



上海电气
SHANGHAI ELECTRIC

MARTANO GAS TO PANAMA POWER PROJECT
SEGURIDAD, SALUD OCUPACIONAL Y MEDIO AMBIENTE



Erosion Control Plan

Código:2974- PG-SSO-40

Revisión: 1

Página: 1 de 15

EROSION and SEDIMENTATION CONTROL PLAN

REVISION AND CHANGES CONTROL					
Rev.Nº	Fecha	Descripción	Elaborado por:	Revisado por:	Aprobado por:
00	2018	Fisrt Issue	HSE. JONATHAN JARAMILLO	AMIR RODRIGUEZ	JAVIER GUTIERREZ
01	2018	Long Term Meaures Included	Jonathan Jaramillo	Javier Gutiérrez	

TABLE OF CONTENT

1.0 INTRODUCTION

2.0 INSTALLATION OF SILT FENCES

2.1 Location of Silt Fences

2.2 Form and Requirement of Silt Fences

2.3 Actual work being done on Project Site

2.4 Approximate Quantities of Silt Fences

3.0 CHECK DAMS

3.1 Planned Location of Riprap Check Dam

3.2 Form and Requirement of Check Dam

1.0 INTRODUCTION

This document is prepared to take corrective actions about the erosion and sedimentation that has occurred on Martano Power Plant Project after part of the topsoil removal has been done by Martano.

The immediate actions that will be taken including its methods and materials will be further explained and illustrated as part of a plan that GEOHARBOUR PANAMA proposed before its equipment and heavy machinery starts the earthworks on full production. It is noted that the earthmoving will be massive, and therefore quick erosion and sedimentation measures have to be taken in the Works that are **within our scope**.

GEOHARBOUR PANAMA is committed at all times to comply with the Environmental and local Regulations and laws, and that is why immediate actions are being taken on site to prevent future damages to the environment and vegetation.

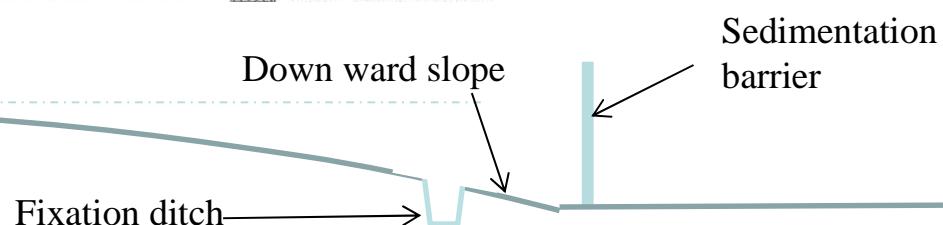
As the earthworks develop and continue, actions will also be taken as soon as any deviation from environmental requirements is observed.

