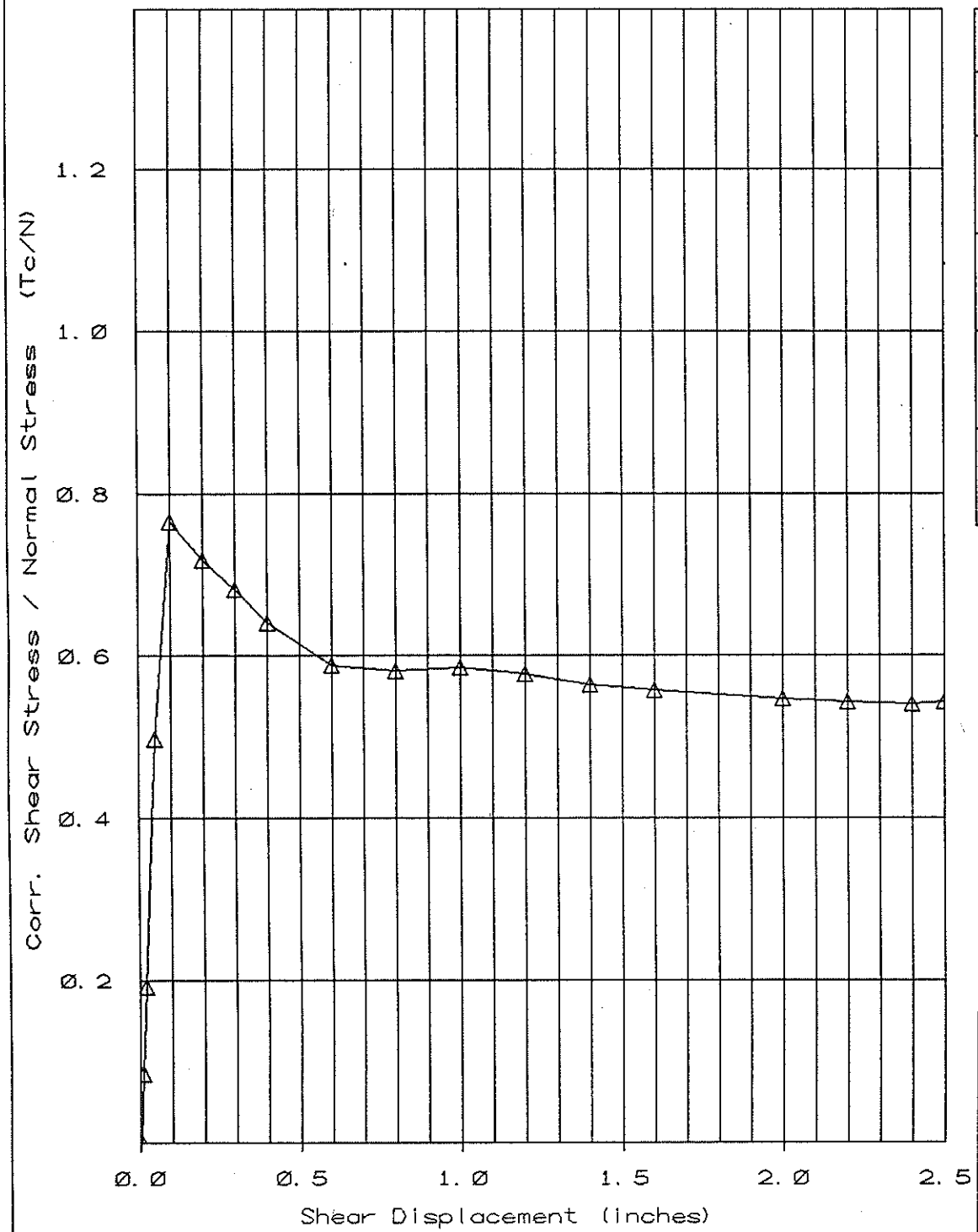
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 11-29-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS11.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.5 16.6
Dry Density Before Initial Consol (pcf):	106.5
Dry Density After This Stress (pcf):	106.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (30000-33000 CY'S)

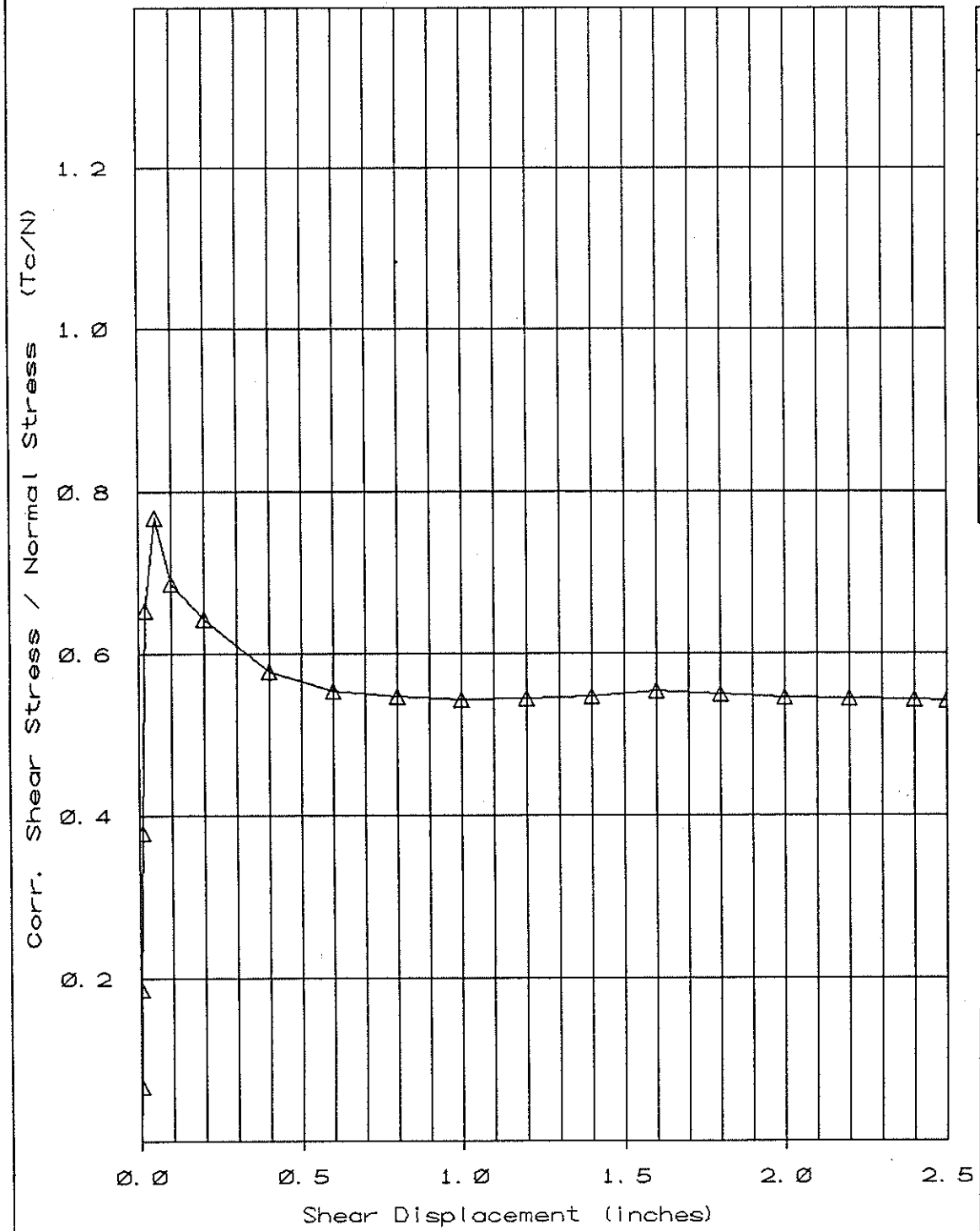
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11/29/99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS11.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.3 15.8
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (30000-33000 CY'S)

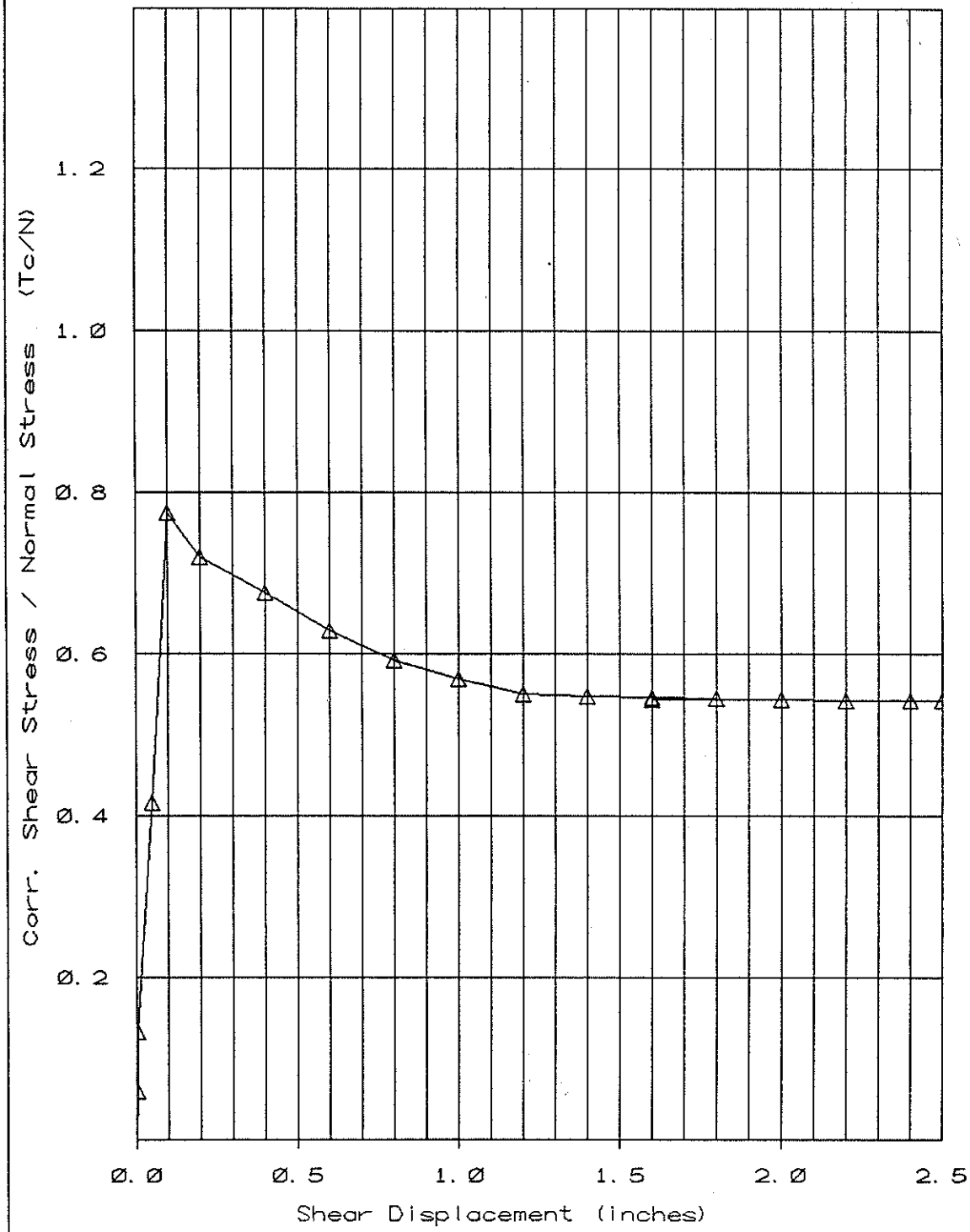
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-29-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS11.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.3 14.9
Dry Density Before Initial Consol (pcf):	106.5
Dry Density After This Stress (pcf):	108.2
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (30000-33000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 11-29-99

Reviewer: MCM File No: L99999.2

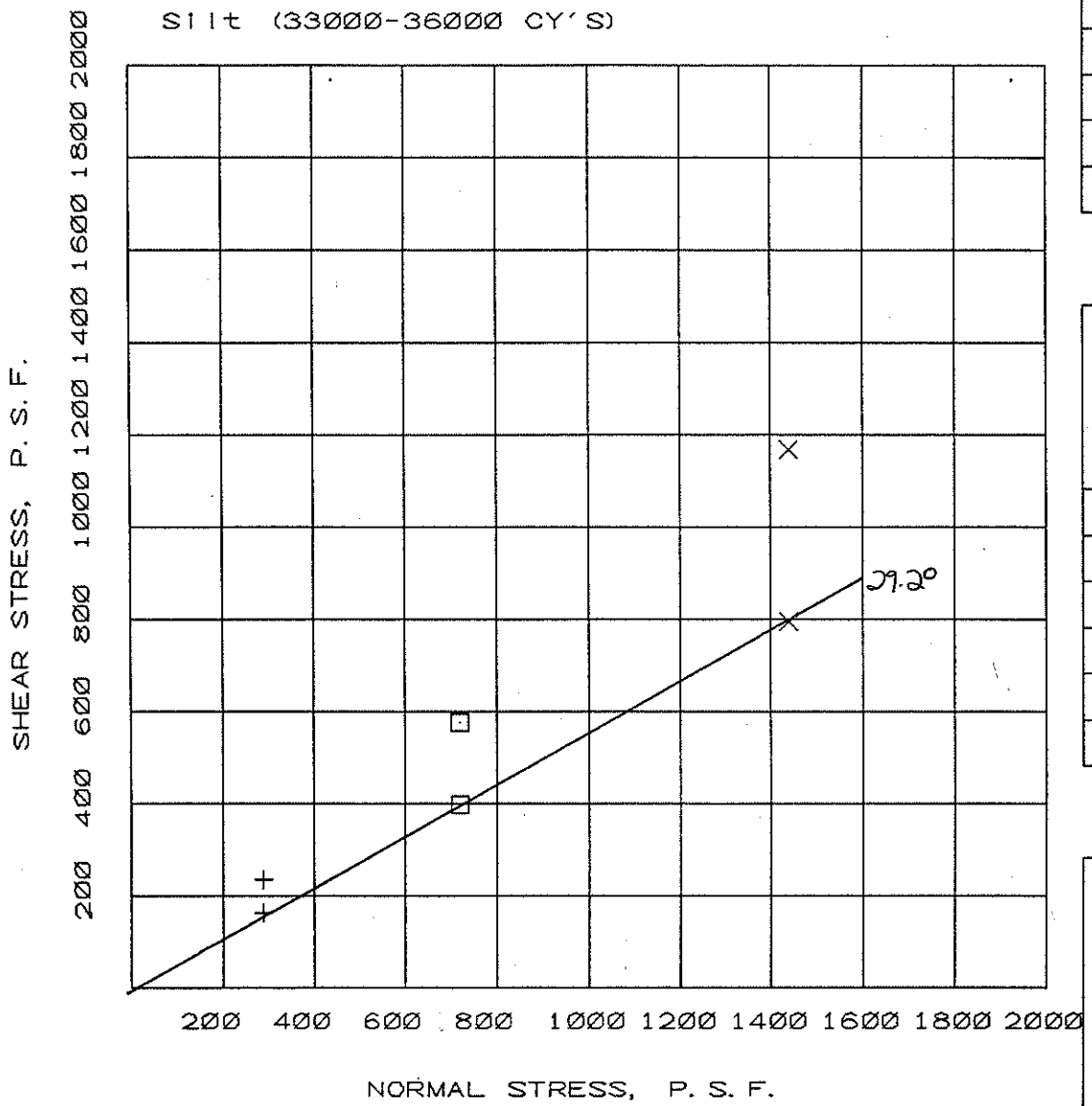
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (33000-36000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS12. 1	+	231	288	159	288
DS12. 3	×	1154	1440	783	1440
DS12. 2	⊡	570	720	391	720

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS12. 1	+				
DS12. 3	×				
DS12. 2	⊡				

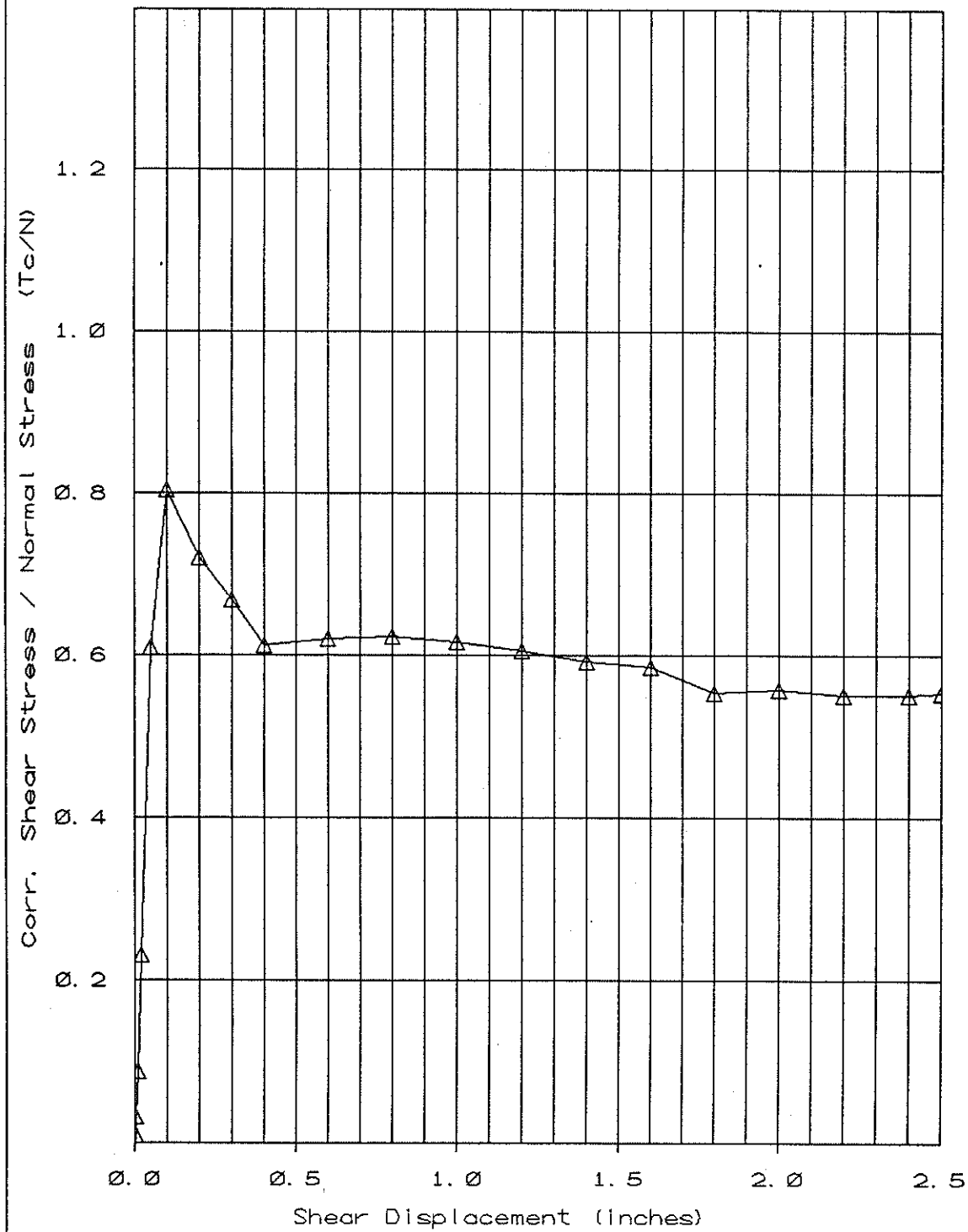
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 12-1-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS12.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.2
Dry Density Before Initial Consol (pcf):	106.2
Dry Density After This Stress (pcf):	106.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (33000-36000 CY'S)

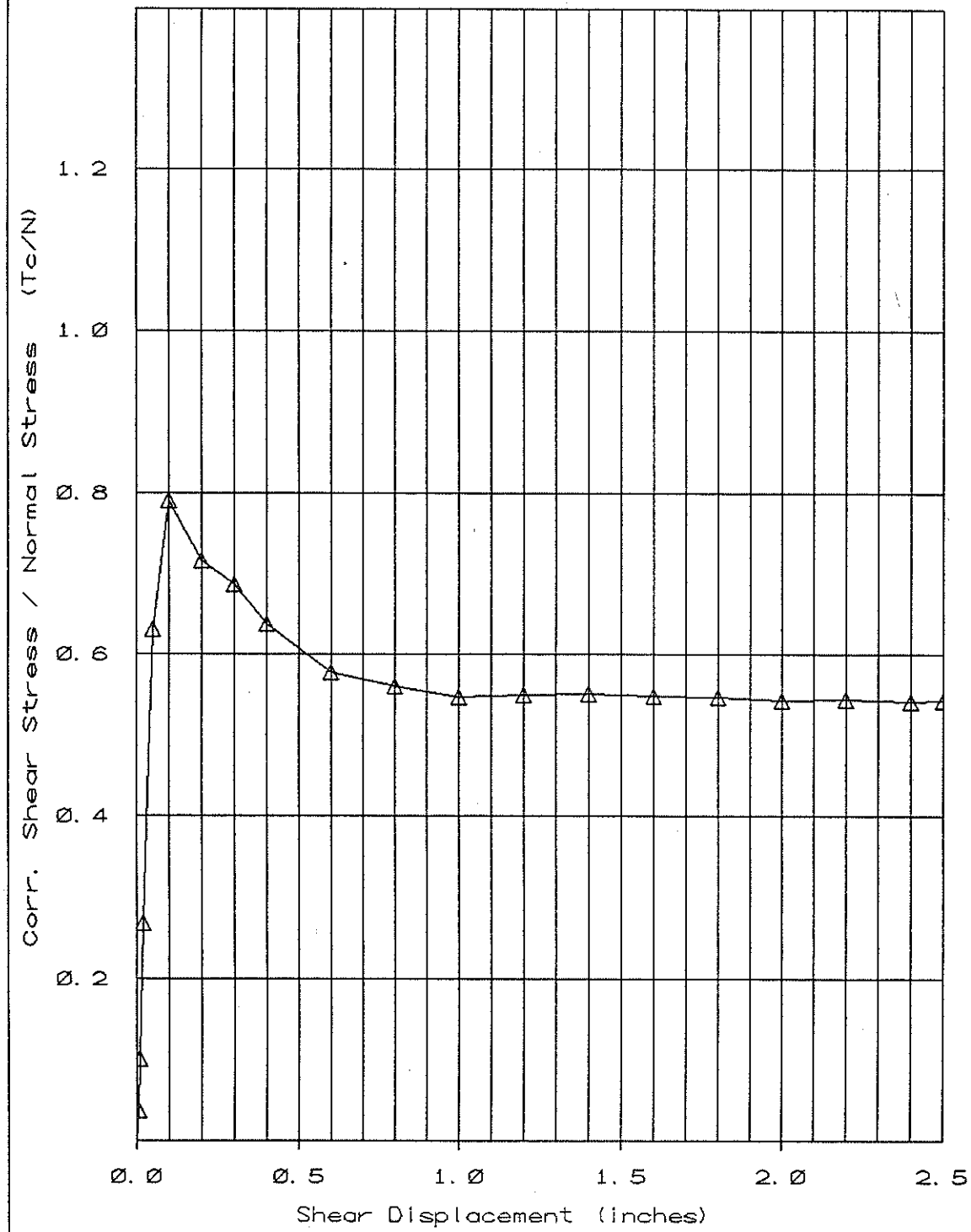
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-1-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS12.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.2 15.8
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	107.4
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (33000-36000 CY'S)

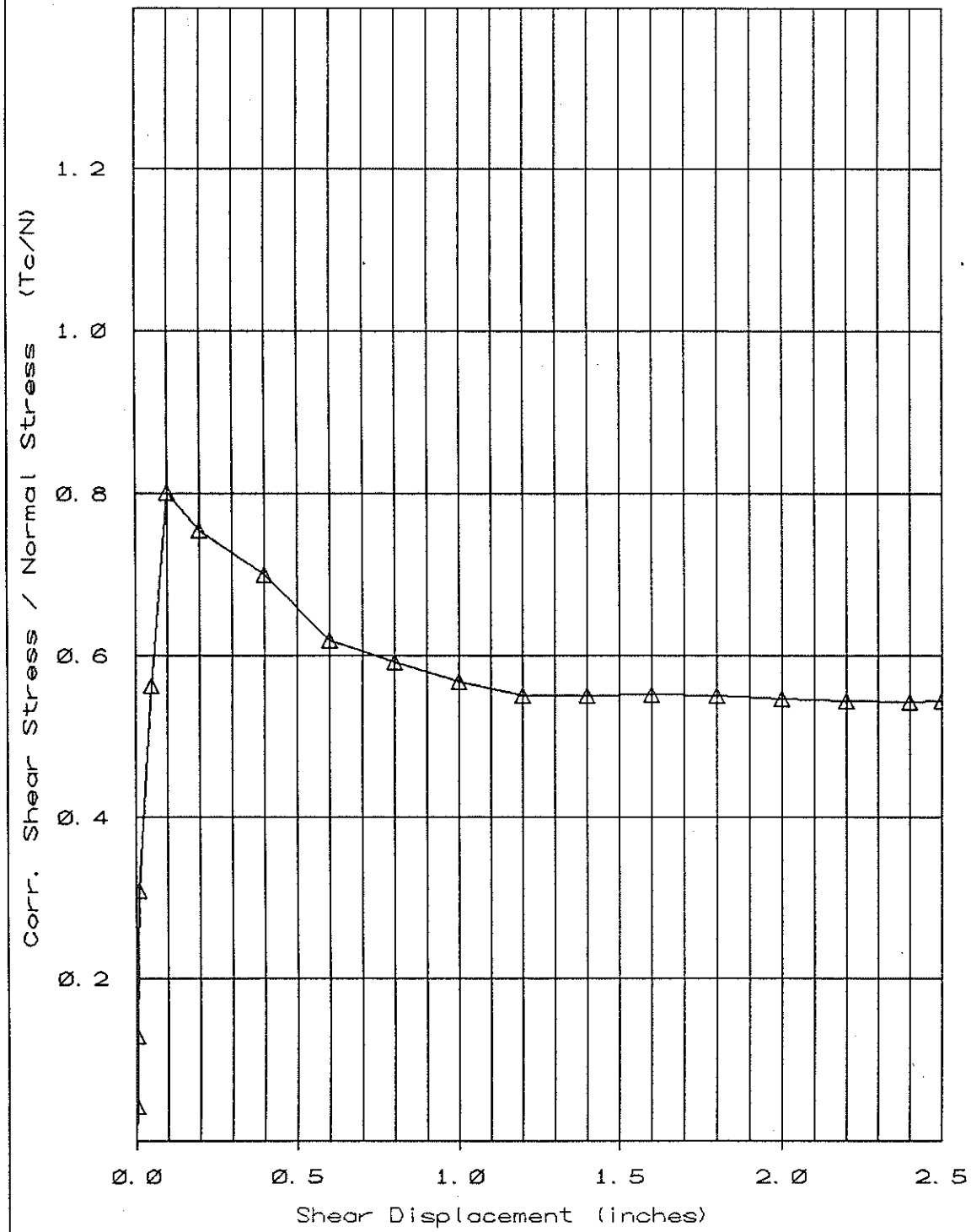
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-1-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS12.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.1 14.9
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	108.0
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (33000-36000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-1-99

Reviewer: MCM File No: L99999.2

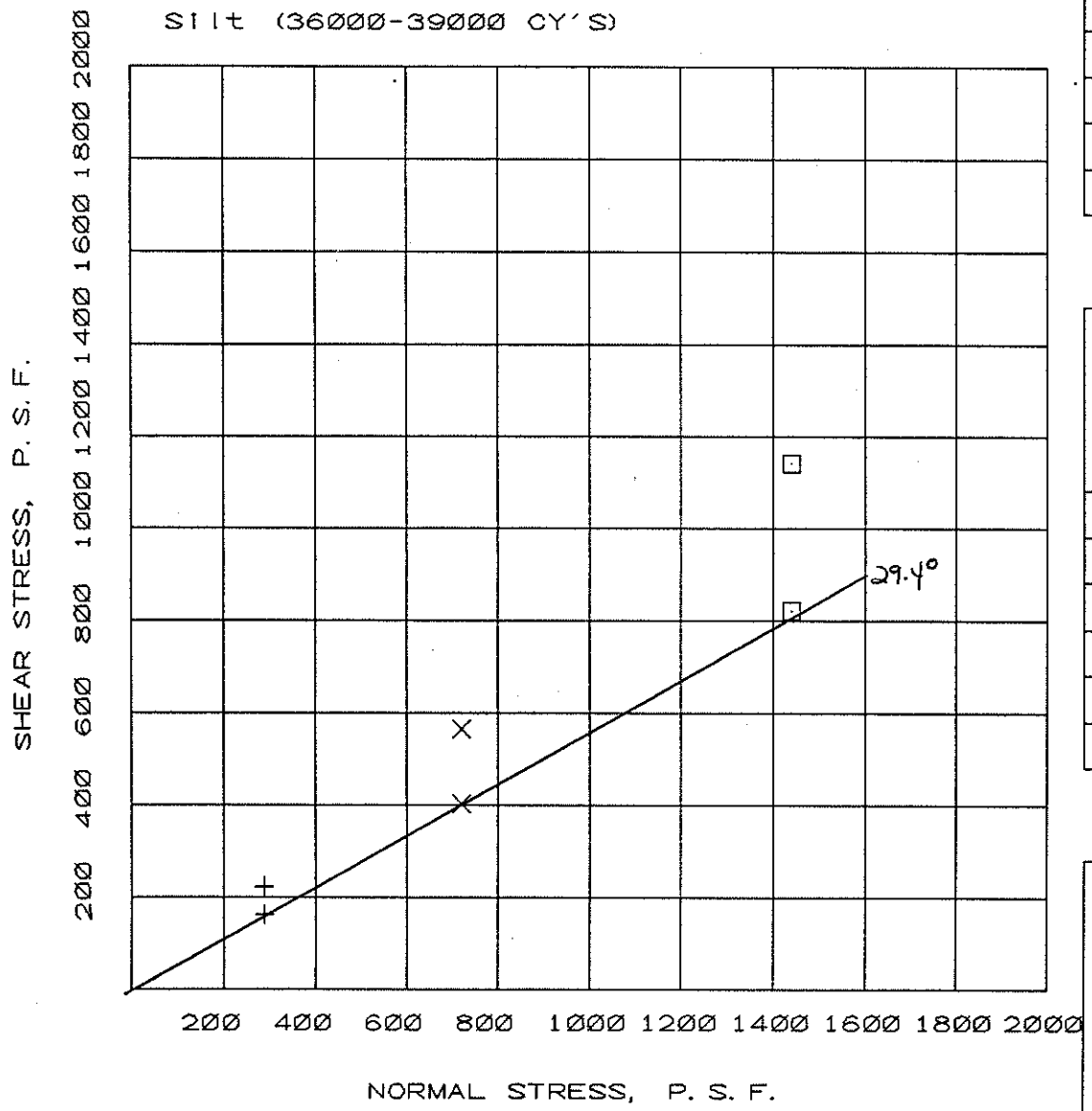
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (36000-39000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS13. 1	+	222	288	161	288
DS13. 2	×	560	720	397	720
DS13. 3	⊡	1128	1440	809	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS13. 1	+				
DS13. 2	×				
DS13. 3	⊡				

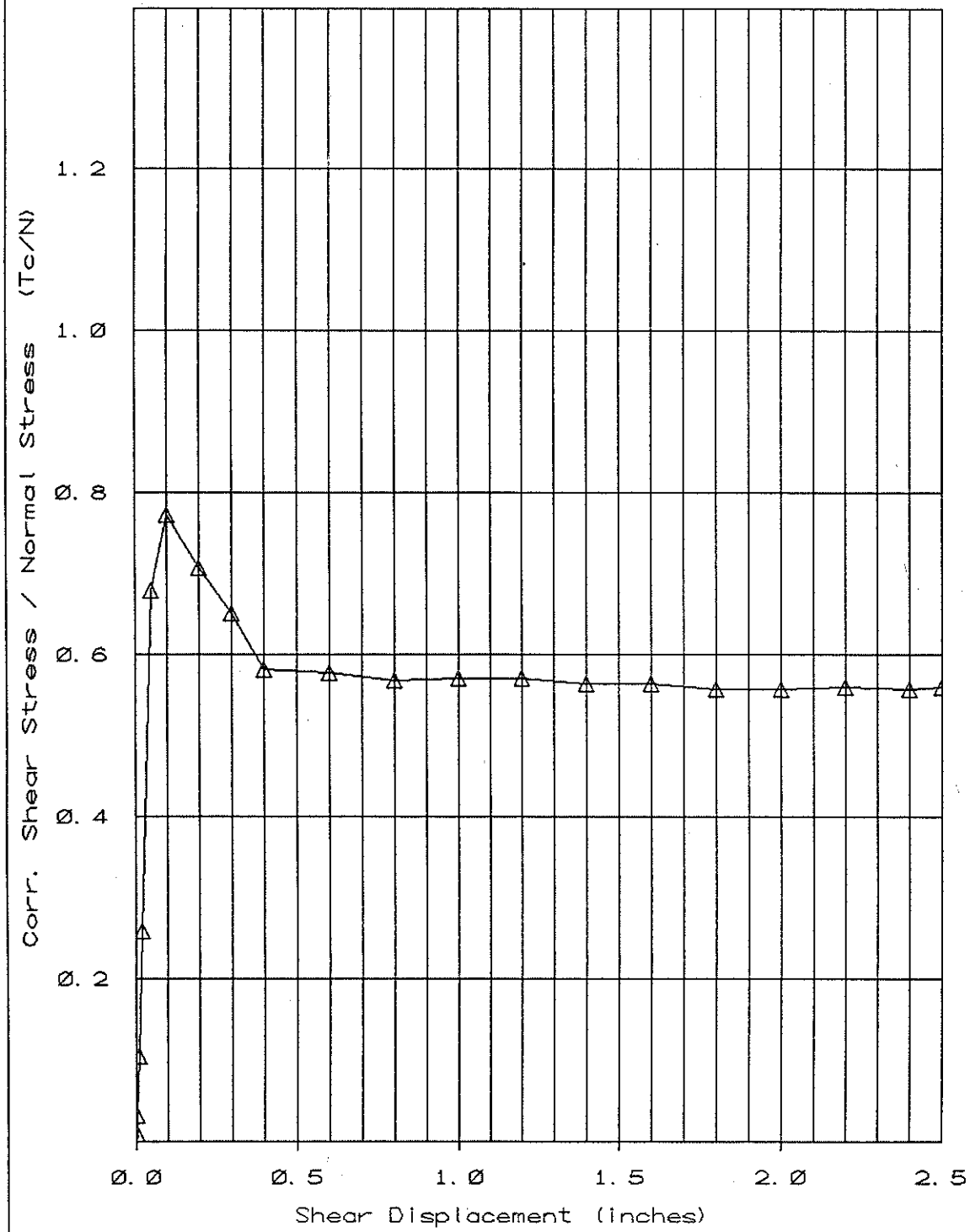
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 12-3-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS13.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.2
Dry Density Before Initial Consol (pcf):	106.2
Dry Density After This Stress (pcf):	106.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (36000-39000 CY'S)

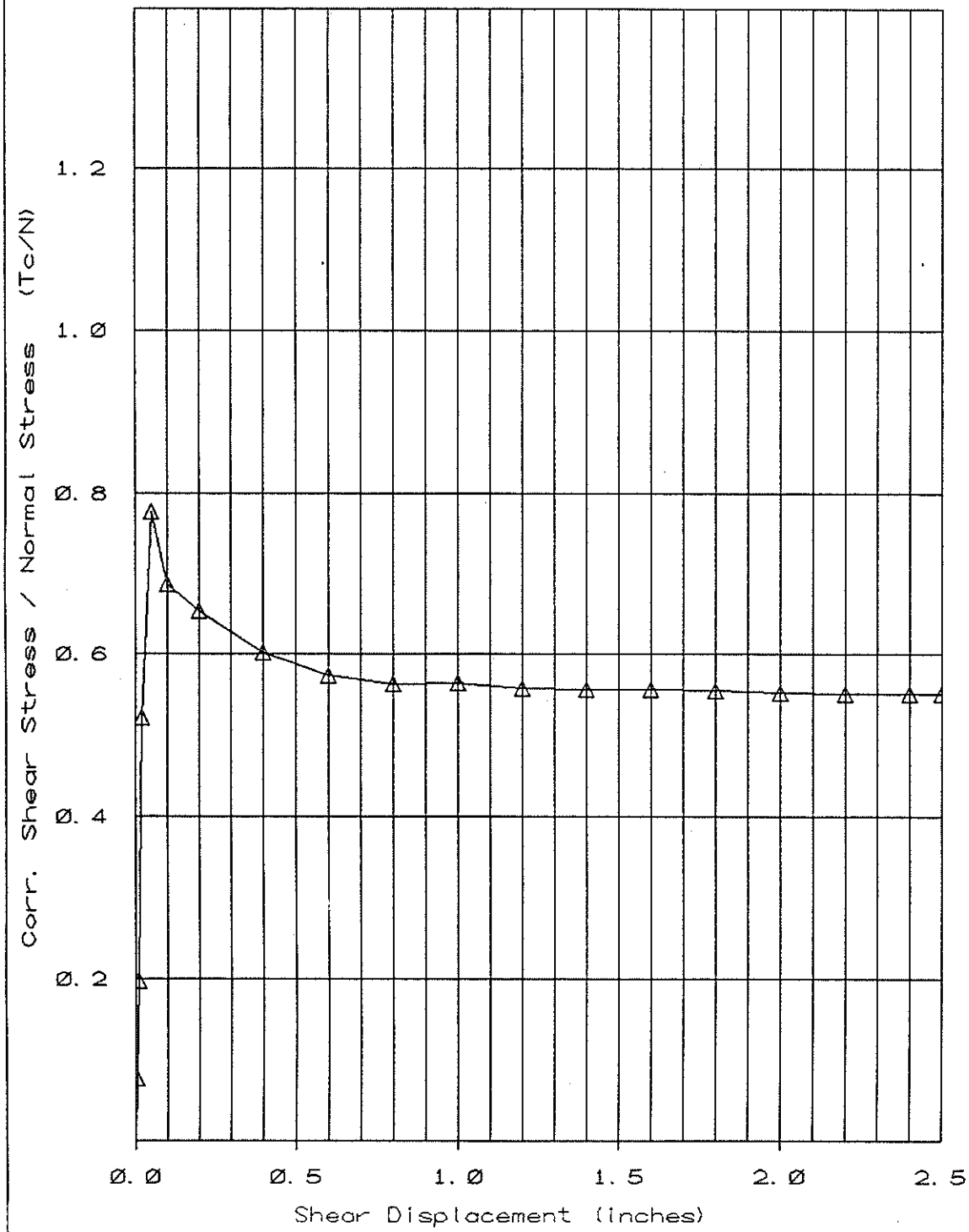
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-3-99

Reviewer: DAS File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS13.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.3 15.5
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	107.5
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (36000-39000 CY'S)

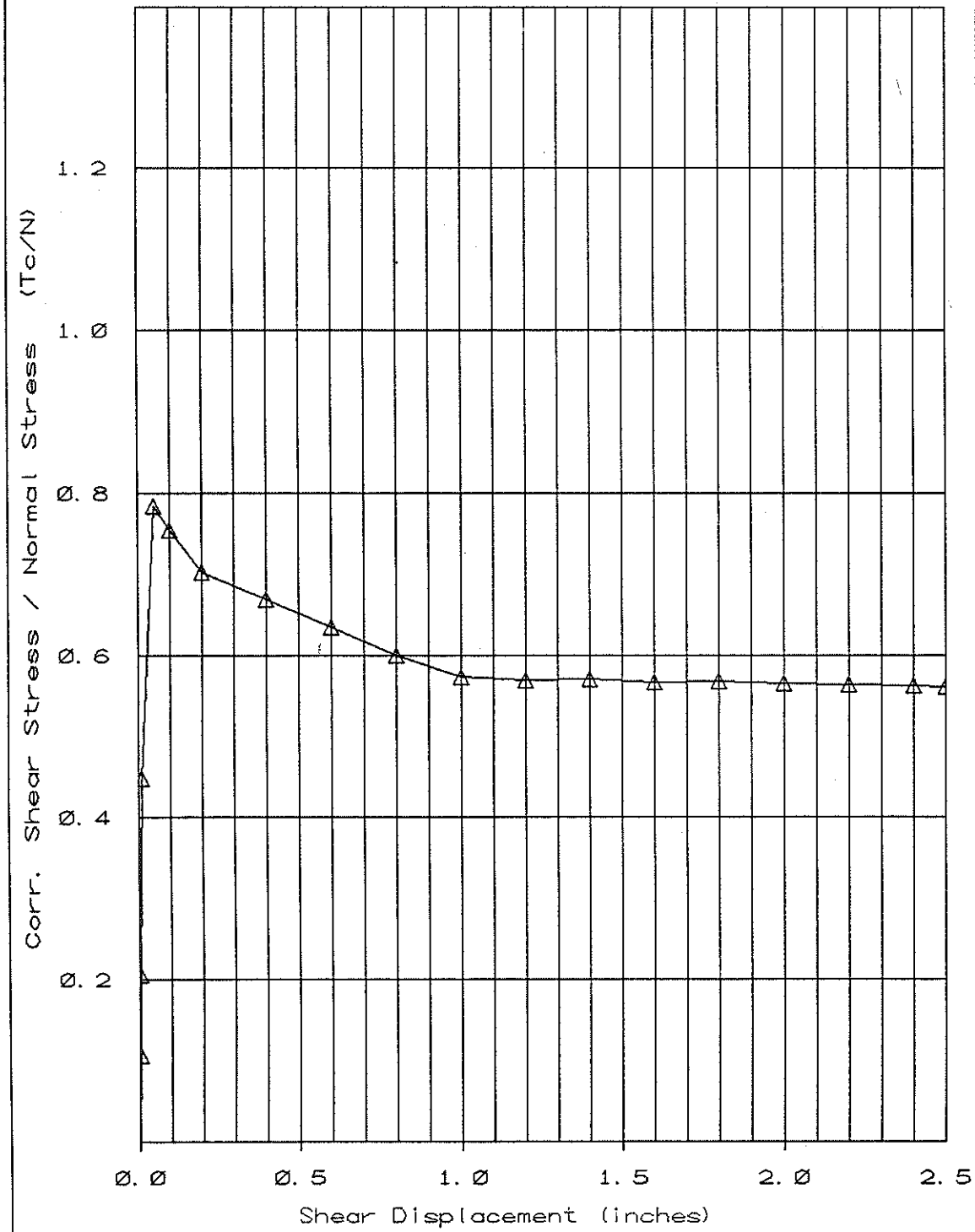
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-3-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS13.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.3 15.1
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	108.2
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (36000-39000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-3-99

Reviewer: MCM File No: L99999.2

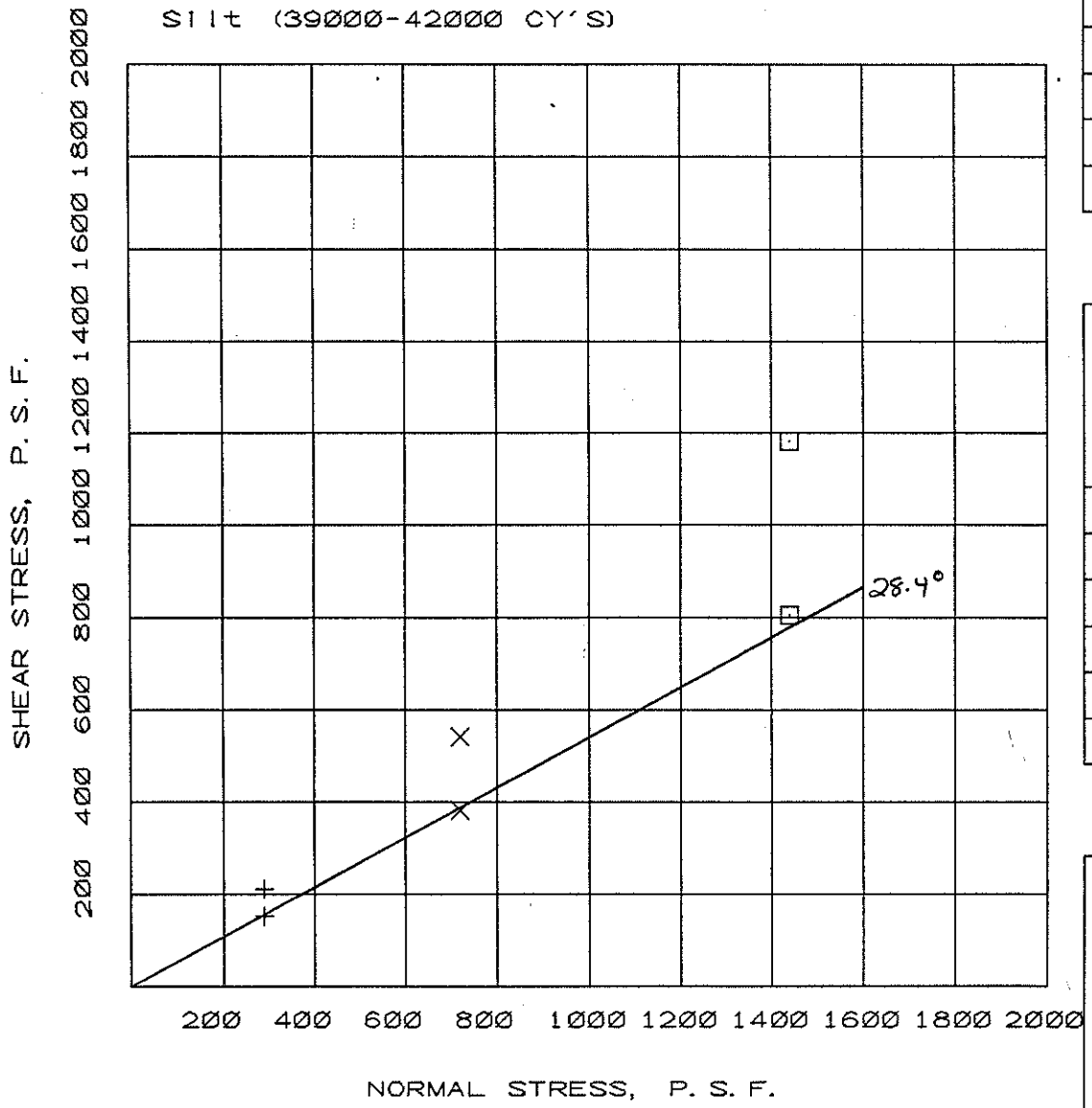
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-) Silt (39000-42000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS14.1	+	208	288	150	288
DS14.2	×	535	720	376	720
DS14.3	⊡	1169	1440	793	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS14.1	+				
DS14.2	×				
DS14.3	⊡				

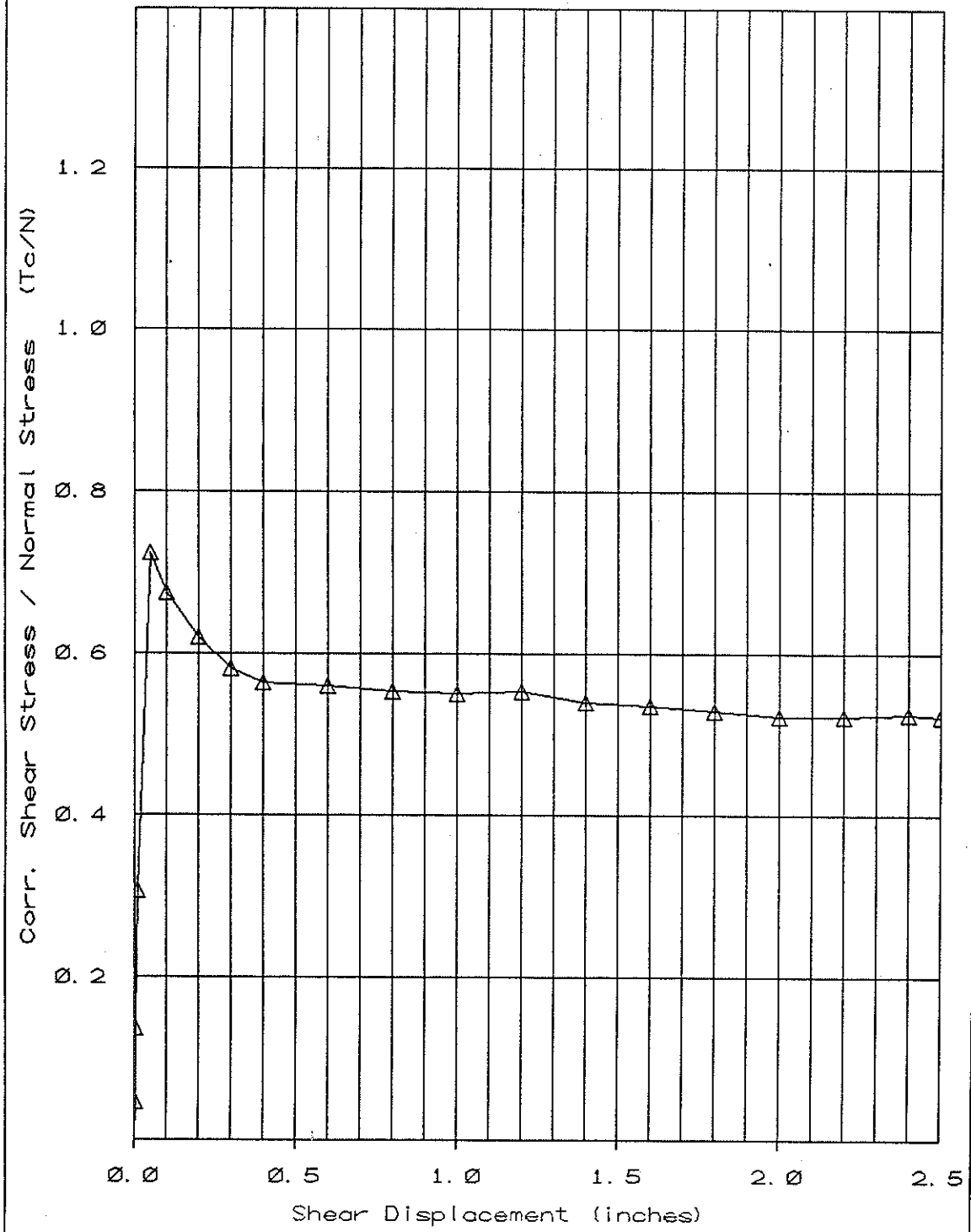
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 12-6-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS14.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.3 16.6
Dry Density Before Initial Consol (pcf):	106.4
Dry Density After This Stress (pcf):	106.8
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (39000-42000 CY'S)

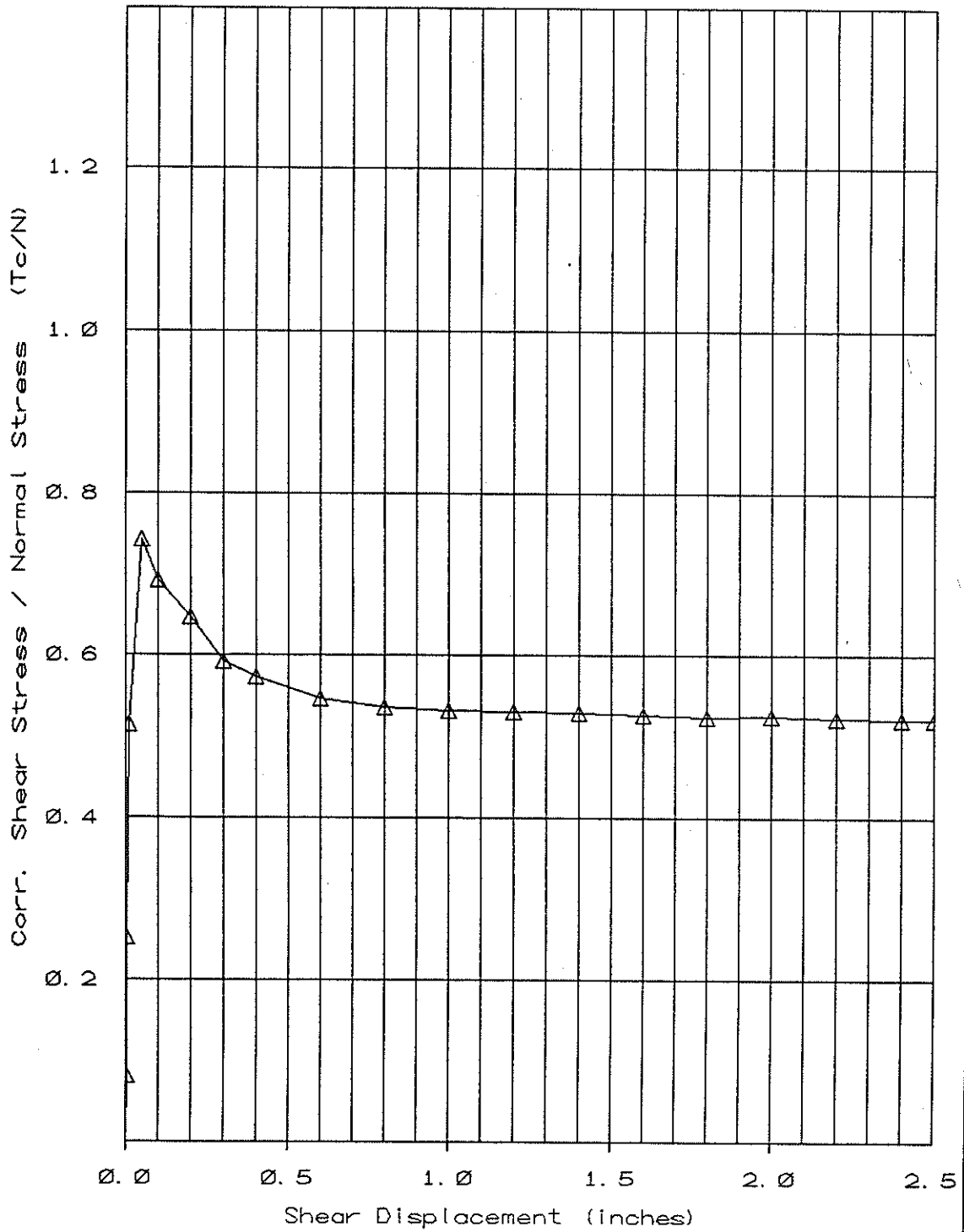
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-6-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS14.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.3 15.2
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	107.9
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (39000-42000 CY'S)

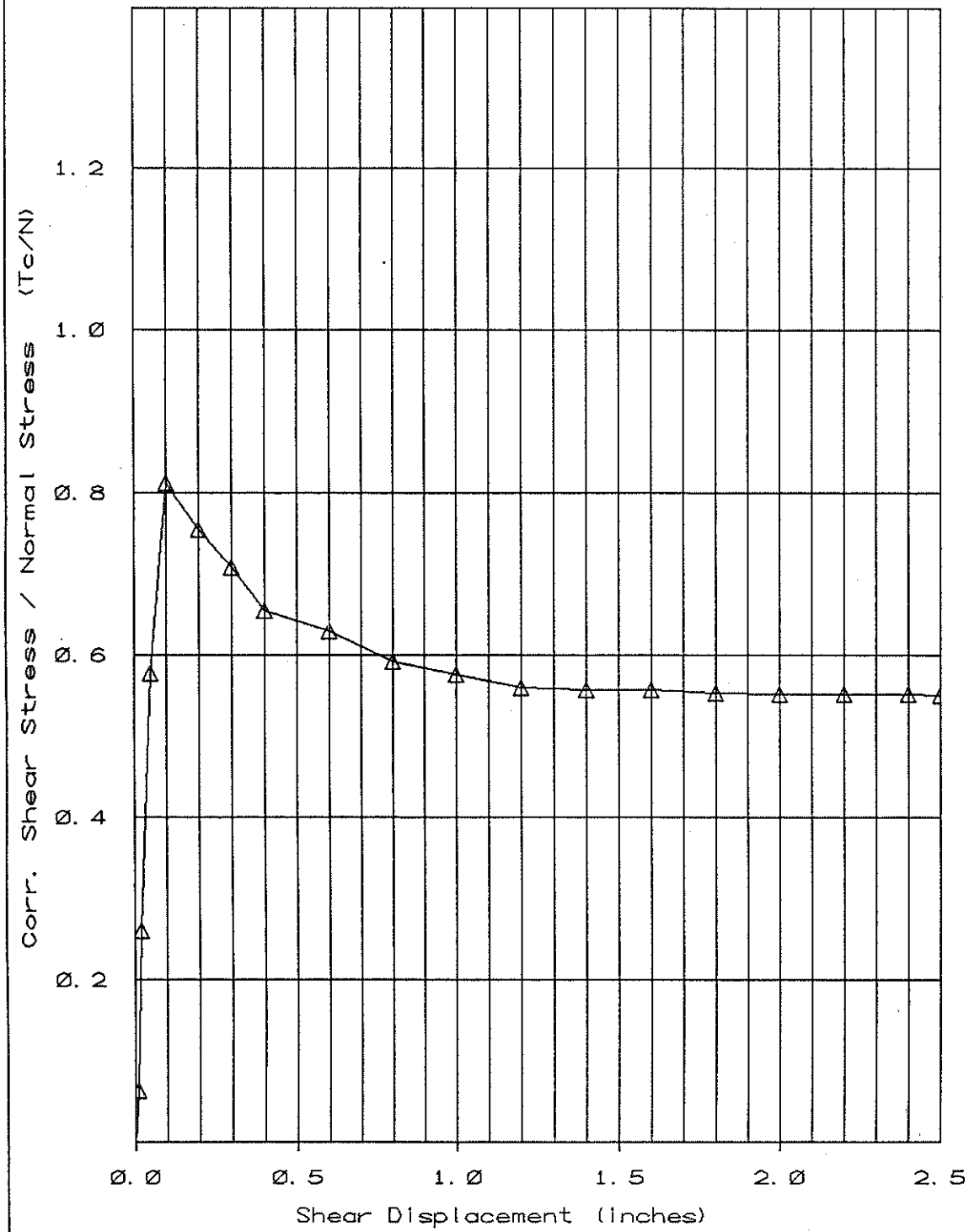
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-6-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS14.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.0 15.1
Dry Density Before Initial Consol (pcf):	106.6
Dry Density After This Stress (pcf):	109.1
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (39000-42000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-6-99

Reviewer: MCM File No: L99999.2

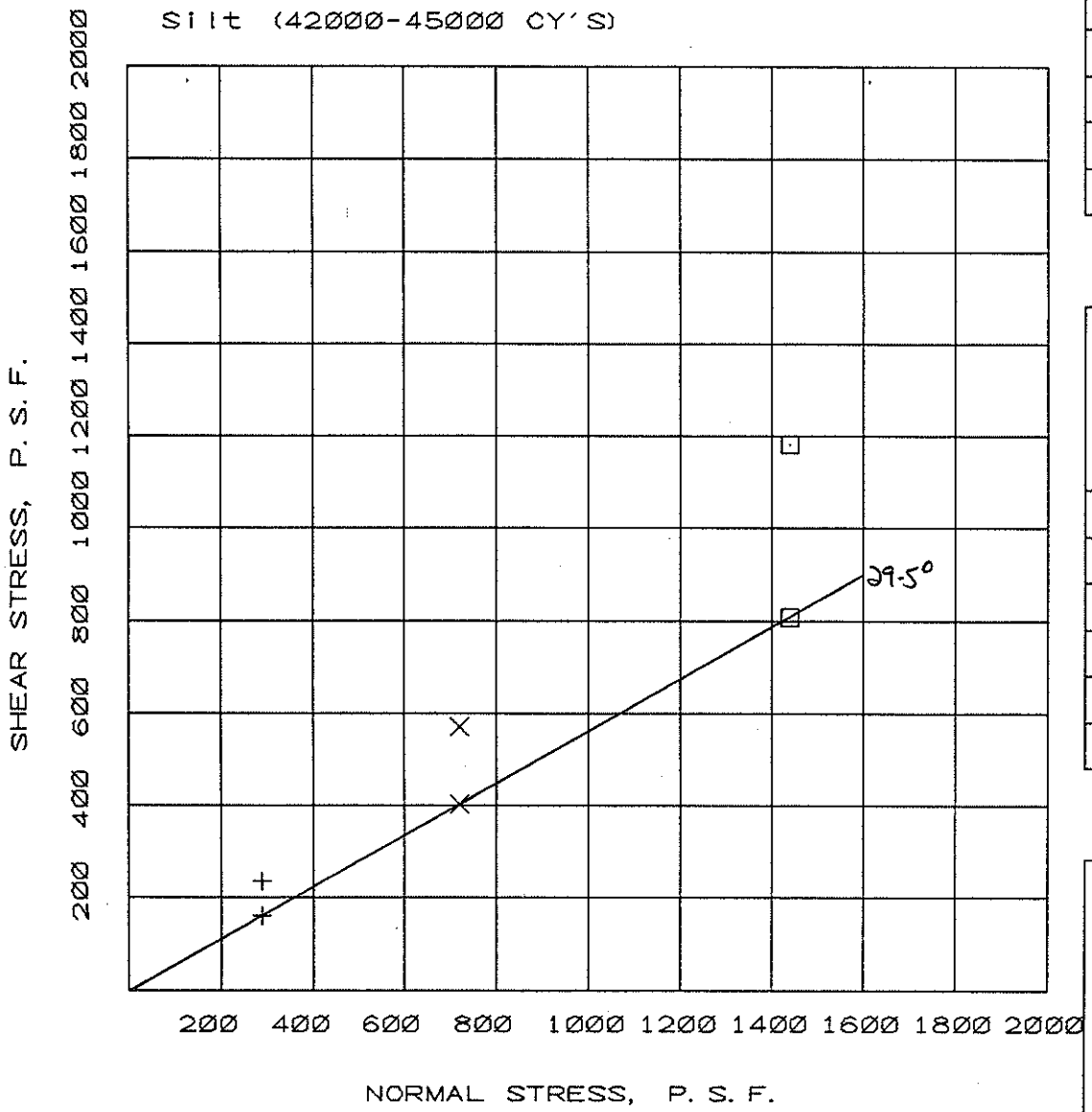
GZA GeoEnvironmental, Inc.

