Document 00660
REQUEST FOR INFORMATION (RFI)

E-MAILED

CONTRACTOR'S REQUEST

RFI Date: 7/27/2010 RFI No. 041: LCRS Gradation Specification

Drawing No. N/A Specification No. Section 02227 Part 2.01

Date Information Required: 7/29/2010

Information Required:

The on-site LCRS being manufactured meets all design specifications except the 3/4" and No. 4 Sieve percent passing requirements. Attached are the LCRS test results and the LCRS specification for review.

Please advise if this material is acceptable to use.

Bryant. Haggerty
(Contractor)

By: Ben Haggerty Date: 7/27/2010

Title: Cost Engineer

OWNER'S RESPONSE

The material does not meet the fines content requirement but the other requirements are met. To verify that the fines are within the specified/tested range and do not affect the permeability, AECOM shall increase the gradation testing (i.e., sieve) listed in Table 3-2 of the CQA Manual for the project to 1 test every 750 cubic yards.

By: F. Settepani Date: 28Jul2010

Title: Sr. Eng. - Geosyntec Consultants, Inc.

CONTRACTOR'S RESPONSE

This clarification will result in no increase in Contract Price or Contract Time. ___ Concur ___ Do Not Concur

Comments: _____

_____

By:_____ Datc:_____

Title:_____

END OF DOCUMENT

WMH001127

WMH001128

MASA FUJIOKA AND ASSOCIATES
SIEVE TEST ANALYSIS

SAMPLE #: LCRS-05

Project: Waimanalo Gulch
Location: Ko Olina
Soil Desc.: Well graded gravel w/ silt
USCS: GW-GM

Job #: 10239-011
Depth: n/a
Tested By: BT
Test Date: 7.16.10

Weight of Sample+Tare (g): 1005.5
Weight Tare (g): 14
Weight of Water (g): 0
Percent Water: 0%
Total Dry Sample Weight (g): 1005.5

Screen Size #	1 1/2	3/4	4	10	40	60	100	200
in mm	37.5	19	4.75	2	0.425	0.25	0.15	0.075
Sieve Weight (g)	508	497.8	471.6	426.6	352.4	320.7	351.5	297.1
Wt. Sieve + Soil (g)	508	945.7	886	456.1	374.4	326.1	357	303.3
Soil on Sieve (g)	0	447.9	414.4	29.5	22	5.4	5.5	6.2
% Stopped at Filter	0	45.174	41.7953	2.97529	2.21886	0.54463	0.554715	0.62532
% Passing Filter	100	**54.826**	**13.0308**	**10.0555**	**7.83661**	**7.29198**	**6.737267**	**6.11195**

* #200 seive wet seived

Performed for:	AE Com			Location:	KoOlina
Project:	Waimanalo Gulch			Job No.: 239-011	
Sample:	LCRS-05			Constant Head Test	
Performed by:	BT			Date of test:	7.19.10
wt of mold =	10.60	lbs.			
wt of mold+soil =	12.85	lbs.			
diameter =	4	inches -->	10.16	cm	
area =	81.07	sq. cm			
length =	4.563	inches -->	11.59	cm	
volume =	939.64	cu. cm			
mass soil =	2.25	lbs. -->	1020.58	g	
		sq. cm			
% Void	35.00	Dry Density -->	1.09	g/cu. cm	
% over 3/4" removed	0.00				

Trial Number	1	2	3	4	5	6
elapsed time (sec)	5	10	20	30	45	60
Water Volume (mL)	142	259	510	724	1037	1343
Δh of water (cm)	96.52	96.52	96.52	96.52	96.52	96.52
temp (deg C)	25	25	25	25	25	25
unit wt. of water	0.9970	0.9970	0.9970	0.9970	0.9970	0.9970
viscosity of water	9.045	9.045	9.045	9.045	9.045	9.045
coefficient of permeability	2.524E+00	2.302E+00	2.266E+00	2.145E+00	2.048E+00	1.989E+00

average	**2.21E+00**	**cm/s**

MASA FUJIOKA & ASSOCIATES
PERMEABILITY CONSTANT HEAD

GRAIN SIZE ANALYSIS

Project: AE Com-Waimanalo Gulch Landfill
Sample: LCRS-05
Job No.: 10239-011
Depth: n/a
Location:n/a