2.0 INSTALLATION OF SILT FENCES



2.1 Location of Silt Fences

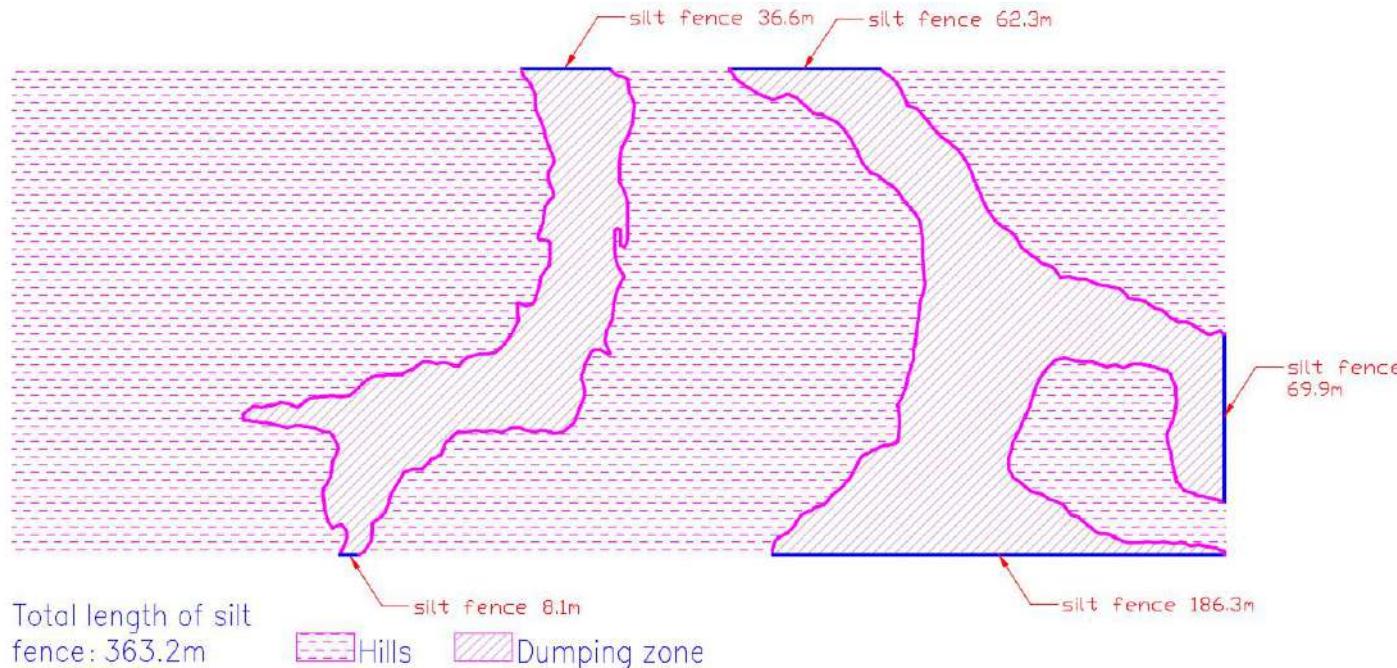
Planned location of silt fences (in site)



Silt Fences shall be installed in the toe of downward slopes.