Membrane Type:

TEXTURED

Sample Description:

Brown f-m SAND, trace (-)
Silt (42000-45000 CY'S)



TEST NUMBER		PEAK STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS15. 1	+	232	288	158	288
DS15. 2	×	564	720	397	720
DS15. 3	⊡	1168	1440	794	1440

TEST NUMBER		RESIDUAL STRESS: PSF		RESIDUAL STRESS: PSF	
		SHEAR	NORMAL	SHEAR	NORMAL
DS15. 1	+				
DS15. 2	×				
DS15. 3	⊡				

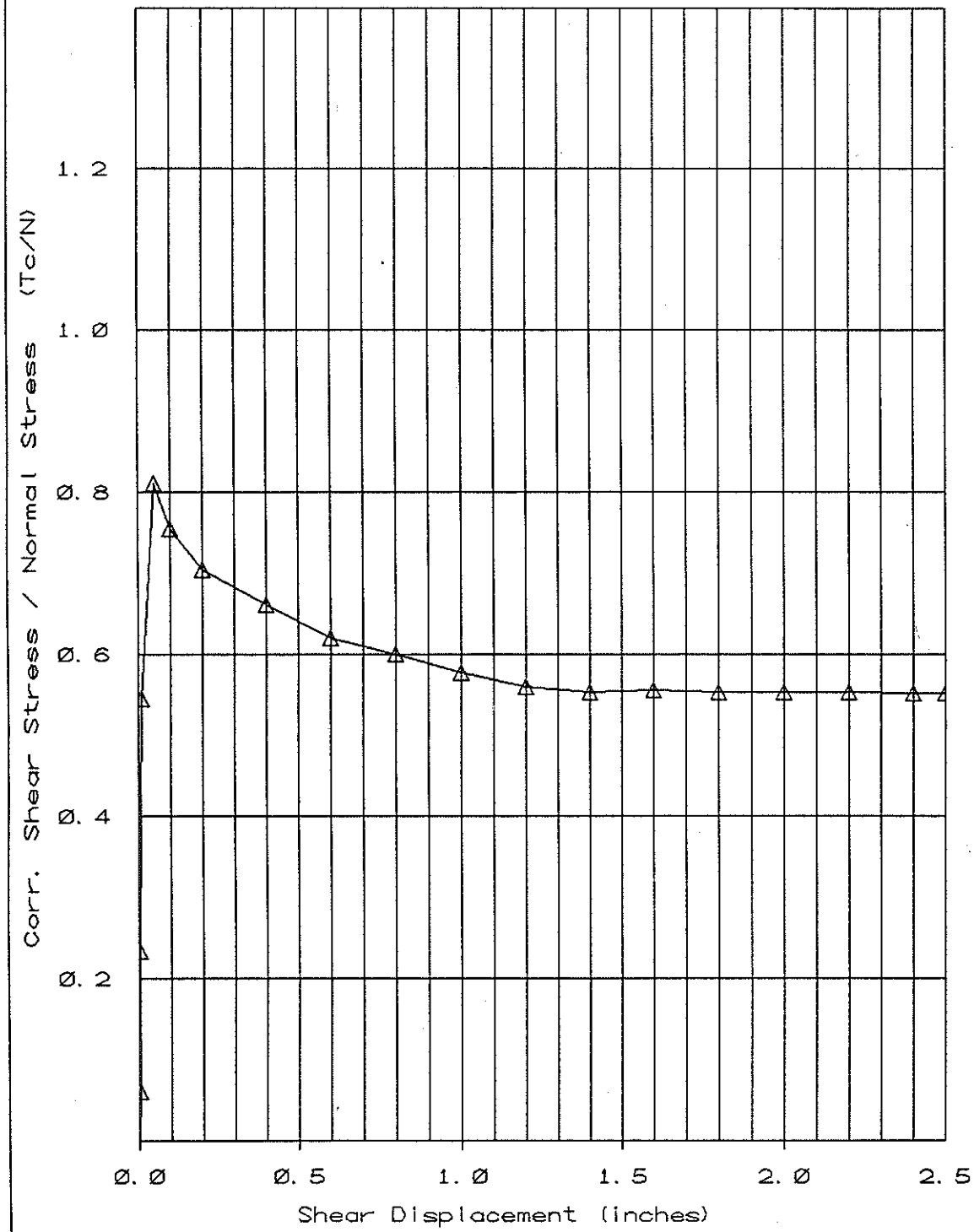
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST
MOHR ENVELOPE

Tech: MST Date: 12-8-99

Reviewer: MCM File No: L99999. 2

GZA GeoEnvironmental, Inc.



Test Number:	DS15.3
Normal Stress (psf):	1440
IWc (%): FWc (%):	14.2 15.0
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	108.3
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (42000-45000 CY'S)

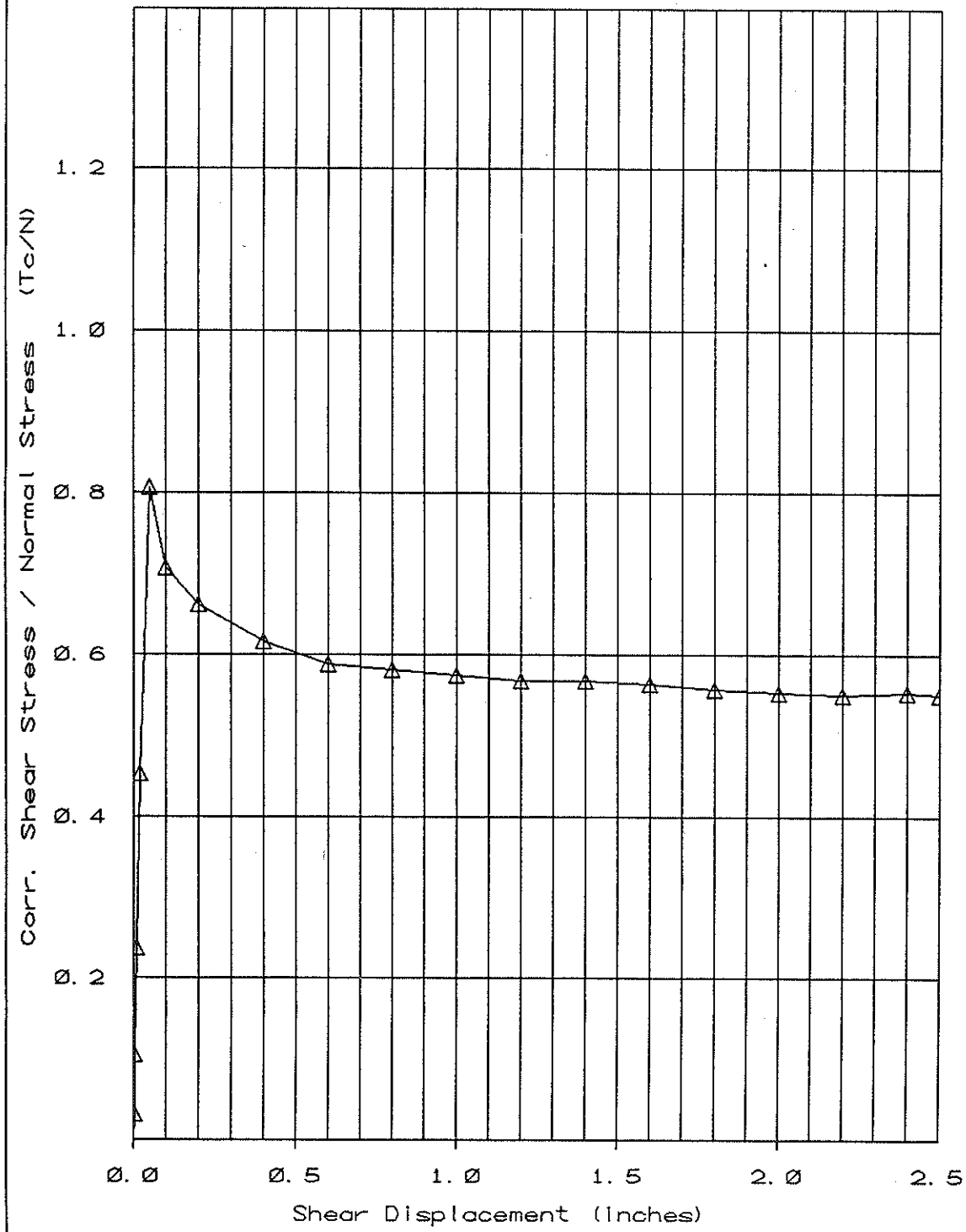
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-8-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS15.1
Normal Stress (psf):	288
IWc (%): FWc (%):	14.1 16.8
Dry Density Before Initial Consol (pcf):	106.2
Dry Density After This Stress (pcf):	106.5
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-) Silt (42000-45000 CY'S)

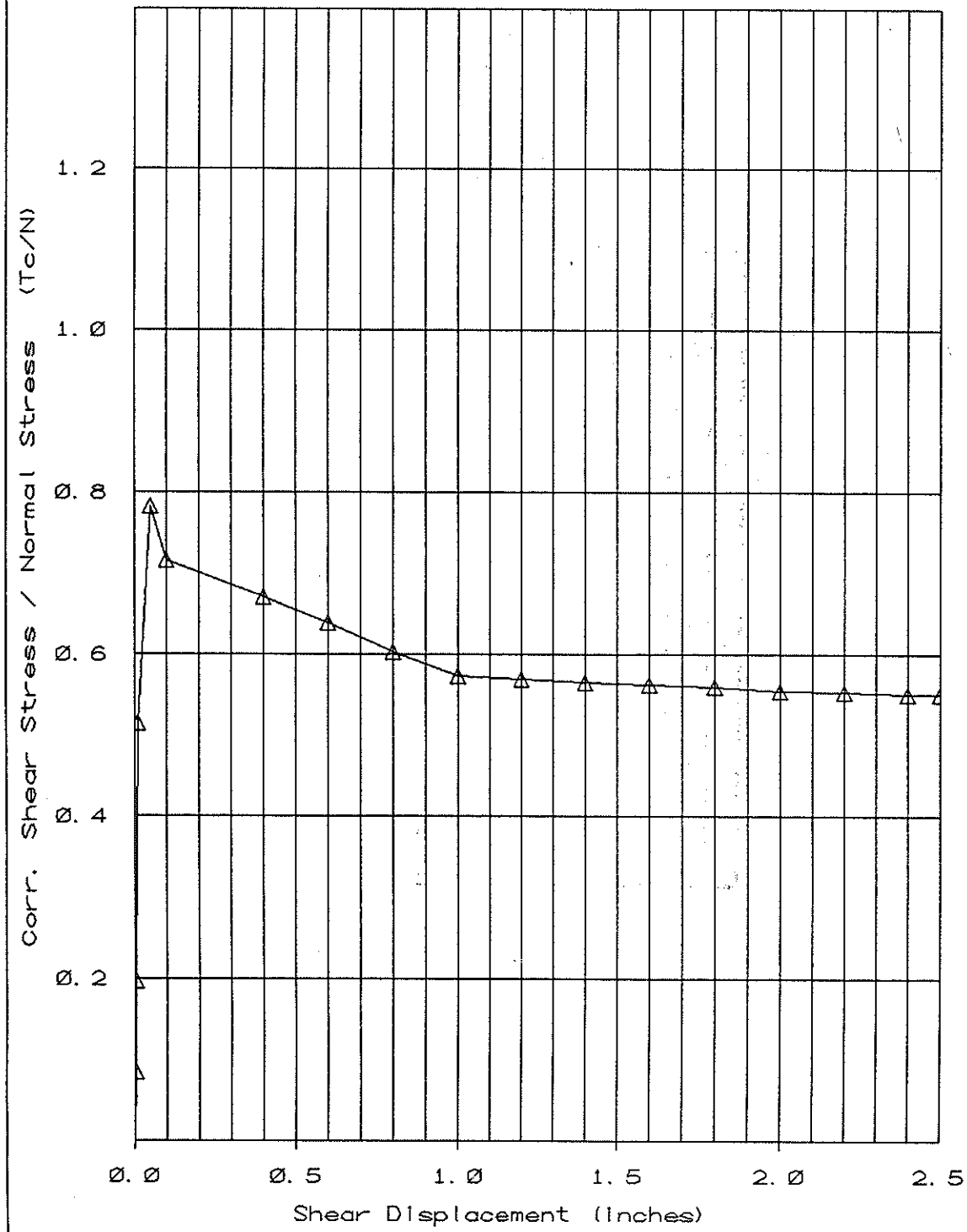
FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-8-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.



Test Number:	DS15.2
Normal Stress (psf):	720
IWc (%): FWc (%):	14.2 15.6
Dry Density Before Initial Consol (pcf):	106.3
Dry Density After This Stress (pcf):	107.2
Rate of Shear Deformation (in/min):	.04

Membrane Manufacturer:

Membrane Type:
TEXTURED

Surface:
SAND VS. TEXTURED

Sample Description:
Brown f-m SAND, trace (-)
Silt (42000-45000 CY'S)

FOXBORO LANDFILL
FOXBORO, MA.

DIRECT SHEAR TEST

Tech: MST Date: 12-8-99

Reviewer: MCM File No: L99999.2

GZA GeoEnvironmental, Inc.

APPENDIX D

HDPE Submittals

NEW LINING SOLUTIONS, CORP.

" Where the little things make the difference. "

10/20/99

Glenn Reagan
Project Manager
Eirco Environmental,LLC
P.O. Box 265
387 Lafayette Road
Hampton,NH 03843-0265

RE: Material roll certifications for Foxboro,MA landfill closure.

Please forward the material certification for the Foxboro,MA landfill to Camp Dresser McKee Engineers for there records and yours.

Sincerely,

Rick Virs

Main Office:12331 11th Ave NE Seattle, WA 98125
PH:604-904-3631 Fax: 604-904-3632
Canadian Office: 2442 Capilano Rd North Vancouver, B.C. Canada
PH: 604-904-3631 Fax 604-904-3632

agru america inc.

quality certificate

ROLL # **238330 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.98**	mm	**39**	mil
	MAX:	**1.13**	mm	**44**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.06**	mm	**42**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.08**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,796**
	Average Strength @ Break	psi	2400	**3,367**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.99**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**461.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238332 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **21** mil	AVE:	**1.08**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40** mil
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.12**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,884**
	Average Strength @ Break	psi	2400	**3,824**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.36**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**486.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238335 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.30**	mm	**51**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.17**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.12**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,884**
	Average Strength @ Break	psi	2400	**3,824**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.36**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**486.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238338 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.27**	mm	**50**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.81**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,922**
	Average Strength @ Break	psi	2400	**3,684**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.66**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238339 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.09**	mm	**43**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.81**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,922**
	Average Strength @ Break	psi	2400	**3,684**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.66**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru America, Inc.

quality certificate

ROLL # **238442 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.37**	mm	**54**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.21**	mm	**48**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.82**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,845**
	Average Strength @ Break	psi	2400	**3,276**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.18**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**423.1**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99** .....

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238446 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **21** mil	AVE:	**1.17**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.98**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,890**
	Average Strength @ Break	psi	2400	**3,572**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**19.32**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**484.7**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238447 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0**	mm	**40** mil
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.98**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,890**
	Average Strength @ Break	psi	2400	**3,572**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**19.32**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**484.7**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru America, Inc.

quality certificate

ROLL # **238452 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,959**
	Average Strength @ Break	psi	2400	**3,490**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**14.74**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**432.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99** .....

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238453 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.08**	mm	**43**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,959**
	Average Strength @ Break	psi	2400	**3,490**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**14.74**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**432.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238557 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.38**	mm	**54**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.20**	mm	**47**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,818**
	Average Strength @ Break	psi	2400	**3,521**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.33**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**491.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238558 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.13**	mm	**44**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.21**	mm	**48**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,818**
	Average Strength @ Break	psi	2400	**3,521**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.33**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**491.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature.....

Quality Control Department

agru america inc.

quality certificate

ROLL # **238450 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.06**	mm	**42**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.98**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,890**
	Average Strength @ Break	psi	2400	**3,572**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**19.32**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**484.7**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238451 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.0 mm	40 mil
	MIN:	1.02	mm	40	mil	Length.....	183 m;	600.4 feet
	MAX:	1.11	mm	44	mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.07	mm	42	mil			

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.96
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,959
	Average Strength @ Break	psi	2400	3,490
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	14.74
Lo = 2.0" Break	Average Elongation @ Break	%	400	432.5
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	46.568
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	81.184
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.880
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238454 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40** mil
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,959**
	Average Strength @ Break	psi	2400	**3,490**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**14.74**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**432.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238455 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.34**	mm	**53**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.22**	mm	**48**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,959**
	Average Strength @ Break	psi	2400	**3,490**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**14.74**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**432.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238556 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.33**	mm	**52**	mil
Asperity GRI GM12: **21** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,818**
	Average Strength @ Break	psi	2400	**3,521**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.33**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**491.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america inc.

quality certificate

ROLL # **238559 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.11**	mm	**44**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.21**	mm	**48**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,818**
	Average Strength @ Break	psi	2400	**3,521**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.33**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**491.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238563 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.13**	mm	**44**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,059**
	Average Strength @ Break	psi	2400	**3,752**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.90**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238564 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.02	mm	40	mil
	MAX:	1.26	mm	50	mil
Asperity GRI GM12: 24 mil	AVE:	1.14	mm	45	mil

Thickness.....	1.0 mm	40 mil
Length.....	183 m;	600.4 feet
Width.....	7.00 m;	23.0 feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.949
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.28
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.90
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	3,059
	Average Strength @ Break	psi	2400	3,752
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	16.90
Lo = 2.0" Break	Average Elongation @ Break	%	400	470.9
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-1.02
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	47.068
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	80.794
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.380
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: D. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238565 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.07	mm	42	mil
	MAX:	1.28	mm	50	mil
Asperity GRI GM12: 27 mil	AVE:	1.17	mm	46	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,059**
	Average Strength @ Break	psi	2400	**3,752**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.90**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H Palmer

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238570 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,034**
	Average Strength @ Break	psi	2400	**3,622**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.40**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**450.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99** .....

Signature.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238673 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40**	mil
Length.....	**183**	m;	**600.4**	feet
Width.....	**7.00**	m;	**23.0**	feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,948**
	Average Strength @ Break	psi	2400	**3,617**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.56**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**485.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238684 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.16**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40** mil
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.45**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,082**
	Average Strength @ Break	psi	2400	**3,686**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.14**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**479.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.653**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.254**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**123.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238213 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.0 mm	40 mil
	MIN:	1.06	mm	42	mil	Length.....	183 m;	600.4 feet
	MAX:	1.21	mm	48	mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.11	mm	44	mil			

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.69
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,859
	Average Strength @ Break	psi	2400	3,700
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	16.71
Lo = 2.0" Break	Average Elongation @ Break	%	400	502.8
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	48.159
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	83.330
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		127.620
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america inc

quality certificate

ROLL # **238214 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.11**	mm	**44**	mil

Thickness.....	**1.0**	**mm**		**40 mil**
Length.....	**183**	m;	**600.4**	feet
Width.....	**7.00**	m;	**23.0**	feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.69**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,859**
	Average Strength @ Break	psi	2400	**3,700**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.71**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**502.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238215 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.35**	mm	**53**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0**	mm	**40** mil
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.69**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,859**
	Average Strength @ Break	psi	2400	**3,700**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.71**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**502.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Fehner

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238218 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.99**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,868**
	Average Strength @ Break	psi	2400	**3,441**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.54**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**463.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238219 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.07**	mm	**42**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.99**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,868**
	Average Strength @ Break	psi	2400	**3,441**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.54**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**463.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: R. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238221 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.0 mm	40 mil
	MIN:	1.05	mm	41	mil	Length.....	183 m;	600.4 feet
	MAX:	1.29	mm	51	mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.17	mm	46	mil			

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.05
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,938
	Average Strength @ Break	psi	2400	3,492
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	17.25
Lo = 2.0" Break	Average Elongation @ Break	%	400	434.0
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	45.726
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	82.632
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.280
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238331 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0** mm	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.12**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,884**
	Average Strength @ Break	psi	2400	**3,824**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.36**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**486.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature.....

Quality Control Department

agru america inc.

quality certificate

ROLL # **238108 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.35**	mm	**53**	mil
Asperity GRI GM12: **19** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,908**
	Average Strength @ Break	psi	2400	**3,346**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.24**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**457.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238109 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.30**	mm	**51**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,908**
	Average Strength @ Break	psi	2400	**3,346**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.24**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**457.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238210 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.11	mm	44	mil
	MAX:	1.31	mm	52	mil
Asperity GRI GM12: 22 mil	AVE:	1.21	mm	48	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,908**
	Average Strength @ Break	psi	2400	**3,346**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.24**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**457.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238211 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.33**	mm	**52**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.69**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,859**
	Average Strength @ Break	psi	2400	**3,700**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.71**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**502.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238212 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.11**	mm	**44**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.69**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,859**
	Average Strength @ Break	psi	2400	**3,700**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.71**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**502.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238104 99** Lot #: **J061188** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **21** mil	AVE:	**1.16**	mm	**46**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.79**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,994**
	Average Strength @ Break	psi	2400	**3,606**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.85**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**449.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.74**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238105 99** Lot #: **J061188** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.03	mm	40	mil
	MAX:	1.26	mm	50	mil
Asperity GRI GM12: 24 mil	AVE:	1.17	mm	46	mil

Thickness.....	1.0 mm	40 mil
Length.....	183 m;	600.4 feet
Width.....	7.00 m;	23.0 feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.79
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,994
	Average Strength @ Break	psi	2400	3,606
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	17.85
Lo = 2.0" Break	Average Elongation @ Break	%	400	449.9
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.74
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	47.408
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	83.264
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		131.180
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america inc.

quality certificate

ROLL # **238106 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,908**
	Average Strength @ Break	psi	2400	**3,346**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.24**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**457.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238107 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.12**	mm	**44**	mil
	MAX:	**1.30**	mm	**51**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.22**	mm	**48**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,908**
	Average Strength @ Break	psi	2400	**3,346**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.24**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**457.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238216 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.30**	mm	**51**	mil
Asperity GRI GM12: **20** mil	AVE:	**1.21**	mm	**48**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.99**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,868**
	Average Strength @ Break	psi	2400	**3,441**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.54**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**463.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238217 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.0 mm	40 mil
	MIN:	1.06	mm	42	mil	Length.....	183 m;	600.4 feet
	MAX:	1.24	mm	49	mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.17	mm	46	mil			

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.99
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,868
	Average Strength @ Break	psi	2400	3,441
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	16.54
Lo = 2.0" Break	Average Elongation @ Break	%	400	463.9
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	48.159
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	83.330
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		127.620
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america inc.

quality certificate

ROLL # **238566 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,034**
	Average Strength @ Break	psi	2400	**3,622**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.40**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**450.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238567 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.11**	mm	**44**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.08**	mm	**43**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,034**
	Average Strength @ Break	psi	2400	**3,622**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.40**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**450.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america inc.

quality certificate

ROLL # **238675 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.15**	mm	**45**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.06**	mm	**42**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,948**
	Average Strength @ Break	psi	2400	**3,617**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.56**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**485.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238677 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.11**	mm	**44**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.07**	mm	**42**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.94**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,049**
	Average Strength @ Break	psi	2400	**3,739**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.75**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**447.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238678 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.09**	mm	**43**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.05**	mm	**41**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.94**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,049**
	Average Strength @ Break	psi	2400	**3,739**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.75**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**447.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature:

Quality Control Department

agru america inc

quality certificate

ROLL # **238681 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.10**	mm	**43**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.07**	mm	**42**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.45**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,082**
	Average Strength @ Break	psi	2400	**3,686**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.14**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**479.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.653**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.254**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**123.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238102 99** Lot #: **J061188** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.35**	mm	**53**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.22**	mm	**48**	mil

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.79**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,994**
	Average Strength @ Break	psi	2400	**3,606**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.85**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**449.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.74**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238103 99** Lot #: **J061188** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.17**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.79**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,994**
	Average Strength @ Break	psi	2400	**3,606**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.85**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**449.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.74**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.408**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.264**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**131.180**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: G. Palmer

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238561 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.27**	mm	**50**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.17**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,059**
	Average Strength @ Break	psi	2400	**3,752**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.90**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238562 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.16**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,059**
	Average Strength @ Break	psi	2400	**3,752**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.90**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america inc.

quality certificate

ROLL # 238568 99 Lot #: J071023 **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.02	mm	40	mil
	MAX:	1.16	mm	46	mil
Asperity GRI GM12: 22 mil	AVE:	1.09	mm	43	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.949
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.28
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.90
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	3,034
	Average Strength @ Break	psi	2400	3,622
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	17.40
Lo = 2.0" Break	Average Elongation @ Break	%	400	450.8
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-1.02
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	47.068
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	80.794
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.380
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: 9-25-99

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238569 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.11**	mm	**44**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.06**	mm	**42**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.90**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,034**
	Average Strength @ Break	psi	2400	**3,622**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.40**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**450.8**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.068**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.794**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.380**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: D. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238571 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.22**	mm	**48**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,948**
	Average Strength @ Break	psi	2400	**3,617**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.56**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**485.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238572 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.98**	mm	**39**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,948**
	Average Strength @ Break	psi	2400	**3,617**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.56**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**485.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238674 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190ºC /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.96**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,948**
	Average Strength @ Break	psi	2400	**3,617**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.56**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**485.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru America, Inc.

quality certificate

ROLL # **238676 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.06**	mm	**42**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.94**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,049**
	Average Strength @ Break	psi	2400	**3,739**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.75**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**447.5**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**47.467**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**79.926**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**120.440**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature: H. Holmes

Quality Control Department

agru america inc.

quality certificate

ROLL # **238682 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.0 mm	40 mil
	MIN:	1.06	mm	42	mil	Length.....	183 m;	600.4 feet
	MAX:	1.25	mm	49	mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 21 mil	AVE:	1.14	mm	45	mil			

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.45**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,082**
	Average Strength @ Break	psi	2400	**3,686**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.14**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**479.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.653**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.254**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**123.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature:

Quality Control Department

agru america inc.

quality certificate

ROLL # **238683 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.27**	mm	**50**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.45**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**3,082**
	Average Strength @ Break	psi	2400	**3,686**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.14**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**479.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.653**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.254**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**123.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-26-99**

Signature: H. Holmes

Quality Control Department

agru America, inc.

quality certificate

ROLL # 238679 99 Lot #: J071023 **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.00	mm	39	mil
	MAX:	1.09	mm	43	mil
Asperity GRI GM12: 30 mil	AVE:	1.05	mm	41	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.949
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	.28
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.94
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	3,049
	Average Strength @ Break	psi	2400	3,739
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	17.75
Lo = 2.0" Break	Average Elongation @ Break	%	400	447.5
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-1.02
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	47.467
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	79.926
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		120.440
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: 9-26-99

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238220 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.16**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.99**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,868**
	Average Strength @ Break	psi	2400	**3,441**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.54**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**463.9**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**48.159**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.330**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.620**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # 238222 99 Lot #: J061182 Liner Type: MICROSPIKE™

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.06	mm	42	mil
	MAX:	1.32	mm	52	mil
Asperity GRI GM12: 23 mil	AVE:	1.21	mm	48	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: Chevron 9638	Melt Flow Index 190°C /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.05
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,938
	Average Strength @ Break	psi	2400	3,492
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	17.25
Lo = 2.0" Break	Average Elongation @ Break	%	400	434.0
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	45.726
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	82.632
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.280
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: Eirco Environmental, LLC

P.O.#: FAX

DESTINATION Foxboro, MA

Form 40MSDS.FRM

Date: 9-25-99

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238223 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.05**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,938**
	Average Strength @ Break	psi	2400	**3,492**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.25**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**434.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: K. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238224 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.37**	mm	**54**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.19**	mm	**47**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.05**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,938**
	Average Strength @ Break	psi	2400	**3,492**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.25**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**434.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238225 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.37**	mm	**54**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.05**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,938**
	Average Strength @ Break	psi	2400	**3,492**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.25**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**434.0**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238326 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.34**	mm	**53**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.20**	mm	**47**	mil

Thickness.....	**1.0**	mm	**40**	mil
Length.....	**183**	m;	**600.4**	feet
Width.....	**7.00**	m;	**23.0**	feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.08**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,796**
	Average Strength @ Break	psi	2400	**3,367**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.99**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**461.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Palmer

Quality Control Department

agru america, inc.

quality certificate

ROLL # 238327 99 Lot #: J061182 **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	1.03	mm	41	mil
	MAX:	1.14	mm	45	mil
Asperity GRI GM12: 27 mil	AVE:	1.08	mm	43	mil

Thickness.....	1.0 mm	40 mil	
Length.....	183 m;	600.4 feet	
Width.....	7.00 m;	23.0 feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	.947
MFI ASTM D-1238 COND. E GRADE: Chevron 9638	Melt Flow Index 190°C /2160 g	g/10	.28	.25
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	2.08
Carbon Black Dispersion ASTM D-5596	Category		1,2	1
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	2,796
	Average Strength @ Break	psi	2400	3,367
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	16.99
Lo = 2.0" Break	Average Elongation @ Break	%	400	461.6
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	-.83
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	45.726
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	82.632
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		125.280
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	ONGOING
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	ONGOING

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: 9-25-99

Signature:

Quality Control Department

agru america inc.

quality certificate

ROLL # **238328 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.15**	mm	**45**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.07**	mm	**42**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.08**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,796**
	Average Strength @ Break	psi	2400	**3,367**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.99**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**461.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: K. Palmer

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238329 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.09**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.08**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,796**
	Average Strength @ Break	psi	2400	**3,367**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.99**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**461.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.726**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**82.632**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.280**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238334 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.10**	mm	**43**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.12**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,884**
	Average Strength @ Break	psi	2400	**3,824**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.36**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**486.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date:..... **9-25-99**

Signature:.....

Quality Control Department

agru america inc.

quality certificate

ROLL # **238336 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.30**	mm	**51**	mil
Asperity GRI GM12: **21** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.81**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,922**
	Average Strength @ Break	psi	2400	**3,684**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.66**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238337 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.81**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,922**
	Average Strength @ Break	psi	2400	**3,684**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.66**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: K. Holmes

Quality Control Department

agru america inc.

quality certificate

ROLL # **238340 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.27**	mm	**50**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**183**	m;	**600.4** feet
Width.....	**7.00**	m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.81**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,922**
	Average Strength @ Break	psi	2400	**3,684**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**16.66**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**470.6**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**45.405**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**80.032**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**124.540**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238441 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.34**	mm	**53**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.20**	mm	**47**	mil

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**183** m;	**600.4** feet
Width.....	**7.00** m;	**23.0** feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.82**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,845**
	Average Strength @ Break	psi	2400	**3,276**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.18**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**423.1**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Palmer

Quality Control Department

agru America, Inc.

quality certificate

ROLL # **238443 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.33**	mm	**52**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.18**	mm	**46**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.82**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,845**
	Average Strength @ Break	psi	2400	**3,276**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.18**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**423.1**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: [signature]

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238445 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.14**	mm	**45**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.82**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,845**
	Average Strength @ Break	psi	2400	**3,276**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	12	**17.18**
	Average Elongation @ Break	%	400	**423.1**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature: H. Holmes

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238449 99** Lot #: **J061182** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC	ENGLISH
	MIN:	1.02 mm	40 mil
	MAX:	1.14 mm	45 mil
Asperity GRI GM12: 25 mil	AVE:	1.07 mm	42 mil

Thickness.....	1.0 mm	40 mil
Length.....	183 m;	600.4 feet
Width.....	7.00 m;	23.0 feet

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.947**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.25**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.98**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,890**
	Average Strength @ Break	psi	2400	**3,572**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**19.32**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**484.7**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-.83**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.926**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**83.382**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**127.860**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

agru america, inc.

quality certificate

ROLL # **238560 99** Lot #: **J071023** **Liner Type: MICROSPIKE™**

Measurement ASTM D-751/5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.15**	mm	**45**	mil

Thickness.....	**1.0** mm	**40** mil	
Length.....	**183** m;	**600.4** feet	
Width.....	**7.00** m;	**23.0** feet	

			A/A'S DATA SHEET	TEST RESULTS
Specific Gravity ASTM D-792	Density	g/cc	.940min	**.949**
MFI ASTM D-1238 COND. E GRADE: **Chevron 9638**	Melt Flow Index 190°C /2160 g	g/10	.28	**.28**
Carbon Black Content ASTM D-1603/4218	Range	%	2-3	**2.93**
Carbon Black Dispersion ASTM D-5596	Category		1,2	**1**
Tensile Strength ASTM D-638 (Modified) (2 inches / minute)	Average Strength @ Yield	psi	2250	**2,818**
	Average Strength @ Break	psi	2400	**3,521**
Elongation ASTM D-638 (Modified) (2 inches/minute) Lo = 1.3" Yield	Average Elongation @ Yield	%	12	**17.33**
Lo = 2.0" Break	Average Elongation @ Break	%	400	**491.3**
Dimensional Stability ASTM D-1204 (Modified)	Average Dimensional Change	%	± 2	**-1.02**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	lbs	30	**46.568**
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	lbs	60	**81.184**
Puncture Resistance ASTM D-4833 (Modified)	Load	lbs		**125.880**
ESCR ASTM D-1693	Minimum Hrs w/o Failures	hrs	3,000	**ONGOING**
Notched Constant Tensile Load ASTM D-5397	pass / fail @ 30%	hrs	200	**ONGOING**

CUSTOMER: **Eirco Environmental, LLC**

P.O.#: **FAX**

DESTINATION **Foxboro, MA**

Form 40MSDS.FRM

Date: **9-25-99**

Signature:

Quality Control Department

APPENDIX E

HDPE Panel Layout

NORTH

PANEL No.	ROLL No.	PANEL No.	ROLL No.
PANEL 01	238 567	PANEL 105	238 332
PANEL 02	238 567	PANEL 106	238 449
PANEL 03	238 214	PANEL 107	238 327
PANEL 04	238 214	PANEL 108	238 338
PANEL 05	238 215	PANEL 109	238 560
PANEL 06	238 215	PANEL 110	238 338
PANEL 07	238 684	PANEL 111	238 674
PANEL 08	238 684	PANEL 112	238 336
PANEL 09	238 570	PANEL 113	238 104
PANEL 10	238 570	PANEL 114	238 674
PANEL 11	238 565	PANEL 115	238 102
PANEL 12	238 565	PANEL 116	238 563
PANEL 13	238 673	PANEL 117	238 561
PANEL 14	238 673	PANEL 118	238 564
PANEL 15	238 558	PANEL 119	238 450
PANEL 16	238 558	PANEL 120	238 559
PANEL 17	238 447	PANEL 121	238 559
PANEL 18	238 447	PANEL 122	238 451
PANEL 19	238 447	PANEL 123	238 451
PANEL 20	238 446	PANEL 124	238 571
PANEL 21	238 446	PANEL 125	238 571
PANEL 22	238 446	PANEL 126	238 571
PANEL 23	238 446	PANEL 127	238 571
PANEL 24	238 225	PANEL 128	238 454
PANEL 25	238 225	PANEL 129	238 454
PANEL 26	238 225	PANEL 130	238 454
PANEL 27	238 225	PANEL 131	238 675
PANEL 28	238 441	PANEL 132	238 103
PANEL 29	238 441	PANEL 133	238 556
PANEL 30	238 441	PANEL 134	238 681
PANEL 31	238 673	PANEL 135	238 455
PANEL 32	238 673	PANEL 136	238 455
PANEL 33	238 441	PANEL 137	238 675
PANEL 34	238 441	PANEL 138	238 223
PANEL 35	238 452	PANEL 139	238 223
PANEL 36	238 452	PANEL 140	238 681
PANEL 37	238 334	PANEL 141	238 556
PANEL 38	238 334	PANEL 142	238 451
PANEL 39	238 443	PANEL 143	238 558
PANEL 40	238 443	PANEL 144	238 103
PANEL 41	238 326	PANEL 145	238 106
PANEL 42	238 326	PANEL 146	238 106
PANEL 43	238 557	PANEL 147	238 566
PANEL 44	238 557	PANEL 148	238 566
PANEL 45	238 335	PANEL 149	238 217
PANEL 46	238 335	PANEL 150	238 678
PANEL 47	238 330	PANEL 151	238 340
PANEL 48	238 330	PANEL 152	238 568
PANEL 49	238 335	PANEL 153	238 674
PANEL 50	238 326	PANEL 154	238 678
PANEL 51	238 330	PANEL 155	238 557
PANEL 52	238 330	PANEL 156	238 217
PANEL 53	238 453	PANEL 157	238 217
PANEL 54	238 453	PANEL 158	238 678
PANEL 55	238 453	PANEL 159	238 678
PANEL 56	238 223	PANEL 160	238 107
PANEL 57	238 453	PANEL 161	238 107
PANEL 58	238 452	PANEL 162	238 107
PANEL 59	238 223	PANEL 163	238 107
PANEL 59A	238 223	PANEL 164	238 107
PANEL 60	238 220	PANEL 165	238 107
PANEL 61	238 220	PANEL 166	238 107
PANEL 62	238 223	PANEL 167	238 107
PANEL 63	238 337	PANEL 168	238 107
PANEL 64	238 337	PANEL 169	238 327
PANEL 65	238 570	PANEL 170	238 327
PANEL 66	238 224	PANEL 171	238 327
PANEL 67	238 224	PANEL 172	238 327
PANEL 68	238 567	PANEL 173	238 327
PANEL 69	238 442	PANEL 174	238 327
PANEL 70	238 442	PANEL 175	238 327
PANEL 71	238 222	PANEL 176	238 327
PANEL 72	238 222	PANEL 177	238 327
PANEL 73	238 560	PANEL 178	238 327
PANEL 74	238 560	PANEL 179	238 327
PANEL 75	238 560	PANEL 180	238 327
PANEL 76	238 560	PANEL 181	238 327
PANEL 77	238 683	PANEL 182	238 449
PANEL 78	238 683	PANEL 183	238 676
PANEL 79	238 683	PANEL 184	238 332
PANEL 80	238 683	PANEL 185	238 561
PANEL 81	238 569	PANEL 186	238 563
PANEL 82	238 569	PANEL 187	238 561
PANEL 83	238 569	PANEL 188	238 338
PANEL 84	238 569	PANEL 189	238 564
PANEL 85	238 334	PANEL 190	238 104
PANEL 86	238 567	PANEL 191	238 679
PANEL 87	238 329	PANEL 192	238 336
PANEL 88	238 329	PANEL 193	238 328
PANEL 89	238 329	PANEL 194	238 105
PANEL 90	238 329	PANEL 195	238 105
PANEL 91	238 329	PANEL 196	238 572
PANEL 92	238 329	PANEL 197	238 572
PANEL 93	238 568	PANEL 198	238 216
PANEL 94	238 568	PANEL 199	238 216
PANEL 95	238 562	PANEL 200	238 677
PANEL 96	238 562	PANEL 201	238 677
PANEL 97	238 683	PANEL 202	238 446
PANEL 98	238 340	PANEL 203	238 213
PANEL 99	238 328	PANEL 204	238 213
PANEL 100	238 445	PANEL 205	238 219
PANEL 101	238 679	PANEL 206	238 219
PANEL 102	238 682	PANEL 207	238 219
PANEL 103	238 676	PANEL 208	238 219
PANEL 104	238 339		

60 0 120 200

SCALE: 1"=60'-0"

LEGEND

- ☐ DESTRUCT
- ⊙ BOOT
- X REPAIR
- O PATCH
- R ROLL No.
- P PANEL No.

NEW LINING SOLUTIONS CORP.

Main Office: 12331 11th Ave. NE seattle, WA 98125
PH: 604-904-3631 Fax: 604-904-3631
Canadian Office: 2442 Capilano Rd North Vancuver, B.C. Canada
PH: 604-904-3631 Fax: 604-904-3631

AS-BUILT PANEL LAYOUT LINER

TOWN OF FOXBOROUGH
FOXBOROUGH, MASSACHUSETTS

JOB No. 344-99
DATE: 05/01/00
DWG: 344-99AS
SCALE: 1"=60'-0"
SHEET No.: 1 of 1

APPENDIX F

HDPE Seam Test Results

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 1	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/15/99
Sample Seam No.:	2/3	Checked by:	AJV
Lab ID Number :	1049		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
108	107	SE1	SE1	Pass
104	111	SE1	SE1	Pass
109	104	SE1	SE1	Pass
112	117	SE1	SE1	Pass
103	101	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
137		SE1		Pass
137		SE1		Pass
117		SE1		Pass
148		SE1		Pass
150		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 2	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/15/99
Sample Seam No.:	4/5	Checked by:	AJV
Lab ID Number :	1050		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
87	115	SE1	SE1	Pass
96	111	SE1	SE1	Pass
97	116	SE1	SE1	Pass
88	112	SE1	SE1	Pass
87	114	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
145		SE1		Pass
146		SE1		Pass
150		SE1		Pass
157		SE1		Pass
142		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 3	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/15/99
Sample Seam No.:	6/7	Checked by:	AJV
Lab ID Number :	1051		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
83	110	SE1	SE1	Pass
95	91	SE1	SE1	Pass
82	95	SE1	SE1	Pass
98	85	SE1	SE1	Pass
98	106	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
137		SE1		Pass
144		SE1		Pass
141		SE1		Pass
138		SE1		Pass
149		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 4	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/15/99
Sample Seam No.:	7/8	Checked by:	AJV
Lab ID Number :	1052		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
103	94	SE1	SE1	Pass
100	100	SE1	SE1	Pass
94	102	SE1	SE1	Pass
94	90	SE1	SE1	Pass
94	86	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
143		SE1		Pass
142		SE1		Pass
156		SE1		Pass
142		SE1		Pass
146		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 5	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/15/99
Sample Seam No.:	9/10	Checked by:	AJV
Lab ID Number :	1053		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
103	101	SE1	SE1	Pass
103	106	SE1	SE1	Pass
97	103	SE1	SE1	Pass
99	104	SE1	SE1	Pass
99	95	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
143		SE1		Pass
149		SE1		Pass
144		SE1		Pass
149		SE1		Pass
146		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 6	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/17/99
Sample Seam No.:	11/12	Checked by:	AJV
Lab ID Number :	1054		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
89	71	SE1	SE1	Pass
101	101	SE1	SE1	Pass
100	66	SE1	SE1	Pass
114	80	SE1	SE1	Pass
109	75	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
146		SE1		Pass
141		SE1		Pass
139		SE1		Pass
149		SE1		Pass
139		BRK		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 7	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/17/99
Sample Seam No.:	13/14	Checked by:	AJV
Lab ID Number :	1055		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
97	84	SE1	SE1	Pass
93	92	SE1	SE1	Pass
90	90	SE1	SE1	Pass
91	86	SE1	SE1	Pass
94	80	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
150		SE1		Pass
146		SE1		Pass
141		SE1		Pass
138		SE1		Pass
149		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 8	Tested by:	DD
Sample Date:	10/11/99	Test Date:	10/18/99
Sample Seam No.:	15/16	Checked by:	AJV
Lab ID Number :	1056		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
105	110	SE1	SE1	Pass
110	95	SE1	SE1	Pass
100	91	SE1	SE1	Pass
91	100	SE1	SE1	Pass
96	97	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
157		SE1		Pass
139		SE1		Pass
138		SE1		Pass
149		SE1		Pass
154		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 9	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	17/21	Checked by:	AJV
Lab ID Number :	1057		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
99	100	SE1	SE1	Pass
102	103	SE1	SE1	Pass
84	93	SE1	SE1	Pass
96	87	SE1	SE1	Pass
99	92	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
141		SE1		Pass
155		SE1		Pass
142		SE1		Pass
144		SE1		Pass
141		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 10	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	20/21	Checked by:	AJV
Lab ID Number :	1058		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
98	95	SE1	SE1	Pass
84	103	SE1	SE1	Pass
104	101	SE1	SE1	Pass
88	100	SE1	SE1	Pass
97	107	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
146		SE1		Pass
155		SE1		Pass
140		SE1		Pass
155		SE1		Pass
148		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 11	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	24/26	Checked by:	AJV
Lab ID Number :	1059		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
85	118	SE1	SE1	Pass
100	88	SE1	SE1	Pass
101	97	SE1	SE1	Pass
92	99	SE1	SE1	Pass
97	96	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
139		SE1		Pass
152		SE1		Pass
130		SE1		Pass
141		SE1		Pass
140		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 12	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	27/28	Checked by:	AJV
Lab ID Number :	1060		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
107	104	SE1	SE1	Pass
108	107	SE1	SE1	Pass
87	90	SE1	SE1	Pass
112	104	SE1	SE1	Pass
104	116	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
138		BRK		Pass
149		SE1		Pass
136		SE1		Pass
140		SE1		Pass
139		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 13	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	34/35	Checked by:	AJV
Lab ID Number :	1061		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
111	103	SE1	SE1	Pass
104	88	SE1	SE1	Pass
106	104	SE1	SE1	Pass
102	89	SE1	SE1	Pass
103	101	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
147		SE1		Pass
154		SE1		Pass
141		SE1		Pass
148		SE1		Pass
147		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 14	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	36/37	Checked by:	AJV
Lab ID Number :	1062		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
89	100	SE1	SE1	Pass
89	96	SE1	SE1	Pass
101	85	SE1	SE1	Pass
88	94	SE1	SE1	Pass
92	100	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
154		SE1		Pass
141		BRK		Pass
151		SE1		Pass
139		SE1		Pass
137		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 15	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/18/99
Sample Seam No.:	38/39	Checked by:	AJV
Lab ID Number :	1063		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
109	109	SE1	SE1	Pass
93	108	SE1	SE1	Pass
107	103	SE1	SE1	Pass
98	106	SE1	SE1	Pass
109	97	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
140		SE1		Pass
140		SE1		Pass
152		SE1		Pass
150		SE1		Pass
150		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 16	Tested by:	DD
Sample Date:	10/13/99	Test Date:	10/17/99
Sample Seam No.:	40/41	Checked by:	AJV
Lab ID Number :	1064		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
97	102	SE1	SE1	Pass
91	108	SE1	SE1	Pass
98	103	SE1	SE1	Pass
91	101	SE1	SE1	Pass
96	104	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
143		SE1		Pass
143		SE1		Pass
142		SE1		Pass
156		SE1		Pass
147		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 17	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	42/43	Checked by:	AJV
Lab ID Number :	1066		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
102	93	SE1	SE1	Pass
94	90	SE1	SE1	Pass
98	95	SE1	SE1	Pass
98	102	SE1	SE1	Pass
94	78	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
147		BRK		Pass
151		SE1		Pass
134		SE1		Pass
153		SE1		Pass
147		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 18	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	49/50	Checked by:	AJV
Lab ID Number :	1067		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
98	88	SE1	SE1	Pass
98	97	SE1	SE1	Pass
98	88	SE1	SE1	Pass
100	97	SE1	SE1	Pass
101	105	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
143		SE1		Pass
145		SE1		Pass
147		SE1		Pass
139		SE1		Pass
147		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 19	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	46/47	Checked by:	AJV
Lab ID Number :	1068		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
95	93	SE1	SE1	Pass
88	105	SE1	SE1	Pass
92	81	SE1	SE1	Pass
90	94	SE1	SE1	Pass
79	85	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
150		SE1		Pass
147		SE1		Pass
147		SE1		Pass
137		SE1		Pass
152		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 20	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	55/56	Checked by:	AJV
Lab ID Number :	1069		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
93	78	SE1	SE1	Pass
109	112	SE1	SE1	Pass
91	104	SE1	SE1	Pass
100	102	SE1	SE1	Pass
94	83	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
112		BRK		Pass
138		SE1		Pass
162		SE1		Pass
147		SE1		Pass
149		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 21	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	46/47	Checked by:	AJV
Lab ID Number :	1070		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
111	107	SE1	SE1	Pass
104	102	SE1	SE1	Pass
106	112	SE1	SE1	Pass
116	109	SE1	SE1	Pass
111	104	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
147		SE1		Pass
154		SE1		Pass
158		SE1		Pass
140		SE1		Pass
155		BRK		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 22	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	44/45	Checked by:	AJV
Lab ID Number :	1071		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
94	97	SE1	SE1	Pass
76	97	SE1	SE1	Pass
107	98	SE1	SE1	Pass
109	107	SE1	SE1	Pass
98	97	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
143		SE1		Pass
150		SE1		Pass
160		SE1		Pass
144		SE1		Pass
146		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 23	Tested by:	DD
Sample Date:	10/16/99	Test Date:	10/20/99
Sample Seam No.:	60/61	Checked by:	AJV
Lab ID Number :	1072		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
71	75	SE1	SE1	Pass
99	91	SE1	SE1	Pass
103	97	SE1	SE1	Pass
91	89	SE1	SE1	Pass
93	94	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
145		SE1		Pass
147		SE1		Pass
125		SE1		Pass
136		SE1		Pass
148		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 24	Tested by:	THR
Sample Date:	10/19/99	Test Date:	10/20/99
Sample Seam No.:	61/62	Checked by:	AJV
Lab ID Number :	1073		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
88	88	SE1	SE1	Pass
89	97	SE1	SE1	Pass
102	105	SE1	SE1	Pass
91	102	SE1	SE1	Pass
88	98	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
144		BRK		Pass
144		SE1		Pass
157		BRK		Pass
146		SE1		Pass
141		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 25	Tested by:	THR
Sample Date:	10/19/99	Test Date:	10/20/99
Sample Seam No.:	63/64	Checked by:	AJV
Lab ID Number :	1074		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
87	90	SE1	SE1	Pass
98	98	SE1	SE1	Pass
96	85	SE1	SE1	Pass
92	89	SE1	SE1	Pass
96	95	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
131		SE1		Pass
152		SE1		Pass
141		SE1		Pass
148		SE1		Pass
139		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 26	Tested by:	THR
Sample Date:	10/19/99	Test Date:	10/20/99
Sample Seam No.:	64/66	Checked by:	AJV
Lab ID Number :	1075		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
111	80	SE1	SE1	Pass
108	85	SE1	SE1	Pass
106	87	SE1	SE1	Pass
109	86	SE1	SE1	Pass
105	84	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
139		SE1		Pass
153		SE1		Pass
136		SE1		Pass
155		SE1		Pass
139		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 27	Tested by:	THR
Sample Date:	10/19/99	Test Date:	10/20/99
Sample Seam No.:	67/69	Checked by:	AJV
Lab ID Number :	1076		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
105	108	SE1	SE1	Pass
102	111	SE1	SE1	Pass
102	88	SE1	SE1	Pass
101	108	SE1	SE1	Pass
98	110	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
141		SE1		Pass
143		SE1		Pass
139		BRK		Pass
142		SE1		Pass
150		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 28	Tested by:	THR
Sample Date:	10/19/99	Test Date:	10/20/99
Sample Seam No.:	70/71	Checked by:	AJV
Lab ID Number :	1077		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
80	79	SE1	SE1	Pass
88	77	SE1	SE1	Pass
83	77	SE1	SE1	Pass
104	68	SE1	SE1	Pass
76	73	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
143		SE1		Pass
139		SE1		Pass
144		SE1		Pass
142		SE1		Pass
146		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill Final Closure	Weld Type:	Fusion
		Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 29	Tested by:	DD
Sample Date:	10/23/99	Test Date:	10/26/99
Sample Seam No.:	71/72	Checked by:	AJV
Lab ID Number :	1103		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
77	88	SE1	SE1	Pass
96	91	SE1	SE1	Pass
102	90	SE1	SE1	Pass
79	94	SE1	SE1	Pass
102	88	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code [1]	Comments
151	SE1	Pass
148	SE1	Pass
152	SE1	Pass
152	SE1	Pass
149	BRK	Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 30	Tested by:	DD
Sample Date:	10/23/99	Test Date:	10/26/99
Sample Seam No.:	84/73	Checked by:	AJV
Lab ID Number :	1104		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
73	117	SE1	SE1	Pass
82	116	SE1	SE1	Pass
105	115	SE1	SE1	Pass
93	117	SE1	SE1	Pass
84	117	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
140	BRK	Pass
138	BRK	Pass
140	SE1	Pass
139	BRK	Pass
142	SE1	Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 31	Tested by:	DD
Sample Date:	10/23/99	Test Date:	10/26/99
Sample Seam No.:	81/82	Checked by:	AJV
Lab ID Number :	1105		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
86	87	SE1	SE1	Pass
101	84	SE1	SE1	Pass
108	84	SE1	SE1	Pass
93	82	SE1	SE1	Pass
103	81	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
146		SE1		Pass
153		SE1		Pass
149		SE1		Pass
146		SE1		Pass
166		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 32	Tested by:	DD
Sample Date:	10/23/99	Test Date:	10/26/99
Sample Seam No.:	78/79	Checked by:	AJV
Lab ID Number :	1106		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
84	80	SE1	SE1	Pass
100	84	SE1	SE1	Pass
105	83	SE1	SE1	Pass
110	87	SE1	SE1	Pass
113	83	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
153		SE1		Pass
153		SE1		Pass
172		SE1		Pass
168		SE1		Pass
154		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 33	Tested by:	DD
Sample Date:	10/23/99	Test Date:	10/26/99
Sample Seam No.:	74/75	Checked by:	AJV
Lab ID Number :	1107		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
97	83	SE1	SE1	Pass
91	81	SE1	SE1	Pass
84	81	SE1	SE1	Pass
79	79	SE1	SE1	Pass
100	77	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
147		SE1		Pass
168		SE1		Pass
142		SE1		Pass
155		SE1		Pass
162		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 39	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	98/99	Checked by:	AJV
Lab ID Number :	1142		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
100	100	SE1	SE1	Pass
95	123	SE1	SE1	Pass
91	95	SE1	SE1	Pass
108	104	SE1	SE1	Pass
95	103	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
157		BRK		Pass
150		SE1		Pass
143		SE1		Pass
161		SE1		Pass
150		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 40	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	99/100	Checked by:	AJV
Lab ID Number :	1143		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
99	97	SE1	SE1	Pass
97	78	SE1	SE1	Pass
98	63	SE1	SE1	Pass
98	79	SE1	SE1	Pass
94	105	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
150		SE1		Pass
150		SE1		Pass
156		SE1		Pass
139		BRK		Pass
163		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 41	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	100/101	Checked by:	AJV
Lab ID Number :	1144		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
79	81	SE1	SE1	Pass
100	86	SE1	SE1	Pass
89	90	SE1	SE1	Pass
94	93	SE1	SE1	Pass
97	92	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
166		SE1		Pass
146		SE1		Pass
160		SE1		Pass
149		SE1		Pass
151		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 42	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	101/102	Checked by:	AJV
Lab ID Number :	1145		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
80	95	SE1	SE1	Pass
103	89	SE1	SE1	Pass
71	86	SE1	SE1	Pass
97	104	SE1	SE1	Pass
113	91	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
148		SE1		Pass
143		SE1		Pass
148		SE1		Pass
148		SE1		Pass
145		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

