



## Drainage Services Department

### Port Shelter Sewerage, Stage 3 – Sewerage Works at Po Toi O

### Silt Curtain & Cofferdam Deployment Plan (Issue 7)

**Certified by:**

A handwritten signature in black ink, appearing to be 'JH' inside a roughly drawn circle.

**Johnathan Ho**

**Environmental Team Leader**

**Verified by:**

A handwritten signature in black ink, appearing to be 'F.C. Tsang' in a cursive style.

**F.C. Tsang**

**Independent Environmental Checker**

Our Ref: PL-202309019

Drainage Services Department  
Special Duty Division  
42/F, Revenue Tower, 5 Gloucester Road,  
Wan Chai, Hong Kong.

Attention: Mr. Gary CHUNG

21 September 2023

Dear Gary,

**Sewerage Works at Po Toi O  
Silt Curtain and Cofferdam Deployment Plan**

I refer to the email from the ET concerning the captioned. I have no adverse comment on the Silt Curtain and Cofferdam Deployment Plan (Rev.7). In accordance with Condition 2.13 of the Environmental Permit with permit No EP-516/2016, I hereby verify that this document has conformed to the relevant information, requirements and recommendations contained in the approved EIA Report (Register No. AEIAR-206/2017).

Yours faithfully,



F.C. Tsang  
Independent Environmental Checker

cc. ETL – Johnathan HO

## Silt Curtain and Cofferdam Deployment Plan (Po Toi O)

DC/2019/09 – Provision of Village Sewerage in Sai Kung

Issue	Date	Amendments from Previous Version
7	21/08/2023	Paragraph 1 & 2 of Part A; Figure and Paragraph 3 & 4 of Section 2.2; Table of Section 2.3; Paragraph 3 of Section 3.1; Point 2 of Section 3.3; Paragraph 3 of Section 3.4; Appendix A; Location Plan (Location B) of Appendix B; Appendix D; Appendix E & Appendix G

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## **Part A – General**

Construction of the submarine outfall will be by means of horizontal directional drilling from the rising mains at the rocky shore through the seabed. A diffuser will be installed on top of a riser shaft extending about 1m above the seabed at the end of the submarine outfall. An area of 498 m<sup>2</sup> will be fully enclosed by sheet pile cofferdam at the diffuser point.

An area of 16.6m x 30m will be fully enclosed by sheet pile cofferdam at the diffuser point. About 498m<sup>2</sup> seabed will be dredged to remove the sediments in the seabed temporarily in order to ensure the stability of the seabed for the installation of the diffuser. Most of the area will be backfilled with rockfill and the permanent area lost at the diffuser is about 5 m<sup>2</sup>. After the backfilling work is completed, the cofferdam will be removed.

Marine-based construction works (i.e. installation & extraction of sheeting pile cofferdam by vibratory action) would cause minor displacement of marine sediment. With erection and maintenance of silt curtain, the displaced sediment will settle quickly and will not significantly increase the suspended solid level in water. Prior to the erection of temporary platform at the rocky shore and the cofferdam for diffuser, silt curtains will be deployed until the works have completed. Besides, an additional silt curtain will be deployed at the outlet of a box culvert prior to the construction of PTO Sewerage Treatment Plant and will be removed upon the completion of the construction of PTOSTP.

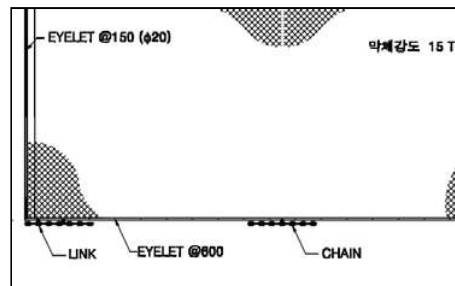
This deployment plan includes construction programme, details on the design, method of installation, operation and maintenance of silt curtains and cofferdam, and other associated information.

## Part B – Deployment of Silt Curtain

### 2.1 Details of the Proposed Silt Curtain

In general, silt curtain “GEONIA<sup>®</sup> Silt Protector - DSP 15” (or equivalent) will be deployed to fully enclose the cofferdam and the outlet of the box culvert prior to commencement of works. With reference to the location of deployment, distance to the coast, and the maximum depth of seabed, the silt curtain specialist suggested that the silt curtain with tensile strength 150 kN/m would be suitable for deployment at Location A and B, whilst less tensile strength shall be considered for the silt curtain deployed at Location C.

The proposed silt curtain applies a durable fabric for the float device by using high tenacity colored yarn, which was improved to solve the problem of fault construction, poor visibility caused by a damaged PVC coated fabric, and marine pollution of a broken PVC coated fabric. The size of each silt curtain will be 10m in length and various sizes in depth. The silt curtain will be connected by using 10mm-diameter PP ropes. A chain (5kg/m) will be installed at the bottom of the silt curtain to ensure the straightness of silt curtain at Location A and B. No gaps will be retained between the seabed and the silt curtain.



