



# Lam Geotechnics Limited

Ground Investigation & Instrumentation Professionals

華益土力有限公司

Ref : G1938/CS/L221/FEP-07/356/2009  
Date : 26 November 2020

**China State Construction Engineering (Hong Kong) Ltd.**  
**29/F, China Oversea Building,**  
**129 Hennessy Road,**  
**Hong Kong**

**Attn: Site Agent, Mr. Danny Lee**

Dear Sir,

**Contract No. HY/2010/08**  
**Central – WanChai Bypass Tunnel (Slip Road Section 8)**  
**Implementation Schedule for Silt Curtain Deployment Plan (Revision 7)**

Referring to the captioned submission received through email on 14 November 2020 as requested by EPD through email on 11 May 2020, we have reviewed your submitted details and hereby certify the submission in accordance with Condition 2.8 of FEP-07/356/2009.

Should you have any enquiry, please feel free to contact the undersigned at 2839 5666.

Yours faithfully,  
For and On Behalf of Lam Geotechnics Limited

Raymond Dai  
Environmental Team Leader

c.c. HyD	- Mr. Enoch Wong	(By Fax: 2714-5289)
CEDD	- Mr. Jimmy Ling	(By Fax: 2301-1277)
AECOM CWB	- Mr. David Kwan	(By Fax: 3912-3010)
Ramboll	- Mr. David Yeung	(By Fax: 3465-2899)



Ref.: AACWBIECEM00\_0\_12491L.20

27 November 2020

China State Construction Engineering (Hong Kong) Ltd.  
29/F, China Overseas Building  
139 Hennessy Road  
Wan Chai, Hong Kong

By Post and Email

Attention: Mr. Danny Lee

Dear Sir,

**Re: Contract No. HY/2010/08**  
**Central – Wan Chai Bypass Tunnel (Slip Road Section 8)**  
**FEP-07/356/2009**  
**Implementation Schedule for Silt Curtain Deployment Plan (Revision 7)**

Reference is made to the submission of Implementation Schedule for the Silt Curtain Deployment Plan (Revision 7) certified by the ET Leader (ET's ref.: "G1938/CS/L221/FEP-07/356/2009" dated 26 November 2020) provided via e-mail on 27 November 2020.

We are pleased to inform you that we have no adverse comments on the captioned submission. We hereby verify the captioned submission in accordance with Condition 2.8 of FEP-07/356/2009.

Thank you for your attention. Please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully,



David Yeung  
Independent Environmental Checker

c.c.	HyD	Attn: Mr. Enoch Wong	by fax: 2714 5289
	CEDD	Attn: Mr. Jimmy Ling	by fax: 2301 1277
	AECOM	Attn: Mr. David Kwan	by fax: 3912 3010
	Lam	Attn: Mr. Raymond Dai	by fax: 2882 3331

Q:\Projects\AACWBIECEM00\02\_Proj\_Mgt\02\_Corr\AACWBIECEM00\_0\_12491L.20.docx

**Implementation Schedule for Silt Curtain Deployment (HY/2010/08)**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Objective of Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages				Relevant Legislation and Guidelines	Implementation Status	Cross - Reference to Silt Curtain Plan
					Des	C	O	Dec			
<b>Construction Phase</b>											
<b>For the Whole Project</b>											
Section 5.6.44	Silt Curtain Deployment	Control sediment dispersion in water	Work site / During Construction Phase	Contractor	✓	✓			EIAO TM	Implemented	Section 5.0

Ref.: AACWBIECEM00\_0\_12126L.20

7 May 2020

China State Construction Engineering (Hong Kong) Ltd.  
29/F, China Overseas Building  
139 Hennessy Road  
Wan Chai, Hong Kong

By Post and Email

Attention: Mr. Thomas Lui

Dear Sir,

**Re: Contract No. HY/2010/08  
Central – Wan Chai Bypass Tunnel (Slip Road Section 8)  
FEP-07/356/2009  
Silt Curtain Deployment Plan (Revision 7)**

Reference is made to the submission of Silt Curtain Deployment Plan (Revision 7) certified by the ET Leader (ET's ref.: "G1938/CS/L096/FEP-07/356/2009" dated 6 May 2020) provided via e-mail on 7 May 2020.

We are pleased to inform you that we have no adverse comments on the captioned submission. We hereby verify the Silt Curtain Deployment Plan (Revision 7) in accordance with Condition 2.8 of FEP-07/356/2009.

Thank you for your attention. Please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully,



David Yeung  
Independent Environmental Checker

c.c.	HyD	Attn: Mr. Tony Cheung	by fax: 2714 5289
	CEDD	Attn: Mr. Jimmy Ling	by fax: 2301 1277
	AECOM	Attn: Mr. David Kwan	by fax: 3912 3010
	LAM	Attn: Mr. Raymond Dai	by fax: 2882 3331

Q:\Projects\AACWBIECEM00\Corr\AACWBIECEM00\_0\_12126L.20.docx



# Lam Geotechnics Limited

Ground Investigation & Instrumentation Professionals

Ref : G1938/CS/L096/FEP-07/356/2009  
Date : 6 May 2020

**China State Construction Engineering (Hong Kong) Ltd.**  
**29/F, China Oversea Building,**  
**129 Hennessy Road,**  
**Hong Kong**

**Attn: Site Agent, Mr. Thomas Lui**

Dear Sir,

**Contract No. HY/2010/08**  
**Central – WanChai Bypass Tunnel (Slip Road Section 8)**  
**Silt Curtain Deployment Plan (Revision 7)**

Referring to the captioned submission received through email on 6 May 2020, we have reviewed your submitted details and hereby certify the submission in accordance with Condition 2.8 of FEP-07/356/2009.

Should you have any enquiry, please feel free to contact the undersigned at 2839 5666.

Yours faithfully,  
For and On Behalf of Lam Geotechnics Limited

Raymond Dai  
Environmental Team Leader

c.c. HyD	- Mr. Tony Cheung	(By Fax: 2714-5289)
CEDD	- Mr. Jimmy Ling	(By Fax: 2301-1277)
AECOM CWB	- Mr. David Kwan	(By Fax: 3912-3010)
Ramboll	- Mr. David Yeung	(By Fax: 3465-2899)





**中國建築工程(香港)有限公司**  
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

**Central – Wan Chai Bypass Tunnel  
(Slip Road Section 8)  
Contract No. HY/2010/08**

**Silt Curtain Deployment Plan under condition 2.8 of FEP- 07/356/2009**

Revision: 7

May 2020

Prepared by: Environmental Officer	Gabriel Wong	Date: 6 May 2020
---------------------------------------	--------------	------------------

**This document contains confidential information of China State Construction Engineering (Hong Kong) Limited and shall not be copied or amended without the approval of the Contractor's Representative**

---

## Table of Content

1 INTRODUCTION	1
2 SCOPE OF WORKS	1
3 LIST OF REFERENCE DOCUMENT	2
4 KEY FACTORS CONSIDERED DURING DESIGN FOR PROPOSED SILT CURTAIN	2
5 DETAILS OF PROPOSED SILT CURTAIN SYSTEM	8
6 DEPLOYMENT SCHEDULE	10
7 CONSTRUCTION PROGRAMME	11
8 TECHNICAL DETAILS OF SILT CURTAIN	11