Soil Classification: Well graded gravel w/ silt

UCSC: GW-GM

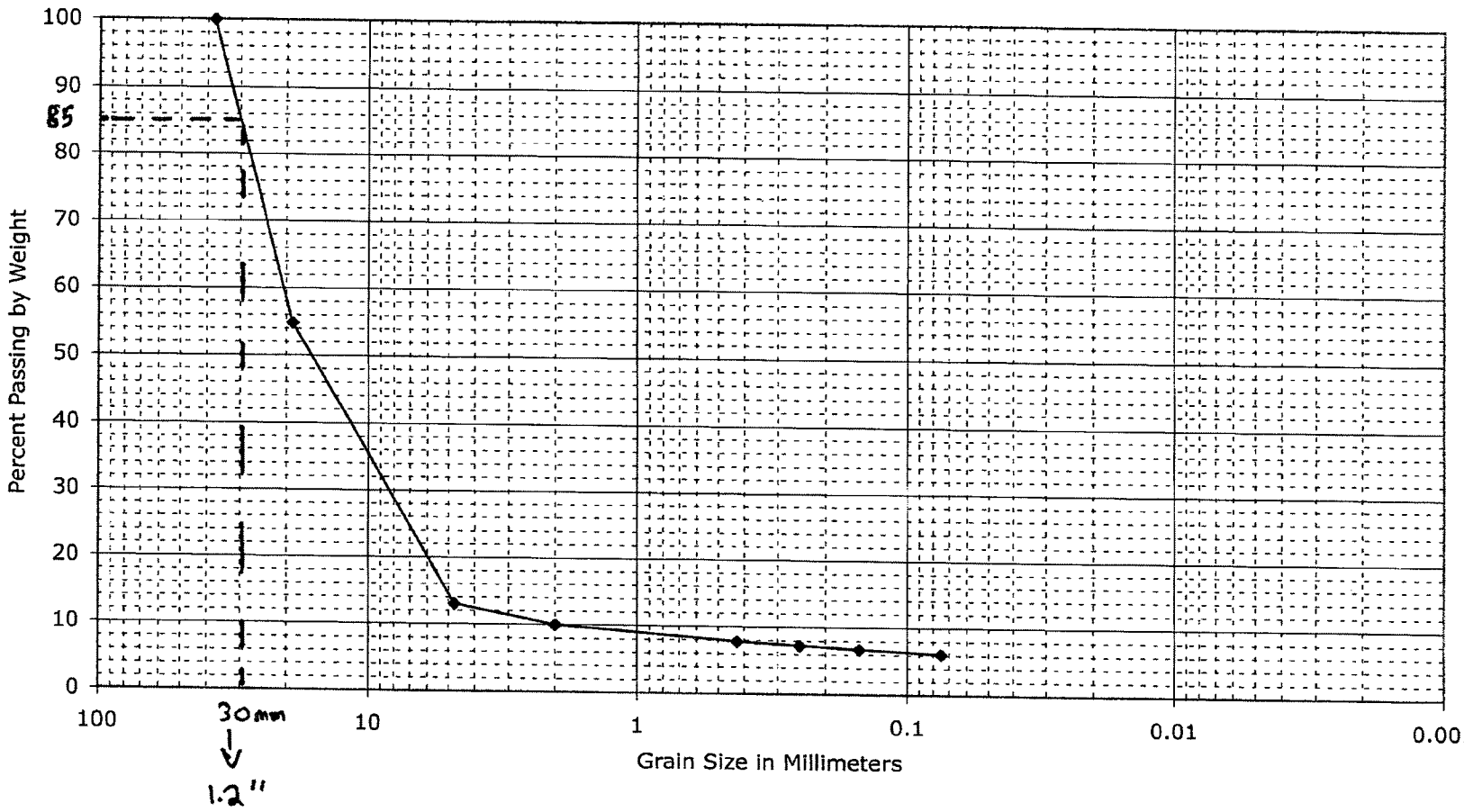

Figure:

MASA FUJIOKA & ASSOCIATES

WMH001131

SECTION 02227
DRAINAGE GRAVEL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Placement of LCRS drainage gravel as shown on the Construction Drawings. In some areas, LCRS drainage gravel is also used as backfill around pipes; refer to the Construction Drawings.

B. Work includes furnishing, loading, hauling, and placing the material.

1.02 RELATED SECTIONS

A. Section 02710 – Polyethylene Pipe.

B. Section 02771 – Geotextile.

C. Section 02777 – Geosynthetic Clay Liner (GCL).

D. Section 02778 – Geomembrane.

1.03 REFERENCES

A. ASTM D422 - Standard Method for Particle-Size Analysis of Soils.

B. ASTM D2434 - Standard Method for Permeability of Granular Soils (Constant Head).

C. ASTM D2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

1.04 SUBMITTALS

A. Submit a 50-pound representative sample of the proposed gravel within 10 days after contract award.

PART 2 PRODUCTS

2.01 DRAINAGE GRAVEL

A. Durable and hard gravel obtained and imported from off-site borrow source.

B. Free of organic or other deleterious material.

C. Having a hydraulic conductivity greater than or equal to 1.0 cm/s (ASTM D2434) when placed in accordance with this specification.

D. Containing no limestone or other material that may adversely react with landfill leachate.
E. Particles shall be angular subangular (ASTM D2488).
F. D_{85} greater than or equal to 0.625-inch.
G. Gradation:

U.S. Sieve Size	Percent Passing
1.5-inch	100
3/4-inch	70 – 90
No. 4	40 – 50
No. 10	0 – 10
No. 200	0 – 5

PART 3 EXECUTION

3.01 PLACEMENT

A. Place materials only when underlying excavations, foundations, and geosynthetic installations are complete and accepted by OWNER in accordance with Specifications.
B. Place to lines and grades shown on the Drawings.
C. Place to the uniform thickness shown on the Drawings.
D. Place without damaging underlying geosynthetics.
E. Grade tolerance: $\leq$ 0.1 foot.
F. Do not cause underlying geosynthetics to bridge across ditch alignments or pipe alignments. If bridging does occur, repair by installing additional compensating geosynthetic materials at no additional cost to the OWNER.

3.02 LEACHATE COLLECTION PIPE INSTALLATION

A. Comply with Section 02710 for assembly of pipe runs.
B. Install to the lines and grades shown on the Construction Drawings.

3.03 FIELD QUALITY CONTROL

A. Prior to beginning Drainage gravel placement, demonstrate that placement techniques will not damage the underlying geosynthetic materials. Demonstrate this by constructing test fill over geosynthetics in an area not part of final construction.

3.04 GRAVEL MATERIAL IN CONTACT WITH GEOSYNTHETICS