**Detail of Chain**

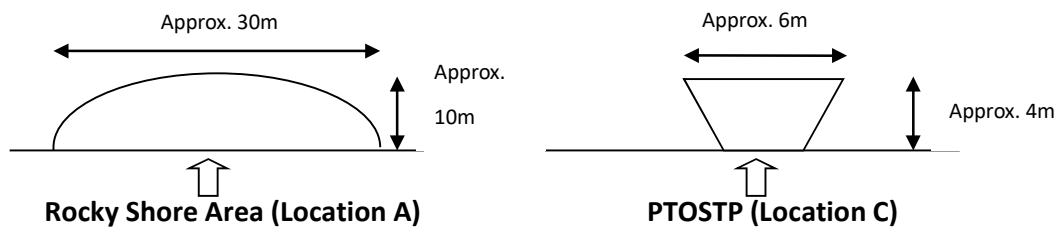
Ton bags with size 1.5mx1.5mx1.5m will be adopted as the anchorage points to fix the silt curtains at Location A and B.

The typical section, connection details, material properties, certificates and job reference of the proposed silt curtain (including anchor block) is attached in **Appendix A – Specification of Silt Curtain.**

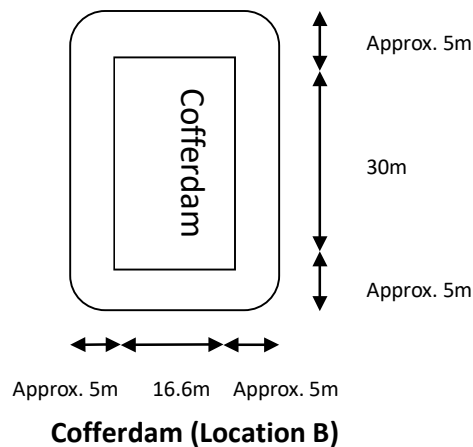
## 2.2. Location Plan of Anchor Blocks and Silt Curtain

During the installation and extraction works of temporary steel cofferdam, as well as the construction of submarine outfall by Horizontal Directional Drilling (HDD), silt curtains will be deployed around the cofferdam (Location B) and rocky shore area (Location A) respectively. In addition, silt curtains will be also deployed near the outlet of the box culvert to avoid overflowing of construction wastewater from Po Toi O Sewerage Treatment Plant (PTOSTP) (Location C).

At the recommendation of the silt curtain specialist, sufficient buffer zone would be provided to avoid leakage of wastewater to the sea. For location A, the farthest point of the silt curtain to the rocky shore would be about 10m, and the maximum width would be about 30m. For location C, the layout plan for silt curtain deployment at Location C was made based on the actual site condition. According to the layout plan (see **Layout Plan for Silt Curtain at Location C** in Appendix B), the maximum width would be about 6m, and the farthest point of the silt curtain to the existing outlet would be about 4m.



For location B, silt curtain shall be about 5m away from the 16.6m x 30m cofferdam.



In these connections, the total lengths of silt curtains at Location A, B, and C were calculated, which were 50m, 135m, and 14m respectively.

The proposed arrangement of the silt curtain and anchor blocks is illustrated in **Appendix B – Location Plan of Silt Curtain and Anchor Blocks**.

### 2.3. Summary of Silt Curtain

The below table summarizing relevant information regarding the silt curtains and anchor blocks to be deployed at the three proposed locations:

INFO \ LOCATION	Location A: Rocky Shore	Location B: Cofferdam	Location C: PTOSTP
Length of Each Silt Curtain	10m		
Total Length of Silt Curtain * <sup>1</sup>	50m	135m	14m
Proposed Nos. of Silt Curtain * <sup>1</sup>	5	13.5	1.4
Proposed Nos. of Anchor Blocks	17	42	3
	(Please kindly refer to anchor details in Appendix A and layout plan in Appendix B for easier understanding of the numbers of anchorblock)		
Type of Silt Curtain and Connection	Durable Tube Type (DSP 15) (Please kindly refer to Appendix A)  *Less tensile strength shall be considered for Location C.		
Size of Silt Curtain	10m (length) x 1m ~ 16.78m (height) (Please kindly refer to Appendix A)		
Size of Anchor Block	1.5m x 1.5m x 1.5m for Location A and B 1.0m x 1.0m x 1.0m for Location C (Please kindly refer to Appendix A)		
Location of Anchor Blocks	(Please kindly refer to Appendix B)		

Notes:

1. Length estimated from the layout plan attached in **Appendix B**
2. Silt curtain has considered the tidal movements and is installed closely to the seabed. It is proved to be effective to avoid dispersion of marine sediments during marine construction activities

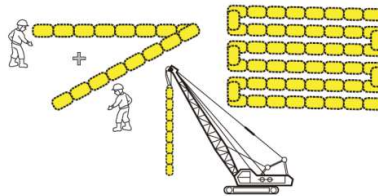
## 2.4. Installation Sequence

Installation of silt curtains will mainly follow the below steps.