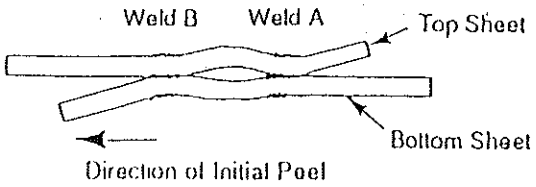
Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

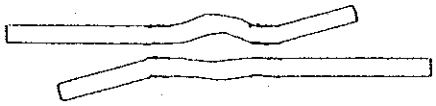
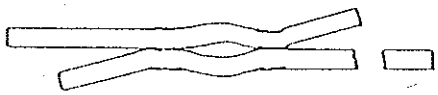
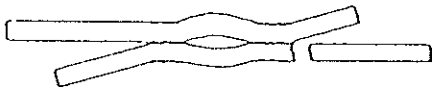
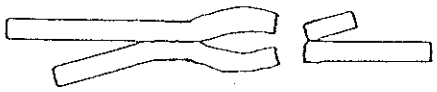
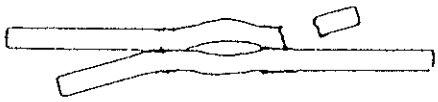
Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 43	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	102/103	Checked by:	AJV
Lab ID Number :	1146		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
99	105	SE1	SE1	Pass
91	111	SE1	SE1	Pass
98	100	SE1	SE1	Pass
113	113	SE1	SE1	Pass
105	107	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
126		SE1		Pass
152		SE1		Pass
158		SE1		Pass
162		BRK		Pass
160		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

Schematic of Untested Specimen



Types of Break	Locus-of-Break Code	Break Description	Classification[a]
	AD	Adhesion failure.	Non-FTB
	BRK	Break in sheeting. Break can be in either top or bottom sheet.	FTB
	SE1	Break at outer edge of seam. Break can be in either top or bottom sheet.	FTB
	SE2	Break at inner edge of seam through both sheets.	FTB
	AD-BRK	Break in first seam after some adhesion failure. Break can be in either the top or bottom sheet.	FTB

[a] FTB = Film - Tear Bond

NOT TO SCALE

Figure N-5. Locus-of-break codes for dual hot-wedge seams in semicrystalline FMLs tested for seam strength in shear and peel modes. In cases where the Weld A fails in adhesion in a peel test, it is recommended that the test be stopped, that the specimen be replaced in the testing machine, and that Weld B be tested by peeling in the direction opposite to that used to Weld A.

*U.S. GOVERNMENT PRINTING OFFICE:1988-548-158:87024

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 34	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	91/92	Checked by:	AJV
Lab ID Number :	1137		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
90	86	SE1	SE1	Pass
100	86	SE1	SE1	Pass
99	94	SE1	SE1	Pass
100	101	SE1	SE1	Pass
101	103	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
138		SE1		Pass
148		BRK		Pass
148		BRK		Pass
143		SE1		Pass
140		BRK		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 35	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	93/94	Checked by:	AJV
Lab ID Number :	1138		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
101	105	SE1	SE1	Pass
108	104	SE1	SE1	Pass
111	106	SE1	SE1	Pass
99	113	SE1	SE1	Pass
101	105	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
157		BRK		Pass
156		SE1		Pass
159		SE1		Pass
158		SE1		Pass
160		SE1		Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 36	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	95/108	Checked by:	AJV
Lab ID Number :	1139		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
113	103	SE1	SE1	Pass
114	99	SE1	SE1	Pass
99	103	SE1	SE1	Pass
107	121	SE1	SE1	Pass
108	105	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
129	BRK	Pass
136	SE1	Pass
146	SE1	Pass
164	SE1	Pass
157	SE1	Pass

Notes:

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 37	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	108/110	Checked by:	AJV
Lab ID Number :	1140		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
101	108	SE1	SE1	Pass
109	80	SE1	SE1	Pass
97	110	SE1	SE1	Pass
108	60	SE1	SE1	Pass
88	74	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
127	BRK	Pass
126	SE1	Pass
135	BRK	Pass
132	SE1	Pass
141	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 38	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	97/110	Checked by:	AJV
Lab ID Number :	1141		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
101	109	SE1	SE1	Pass
103	95	SE1	SE1	Pass
97	98	SE1	SE1	Pass
106	94	SE1	SE1	Pass
97	94	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
146		SE1		Pass
142		SE1		Pass
147		SE1		Pass
154		SE1		Pass
151		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 44	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	102/103	Checked by:	AJV
Lab ID Number :	1147		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
104	98	SE1	SE1	Pass
100	77	SE1	SE1	Pass
99	92	SE1	SE1	Pass
103	91	SE1	SE1	Pass
98	87	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code [1]	Comments
154	SE1	Pass
150	BRK	Pass
152	BRK	Pass
144	SE1	Pass
154	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 45	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	104/105	Checked by:	AJV
Lab ID Number :	1148		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
113	95	SE1	SE1	Pass
98	101	SE1	SE1	Pass
119	98	SE1	SE1	Pass
99	87	SE1	SE1	Pass
110	115	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
156		SE1		Pass
152		SE1		Pass
154		SE1		Pass
155		SE1		Pass
144		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 46	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	105/106	Checked by:	AJV
Lab ID Number :	1149		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
105	96	SE1	SE1	Pass
113	105	SE1	SE1	Pass
100	104	SE1	SE1	Pass
103	100	SE1	SE1	Pass
98	105	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
141		SE1		Pass
143		SE1		Pass
148		SE1		Pass
147		BRK		Pass
150		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 47	Tested by:	DD
Sample Date:	---	Test Date:	11/2/99
Sample Seam No.:	106/107	Checked by:	AJV
Lab ID Number :	1150		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
104	111	SE1	SE1	Pass
99	94	SE1	SE1	Pass
105	101	SE1	SE1	Pass
102	91	SE1	SE1	Pass
105	106	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
135		SE1		Pass
146		SE1		Pass
144		SE1		Pass
143		SE1		Pass
154		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 48	Tested by:	DD
Sample Date:	---	Test Date:	11/3/99
Sample Seam No.:	107/112	Checked by:	AJV
Lab ID Number :	1151		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
77	79	SE1	SE1	Pass
92	85	SE1	SE1	Pass
99	78	SE1	SE1	Pass
90	101	SE1	SE1	Pass
93	84	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
141		SE1		Pass
143		SE1		Pass
141		SE1		Pass
141		SE1		Pass
153		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 49	Tested by:	DD
Sample Date:	---	Test Date:	11/3/99
Sample Seam No.:	113/114	Checked by:	AJV
Lab ID Number :	1152		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
80	110	SE1	SE1	Pass
81	98	SE1	SE1	Pass
88	90	SE1	SE1	Pass
79	97	SE1	SE1	Pass
99	110	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code [1]	Comments
149	SE1	Pass
128	SE1	Pass
125	BRK	Pass
140	SE1	Pass
151	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 51	Tested by:	DD
Sample Date:	---	Test Date:	11/3/99
Sample Seam No.:	115/116	Checked by:	AJV
Lab ID Number :	1153		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
118	107	SE1	SE1	Pass
111	106	SE1	SE1	Pass
117	101	SE1	SE1	Pass
118	107	SE1	SE1	Pass
89	96	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
142		SE1		Pass
140		SE1		Pass
152		SE1		Pass
143		SE1		Pass
147		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 52	Tested by:	DD
Sample Date:	---	Test Date:	11/3/99
Sample Seam No.:	116/117	Checked by:	AJV
Lab ID Number :	1154		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
107	95	SE1	SE1	Pass
96	105	SE1	SE1	Pass
100	120	SE1	SE1	Pass
103	99	SE1	SE1	Pass
104	102	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
154		SE1		Pass
157		SE1		Pass
157		SE1		Pass
158		SE1		Pass
151		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 50	Tested by:	THR
Sample Date:	10/30/99	Test Date:	11/3/99
Sample Seam No.:	114/115	Checked by:	AJV
Lab ID Number :	1160		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
101	85	SE1	SE1	Pass
92	94	SE1	SE1	Pass
96	92	SE1	SE1	Pass
97	97	SE1	SE1	Pass
97	90	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
153		BRK		Pass
150		SE1		Pass
156		BRK		Pass
147		SE1		Pass
151		BRK		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 53	Tested by:	THR
Sample Date:	10/30/99	Test Date:	11/3/99
Sample Seam No.:	118/119	Checked by:	AJV
Lab ID Number :	1161		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
78	72	SE1	SE1	Pass
82	88	SE1	SE1	Pass
86	75	SE1	SE1	Pass
84	78	SE1	SE1	Pass
82	78	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
132		SE1		Pass
138		SE1		Pass
141		SE1		Pass
148		SE1		Pass
141		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 54	Tested by:	THR
Sample Date:	10/30/99	Test Date:	11/3/99
Sample Seam No.:	119/120	Checked by:	AJV
Lab ID Number :	1162		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
108	102	SE1	SE1	Pass
88	82	SE1	SE1	Pass
110	89	SE1	SE1	Pass
98	94	SE1	SE1	Pass
95	93	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
153		SE1		Pass
141		SE1		Pass
144		SE1		Pass
132		SE1		Pass
143		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 55	Tested by:	THR
Sample Date:	10/30/99	Test Date:	11/3/99
Sample Seam No.:	121/122	Checked by:	AJV
Lab ID Number :	1163		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
86	110	SE1	SE1	Pass
79	87	ADBRK	SE1	Pass
90	78	SE1	ADBRK	Pass
74	90	SE1	SE1	Pass
81	---	AD	---	Fail

Shear (lb/in)	Locus-of-Break Code (1)	Comments
138	SE1	Pass
149	SE1	Pass
142	BRK	Pass
148	SE1	Pass
140	BRK	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 56	Tested by:	THR
Sample Date:	10/30/99	Test Date:	11/3/99
Sample Seam No.:	123/124	Checked by:	AJV
Lab ID Number :	1164		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
96	89	SE1	SE1	Pass
93	88	SE1	SE1	Pass
82	81	SE1	SE1	Pass
104	96	SE1	SE1	Pass
85	87	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
155	SE1	Pass
143	SE1	Pass
150	BRK	Pass
141	SE1	Pass
139	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 57	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	127/128	Checked by:	AJV
Lab ID Number :	1165		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
92	85	SE1	SE1	Pass
104	87	SE1	SE1	Pass
97	83	SE1	SE1	Pass
101	80	SE1	SE1	Pass
85	80	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code [1]	Comments
153	SE1	Pass
151	SE1	Pass
149	SE1	Pass
148	SE1	Pass
173	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 58	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	129/130	Checked by:	AJV
Lab ID Number :	1166		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
116	96	SE1	SE1	Pass
113	90	SE1	SE1	Pass
107	91	SE1	SE1	Pass
113	97	SE1	SE1	Pass
104	112	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
153		SE1		Pass
160		SE1		Pass
157		SE1		Pass
150		SE1		Pass
158		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 59	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	131/132	Checked by:	AJV
Lab ID Number :	1167		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
100	104	SE1	SE1	Pass
98	93	SE1	SE1	Pass
94	91	SE1	SE1	Pass
118	95	SE1	SE1	Pass
104	102	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
149		SE1		Pass
161		SE1		Pass
168		SE1		Pass
162		SE1		Pass
165		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 60	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	133/134	Checked by:	AJV
Lab ID Number :	1168		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
102	98	SE1	SE1	Pass
95	104	SE1	SE1	Pass
120	101	SE1	SE1	Pass
113	106	SE1	SE1	Pass
92	107	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
151	SE1	Pass
158	SE1	Pass
146	SE1	Pass
147	BRK	Pass
160	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 61	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	134/135	Checked by:	AJV
Lab ID Number :	1169		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
87	98	SE1	SE1	Pass
109	101	SE1	SE1	Pass
92	92	SE1	SE1	Pass
97	104	SE1	SE1	Pass
94	104	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
168		SE1		Pass
169		SE1		Pass
168		SE1		Pass
166		SE1		Pass
164		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 62	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	136/137	Checked by:	AJV
Lab ID Number :	1170		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
90	95	SE1	SE1	Pass
77	101	SE1	SE1	Pass
94	114	SE1	SE1	Pass
88	100	SE1	SE1	Pass
94	96	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
162	SE1	Pass
154	SE1	Pass
158	SE1	Pass
147	SE1	Pass
175	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 63	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	140/141	Checked by:	AJV
Lab ID Number :	1171		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
95	100	SE1	SE1	Pass
100	77	SE1	SE1	Pass
99	92	SE1	SE1	Pass
88	94	SE1	SE1	Pass
99	85	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
154	SE1	Pass
159	SE1	Pass
160	SE1	Pass
150	SE1	Pass
157	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 64	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	141/144	Checked by:	AJV
Lab ID Number :	1172		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
121	100	SE1	SE1	Pass
109	114	SE1	SE1	Pass
113	109	SE1	SE1	Pass
104	116	SE1	SE1	Pass
107	98	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
168		SE1		Pass
158		SE1		Pass
165		SE1		Pass
168		SE1		Pass
155		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 65	Tested by:	DD
Sample Date:	10/30/99	Test Date:	11/4/99
Sample Seam No.:	141/144	Checked by:	AJV
Lab ID Number :	1173		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
98	107	SE1	SE1	Pass
96	97	SE1	SE1	Pass
104	98	SE1	SE1	Pass
99	114	SE1	SE1	Pass
86	107	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
154	BRK	Pass
159	SE1	Pass
163	BRK	Pass
157	SE1	Pass
164	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 66	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	147/148	Checked by:	AJV
Lab ID Number :	1174		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
82	84	SE1	SE1	Pass
94	94	SE1	SE1	Pass
88	97	SE1	SE1	Pass
86	73	SE1	SE1	Pass
89	87	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
159		SE1		Pass
153		SE1		Pass
151		SE1		Pass
163		SE1		Pass
153		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 67	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	149/158	Checked by:	AJV
Lab ID Number :	1175		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
119	110	SE1	SE1	Pass
123	112	SE1	SE1	Pass
113	113	SE1	SE1	Pass
119	117	SE1	SE1	Pass
114	110	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
130		BRK		Pass
134		SE1		Pass
134		SE1		Pass
133		SE1		Pass
143		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 68	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	151/152	Checked by:	AJV
Lab ID Number :	1176		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
81	97	SE1	SE1	Pass
92	98	SE1	SE1	Pass
78	102	AD	AD	Fail
76	106	SE1	SE1	Pass
73	91	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
154	SE1	Pass
163	SE1	Pass
154	SE1	Pass
159	SE1	Pass
137	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 69	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	154/155	Checked by:	AJV
Lab ID Number :	1177		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
96	80	SE1	ADBRK	Pass
95	91	SE1	SE1	Pass
104	111	ADBRK	SE1	Pass
84	95	SE1	SE1	Pass
94	103	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
160		SE1		Pass
149		SE1		Pass
158		SE1		Pass
153		BRK		Pass
161		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 70	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	158/159	Checked by:	AJV
Lab ID Number :	1178		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
107	98	SE1	SE1	Pass
112	101	SE1	SE1	Pass
115	112	SE1	SE1	Pass
121	106	SE1	SE1	Pass
101	110	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
146		SE1		Pass
154		SE1		Pass
141		SE1		Pass
144		SE1		Pass
158		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 71	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	166/167	Checked by:	AJV
Lab ID Number :	1179		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
88	97	SE1	SE1	Pass
106	115	SE1	SE1	Pass
96	86	SE1	SE1	Pass
90	76	SE1	SE1	Pass
91	98	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
156	SE1	Pass
161	BRK	Pass
156	BRK	Pass
143	SE1	Pass
164	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 72	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	171/172	Checked by:	AJV
Lab ID Number :	1180		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
92	97	SE1	SE1	Pass
100	111	SE1	SE1	Pass
88	77	SE1	SE1	Pass
104	101	SE1	SE1	Pass
82	89	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
146		SE1		Pass
144		SE1		Pass
137		SE1		Pass
145		SE1		Pass
154		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 73	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	175/176	Checked by:	AJV
Lab ID Number :	1181		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
107	108	SE1	SE1	Pass
105	103	SE1	SE1	Pass
107	123	SE1	SE1	Pass
102	96	SE1	SE1	Pass
111	110	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
149		SE1		Pass
154		SE1		Pass
130		SE1		Pass
154		SE1		Pass
148		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 74	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	180/181	Checked by:	AJV
Lab ID Number :	1182		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
99	86	SE1	SE1	Pass
108	113	SE1	SE1	Pass
116	109	SE1	SE1	Pass
86	108	SE1	SE1	Pass
83	102	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
155	BRK	Pass
144	SE1	Pass
158	SE1	Pass
163	BRK	Pass
176	SE1	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill Final Closure	Weld Type:	Fusion
		Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 75	Tested by:	DD
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	184/185	Checked by:	AJV
Lab ID Number :	1183		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
108	77	SE1	SE1	Pass
100	109	SE1	SE1	Pass
106	118	SE1	SE1	Pass
106	78	SE1	SE1	Pass
98	101	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
154		SE1		Pass
149		SE1		Pass
159		SE1		Pass
153		SE1		Pass
164		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 76	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	186/188	Checked by:	AJV
Lab ID Number :	1184		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
96	87	SE1	SE1	Pass
92	82	SE1	SE1	Pass
98	87	SE1	SE1	Pass
85	87	SE1	SE1	Pass
102	85	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
154		SE1		Pass
137		SE1		Pass
153		BRK		Pass
130		BRK		Pass
146		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 77	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	189/190	Checked by:	AJV
Lab ID Number :	1185		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
110	99	SE1	SE1	Pass
118	96	SE1	SE1	Pass
109	96	SE1	SE1	Pass
122	95	SE1	SE1	Pass
100	99	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
140		SE1		Pass
149		SE1		Pass
135		SE1		Pass
152		SE1		Pass
140		BRK		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 78	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	193/194	Checked by:	AJV
Lab ID Number :	1186		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
92	96	SE1	SE1	Pass
95	103	SE1	SE1	Pass
92	91	SE1	SE1	Pass
94	98	SE1	SE1	Pass
94	86	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
151		SE1		Pass
108		BRK		Pass
152		SE1		Pass
131		SE1		Pass
154		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 79	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	195/196	Checked by:	AJV
Lab ID Number :	1187		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
91	96	SE1	SE1	Pass
101	104	SE1	SE1	Pass
100	98	SE1	SE1	Pass
95	104	SE1	SE1	Pass
115	107	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
140		BRK		Pass
150		SE1		Pass
152		SE1		Pass
158		SE1		Pass
149		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 80	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	197/198	Checked by:	AJV
Lab ID Number :	1188		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
100	98	SE1	SE1	Pass
114	96	SE1	SE1	Pass
118	90	SE1	SE1	Pass
96	112	SE1	SE1	Pass
89	97	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
153		SE1		Pass
145		SE1		Pass
140		SE1		Pass
139		SE1		Pass
142		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 81	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	199/200	Checked by:	AJV
Lab ID Number :	1189		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
120	102	SE1	SE1	Pass
114	108	SE1	SE1	Pass
89	86	SE1	SE1	Pass
81	84	SE1	SE1	Pass
85	116	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
154		BRK		Pass
149		SE1		Pass
152		SE1		Pass
142		SE1		Pass
155		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 82	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	200/202	Checked by:	AJV
Lab ID Number :	1190		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
121	97	SE1	SE1	Pass
123	89	SE1	SE1	Pass
115	97	SE1	SE1	Pass
120	88	SE1	SE1	Pass
100	98	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
144		SE1		Pass
151		SE1		Pass
145		SE1		Pass
144		SE1		Pass
155		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill Final Closure	Weld Type:	Fusion
		Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 83	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	201/203	Checked by:	AJV
Lab ID Number :	1191		

Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
104	91	SE1	SE1	Pass
98	89	SE1	SE1	Pass
93	91	SE1	SE1	Pass
106	111	SE1	SE1	Pass
88	87	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code (1)		Comments
148		SE1		Pass
143		SE1		Pass
159		SE1		Pass
134		BRK		Pass
150		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 84	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	204/205	Checked by:	AJV
Lab ID Number :	1192		

Peel (lb/in)		Locus-of-Break Code [1]		Comments
Weld A (left side)	Weld B (right side)			
88	94	SE1	SE1	Pass
92	92	SE1	SE1	Pass
86	93	SE1	SE1	Pass
92	89	SE1	SE1	Pass
113	91	SE1	SE1	Pass
Shear (lb/in)		Locus-of-Break Code [1]		Comments
140		SE1		Pass
150		SE1		Pass
157		SE1		Pass
141		SE1		Pass
153		SE1		Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

CDM Jessberger Inc.
Geotechnical Engineering Laboratory

Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes (ASTM D 4437)

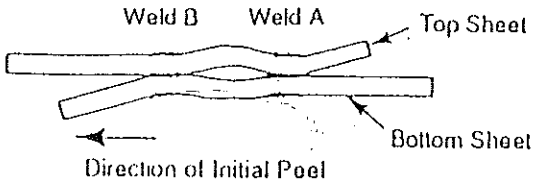
Client:	Town of Foxborough, MA	Geomembrane Type:	40 mil
Project Name:	Foxborough Sanitary Landfill	Weld Type:	Fusion
	Final Closure	Testing Equipment:	Accura-Lite Tensionmeter
Project Location:	E. Belcher Road	Test Specimen Size:	1" x 6"
Project Number:	10905-26605-CM.GEOLAB	Crosshead Speed:	2 in/min
Sample Number:	DS 85	Tested by:	THR
Sample Date:	11/1/99	Test Date:	11/4/99
Sample Seam No.:	206/207	Checked by:	AJV
Lab ID Number :	1193		

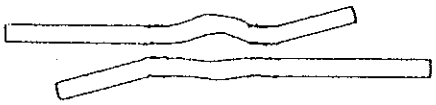
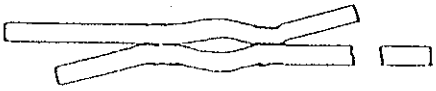
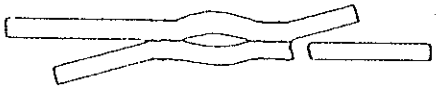
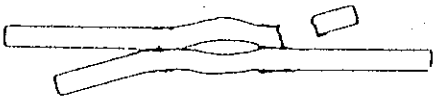
Peel (lb/in)		Locus-of-Break Code (1)		Comments
Weld A (left side)	Weld B (right side)			
89	110	SE1	SE1	Pass
89	108	SE1	SE1	Pass
88	113	SE1	SE1	Pass
89	112	SE1	SE1	Pass
90	106	SE1	SE1	Pass

Shear (lb/in)	Locus-of-Break Code (1)	Comments
146	SE1	Pass
154	SE1	Pass
133	BRK	Pass
154	SE1	Pass
127	BRK	Pass

Reference: EPA 600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities", September 1988 (see attached).

Schematic of Untested Specimen



Types of Break	Locus-of-Break Code	Break Description	Classification[a]
	AD	Adhesion failure.	Non-FTB
	BRK	Break in sheeting. Break can be in either top or bottom sheet.	FTB
	SE1	Break at outer edge of seam. Break can be in either top or bottom sheet.	FTB
	SE2	Break at inner edge of seam through both sheets.	FTB
	AD-BRK	Break in first seam after some adhesion failure. Break can be in either the top or bottom sheet.	FTB

[a] FTB = Film - Tear Bond

NOT TO SCALE

Figure N-5. Locus-of-break codes for dual hot-wedge seams in semicrystalline FMLs tested for seam strength in shear and peel modes. In cases where the Weld A fails in adhesion in a peel test, it is recommended that the test be stopped, that the specimen be replaced in the testing machine, and that Weld B be tested by peeling in the direction opposite to that used to Weld A.

*U.S. GOVERNMENT PRINTING OFFICE:1988-548-158:87024

NEW LINING SOLUTIONS, CORP.

" Where the little things make the difference. "

1/11/00

Glen Reagan
Eirco Environmental
P.O.Box 265
Hampton, N.H. 03843

RE: Field quality assurance paper work final submittal.

Dear Glen

Please find enclosed the QC/QA documentation for the Foxborough,MA Landfill cap and As-Built drawing.

SHOP DRAWING REVIEW

ENGINEER'S REVIEW	RESPONSE REQUIRED OF CONTRACTOR
Approved ☑ Not Approved ☐ Approved As Noted ☐ Comments Attached ☐	Confirm ☐ Resubmit ☐

The Engineer's review of this shop drawing is limited to the review of dimensions, equipment and materials as presented in the Contract plans, specifications and for design concept. This review does not relieve the Contractor from errors or omissions in this submittal or from the Contractor's responsibility of addressing any deviations from the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences or procedures of construction and performing his work in a safe manner.

CAMP DRESSER & McKEE, INC.

By TA Date 2-10-00

Sincerely,

Rick Virs

Main Office:12331 11th Ave NE Seattle, WA 98125
PH:604-904-3631 Fax: 604-904-3632
Canadian Office: 2442 Capilano Rd North Vancouver, B.C. Canada V7P-3C2
PH: 604-904-3631 Fax 604-904-3632

New Lining Solutions,Inc
Foxborough,MA Field QC/QA Forms

Section 1:

Daily Trial Weld/End of Seam Log

Section2:

Daily Panel Placement Log

Section3:

Daily As-Built Panel Log

Section4:

Pressure Test Log

Section 5:

Sem Destructive Log

Section 6:

As-Built Panel Layout

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: FOXBORO **Project No.:** _____ **Pg.** 1 **of** _____

	Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
Smooth Smooth	10/7/99 1 AM	E.T. HS #3		750 / 5.0		94 / 90	99 98 / 100 99	146 / 148 148	Y	P
Smooth Smooth	10/7/99 2 AM Test	C.N. HS #2		750 / 5.0		98 / 104	98 / 90	159 / 159	Y	P
Smooth Smooth	10/8/99 3 AM Test	ET HS #3		750 / 5.		90 / 92	100 94 / 90 94	154 / 155 157	Y	P
Smooth Smooth	10/8/99 4 AM Test	CN HS #2		750 / 5.		96 97 / 109 100	104 / 103	142 170 / 158	Y	P
	EOS	CN HS #2	54°	750/5	2-3	85/85			Y	P
	EOS	CN HS #2	55°	75/4.5	3-4	96/107			Y	P
	10/8/99 EOS	ET HS #3	55°	775/4.5	5/6	99/110			Y	P
	10/8/99	PD HS#2	55°	850/5					Y	P
Smooth Smooth	10/8/99 PM TEST	JO HS #3	59	775/4.5		100/125	128 95 / 110 121	173 167 / 163	Y	P
	10/8/99	PD HS#2	68	750/4.5		90/104	108/93	164/161	Y	P
	10/8/99 EOS	JO HS #3	68	775/4.5	9/10	100/91			Y	P
	EOS	C.N. HS #2		775/4.5		97/100			Y	P
	EOS	ET #3	64	775/4.5	11/12	120/124			Y	P
	10/8/99 PM test	CN HS #2	64	775/4.5		103/128	99/114	130/176	Y	P
	10/8/99 EOS	ET HS #3	67	775/4.5	13/14	123/133			Y	P
	EOS	HS #2	67	775/4.5	12/13	129/128			Y	P
	10/8/99 EOS	JO HS #3	60	775/4.5	14/15	127/128			Y	P
TEX TEX	10/9/99 AM	+ J.O EXT 3	57	500/450		117/100	108	151 158 / 168	Y	P
	Comments: smooth 10/10/99 TEX AM	JO EXT #3	60	500/450		101/108	110	142 146 / 151	Y	P

DATE TRIAL No.	OPERATOR MACHINE	AMB	TEMP SPEED	STEAM No.	Peel	Peel	Shrink	FTB Y/N	PF
smooth 10-11-99	HS#3 ET	67	775/4.5		100/103 96/95	105/101	157/157 160	Y	P
rough 10-11-99	HS#3 JO.	66	775/45						

Seq. 114 513-16-114 pell

PB

#3 HS

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: FOXBORO, MA LF **Project No.:** _____ **Pg.** 2 **of** _____

	Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
TEX TEX	10/10/99 AM TEST	J.O EXT#3	57	500/450		117/100	108	151/168 158	Y	P
Smooth Tex	10/10/99 AM TEST	ET EXT#3	60	500/450		101/108	110	142 146/151	Y	P
Smooth Smooth	10/11/99 AM TEST	ET HS#3	67	775/4.5		100/103 94/95	105/101	157/157 160	Y	P
Tex Tex	10/11/99 AM TEST	J.O HS#3	66	775/4.5		110/115	119 119/111 110	142 [illegible]/147 149	Y	P
Smooth Smooth	10/11/99 EOS	ET HS#3	63	775/4.5	1/17	114/111			Y	P
Smooth Smooth	10/11/99 EOS	ET HS#3	60	775/4.5	18/19	94/111			Y	P
TEX TEX	10/11/99 AM TEST	JO EXT#3	67	500/425		131/125	130	141/151 140	Y	P
Smooth Smooth	10/10/99 PM TEST	JO EXT#3	67	500/425		140/149	135	139/152 142	Y	P
Smooth Smooth	10/12/99 AM TEST	ET HS#3	44	775/4.5		120/106 114/113	138/126	186/204 189	Y	P
	10/12/99 EOS	ET HS#3		775/4.5	19/20	167/159			Y	P
	10/12/99 EOS	ET HS#3		775/4.5	17/21	117/126			Y	P
	10/12/99 EOS	E HS#3		775/4.5	21/23	156/162			Y	P
Smooth Smooth	10/12/99 AM Test	C.N. HS#2	71	775/4.5		106/83	122/98	162/163		
Smooth tex	10/12/99	ET HS#3		775/4.5		121/117			Y	P
	10-12-99 EOS	C.N. HS 2		775/4.5	24/26	102/120			Y	P
	10/12-99 PM Test	JO HS #3	62	775/4.5		96/108	100 72/86 81	141/159 141	Y	P
	10/12/99 EOS	C.N. HS#2	62	775/4.5	26/27	100/98			Y	P
	10/12/99 EOS	ET HS#3	62	775/4.5	27/28	124/119			Y	P
	10/12/99 EOS	CN HS 2	62	775/4.5	28/29	103/107			Y	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project:_____ Project No.:_____ Pg. _____ of_____

	Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
	10-12. PM TEST	TS EXT 3	64	500/425	—	95/110	98/107	154/158 150	Y	P
	10-12	CN HS#2	66	775/4.5	30/31	110/101			Y	P
smooth tex	EOS 10-12	CN HS #2	66	775/4.5	3/32	93/104			U	P
	EOS 10-12-99	ET HS#3	69	775/4.5	29/30	118/108			Y	P
	10-12-99 EOS	ET HS#3	69	775/4.5	BS	92/95			Y	P
smooth Tex	10-12-99 EOS	ET HS#3	66	775/4.5	1/33	113/113			Y	P
	[illegible]	[illegible]	[illegible]	[illegible]						
smooth tex	10-13-99 Am Test	ET HS #3	48	775/4.5	—	117/124 121/108	111/98	183/181 161	Y	P
smooth smooth	10-13-99 Am test	C.N. HS.#2	48	775/4.5		99/94 95/80	93/86	155/164 150	Y	P
smooth smooth	10-13-99 EOS	ET HS#3	58	775/4.5	16/34	121/120			Y	P
smooth smooth	10-13-99 EOS	CN HS #2	58	775/4.5	34/35	83/81			Y	P
	10-13-99 EOS	ET JO HS#3	65	775/4.5	35/34	111/112			Y	P
smooth smooth	10-13-99 EOS	C.N. HS.#2	65	775/4.5	36/37	111/86			Y	P
smooth smooth	10-13-99 EOS	C.N. HS.#2	72	775/4.5	38/39	107/113			Y	P
	10-13-99 EOS	ET JO HS#3	71	775/4.5	37/38	106/105			Y	P
	10-13-99 EOS	150 HS#3	71	775/4.5	39/40	110/109			Y	P
tex tex	10-13-99 Am test	EXT #3	71	510/325.		102/107	107	135/139 113	Y	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: FOXBORO MA **Project No.:**_____ **Pg.** ____ **of** ____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10-13-99 PM TEST	TS EXT #1	72	490/425	—	185/109	103	157/160 159	Y	P
10-14-99	ET EXT #1	50°	495/425		107/105	110	148/160/162	Y	P
smooth 10-15-99 AM Test	JO HS # 3	46°	775/4.5	~	113/104	100/106 110/107	193/203 200	Y	P
Smooth 10-15-99 AM Test	CN HS #2	43°	775/4.5		118/119	117/105 109/84	173/188 180	Y	P
10-15-99 EOS	ET HS #3	57	775/4.5	42/43	124/118			Y	P
smooth 10-15-99 EOS	CN HS #2	57	775/4.5	44/46	99/98			Y	S
smooth 10-15-99 PM test	C.N. H.S #2	66	775/4.5		102/110	109/103 89/125	151/161 157	Y	P
10-15-99 EOS	ET HS #2	62	775/4.5	330/326	118/111			Y	P
10/16/99 AM Test	ET HS #1	56	775/4.5		93/91 91/119	93/104	172/184 180	Y	P
smooth 10-16-99 Am test	C.N. H.S #2	56	775/4.5		45/99	92	103/158	Y	P
smooth 10-16-99 EOS	CN H.S. #2	56	775/4.5		220/220	91/111	98	Y	P
10-16-99 EOS	C.N. HS #2	77	775/4.5		57/58	91/105		Y	P
10-16-99 EOS	C.N. HS #2	77	775/4.5		58/59	100/94		Y	P
10-16-99 PM. TEST	~~ET~~ JO HS #2	77	775/4.5		78/104	116/81 77/76	124/161 173	Y	P
10-16-99 PM ~~TEST~~	CN ~~EXT #3~~	77	510/425		91/119	107	146/157 156		
10-16-99 PM Test	JO ~~EXT #1~~	84	500/425	~	108/103	119	154/156 150		
10-17-99 AM Test	HS #2	58	775/4.5		95/96 91/90	86/101	171/192 166	V	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: Foxboro Project No.:_____ Pg. _____ of_____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10/17/99 AM TEST	ET HS#1	57	775 / 4.5		99 98 / 93 100	92 / 93	190 / 171 185	Y	P
10-17-99 EOS	C.N. HS#2	57	775 / 4.5	64 / 66	101 / 97			Y	P
10/17/99 EOS	ET HS#1	71	775 / 4.5	66 / 67	89 / 92			Y	P
10-17-99 PM TEST	TS EXT#3	81	450 / 425		184 / 154	131 / 132	141 / 144	Y	P
10/18/99 AM TEST	ET EXT#3	78	900 / 425		130 / 128	128	156 / 151 154	Y	P
10/21/99 AM TEST	ET HS#1	48	775 / 4.5		101 92 / 104 109	92 / 112	187 / 191 178	Y	P
10/21/99 PM test	C.N. HS#2	82	775 / 4.5		102 / 94 109 / 93	92 / 106	154 / 158 160	Y	P
10/21/99 EOS	ET HS#	82	775 / 4.5	72 / 73	100 / 119			Y	P
10/21/99 PM TEST	ET HS#	66	775 / 4.5		90 / 91	103 103 / 88 105	171 / 182 182	Y	P
10/21/99 EOS	C.N. HS#2	66	775 / 4.5		109 / 109				
10/22/99 AM TEST	ET HS#1	44	775 / 4.5		106 / 104	88 101 / 99 101	203 / 187 199	Y	P
10/22/99 AM Test	C.N. HS#2	47	775 / 4.5		105 93 / 98 107	101 / 109	181 176 / 206	Y	P
10/22/99 EOS	P.D. HS#2	41	775 / 4.5	29 / 28	93 / 96			Y	P
10/22/99 EOS	P.D. HS#2	66	775 / 4.5	93 / 94	124 / 111			Y	P
10/22/99 EOS	P.D. HS#2	67	775 / 4.5	94 / 95	85 / 120			Y	P
10-22-99 PM TEST	TS EXT.3	67	425 / 500	—	120 / 125	128 / 127	144 / 142	Y	P
10/22/99 PM TEST	ET EXT#1		425 / 500		93 / 87	90	170 / 165 145	Y	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: Foxboro **Project No.:**_____ **Pg.** ____ **of**____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10/23/99 AM Test	ET HS#1	55	775 / 4.5		83 94 / 114 85	104 / 95	195 / 164 199	Y	P
10/24/99 Am Test	JD HS#1	42	775 / 4.5		105 93 / 102 85	91 / 90	182 / 187 185	Y	P
10/24/99 AM TEST	ET HS#2	43	775 / 4.5		115 100 / 135 141	122 / 124	198 / 204 188	Y	P
10/24/99 PM TEST	ET HS#2	80	775 / 4.5		87 101 / 82 100	83 / 101	164 / 173 172	Y	P
10/29/99 AM Test	JD HS#1	58	775 / 4.5		84 89 / 111 90	91 / 92	192 / 171 177	Y	P
10/24/99 PM Test	JD HS#1	60	775 / 4.5		97 85 / 91 91	91 / 94	159 / 162 163	Y	P
10/25/99 AM TEST	ET HS#2	40	775 / 4.5		122 105 / 111 104	113 / 120	212 / 213 223	Y	P
10/25/99 AM Test	JD #S1	37	775 / 4.5		91 98 / 104 106	104 / 109	208 / 227 208	Y	P
10.25.99 PM TEST	TS EXT-3	63	480 / 510		106 121 / 126	161 / 122 148	148 / 141	Y	P
10-20-99 AM TEST	PD HS#2	40	775 / 4.5		121 94 / 111 110	131 / 100	214 / 204 220	Y	P
10/20/99 AM Test	JD HS1	40	775 / 4.5		120 113 / 119 98	117 / 120	203 / 186 208	Y	P
10/26/99 EOS	PD HS#2	77	775 / 4.5	107A / 109	109 / 143			Y	P
10/26/99 EOS	PD HS#2	77	775 / 4.5	115 / 116	101 / 98			Y	P
10/26/99 PM Test	ET EXT#3	77	425 / 500	115 / 116	92 89 / 91 85		121 / 115	Y	P
10/27/99 AM Test	ET HS#2	51	775 / 4.5		99 112 / 117 97	133 / 90	191 / 196 195	Y	P
10/27/99 AM Test	JD HS1	50	775 / 4.5		106 114 / 111 109	126 / 115	188 / 197 196	Y	P
10/27/99 EOS	ET HS#2	56	775 / 4.5		146 / 118			Y	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: Foxboro **Project No.:**_____ **Pg.** ____ **of**____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10/27/99 Pm Test	JO HS #1	63	775 / 4.5		90 / 112	98 100 / 114 101	175 / 167 175	Y	P
10/28/99 Am Test	JO HS 1	40	775 / 4.5		94 106 / 104 104	100 / 109	220 223 / 205	Y	P
10/28/99 AM test	PD HS#2	49	775 / 0.5		114 105 / 95/100	109 / 96	145 204 / 202	Y	P
10/28/99 Pm test	ET HS 3	45	775 / 4.5		144 120 / 147 134		178 / 184	Y	P
PM 10-28-99 test	PD HS#2	63	775 / 4.5		138 / 92	101 107 / 84	161 / 171	Y	P
pm Test 10-28-99	JO HS 1	74	775 / 4.5		103 / 104	104 106 / 103 100	156 159 / 163	Y	P
10/29/99 AM TEST	ET HS #3	44	775 / 4.5		123 / 125	102 112 / 111 110	195 / 187 188	Y	P
10-29-99 AM TEST	ES HS-2	45	775 / 4.5		117 / 111	100 102 / 101 100	199 / 196 200	Y	P
10/29/99 Am Test	JO HS 1	46	775 / 4.5		100 99 / 95 102	95 / 105	189 / 190 191	Y	P
10 29 99 PM TEST	TS HS-2	72	775 / 4.5		101 98 / 99 100	98 / 106	199 / 200 201	Y	P
10/29/99 pm Test	JO HS 1	71	775 / 4.5		109 / 135	114 118 / 112 110	176 / 180 173	Y	P
10/30/99 AM Test	C.N. HS#2	43	775 / 4.5		92 / 114	134 128 / 113 98	211 214 / 211	Y	P
10/30/99 AM Test	JO HS 1	42	775 / 4.5		92 / 99	99 99 / 101 108			
10/30/99 E.O.S.	RM HS#2	43	775 / 4.5	170 / 171	134 / 75			Y	P
10/30/99 EOS	RM HS#2	45	775 / 4.5	171 / 172	95 / 155			Y	P
10/30/99 AM TEST	ET EXT #3	45	500 / 450		163 / 126 143	180 / 1	195 / 182	Y	P
10 30 99 EOS	TS HS-1	46	775 / 4.5	172 / 173	109 / 99				

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: Foxboro **Project No.:**_____ **Pg.** ____ **of**____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10.30.99 EOS	HS-1	56	775 / 4.5	174 / 175	102 / 100			Y	P
10/30/99 EOS	HS#2	56	775 / 4.5	173 / 174	122 / 132			Y	P
10/30/99 EOS	CN HS#2	56	775 / 4.5	175 / 176	85 / 118			Y	P
10-30-99 EOS	TS HS-1	56	775 / 4.5	176 / 177	113 / 127			Y	P
10-30-99 EOS	SO#1	58	775 / 4.5	178 / 179	111 / 127			Y	P
10/30/99 EOS	C.N. S.H.#2	58	775 / 4.5	177 / 178	123 / 98			Y	P
10/30/99 AM Test	ET HS#3	61	775 / 4.5		121 / 123	111 / 111 115 / 109	168 / 149 171	Y	P
10/30/99 EOS	SO HS1	61	775 / 4.5		133 / 133			Y	P
10/30/99 EOS	H.S. #2	61	775 / 4.5	179 / 180	123 / 127			Y	P
10-30-99 EOS	HS-1	60	775 / 4.5	176 / 179	172 / 136			Y	P
10/30/99 EOS	H.S.#2	67	775 / 4.5	181 / 182	90 / 88			Y	P
10 30 99 EOS	HS-1	68	775 / 4.5	182 / 183	125 / 118			Y	P
10-30-99 PM TEST	TS HS-2	69	775 / 4.5		102 / 102	111 108 / 113	170 / 190	Y	P
10/30-99 EOS	C.N. HS 2	77	775 / 4.5	183 / 184	96 / 87			Y	P
10-30-99 EOS	TS HS-2	71	775 / 4.5	184 / 185	105 / 106			Y	P
10-30-99 EOS	TS HS-2		775 / 4.5	185 / 186	146 / 136			Y	P
10/30/99 EOS	C.N. HS 2	73	775 / 4.5	131 / 187	90 / 94			Y	P
10/30/99 EOS	C.N. H.S.#2	73	775 / 4.5	186 / 188	87 / 96			Y	P
10/30/99 AM Test	ET EXT 3		500 / 450		124 / 112 108	145 / 143 138		Y	P
10/31/99 AM Test	ET EXT#3		500 / 450		98 / 109 110		124 / 113 118	Y	P

Comments:

NEW LINING SOLUTIONS INC.

DAILY TRIAL WELD LOG / END OF SEAM D.S.

Project: Foxboro **Project No.:**_____ **Pg.** ____ **of** ____

Date / Trail No.	Operator / Machine	Amb	Temp. Spd.	Seam No.	Peel	Peel	Shear	FTB Y/N	P/F
10-30-99 EOS	TS HS-2	66	275 / 4.5	188 / 189	111 / 100	—	—	Y	P
10-30-99 EOS	DD HS#3	44	7.75 / 4.5	190 / 191	110 / 112		—	Y	P
10-30-99 EOS	TS HS-2	59	275 / 4.5	190 192 / 192-193	113 / 133	—	—	Y	P
11-1-99 AM TEST	TS HS-2	54	275 / 4.5	—	110 105 / 108 116	97 / 100	157 155 / 170	Y	P
11-1-99 AM TEST	JD # HS 3	53	275 / 4.5	—	117 118 / 97 110	106 / 108	145 180 / 164	Y	P
11-1-99 EOS	TS HS-2	60	275 / 4.5	194 / 195	98 / 96	—	—		
11-1-99 EOS	TS HS-2	60	275 / 4.5	196 / 197	128 / 121	—	—	Y	P
11-1-99 EOS	TS HS-2	70	275 / 4.5	198 / 199	108 / 111	—	—	Y	P
11-1-99 EOS	T.S. HS#2	70	275 / 4.5	100 / 101	100 / 114	—	—	Y	P
11-1-99 PM TEST	TS HS-2	72	275 / 4.5	[illegible]	102 105 / 110 108	180 / 179	160 159 / 162	Y	P
11-1-99 PM Test	SD HS1	70	275 / 4.5	—	108 114 / 116 112	114 / 108	147 155 / 154	Y	P
11-1-99 AM Test	ET HS#3		275 / 4.5		105 / 109	111 102 / 115 112	147 / 152 153	Y	P
11-1-99 AM Test	ET EXT#3		500 / 450		110 / 121 118		138 / 121 148	Y	P
11-2-99 AM Test	ET EXT#3		500 / 450		108 / 116 121		168 / 172 150	Y	P
11-2-99 AM Test	TS EXT #1		500 / 450		110 / 124	123	158 171 / 142	Y	P

Comments:

SECTION:: 2

NEW LINING SOLUTIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro L.F. **Project No:**_____
Date: 10/8/99 **Product [check one]:**

Sector: _____ **FML** X **GT**____ **GCL**____ **GC**____ **GN**____ **OTHER**____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
1	238 567	247	5681
2	" 567	267	6141
3	" 214	295'	6785
4	" 214	293'	6739
5	" 215	294'	6762
6	" 215	283'	6509
7	" 684	284'	6532
8	" 684	280'	6440
9	" 570	276'	6348
10	" 570	272'	6256
11	" 565	277'	6371
12	" 565	274'	6302
13	" 673	269'	6187
14	" 673	266'	6118
15	" 558	267	6141
16	" 558	265'	6095

BEGINNING BALANCE:_____ TOTAL INSTALLED TODAY: 101407

RECEIVED TODAY:_____

TOTAL MATERIAL ON HAND:_____

TOTAL INSTALLED TO DATE:_____

NEW LINING SOLUTIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: FOXBORO **Project No:**

Date: 10-11-99 **Product [check one]:**

Sector: _____

FML____ **GT**____ **GCL**____
GC____ **GN**____ **OTHER**____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
17	447	185	4255
18	447	193	4439
19	447	193	4439
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			

BEGINNING BALANCE: 101407 TOTAL INSTALLED TODAY: 13133 ✓

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE: 114540

NEW LINING SOLUTIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: FOXBORO MA **Project No:**

Date: 10-12-99 **Product [check one]:**

Sector: FML X GT GCL
GC GN OTHER

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
20	446	191'	4393
21	446	193	4439
22	446	PIE 22X163 ÷2	1793
23	446	PIE 22X161 ÷2	1771
24	225	156	3588
25	225	167	3841
26	225	127	2921
27	225	114	2622
28	441	100	2300
29	441	87	2001
30	441	71	1633
31	673	54	1242
32	673	PIE 23X15 ÷2	173
33	441	81	1863

BEGINNING BALANCE: 114540 TOTAL INSTALLED TODAY: 34765

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE: 149305

30843
3726

NEW LINING SOLUTIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: FOXBORO MA Project No: _____

Date: 10-13-99 Product [check one]:

Sector: _____ FML X GC ____ GT ____ GN ____ GCL ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
34	441	246	5658
35	452	265	6095
36	452	255	5865
37	334	257	5911
38	334	247	5681
39	443	242	5566
40	443	238	5474
41	326	236	5428
42	326	234	5382

BEGINNING BALANCE: 149305 TOTAL INSTALLED TODAY: 51060

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 200848

NEW LINING SOLUTIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: FOXBORO MA LF Project No: _____

Date: 10/15 Product [check one]:

FML X GT ____ GCL ____

GC ____ GN ____ OTHER ____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
43	557	228	5244
44	557	267	6141
45	335	273	6279
46	335	237	5451
47	330	219	5037
48	PIE 39X24÷2 R330	39X24÷2	468
49	335	64 AVE	1472
50	326	102 AVE	2346
51	330	138 AVE	3174
52	330	168 AVE	3864
53	453	172 AVE	3956
54	453	157 AVE	3611
55	453	140	3220

BEGINNING BALANCE: 200848 TOTAL INSTALLED TODAY: 50263

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 251111

NEW LINING SOL TIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: FOXBORO MA LF Project No: _____

Date: 10-16-99 Product [check one]:

FML X GT ____ GCL ____

Sector: _____ GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
56	223	119 AVE	2737
57	453	91 AVE	2093
58	452	62 AVE	1426
59	223	PIE 29X23 1/2	334
59A	220	279	6417
60	220	297	6831
61	223	304	6992
62	337	312	7176
63			

BEGINNING BALANCE: 251111 TOTAL INSTALLED TODAY: 34006

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 285117

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/16 Product [check one]:

FML____ GT____ GCL____
GC____ GN____ OTHER____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
60	220	279	6417
61	220	297	6831
62	223	304	6992
63	337	312	7176

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: _____

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 304874

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/17 Product [check one]:

FML X GT ____ GCL ____

GC ____ GN ____ OTHER ____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
64	337	276	6348
65	570	42	966
66	224	316	7268
67	224	276	6348
68	567	40	920
69	442	314	7222
70	442	283	6509
71	222	276	6348

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 41,929

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 346803

NEW LINING SOL TIONS INC.

