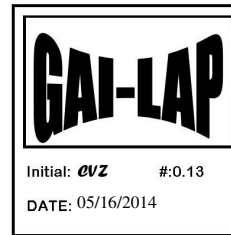




May 16, 2014

Allan Brantley
Brantley Engineering, LLC
13933 Tree Loft Road
Milton, GA, 30004



Re: FINAL LABORATORY TEST REPORT

Dear Mr. Brantley:

Thank you for consulting TRI California for your material testing needs.

Enclosed is the **final** laboratory report for the seam testing of three (3) HDPE seam samples.

PROJECT NAME: JED Cell 10

DATE REPORTED: May 16, 2014

REFERENCE TRI JOB NO.: G140424

DATE RECEIVED: May 16, 2014

SAMPLES SENT BY: Brantley Engineering

SAMPLE IDENTIFICATIONS:

SAMPLE ID

1. DSP-26 P75/ 76
2. DSP-27 P80/ 81
3. DXP-3 P84/ EX

TRI-CA CONTROL NUMBER

- 97831
97832
97833

TESTS REQUIRED / PERFORMED:

TEST METHOD

1. ASTM D6392
2. ASTM D6392

DESCRIPTION

- Shear Bond Strength
Peel Bond Adhesion

TEST RESULTS: The test results are summarized in the attached Tables 1 to 2.

Respectfully,

TRI Environmental, Inc. - California

Maria Espitia
Quality Assurance

Carmelo V. Zantua
Technical Director

Signatures are on file

It shall be noted that the samples tested are believed to be true representatives of the material produced under the designation herein stated. In addition, the attached laboratory tests results are considered indicative only of the quality of samples/specimens that were actually tested. The appropriate test methods hereby employed are based on the current and accepted industry practices. TRI neither accepts responsibility for nor makes claims to the intended final use and purpose of the material. The test data and all associated project information shall be held confidential and not to be reproduced and/or disclosed to other parties except in full and with prior written approval from pertinent entity duly authorized by the respective client or from the client itself. It is our policy to keep physical records of each job for two (2) years commencing from the date of receipt of the samples and keep its corresponding electronic file for seven (7) years. **Failed seam samples are kept for two (2) years and good seam samples are disposed of after two (2) weeks.** On the other hand, should you need us to keep them at a longer period, please advise us in writing.

3 Pages Total



TABLE 1.
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Brantley Engineering, LLC**
PROJECT: **JED Cell 10**
DATE REC'D: **16-May-14**