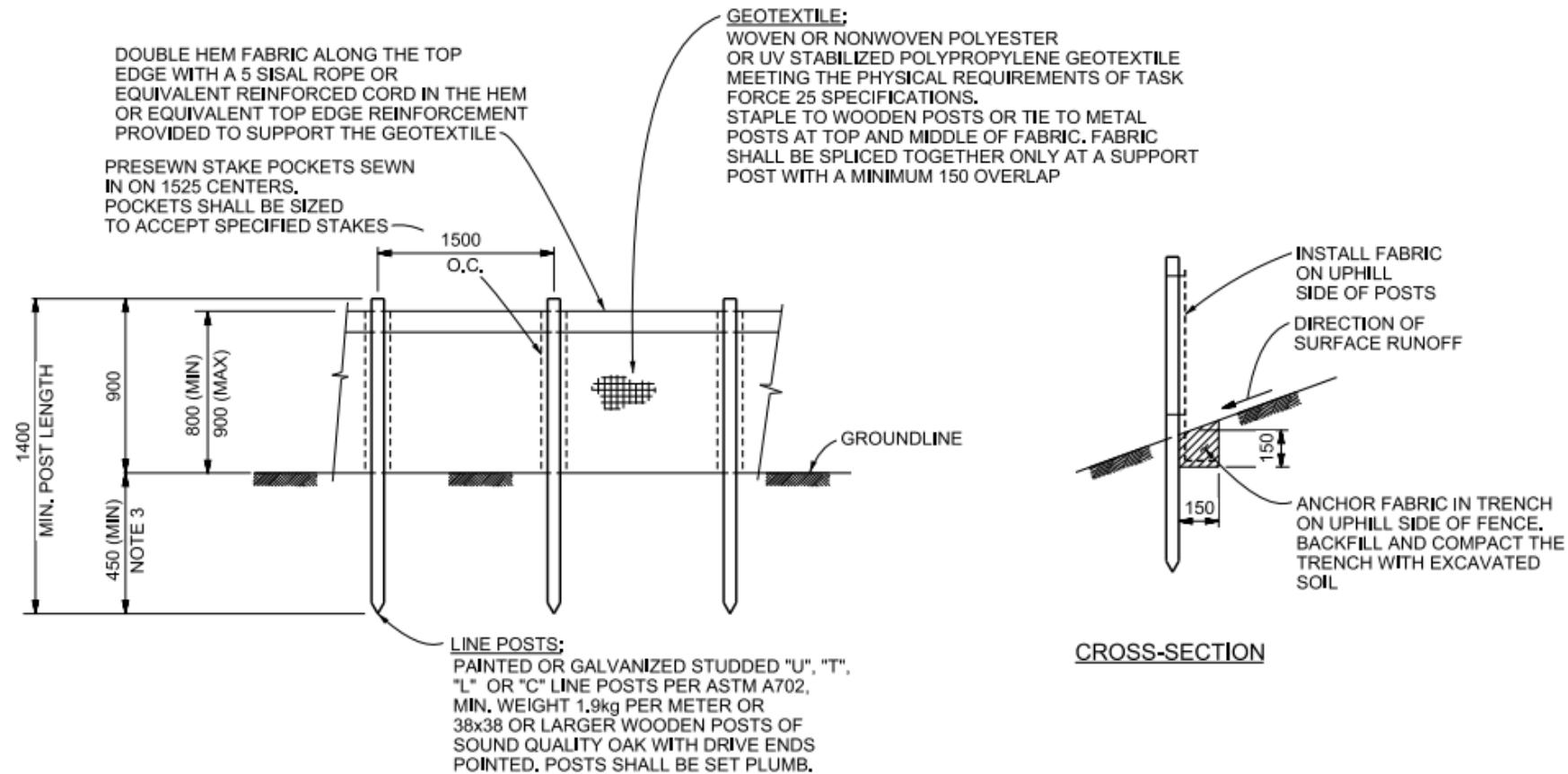
2.1 Location of Silt Fences

Planned location of silt fences (in dumping zone)



Silt fences shall be installed in the location represented in blue lines.

2.2 Form and Requirement of Silt Fences



Chosen type of geotextile: WOVEN SEDIMENTATION BARRIER, 383.65 383.65 GEOTEX 2130 (0.91M X 457.18/ 418 M2)
 According to AASHTO M288-05
 ASTM D-5141/VTM 51



GEOTEX[®]
BY PROPEX

Product Data
GEOTEX 2130

GEOTEX 2130 is a 100% polypropylene woven flat tape; silt fence fabric produced by Propex, and will meet the AASHTO M-288 and ASTM D 4439 for silt fence and geotextile usage. This engineered fabric is stabilized to resist degradation due to ultraviolet exposure for a minimum of six months of the expected usable construction life at a temperature of 0 to 120 degrees Fahrenheit. It is resistant to commonly encountered soil chemicals, mildew, and insects, as well as non-biodegradable. Polypropylene is stable within a pH range of 2 to 13, making it one of the most stable polymers for geotextiles today.

GEOTEX 2130 conforms to the property values listed below.¹ Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute - Laboratory Accreditation Program (GAI-LAP). This product is NTPEP approved for AASHTO standards.

MARV²

PROPERTY	TEST METHOD	ENGLISH	METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured Inputs		100%	100%
% U.S. Manufactured		100%	100%
MECHANICAL			
Tensile Strength (Gerb)	ASTM D-4832	124 lbe	551.8 N
Elongation	ASTM D-4832	15 x 20%	15 x 20%
Trapezoidal Tear	ASTM D-4533	65 lbe	288.3 N
ENDURANCE			
UV Resistance % Retained at 500 hrs	ASTM D-4255	80%	80%
HYDRAULIC			
Apparent Opening Size (AOS) ³	ASTM D-4751	30 US Std. Sieve	0.600 mm
Permeability	ASTM D-4491	0.1 sec ⁻¹	0.1 sec ⁻¹
Water Flow Rate	ASTM D-4491	10 gpm/ft ²	407.4 lpm/m ²
ROLL SIZES		3.0 ft x 1500 ft 3.5 ft x 330 ft	0.91 m x 457.3 m 1.07 m x 100.8 m

NOTES:

1. The property values listed above are effective 04/2013 and are subject to change without notice.
2. Values shown are in weaker principal direction. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum average roll value.