## List of Appendices

### Appendix A

Location Plan of Trimming Works

### Appendix B

Works Programme

### Appendix C

Detailed Drawing of Silt Curtains

### Appendix D

Technical Details of Silt Curtain

### Appendix E

Silt Curtain Daily Checklist Template

### Appendix F

Email confirmation from EPD regarding Seabed Reinstatement Works

## Revision Status

Revision	Summary of Revision	Prepared	
		By	Date
1	First submission	CM Wong	26 Nov 13
2	Second submission	CM Wong	26 Aug 14
3	Third submission	CM Wong	30 Sept 14
4	Fourth submission	G Wong	30 July 19
5	Fifth submission	G Wong	19 Oct 19
6	Sixth submission	G Wong	7 Dec 19
7	Seventh submission	G Wong	6 May 20

EPD's observation / comment via email dated 29 April 2020	Responses
Wan Chai Development Phase II – Central-Wan Chai Bypass Tunnel (Slip Road Section 8) EP Condition 2.8: Silt Curtain Deployment Plan (Revision 6)	
i) Cover page – The Revision number seems wrong, please revise.	Revised
ii) S4.7, first paragraph – Please revise the paragraph to be <b>“With respect to nature of works include trimming only, the recommend maximum dredging rate as stated in Table 2 of the FEP 07/356/2009 will not be implemented at this stage.</b> In reference to EPD's confirmation email on 13 June 2019, in Appendix F, the seabed reinstatement works are exempt from the requirement of <b>the a</b> -permit under Section 8 of the Dumping at Sea Ordinance., <del>as such the said Works is not considered as dredging.</del>	Revised

EPD's observation / comment via email dated 7 January 2020	Responses
Wan Chai Development Phase II – Central-Wan Chai Bypass Tunnel (Slip Road Section 8) EP Condition 2.8: Silt Curtain Deployment Plan (Revision 5)	
i) Please add a table showing the revision history in the cover page of the plan.	Added
ii) Silt Curtain Deployment Plan (Rev 3, dated 25 November 2014) has already uploaded in EPD's EIAO website as follows: <a href="https://www.epd.gov.hk/eia/register/english/permit/fep1492013/documents/emar201411hk201108/pdf/emar201411hk201108.pdf">https://www.epd.gov.hk/eia/register/english/permit/fep1492013/documents/emar201411hk201108/pdf/emar201411hk201108.pdf</a> . Please clarify why the plan is still required to be revised and submitted for EPD's vetting.	Added in Section 2.0 (iii)
iii) It is known from S4.6 & S4.7 and on the plan that (i) HY/2010/08 will carry out trimming works based on the requirements of the Marine Department & (ii) the nature of works include trimming only. Please kindly advise and highlight the differences between dredging and trimming works	Added in Section 4.7
iv) We note S4.7 is revised as compared with previous version and inclusion of a new Appendix E that show the works involving seabed reinstatement works could be exempted from the requirement for a permit under S8 of the Dumping at Sea Ordinance (Cap.466). <b>However, the main concern for the trimming works is that the amount of sediment displaced may exceed that which is equivalent to the maximum rate of dredging in FEP-07/356/2009. Please elaborate</b>	Added in Section 4.7





<b>more on how the rate of trimming works (for example, by stating daily area of trimming and therefore expected volume of sediment displacement, or other illustrations as applicable) will not generate more sediment which is equivalent to the rate in Table 2 of FEP-07/356/2009.</b>	
v) It is known from S6 the plan that all other marine works except trimming (including dredging for seawall, temp. reclamation, removal of temp reclamation of TCBR4 has been completed. Please add the completion date of these works in S6.	Added

## 1.0 Introduction

In accordance of the Further Environmental Permit No. FEP-07/356/2009, the purpose of this deployment plan is to illustrate the general layout, the construction programme, details on the design, operation and maintenance of silt curtain to be installed for trimming works under the Central – Wan Chai Bypass Tunnel (Slip Road 8 Section) Project at Temporary Reclamation of Causeway Bay Typhoon Shelter TCBR4 as shown in Figure 2 of the Further Environmental Permit No. FEP-07/356/2009.

As the permit holder of the Further Environmental Permit No. FEP-07/356/2009, China State Construction Engineering (Hong Kong) Limited (hereafter CSHK) would be responsible for installation, maintenance, repairing (if necessary) and removal of the temporary works of silt curtain.

## 2.0 Scope of Works

In accordance with the Part B of Further Environmental Permit No. FEP-07/356/2009, this project is part of the designated project referred to as DP3 in the EIA report (Registration No.: AEIAR-125/2008) which involve

- i) Temporary reclamation works of around 3 ha in size including associated dredging works at Causeway Bay Typhoon Shelter ( hereafter CBTS);
- ii) Removal of the temporary reclamation after the construction of the Trunk Road; and reinstatement of CBTS
- iii) Further trimming and backfilling works (seabed reinstatement works) within CBTS was requested by Marine Department, with the previous revision of Silt Curtain Deployment Plan stating the marine works has been completed.

Location Plan of Trimming Works, please refers to **Appendix A**.

### 3.0 List of Reference Document

Relevant conditions in the EP and FEP are listed as follows for ease of references.

EP and FEP Condition	Remarks
EP No. EP-356/2009, Condition 2.8 and FEP-07/356/2009, Condition 2.8	<ul style="list-style-type: none"><li>- Referring to the Condition 2.8 stipulated in Environmental Permit No. EP-356/2009 and FEP-07/356/2009. The Permit Holder shall submit a silt curtain deployment plan at least two weeks prior to the commencement of the marine works.</li><li>- 4 hard copies &amp; 1 electronic copy of silt curtain deployment plan shall be certified by ET Leader and verified by the IEC as conforming to the relevant information and recommendation contained in the approved EIA Report (Register No.: AEIAR-125/2008).</li></ul>

### 4.0 Key Factors Considered during Design for Proposed Silt Curtain

The following factors have been taken into account during the preparation for this silt curtain deployment plan:-

4.1 The seabed trimming works will be carried out inside the CBTS. CBTS is surrounded by three breakwaters and the shorelines of the Hong Kong Island, leaving only two openings in the northeast and northwest corners as navigation accesses.

4.2 The existing North Breakwater of the CBTS forms two openings for the typhoon shelter, which allow vessels to and from the shelter. Generation of sediment plumes (such as trimming works operation) within typhoon shelter cannot be dispersed into the Victoria Harbour apart from these open ends. Please refer to Photo 01.