### Step 0:

Preparation work - Before fabrication, necessary survey and inspection will be carried out to confirm the depth of silt curtain.

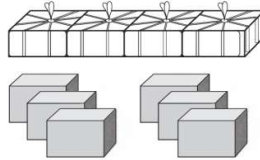
### Step 1:



Checking – Checking of product will be carried out before assembly;

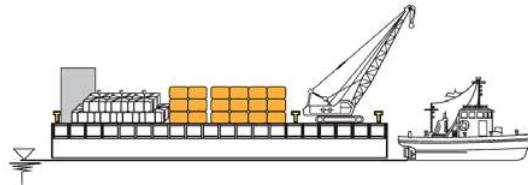
Assembly – Connect each unit of silt curtain on shore;

### Step 2:



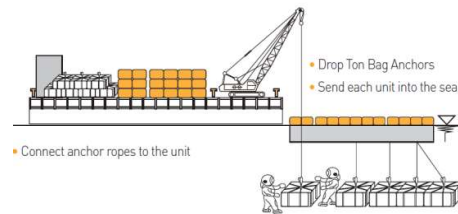
Anchor Blocks – Prepare Ton Bag Anchors for further use;

### Step 3:



Transportation – All the materials will be loaded on the barge or truck and transported to the proposed locations.

**Step 4:**



Deployment –Surveyor will help to set out the location of deployment. Ton Bag Anchors will be deployed on the seabed and silt curtain units will be unloaded in the sea. Then, diver / worker will connect the anchor ropes to the units (please refer to Appendix A for the connection details). Dive checking would be carried out to ensure the components were well installed in the right positions.

The typical inspection checklist for installation of silt curtain is attached in **Appendix C - Inspection Checklists for Silt Curtain**.

## 2.5. Maintenance

The silt curtain should be visually monitored weekly by patrol during the period it is placed in the water. The patrol is performed on the boat for the purpose of preventing ships from running against the unit and of finding abnormality in earlier phase. Visual inspection shall be once per day before commencement of works and the checklist will be signed by appropriate parties and ready for checking on-site.

In addition to visual inspection on the boat, dive to check the unit thoroughly. Diving inspection shall be at least once per every three months. The checklist will be signed by the Contractor and ready for checking on-site.

After Typhoon Signal No. 3 or above, and/or Black Rainstorm Warning Signal informed by the Hong Kong Observatory, check the unit for the purpose of finding possible damages or troubles earlier. This check is performed basically on the boat (visual inspection), but dive to check the unit if necessary (diving inspection).

Related works will be suspended immediately if the silt curtain is found damaged. A new silt curtain will be installed to surround the broken one and will be well connected to the anchor blocks. Then the broken one would be untied and removed by grab barge.

To avoid collision caused by vessels, waterproof flash lanterns will be mounted on the float tubes.

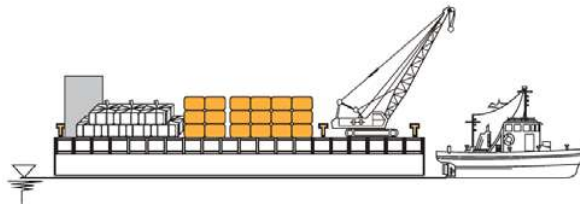
The typical inspection checklists (Visual and Diving) is attached in **Appendix C - Inspection Checklists for Silt Curtain**.

The inspecting person shall be delegated by the Specialist Sub-contractor in Marine Works, who shall complete the training about silt curtain by the supplier, and have experiences about the similar checking and inspection works.

## 2.6. Silt Curtain Removal/Repositioning

In order to reduce negative impact on water quality during the demolition or removal works of the cofferdam and temporary platform at the rocky shore. Silt Curtain will be removed after completion of construction works (i.e. removal of temporary platform at the rocky shore and removal of cofferdam at the submarine outfall) in rocky shore and submarine outfall.

Silt curtain removal will be carried out by derrick lighter barges. After the removal of temporary steel cofferdam, granular fill and anti-scour concrete mattress will be placed on the seabed before the placement of sorted marine deposits. Only insignificant sediment loss would be expected during the silt curtain removal.



Tentatively, there will not be any plan for repositioning of silt curtain. The actions upon re-deployment will be submitted separately if necessary.

## Part C – Deployment of Cofferdam

### 3.1. Details of Temporary Steel Cofferdam

The purpose for the temporary steel cofferdam is to minimize the water quality impact due to the dredging and filling works. The temporary steel cofferdam will be installed (from the seabed up to a height above the high water mark) to fully enclose the entire dredging / filling areas before carrying out any dredging/filling works. All dredging and filling works shall be carried out inside the cofferdam.