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Propex Operating Company, LLC • 8025 Lee Highway, Suite 425 • PO Box 22788 • Chattanooga, TN 37422
ph 423 899 0444 • ph 800 621 1273 • fax 423 899 7619

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2.3 Actual work being done on Project Site



Geotextile silt fence



Geotextile silt fence on site

2.4 Approximate Quantities of Silt Fences

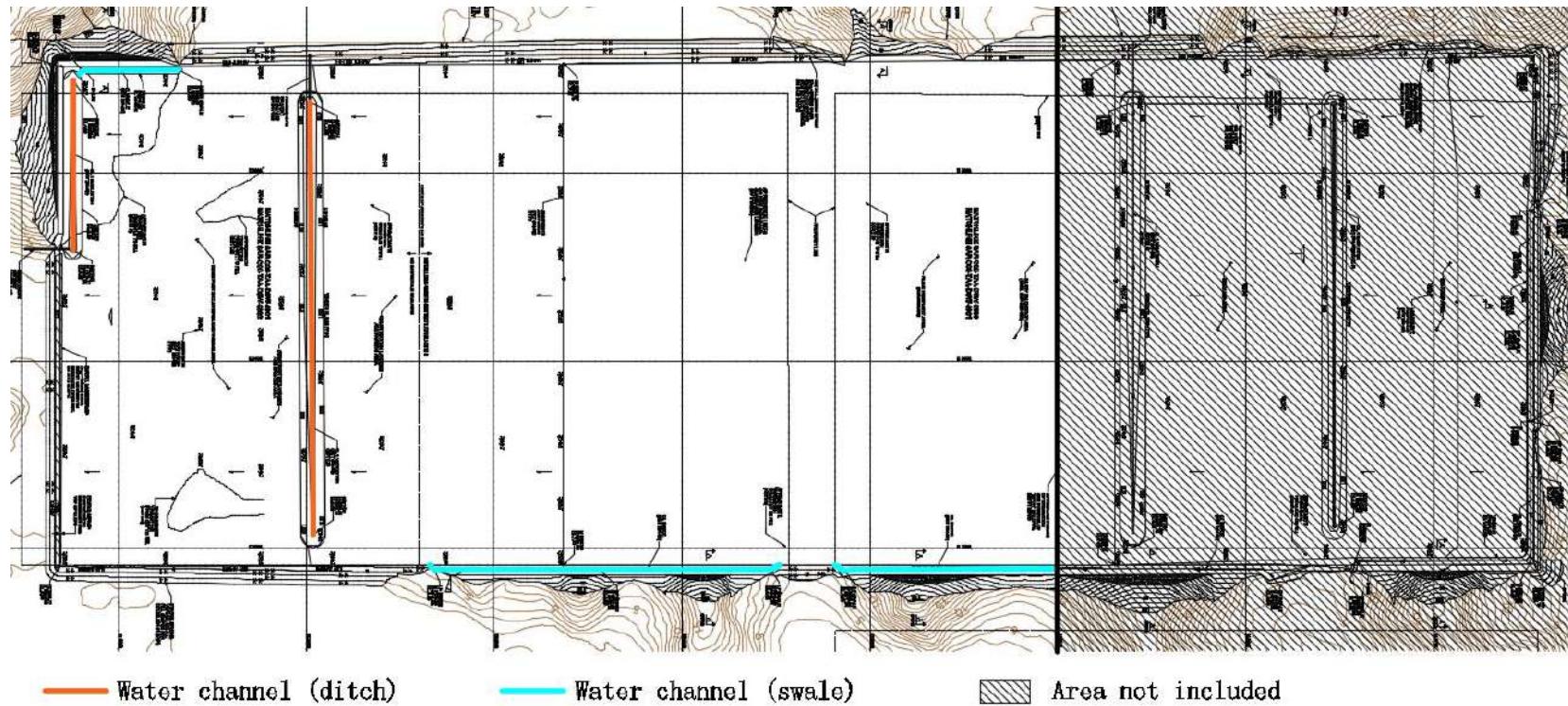
Item	Unit	Qua.	Main material		
			Name	Unit	Quantity
Silt fence in site	m	911.4	geotextile	m2	1170.4
			posts	stick	611
			A 5 sisal rope	m	911.4
Silt fence in dumping zone	m	363.2	geotextile	m2	466.9
			posts	stick	247
			A 5 sisal rope	m	363.2