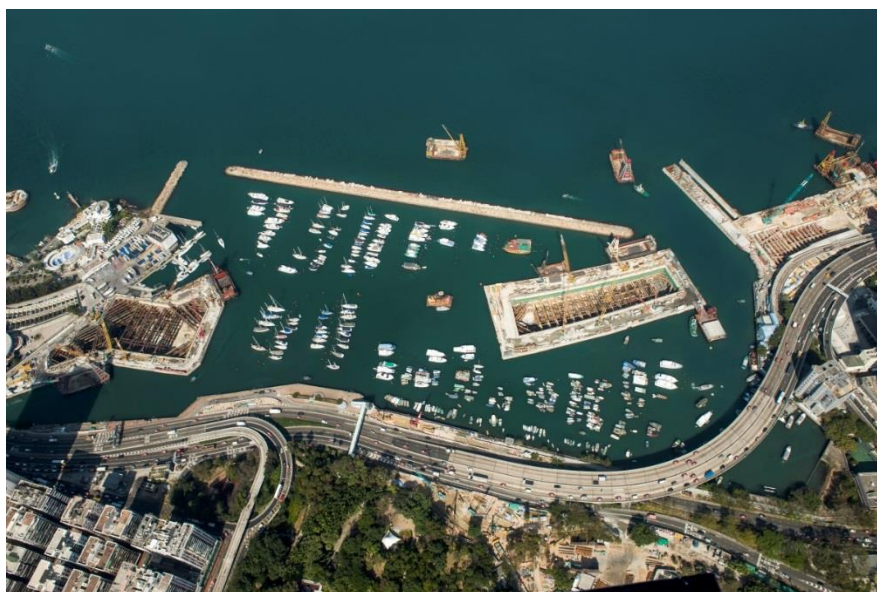


Photo 01: General view of the Causeway Bay Typhoon Shelter (CBTS).

4.3 The existing cooling seawater intake for Windsor House (C7) has been protected against any potential sediment plumes by the deployment of silt screen following the requirement in the conditions of the relevant EP and FEPs.

[Remark: Protection of seawater intake(s) would be addressed under the condition 2.9 (silt screen deployment plan) of FEP-07/356/2009 in a separate submission. As the reclamation of TCBR4 will coincide with the existing Windsor House cooling water intake, diversion of the source of seawater and newly silt screen are described in silt screen deployment plan.]

4.4 To minimize the loss of sediment affecting the water quality due to trimming works, the trimming works shall be carried out behind silt curtain(s);

4.5 The existing CBTS is very congested and the marine works area is located in close proximity to the vessels in the anchorage area. Also the marine works area is entirely surrounded by the public navigation channels, installation of silt curtain at the boundary between the works area and navigation channels will induce obstruction to the channel.

4.6 As per Marine Department's request, the existing CBTS seabed is to be trimmed to their desired levels. Therefore, HY/2010/08 will carry out such trimming works.

4.7 In reference to EPD's confirmation email on 13 June 2019, in **Appendix F**, the seabed reinstatement works are exempt from the requirement of the permit under Section 8 of the Dumping at Sea Ordinance.

Works at CBTS is trimming of local high spots within the CBTS as part of the seabed reinstatement works, the excavated material are the fine quality general fill material backfilled by HY/2010/08 previously onto the seabed upon completion of the temporary reclamation removal of the CWB tunnel construction.

The trimming volume of CBTS is expected to be 1682m<sup>3</sup>, with only one dredger will be conducting the trimming works within CBTS, it will not exceed the daily dredging rate of 5,000 cubic meter/day nor the hourly dredging rate of 313 cubic meter/hour as stated in Table 2 of FEP-07/356/2009.

## 5.0 Details of Proposed Silt Curtain System

5.1 Taking into account of the key factors mentioned in Section 4 above, the silt curtain system to facilitate the trimming works is designed and its details are elaborated below:-

- (a) The location plan of trimming areas of the designated project is shown in drawing no. CDD/TS3/0035 enclosed in **Appendix A**.
- (b) To cater for the dynamic situation within the CBTS, silt curtain shall be set up in a way such that adequate protection for the nearby intake, proper tidal flushing to circulate the embayed water and navigation safety of vessels can all be ensured during the trimming operation. Extend of the silt curtain would be down to seabed level.
- (c) A silt curtain frame mounted on the grab dredger/barge will be constructed with double layer of geotextile materials. The toe of the curtain will be lowered simultaneously with the increase of trimming depth. The migration of sediment plume is under control within silt curtain enclosed area. The entire the water column should be enclosed by the silt curtain.

### 5.2 Maintenance for Silt Curtain

Proper maintenance will be carried out for the proposed silt curtain system and the procedures are laid down below:

5.2.1 Site supervisors should be responsible to inspect the condition of the silt curtain during the course of marine works. An inspection checklist will be filled by the site supervisors. All completed checklists should be kept on site for record purpose. A template of checklist is attached in Appendix E.

5.2.2 If any silt curtain is found damaged and repairing works are considered necessary, the respective parts of works at location from the damaged curtain will be temporarily ceased unless the damaged silt curtain have been repaired or replaced by another silt curtain. The silt curtain will be lifted up from sea by chain block pulley system with the aid of crane barge if necessary so that the whole/part of silt curtain (dependent on the extent of damage) will be replaced.

5.2.3 Before and during removal of the damaged silt curtain, site supervisor should closely communicate with operators of other marine plant to ensure no trimming works will be carried out in region from the location of silt curtain maintenance. The ceased trimming works will be resumed after the damaged silt curtain is satisfactorily repaired or replaced by another silt curtain.

5.2.4 During regular daily maintenance, refuse or debris around the silt curtain would be collected within site boundary, both inside or outside area enclosed by silt curtain. This is to avoid adverse effect to marine plant as well as to the marine access and the public.

5.2.5 Sufficient stock of spare geotextile materials and other associated components shall be kept for readily repairing/replacement in case of damages.

5.2.6 Trimming works inside CBTS will be ceased when Tropical Cyclone Signal 1 is hoisted. When Tropical Cyclone Signal 1 is hoisted, the silt curtain will be retracted and securely stored on board the barge. Upon the cancellation of tropical cyclone signal, all silt curtains will be re-deployed after checking prior to the resumption of works. Furthermore, a diving inspection will be carried out to ensure the integrity the silt curtain. A sample of diving inspection checklist is enclosed in Appendix E in this deployment plan.

## **6.0 Deployment Schedule**

The anticipated schedule of the silt curtain deployment is shown in the table below. It is prepared based on the latest Works Programme and may subject to changes to cope with the actual site situation and progress. Silt curtain would be deployed along temporary seawall to protect water quality.

	Anticipated Installation Works	Anticipated Removal Works
TCBR4		
Dredging works for seawall	Completed	Nov 2014
Temporary Reclamation	Completed	July 2015
Removal of temporary Reclamation	Completed	Sept 2017
Trimming Works	May 2019	Oct 2020

Deployment of silt curtain on site will match the works to be carried out. For details of Works programme please refer to **Appendix B**.

In accordance with the works programme, deployment of silt curtain(s) are separated into different stages. They are:

- i) Trimming works

Detailed drawings of deployment of silt curtain by stages are given in **Appendix C**.

## 7.0 Construction Programme

The updated marine works programme for the project is summarized and enclosed in **Appendix B**.

## 8.0 Technical Details of Silt Curtain

8.1 “Thrace Plastics” WG 105 woven geotextile will be used for all proposed silt curtains and double-layered silt curtain.