MATERIAL: **HDPE SEAM**
SEAM TYPE: **Fusion Weld**
TRI JOB #: **G140424**

QC'd By: *Maria Espitia*
TEST METHOD: **ASTM D6392**
DATE REPORT: **16-May-14**

Crosshead Speed: 2 in/min						Crosshead Speed: 2 in/min				
SAMPLE ID	TRI CONTROL #	SHEAR EVALUATION				PEEL EVALUATION				
		MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DSP-26 P75/ 76	97831	144	> 50%	BRK		1 Outside	119	0	SE1	
		146	> 50%	BRK		2 Outside	119	0	SE1	
		149	> 50%	BRK		3 Outside	112	0	SE1	
		155	> 50%	BRK		4 Outside	109	0	SE1	
		156	> 50%	BRK		5 Outside	106	0	SE1	
		AVG:					113		91	
		STD. DEV.					6			
						1 Inside	113	0	SE1	
						2 Inside	113	0	SE1	
						3 Inside	110	0	SE1	
						4 Inside	111	0	SE1	
						5 Inside	116	0	SE1	
AVG:		150	120			AVG:	113		91	
STD. DEV.		5				STD. DEV.	2			
DSP-27 P80/ 81	97832	154	> 50%	BRK		1 Outside	114	0	SE1	
		151	> 50%	BRK		2 Outside	111	0	SE1	
		152	> 50%	BRK		3 Outside	111	0	SE1	
		156	> 50%	BRK		4 Outside	111	0	SE1	
		155	> 50%	BRK		5 Outside	113	0	SE1	
		AVG:					112		91	
		STD. DEV.					1			
						1 Inside	109	0	SE1	
						2 Inside	112	0	SE1	
						3 Inside	120	0	SE1	
						4 Inside	111	0	SE1	
						5 Inside	109	0	SE1	
AVG:		154	120			AVG:	112		91	
STD. DEV.		2				STD. DEV.	5			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD ADHESION FAILURE.
BRK BREAK IN SHEETING.
SE1 BREAK AT OUTER EDGE OF SEAM.
SE2 BREAK AT INNER EDGE OF SEAM.
AD-BRK BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1 ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2 ADHESION FAILURE.
AD-WLD BREAK THROUGH THE FILLET.
SE1 BREAK AT BOTTOM EDGE OF SEAM.
SE2 BREAK AT TOP EDGE OF SEAM.
SE3 BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1 BREAK IN BOTTOM SHEETING.
BRK2 BREAK IN TOP SHEETING.
AD-BRK BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT BREAK AT EDGE OF HOT TACK
SIP SEPARATION IN THE PLANE OF THE SHEET.

(End of Table 1)

(Sheet 1 of 1)

By accepting the data and results presented on this report, the Client agrees to limit the liability of TRI Environmental, Inc. from Client and all other parties for claims on issues, due to the use of this data, to the cost for the respective tests presented in this report; and the Client agrees to indemnify and hold harmless TRI Environmental, Inc. from and against all liabilities in excess of the aforementioned limit.



TABLE 2.
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Brantley Engineering, LLC**
PROJECT: **JED Cell 10**
DATE REC'D: **16-May-14**

MATERIAL: **HDPE SEAM**
SEAM TYPE: **Extrusion Weld**
TRI JOB #: **G140424**

QC'd By: *Maria Espitia*
TEST METHOD: **ASTM D6392**
DATE REPORT: **16-May-14**

Crosshead Speed: 2 in/min						Crosshead Speed: 2 in/min					
SAMPLE ID	TRI CONTROL #	SHEAR EVALUATION				PEEL EVALUATION					
		MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)	
DXP-3 P84/ EX	97833	154	> 50%	BRK		1 Outside	130	0	SE3		
		155	> 50%	BRK		2 Outside	137	0	SE3		
		155	> 50%	BRK		3 Outside	136	0	SE3		
		156	> 50%	BRK		4 Outside	138	0	SE3		
		159	> 50%	BRK		5 Outside	119	0	SE3		
		AVG:					132		78		
		STD. DEV.					8				
						1 Inside	N/A				
						2 Inside					
						3 Inside					
			4 Inside								
			5 Inside								
AVG.		156	120			AVG:					
STD. DEV.		2				STD. DEV.					

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD ADHESION FAILURE.
BRK BREAK IN SHEETING.
SE1 BREAK AT OUTER EDGE OF SEAM.
SE2 BREAK AT INNER EDGE OF SEAM.
AD-BRK BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1 ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2 ADHESION FAILURE.
AD-WLD BREAK THROUGH THE FILLET.
SE1 BREAK AT BOTTOM EDGE OF SEAM.
SE2 BREAK AT TOP EDGE OF SEAM.
SE3 BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1 BREAK IN BOTTOM SHEETING.
BRK2 BREAK IN TOP SHEETING.
AD-BRK BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT BREAK AT EDGE OF HOT TACK
SIP SEPARATION IN THE PLANE OF THE SHEET.

(End of Table 2)

(Sheet 1 of 1)

By accepting the data and results presented on this report, the Client agrees to limit the liability of TRI Environmental, Inc. from Client and all other parties for claims on issues, due to the use of this data, to the cost for the respective tests presented in this report; and the Client agrees to indemnify and hold harmless TRI Environmental, Inc. from and against all liabilities in excess of the aforementioned limit.