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No:

Date: 10/21 Product [check one]:

Sector: FML X GT GCL GC GN OTHER

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
85	R334	Δ	1,598
86	R567	Δ	156
72	R222	250'	5750
73	R560	231'	5313
74	R560	60'	1771
75	560	95'	2530
76	"	126'	2944
77	683	133'	3059
78	683	147'	3381
79	683	164'	3772
80	683	148'	3403
81	569	161	3703
82	569	145	3335
83	569	149	3427
84	569	Δ	2825

BEGINNING BALANCE: TOTAL INSTALLED TODAY: 44,142

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE: 393770

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/22 Product [check one]:

FML X GT ____ GCL ____

Sector: _____ GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
87	329	51	1173
88	329	40	920
89	329	1	1110
90	329	120	2760
91	329	203	4669
92	329	222	5106
93	568	238	5474
94	568	251	5773
95	562	272	6256

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 33,241

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 427011

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/24 Product [check one]:

FML X GT ____ GCL ____

Sector: _____ GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
96	562	349	8027
97	683	19'	437
98	340	Δ	8740
99	328	Δ	10,741
100	445	524	12,052
101	679	537	12,351
102	682	475	10,925
103	676	481	11063
104	339	477	10,971
105	332	464	10,672
106	449	429	9,867
107	327	498	11,454

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 117,300

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 544311

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No:

Date: 10/25 Product [check one]:

FML GT GCL

Sector: GC GN OTHER

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
108	338	Δ	1150
109	560	Δ	12750
110	338	Δ	6623
112	336	435	10,005
113	104	429	9,867

BEGINNING BALANCE: TOTAL INSTALLED TODAY: 28 920

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE: 573231

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/26 Product [check one]:

Sector: _____

FML ✓ GT ____ GCL ____
GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
111	674	40	920
114	674	413	9499
115	102	393	9039
116	563	373	8579
117	561	359	8257

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 36,294

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 609525

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/27 Product [check one]:

FML X GT ____ GCL ____

GC ____ GN ____ OTHER ____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
118	564	348	8004
119	450	330	7590
120	559	319	7337
121	559	260	5980
122	451	260	5980
123	451	256	5888
124	571	256	5888
125	571	93	2139
126	571	105	2415
127	571	126	2898
128	454	203	4669

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 58,788

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 668313

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No:

Date: 10/28 Product [check one]:

FML X GT GCL

GC GN OTHER

Sector:

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
129	454	203	4669
130	454	231	5313
131	675	300	6900
132	103	315	7245
133	556	312	7146
134	681	310	7130
135	455	311	7153
136	455	268	6164
137	675	270	6210
138	223	56	1288
139	223	32	736
140	681	262	6026
141	556	270	6210
142	451	58	1334
143	558	56	1288
144	103	275	6325

BEGINNING BALANCE: TOTAL INSTALLED TODAY: See next Sheet

ST= 81,137

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE:

DAILY PANEL PLACEMENT/ PRODUCTION

Project: _____ Project No: _____

Date: 10/28 Cont. Product [check one]:

FML____ GT____ GCL____
GC____ GN____ OTHER____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
145	106	286	6578
146	106	303	6969
			13,547
		129-144 =	81,137

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 94684

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 762997

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Foxboro Project No: _____

Date: 10/29 Product [check one]:

FML X GT ____ GCL ____

GC ____ GN ____ OTHER ____

Sector: _____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
147	566	263	4049
148	566	247	5681
149	217	237	5451
150	678	145	3335
151	340	135	3105
152	568	123	2829
153	674	112	2574
154	678	101	2323
155	557	96	2208
156	217	153	3519
157	217	152	3496
158	678	153	3519
159	678	146	3358
160	107	137	3151
161	107	22	506
162	107	22	506

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: See next sheet

OT 51,612

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: _____

DAILY PANEL PLACEMENT/ PRODUCTION

Project: _____ Project No: _____

Date: 10/29/cont. Product [check one]:

FML ____ GT ____ GCL ____

Sector: _____ GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
163	107	31	713
164	107	36	828
165	107	42	966
166	107	47	1081
167	107	80	1840
168	107	80	1840
169	327	80	1840
170	327	92	2116
		Panel 147-162	= 51,617
			11,224

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 62836

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 825833

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Sordoro Project No:

Date: 10/30 Product [check one]:

FML GT GCL
GC GN OTHER

Sector:

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
171		92	2116
172		97	2231
173		106	2438
174			2196
175		87	2001
176		95	2185
177		85	1955
178		88	2024
179		92	2116
180		95	2185
181		94	2162
182	R449	97	2231
183	676	101	2323
184	332	104	2392
185	561	172	3956
186	563	182	4186

BEGINNING BALANCE: TOTAL INSTALLED TODAY: See next sheet

ST 38,697

RECEIVED TODAY:

TOTAL MATERIAL ON HAND:

TOTAL INSTALLED TO DATE:

DAILY PANEL PLACEMENT/ PRODUCTION

Project: _____ Project No: _____

Date: 10/30 Product [check one]:

Sector: _____

FML____ GC____ GT____ GN____ GCL____ OTHER____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
187	561	Δ	1035
188	338	190	4370
189	564	172	3956
190	104	154	3542
191	679	51	1173
192	336	154	3542
193	328	62	1426
194	105	231	5313
			24,357
		Panels 171-186 =	38,697

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 63054

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 888887

DAILY PANEL PLACEMENT/ PRODUCTION

Project: Jonsboro Project No: _____

Date: 11/1 Product [check one]:

Sector: _____

FML X GT ____ GCL ____
GC ____ GN ____ OTHER ____

PANEL NO.	ROLL NO.	LENGTH	SQ. FOOTAGE
195	R105	245	5635
196	572	258	5934
197	572	273	6279
198	216	287	6601
199	216	297	6831
200	677	307	7061
201	677	274	6302
202	446	Δ	989
203	213	271	6233
204	213	269	6187
205	219	209	4807
206	219	Δ	~~966~~ 3450
207	219	Δ	1621
208	219	Δ	726

BEGINNING BALANCE: _____ TOTAL INSTALLED TODAY: 68656

RECEIVED TODAY: _____

TOTAL MATERIAL ON HAND: _____

TOTAL INSTALLED TO DATE: 957543

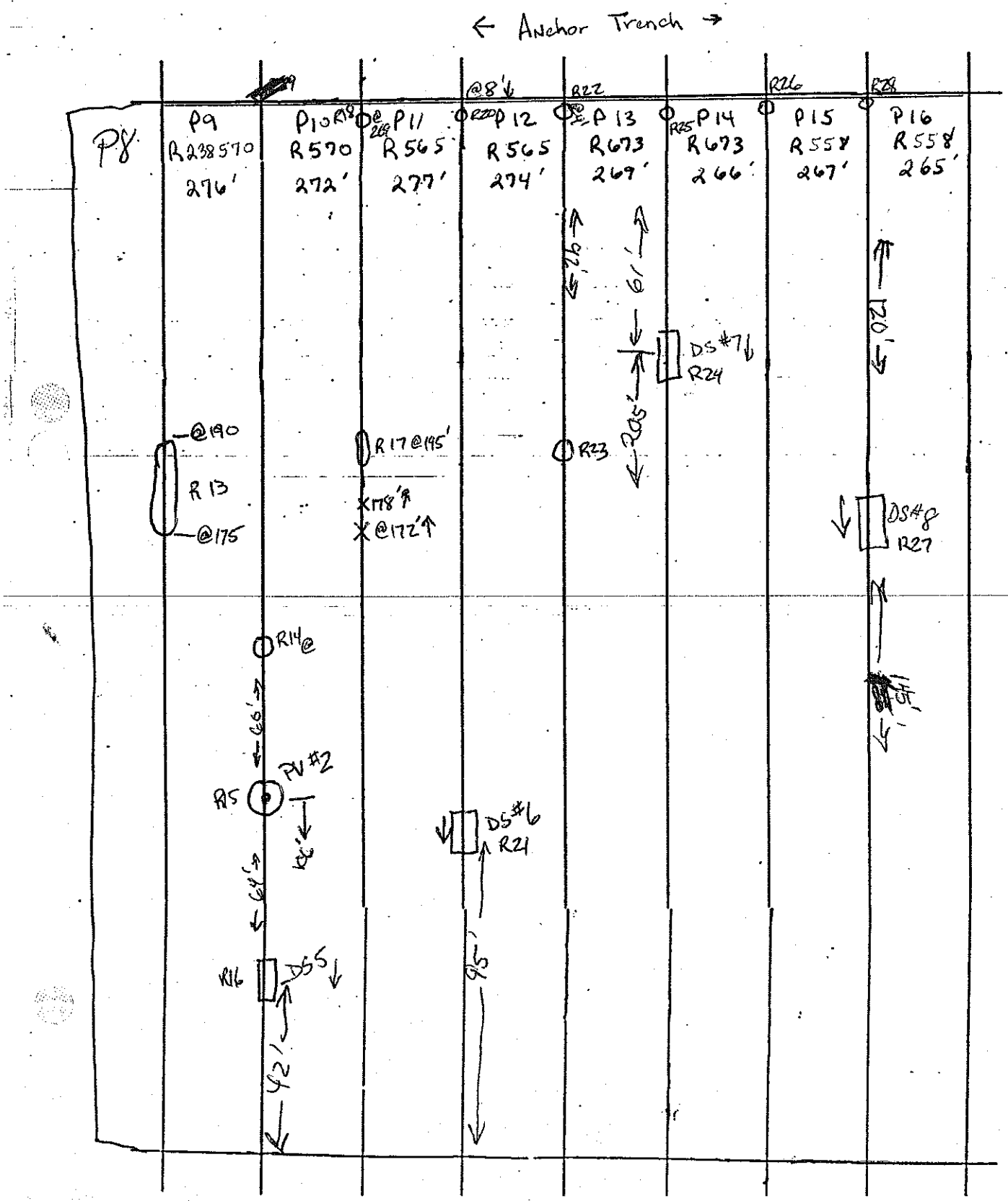
SECTION:: 3

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/8/99

(indicate North with arrow)

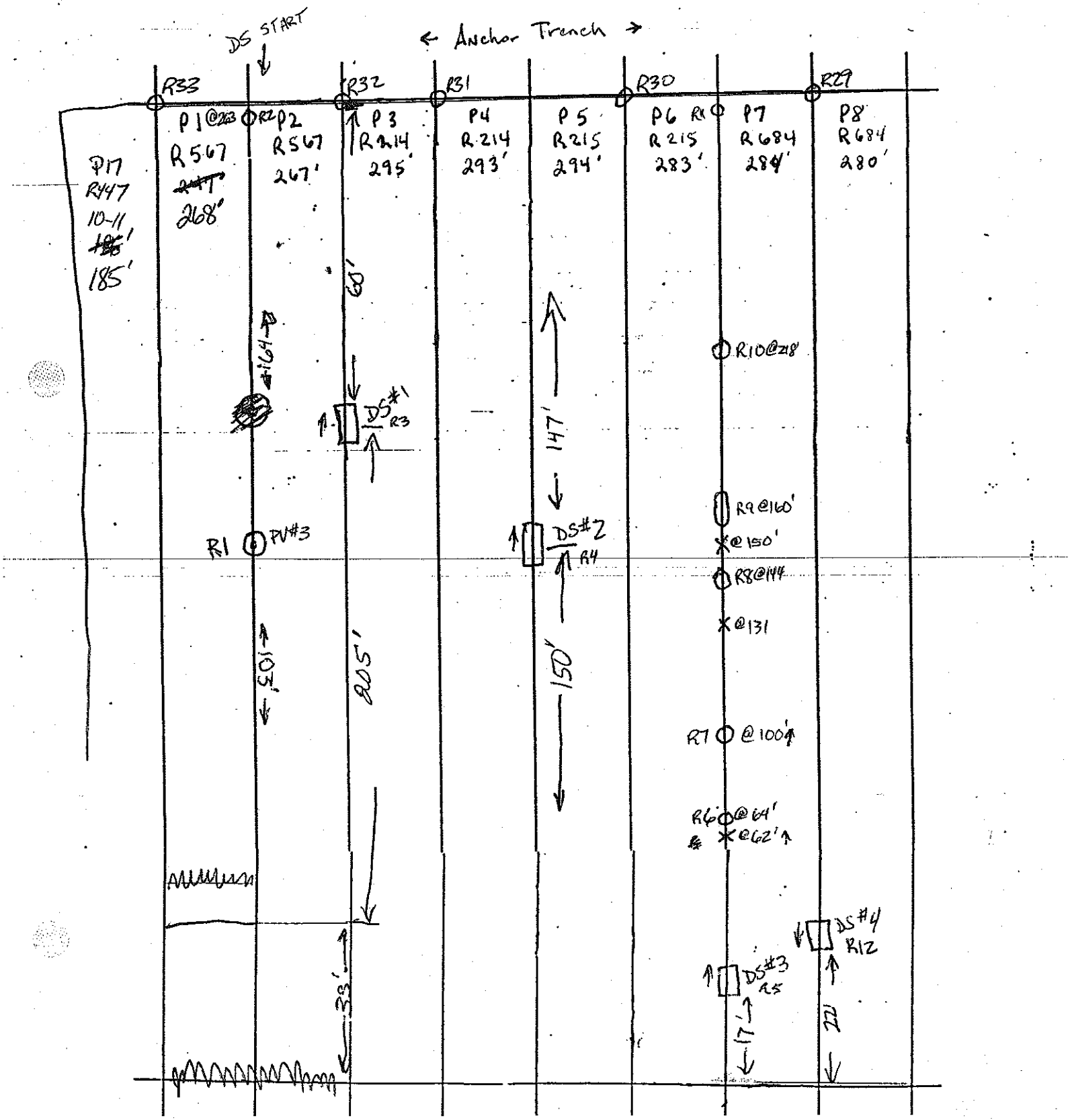


NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/8/99

(indicate North with arrow)

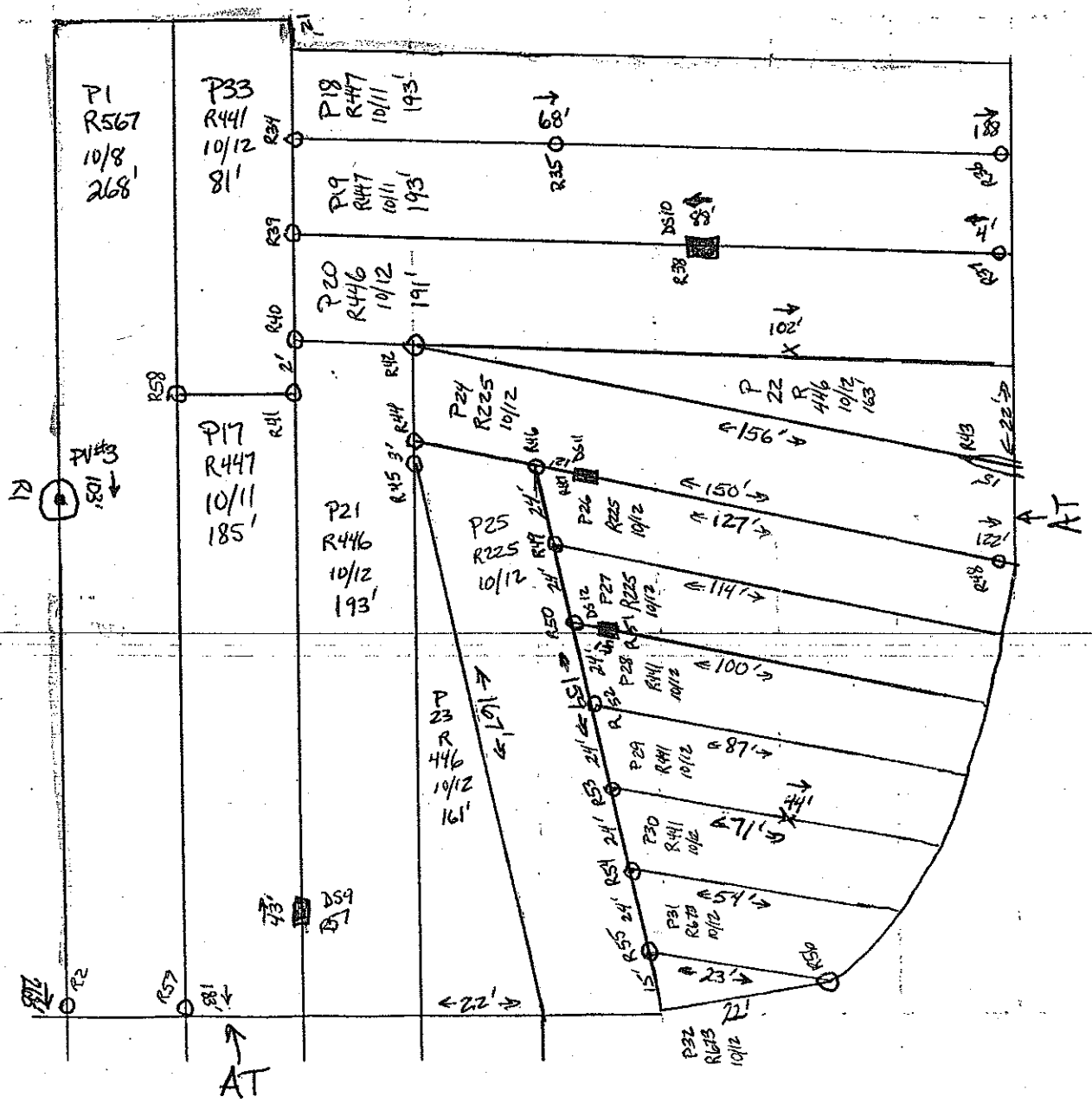


NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10-11-99 → 10-12-99

(indicate North with arrow)



□ - DESTRUCT
⊙ - BOOT

X - REPAIRS
O - PATCH

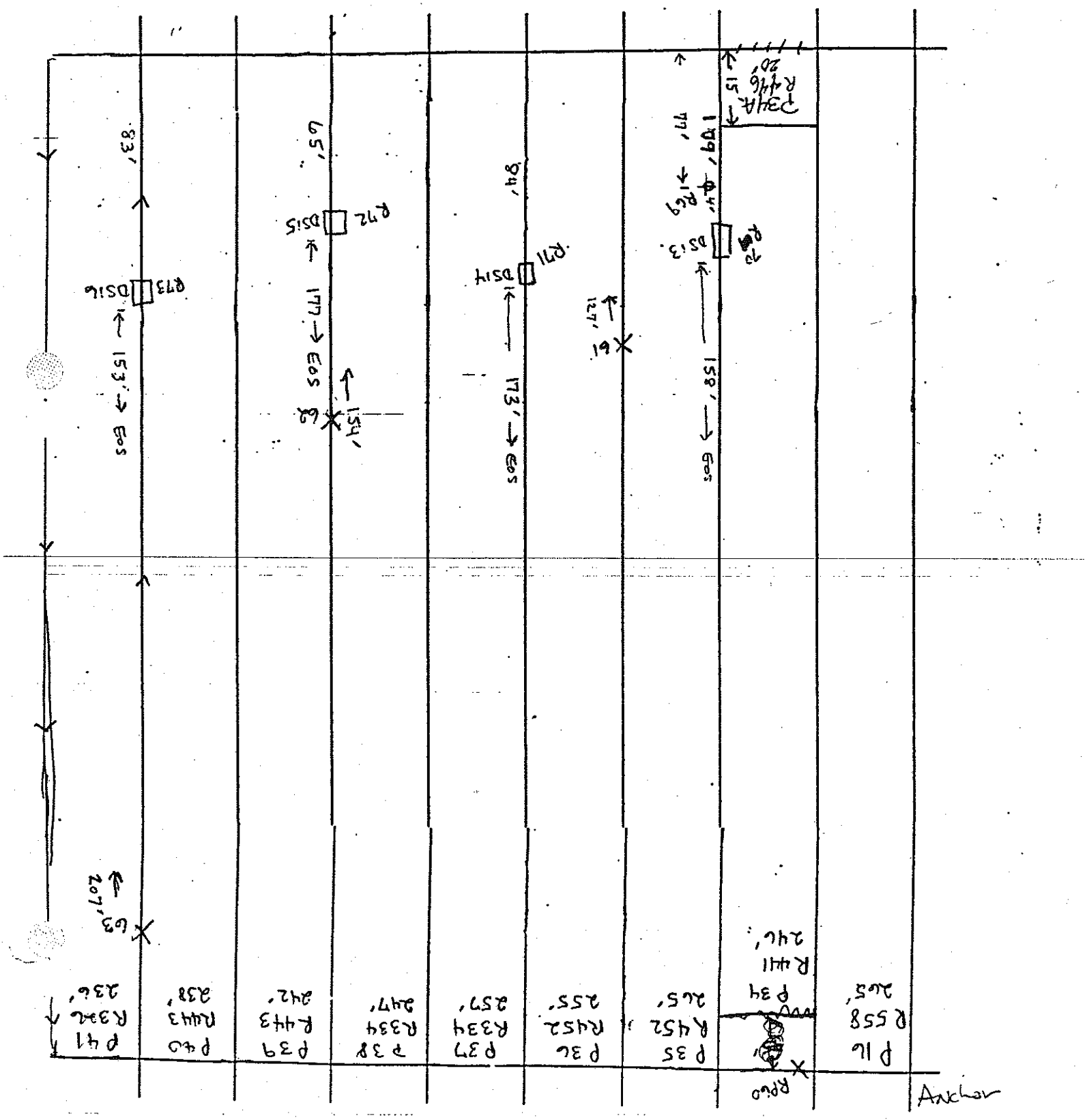
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10-13-99

(indicate North with arrow)

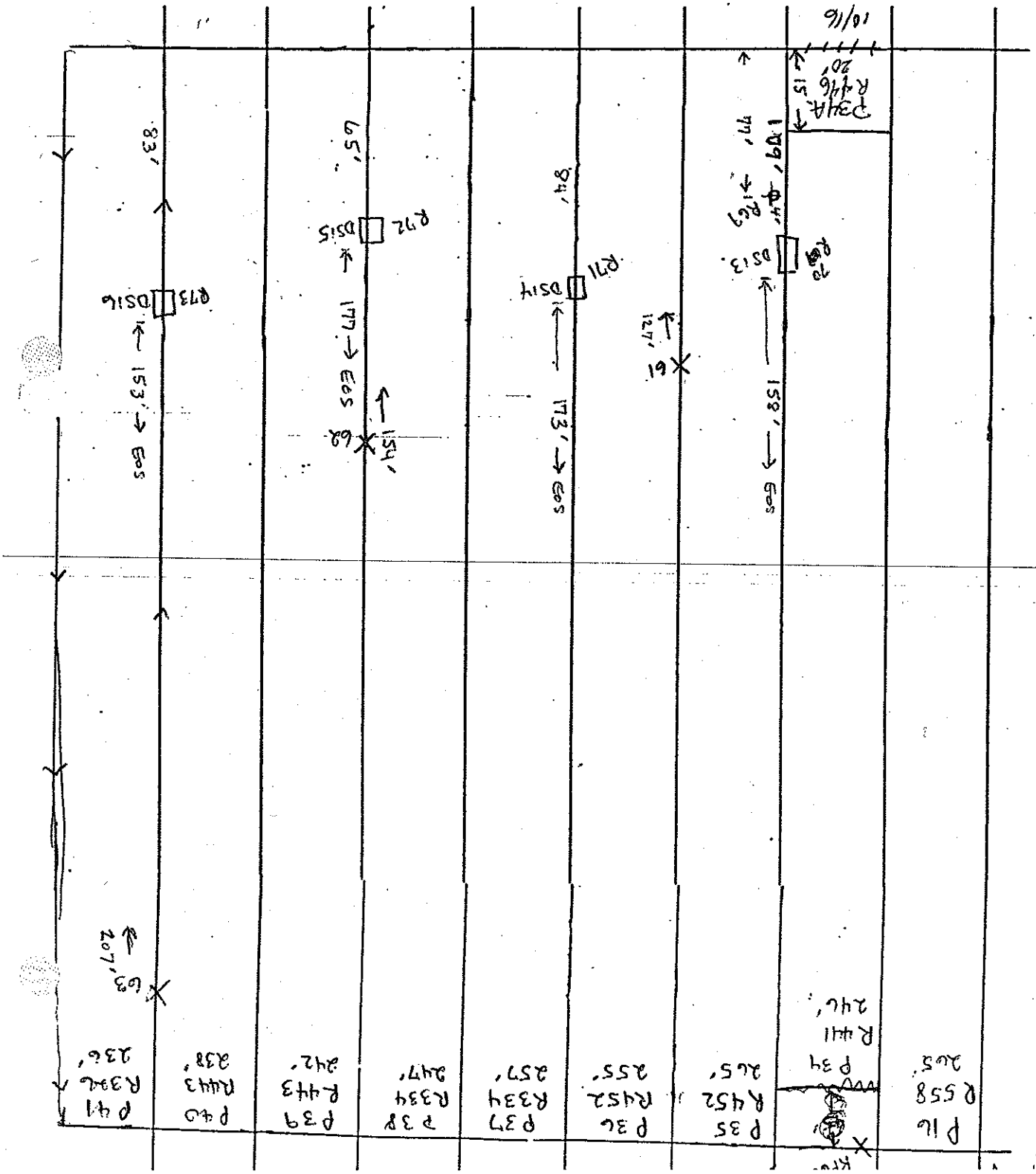


NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10-13-99

(indicate North with arrow)

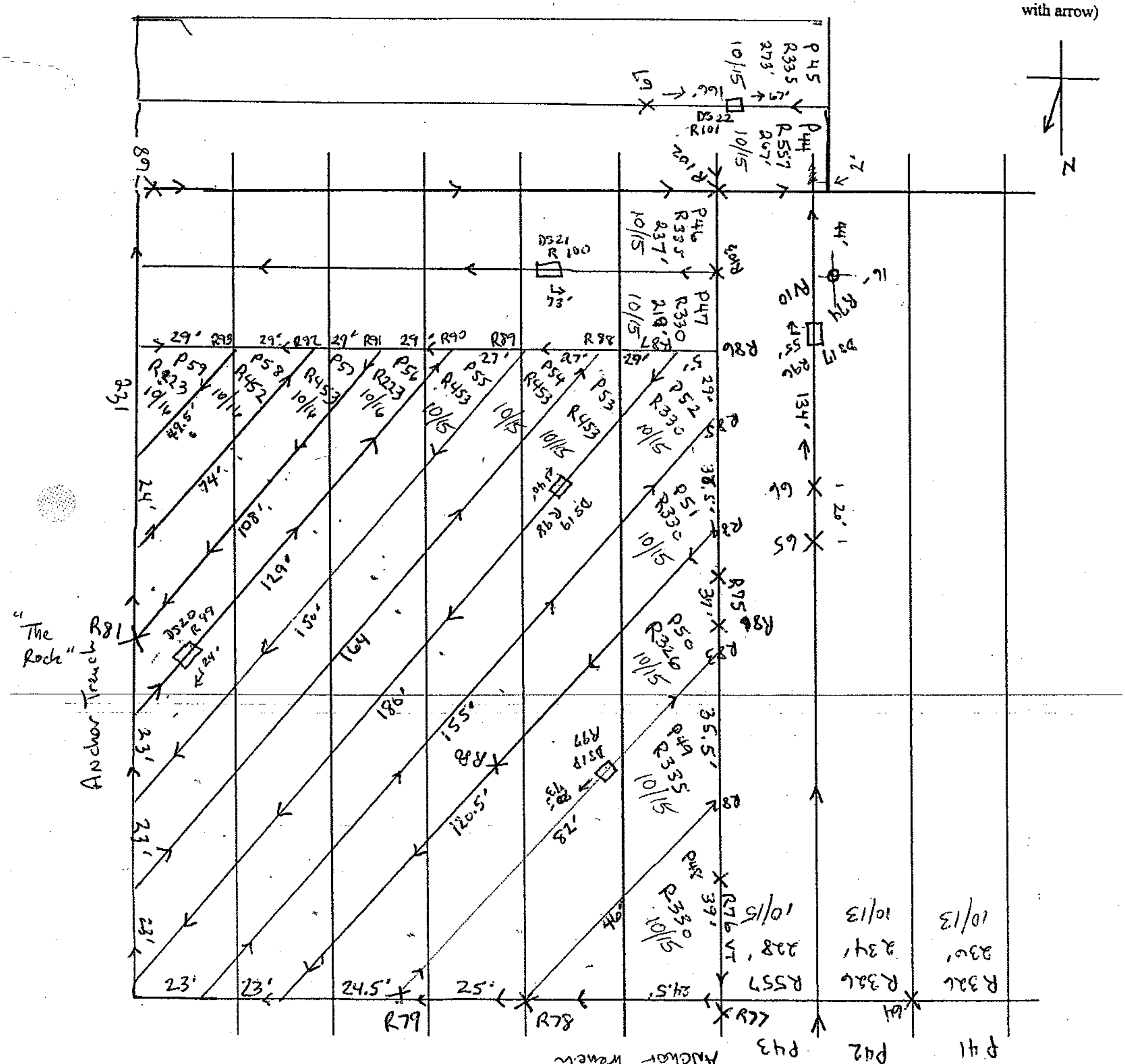


NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/13 + 10/15

(indicate North with arrow)



□ - DESTRUCT X - REPAIRS R - ROLL NO.

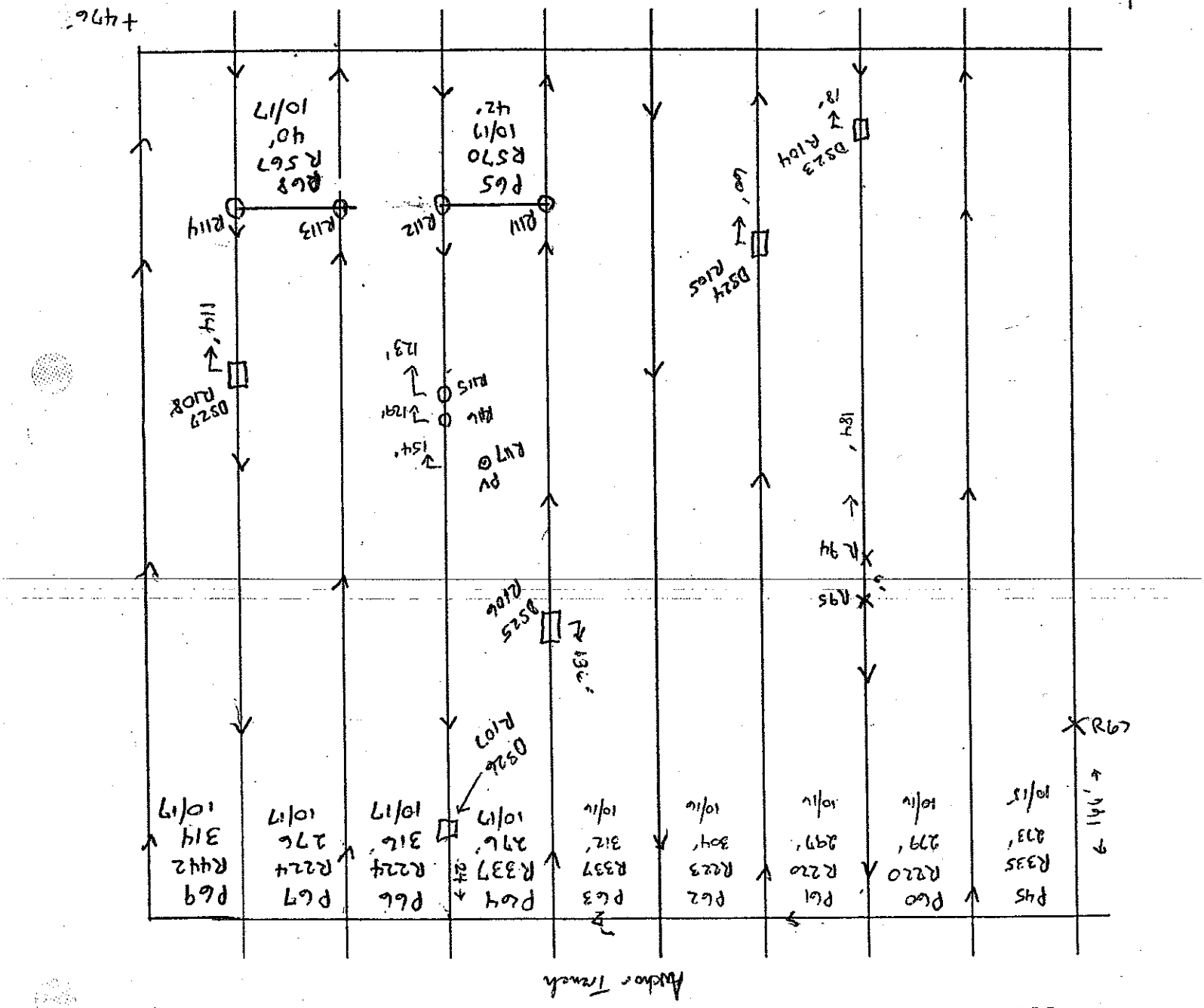
⊙ - BOOT O - PATCH P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/16-17

(indicate North with arrow)



□ - DESTRUCT
◉ - BOOT

X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

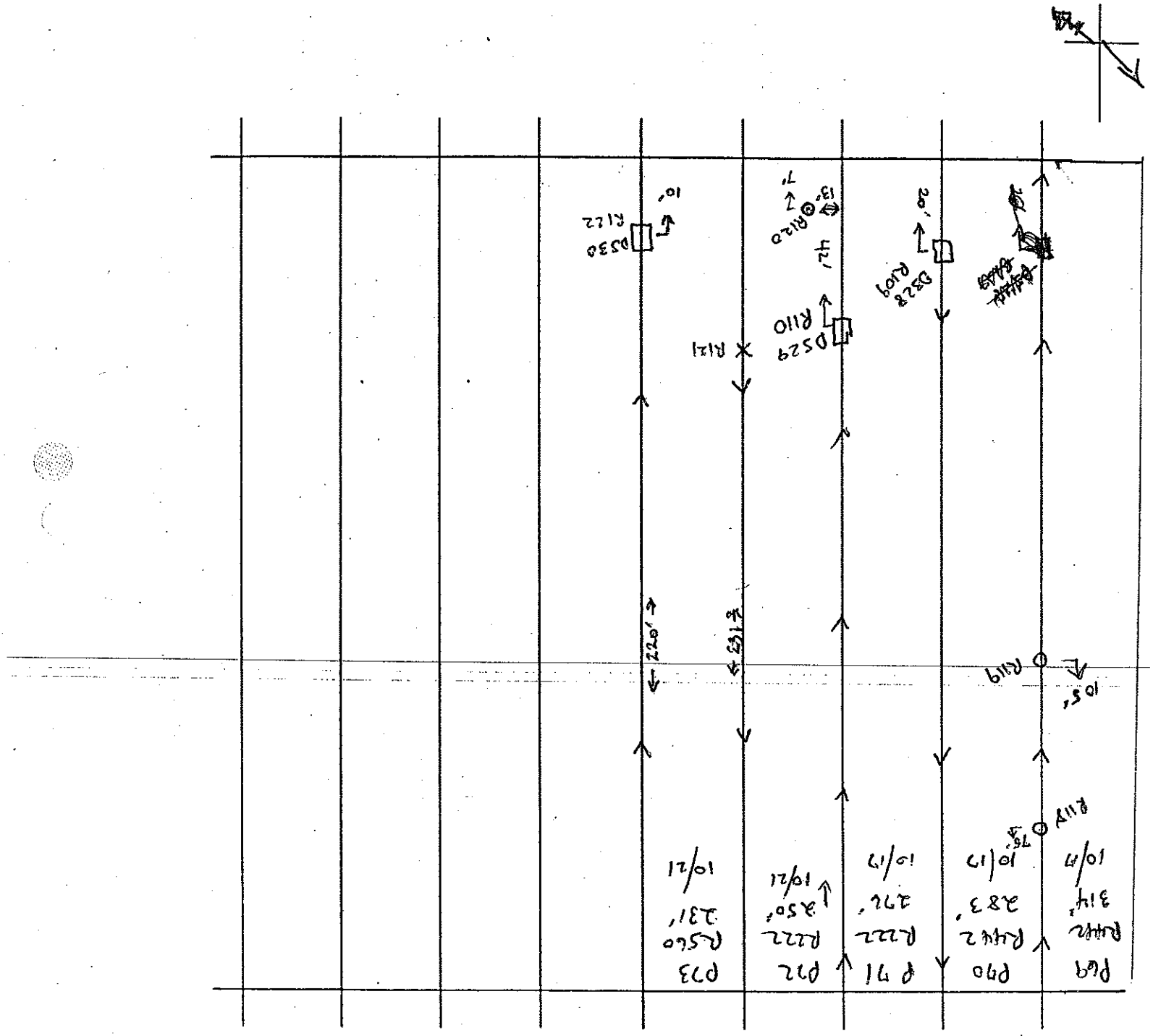
Desktop#83
Start @ 45/00 + 80'

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/17

(indicate North with arrow)



Anchor Trench

□ - DESTRUCT
◉- BOOT

X - REPAIRS
O - PATCH

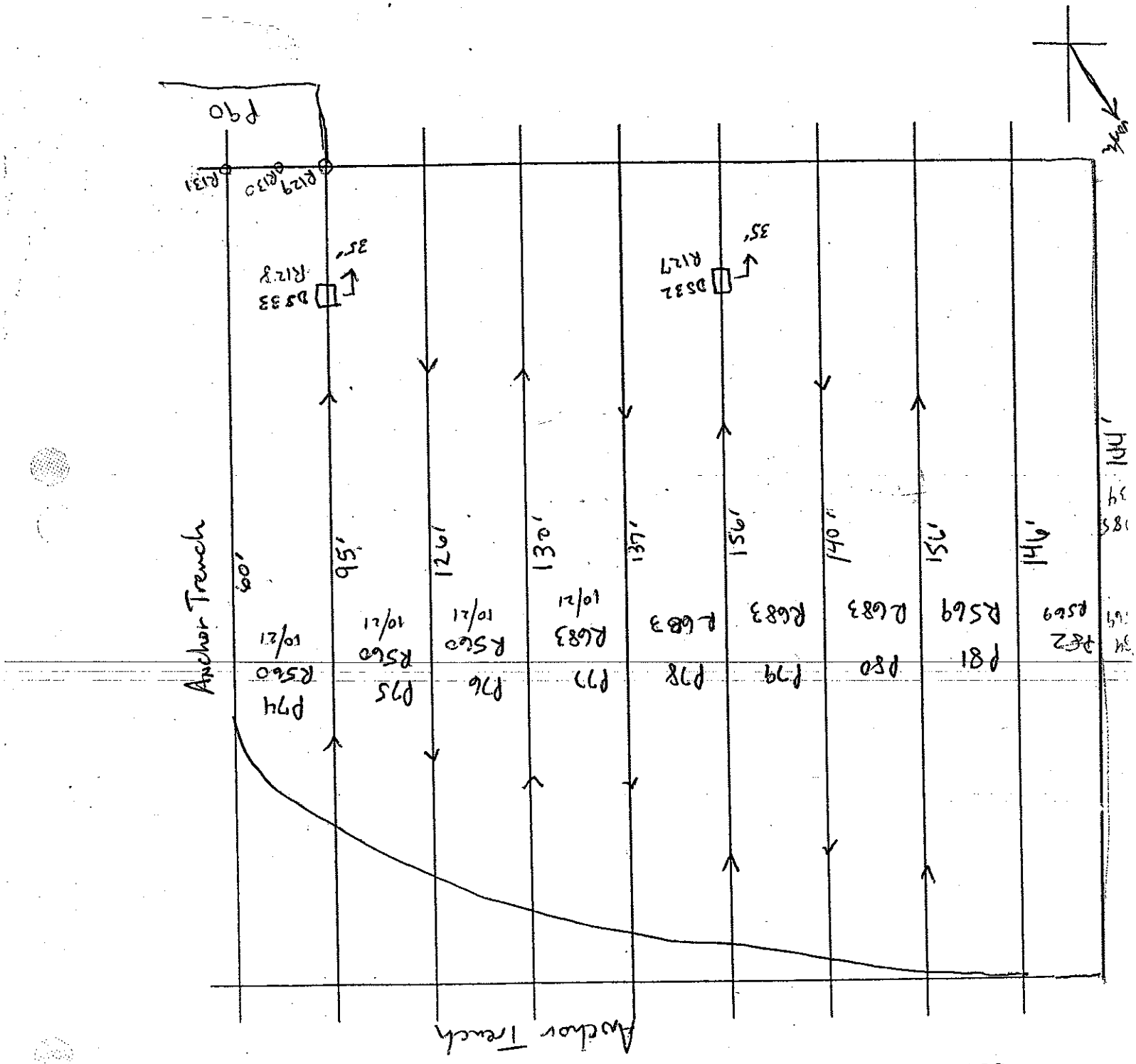
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/21

(indicate North with arrow)



□ - DESTRUCT
◉ - BOOT

X - REPAIRS
O - PATCH

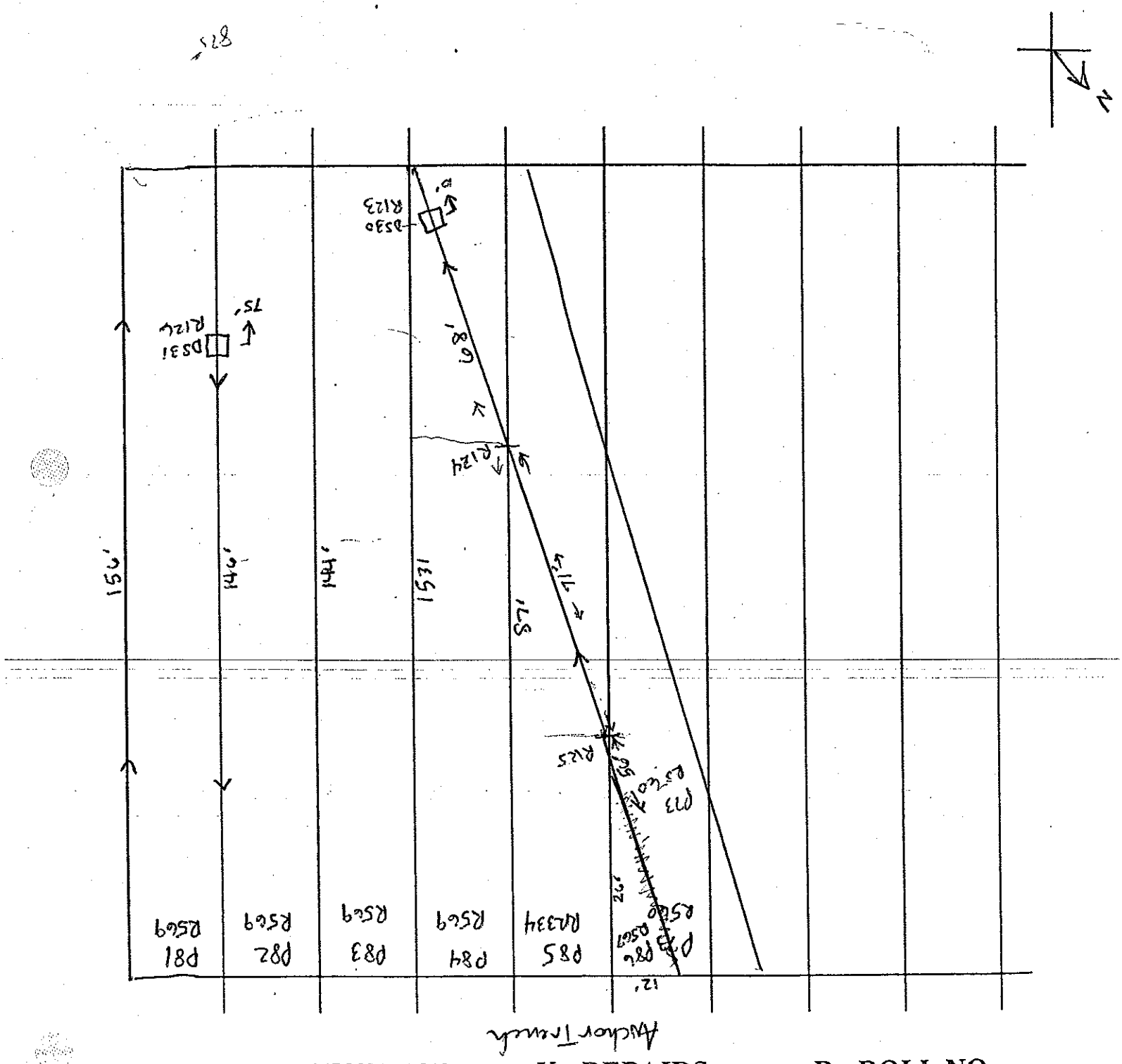
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/21/99

(indicate North with arrow)



□ - DESTRUCT X - REPAIRS R - ROLL NO.

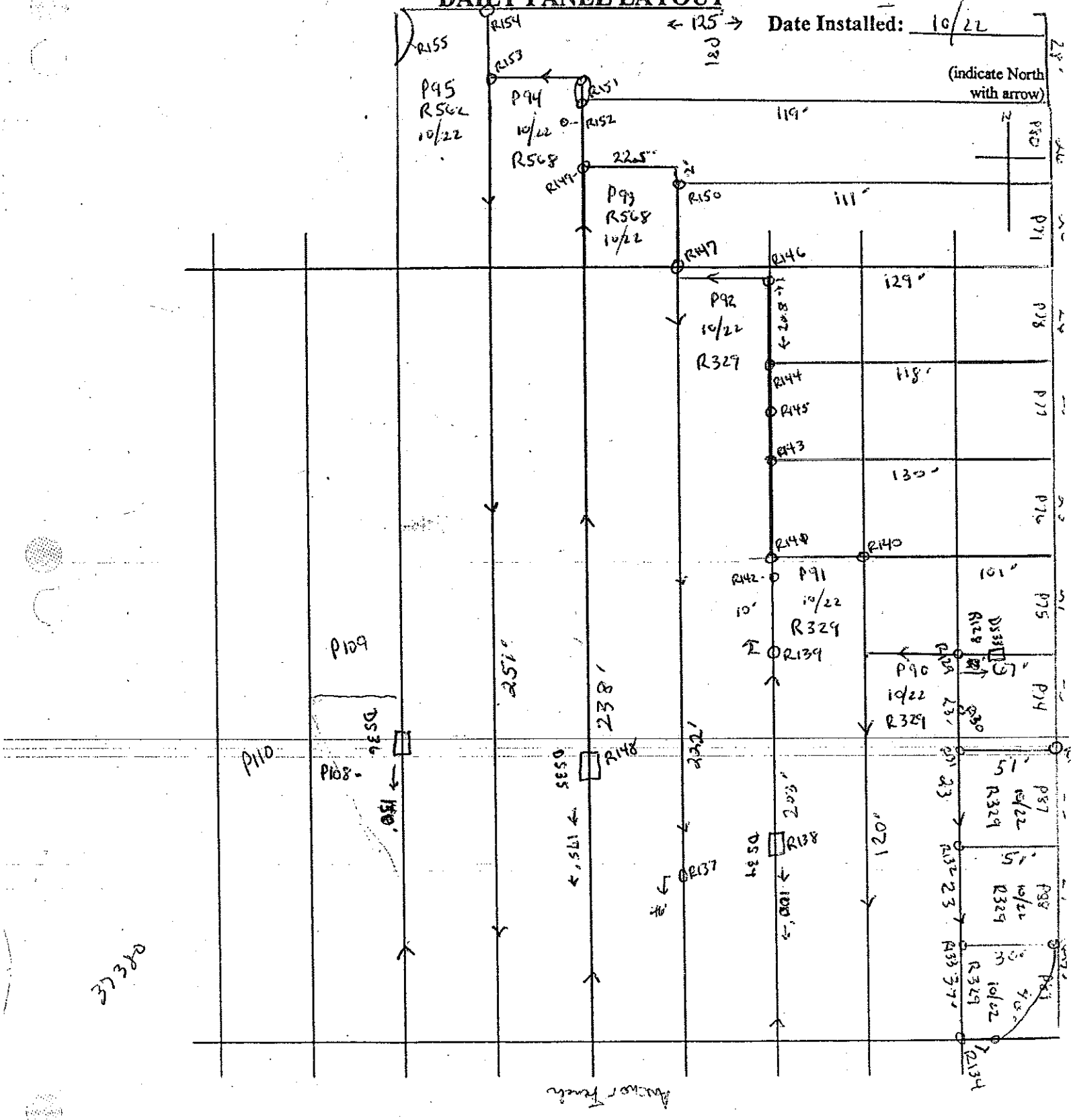
◉- BOOT O - PATCH P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/22

(indicate North with arrow)



□ - DESTRUCT
⊙ - BOOT

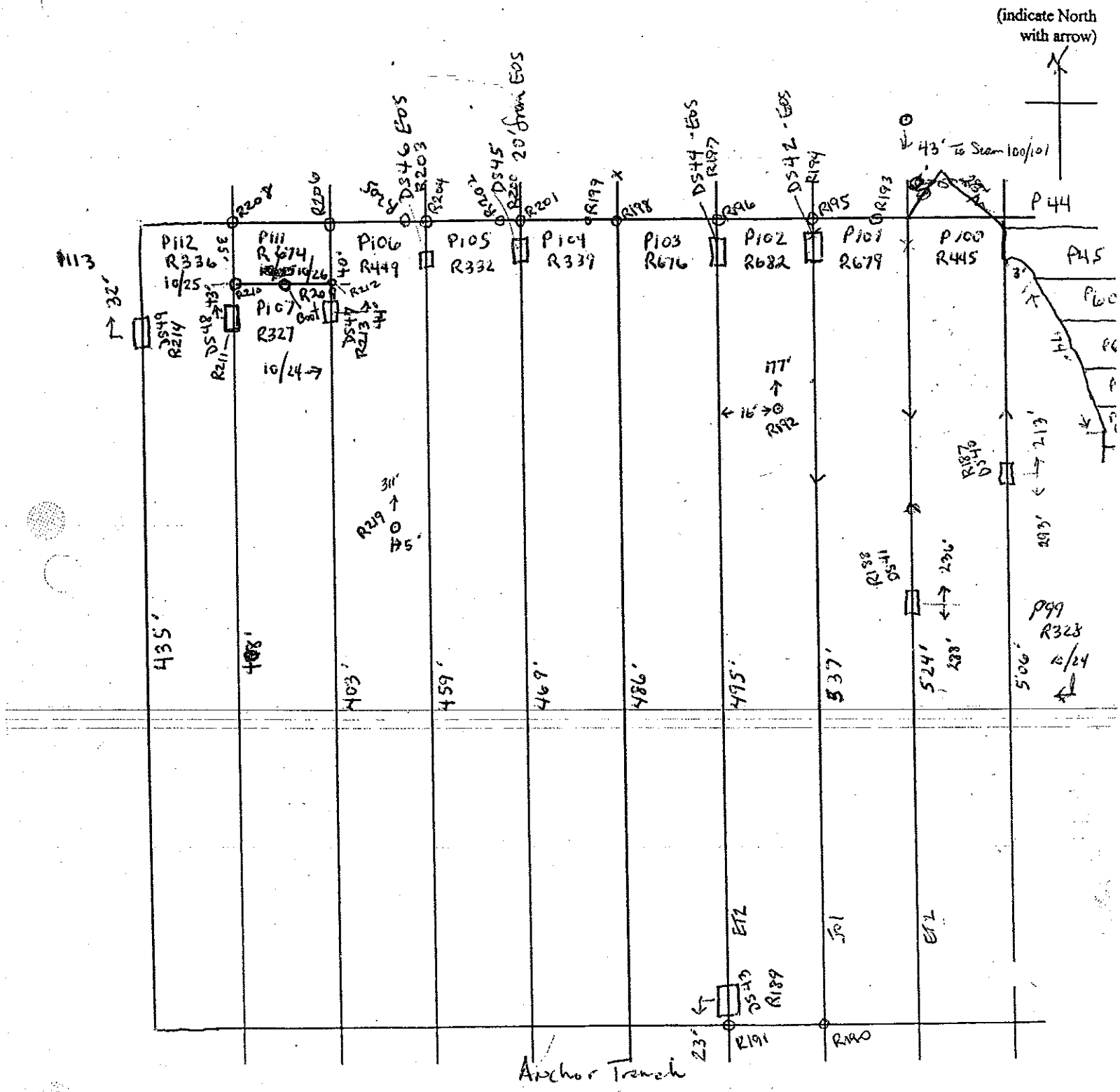
X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/24



□ - DESTRUCT
◉ - BOOT

X - REPAIRS
O - PATCH

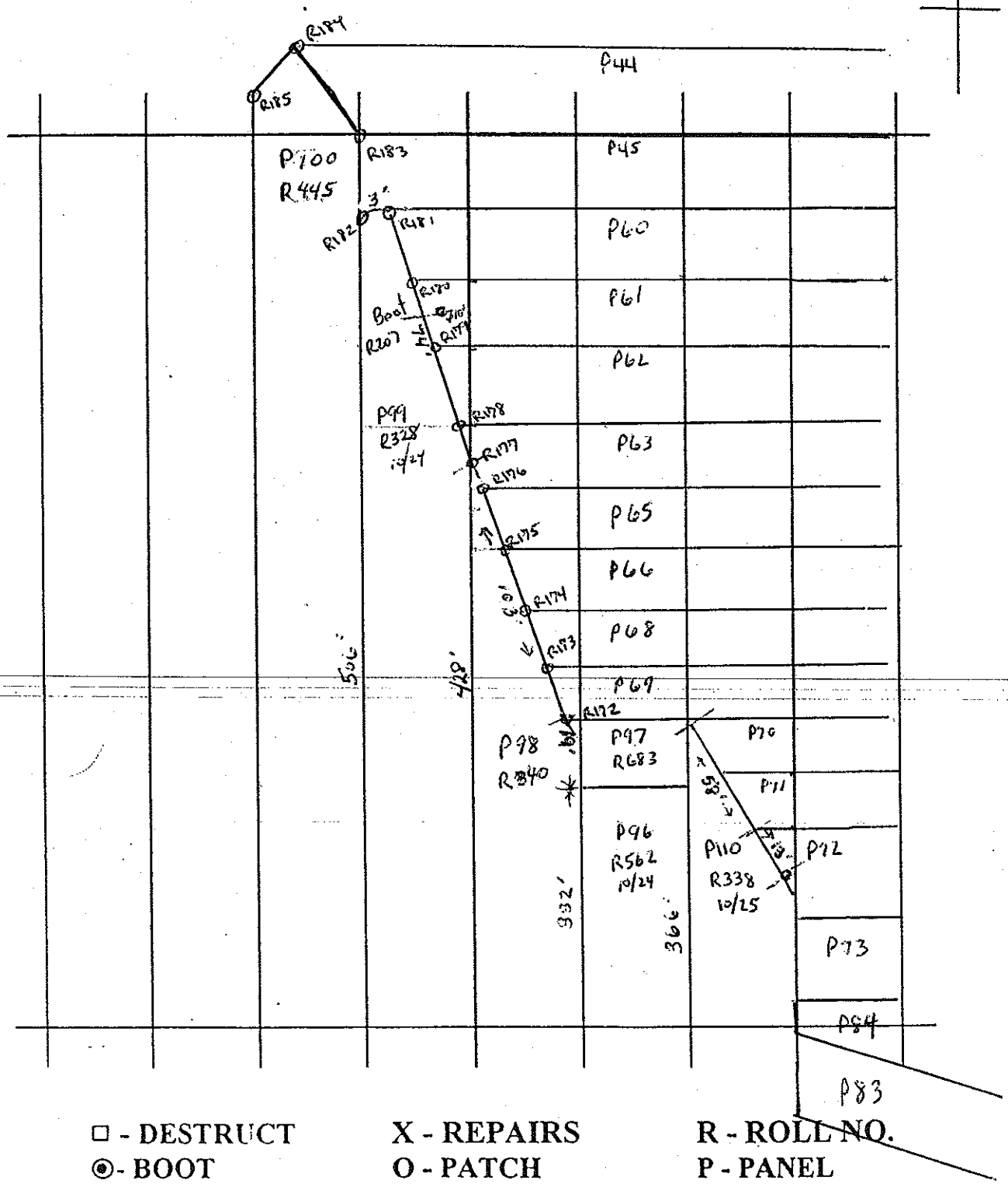
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/24-25/9

(indicate North with arrow)



□ - DESTRUCT X - REPAIRS R - ROLL NO.