8.2 The technical data of the proposed geotextile material is enclosed in **Appendix D**.



# Appendix A

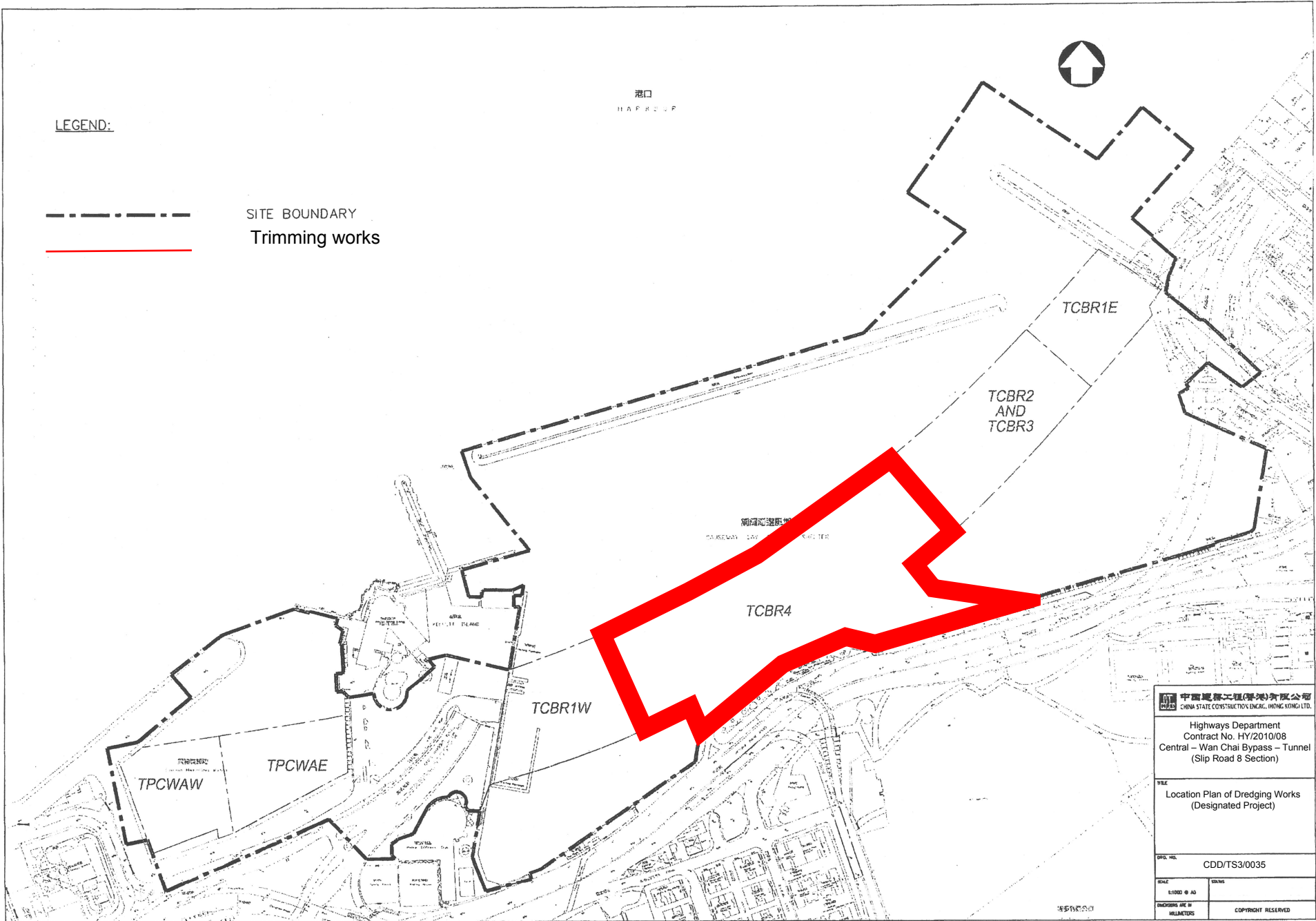
## Location Plan of Trimming Works



LEGEND:

- SITE BOUNDARY
- Trimming works

港口  
HARBOR



中國建築工程(香港)有限公司  
CHINA STATE CONSTRUCTION ENGINEERING, HONG KONG LTD.

Highways Department  
Contract No. HY/2010/08  
Central - Wan Chai Bypass - Tunnel  
(Slip Road 8 Section)

FILE  
Location Plan of Dredging Works  
(Designated Project)