3.0 Check Dams



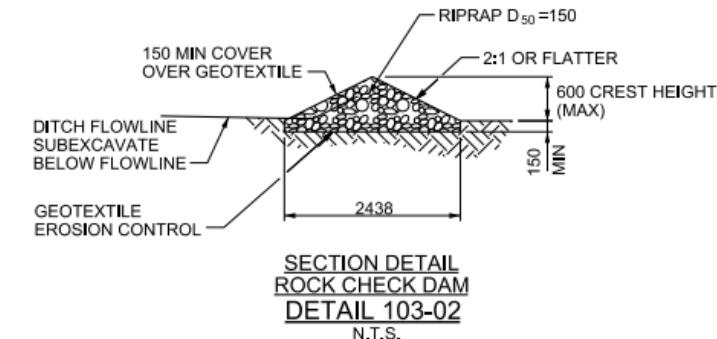
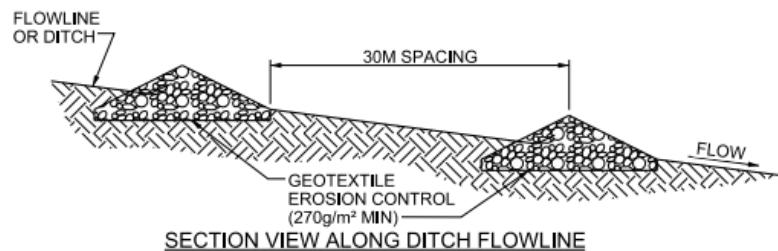
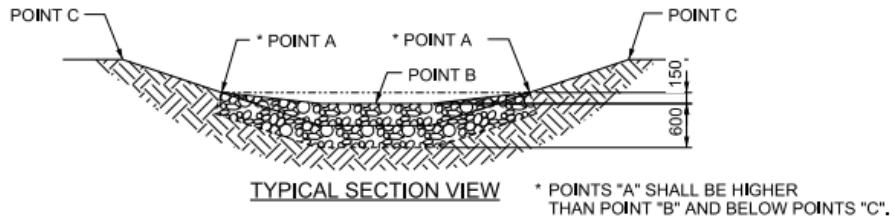
✓ The riprap check dam will be placed by the progress of the work. And it will be placed where there are water channels.

3.1 Planned Location of Riprap Check Dams



Check dam will be placed in water channels in 30m spacing.

3.2 Form and Requirement of Check Dam



ROCK CHECK DAM INSTALLATION NOTE:

1. CHECK DAMS SHOULD BE KEYED INTO THE SIDES AND BOTTOM OF THE CHANNEL, MINIMUM 4 TO 6 INCHES.

ROCK CHECK DAM MAINTENANCE NOTES:

1. AFTER EACH SIGNIFICANT RAINFALL, CHECK DAMS SHOULD BE INSPECTED FOR SEDIMENT AND DEBRIS. SEDIMENT SHOULD BE REMOVED FROM BEHIND THE CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE-HALF OF THE ORIGINAL HEIGHT OF THE DAM AND PROPERLY DISPOSED OF.
2. INSPECT FOR EROSION ALONG THE EDGES OF THE CHECK DAMS AND REPAIR AS REQUIRED IMMEDIATELY.

Approximate Quantities of Check Dam

Item	Unit	Qua.
Crashed rock for check dam	m ³	77.4