⊙- BOOT O - PATCH P - PANEL

~~2208~~ 9844

1104

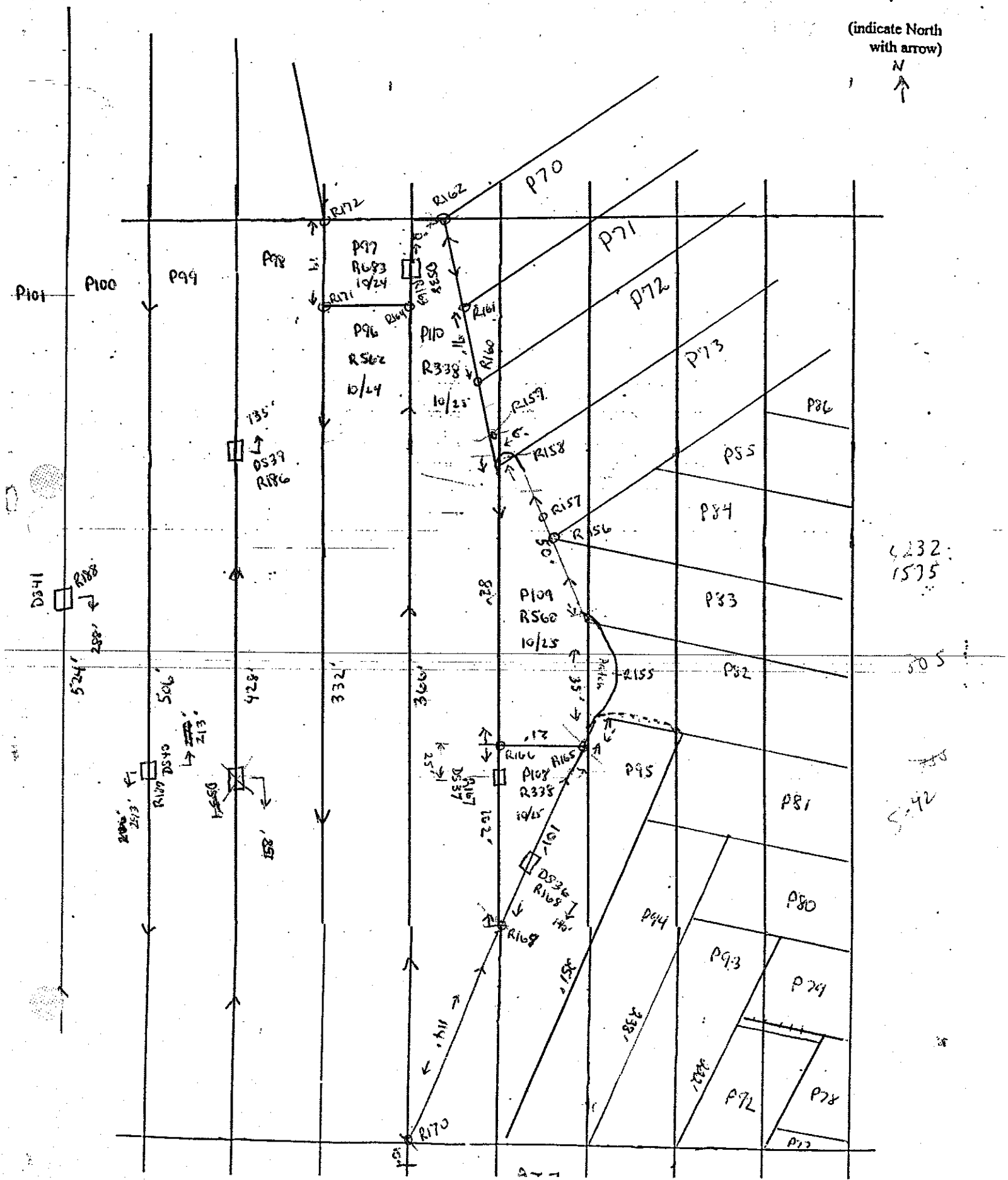
NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/25

(indicate North with arrow)

N



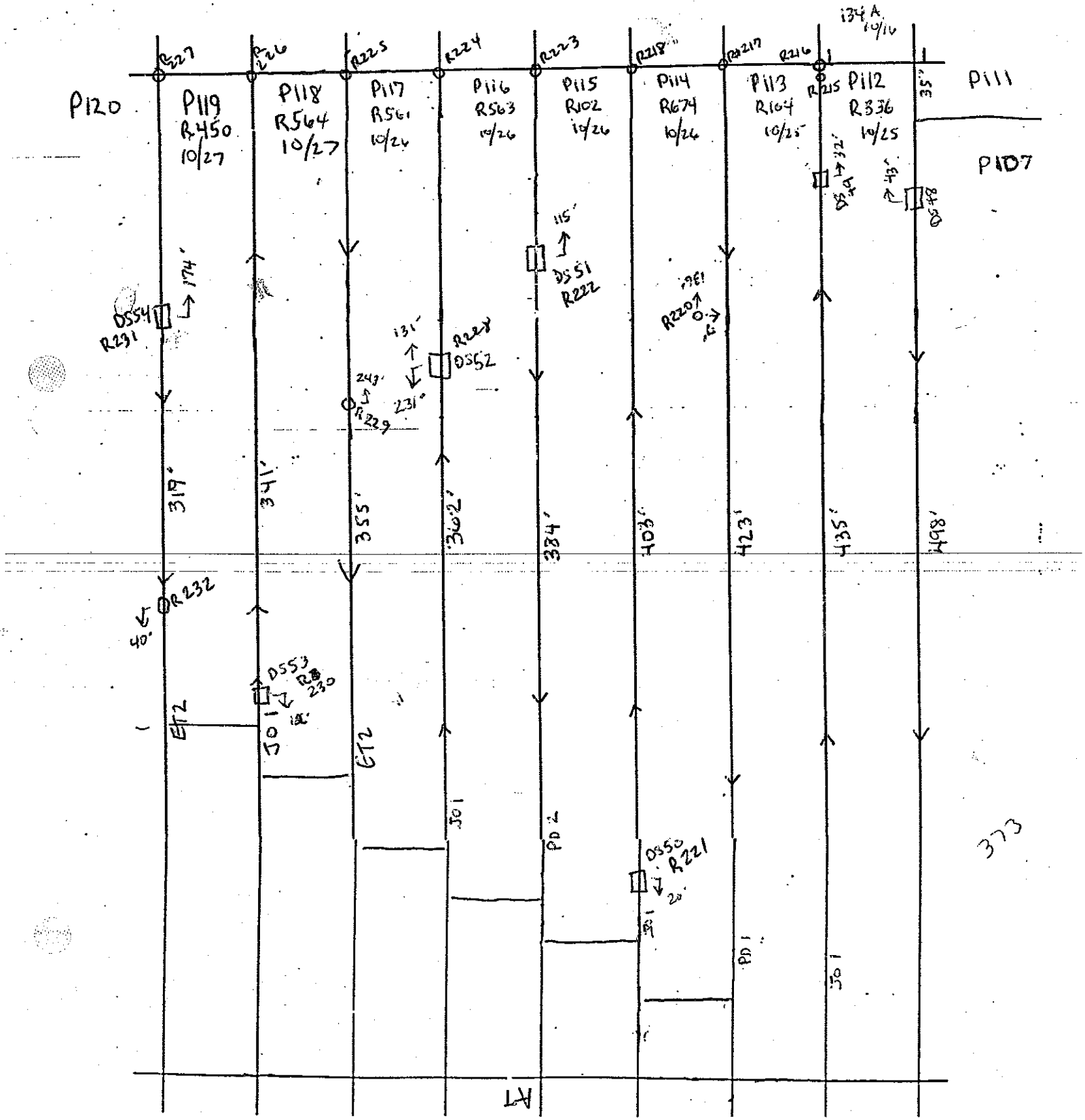
NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/25-10/26-27

(indicate North with arrow)

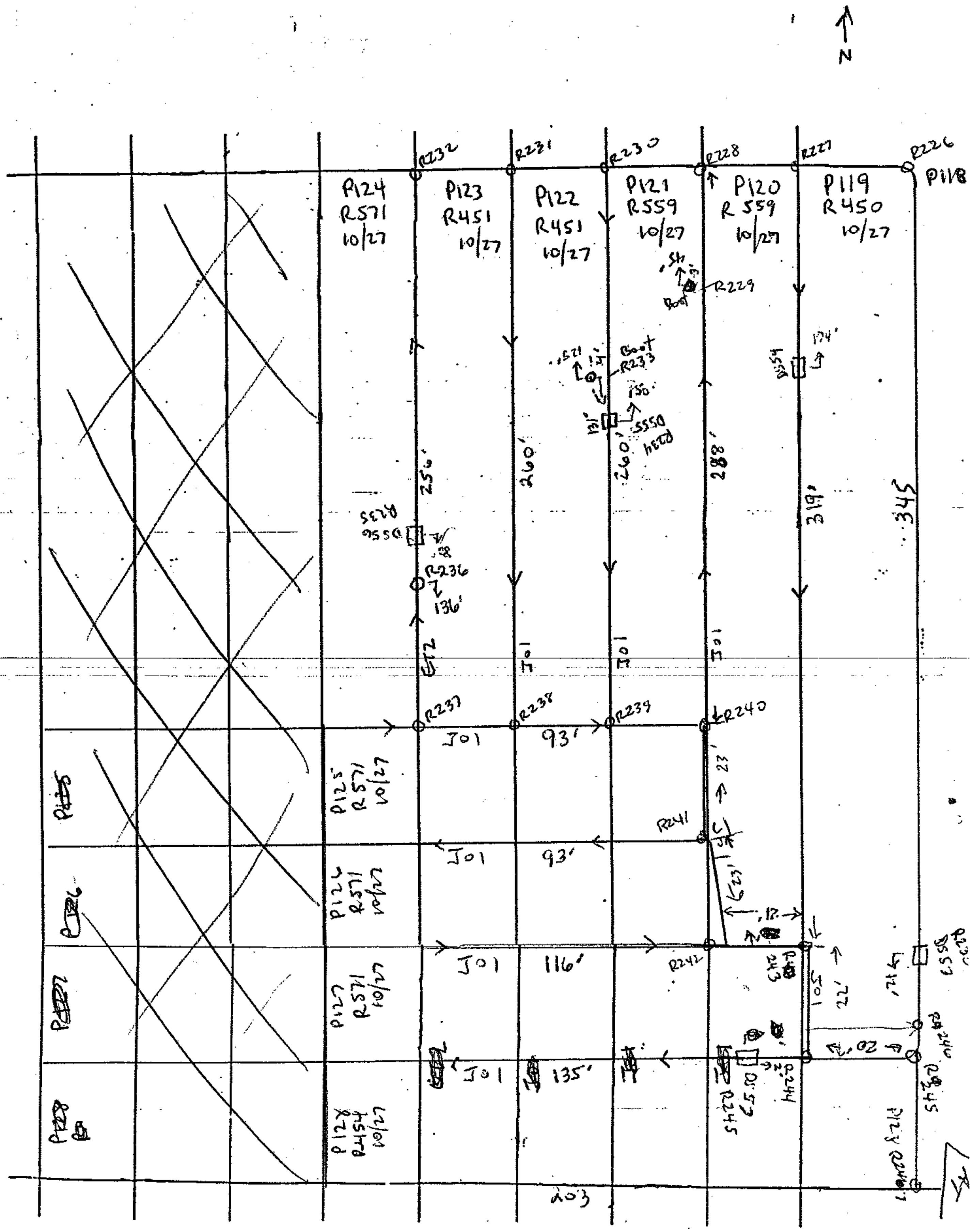
N



DAILY PANEL LAYOUT

Date Installed: 10/~~26~~27

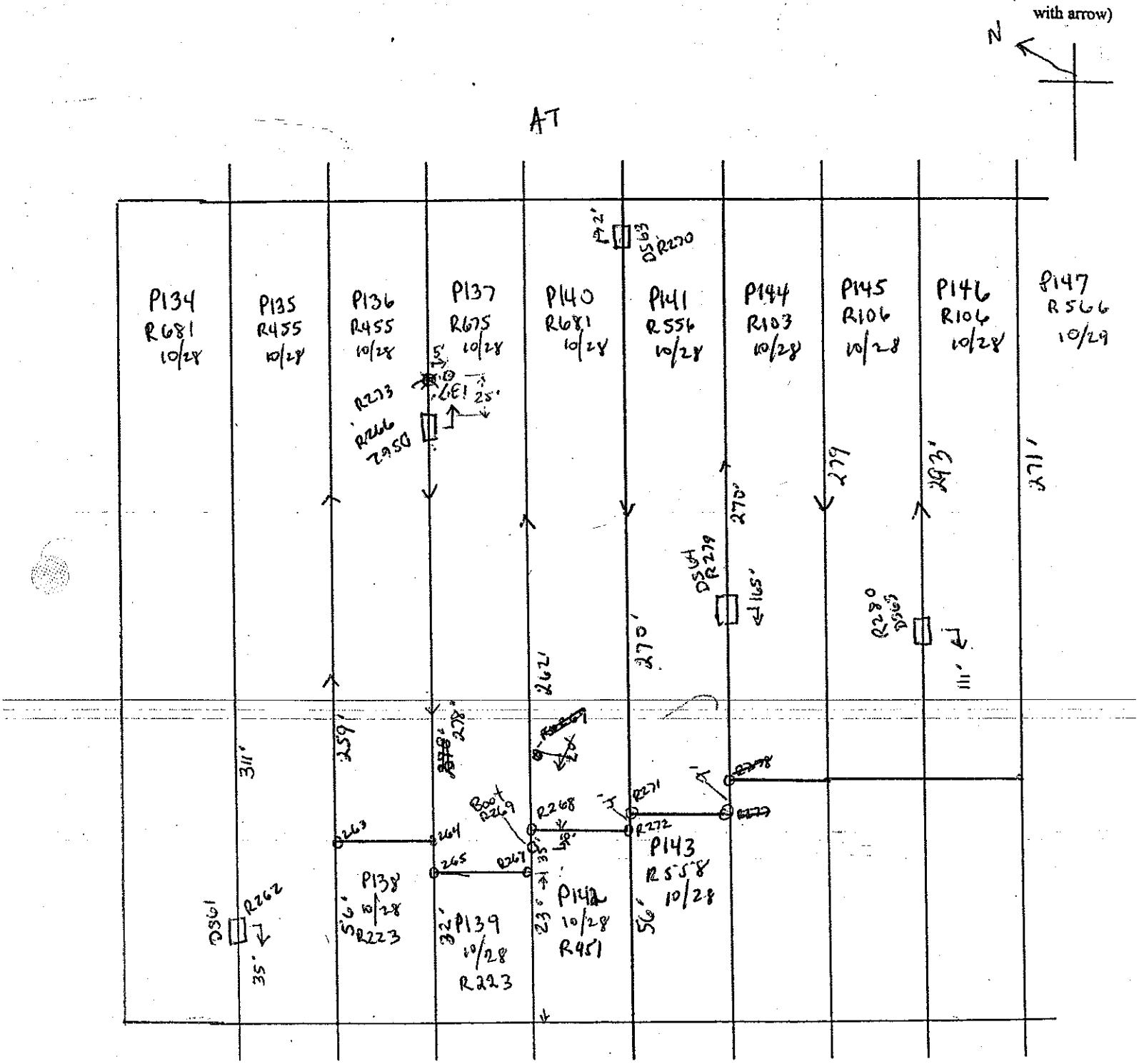
(indicate North with arrow)



DAILY PANEL LAYOUT

Date Installed: 10/28/99

(indicate North with arrow)



□ - DESTRUCT
◉ - BOOT

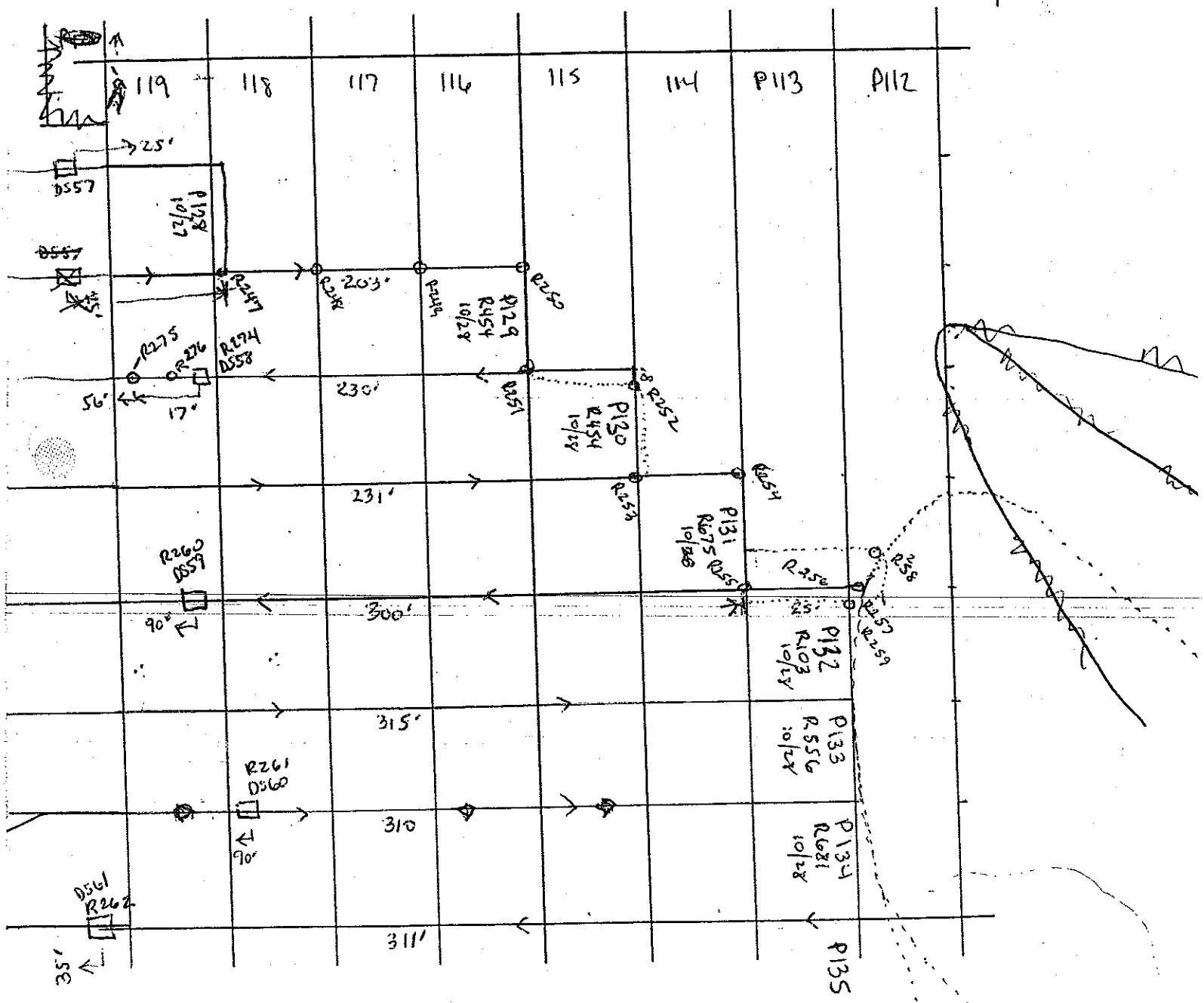
X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

DAILY PANEL LAYOUT

Date Installed: 10-28/99

(indicate North with arrow)



□ - DESTRUCT
⊙ - BOOT

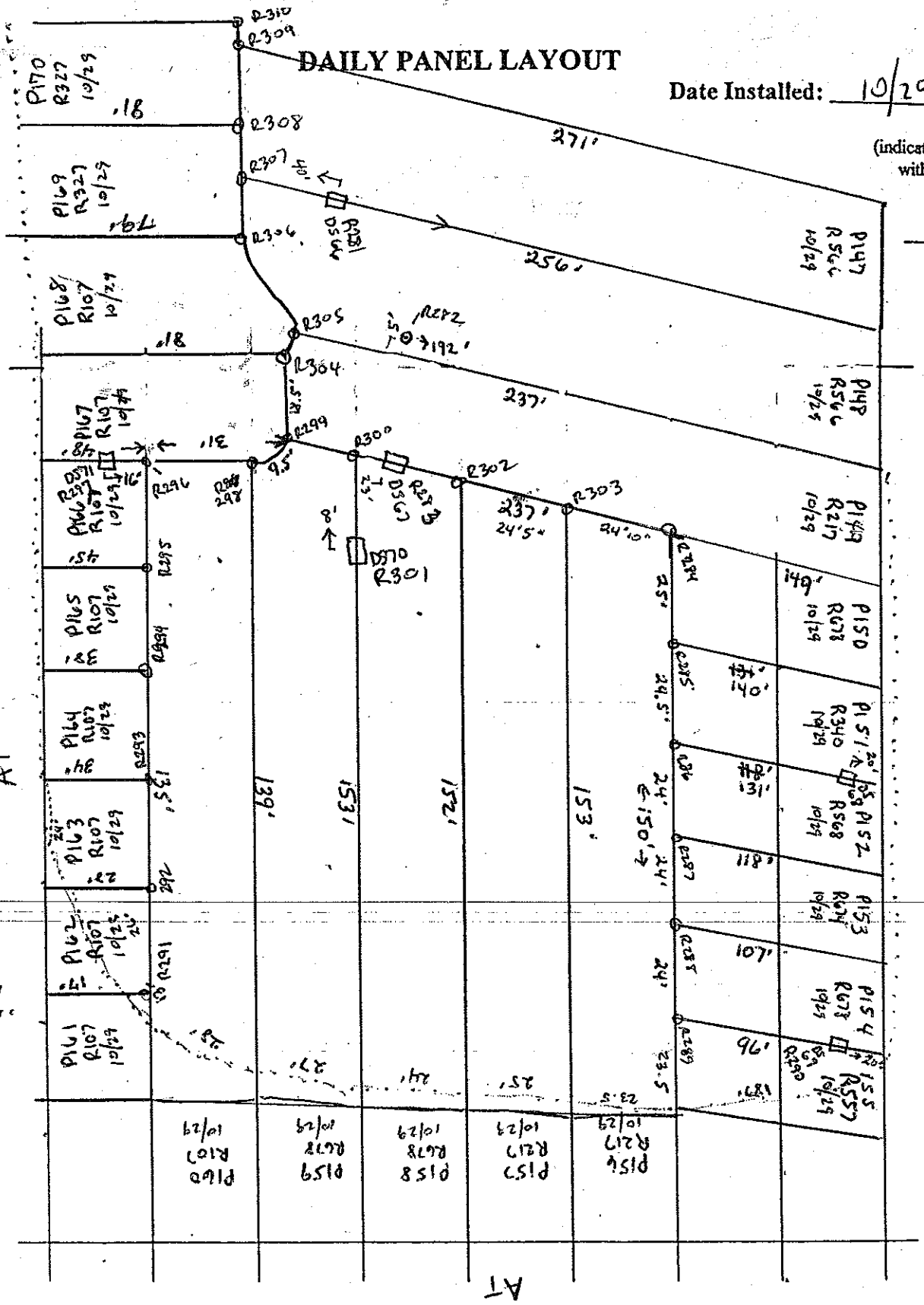
X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

DAILY PANEL LAYOUT

Date Installed: 10/29/99

(indicate North with arrow)



□ - DESTRUCT
◉ - BOOT

X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

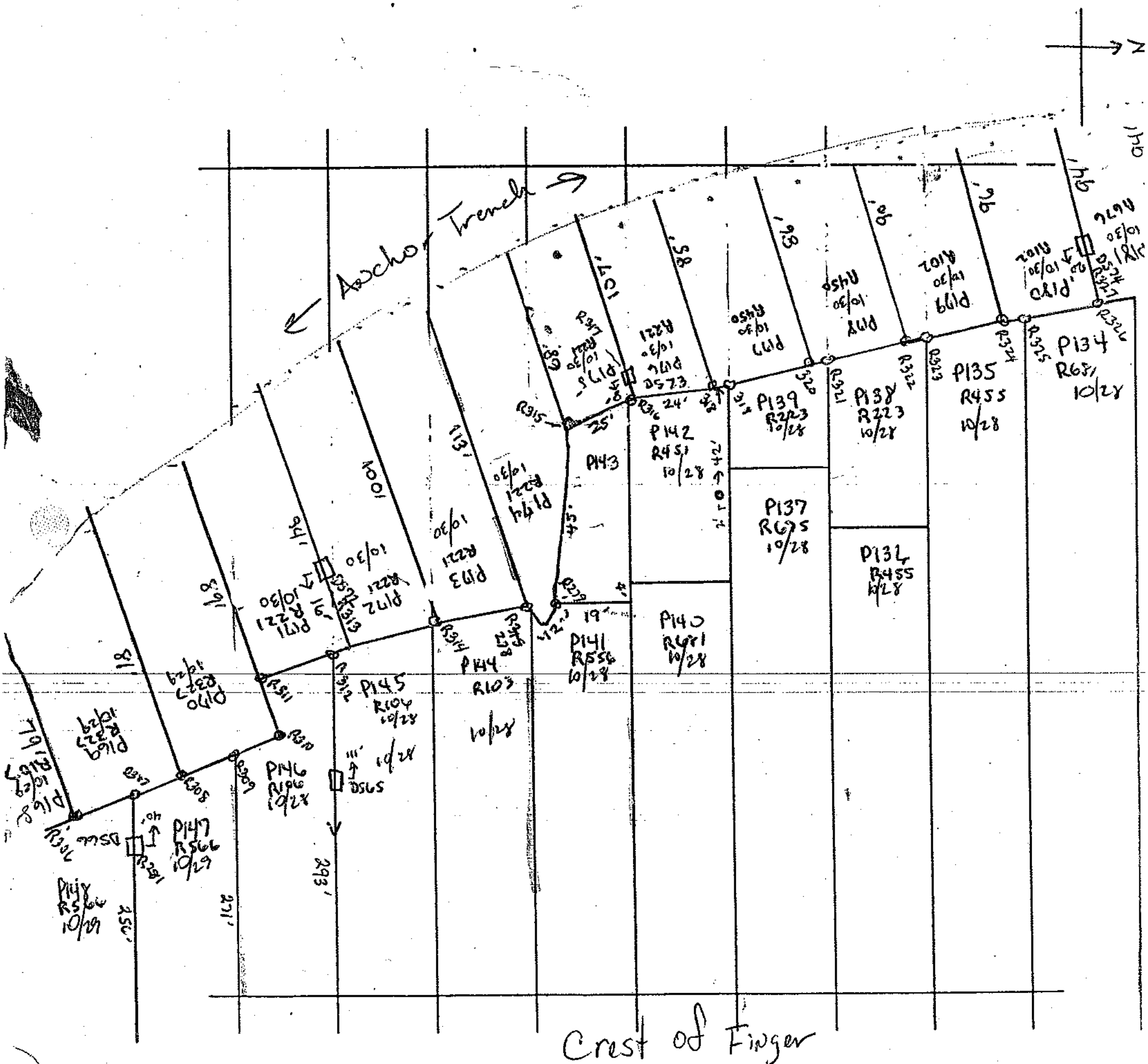
NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/30/99

(indicate North with arrow)

Roll #s
Repairs 140/137/134



□ - DESTRUCT
◉ - BOOT
X - REPAIRS
O - PATCH
R - ROLL NO.
P - PANEL

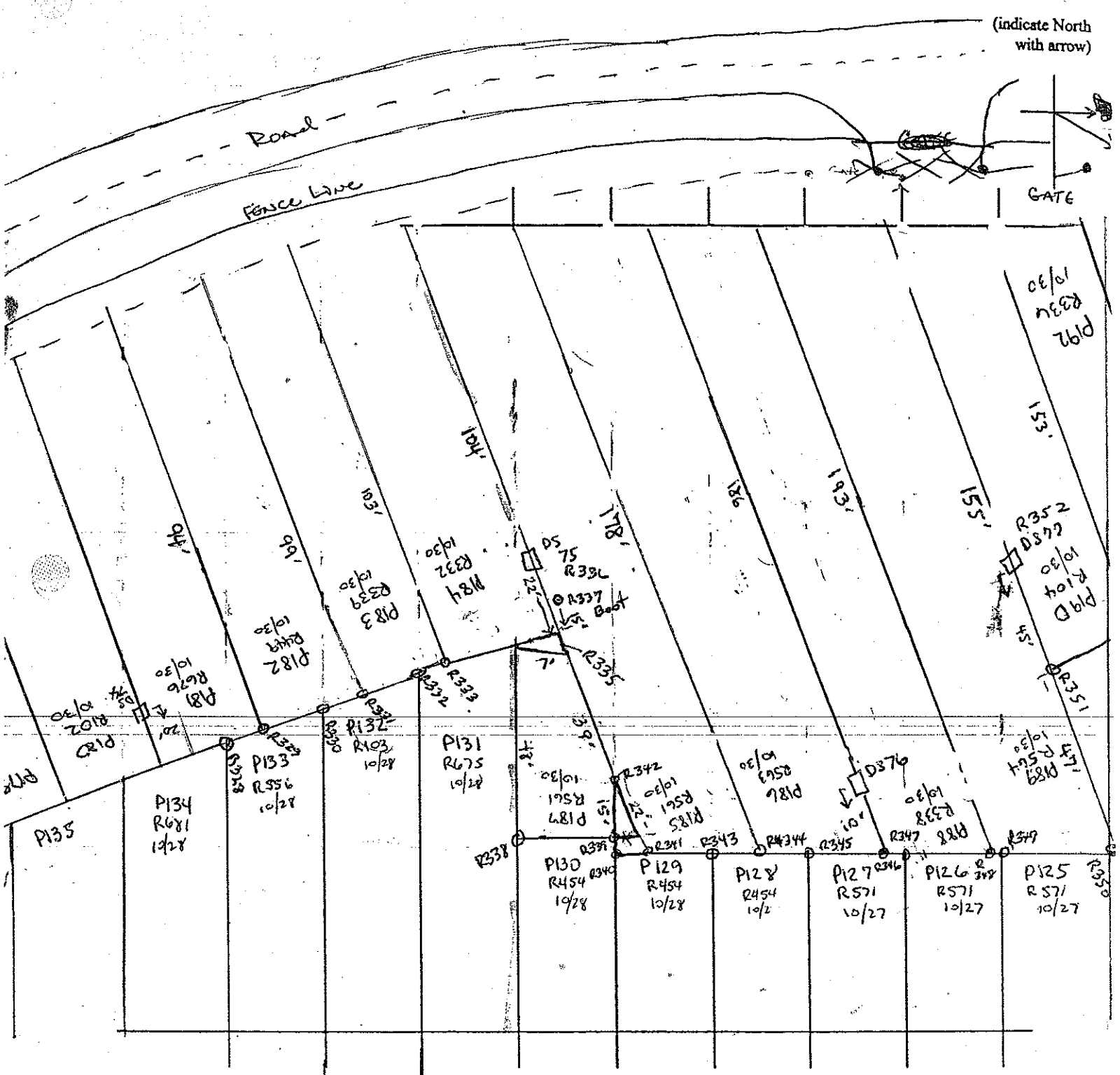
1504

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 10/30/99

(indicate North with arrow)



□ - DESTRUCT
⊙ - BOOT

X - REPAIRS
O - PATCH

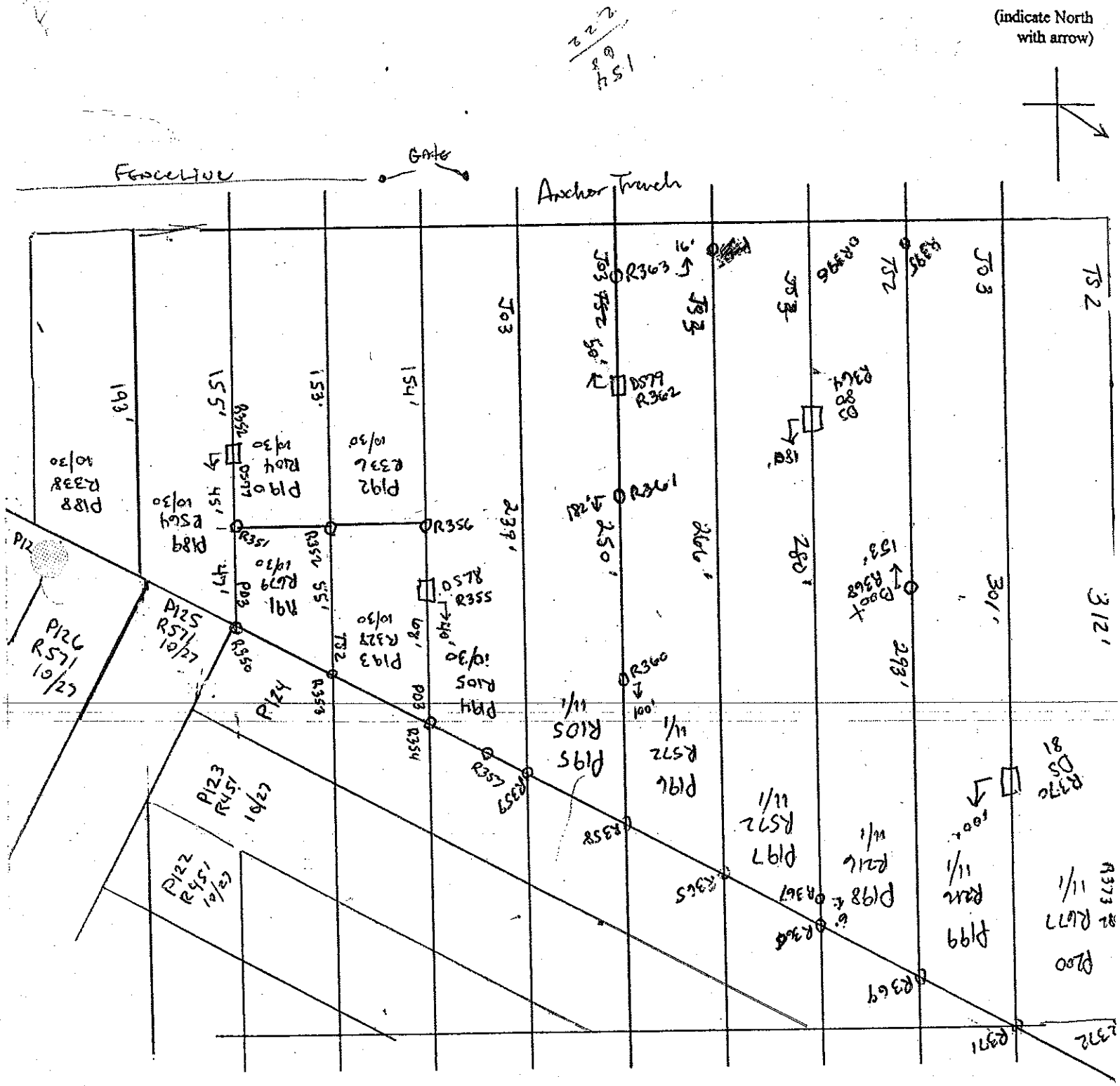
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 11/1/99 + 10/30/99

(indicate North with arrow)



□ - DESTRUCT
◉ - BOOT

X - REPAIRS
O - PATCH

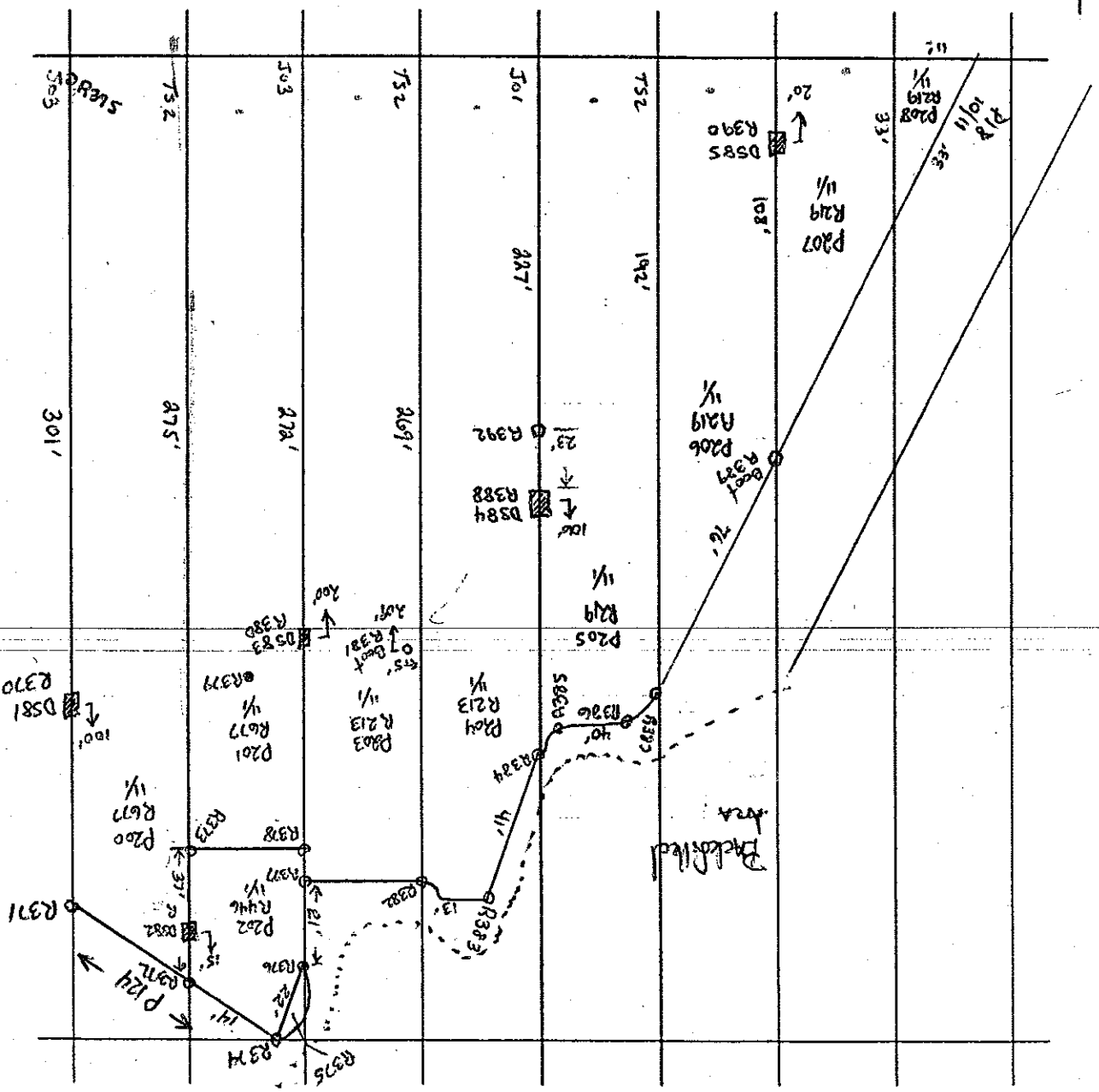
R - ROLL NO.
P - PANEL

NEW LINING SOLUTIONS INC.

DAILY PANEL LAYOUT

Date Installed: 11/1

(indicate North with arrow)



□ - DESTRUCT
⊙- BOOT

X - REPAIRS
O - PATCH

R - ROLL NO.
P - PANEL

SECTION:: 4

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 1 of ____

WELDING					PRESSURE TEST				
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F
10/8/99	1-2	ET	3	750°/5	10/9	ET	11:33 / 30	11:38 / 30	P to Vent Pipe
	1-2				10/9	ET	11:40 / 30	11:45 / 30	P to ~~Patch~~ ~~EOS~~ Patch At Anch
10/8	2-3	CN	2	750°/5	10/9	ET	1149 / 30	11 54 / 30	P EOS
10/8	3-4	ET	3	750°/5	10/9	ET	12 00 / 3	1205 / 30	P to ~~Patch~~ EOS
10/8	4-5	CN	2	750/5	10/9	ET	12 01 / 30	1206 / 30	P EOS
10/8	5-6	ET	3	750°/5	10/9	ET	1210 / 30	1215 / 30	P EOS
10/8	6-7	PD	2	750°/4.5	10/9	ET	1231 / 30	1236 / 30	P To patch
					10/9	ET	1228 / 30	1233 / 30	P To Patch
					10/9	ET	1236 / 30	1241 / 30	P to Patch
					10/9	ET	1248 / 30	1254 / 30	P to patch
					10/9	ET	1250 / 30	1255 / 30	P to patch At Anchor Trim
10/8	7-8	ET	3	750°/4.5	10/9	ET	1.01 / 30	1:06 / 30	P EOS
10/8	8-9	PD	2	750° 4.5	10/9	ET	1:27 / 30	1:32 / 30	P to Patch
~~10/8~~	~~9-10~~	~~JO~~	~~3~~	~~750° 4.0~~					
~~10/8~~	~~10-11~~	~~CN~~	~~2~~	~~750 4.5~~					
					10/9	ET	1:15 / 32	1:20 / 32	P To EOS
10/8	9/10	JO	3	75° 4.0	10/9	ET	154 / 32	159 / 30	P to Patch
					10/9	ET	137 / 32	142 / 32	P To EOS
10/8	10/11	CN	2	750 4.5	10/9	ET	203 / 30	208 / 30	P To Patch

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 2 of ____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/8	10/11	CN	2	750/4.5	10/9	ET	2:07 / 30	2:12 / 30	P To EOS	
10/8	11/12	JO	3	775/4.5	10/9	ET	2:20 / 32	2:25 / 32	P To Patch	@ Trench Edge
10/8	12/13	CN	2	775/4.5	10/9	ET	2:44 / 30	2:50 / 30	P To Patch	
10/8	12/13				10/9	ET	2:48 / 31	2:53 / 29	To P EOS	
10/8	13/14	ET	3	775/4.5	10/9	ET	2:38 / 30	2:43 / 30	P To EOS	
10/8	14/15	JO	3	775/4.5	10/9	ET	2:51 / 31	2:56 / 31	P To Patch	@ edge of Trench
10/8	15/16	PD	2	775/4.5	10/9	ET	2:59 / 31	3:04 / 30	P To Patch	@ Trench
10/11	18/19	ET	3	775/4.5	10/12	RT	7:46 / 31	7:51 / 30	P EOS	
10/11	1/17	ET	3	775/4.5	10/12	RT	7:35 / 30	7:40 / 30	P EOS	
10/12	19/20	ET	3	775/4.5	10/12	RT	1013 / 30	1020 / 30	P	EOS
10/12	17/21	ET	3	775/4.5	10/12	RT	1016 / 30	1022 / 30	P	EOS
10/12	21/23	ET	3	775/4.5	10/12	RT	1024 / 31	1029 / 31	P	EOS
10/12	22/20	ET	3	775/4.5	10/12	RT	1033 / 30	1039 / 30	P	EOS
10/12	22/24	ET	3	775/4.5	10/12	RT	11:05 / 31	11:10 / 30	P	EOS
10/12	24/25	ET	3	775/4.5	10/12	RT	2:35 / 30	2:41 / 30	P	To Patch
10/12	24/26	CN	2	775/4.5	10/12	RT	2:27 / 30	2:34 / 30	P	EOS
10/12	26/27	CN	2	775/4.5	10/12	RT	2:41 / 31	2:32 / 31	P	EOS
10/12	27/28	ET	3	775/4.5	10/12	RT	2:46 / 31	2:55 / 31	P	EOS
10/12	28/29	CN	2	775/4.5	10/12	RT	2:57 / 30	3:03 / 30	P	EOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro LF Project No. _____ Pg. 3 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/12	29/30	ET	3	775/4.5	10/12	RT	3:00/31	3:05/31	P	EOS
10/12	31/30	ET	3	775/4.5	10/12	RT	3:14/31	3:22/31	P	EOS
10/12	31/32	CN	2	775/4.5	10/12	RT	3:21/31	3:30/31	P	EOS
10/12	BS 25/31	ET	3	775/4.5	10/12	RT	3:28/30	3:34/30	P	~~EOS~~ To Patch
10/12	BS 25/30	ET	3	775/4.5	10/12	RT	3:30/30	3:35/30	P	To Patch
10/12	33/1	ET	3	775/4.5	10/13	RT	835/31	707/30	P	To BS
10/12	BS 33/17	ET	3	775/4.5	10/13	RT	839/30	844/30	P	To BS
10/12	BS 33/20	ET	3	775/4.5	10/13	RT	850/30	855/30	P	To BS
10/12	BS 33/19	ET	3	775/4.5	10/13	RT	851/30	856/30	P	To BS
10/12	BS 33/18	ET	3	775/4.5	10/13	RT	9:12/30	9:17/29	P	To BS
10/13	16/34	ET	3	775/4.5	10/13	RT	9:42/30	9:47/30	P	To EOS
10/13	34/35	CN	2	775/4.5	10/13	RT	9:43/30	9:48/28	P	To Vent
10/13	34/35	"	"	"	10/13	RT	9:44/30	9:50/30	P	To Anchor
10/13	35/36	JO	3	775/4.5	10/13	RT	1030/30	1039/30	P	To EOS
10/13	36/35	CN	2	775/4.5	10/13	RT	1005/30	1014/30	P	To Anchor
10/13	37/38	JO	3	775/4.5	10/13	RT	1009/30	1016/28	P	To EOS ~~To Patch~~
10/13	38/39	CN	2	775/4.5	10/13	RT	1035/30	1041/30	P	To B.O. Pat.
"	"	"	"	"	"	RT	1038/30	1044/30	P	To EOS
"	39/40	JO	3	775/4.5	10/13	RT	1052/30	1056/30	P	To EOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: FOXBORO, MA LF Project No. _____ Pg. 4 of _____

WELDING					PRESSURE TEST				
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10-13-99	41/42	JO	3	775/4.5	10-13	BL	1240 / 31	1245 / 31	P	
10-13-99	40/41	JO	3	775/4.5	10/13	BL	V Box	30' ≥ AT	P	
10/15	42/43	JO	3	775/4.5	10/15	RT	1452 / 30	1503 / 30	P	To Patch @ Vent
"	42/43 ~~44/45~~	"	"	"	10/15	RT	1453 / 30	1506 / 30	P	To patch @ Berm
"	42/43	"	"	"	10/15	RT	1427 / 30	1509 / 28	P	From Patch Below Berm To EOS
"	46/47	ET	3	775/4.5	10/15	RT	1524 / 30	1531 / 30	P	To EOS
"	44/46	ET	3	775/4.5	10/15	RT	1527 / 30	1532 / 30	P	To EOS
"	44/45	CN	2	775/4.5	10/15	RT	1530 / 30	1535 / 30	P	To EOS
10/15	43/47 BS	ET	3	775/4.5	10/16	RT	734 / 31	752 / 31	P	To BS
"	43/52 BS	ET	3	775/4.5	10/16	RT	747 / 30	753 / 30	P	To BS
"	43/51 BS	ET	3	775/4.5	10/16	RT	745 / 30	755 / 29	P	To BS
"	43/50 BS	ET	3	775/4.5	10/16	RT	810 / 30	824 / 30	P	To Patch
"	43/49 BS	ET	3	775/4.5	10/16	RT	815 / 30	823 / 30	P	To BS
"	43/48 BS	ET	3	775/4.5	10/16	RT			F	Vaccum Test
"	43/48 BS	ET	3	775/4.5	10/16	RT	850 / 30	855 / 30	P	Patch to EOS
"	48/49	ET	3	775/4.5	10/16	RT	904 / 30	915 / 30	P	Repair @ AT
"	49/50	ET	3	775/4.5	10/16	RT	905 / 30	916 / 30	P	Repair @ AT
"	50/51	ET	3	775/4.5	10/16	RT	909 / 30	916 / 30	P	To Repair
"	50/51	ET	3	775/4.5	10/16	RT	910 / 30	919 / 28	P	To EOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro LF Project No._____ Pg. 5 of ____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/15	51/52	ET	3	775/4.5	10/16	RT	944/30	958/30	P	To EOS
10/15	52/47BS	ET	3	775/4.5	10/16	RT	950/30	955/30	P	EOS
10/15	52/53	ET	3	775/4.5	10/16	RT	946/30	958/28	P	EOS
10/15	47/53BS	ET	3	775/4.5	10/16	RT	1004/30	1009/28	P	To BS
10/15	53/54	ET	3	775/4.5	10/16	RT	947/30	957/30	P	EOS
10/15	47/54BS	ET	3	775/4.5	10/16	RT	1004/30	1010/30	P	To BS
10/15	47/55BS	ET	3	775/4.5	10/16	RT	1013/30	1020/30	P	To BS
10/15	54/55	ET	3	775/4.5	10/16	RT	1022/30	1027/30	P	EOS
10/16	55/56	JO	1	775/4.5	10/16	RT	1030/30	1043/30	P	EOS
10/16	56/57	JO	1	775/4.5	10/16	RT	1034/30	1042/30	P	EOS
10/16	47/56BS	JO	1	775/4.5	10/16	RT	1058/30	1107/30	P	BS
10/16	47/57BS	JO	1	775/4.5	10/16	RT	1059/30	1107/30	P	BS
10/16	47/58BS	JO	1	775/4.5	10/16	RT	1102/30	1108/30	P	BS
10/16	57/58	CN	2	775/4.5	10/16	RT	1101/30	1109/30	P	EOS
10/16	58/59	CN	2	775/4.5	10/16	RT	1101/30	1109/30	P	EOS
10/16	59/47BS	JO	1	775/4.5	10/16	RT	1111/31	1118/31	P	EOS
10/16	45/60	ET	1	775/4.5	10/16	RT	252/31	259/31	P	EOS
10/16	60/61	CN	2	775/4.5	10/16	RT	311/31	319/31	P	To Patch @ Berm
10/16	60/61	CN	2	775/4.5	10/16	RT	306/31	311/31	P	EOS
10/16	61/62	CN	2	775/4.2	10/16	RT	312/30	321/30	P	EOS

5' run

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro LF Project No. _____ Pg. 6 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/17	63/65	ET	1	775/4.5	10/17	RT	1122/30	1132/28	P	To BS
10/17	65/64BS	ET	1	775/4.5	10/17	RT	1140/30	1146/28	P	
10/17	65/66	CN	2	775/4.5	10/17	RT	1139/30	1144/30	P	To BS
10/17	65/66	CN	2	775/4.5	10/17	RT	1139/30	1144/30	P	To ~~GOS~~ patch Top
10/17	63/64	ET	1	775/4.5	10/17	RT	1242/30	1247/30	P	To GOS
10/17	64/66BS	CN	2	775/4.5	10/17	RT	1140/30	1146/28	P	To GOS
10/17	66/68	ET	1	775/4.5	10/17	RT	1143/30	1150/30	P	To BS
10/17	66/67	CN	2	775/4.5	10/17	RT	1234/30	1239/30	P	To ~~Patch~~ GOS
10/17	66/64	CN	2	775/4.5	10/17	RT	1300/30	1305/30	P	To Patch/vent To GOS
10/17	66/64	CN	2	775/4.5	10/17	RT	1237/30	1242/30	P	To Patch & Vent
10/17	66/64	CN	2	775/4.5	10/17	RT	1235/30	1240/30	P	To Pullout
10/17	68/69	CN	2	775/4.5	10/17	RT	1330/31	1336/31	P	To BS
10/17	67/69	CN	2	775/4.5	10/17	RT	1331/31	1337/31	P	To GOS
10/17	67/68BS	ET	1	775/4.5	10/17	RT	1324/30	1329/30	P	
10/17	69/70	CN	2	775/4.5	10/17	RT	1358/30	1401/30	P	To Patch & Berm
10/17	69/70	CN	2	775/4.5	10/17	RT	1356/30	1401/30	P	To Patch
10/17	69/70	CN	2	775/4.5	10/17	RT	1403/30	1408/28	P	To GOS
10/17	70/71	ET	1	775/4.5	10/17	RT	1354/30	1411/28	P	To GOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 7 of ____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/21	74/75	ET	1	775/4.5	10/22	KT	746/30	751/30	P	GOS
"	75/76	ET	1	"	10/22	"	745/30	752/30	P	GOS
"	76/77	ET	1	"	"	"	744/30	753/28	P	GOS
"	77/78	ET	1	"	"	"	749/30	754/30	P	GOS
"	78/79	ET	1	"	"	"	818/30	825/30	P	GOS
"	79/80	ET	1	"	"	"	820/30	827/30	P	GOS
"	80/81	CN	2	"	"	"	822/30	828/30	P	GOS
"	81/82	ET	1	"	"	"	823/30	830/29	P	GOS
"	82/83	CN	2	"	"	"	853/30	908/30	P	GOS
"	83/84	ET	1	"	"	"	857/30	906/30	P	GOS
"	84/73	ET	1	"	"	"	900/30	906/28	P	To Intersection
"	84/85	CN	2	"	"	"	904/30	911/30	P	To GOS
"	73/85	CN	2	"	"	"	919/30	936/30	P	To Intersecti
"	85/86	CN	2	"	"	"	931/30	942/30	F	At Berm.
"	86/73	CN	2	"	"	"	931/30	939/30	P	GOS
"	85/86	CN	2	"	"	"	936/30	941/30	P	Berm to GOS.
"	73/72	ET	1	"	"	"	949/30	953/30	P	GOS
"	72/71	ET	1	"	"	"	957/30	1002/30	P	GOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No. _____ Pg. 8 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/22	95/82BS	CT	1	77 5/4.5	10/22	RT	131/30	142/28	P	
"	95/81BS	"	"	"	"	"	134/30	144/30	P	
"	94/81BS	"	"	"	"	"	136/30	145/28	P	
"	94/80BS	"	"	"	"	"	138/30	147/29	P	
"	94/95	ET	1	"	"	"	152/30	157/30	P	EOS
"	93/94	CN	2	"	"	"	152/30	158/30	P	EOS
"	92/93	ET	1	"	"	"	202/30	211/29	P	To BO @ Swnle
"	92/93	CN	2	"	"	"	207/30	214/30	P	B.O to EOS
"	92/91	ET	1	"	"	"	205/30	213/30	P	To EOS
"	93/80BS	"	"	"	"	"	220/30	225/30	P	
"	93/79BS	"	"	"	"	"	221/30	226/28	P	
"	92/78BS	"	"	"	"	"	225/30	230/30	P	
"	92/78BS	"	"	"	"	"	234/30	240/30	P	
"	92/77BS	"	"	"	"	"	237/30	242/30	P	
"	92/76BS	"	"	"	"	"	244/30	249/28	P	
"	91/76BS	"	"	"	"	"			F	VAC Test
"	91/75BS	"	"	"	"	"			F	"
"	75/90	CN	2	"	"	"	306/31	312/30	P	
"	90/91	ET	1	"	"	"	305/31	313/31	P	