DRG. NO.  
CDD/TS3/0035

SCALE 1:500 @ A3	DATE
DESIGNED BY MILLICENT	COPYRIGHT RESERVED



# Appendix B

# Works Programme

---



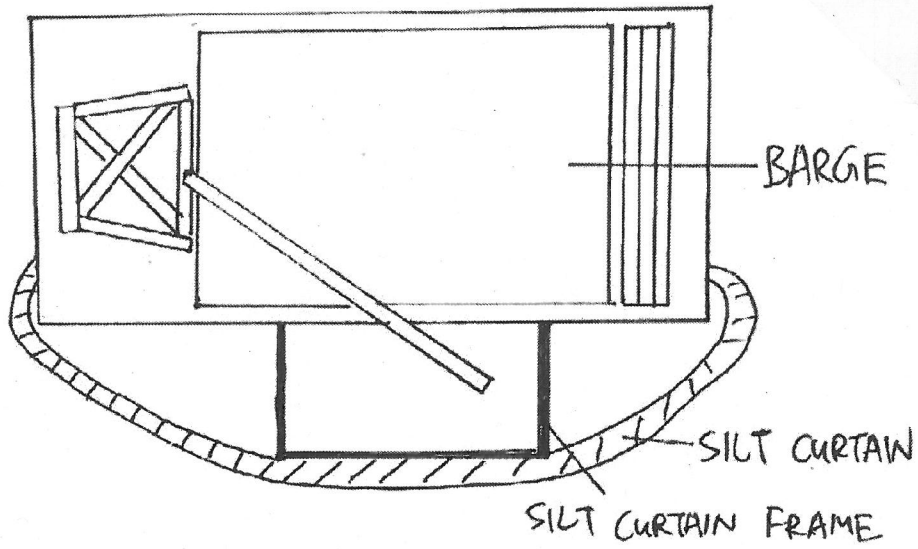


# Appendix C

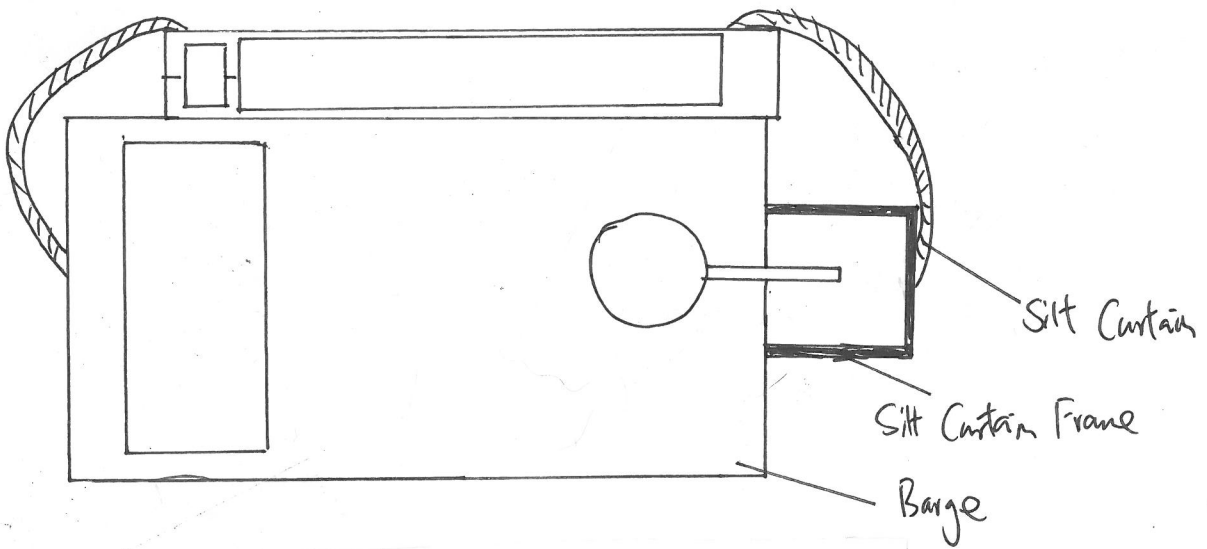
## Detailed Drawing of Silt Curtains

# Silt Curtain Arrangement During Trimming Works

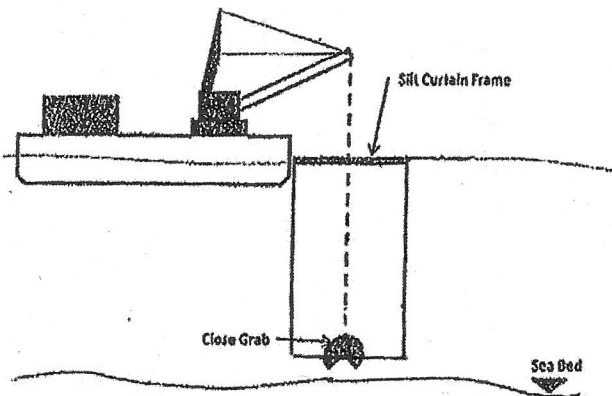
A



B



PLAN



SECTION A-A



# Appendix D

## Technical Details of Silt Curtain



**中國建築工程(香港)有限公司**  
CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.

Contract No. HY/2010/08  
Contract Title: Central – Wan Chai Bypass –  
Tunnel (Slip Road 8 Section)

### CONTRACTOR'S SUBMISSION FORM (MATERIAL)

To : The Engineer's Representative  
Attn: Mr. Peter Poon

Submission Ref. No: CDD/2002/CSF/MTL/TC/001015

CSF No: 000296

AECOM ref. no. (if applicable) :

Title of Submission: Geotextiles for Marine Works

Required Information	Details Provided
Name of Product or Service	Woven Geotextiles – Silt Curtain for Marine Works
Supplier's Address	Workshop E, 2/F., Effort Industrial Building, 2-8 Kung Yip Street, Kwai Chung, N. T. Hong Kong
Supplier's Name	Million Target Enterprises Ltd
Type of Product or Service	WG105
Applicable Specification Clause	
Applicable Standard	
Test / Backup Data Provided	As per attached
Previous History of Used	As per attached
Proposed Location of use	Silt curtain and Marine works
Proposed Duration for use	Whole Contract Period
Health and Safety Information provided	N/A
BD reference No.	N/A
FSD reference No.	N/A

Remarks :

The information, technical data sheet and sample of the proposed material are attached.

Purpose of Submission:

For Approval

For Information

For Record Purposes

Date of Required Response : 15/9/2013

Total Page : 1 + 6

From: Site Agent

Name: Dr. Dave Chan

Signature:

Date: 23 August 2013

Prepared by: DC/SML/CPY/ysk

c.c.: MasterFile/QA/originator

# GEOSYNTHETICS WOVEN GEOTEXTILES

Polypropylene geotextiles for:

- Reinforcement
- Separation
- Filtration
- Drainage
- Erosion Control





# THE COST-EFFECTIVE CHOICE FOR BUILDING THE FUTURE

## FUNCTIONS SERVED BY THRACE NG WOVEN GEOTEXTILES



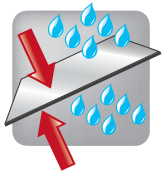
### REINFORCEMENT

The good tensile mechanical properties of Thrace NG geotextiles in conjunction with the soil's good compressive but poor tensile properties **improve the total system's strength interaction**. The high strength and low elongation of the geotextiles are **ideal for reinforcing embankments of roads, slopes and retaining walls**.



### SEPARATION

The placement of Thrace NG flexible and porous geotextile between dissimilar earth materials allows for the **integrity and functioning of both materials** so that they can be improved or remain intact.



### FILTRATION

Thrace NG woven geotextiles work in equilibrium with the soil to allow for **adequate liquid flow with limited soil loss** across the plane of the geotextile while avoiding pore clogging.



### DRAINAGE

The equilibrium between the soil-to-Thrace NG geotextile system allows for adequate liquid flow while maintaining limited soil loss within the plane of the geotextile. The hydraulic properties of the geotextile are suitable to establish **structural stability by controlling excess amounts of water** during and after construction.



### EROSION CONTROL

Thrace NG woven geotextiles can be used independently or in conjunction with Thrace NG nonwoven geotextiles for **creating geobags** that can be utilized for **erosion control of slopes, shoreline protection, and river bank flood control**.



[www.thracegroup.com](http://www.thracegroup.com)

THRACE NONWOVENS & GEOSYNTHETICS S.A.

20, Marinou Antypa str., 17455, Alimos, Athens, Greece

T +30 210 9875 046-8 | F +30 210 9875 040 | [geo@thraceplastics.gr](mailto:geo@thraceplastics.gr)

 **THRACE NG**

MEMBER OF THRACE GROUP

## WG - Standard | WG105



### Applications

Roads , Shore and Riverline Protection

PROPERTY	METHOD	UNITS	WG105
Tensile Strength MD	EN 10319	kN/m	105
Tensile Strength CD	EN 10319	kN/m	105
Tensile Elongation MD	EN 10319	%	15
Tensile Elongation CD	EN 10319	%	11
Resistance To Static Puncture	EN ISO 12236	N	12000
Characteristic Opening Size (ø90)	EN ISO 12956	mm	175
Water Permeability Normal To Plane Vih50	EN ISO 11058	m/sec*10-3	9
Thickness (2kpa)	EN 9863-1	mm	1,4