Ground investigation will be carried out to verify the seabed geological condition to ensure a safe and reliable design for cofferdam. During design, lateral forces induced by the sea water would be considered, and sufficient toe-in below the seabed will be required to ensure the stability of cofferdam. Before installation, the design will be checked certified by the Independent Checking Engineer. In addition, the Independent Checking Engineer will also check the as-constructed cofferdam to comply with the design.

In order to facilitate the construction of HDD and submarine diffuser, sufficient working space shall be provided as practicable as possible. Therefore, the proposed size of the cofferdam will be about 16.6m x 30m on plan, and approximate 16.78m in depth. Approximate 4.3m toe-in will be required. Lateral loading from wave and water pressure will be resisted by struts and walings system, which form part of the cofferdam.

Details on the Cofferdam Design and the location plan are attached in **Appendix D – Cofferdam Details** and **Appendix E– Sectional Properties of The Proposed Sheet Pile**.



**Typical Arrangement of Cofferdam with Sheetpiles and Struts**



### 3.2. Details of HDD Entry Pit Cofferdam

In order to prevent falling of debris into the sea, a cofferdam shored up by sheet piles would be installed at the entry pit, where HDD drill rig would be inserted and would drill through the rock layer below the sea. On top of that, as the HDD entry pit is in the inner part of a temporary working platform, this could provide a sufficient buffer zone to avoid debris from falling into the sea.

Details on the Cofferdam Design and the location plan are attached in **Appendix D – Cofferdam Details** and **Appendix E– Sectional Properties of The Proposed Sheet Pile**.

### 3.3 Installation and Removal of Cofferdam

Installation and extraction of sheet piles will be conducted by vibratory action. This will cause minor displacement of marine sediment, which will quickly settle without significant increase in suspended solids.



**Installation/Extraction of Sheetpile by Vibratory Method**

The installation and removal of cofferdam will basically follow the below steps:

1. After the deployment of silt curtain at the proposed diffuser location, sheetpile will be driven by vibratory hammer along the alignment with sheetpiles interlocked until the desired depth has reached.
2. The installation arrangement will start from the Southwest corner of the cofferdam and will proceed in clockwise direction. The installation of sheet piles for cofferdam at the manifold is scheduled to commence from mid-June 2023 and will last for about 50 working days. The proposed construction arrangement of

cofferdam is also shown in the drawing Po Toi O – Cofferdam Layout Plan in

***Appendix D – Cofferdam Details;***

3. Wailing and strut will be installed by derrick barge and weld and cutting set accordingly; A dive inspection will be conducted to confirm if the cofferdam is intact with no leakage after installation. Sufficient flash lanterns will be installed on the cofferdam to alert the workers, and reliable anchorages will be adopted to stabilize the barges.

4. Marine dredging and construction of diffuser will be proceeded upon the completion of cofferdam. Sediment confined within the cofferdam would be dredged by closed-grab and stored in sealed compartment of the barge anchored outside the cofferdam.

5. Backfilling works will be confined within the cofferdam. No opening of cofferdam is required and thus there will be no release of sediment into water bodies. Increase in suspended solids is not likely to happen and no significant water quality impact is expected.

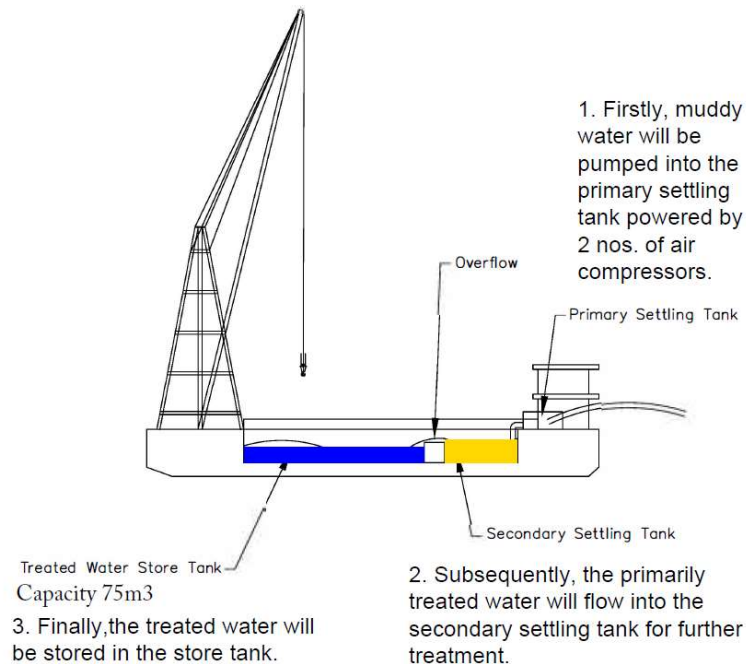
6. Wailing and strut will be demolished step by step after backfilling;

7. Sheetpiles of the cofferdam will be extracted during ebb tide at the final stage with vibratory hammer, and stored on the barge. Extraction of sheetpile will basically follow the steps in Bullet Point 2. The size of barge is about 12m x 25m.