Interset

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No. _____ Pg. 9 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/22	74/90BS	ET	1	725/4.5	10/22	RT			F	VAC TEST
"	87/90BS	"	"	"	"	"	326/30	331/28	P	
"	88/90BS	"	"	"	"	"	1545/30	1546/28	P	
"	89/90BS	"	"	"	"	"	1533/30	1533/28	P	
"	89/90EOS	"	"	"	"	"	1540/30	1545/29	P	
"	74/87	CN	2	"	"	"	325/30	330/30	P	EOS
"	87/88	CN	2	"	"	"	1534/30	1541/30	P	EOS
"	88/89	CN	2	"	"	"	1545/30	1550/30	P	
"	75/90	ET	1	"	"	"			F	VAC TEST
10/24	96/110	ET	1	"	10/25	BL	1228/28	1237/28	P	EOS
"	96/99	ET	1	"	"	"	1235/29	1245/28	P	EOS
"	98/97BS	"	"	"	"	"	1277/29	1242/29	P	
"	69/97BS	"	"	"	"	"	1247/29	1254/29	P	
"	97/96BS	"	"	"	"	"				VBox
"	98/69BS	"	"	"	"	"	1253/29	1258/29	P	
"	98/68BS	"	"	"	"	"	1305/26	1310/26	P	
"	98/66BS	"	"	"	"	"	1310/32	1320/30	P	
"	98/65BS	"	"	"	"	"	1315/33	1320/32	P	
"	98/63						1320/32	1325/31	P	

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Toxbow Project No. _____ Pg. 10 of _____

WELDING					PRESSURE TEST				
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F
10/24	63/99 BS	ET	2	775/4.5	10/25	BL	1322/31	1329/31	P
"	62/99 BS	"	"	"	"	"	1327/32	1332/30	P
"	61/99 BS	"	"	"	"	"	1330/29	1335/27	P
"	60/99 BS	"	"	"	"	"	1334/29	1339/27	P
"	45/100 BS	"	"	"	"	"	1336/30	1342/29	P
"	44/100 BS	"	"	"	"	"	1337/29	1342/29	P
"	42/100 BS	"	"	"	"	"	1343/33	1348/33	P
"	41/101 BS	"		"	"	"	1350/29	1355/29	P
"	110/70 BS	"	"	"	"	"	1408/29	1419/29	P
"	110/71 BS	"	"	"	"	"	1410/29	1420/29	P
"	110/72 BS	"	"	"	"	"	1413/29	1419/29	P
"	109/73 BS	"	"	"	"	"	1433/31	1439/30	P
"	83/109 BS	"	"	"	"	"	1424/29	1429/29	P
"	82/109 BS	"	"	"	"	"	1442/30	1443/30	P
"	95/109	"	"	"	"	"	1448/30	1455/30	P
"	108/109 BS	"	"	"	"	"	1439/29	1451/29	P
"	108/110	"	"	"	"	"	1455/31	1502/31	P
"	108/95	"	"	"	"	"	1454/30	1502/30	P
"	109/110	"		"	"	"	1457/30	1500/30	P

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 11 of ____

WELDING					PRESSURE TEST				
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/ F
10/24	95/10	ET	1	775/4.5	10/25	RT	1508/30	1513/28	P
"	98/99	ET	2	"	"	"	1517/30	1522/30	P
"	100/101	"	"	"	"	"	1523/30	1528/28	P
"	101/102	JO	1	"			1524/30	1529/30	P
"	102/103	ET	2	"	"	"	1525/30	1530/29	P
"	103/104	CW	1	"	"	"	1531/31	1537/30	P
"	104/105	ET	2	"	"	"	1533/1539	30/30	P
"	105/106	JO	1	"	"	"	1535/29	1540/28	P
"	106/107	ET	2	"	"	"	1544/30	1550/30	P
"	99/100	JO	1	"	"	"	1518/30	1523/29	P
"	107/112	JO	1	"	"	"	1544/28	1551/28	P
"	112/113	JO	1	"	"	"	1545/31	1557/30	P
10/26	113/114	PD	1	"	10/26	"	1255/30	1302/29	P
"	114/115	JO	1	"	"	"	1253/28	1306/28	P
"	115/116	PD	2	"	"	"	1252/31	1312/30	P
"	116/117	JO	1	"	"	"	1250/30	1314/28	P
"	112/111	PD	2	"	"	"	1345/29	1350/29	P
"	106/111	PD	2	"	"	"	1344/30	1349/30	P
10/27	117/118	JO	1	"	10/27	"	1407/30	1412/30	P

From Berm To Eos

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 12 of ____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/ F	
10/27	119/120	JO	1	775/4.5	10/27	RT	1406/30	1411/30	P	From Berm To EOS
"	117/118	JO	1	"	"	"	1419/29	1425/29	P	From Top To 1ST Swale
"	119/120	JO	1	"	"	"	1420/29	1425/28	P	From Top To 1ST Swale
"	118/119	JO	1	"	"	"	1435/30	1440/30	P	EOS
"	120/121	JO	1	"	"	"	1445/28	1450/28	P	Boot to EOS
"	120/121	JO	1	"	"	"	1518/30	1524/30	P	EOS To Boot
"	121/122	JO	1	"	"	"	1452/29	1458/29	P	EOS To Boot
"	122/123	JO	1	"	"	"	1455/1500	30/30	P	EOS
"	123/124	ET	2	"	"	"	1500/30	1505/30	P	EOS To B.O
"	121/122	JO	1	"	"	"	1513/30	1518/30	P	EOS To Boot
"	123/124	ET	2	"	"	"	1512/30	1519/30	P	EOS To B
"	125/126	JO	1	"	"	"	1529/29	1534/29	P	EOS
"	127/127	JO	1	"	"	"	1530/28	1535/27	P	EOS
"	127/128	JO	1	"	"	"	1530/30	1535/30	P	EOS
10/28	128/129	PD	2	"	10/28	RT	1455/30	1502/30	P	To Butt
"	129/130	JO	1	"	"	"	1455/30	1500/30	P	To Boot
"	129/130	"	"	"	"	"	1457/30	1502/30	P	To Butt
"	130/131	PD	2	"	"	"	1456/30	1502/30	P	EOS
"	131/132	JO	1	"	"	"	1519/30	1532/30	P	EOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No. _____ Pg. 13 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/28	132/133	RM	1	775/4.5	10/28	NT	1523/29	1533/29	P	GOS
10/28	133/134	PD	2	"	"	"	1529/1534	29/28	P	GOS
"	134/135	JO	1	"	"	"	1530/30	1535/30	P	GOS
"	135/138	PD	2	"	"	"	1540/30	1545/29	P	To Butt
"	135/136	PD	2	"	"	"	1636/29	1646/28	P	GOS
"	136/137	JO	1	"	"	"	1638/29	1646/29	P	GOS
"	138/139	"	"	"	"	"	1541/29	1554/29	P	To Butt
"	138/137	"	"	"	"	"	1557/31	1604/31	P	To Butt
"	139/142	PD	2	"	"	"	1602/30	1612/30	P	To Butt
"	142/137	P2	2	"	"	"	1604/31	1613/31	P	To Boot
"	137/140	"	"	"	"	"	1640/29	1645/29	P	GOS
"	142/143	"	"	"	"	"	1616/29	1629/29	P	To Butt
"	140/141	"	"	"	"	"	1629/29	1634/29	P	To GOS
"	141/144	JO	1	"	"	"	1702/30	1710/30	P	GOS
"	144/145	PD	2	"	"	"	1715/29	1720/28	P	GOS
"	145/146	JO	1	"	"	"	1720/29	1725/28	P	GOS
"	146/147	JO	1	"	"	"	309/29	316/29	P	GOS
"	147/148	JO	1	"	"	"	311/31	318/31	P	GOS
"	148/149	JO	1	"	"	"	321/29	327/29	P	To Boot

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No. _____ Pg. 14 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/29	148/149	JO	1	775/4.5	10/29	RT	313/31	320/31	P	Boot to Go
"	149/150	JO	1	"	"	"	435/31	451/30	P	GOS
"	150/151	TS	2	"	"	"	[illegible]/31	452/31	P	GOS
"	151/152	"	"	"	"	"	438/30	452/30	P	GOS
"	152/153	"	"	"	"	"	1703/29	1708/29	P	GOS
"	153/154	"	"	"	"	"	1702/30	1707/30	P	GOS
"	154/155	"	"	"	"	"	1701/31	1706/29	P	GOS
"	156/157	"	"	"	"	"	1709/30	1715/30	P	GOS
"	157/158	RM	1	"	"	"	1710/29	1715/29	P	GOS
"	158/159	TS	2	"	"	"	1711/29	1717/28	P	GOS
"	159/160	JO	1	"	"	"	1726/30	1731/29	P	GOS
"	167/168	TS	2	"	"	"	1729/31	1734/29	P	GOS
"	168/169	RM	1	"	"	"	1735/29	1743/29	P	GOS
"	169/170	TS	2	"	"	"	1738/29	1743/29	P	GOS
10/29	167/166	JO	1	"	10/29	RT	1728/30	1733/29	P	GOS
"	166/165	TS	2	"	10/30	"	0720/29	0725/29	P	GOS
"	165/164	JO	1	"	"	"	0721/30	0726/30	P	GOS
	164/163	TS	2	"	"	"	0722/30	0727/30	P	GOS
"	163/162	JO	1	"	"	"	0725/30	0730/29	P	GOS

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No._____ Pg. 15 of ____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/29	162/161	TS	2	775/4.5	10/30	RT	0726/29	0731/28	P	GOS
10/30	170/171	CN	2	"	"	BL	1150/30	1155/30	P	GOS
"	171/172	TS ~~CN~~	1 ~~2~~	"	"	RT	1152/29	1157/29	P	GOS
"	172/173	CN2 ~~TS~~	2	"	"	"	1154/30	1159/28	P	GOS
"	173/174	CN2	2	"	"	"	1200/30	1208/30	P	GOS
"	174/175	JO	1	"	"	"	1205/30	1210/29	P	GOS
"	175/176	CN	2	775.4.5	"	"	1206/30	1212/29	P	GOS
"	176/177	TS	1	"	"	"	1215/30	1220/29	P	GOS
"	177/178	CN	2	"	"	"	1216/29	1221/29	P	GOS
"	178/179	JO	1	"	"	"	1217/29	1222/29	P	GOS
"	179/180	CN	2	"	"	"	1224/30	1229/30	P	GOS
"	180/181	TS	1	"	"	"	1225/31	1230/31	P	GOS
"	181/182	CN	2	"	"	"	1227/29	1232/29	P	GOS
"	182/183	JO	1	"	"	"	1231/31	1236/31	P	GOS
"	189/190	AD	3	"	"	"	1711/29	1716/29	P	To Butt
"	189/191	"	"	"	"	"	1712/29	1717/29	P	EOS
"	190/191 BS	"	"	"	"	"	1738/29	1743/29	P	~~EOS~~
"	188/189	TS	2	"	"	"	1708/29	1715/28	P	GOS
"	190/192	TS	2	"	"	"	1752/30	1757/30	P	To Butt

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro Project No. _____ Pg. 16 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
10/30	191/193	TS	2	775/4.5	10/30	RT	1750/30	1755/30	P	GOS
"	192/193BS	PD	3	"	"	"	1757/30	1758/29	P	
"	192/194	PD	3	"	"	"	1817/30	1822/30	P	To Butt
"	193/194	"	"	"	"	"	1757/30	1807/30	P	GOS
"	183/184	CN	2	"	10/31	"	1247/30	1253/30	P	GOS
"	184/185	TS	2	"	"	"	1241/30	1245/29	P	GOS
"	139/187	CN	2	"	"	"	1245/28	1250/28	P	GOS
"	185/187	TS	2	"	"	"	1247/30	1252/30	P	GOS
"	187/R340	TS	2	"	"	"	1301/30	1306/30	P	GOS
"	185/R340	"	"	"	"	"	1301/30	1306/30	P	GOS
"	185/186	"	"	"	"	"	1309/30	1315/30	P	GOS
"	186/188	CN	2	"	"	"	1309/30	1315/28	P	GOS
11/1	194/195	TS	2	"	11/1	RT	1300/30	1305/30	P	GOS
"	195/196	JO	3	"	11/1	RT	1301/30	1306/28	P	BOTOBO
"	"	"	"	"	"	"	1304/29	1309/29	P	BO to Low temp
"	"	"	"	"	"	"	1311/30	1316/30	P	" to Go.
"	196/197	TS	2	"	"	"	1312/28	1317/28	P	GOS
"	197/198	JO	3	"	"	"	1313/30	1318/30	P	GOS
"	198/199	TS	2	"	"	"	1315/30	1320/30	P	To Boot

NEW LINING SOLUTIONS INC.
PRESSURE TEST / WELDER

Project: Foxboro, MA Project No. _____ Pg. 17 of _____

WELDING					PRESSURE TEST					
Date	Seam No.	Welder	Mach. No.	Temp. PHT \ Spd.	Date	QC	Start	FIN.	P/F	
11/1	198/199	TS	2	775/4.5	11/1	RT	1322/30	1330/30	P	Boot to GO.
"	199/200	JO	3	"	"	"	1314/1320	30/28	P	GOS
"	200/202	TS	2	"	"	"	1320/30	1325/28	P	To B.S.
"	200/201	"	"	"	"	"	1325/31	1334/30	P	To GOS
"	201/203	JO	1	"	"	"	1337/30	1345/30	P	To GOS
"	203/204	TS	2	"	"	"	1334/30	1339/30	P	To Boot
"	"	"	"	"	"	"	1349/30	1355/29	P	To GOS
"	204/205	JO	1	"	"	"	1601/30	1606/30	P	To B.O.
"	"	"	"	"	"	"	1556/30	1601/30	P	GOS
"	205/206	TS	3	"	"	"	1600/30	1608/30	P	GOS
"	206/18	"	"	"	"	"			P	VT OK
"	206/207	"	"	"	"	"	1612/29	1617/29	P	GOS
"	207/18	"	"	"	"	"			P	VT OK
"	207/208	"	"	"	"	"			P	VT OK
"	208/18	"	"	"	"	"			P	VT OK

SECTION:: 5

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro LF Cap **PROJECT NO.** _____ **Pg.** 1 **Of** _____

Min. Peel Value: 59 # Min. Shear Value: 80 #

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/11	2-3	1	ET	60	3	750/5.0	PEEL	110/86	60/88	112/91	106/111	112/117	Y	P
							SHEAR	170	171	168	174	181	Y	P
10/11	4-5	2	CN	60	2	750°/5.0	PEEL	78/122	125/78	78/117	114/69	127/99	Y	P
							SHEAR	161/172	166/145	175/152	146/167	176/149	Y	P
10/11	6/7	3	PD	60	3	750°/4.5	PEEL	110/91	91/100	92/95	80/66	92/101	Y	P
							SHEAR	153/121	166/132	149/168	181/142	169/158	Y	P
10/11	7/8	4	JO	65		775°/4.5	PEEL	77/82	95/88	95/96	98/90	89/92	Y	P
							SHEAR	151/147	150/138	162/131	138/154	148/160	Y	P
10/11	9/10	5	CN	65		775/4.5	PEEL	100/92	100/106	119/96	112/114	103/106	Y	P
							SHEAR	157	149	161	172	168	Y	P
10/11	11/12	6	ET	65		775/4.5	PEEL	99/86	80/79	87/73	92/74	90/84	Y	P
							SHEAR	166	171	158	162	132	Y	P
10/11	13/14	7	CN	65		775/4.5	PEEL	109/109	94/99	101/100	108/101	117/104	Y	P
							SHEAR	160	152	161	158	153	Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro LF. CAP
Min. Peel Value: 59

PROJECT NO.
Min. Shear Value: 80

Pg. 2 Of

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10-11	15-16	8	ET	65	3	775/4.5	PEEL	95/87	93/90	105/111	115/103	112/65	Y	P
							SHEAR	153	152	155	162	150	Y	P
10/13	17-21	9	CN	62	2	775/4.5	PEEL	124/109	111/94	82/104	94/113	101/98	Y	P
10/13							SHEAR	162	159	152	160	149	Y	P
10/13	39-40	10	ET	62	3	775/4.5	PEEL	141/128	138/91	122/79	116/84	102/98	Y	P
							SHEAR	164	175	180	172	173	Y	P
10/13	24-26	11	JO	62	3	775/4.5	PEEL	110/91	98/89	84/109	97/101	74/98	Y	P
							SHEAR	169	121	181	99	142	Y	P
10/13	27-28	12	CN	65	2	775/4.5	PEEL	76/84	100/88	62/94	77/100	94/106	Y	P
							SHEAR	180	142	150	178	122	Y	P
10/13	34-35	13	JO	65	3	775/4.5	PEEL	96/104	99/69	101/84	89/112	127/82	Y	P
							SHEAR	172	148	150	162	151	Y	P
10/13	36-37	14	CN	65	2	775/4.5	PEEL	98/77	101/90	68/98	112/92	125/111	Y	P
							SHEAR	180	139	170	168	142	Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro LF
Min. Peel Value: 59 #

PROJECT NO. _____
Min. Shear Value: 80 #

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/13	38-39	15	CN	65	2	775/4.5	PEEL	101/94	89/140	99/109	84/100	90/84	Y	P
							SHEAR	144	159	172	164	180	Y	P
10/13	40-41	16	ET	65	3	775/4.5	PEEL	92/89	101/114	138/149	104/99	130/88	Y	P
							SHEAR	158	170	112	160	172	Y	P
10/16	42-43	17	JO	65	3	775/4.5	PEEL	86/89	96/93	86/83			Y	P
							SHEAR	140	135	145			Y	P
10/16	49-50	18	ET	65	3	775/4.5	PEEL	99/95	97/103	104/79			Y	P
							SHEAR	144	117	143			Y	P
10/16	52-53	19	ET	65	3	775/4.5	PEEL	89/91	82/96	99/98			Y	P
							SHEAR	143	136	149			Y	P
10/16	55-56	20	JO	65	1	775/4.5	PEEL	84/89	90/105	100/98			Y	P
							SHEAR	141	144	137			Y	P
10/16	46-47	21	ET	65	3	775/4.5	PEEL	101/113	83/101	102/99			Y	P
							SHEAR	143	144	137			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro LF
Min. Peel Value: 59#

PROJECT NO.
Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/16	44-45	22	CN	65	2	775/4.5	PEEL	79/105	102/92	88/97			Y	P
							SHEAR	132	151	130			Y	P
10/16	60-61	23	CN	67	2	775/4.5	PEEL	112/104	116/94	94/116			Y	P
							SHEAR	113	136	129			Y	P
10/19	61-62	24	CN	59	2	775/4.5	PEEL	90/102	102/118	107/106			Y	P
							SHEAR	146	161	160			Y	P
10/19	63-64	25	ET	59	1	775/4.5	PEEL	100/89	94/96	87/87			Y	P
							SHEAR	147	159	152			Y	P
10/19	64-66	26	CN	67	2	775/4.5	PEEL	96/85	98/89	81/84			Y	P
							SHEAR	158	144	150			Y	P
10/19	67-69	29	CN	67	2	775/4.5	PEEL	122/96	120/108	103/114			Y	P
							SHEAR	143	143	141			Y	P
10/19	70-71	28	ET	67	1	775/4.5	PEEL	96/89	92/80	95/85			Y	P
							SHEAR	143	143	144			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro PROJECT NO. _____ Pg. 5 Of 13

Min. Peel Value: 59 # Min. Shear Value: 80 #

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/23	71-72	29	ET	49°	1	775/4.5	PEEL	123/110	118/108	114/102			Y	P
"							SHEAR	166	173	147			Y	P
10/23	73-84	30	ET	49°	1	775/4.5	PEEL	84/127	123/92	119/101			Y	P
							SHEAR	163	167	167			Y	P
10/23	81-82	31	ET	49°	1	775/4.5	PEEL	93/99	95/102	93/89			Y	P
							SHEAR	176	175	177			Y	P
10/23	78-79	32	ET	49°	1	775/4.5	PEEL	81/118	91/101	117/121			Y	P
							SHEAR	175	176	169			Y	P
10/23	74-75	33	ET	49°	1	775/4.5	PEEL	90/89	110/96	91/102			Y	P
						"	SHEAR	160	172	180			Y	P
10/27	91-92	34	ET	55	1	"	PEEL	204/97	89/114	92/99			Y	P
						"	SHEAR	175	168	173			Y	P
10/27	93/94	35	CN	55	2	"	PEEL	91/107	116/106	102/111			Y	P
						"	SHEAR	160	168	173			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro PROJECT NO. _____ Pg. 6 Of 13

Min. Peel Value: 59# Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
	95/108 ~~36~~	36	ET	55	2	775/4.5	PEEL	111/103	105/98	103/78	73/~~79~~		Y	P
						"	SHEAR	157	161	152			Y	P
	108/110 ~~37~~	37	ET	55	2	"	PEEL	83/85	74/110	120/80			Y	P
						"	SHEAR	148	128	151			Y	P
	97/110 ~~38~~	38	ET	55	2	"	PEEL	82/91	128/119	88/124			Y	P
						"	SHEAR	166	170	158			Y	P
	98/99 ~~39~~	39	ET	"	2	"	PEEL	101/98	108/96	89/102			Y	P
						"	SHEAR	178	178	162			Y	P
	99/100 ~~40~~	40	JO	"	1	"	PEEL	86/87	90/73	95/89			Y	P
						"	SHEAR	160	163	160			Y	P
	100/101 ~~41~~	41	ET	"	2	"	PEEL	105/96	114/92	65/111			Y	P
						"	SHEAR	183	177	176			Y	P
	101/102 ~~42~~	42	JO	"	1	"	PEEL	93/101	93/79	94/73			Y	P
						"	SHEAR	182	175	179			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro PROJECT NO. _____ Pg. 7 Of 13

Min. Peel Value: 59# Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/27	102/103 ~~43~~	43	ET	55 F	2	775/4.5	PEEL	127/114	133/112	118/114			Y	P
						"	SHEAR	168	164	159			Y	P
10/27	102/103 ~~44~~	44	ET	"	2	"	PEEL	100/100	97/94	99/88			Y	P
						"	SHEAR	183	185	183			Y	P
10/27	104/105 ~~45~~	45	ET	"	2	"	PEEL	92/108	101/97	98/71			Y	P
						"	SHEAR	167	175	178			Y	P
10/27	105/106 ~~46~~	46	JO	"	1	"	PEEL	96/109	69/113	112/124			Y	P
						"	SHEAR	168	170	160			Y	P
10/27	106/107 ~~47~~	47	ET	"	2	"	PEEL	88/98	107/84	106/111			Y	P
						"	SHEAR	171	166	158			Y	P
10/27	107/112 ~~48~~	48	JO	"	1	"	PEEL	89/91	99/87	84/			Y	P
						"	SHEAR	160	164	157			Y	P
10/27	113/114 ~~49~~	49	PD	"	1	"	PEEL	100/104	99/103	102/94			Y	P
						"	SHEAR	152	138	154			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro
Min. Peel Value: 59#

PROJECT NO.
Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/29	114/115	50	JO	52°	1	775/4.5	PEEL	111/98	105/97	96/102			Y	P
						"	SHEAR	169	164	159			Y	P
10/28	115/116	51	PP	"	2	"	PEEL	103/91	98/96	98/95			Y	P
						"	SHEAR	171	161	143			Y	P
10/28	116/117	52	JO	"	1	"	PEEL	101/83	96/103	129/91			Y	P
						"	SHEAR	157	170	168			Y	P
10/29	118/119	53	JO	"	1	"	PEEL	82/99	101/89	111/90			Y	P
						"	SHEAR	163	172	159			Y	P
10/29	119/120	54	GT	"	2	"	PEEL	92/128	100/116	95/93			Y	P
						"	SHEAR	165	173	176			Y	P
10/29	121/122	55	JO	"	1	"	PEEL	101/78	114/84	84/95			Y	P
						"	SHEAR	163	168	157			Y	P
10/29	123/124	56	GT	"	2	"	PEEL	65/103	87/91	98/81			Y	P
						"	SHEAR	167	171	176			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro
Min. Peel Value: 59#

PROJECT NO.
Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/28	114/115	50	JO	52°	1	775/4.5	PEEL	111/98	105/97	96/102			Y	P
						"	SHEAR	169	164	159			Y	P
10/28	115/116	51	PP	"	2	"	PEEL	103/91	98/96	98/95			Y	P
						"	SHEAR	171	161	143			Y	P
10/28	116/117	52	JO	"	1	"	PEEL	101/83	96/103	129/91			Y	P
						"	SHEAR	157	170	168			Y	P
10/29	118/119	53	JO	"	1	"	PEEL	82/99	101/89	111/90			Y	P
						"	SHEAR	163	172	159			Y	P
10/29	119/120	54	GT	"	2	"	PEEL	92/128	100/116	95/93			Y	P
						"	SHEAR	165	173	176			Y	P
10/29	121/122	55	JO	"	1	"	PEEL	101/78	114/84	84/95			Y	P
						"	SHEAR	163	168	157			Y	P
10/29	123/124	56	GT	"	2	"	PEEL	105/103	87/91	98/81			Y	P
						"	SHEAR	167	171	176			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro
Min. Peel Value: 59#

PROJECT NO.
Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/29	141/144	64	JO	59°	1	775/4.5	PEEL	101/86	116/109	105/76			Y	P
							SHEAR	169	161	170			Y	P
10/29	145/146	65	JO	59°	1	"	PEEL	93/73	91/102	96/101			Y	P
	~~189/191~~						SHEAR	159	162	160			Y	P
10/30	189/190	~~76~~ 77	PD	58°	3	"	PEEL	96/87	116/80	93/108			Y	P
							SHEAR	164	158	171			Y	P
10/30	193/194	~~78~~ 78	PD	58°	3	"	PEEL	94/90	96/97	90/89			Y	P
							SHEAR	166	158	172			Y	P
10/31	~~150/151~~ 151/152	68	TS	"	2	"	PEEL	72/104	73/104	88/111			Y	P
							SHEAR	172	161	166			Y	P
10/31	~~154/155~~ 154/155	69	~~154/155~~ TS	"	2	"	PEEL	104/123	114/116	121/78			Y	P
							SHEAR	140	171	162			Y	P
10/31	~~158/159~~ 158/159	70	~~158/159~~ TS	"	2	"	PEEL	72/91	82/82	105/83			Y	P
							SHEAR	146	154	169			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro PROJECT NO. _____ Pg. 11 Of 13

Min. Peel Value: 59# Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
10/31	147/148	66	JO	58°	1		PEEL	96/94	88/95	95/97			Y	P
							SHEAR	157	168	170			Y	P
10/31	149/158	67	JO	"	1		PEEL	113/109	118/119	113/109			Y	P
							SHEAR	144	140	138			Y	P
10/31	166/167	71	JO	"	1		PEEL	99/105	85/95	88/99			Y	P
							SHEAR	177	172	168			Y	P
11/1	171/172	72	TS		1		PEEL	96/74	95/105	94/81			Y	P
							SHEAR	169	171	175			Y	P
11/1	175/176	73	CN		2		PEEL	104/99	93/81	94/101			Y	P
							SHEAR	165	174	159			Y	P
11/1	180/181	74	TS		1		PEEL	100/102	93/104	97/103			Y	P
							SHEAR	164	173	169			Y	P
11/1	184/185	75	TS		2		PEEL	88/84	76/81	99/72			Y	P
							SHEAR	158	154	172			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: Foxboro PROJECT NO. _____ Pg. 12 Of 13

Min. Peel Value: 59# Min. Shear Value: 80#

Date	Panel	D.S. No.	Opert.	Amb. T C/F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
11/1	186/188	76	TS	65°	2	775/4.5	PEEL	101/86	96/80	75/85			Y	P
							SHEAR	172	159	161			Y	P
11/1	195/196	79	JO	70°	3	"	PEEL	92/77	105/62	84/76			Y	P
							SHEAR	169	182	174			Y	P
11/1	197/198	80	JO	70°	3	"	PEEL	93/106	77/103	89/87			Y	P
							SHEAR	164	157	159			Y	P
11/1	199/200	81	JO	70°	3	"	PEEL	94/110	103/96	83/120			Y	P
							SHEAR	169	168	179			Y	P
11/1	200/202	82	TS	70°	2	"	PEEL	90/114	130/94	112/98			Y	P
							SHEAR	179	170	184			Y	P
11/1	201/203	83	JO	70°	3	"	PEEL	90/89	88/103	93/85			Y	P
							SHEAR	170	164	172			Y	P
11/1	204/205	84	JO	70°	1	"	PEEL	111/88	114/64	90/101			Y	P
							SHEAR	161	172	165			Y	P

NEW LINING SOLUTIONS INC.

SEAM WELD LOG - DESTRUCT

PROJECT: _____ **PROJECT NO.** _____

Min. Peel Value: _____ Min. Shear Value: _____

Date	Panel	D.S. No.	Opert.	Amb. T C / F	Mach. No.	Temp. PHT SPD		1	2	3	4	5	F.T.B.	PASS FAIL
11/1	206/207	85	JO	68°	1	775/4.5	PEEL	85/101	79/98	103/84			4	P
							SHEAR	171	168	174			4	P
							PEEL							
							SHEAR							
							PEEL							
							SHEAR							
							PEEL							
							SHEAR							
							PEEL							
							SHEAR							
							PEEL							
							SHEAR							
							PEEL							
							SHEAR							

APPENDIX G

Top Soil Test Results

TIBBETTS ENGINEERING CORP.

☐ 3090 Acushnet Avenue, New Bedford, MA 02745, (508) 998-3700
☐ 303 Rodman Street, Fall River, MA 02721, (508) 676-1710
☑ 716 County Street, Taunton, MA 02780, (508) 822-6934

LETTER OF TRANSMITTAL

DATE	JOB NO.
12/3/99	10650.010

ATTENTION: Glen Reagan

RE: Foxboro Landfill

TO Eirco Environmental
P.O. Box 265
Hampton, NH 03842

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1		2	Testing Logs (Sand & Topsoil)
1		7	Loam Grainsize Analysis GS9319A+B, GS9320 A,B, GS9321A, B GS9323A
1		7	Loam Analysis (Organics & PH) LA9319A,B LA9320A,B, GS9321A,B GS9323A
1		8	Permeability Test Reports PE9321A, PE9321C, E, G, PE9323, C, E, G,
1		16	Washed Sieve Analysis Reports MA9319A - MA9328B PE9328B

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

SHOP DRAWING REVIEW

ENGINEER'S REVIEW	RESPONSE REQUIRED OF CONTRACTOR
Approved ☐ Approved As Noted ☒ Not Approved ☐ Comments Attached ☒	Confirm ☐ Resubmit ☐

The Engineer's review of this shop drawing is limited to the review of dimensions, equipment and materials as presented in the Contract plans, specifications and for design concept. This review does not relieve the Contractor from errors or omissions in this submittal or from the Contractor's responsibility of abandoning any deviations from the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences or procedures of construction and performing his work in a safe manner.
CAMP DRESSER & McKEE, INC.

By _____ Date 12-27-99

COPY TO _____

SIGNED: _____

If enclosures are not as noted, kindly notify us at once.

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/27/99

Top Soil Testing Log				
Sample No.	**Lab Identification No.**	**Date Received in Laboratory**	**Source/Supplier**	**Cubic Yards of Top Soil Represented**
1	GS9308A	11/8/99	M.S.P. Trucking	0-1000
2	GS9319A	11/15/99	M.S.P. Trucking	1000-2000
3	GS9319B	11/15/99	M.S.P. Trucking	2000-3000
4	GS9320A	11/15/99	M.S.P. Trucking	3000-4000
5	GS9320B	11/16/99	M.S.P. Trucking	4000-5000
6	GS9321A	11/16/99	M.S.P. Trucking	5000-6000
7	GS9321B	11/17/99	M.S.P. Trucking	6000-7000
8	GS9323A	11/22/99	C.F.R. Middleboro	7000-8000

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/15/99
Report #:GS9319A

Project: Foxboro LandFill - Foxboro
Sample No 2 (1000 - 2000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	99.89	4.760
#10	91.52	2.000
#18	82.34	1.000
#35	65.21	.500
#60	45.28	.250
#140	29.87	.105
#270	13.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.95
#35	.50000	92.31
#60	.25000	74.58
#140	.10500	51.39
#270	.05300	33.25
	.03704	26.02
	.03078	19.23
	.02191	16.97
	.01565	12.44
	.01116	9.05
	.00790	7.92
	.00561	6.79
	.00398	5.66
	.00319	3.39
	.00146	3.39

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 8.5

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 66.8
% Silt = 31.1
% Clay = 2.1

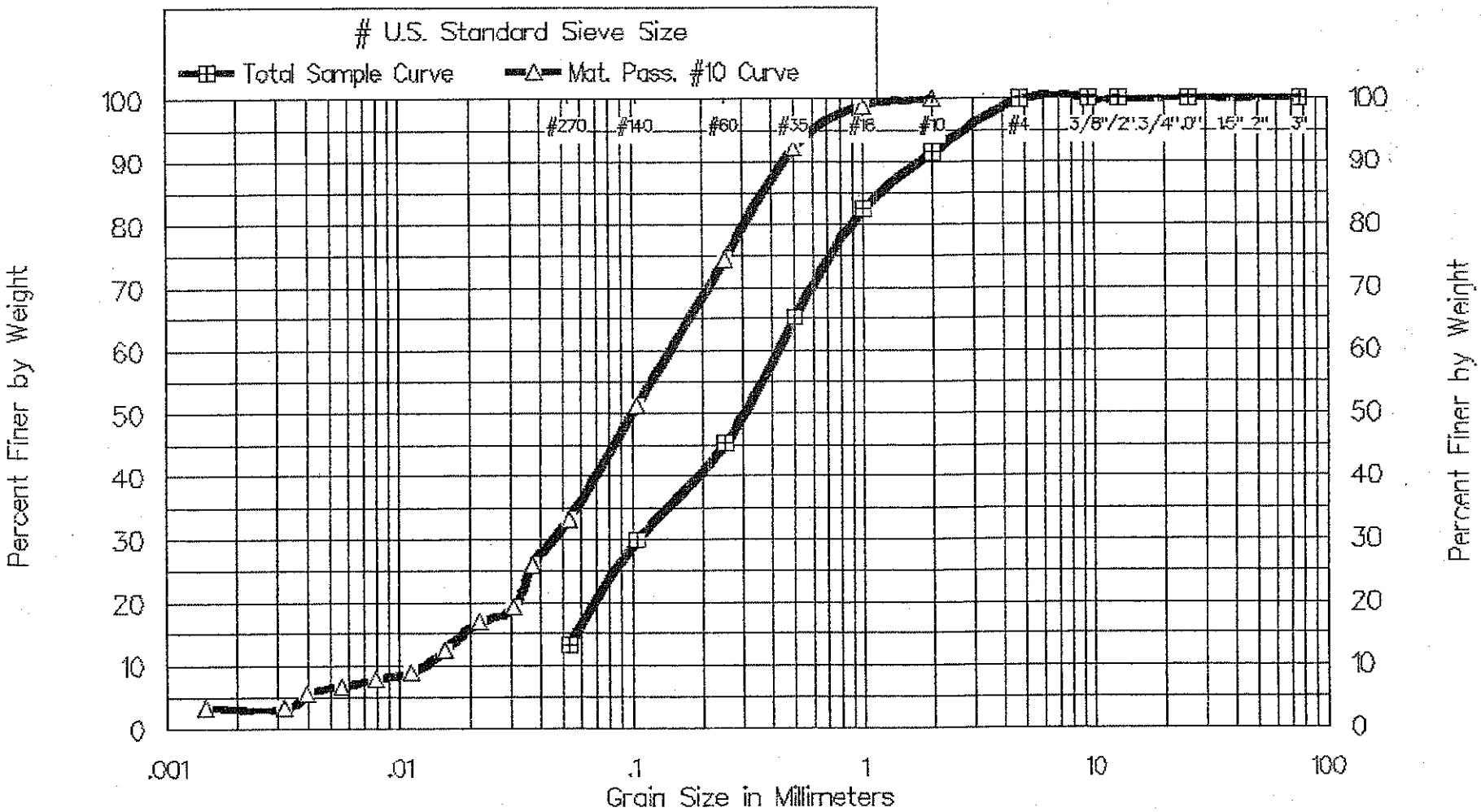
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/15/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9319A – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/15/99
Report No. LA9319A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 2 (1000 – 2000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/15/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.7% *	(8.0-10.0%)
pH	= 6.9	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/15/99
Report #:GS9319B

Project: Foxboro LandFill - Foxboro
Sample No 3 (2000 - 3000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	99.89	4.760
#10	87.65	2.000
#18	79.96	1.000
#35	65.47	.500
#60	40.74	.250
#140	27.89	.105
#270	10.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.95
#35	.50000	87.45
#60	.25000	74.58
#140	.10500	50.01
#270	.05300	32.87
	.03664	30.54
	.03003	28.28
	.02139	26.02
	.01539	19.23
	.01096	16.97
	.00788	10.18
	.00559	7.92
	.00398	5.66
	.00318	5.66
	.00145	5.66

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 12.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 67.1
% Silt = 29.3
% Clay = 3.6

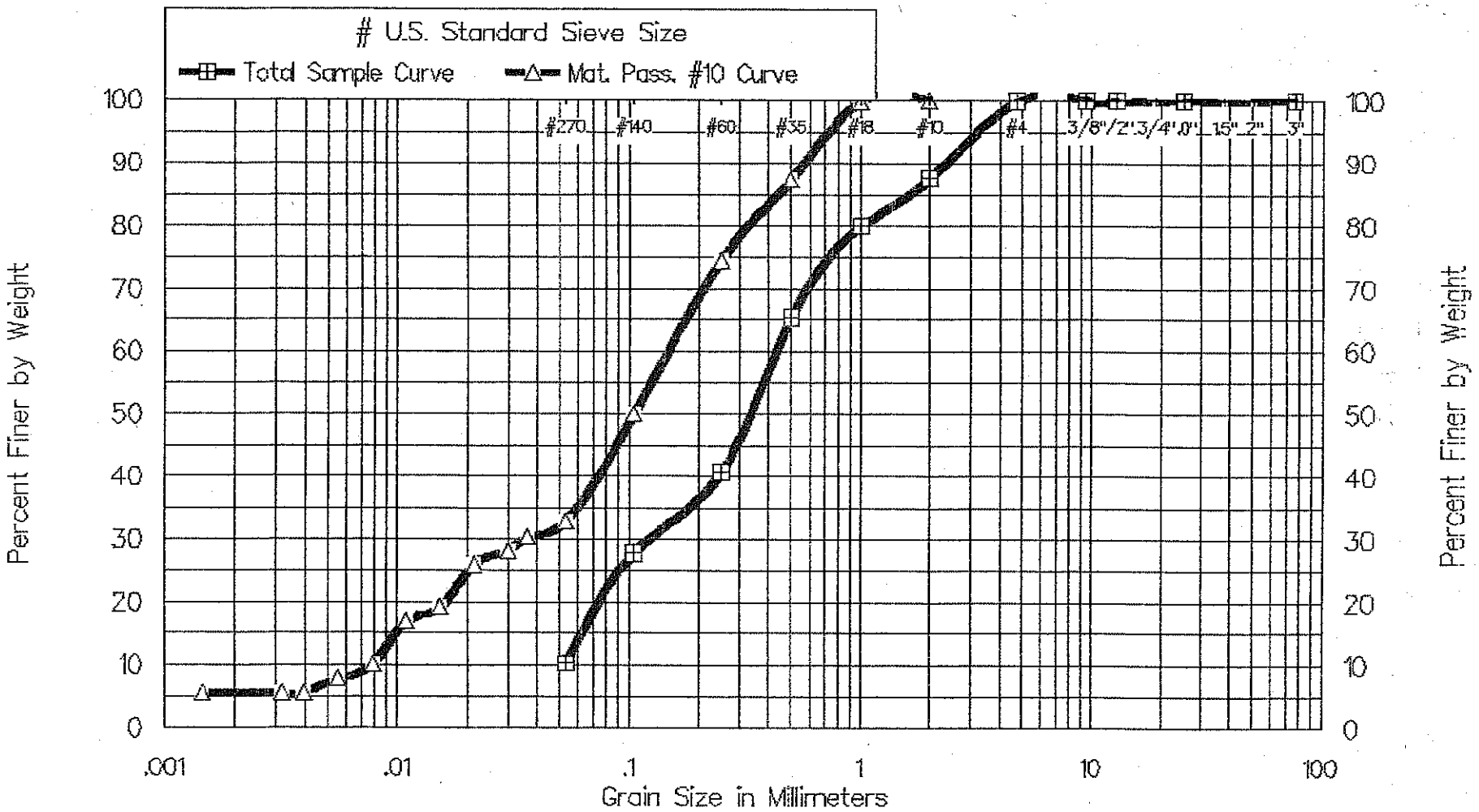
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Walter L. Galuska for
Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/15/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9319B – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/15/99
Report No. LA9319B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 3 (2000 – 3000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/15/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.5% *	(8.0-10.0%)
pH	= 7.0	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/16/99
Report #:GS9320A

Project: Foxboro LandFill - Foxboro
Sample No 4 (3000 - 4000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	99.89	9.510
#4	96.54	4.760
#10	88.57	2.000
#18	82.34	1.000
#35	63.21	.500
#60	40.21	.250
#140	27.53	.105
#270	12.35	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	96.54
#35	.50000	89.93
#60	.25000	72.32
#140	.10500	55.70
#270	.05300	45.63
	.03610	35.07
	.03003	28.28
	.02176	19.23
	.01550	16.97
	.01107	12.44
	.00788	10.18
	.00558	9.05
	.00395	9.05
	.00316	7.92
	.00145	5.66

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 11.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 54.4
% Silt = 40.6
% Clay = 5.0

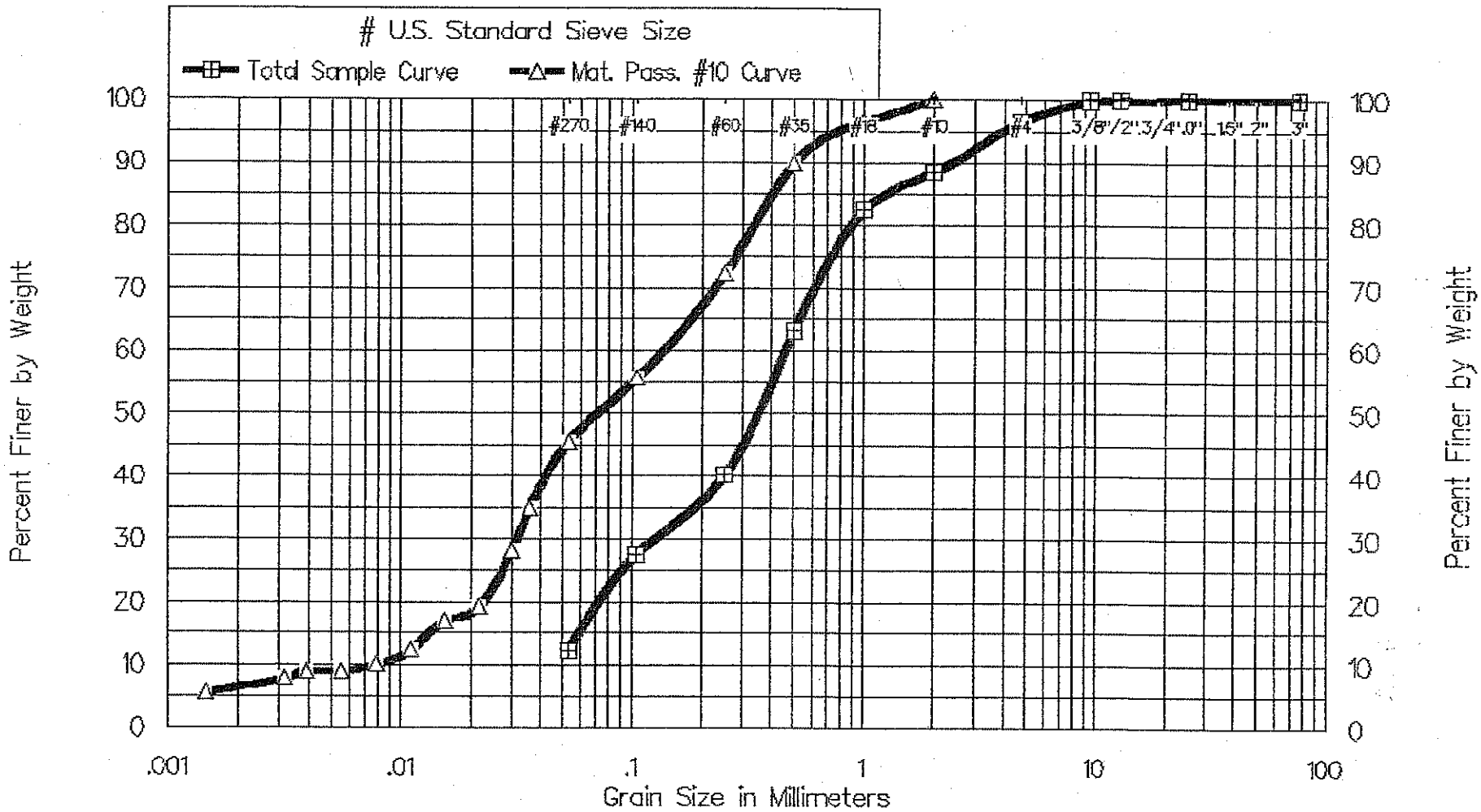
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/16/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9320A – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/16/99
Report No. LA9320A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 4 (3000 – 4000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/15/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.1% *	(8.0-10.0%)
pH	= 7.7	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/16/99
Report #:GS9320B

Project: Foxboro LandFill - Foxboro
Sample No 5 (4000 - 5000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	98.74	9.510
#4	94.32	4.760
#10	86.58	2.000
#18	79.24	1.000
#35	60.33	.500
#60	37.84	.250
#140	25.47	.105
#270	10.23	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.99
#35	.50000	91.30
#60	.25000	75.69
#140	.10500	58.03
#270	.05300	36.98
	.03664	30.54
	.03003	28.28
	.02176	19.23
	.01550	16.97
	.01107	12.44
	.00788	10.18
	.00558	9.05
	.00395	9.05
	.00318	5.66
	.00146	3.39

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 13.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 63.0
% Silt = 33.4
% Clay = 3.6

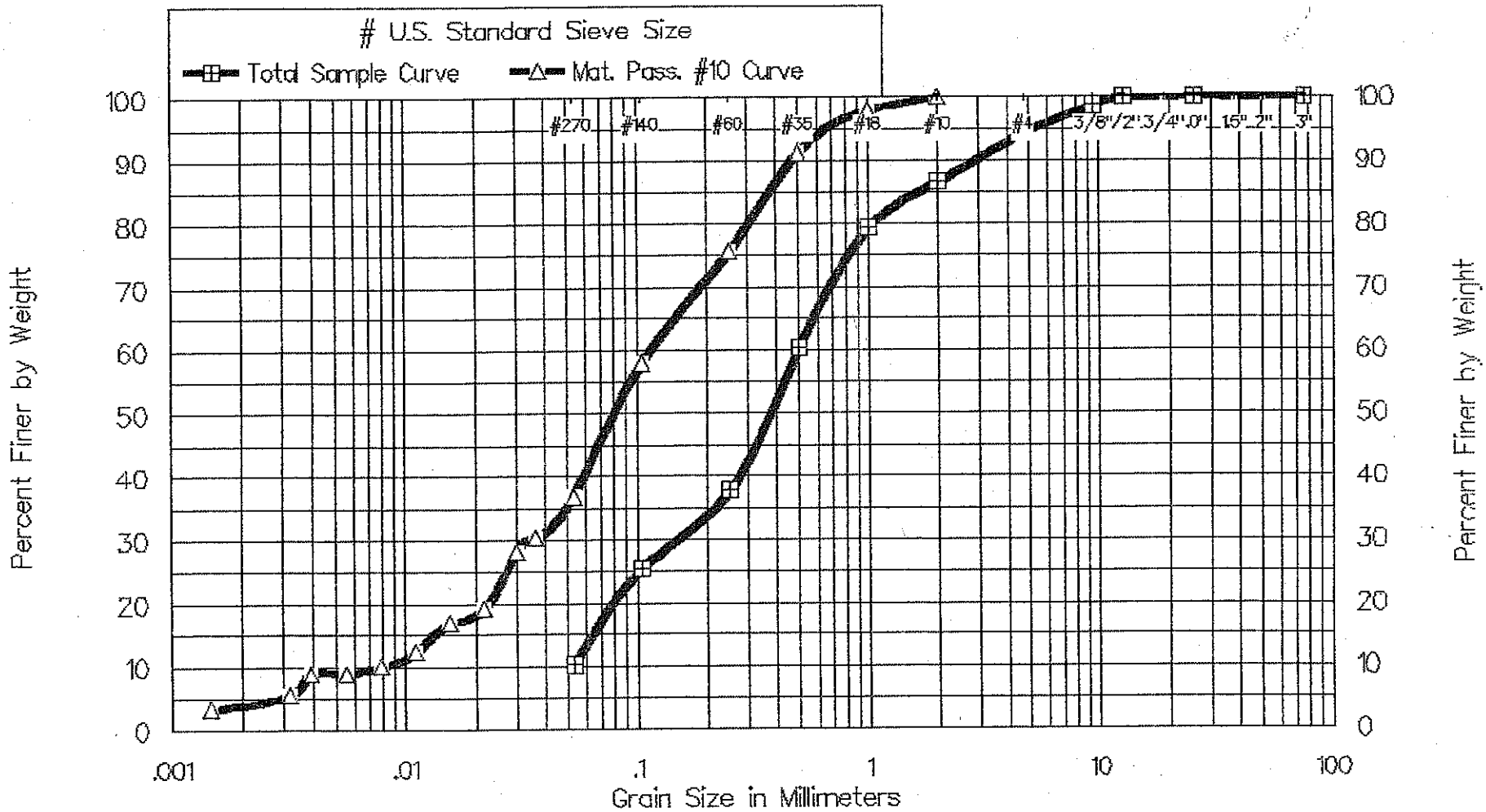
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/16/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9320B – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/16/99
Report No. LA9320B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 5 (4000 – 5000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/16/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.6% *	(8.0-10.0%)
pH	= 7.6	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/17/99
Report #:GS9321A

Project: Foxboro LandFill - Foxboro
Sample No 6 (5000 - 6000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	97.45	9.510
#4	90.27	4.760
#10	86.58	2.000
#18	74.25	1.000
#35	59.63	.500
#60	37.84	.250
#140	27.62	.105
#270	11.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.99
#35	.50000	89.58
#60	.25000	75.11
#140	.10500	54.69
#270	.05300	34.25
	.03664	30.54
	.03003	28.28
	.02161	21.49
	.01550	16.97
	.01107	12.44
	.00785	11.31
	.00557	10.18
	.00395	7.92
	.00318	5.66
	.00146	3.39

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 13.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 65.8
% Silt = 30.7
% Clay = 3.6

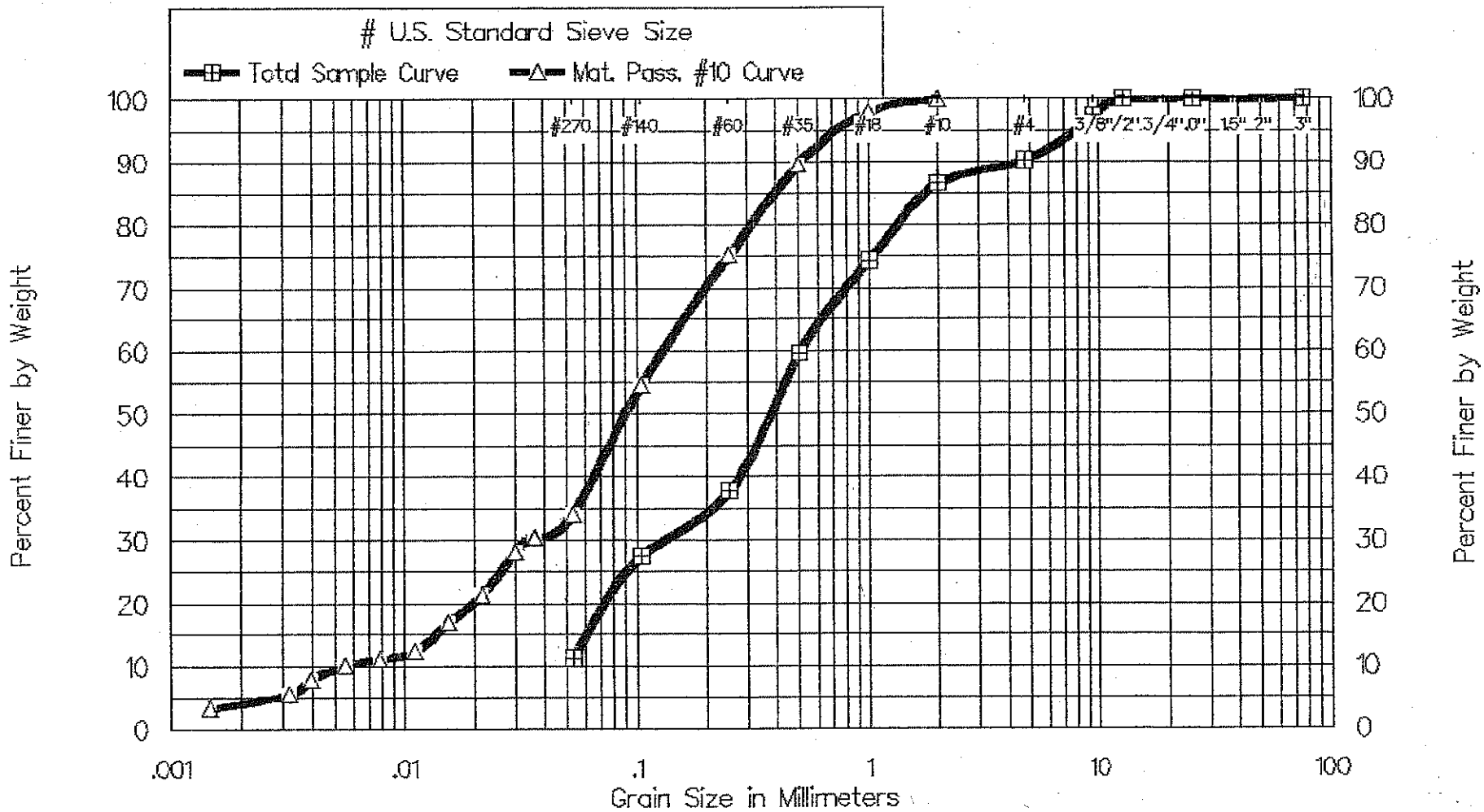
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/17/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9321A – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/17/99
Report No. LA9321A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 6 (5000 – 6000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/16/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.0% *	(8.0-10.0%)
pH	= 6.8	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/17/99
Report #:GS9321B