### Note

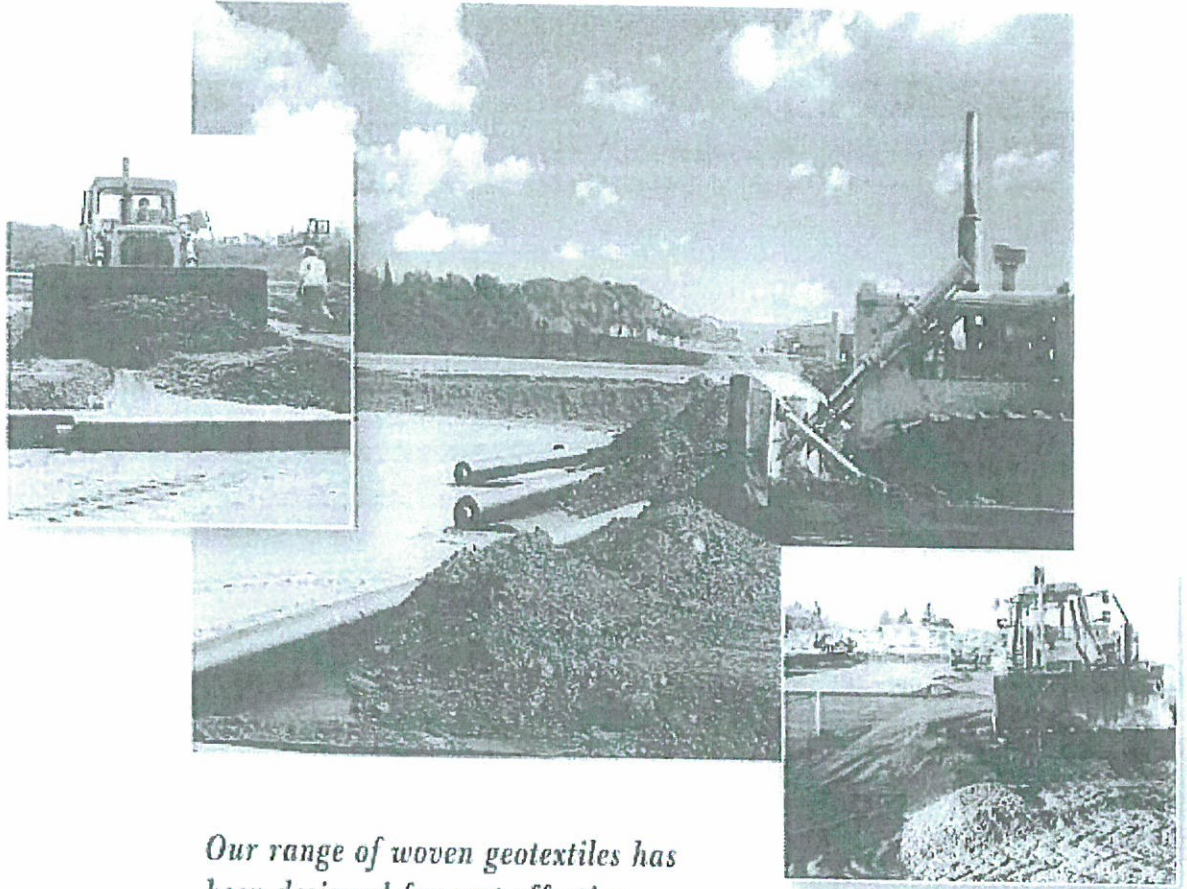
The information contained herein is furnished without charge or obligation and the recipient assumes all the responsibility for its use. The property values listed are subject to change without prior notice. Because conditions for use and handling may vary and are beyond our control, we make no representation about, and are no responsible or liable for, the accuracy or reliability of said information or performance of any product. Any specification, properties or applications listed herein are provided as information only in no way modify, amend, enlarge or create any warranty. Nothing contained herein is to be construed as permission or as any recommendation to infringe any patent.

© 2019 Thrace Group. All Rights Reserved.

All Thrace Group Products Are ISO Controlled



# WOVEN Geotextiles



*Our range of woven geotextiles has  
been designed for cost effective*

- *Reinforcement*
- *Separation*
- *Filtration*

*With over 25 years of experience Thrace Plastics continues to  
demonstrate its ability to extend project life and reduce  
construction cost.*



## Thrace Plastics

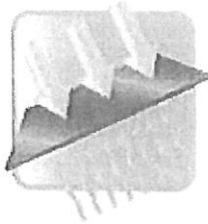
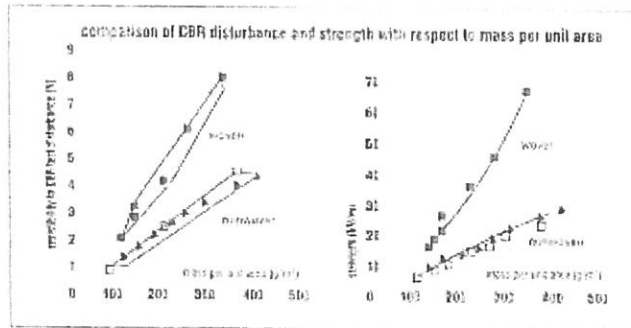


MILLION TARGET ENTERPRISES LTD 1/4  
MANDAS ENTERPRISES  
明 達 企 業

Workshop E, 2/F., Effort Industrial Building, 2-8 Kung Yip Street, Kwai Chung, N.T., Hong Kong  
Tel. +852 2301 1693 Fax. +852 2398 3495 E-mail. info@mandas.com.hk Website. www.mandas.com.hk

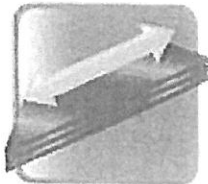
# WOVEN Geotextiles

# TECHNICAL FABRICS



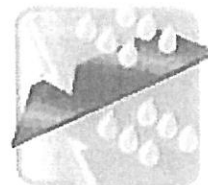
## Separation

Using Thruce woven geotextiles that provide strength, puncture resistance and the proper elongation properties separating layers in construction works can be achieved properly. Preventing the intermixing of two layers of soil is a common requirement in road works and railway constructions.



## Reinforcement

The mechanical properties of Thruce woven geotextiles when installed under or in-between soil layers, help improve the soil layers mechanical properties by absorbing the tensile forces and reducing deformation. High strength & low elongation are ideal for reinforcing embankments of roads, slopes, retaining walls.



## Filtration

Thruce woven geotextiles creates a bridging zone and its pore size helps retain soil particles allowing movement of water, making it possible to maintain water flow while avoiding clogging.



## Erosion Control

Using Thruce woven geotextiles helps prevent soil particles from washing away from slopes and shoreline. Geotubes and Thruce silt fence are both additional products made from Thruce woven geotextiles to prevent erosion control.



# Thrace

## Nonwovens & Geosynthetics

# High Strength Woven Geotextiles

## WG series - Technical table (Metric values)



Filtration



Separation



Drainage



Reinforcement



Erosion Control

THRACE NW&GEO S.A. WG technical fabrics are polypropylene, UV stabilized, high strength, black woven geotextiles, used for many civil engineering and building applications. It is manufactured at one of THRACE NW&GEO S.A. facilities that have achieved ISO 9001:2008 certification for its systematic approach to quality. They are also resistant to chemicals and biological agents. WG geotextiles conform to the property values listed below. All technical data are based on statistical analysis from internal and external laboratory results.