A Works Programme is attached in ***Appendix G – Works Programme for Po Toi O.***

### 3.4 Wastewater Treatment Facility on the Barge

After erection of cofferdam, water pumped out from the cofferdam will be stored in the settling tanks of the barge for settling suspended solids. The capacity of the store tank will be about 75m<sup>3</sup> (design flow 75m<sup>3</sup> per day, sedimentation reaction time 24 hours).



**Barge with Wastewater Treatment Facility**

Firstly, muddy water will be pumped into the primary settling tank powered by 2 nos. of air compressors. Subsequently, the primarily treated water will flow into the secondary settling tank for further treatment. The treated water will be stored in the store tank. The treated water will be visually monitored by patrol daily.

The treated water will be checked daily in accordance with the checklist attached in **Appendix H – Inspection Checklist for Treated Water**. Water samples of the treated water would be collected and tested in accordance with the requirements of the water discharge license. After checking against Appendix H, the treated water will be discharged to the designated discharge point.

CCTV system will be installed to closely monitor the cofferdam and water condition. In case of emergency cases, construction works will be stopped immediately. Site

staffs will be delegated to the frontline to investigate in the leakage and coordinate the remedial works.

If seawater trapped inside the casing and cofferdam shall be pumped out, it should be directed to the sedimentation tank or settling devices before discharge to the designated discharge point.

The Contractor should ensure the effluent from the sedimentation tank meet the WPCO/TM requirements before discharge. If failure in visual inspection, discharge shall be ceased immediately and investigation in the whole facility shall be carried out to figure out the reason.

The proposed discharge point is indicated in the drawing Po Toi O – Cofferdam Layout Plan in **Appendix D – Drawings for Cofferdam Details**;

The proposed wastewater treatment facility on the barge is attached in **Appendix F – Wastewater Treatment Facility on the Barge**.

## Appendix A – Specification of Silt Curtain

# Material Submission

## G and E Silt Curtain (Hanging type)



### **G AND E COMPANY LIMITED**

14th Floor, Kiu Yin Commercial Building

361-363 Lockhart Road, Wanchai, HK

Tel: 2570 0103 Fax: 2570 0089

email: [info@g-and-e.com](mailto:info@g-and-e.com) website: [www.g-and-e.com](http://www.g-and-e.com)

December 2022



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- Geotextile Specification
- Component Material and Coating

### 4) **Certification**

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- ISO 9001:2015 Certificate

### 5) **Project Reference**

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- Project List
- Photo References



## An Introduction of G and E Company Limited





# G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building  
361 – 363 Lockhart Road, Wanchai, Hong Kong  
Tel: 2570 0103 Fax: 2570 0089 e-mail: [info@g-and-e.com](mailto:info@g-and-e.com)  
website: [www.g-and-e.com](http://www.g-and-e.com)



## G and E – A Perspective

G and E, a geosynthetics specialist, distributes a full range of geosynthetics from renowned global manufacturers. The Company also manages a competent installation contracting service team. To better serve our clients, design and engineering service have also been established in our portfolio. We aspire to provide our client engineering solutions, from application and design, supply of materials and their installation, to conformance testing and project commissioning.

G and E takes a strong vision in geosynthetics application, sustainable construction, and development by working closely with engineering communities, consultants, academic, industry organizations, research institutions, testing laboratories, contractors and education bodies, a mission to broaden geosynthetics' versatility.



We offer comprehensive and competitive service to application, design, installation, and testing, with superior attentiveness, professionalism and international industry standard.



G and E is ISO 9001 quality management certified and a VSRS registered contractor, with a remarkably successful working relationship with a long list of clients, the government, stakeholders, contractors, designers, consultant engineers, overseas distributors and trading partners. The clientele extends to Macau, Southeast Asia and Southern China.

Talk to us today and see how our proposal can be an appropriate, cost-effective and time saving solutions. We are entering our 38<sup>th</sup> year in the industry, we have a library of experience to share and to support your project.

ISO9001:2015



International Geosynthetics Society



Product Endorsement



Registered Subcontractor



G and E runs a global distribution network and sourcing agent of geosynthetics, as well as a provider of professional design and installation services.



Central Kowloon Route – Kai Tak West (HY/2014/07)

The company handles a comprehensive range of geosynthetic materials:

- GEOTEXTILE:** Woven, non-woven, thermal bonded, needle punched, spun bond, special weave & composite
- GEOMEMBRANE:** PE, PVC & EPDM membrane, keyed preformed, conductive & concrete protection liner, gas barrier, waterproofing sheet, leakage collection, contamination treatment & effluent containment system
- GEODRAIN:** Geonet, geocomposite, cusped drain, band drain, PVD, sheet drain, relief drain, raking drain
- GEOGRID:** Uni-axial, bi-axial & tri-axial geogrid and composite geogrid, reinforced fill construction
- EROSION CONTROL:** Erosion mat, concrete mat, coir mat, geocell, gabion, wire & cable mesh, concrete canvas, flexible rockfall barrier
- MARINE:** Silt curtain, turbidity control, block mat, geotextile tube, oil & trash boom, geobag, geotextile container, concrete mattress
- CLAY LINERS:** Geosynthetic bentonite liner, GCL and composite
- TUNNEL:** Waterproofing membrane, invert drainage void former, GFRP, strip drain, geodrain
- LANDSCAPE:** Geotextile filter, root barrier, drainage composite, roof drain, tree anchor, rigid drainage cell, grass paver, zero irrigation system
- SERVICE:** Geomembrane leak location survey, HDPE pipe, geosynthetics fabrication, repair & testing, crib wall, reinforced fill slope and wall, ground stabilization, land decontamination



## Silt Curtain Leaflet



# G and E - Silt Curtain



G and E has established silt curtain fabrication facility in Korea, making full use of professional factory set up, trained and skill workers, availability of quality geotextile and components, efficient operation and fast delivery from Busan to Hong Kong. G and E Silt Curtain (GESC series) has standard unit and customized model.

## We can supply silt curtain systems with:

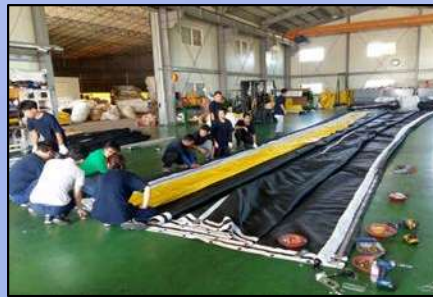
- Customize design & drawing based on requirements
- Engineer to site condition constraint
- Fabricate to specific depth and length
- Supplement with accessories and installation components



*Typical proto-type*



*Handling of the silt curtain*



*Fabrication of silt curtain*



*Factory in Ansung, Korea*

The silt curtain will be delivered in pre-assembled package, including the float, geotextile curtain, ballast chain, other accessories, readied for immediate deployment, anchor system is optional.

## Silt Curtain Types

to be adopted

G and E Silt Curtain system comes in various types to suit all environments. There are:

- **Hanging type** - typical floating system to enclosed work area
- **Standing type** - suspended in mid water to allow marine traffic
- **Barge type** – for attachment to vessel or marine structure
- **Cover head type** - for coastal calm area
- **Frame type** - for enclosure of grab bucket
- **Double chain type** – a waving skirt to accommodate tidal change



*Silt curtain at Lung Mei Beach, May 2018*



*Tung Chung New Town Extension - Reclamation and Advance Works, December 2018 (NL/2017/03)*



*TKO - Lam Tin Tunnel - Main Tunnel and Associated Works, April 2019 (NE/2015/01)*



*Central Kowloon Route - Kai Tak West, January 2019 (HY/2014/07)*



Barge type



Cover head type



Double chain type

There are various sizes of float (buoyancy necessity), different grades of geotextile (strength requirement), a variety of steel plates (connection integrity), reinforcement belt (stiffening the curtain body) and several bottom chain (adequate ballast weight) to configurate the most appropriate system.

### Silt Curtain Accessory

Optional accessories include sub-float to counter balance wave action, marker buoy to identify anchor position, marker light to signal alignment, fluke & ton bag anchor to replace anchor block as well as PP rope, shackle and anchor wire.