Project: Foxboro LandFill - Foxboro
Sample No 7 (6000 - 7000 Cubic Yards)
Source: M.S.P. Trucking

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	94.25	4.760
#10	90.30	2.000
#18	77.11	1.000
#35	62.58	.500
#60	40.30	.250
#140	31.02	.105
#270	14.78	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	93.25
#35	.50000	85.60
#60	.25000	69.50
#140	.10500	54.69
#270	.05300	39.25
	.03664	30.54
	.03003	28.28
	.02161	21.49
	.01539	19.23
	.01107	12.44
	.00785	11.31
	.00555	11.31
	.00395	9.05
	.00316	7.92
	.00145	5.66

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 9.7

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 60.8
% Silt = 34.2
% Clay = 5.0

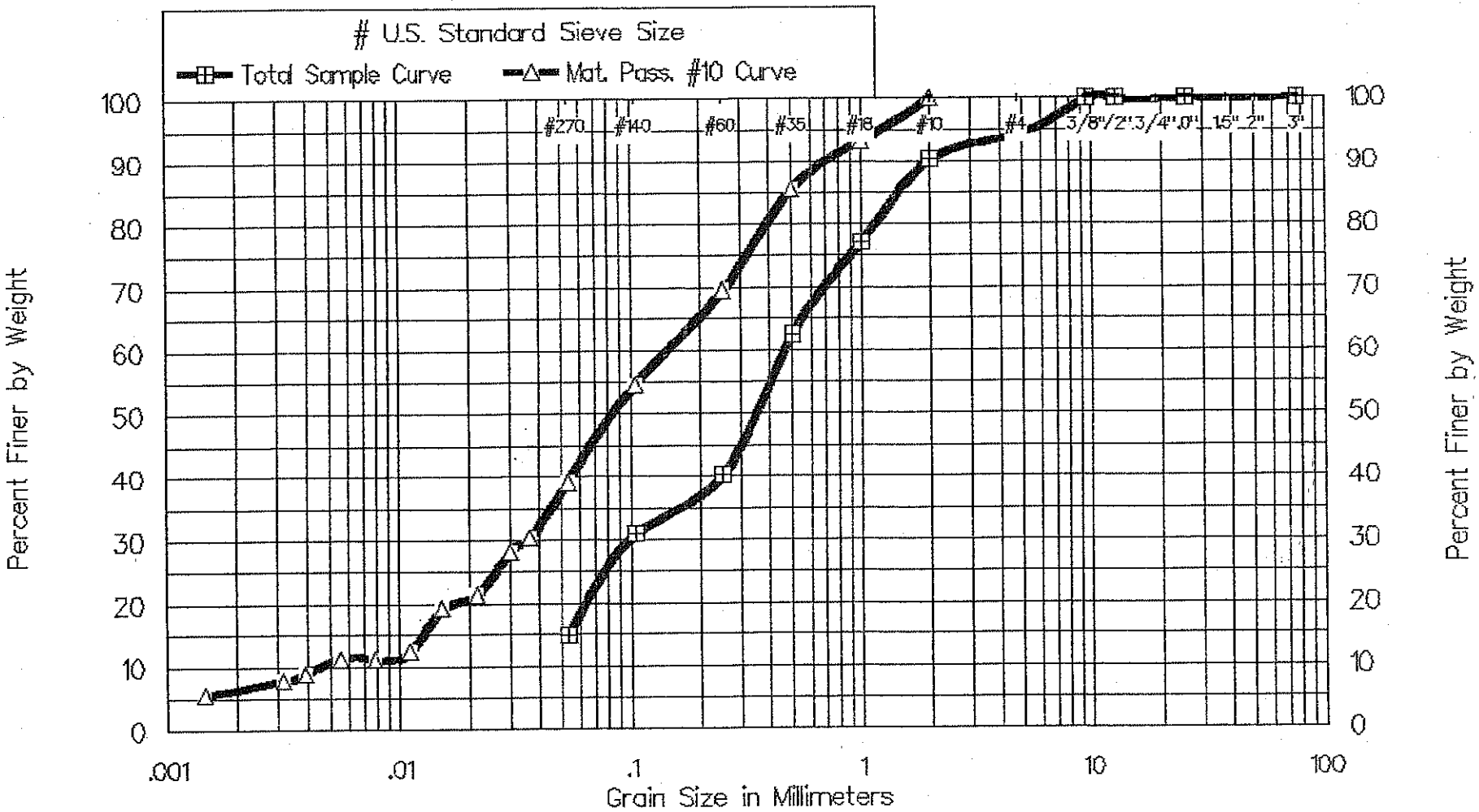
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/17/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9321B – Top Soil from M.S.P. Trucking

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/17/99
Report No. LA9321B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 7 (6000 – 7000 Cubic Yards) – M.S.P. Trucking

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/17/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.6% *	(8.0-10.0%)
pH	= 6.2	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O.Box 265
Hampton NH. 03842

Job No. 10650.010
Date: 11/22/99
Report #:GS9323A

Project: Foxboro LandFill - Foxboro
Sample No 8 (7000 - 8000 Cubic Yards)
Source: C.F.R. Middleboro

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	99.70	9.510
#4	95.60	4.760
#10	87.60	2.000
#18	47.90	1.000
#35	21.30	.500
#60	12.10	.250
#140	8.75	.105
#270	5.40	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	93.60
#35	.50000	78.40
#60	.25000	58.40
#140	.10500	42.00
#270	.05300	34.00
	.03691	24.00
	.03035	22.00
	.02169	18.00
	.01550	15.00
	.01103	12.00
	.00788	9.00
	.00559	7.00
	.00396	6.00
	.00318	5.00
	.00143	5.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 12.4

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 66.0
% Silt = 30.9
% Clay = 3.1

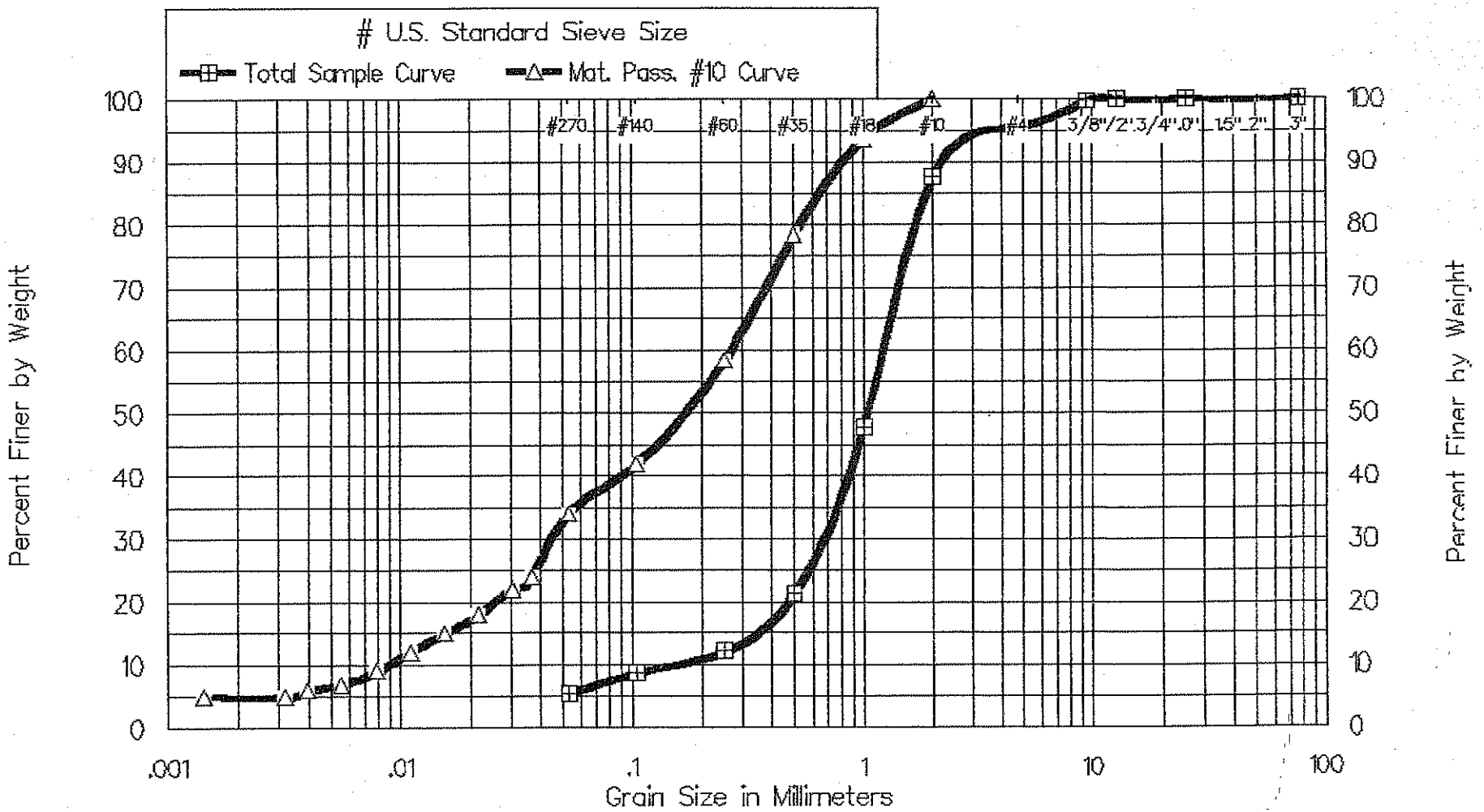
REMARKS: This sample is classified as "SANDY LOAM" in accordance the U.S.D.A. Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White P.E.
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/22/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9323A – Top Soil from C.F.R. Middleboro MA

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/17/99
Report No. LA9323A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 8 (7000 – 8000 Cubic Yards) – C.F.R. Middleboro

---

TEST PERFORMED:

Determine the organic content, and pH value of a sample of topsoil collected on 11/22/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.2% *	(8.0-10.0%)
pH	= 6.0	(5.5-8.0)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

TIBBETTS ENGINEERING CORP.

☐ 3050 Acushnet Avenue, New Bedford, MA 02745, (508) 998-3700
☐ 303 Rodman Street, Fall River, MA 02721, (508) 676-1710
☑ 716 County Street, Taunton, MA 02780, (508) 822-6934

LETTER OF TRANSMITTAL

DATE	JOB NO.
1/17/2000	10650.010

ATTENTION: Glenn Reagan

RE: Foxboro Landfill

TO Eirco Environmental
P.O. Box 265
Hampton N.H, 03842

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1		1	Sand Testing Log Dated 12/17/99
1		8	Grainsize Analysis Reports MA9335A - MA9349C - (Sand)
1		4	Permeability Reports PE9335B - PE9349C (Sand)
1		1	Top Soil Testing Log Dated 1/12/2000
1		22	Grainsize Analysis Reports GS9329A - GS9349S (Loam)
1		22	P.H. and Organic Reports GA9329A - GA9349S (Loam)

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

RECEIVED
JAN 25 2000
SHOP DRAWING DEPT.

COPY TO

SIGNED:

If enclosures are not as noted, kindly notify us at once.

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 1/12/2000

Top Soil Testing Log

Sample No.	Lab Identification No.	Date Received in Laboratory	Source/Supplier	Cubic Yards of Top Soil Represented
9	GS9329A	11/29/99	C.F.R.	8000-9000
10	GS9329B	11/29/99	C.F.R.	9000-10000
11	GS9329C	11/30/99	C.F.R.	10000-11000
12	GS9333A	11/30/99	C.F.R.	11000-12000
13	GS9333B	11/30/99	C.F.R.	12000-13000
14	GS9333C	12/1/99	P. Murphy	13000-14000
15	GS9333D	12/1/99	P. Murphy	14000-15000
16	GS9333E	12/2/99	P. Murphy	15000-16000
17	GS9334A	12/2/99	C.F.R.	16000-17000
18	GS9334C	12/2/99	C.F.R.	17000-18000
19	GS9334D	12/6/99	C.F.R.	18000-19000
20	GS9336A	12/6/99	C.F.R.	19000-20000
21	GS9336B	12/6/99	C.F.R.	20000-21000
22	GS9336C	12/7/99	P. Murphy	21000-22000
23	GS9336D	12/7/99	P. Murphy	22000-23000
24	GS9337B	12/7/99	P. Murphy	23000-24000
25	GS9337C	12/8/99	P. Murphy	24000-25000
26	GS9337D	12/8/99	P. Murphy	25000-26000
27	GS9344G	12/15/99	C.F.R.	26000-27000
28	GS9345A	12/16/99	C.F.R.	27000-28000
29	GS9349F	12/16/99	C.F.R.	28000-29000
30	GS9349J	12/21/99	C.F.R.	29000-29072

SHOP DRAWING REVIEW

ENGINEER'S REVIEW	RESPONSE REQUIRED OF CONTRACTOR
Approved ☐ Not Approved ☐ Approved As Noted ☒ Comments Attached ☐	Confirm ☐ Resubmit ☐

The Engineer's review of this shop drawing is limited to the review of dimensions, equipment and materials as presented in the Contract plans, specifications and for design concept. This review does not relieve the Contractor from errors or omissions in this submittal or from the Contractor's responsibility of addressing any deviations from the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences or procedures of construction and performing his work in a safe manner.

CAMP DRESSER & McKEE, INC.

By _____ Date 2-9-00

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 11/29/99
Report #:GS9329A

Project: Foxboro Landfill - Foxboro
Sample No.9 (8000 CY - 9000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	97.90	9.510
#4	95.85	4.760
#10	86.25	2.000
#18	47.90	1.000
#35	21.30	.500
#60	12.10	.250
#140	7.79	.105
#270	5.40	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	93.60
#35	.50000	78.40
#60	.25000	58.40
#140	.10500	42.00
#270	.05300	30.97
	.03480	21.00
	.02478	19.00
	.02045	15.00
	.01461	12.00
	.01040	9.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00131	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 13.8

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 69.0
% Silt = 31.0
% Clay = .0

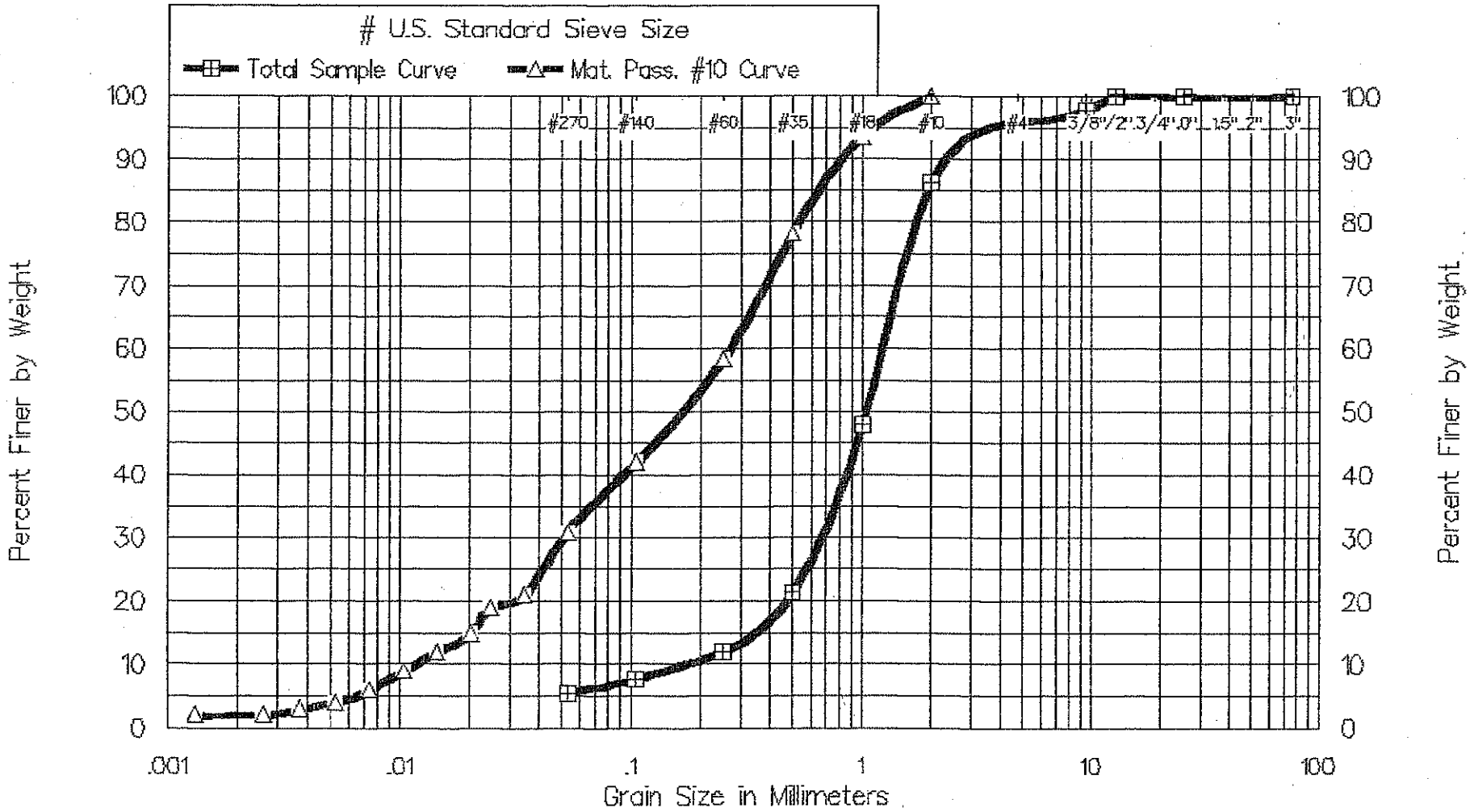
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/29/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9329A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/29/99
Report No. LA9329A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 9 (8000 CY – 9000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/29/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.1% *	(8.0-10.0%)
pH	= 6.7	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 11/29/99
Report #:GS9329B

Project: Foxboro Landfill - Foxboro
Sample No.10 (9000 CY - 10000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	99.25	9.510
#4	96.52	4.760
#10	89.99	2.000
#18	49.58	1.000
#35	25.69	.500
#60	14.58	.250
#140	8.96	.105
#270	6.69	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	96.54
#35	.50000	80.25
#60	.25000	62.14
#140	.10500	43.33
#270	.05300	32.32
	.03461	23.00
	.02478	19.00
	.02059	13.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 10.0

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 67.7
% Silt = 32.3
% Clay = .0

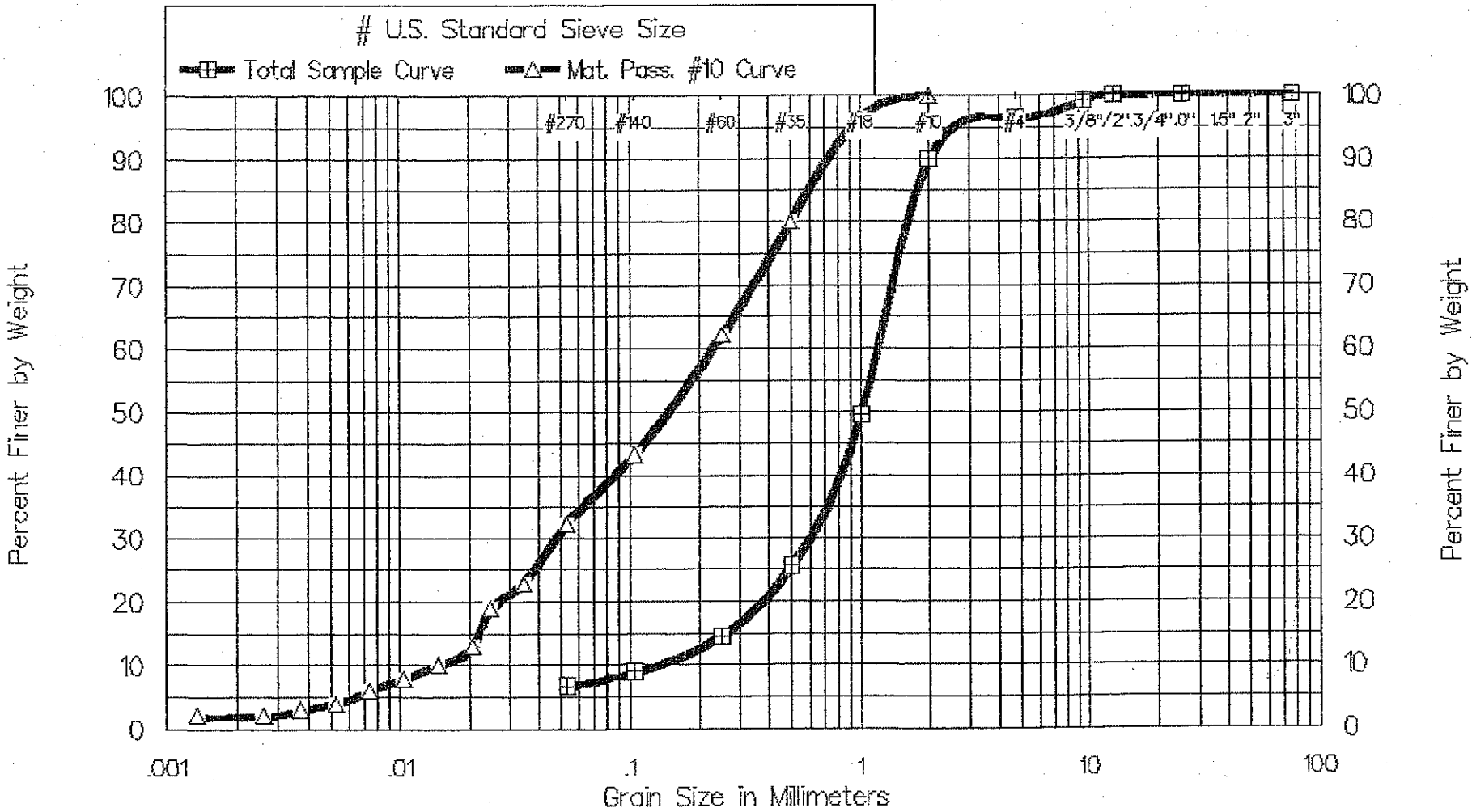
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/29/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9329B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/29/99
Report No. LA9329B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 10 (9000 CY – 10000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/29/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.7% *	(8.0-10.0%)
pH	= 7.4	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 11/30/99
Report #:GS9329C

Project: Foxboro Landfill - Foxboro
Sample No.11 (10000 CY - 11000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	99.56	4.760
#10	95.62	2.000
#18	65.41	1.000
#35	39.68	.500
#60	25.68	.250
#140	17.85	.105
#270	10.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.85
#35	.50000	90.25
#60	.25000	60.00
#140	.10500	44.25
#270	.05300	35.69
	.03404	28.00
	.02434	25.00
	.02024	19.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 4.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 64.3
% Silt = 33.7
% Clay = 2.0

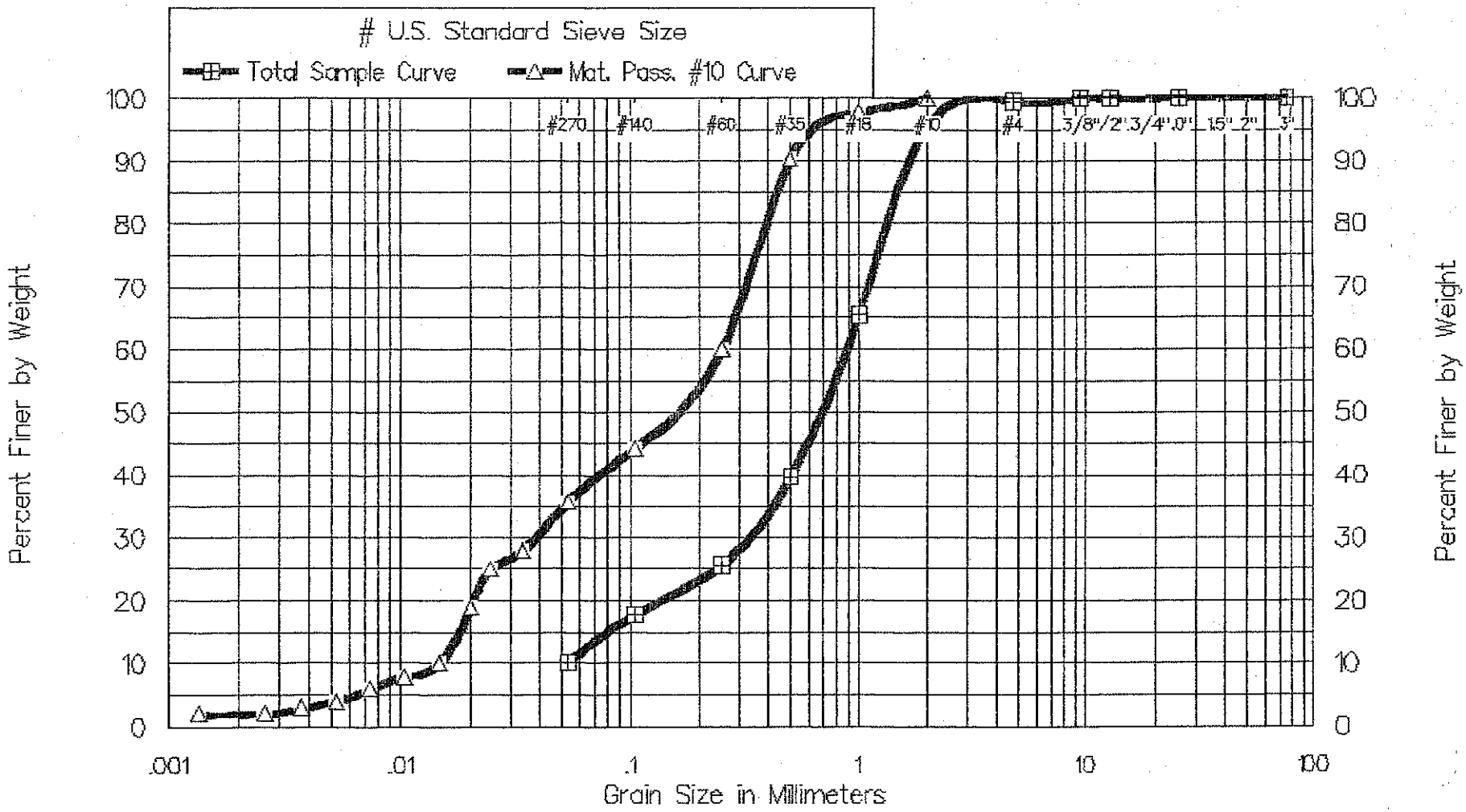
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/30/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9329C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/30/99
Report No. LA9329C

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 11 (10000 CY – 11000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.7% *	(8.0-10.0%)
pH	= 7.6	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 11/30/99
Report #:GS9333A

Project: Foxboro Landfill - Foxboro
Sample No.12 (11000 CY - 12000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	99.56	9.510
#4	96.54	4.760
#10	93.21	2.000
#18	66.21	1.000
#35	41.25	.500
#60	27.89	.250
#140	19.55	.105
#270	9.87	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.52
#35	.50000	89.21
#60	.25000	59.87
#140	.10500	41.25
#270	.05300	33.54
	.03404	30.00
	.02434	25.00
	.02024	19.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00135	.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 6.8

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 66.5
% Silt = 31.5
% Clay = 2.0

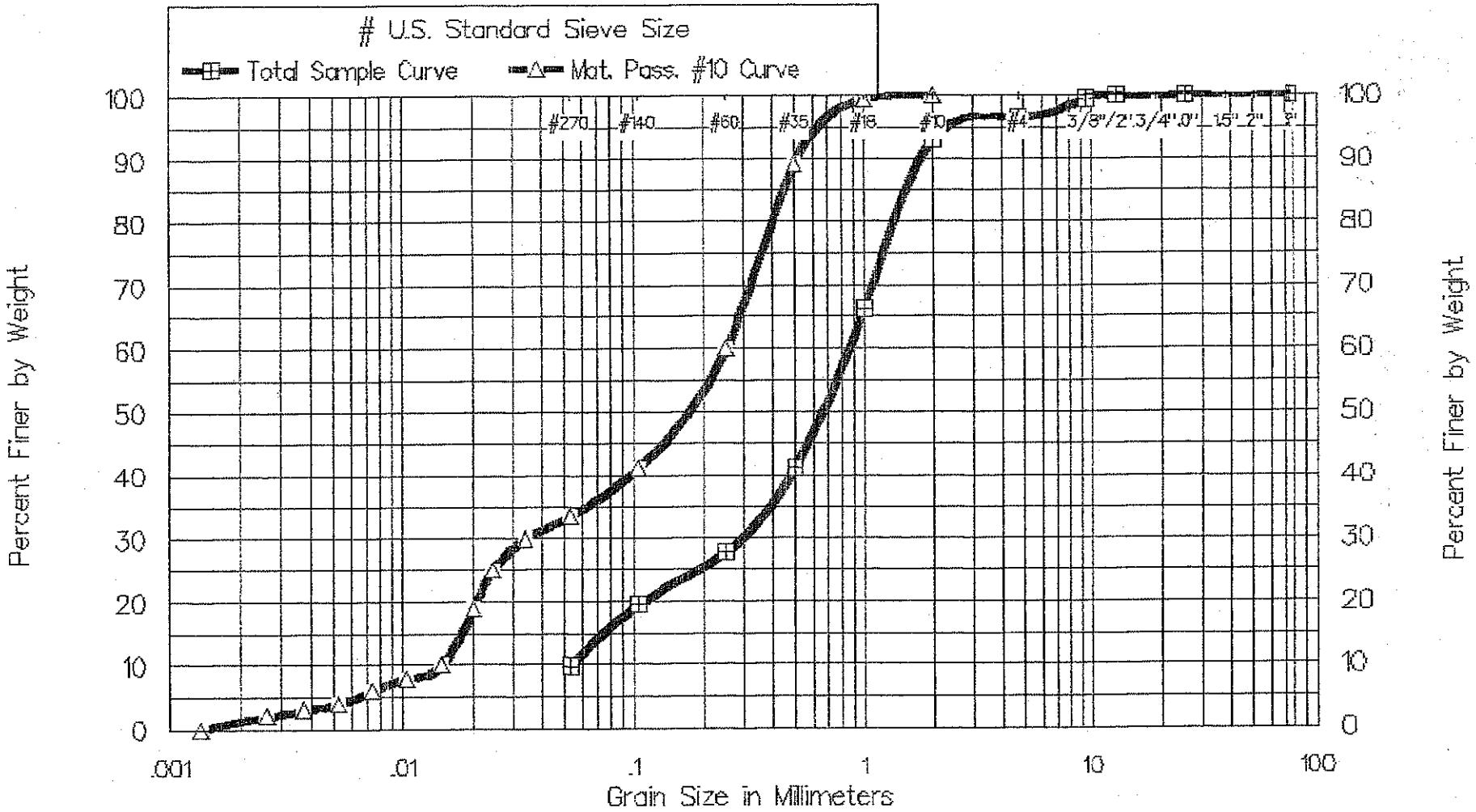
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/30/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9333A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/30/99
Report No. LA9333A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 12 (11000 CY – 12000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.0% *	(8.0-10.0%)
pH	= 7.1	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 11/30/99
Report #:GS9333B

Project: Foxboro Landfill - Foxboro
Sample No.13 (12000 CY - 13000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	98.45	9.510
#4	96.54	4.760
#10	94.56	2.000
#18	64.01	1.000
#35	40.70	.500
#60	26.98	.250
#140	21.25	.105
#270	10.02	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.75
#35	.50000	88.12
#60	.25000	58.74
#140	.10500	40.23
#270	.05300	33.99
	.03417	27.00
	.02434	25.00
	.02024	19.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00135	1.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 5.4

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 66.0
% Silt = 32.0
% Clay = 2.0

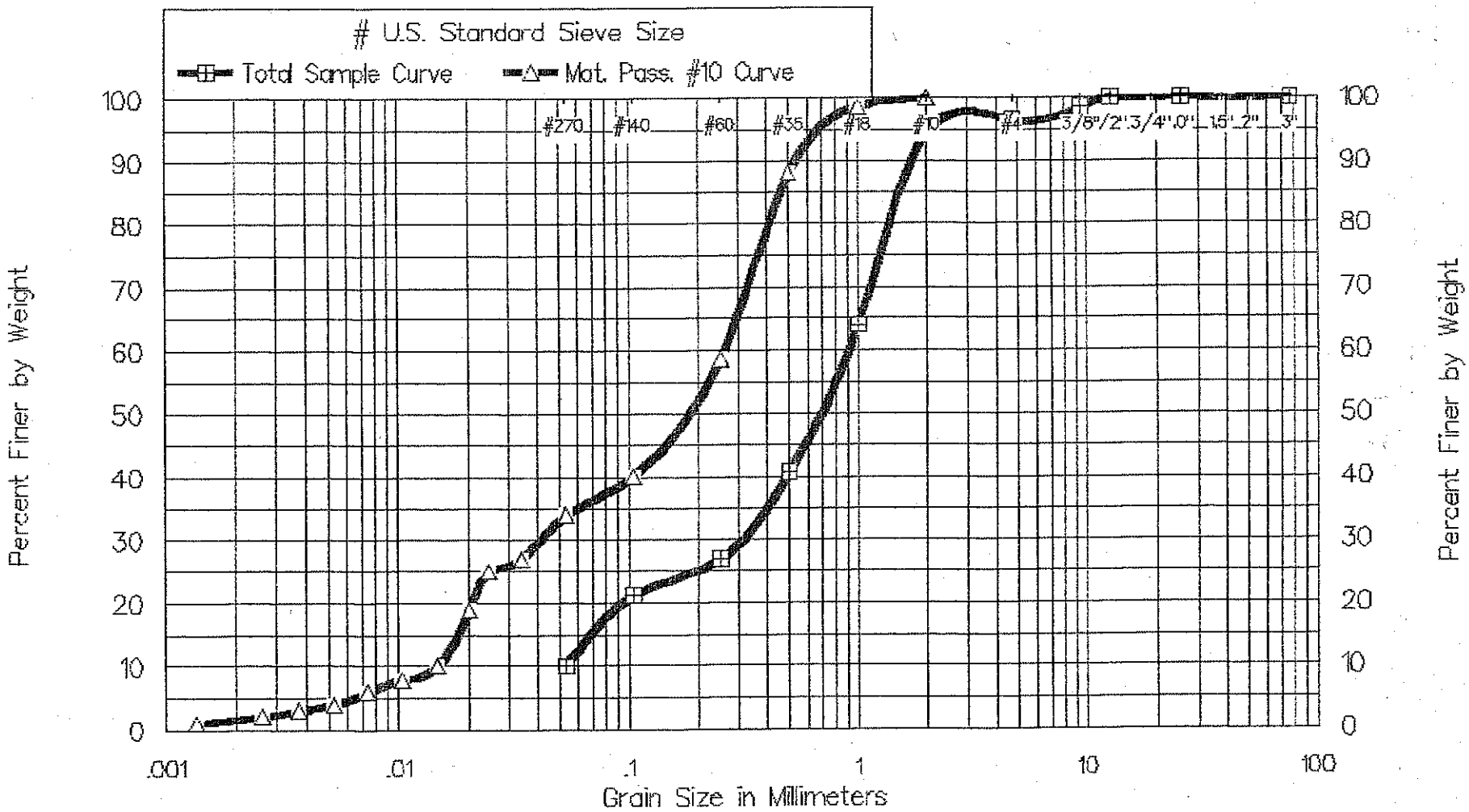
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 11/30/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9333B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 11/30/99
Report No. LA9333B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 13 (12000 CY – 13000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.6% *	(8.0-10.0%)
pH	= 6.7	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/1/99
Report #:GS9333C

Project: Foxboro Landfill - Foxboro
Sample No.14 (13000 CY - 14000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	97.46	9.510
#4	95.45	4.760
#10	87.65	2.000
#18	66.33	1.000
#35	45.78	.500
#60	24.89	.250
#140	22.00	.105
#270	11.24	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	96.54
#35	.50000	90.21
#60	.25000	62.14
#140	.10500	41.58
#270	.05300	36.98
	.03391	30.00
	.02452	22.00
	.02024	19.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00260	2.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 12.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 63.0
% Silt = 35.0
% Clay = 2.0

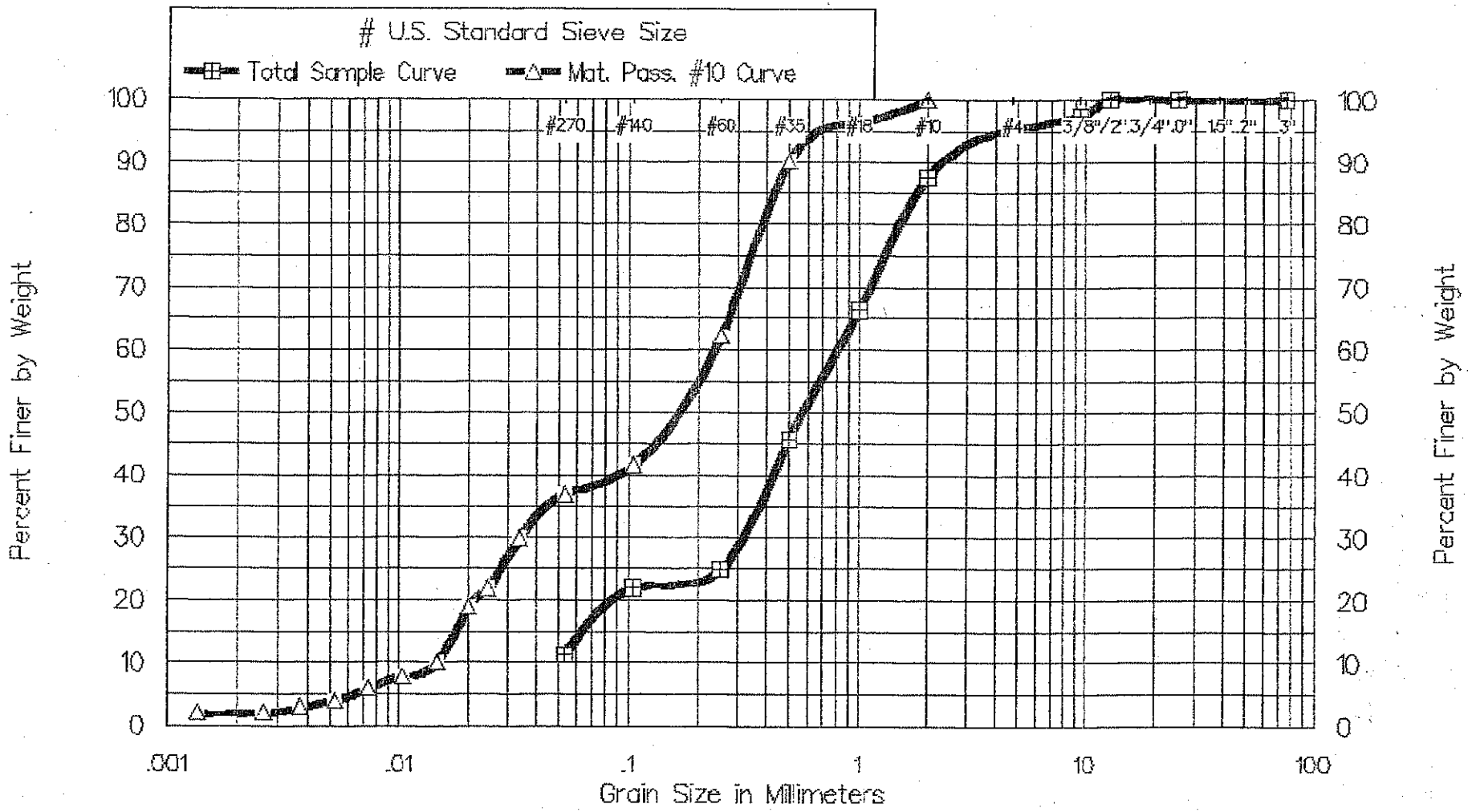
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/1/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9333C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. LA9333C

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 14 (13000 CY – 14000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.2% *	(8.0-10.0%)
pH	= 6.9	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/1/99
Report #:GS9333D

Project: Foxboro Landfill - Foxboro
Sample No.15 (14000 CY - 15000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	98.74	4.760
#10	90.01	2.000
#18	67.44	1.000
#35	47.89	.500
#60	26.89	.250
#140	20.01	.105
#270	10.15	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.98
#35	.50000	93.21
#60	.25000	59.78
#140	.10500	39.78
#270	.05300	31.25
	.03391	30.00
	.02452	22.00
	.02024	19.00
	.01466	10.00
	.01044	8.00
	.00743	6.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 10.0

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 68.8
% Silt = 28.3
% Clay = 3.0

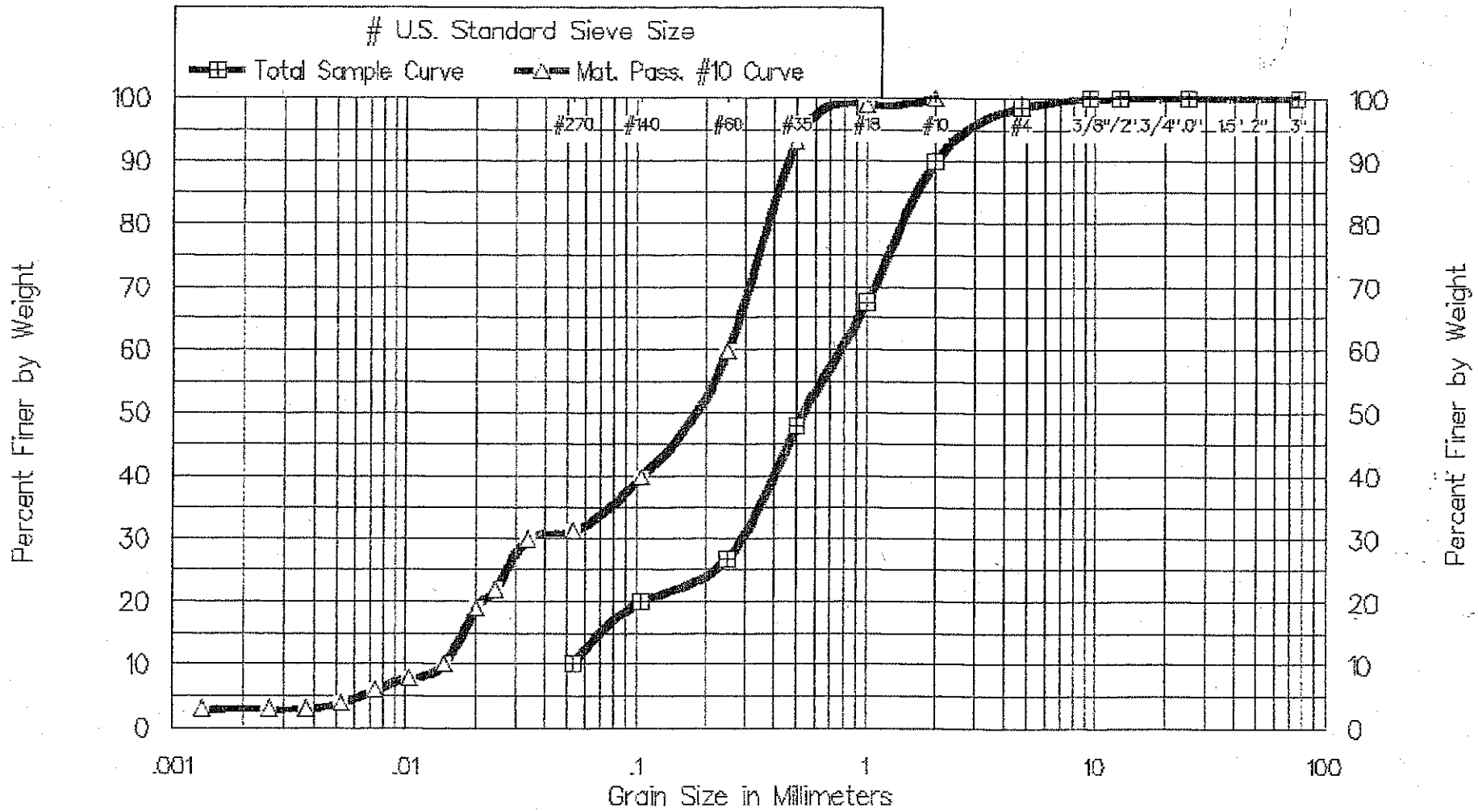
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/1/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9333D

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/1/99
Report No. LA9333D

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 15 (14000 CY – 15000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.9% *	(8.0-10.0%)
pH	= 7.1	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/2/99
Report #:GS9333E

Project: Foxboro Landfill - Foxboro
Sample No.15 (15000 CY - 16000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	99.89	9.510
#4	96.47	4.760
#10	87.42	2.000
#18	62.58	1.000
#35	40.01	.500
#60	23.28	.250
#140	17.89	.105
#270	8.99	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.45
#35	.50000	90.00
#60	.25000	57.85
#140	.10500	40.01
#270	.05300	33.01
	.03391	30.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 12.6

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 67.0
% Silt = 30.0
% Clay = 3.0

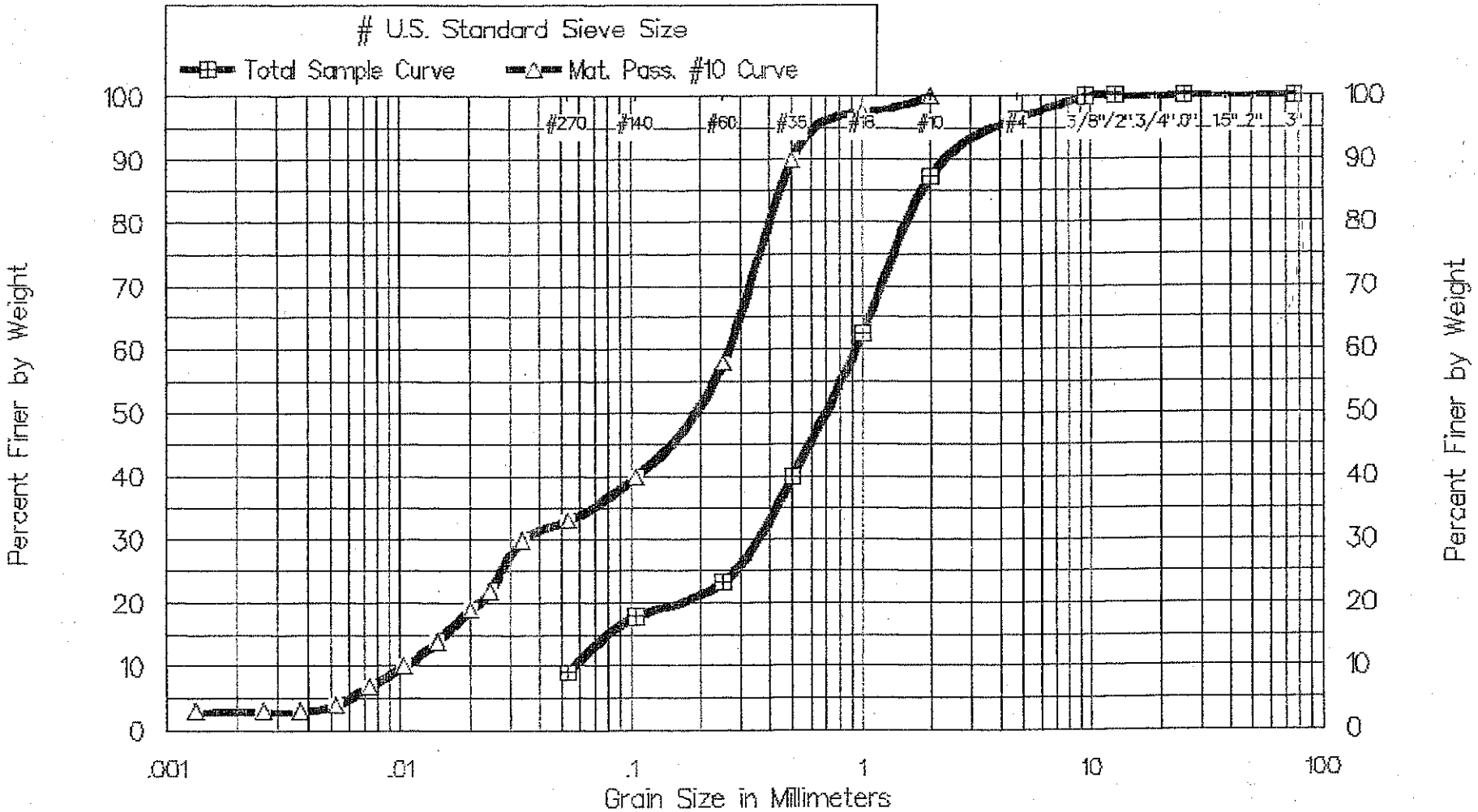
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date:12/2/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9333E

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. LA9333E

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 16 (15000 CY – 16000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.2% *	(8.0-10.0%)
pH	= 7.0	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/2/99
Report #:GS9334A

Project: Foxboro Landfill - Foxboro
Sample No.15 (16000 CY - 17000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	96.33	4.760
#10	88.99	2.000
#18	60.25	1.000
#35	39.78	.500
#60	23.00	.250
#140	15.98	.105
#270	9.98	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.78
#35	.50000	89.45
#60	.25000	58.96
#140	.10500	39.78
#270	.05300	35.69
	.03391	30.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 11.0

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 64.3
% Silt = 33.0
% Clay = 2.7

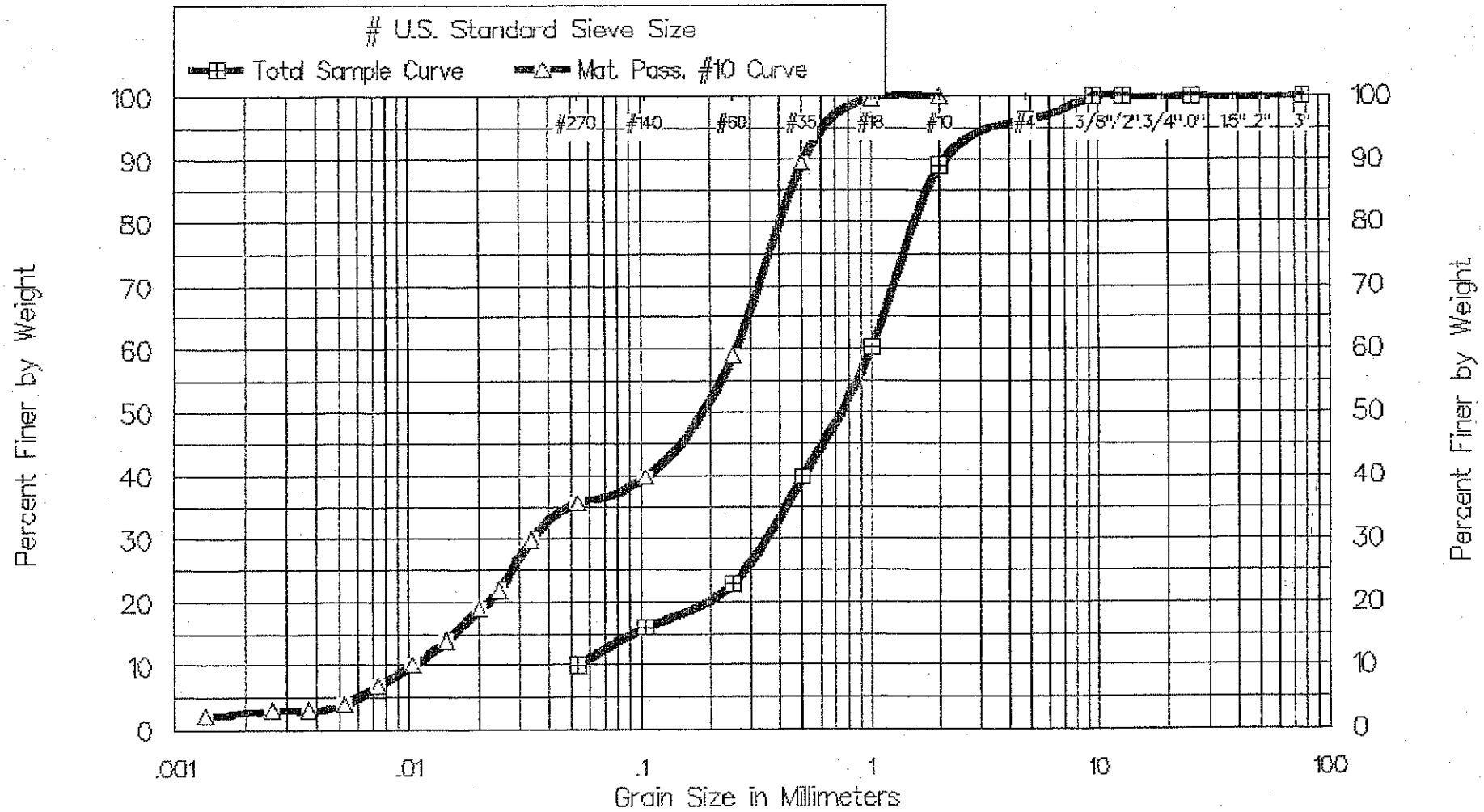
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date:12/2/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9334A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. LA9334A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 17 (16000 CY – 17000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.6% *	(8.0-10.0%)
pH	= 6.7	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/2/99
Report #:GS9334C

Project: Foxboro Landfill - Foxboro
Sample No.18 (17000 CY - 18000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	90.01	4.760
#10	85.45	2.000
#18	59.87	1.000
#35	40.25	.500
#60	22.01	.250
#140	14.65	.105
#270	10.19	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.70
#35	.50000	90.01
#60	.25000	55.68
#140	.10500	45.69
#270	.05300	37.25
	.03398	29.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	1.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 14.6

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 62.8
% Silt = 35.2
% Clay = 2.1