PROPERTY	METHOD	UNIT	WG14	WG16	WG22	WG25	WG30	WG31	WG40	WG42	WG48	WG55	WG60	WG65	WG80	WG95	WG105
Tensile Strength (MD/CD)	EN 10376	N/m	22/18	22/18	22/22	25/25	30/30	32/22	40/40	42/42	48/48	55/55	65/60	65/75	85/75	85/85	105/105
Elongation (MD/CD)	EN 10376	%	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12	15/12
Resistance to static puncture	EN ISO 12238	N	2400	2400	3150	3400	3650	4000	5000	5600	6500	7000	7500	8500	10000	11000	13000
Dynamic Puncture resistance	EN 13423	mm	17	17	14	12	10	9	8	8	6	5	5	5	3	3	3
Characteristic Opening Size (O <sub>95</sub> )	EN ISO 12864	µm	250	250	250	250	230	230	200	200	200	180	160	225	225	200	175
Water Permeability normal to the plane (K <sub>100</sub> )	EN ISO 11058	ml <sup>2</sup> /g <sup>2</sup>	15	7	10	10	10	10	7	15	15	10	10	9	9	9	7
Water Flow Rate (q <sub>10</sub> #50mm)	EN ISO 11058	µm <sup>2</sup> /s	15	7	10	10	10	10	7	15	15	10	10	9	9	9	7
Mass per Unit Area	EN 2064	g/m <sup>2</sup>	95	95	100	100	150	160	190	200	220	250	270	350	350	360	430
Thickness	EN 8933-1	mm	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.8	1.1	1.1	1.2	1.2	1.2	1.3
UV Resistance	EN 12224	%retained @500h	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Roll Width / Roll Length	Measured	m	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100	5.2/100
Roll Area	Calculated	m <sup>2</sup>	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530

### Applications and intended uses of High Strength Woven Geotextiles

	EN 13249	F	R	F+S	R+S	F+R	F+R+S
	EN 13250	F	R	F+S	R+S	F+R	F+R+S
	EN 13251	F	R	F+S	R+S	F+R	F+R+S
	EN 13252	F	D	F+S	F+D	F+S+D	F+R+S
	EN 13253	F	R	F+S	R+S	F+R	F+R+S
	EN 13254	F	R	F+S	R+S	F+R	F+R+S
	EN 13255	F	R	F+S	R+S	F+R	F+R+S
	EN 13256	F	R	F+S	R+S	F+R	F+R+S
	EN 13257	F	R	F+S	R+S	F+R	F+R+S
	EN 13265	F	R	F+S	R+S	F+R	F+R+S

**NOTES:**

- All the above figures are averages values obtained from testing to current EN standards in our laboratory and at external laboratories.
- THRACE NW&GEO S.A. Technical Fabrics reserve the right to alter product specifications at any time without prior notice. It is the responsibility of all users to satisfy themselves that the above data are current.
- Polypropylene is the constituent polymer used in the production of the WG geotextiles series.
- To be covered within one month after installation. All the above geotextiles are predicted to be durable for more than 50 years in soil temperatures > 25°C and are resistant to highly acid and alkaline environments on the basis of a durability assessment. All of them have been satisfactorily assessed for resistance to oxidation (EN ISO 12938), microbiological degradation (EN ISO 12253) and chemical opening (EN ISO 12959-Method A; inorganic acid and Method B: organic base).

The information contained herein is furnished without charge or obligation and the recipient assumes all the responsibility for its use. Because conditions for use and handling may vary and are beyond our control, we make no representation about, and are not responsible or liable for, the accuracy or reliability of said information or performance of any product. Any specification, properties or applications listed herein are provided as information only in no way modify, amend, enlarge or create any warranty. Nothing contained herein is to be construed as permission or as any recommendation to infringe any patent.

**CE**

**TUV**

**AUSTRIA**

**HELLAS**

ISO 9001:2008

Reg.No: 01010018

Certificate No: 558-CPD-592

Workshop E, 2/F., Effort Industrial Building, 2-8 Kung Yip Street, Kwai Chung, N.T., Hong Kong

Tel. +852 2301 1693 Fax. +852 2398 3495 E-mail: info@mandat.com.hk

Mandarin Enterprises Ltd. 1/A

**MANDARIN ENTERPRISES**

明達企業



Certificate No: 0338-CPD-392

## Product Data Sheet

### WG105

WG105 technical fabric is a polypropylene, UV stabilized, high strength, black woven geotextile, used for many civil engineering and building applications. It is manufactured at one of THRACE NW&GEOs S.A. facilities that have achieved ISO 9001:2008 certification for its systematic approach to quality. It is also resistant to many chemicals and biological agents. WG105 conforms to the property values listed below. All technical data are based on statistical analysis from internal and external laboratory results.

PROPERTY	TEST METHOD	VALUE	METRIC VALUES		TOLERANCE
<b>MECHANICAL</b>					
Tensile Strength (MD/CD)	EN 10319	Average	kN/m	105/105	-5.0/-5.0
Elongation (MD/CD)	EN 10319	Average	%	20/15	±4/±3
Resistance to static puncture	EN ISO 12236	Average	N	12000	-1000
Dynamic Perforation resistance	EN 13433	Average	mm	3	+1
<b>HYDRAULIC</b>					
Characteristic Opening Size (O <sub>95</sub> )	EN ISO 12956	Average	µm	175	±50
Water permeability V <sub>15s</sub>	EN ISO 11058	Average	m/sec*10 <sup>3</sup>	9	-3
Water flow rate	EN ISO 11058	Average	l/m <sup>2</sup> *s	9	-3
<b>PHYSICAL</b>					
Mass/Unit Area	EN 9864	Average	gr/m <sup>2</sup>	480	±20
Thickness (2kPa)	EN 9863-1	Average	mm	1.4	±0.1
<b>ENDURANCE</b>					
Weathering Resistance (MD/CD)	EN 12224	Average	%retained @500hr	90	±10
<b>STANDARD PACKAGING</b>					
Roll Width	Measured	Typical	m	5.2	-0.01
Roll Length	Measured	Typical	m	100	-2
Roll Area	Calculated	Typical	m <sup>2</sup>	520	-0.02



F=Filtration



S=Separation



D=Drainage



R=Reinforcement



Erosion Control

#### Applications and Intended uses of High Strength Woven Geotextiles

EN 13249	EN 13250	EN 13251	EN 13252	EN 13253	EN 13254	EN 13255	EN 13256	EN 13257	EN 13265
F,R	F,R	F,R	F,R	F,R	F,R	F,R	F,R	F,R	F,R
F+S	F+S	F+S	F+S	F+S	F+S	F+S	F+S	F+S	F+S
R+S	R+S	R+S	R+S	R+S	R+S	R+S	R+S	R+S	R+S
F+R	F+R	F+R	F+R	F+R	F+R	F+R	F+R	F+R	F+R
F+R+S	F+R+S	F+R+S	F+S+D	F+R+S	F+R+S	F+R+S	F+R+S	F+R+S	F+R

#### NOTES:

- All the above figures are averages values obtained from testing to current EN standard in our laboratory and at external Institutes.
- THRACE NW&GEOs S.A. Technical Fabrics reserve the right to alter product specifications at any time without prior notice. It is the responsibility of all users to satisfy themselves that the above data are current.
- Polypropylene is the constituent polymer used in the production of the WG geotextiles series.
- To be covered within one month after installation. All the above geotextiles are predicted to be durable for more than 50 years in soil temperatures >25°C and are resistant to highly acid and alkaline environments on the basis of a durability assessment. All of them have been satisfactorily assessed for resistance to oxidation (ENV ISO 13438), microbiological degradation (ENV 12225) and chemical ageing (ENV ISO 12960-Method A: Inorganic acid and Method B: organic base).

The information contained herein is furnished without charge or obligation and the recipient assumes all the responsibility for its use. Because conditions for use and handling may vary and are beyond our control, we make no representation about, and are not responsible or liable for, the accuracy or reliability of said information or performance of any product. Any specification, properties or applications listed herein are provided as information only in no way modify, amend, enlarge or create any warranty. Nothing contained herein is to be construed as permission or as any recommendation to infringe any patent.