Anchor wire & cable



Marker light



Marker buoy

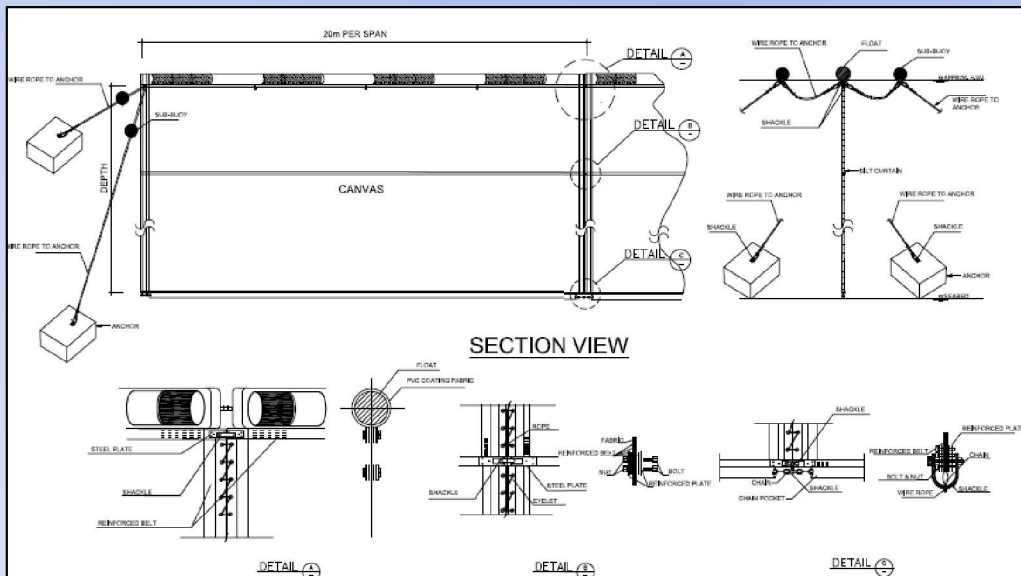


Sand bag anchor



Rope & shackle

### Typical Design Drawing of Silt Curtain



Fluke anchor



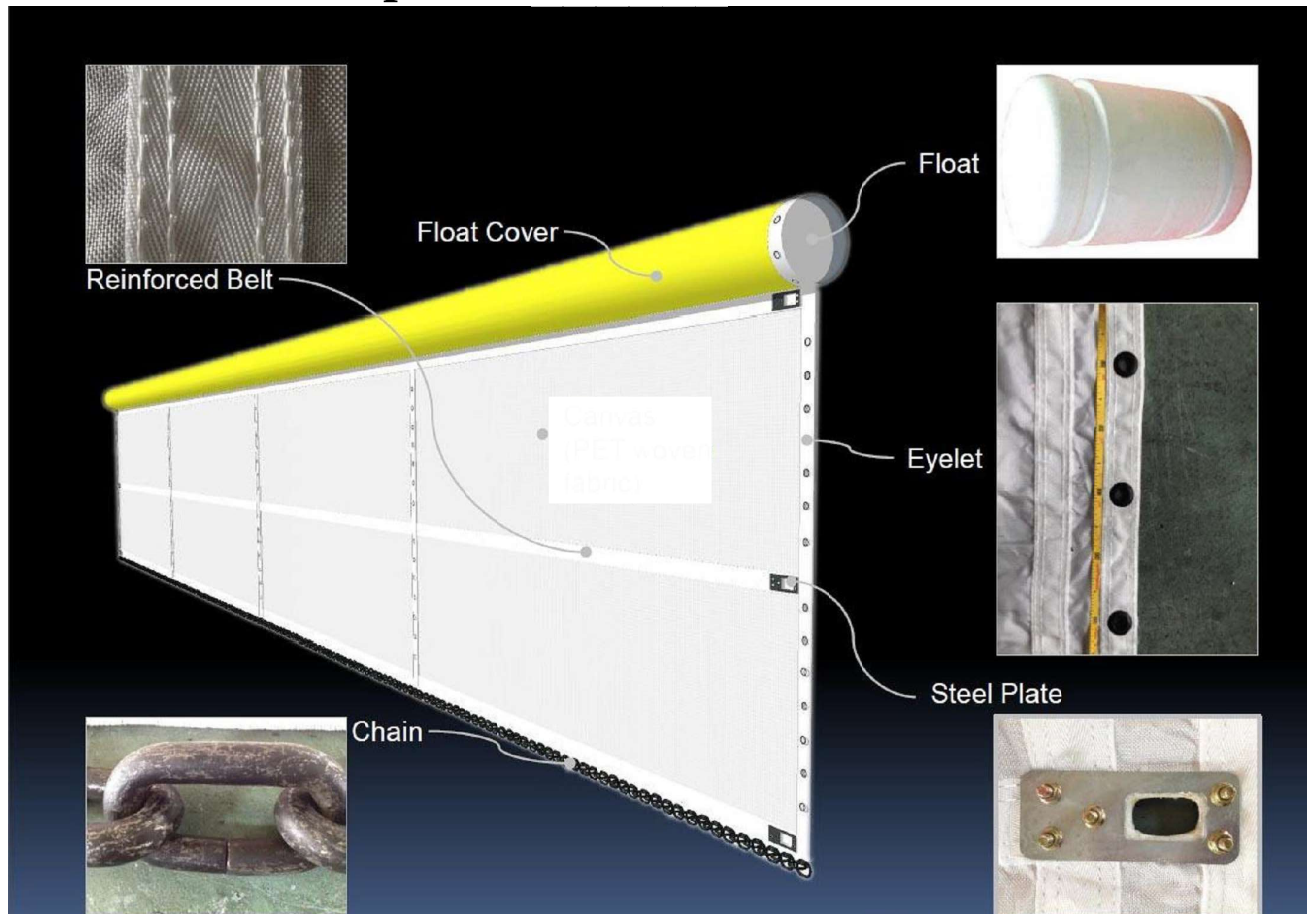
Sub float



# GESC-15

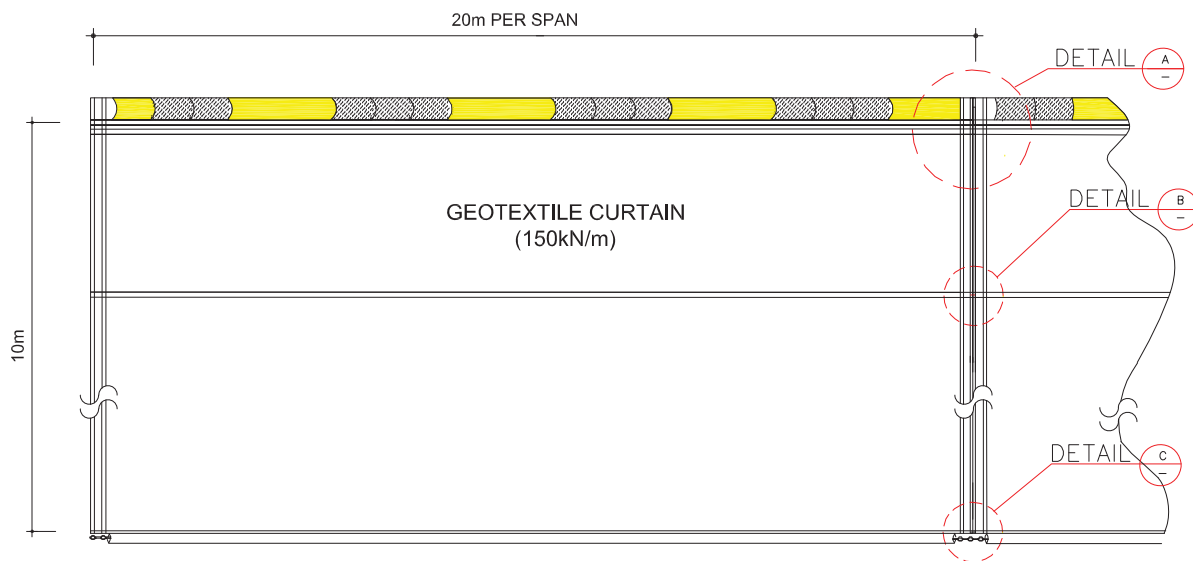
## Hanging Type

### Silt Curtain Components

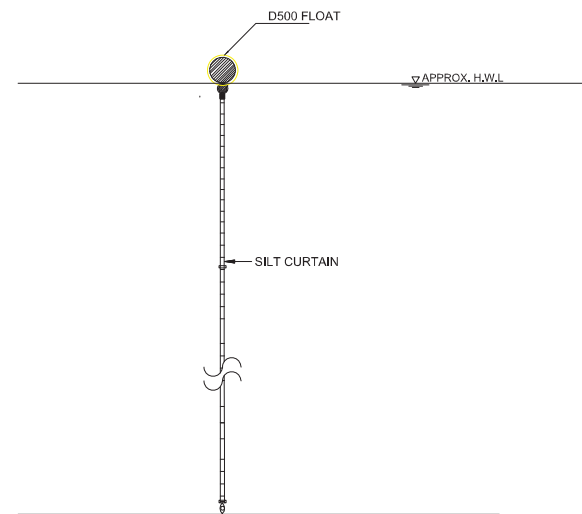