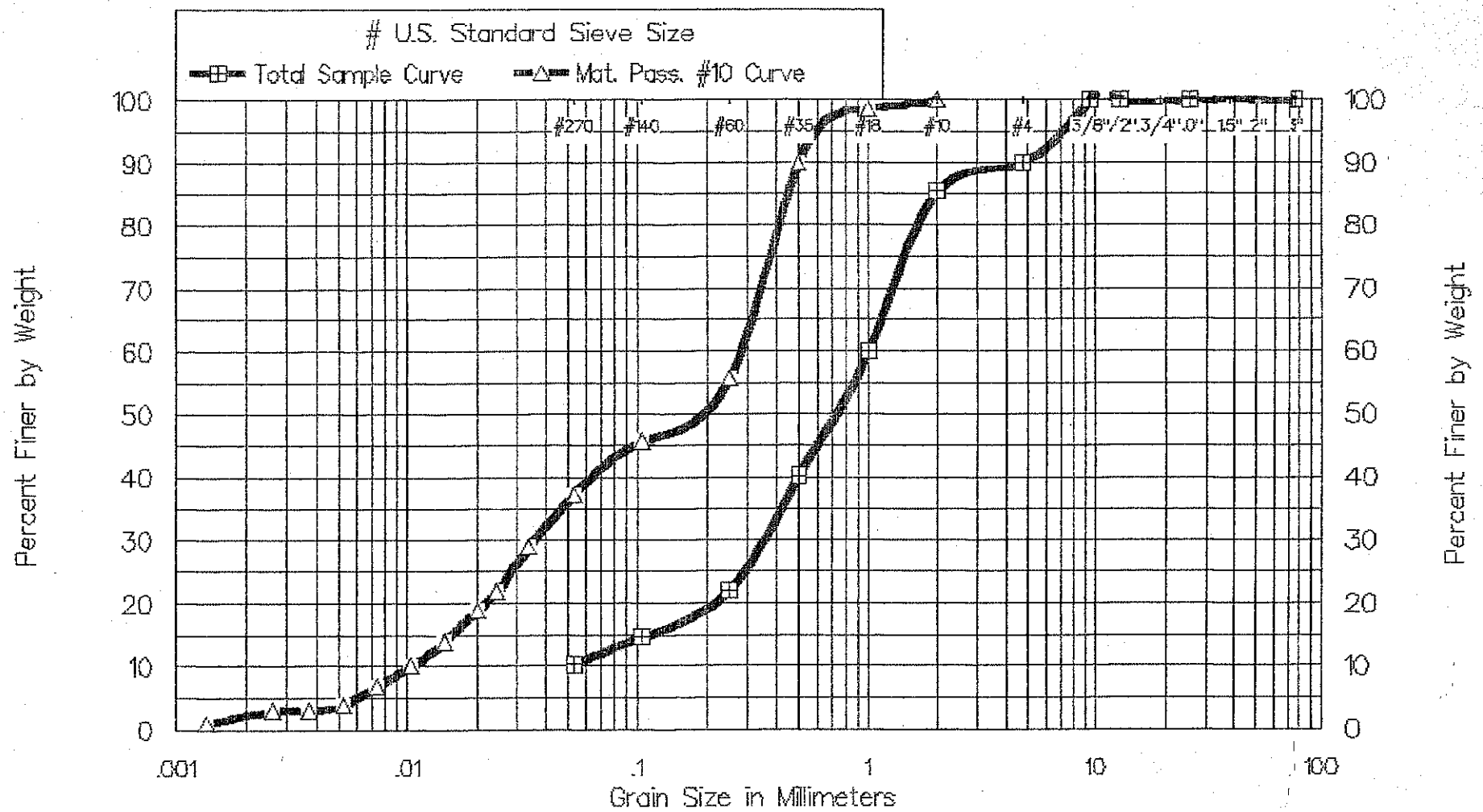
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date:12/2/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report NO. GS9334C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/2/99
Report No. LA9334C

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 18 (17000 CY – 18000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.2% *	(8.0-10.0%)
pH	= 6.1	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/6/99
Report #:GS9334D

Project: Foxboro Landfill - Foxboro
Sample No.19 (18000 CY - 19000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	98.70	4.760
#10	89.97	2.000
#18	62.10	1.000
#35	41.25	.500
#60	21.04	.250
#140	13.56	.105
#270	9.87	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.74
#35	.50000	90.25
#60	.25000	65.25
#140	.10500	49.85
#270	.05300	35.69
	.03365	32.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 10.0

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 64.3
% Silt = 32.7
% Clay = 3.0

REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/6/99
Report #:GS9334D

Project: Foxboro Landfill - Foxboro
Sample No.19 (18000 CY - 19000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	98.70	4.760
#10	89.97	2.000
#18	62.10	1.000
#35	41.25	.500
#60	21.04	.250
#140	13.56	.105
#270	9.87	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.74
#35	.50000	90.25
#60	.25000	65.25
#140	.10500	49.85
#270	.05300	35.69
	.03365	32.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 10.0

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 64.3
% Silt = 32.7
% Clay = 3.0

REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/6/99
Report No. LA9334D

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 19 (18000 CY – 19000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.0% *	(8.0-10.0%)
pH	= 6.7	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/6/99
Report #:GS9336A

Project: Foxboro Landfill - Foxboro
Sample No.20 (19000 CY - 20000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	98.25	9.510
#4	96.54	4.760
#10	91.01	2.000
#18	63.25	1.000
#35	41.07	.500
#60	22.36	.250
#140	14.85	.105
#270	10.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.74
#35	.50000	89.45
#60	.25000	66.25
#140	.10500	50.25
#270	.05300	37.85
	.03429	26.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 9.0

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 62.2
% Silt = 34.9
% Clay = 3.0

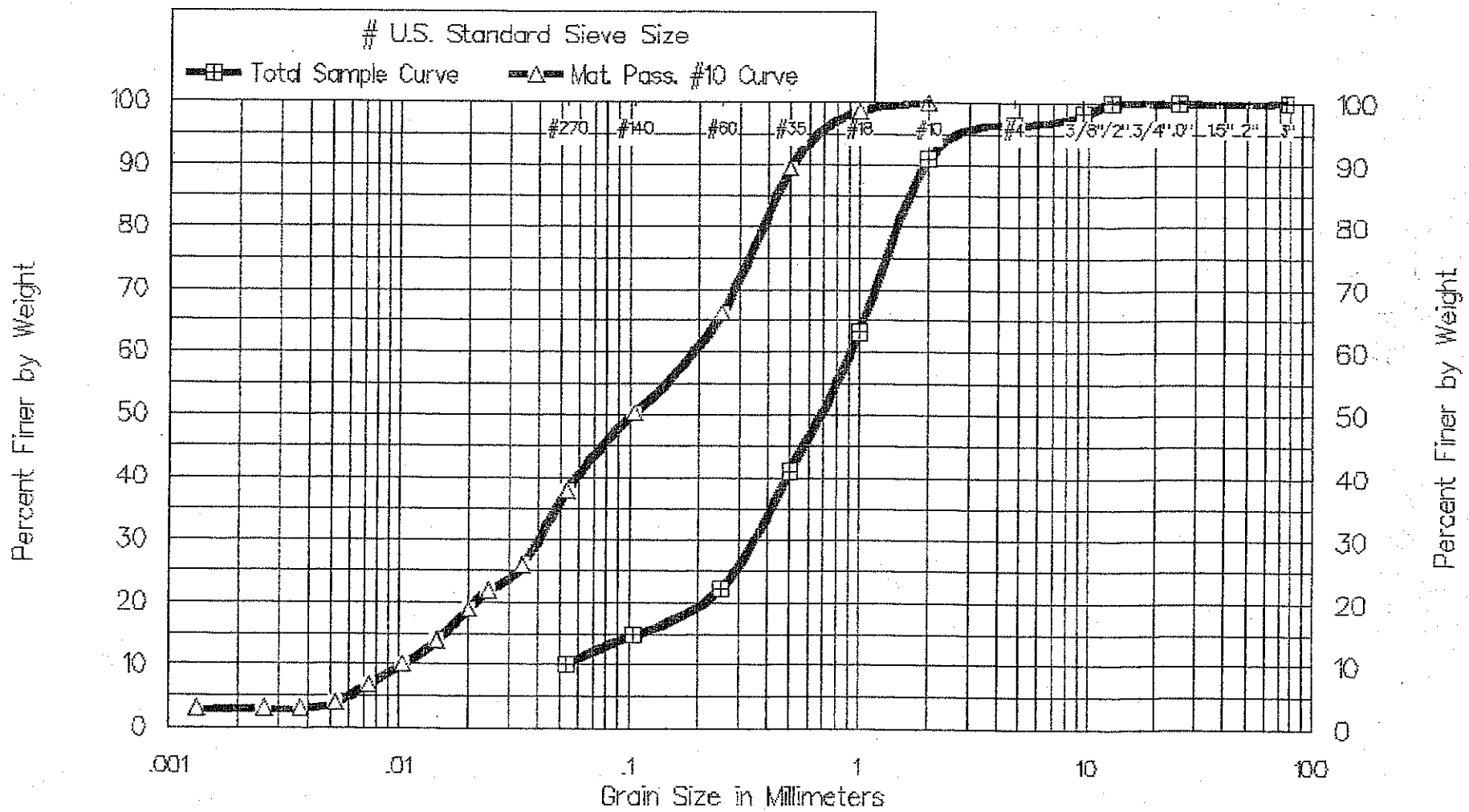
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/6/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9336A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/6/99
Report No. LA9336A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 20 (19000 CY – 20000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.9% *	(8.0-10.0%)
pH	= 7.2	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/6/99
Report #:GS9336B

Project: Foxboro Landfill - Foxboro
Sample No.21 (20000 CY - 21000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	96.54	4.760
#10	91.01	2.000
#18	60.04	1.000
#35	38.74	.500
#60	20.25	.250
#140	12.98	.105
#270	8.74	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.74
#35	.50000	87.90
#60	.25000	62.14
#140	.10500	51.25
#270	.05300	33.25
	.03417	27.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00136	.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 9.0

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 66.8
% Silt = 31.4
% Clay = 1.9

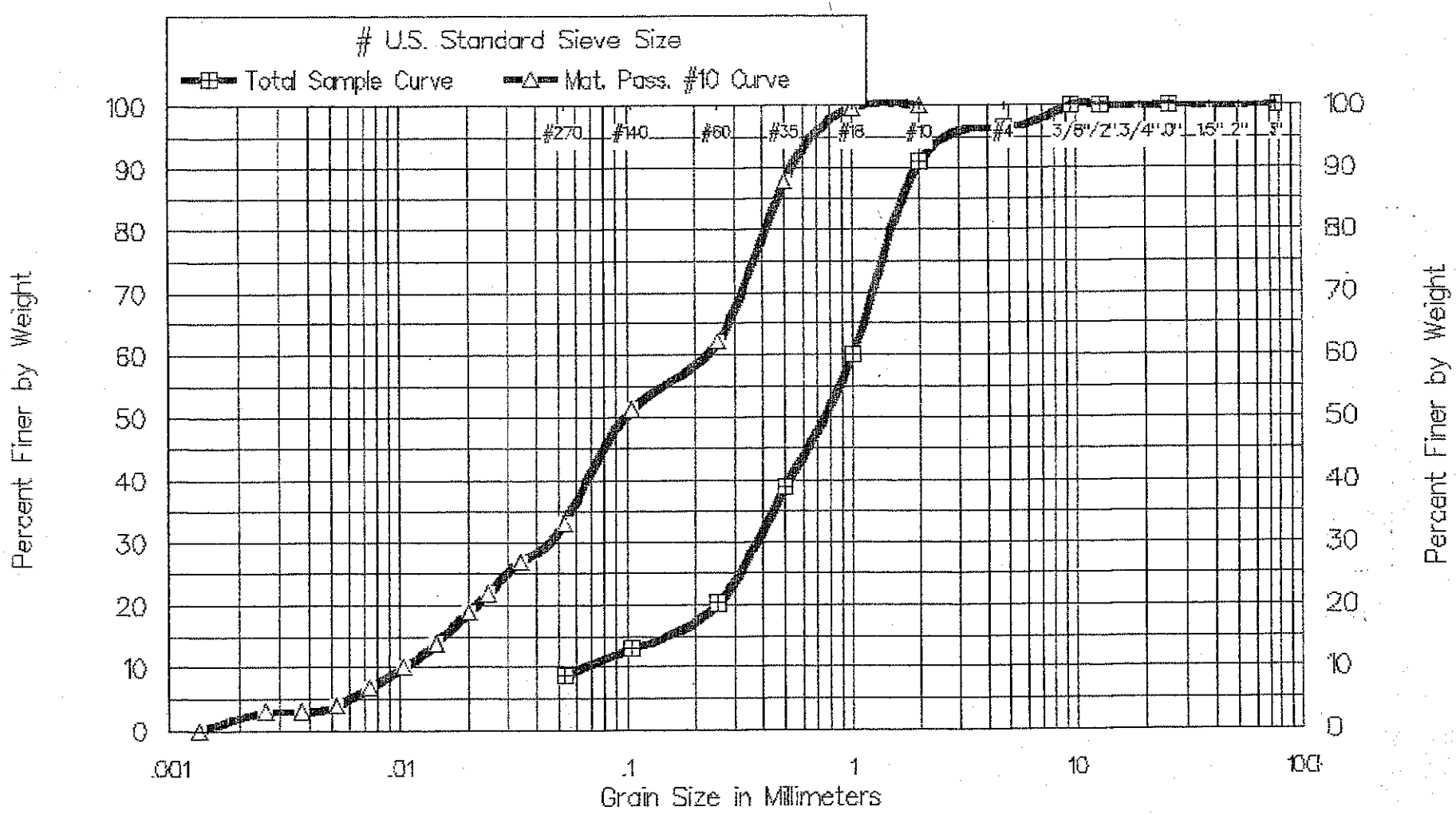
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/6/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9336B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/6/99
Report No. LA9336B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 21 (20000 CY – 21000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.5% *	(8.0-10.0%)
pH	= 6.2	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/7/99
Report #:GS9336C

Project: Foxboro Landfill - Foxboro
Sample No.22 (21000 CY - 22000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	97.45	4.760
#10	88.12	2.000
#18	59.87	1.000
#35	41.25	.500
#60	21.00	.250
#140	11.25	.105
#270	9.05	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.58
#35	.50000	86.45
#60	.25000	63.21
#140	.10500	50.50
#270	.05300	34.89
	.03404	28.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	1.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 11.9

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 65.1
% Silt = 33.0
% Clay = 1.9

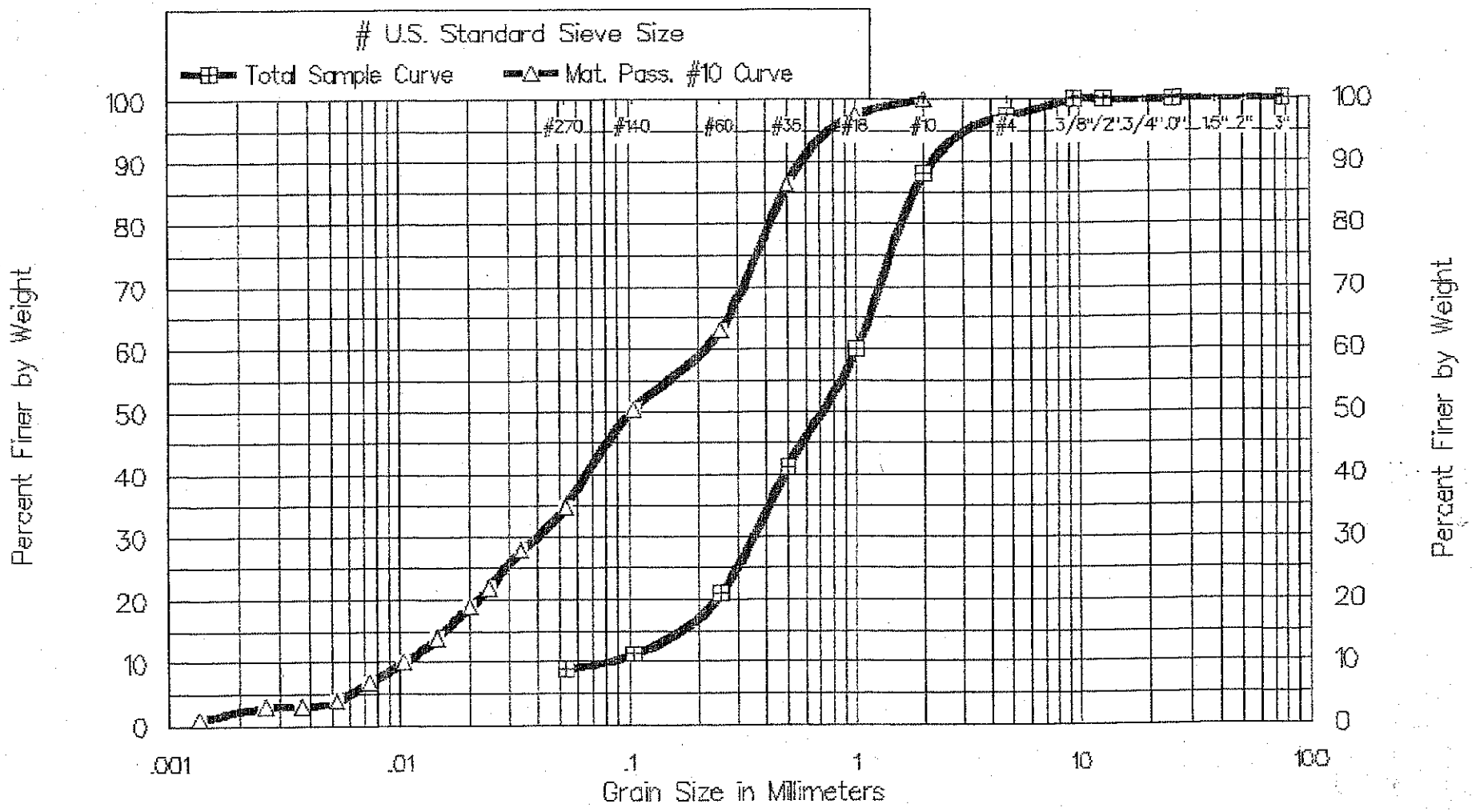
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date : 12/7/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report NO. GS9336C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/7/99
Report No. LA9336C

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 22 (21000 CY – 22000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.0% *	(8.0-10.0%)
pH	= 6.0	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/7/99
Report #:GS9336D

Project: Foxboro Landfill - Foxboro
Sample No.23 (22000 CY - 23000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	98.70	4.760
#10	87.14	2.000
#18	60.14	1.000
#35	42.56	.500
#60	22.32	.250
#140	12.58	.105
#270	10.07	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.96
#35	.50000	84.25
#60	.25000	64.28
#140	.10500	51.07
#270	.05300	33.69
	.03455	24.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 12.9

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 66.3
% Silt = 31.1
% Clay = 2.6

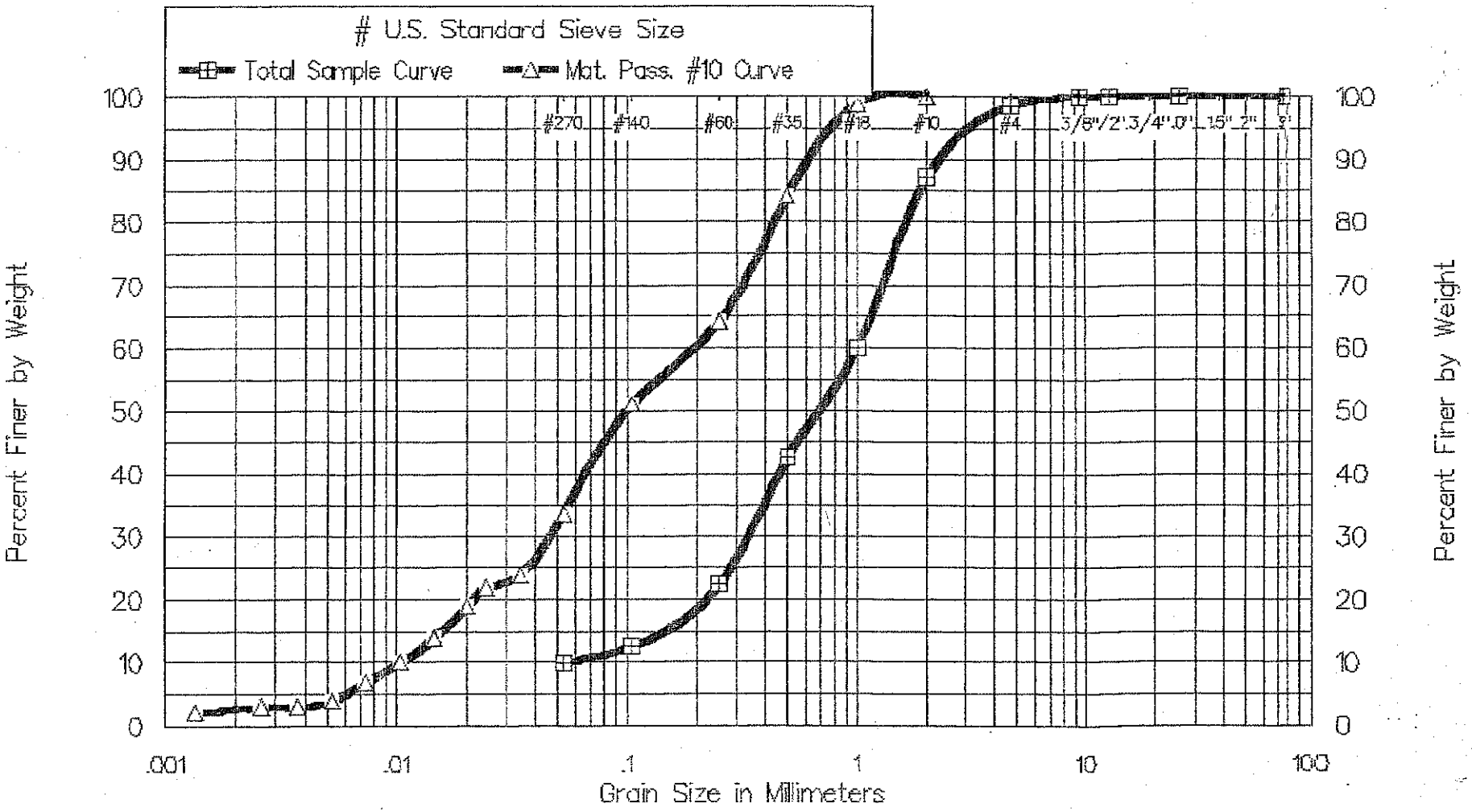
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date : 12/7/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9336D

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/7/99
Report No. LA9336D

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 23 (22000 CY – 23000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.7% *	(8.0-10.0%)
pH	= 6.9	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/7/99
Report #:GS9337B

Project: Foxboro Landfill - Foxboro
Sample No.24 (23000 CY - 24000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	94.25	4.760
#10	89.21	2.000
#18	54.75	1.000
#35	41.03	.500
#60	21.36	.250
#140	11.25	.105
#270	9.85	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	96.58
#35	.50000	83.45
#60	.25000	63.54
#140	.10500	49.01
#270	.05300	36.89
	.03391	30.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 10.8

For Triangle Classification
Based on mat. passing #10 sieve

% Sand = 63.1
% Silt = 34.3
% Clay = 2.6

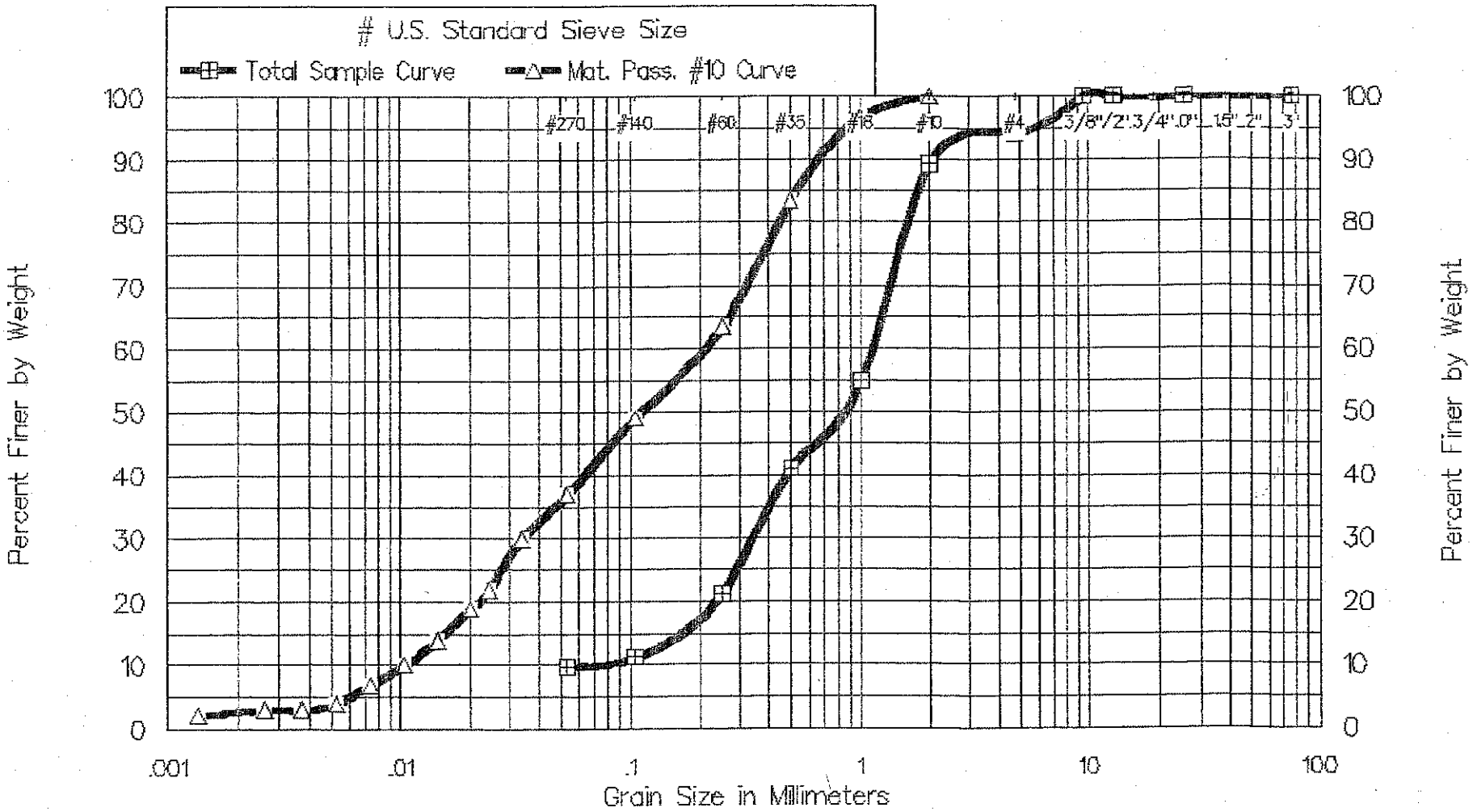
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date : 12/7/99



Job No. 10650.010
Foxboro Landfill - Foxboro MA
Report No. GS9337B

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/7/99
Report No. LA9337B

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 24 (23000 CY – 24000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.4% *	(8.0-10.0%)
pH	= 7.9	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/8/99
Report #:GS9337C

Project: Foxboro Landfill - Foxboro
Sample No.25 (24000 CY - 25000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	96.71	4.760
#10	92.58	2.000
#18	59.87	1.000
#35	45.28	.500
#60	22.58	.250
#140	12.39	.105
#270	10.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.42
#35	.50000	80.36
#60	.25000	60.20
#140	.10500	51.04
#270	.05300	33.25
	.03404	28.00
	.02452	22.00
	.02024	19.00
	.01451	14.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00375	2.00
	.00260	2.00
	.00135	1.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 7.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 66.8
% Silt = 31.9
% Clay = 1.4

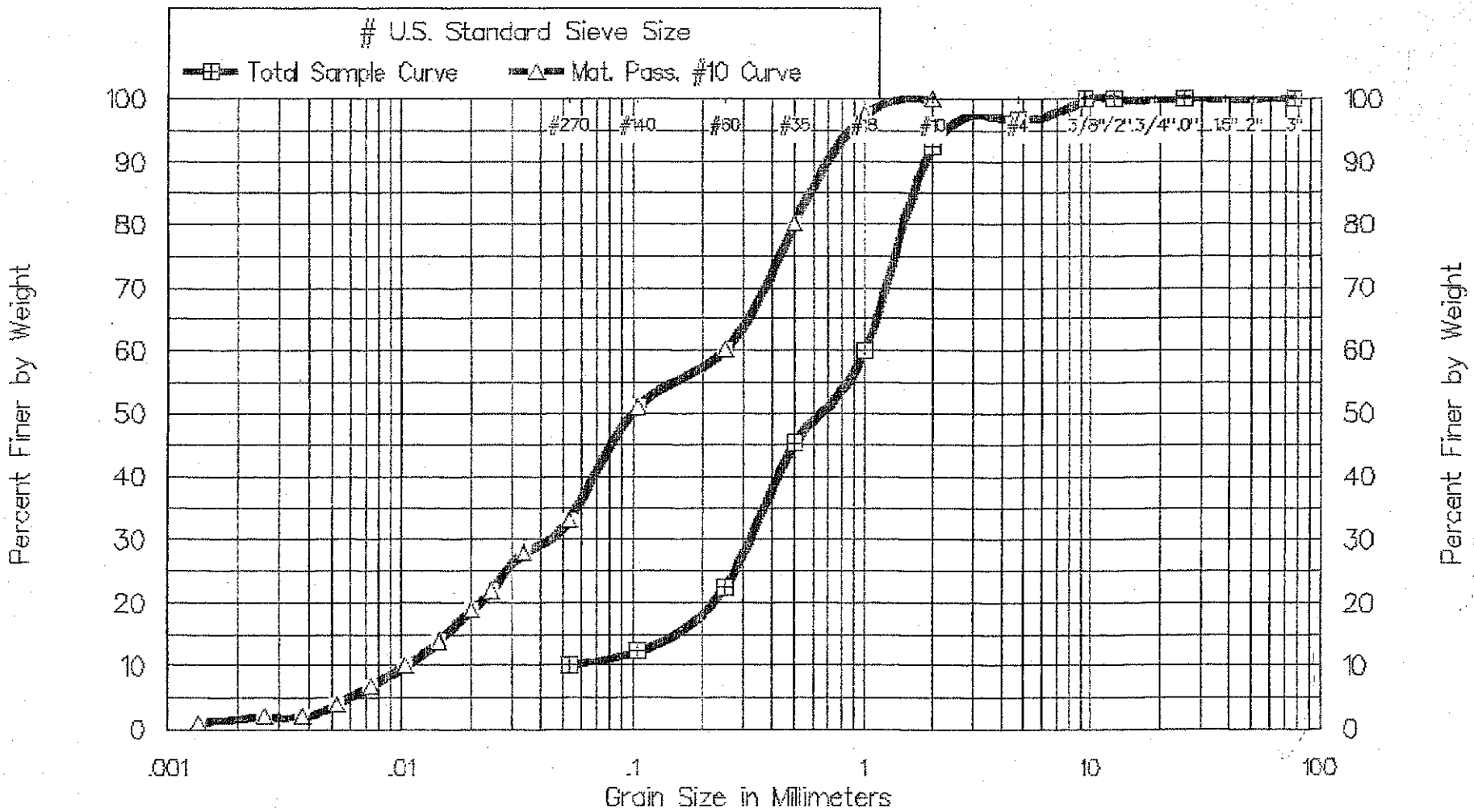
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

DL Mello (for)
Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/8/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9337C

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/8/99
Report No. LA9337C

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 25 (24000 CY – 25000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.9% *	(8.0-10.0%)
pH	= 7.1	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/8/99
Report #:GS9337D

Project: Foxboro Landfill - Foxboro
Sample No.26 (25000 CY - 26000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT

****

(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	97.45	4.760
#10	93.56	2.000
#18	65.69	1.000
#35	41.87	.500
#60	23.69	.250
#140	10.00	.105
#270	7.77	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.00
#35	.50000	83.36
#60	.25000	62.54
#140	.10500	55.07
#270	.05300	34.29
	.03404	28.00
	.02469	20.00
	.02038	16.00
	.01461	12.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00375	2.00
	.00260	2.00
	.00135	1.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 6.4

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 65.7
% Silt = 32.9
% Clay = 1.4

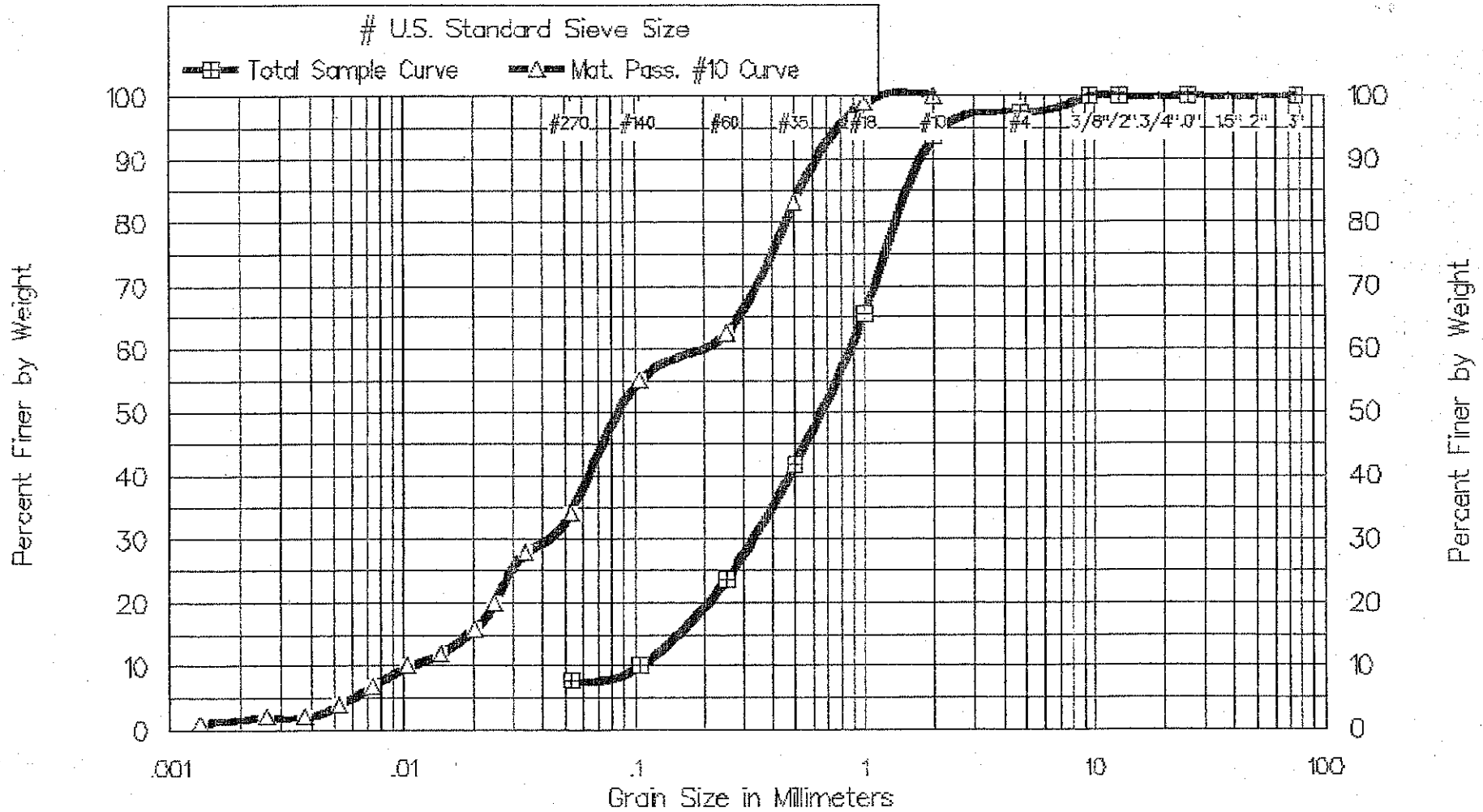
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/8/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9337D

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/8/99
Report No. LA9337D

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 26 (25000 CY – 26000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.7% *	(8.0-10.0%)
pH	= 7.8	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/15/99
Report #:GS9344G

Project: Foxboro Landfill - Foxboro
Sample No.27 (26000 CY - 27000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	97.45	9.510
#4	90.07	4.760
#10	86.45	2.000
#18	60.12	1.000
#35	37.89	.500
#60	19.78	.250
#140	12.58	.105
#270	8.97	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	98.45
#35	.50000	80.90
#60	.25000	63.12
#140	.10500	51.25
#270	.05300	35.69
	.03398	29.00
	.02469	20.00
	.02038	16.00
	.01461	12.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 13.6

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 64.3
% Silt = 33.3
% Clay = 2.4

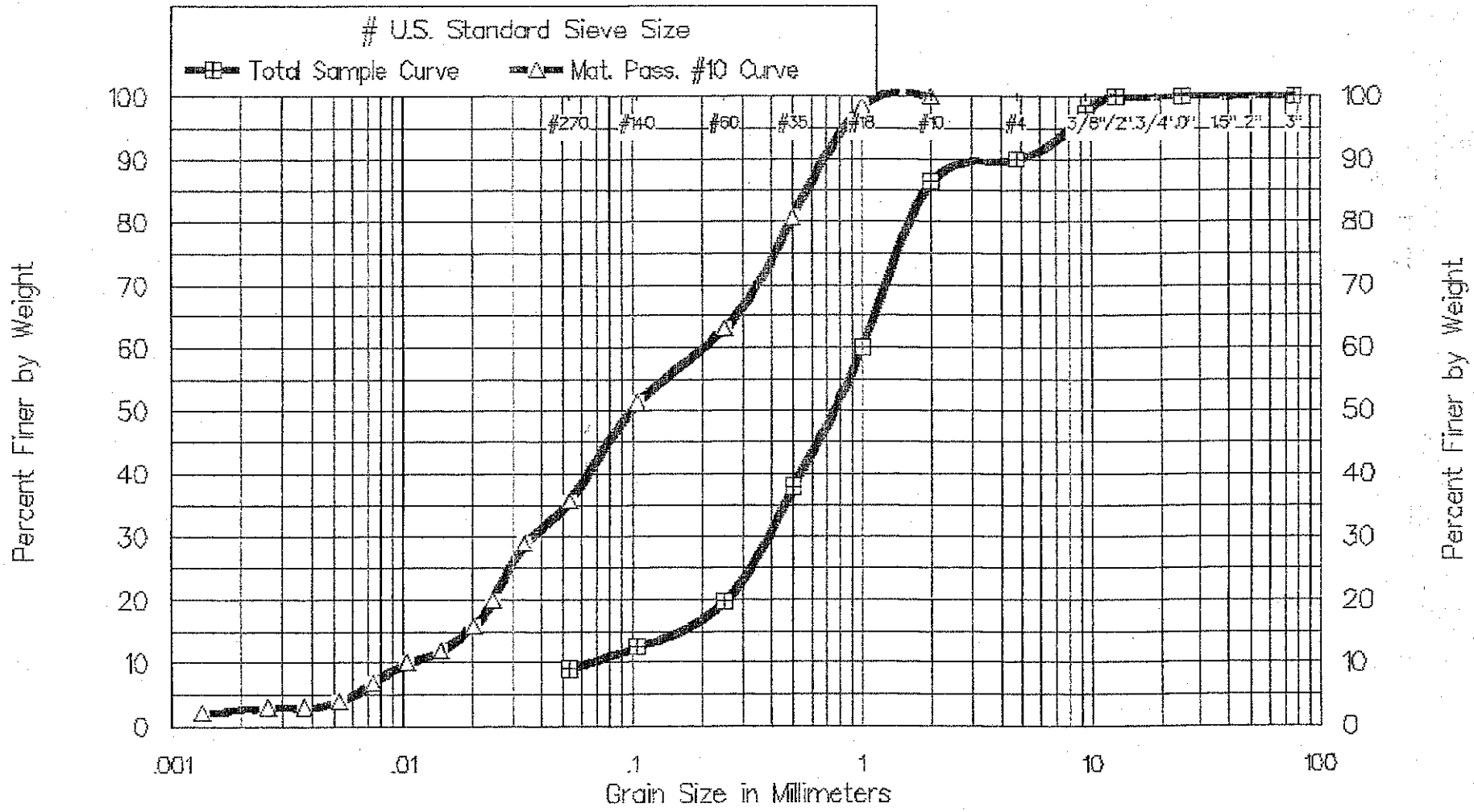
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/15/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9344G

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/15/99
Report No. LA9344G

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 27 (26000 CY – 27000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 8.6% *	(8.0-10.0%)
pH	= 7.3	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.
CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/16/99
Report #:GS9345A

Project: Foxboro Landfill - Foxboro
Sample No.28 (27000 CY - 28000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	96.45	9.510
#4	89.99	4.760
#10	85.17	2.000
#18	59.07	1.000
#35	35.87	.500
#60	21.00	.250
#140	13.58	.105
#270	9.00	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	99.08
#35	.50000	83.25
#60	.25000	60.17
#140	.10500	52.14
#270	.05300	36.90
	.03417	27.00
	.02469	20.00
	.02052	14.00
	.01461	12.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00259	3.00
	.00134	3.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 14.8

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 63.1
% Silt = 34.5
% Clay = 2.4

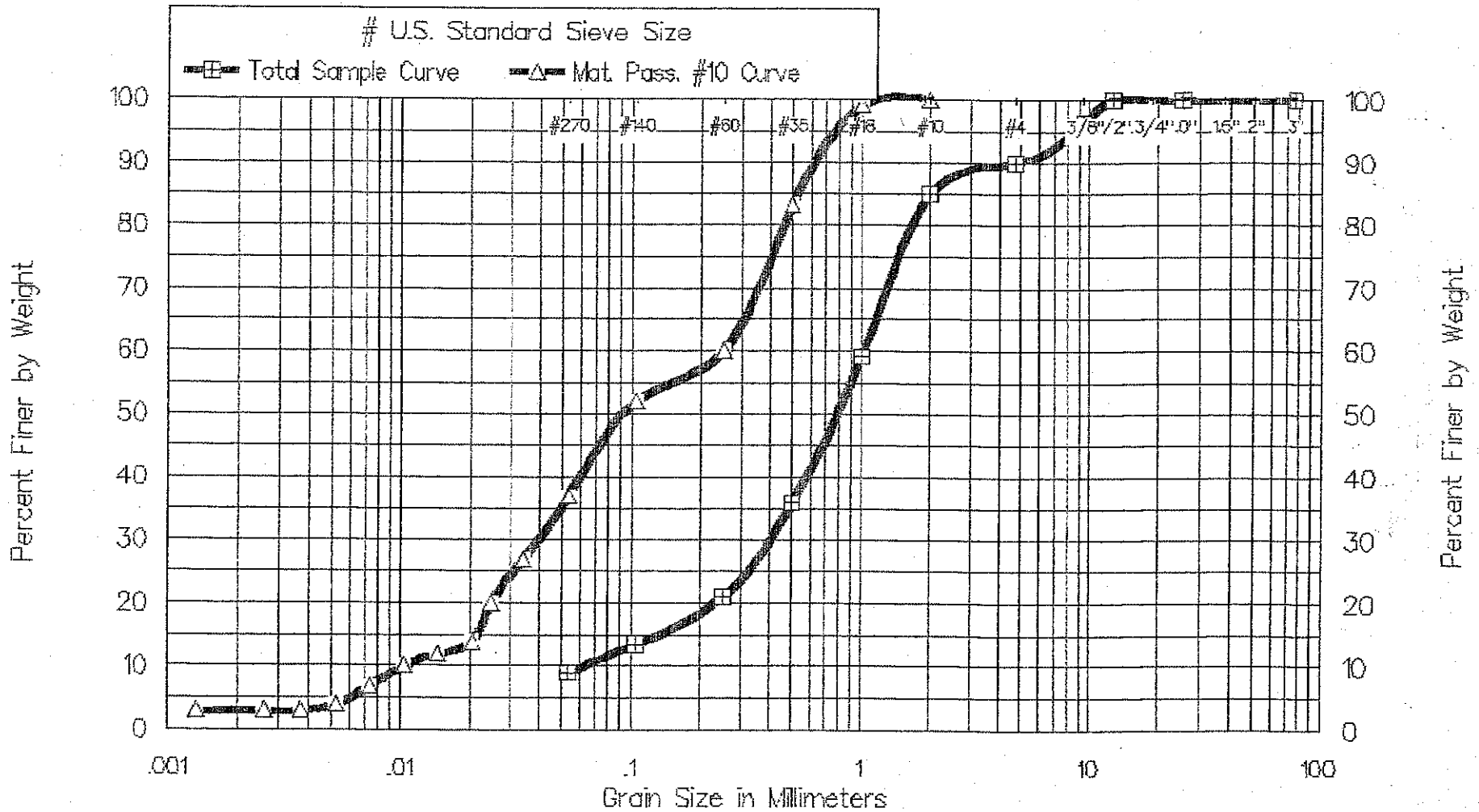
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/16/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9345A

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/16/99
Report No. LA9345A

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 28 (27000 CY – 28000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.6% *	(8.0-10.0%)
pH	= 6.7	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/16/99
Report #:GS9349F

Project: Foxboro Landfill - Foxboro
Sample No.29 (28000 CY - 29000 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	97.89	9.510
#4	90.99	4.760
#10	86.45	2.000
#18	60.25	1.000
#35	36.98	.500
#60	22.36	.250
#140	14.58	.105
#270	10.99	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	97.89
#35	.50000	80.69
#60	.25000	59.88
#140	.10500	49.01
#270	.05300	33.25
	.03404	28.00
	.02469	20.00
	.02052	14.00
	.01461	12.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00374	3.00
	.00261	2.00
	.00135	2.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 13.6

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 66.8
% Silt = 31.3
% Clay = 2.0

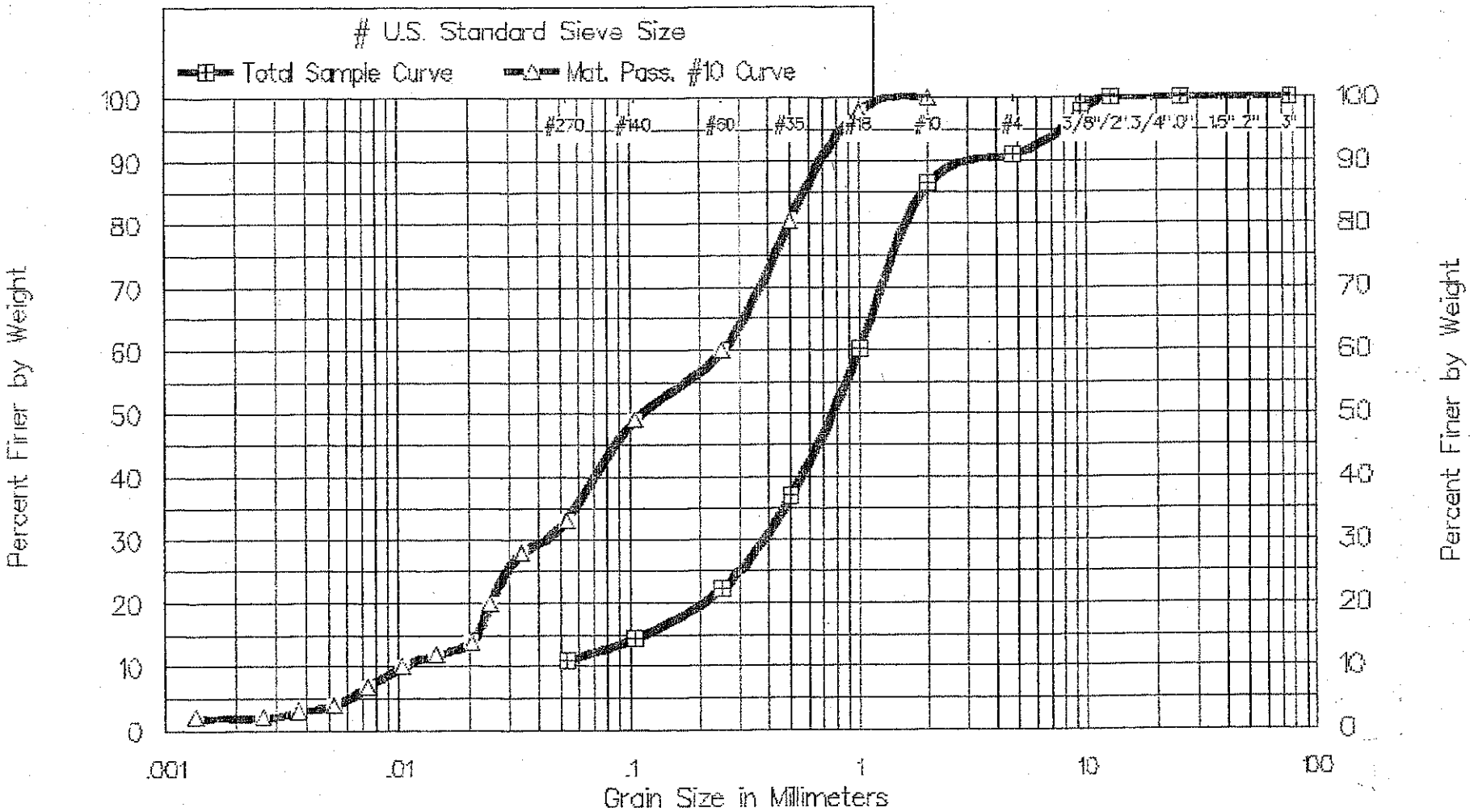
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date : 12/16/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9349F

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/16/99
Report No. LA9349F

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 29 (28000 CY – 29000 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.0% *	(8.0-10.0%)
pH	= 7.1	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician

tibbetts engineering corp.

CONSULTING ENGINEERS

Client: Eirco Environmental
P.O. Box. 265
Hampton NH 03842

Job No. 10650.01
Date: 12/21/99
Report #:GS9349J

Project: Foxboro Landfill - Foxboro
Sample No.30 (29000 CY - 29072 CY)

COMBINED HYDROMETER AND SIEVE ANALYSIS REPORT
****
(ASTM D 422)

Dry Sieve Analysis of the Total Sample

Sieve	% Passing	Size(mm)
3.0"	100.00	76.100
1.0"	100.00	25.400
1/2"	100.00	12.700
3/8"	100.00	9.510
#4	94.25	4.760
#10	88.14	2.000
#18	61.25	1.000
#35	38.88	.500
#60	23.01	.250
#140	15.69	.105
#270	11.25	.053

Hydrometer Analysis of the Portion Passing #10 Sieve

Sieve	Size(mm)	% Pass.
#10	2.00000	100.00
#18	1.00000	96.85
#35	.50000	81.02
#60	.25000	60.00
#140	.10500	49.98
#270	.05300	31.01
	.03455	24.00
	.02469	20.00
	.02052	14.00
	.01461	12.00
	.01037	10.00
	.00744	7.00
	.00527	4.00
	.00375	2.00
	.00260	1.00
	.00135	.00

Percent of Total Sample Retained on #10 Sieve:

% Retained (2mm) = 11.9

For Triangle Classification Based on mat. passing #10 sieve

% Sand = 69.0
% Silt = 30.2
% Clay = .8

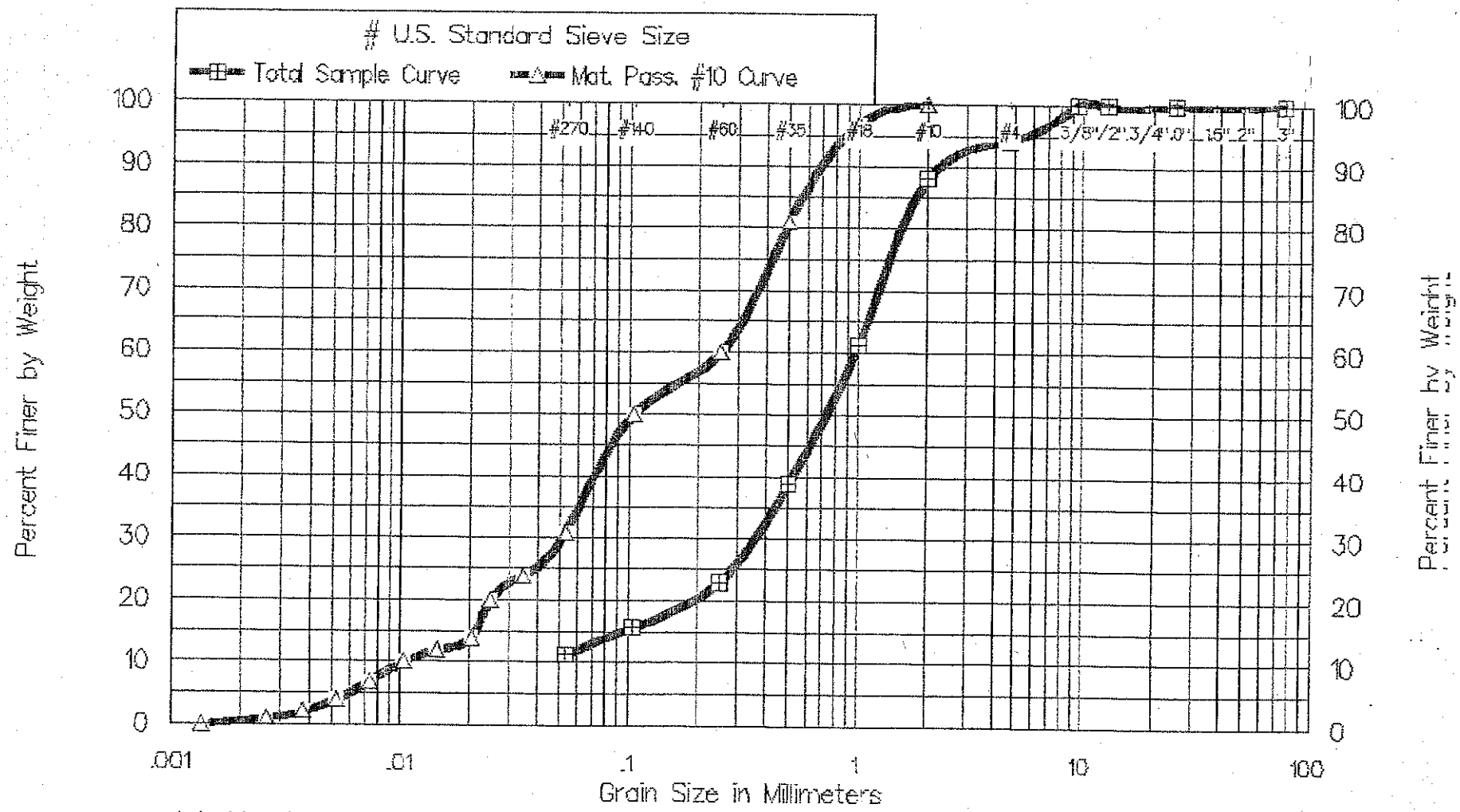
REMARKS: This sample is classified as "SANDY LOAM" in accordance with the USDA Textural Triangle

Derek Mello
Laboratory Technician

Christopher M. White
Laboratory Director

TIBBETTS ENGINEERING CORP.

Soil Grain Size Analysis
Using ASTM D-422 Date: 12/21/99



Job No. 10650.010
Foxboro Landfill – Foxboro MA
Report No. GS9349J

tibbetts engineering corp.
CONSULTING ENGINEERS
716 County Street, Taunton MA 02780
Tel. (508) 822-6934 Fax. (508) 880-7811

CLIENT: Eirco Environmental
P.O. Box 265
Hampton, NH 03842

Job No. 10650.010
Date: 12/21/99
Report No. LA9349J

PROJECT: Foxboro Landfill – Foxboro, MA

LOCATION: Sample No. 30 (29000 CY – 29072 CY)

TEST PERFORMED:

Determine the nutrient demand, organic content, and pH value of a sample of topsoil delivered to our Taunton office.on 11/30/99

RESULTS:

		(Spec. Limits)
Organic Content	= 9.7% *	(8.0-10.0%)
pH	= 5.9	(5.5-8.0%)

* Determined by drying 105 degrees Celsius to a constant weight and burning in a muffler furnace @ 550 degrees Celsius

REMARKS

The organic content, and pH is within the project specification limits.

Walter P. Galuska
Laboratory Supervisor

Derek Mello
Laboratory Technician