**TÜV**  
AUSTRIA  
HELLAS  
ISO 9001:2008  
Reg.No: 01010018

**BTG** CERTIFICATION SERVICES

Notified Body



CERTIFICATION  
SERVICES

## Certificate of Factory Production Control

BTTG Ref No: 5100316/1

**0338-CPD-0687**

In compliance with Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (the Construction Products Directive or CPD), as later amended, it has been stated that the construction products

**Polypropylene, UV Stabilized, Black Woven Geotextile Fabric**

TP019011P, TP019013P, TP019016P, TP020014P, TP025025W, TP030030W,  
TP040035W, TP045045W, TP060060W, TP080080W, TP100100W

WG42HF, WG48HF, WG55HF, WG60HF, WG65HF, WG80HF, WG85HF, WG105HF

WG14, WG16, WG18, WG22, WG25, WG30, WG32, WG40, WG42,  
WG48, WG55, WG60, WG65, WG80, WG85, WG105

placed on the market by

**Thrace Nws&GEOs S.A**  
**20 Marinou Antipa str.**  
**GR-174 55 Alimos Athens**  
**Greece**

factory address

**Magiko Xanthis**  
**GR-671 00**  
**Greece**

are submitted by the manufacturer to the initial type-testing of the product, a factory production control and that the notified body No. 0338 - BTTG - has performed the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.

This certificate attests that all provisions concerning the attestation of factory production control described in Annex ZA of the standards

Intended uses: F + R + S

EN 13249:2000/A1:2005; EN 13250:2000/A1:2005; EN 13251:2000/A1:2005; EN 13253:2000/A1:2005;  
EN 13254:2000/A1:2005; EN 13255:2000/A1:2005; EN 13257:2000/A1:2005

Intended uses: F + S + D

EN 13252:2000/A1:2005

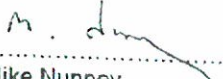
Intended uses: F + R

EN 13265:2000/A1:2005

were applied.

This certificate was first issued on 5 March 2012 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

Signed for and on behalf of BTTG

  
.....  
**Mike Nunny**  
Operational Head, Certification  
BTTG  
Date Signed: 5 March 2012

For terms and conditions of issue, see Page 2



Page 1 of 2

BTTG Ltd. Registered Office: Wira House, West Park Ring Road, Leeds. LS16 6QL. United Kingdom

Registered in England No. 4628697

Tel: +44 (0)113 259 1999 Fax: +44 (0)113 278 0306 e-mail: info@bttg.co.uk

5

**Terms and Conditions associated with the issue of  
EC Certificate of Factory Production Control No: 0338-CPD-0687**

1. This certificate is issued subject to BTTG's standard terms of business.
2. Any change to the product and/or technical specification shall be immediately notified to BTTG.
3. The Manufacturer / Authorised Representative shall have continuous surveillance of Factory Production Control carried out by a Notified Body and a re-assessment of Factory Production Control every three years.
4. This certificate remains the property of BTTG and will be withdrawn if any of the conditions attached to its issue are not complied with.
5. Marking and instructions have been assessed in the English language only. It is the Manufacturers/Authorised Representatives responsibility to obtain and supply language versions acceptable to the country where the product is to be sold.
6. This certificate remains valid only if satisfactory maintenance of independent certification against ISO 9001 is achieved.





# Appendix E

## Silt Curtain Daily Checklist

### Template

---

# Silt Curtain每日檢查表

位置：\_\_\_\_\_ 編號：\_\_\_\_\_

日期：\_\_\_\_\_ 檢查員：\_\_\_\_\_

	星期一	星期二	星期三	星期四	星期五	星期六
1. 整潔						
1.1 沒有垃圾在浮架內						
1.2 已清理架內垃圾						
1.3 其它 (請註明):						
2. 浮架狀況						
2.1 浮架沒有損壞						
2.2 浮架接口沒有損壞						
2.3 螺絲及繩索沒有鬆脫						
2.4 其它 (請註明):						
3. 隔泥布狀況						
3.1 隔泥布沒有損壞						
3.2 隔泥布沒有鬆脫						
3.3 其它 (請註明):						
簽署:						

說明: ✓ = 滿意

x = 不滿意須改善

- = 不適用

# 隔泥布潛水員檢查表

位置: \_\_\_\_\_ 編號: \_\_\_\_\_  
日期: \_\_\_\_\_ 檢查員: \_\_\_\_\_

1. 整潔	
1.1 沒有垃圾在浮架內	
1.2 已清理架內垃圾	
1.3 其他(請註明):	
2. 浮架狀況	
2.1 浮架沒有損壞	
2.2 浮架接口沒有損壞	
2.3 螺絲及繩索沒有鬆脫	
2.4 其他(請註明):	
3. 隔泥布狀況	
3.1 隔泥布沒有損壞	
3.2 隔泥布沒有鬆脫	
3.3 其他(請註明):	
	簽署:

說明: ✓ = 滿意

× = 不滿意須改善

- = 不適用



# Appendix F

## Email confirmation from EPD regarding Seabed Reinstatement Works

---

黃卓峯

---

收件者: Ip Chi Fung, Donald  
主旨: RE: Seabed Reinstatement/Trimming Works at Ex-Wan Chai Public Cargo Working Area (Ex-WCPCWA) and Causeway Bay Typhoon Shelter (CBTS)

---

**From:** [stephenschung@epd.gov.hk](mailto:stephenschung@epd.gov.hk) [<mailto:stephenschung@epd.gov.hk>]

**Sent:** Thursday, June 13, 2019 10:58 AM

**To:** Ip Chi Fung, Donald

**Cc:** Po On Yee, Annie; Norton, Denis Arthur; Mr. Li Yingrui, Ray - Highways Department; Wong Kam Keung, Eric; Chu Wa Nin, Samuel; [louischan@epd.gov.hk](mailto:louischan@epd.gov.hk)

**Subject:** RE: Seabed Reinstatement/Trimming Works at Ex-Wan Chai Public Cargo Working Area (Ex-WCPCWA) and Causeway Bay Typhoon Shelter (CBTS)

Dear Mr IP,

I refer to your email of 12 Jun 2019 attaching supporting documents related to the captioned works. We note that:

- your proposed seabed reinstatement works shown in your plans with sketch no. 60095653/T2/SK0957A and no. 60095653/T2/SK0958 are within the works area delineated in the plans nos. 92995/GAZ/1000A and 92995/GAZ/1005A to 92995/GAZ/1008A;
- the works associated with the plans nos. 92995/GAZ/1000A and 92995/GAZ/1005A to 92995/GAZ/1008A are authorized under the Roads (Works, Use and Compensation) Ordinance (Cap.370); and
- the works to be carried out in association with the reclamation (i.e. "1st part of the works" as stated in your proposal) involve the reinstatement of existing sea-bed.
- 

In accordance with s.4(1) of the Dumping at Sea (Exemption) Order, your proposed seabed reinstatement works are exempt from the requirement for a permit under section 8 of the Dumping at Sea Ordinance (Cap.466).

Should you have any queries, please feel free to contact me.

Regards,  
Stephen Chung  
Environmental Protection Department  
Tel.: 2835 1189