Prototype

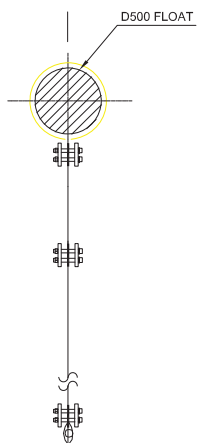
# SILT CURTAIN HANGING TYPE



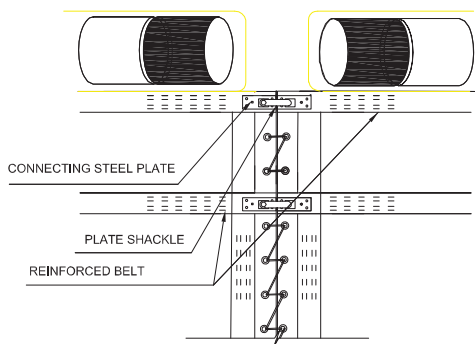
ELEVATION



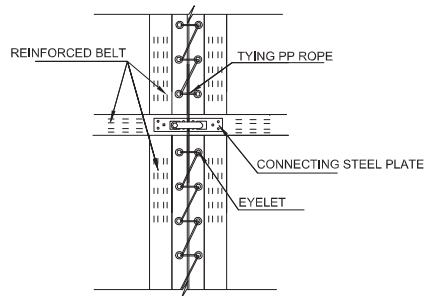
SIDE VIEW



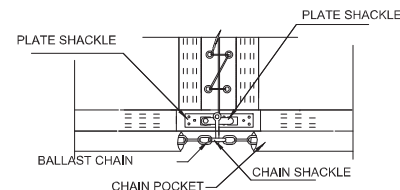
SIDE VIEW



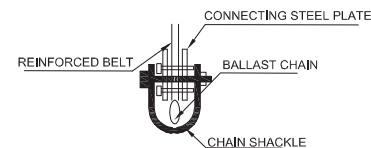
DETAIL A



DETAIL B



DETAIL C



PROJECT NO.	--	DRAWN	TCY
DRAWING NO.	GESCH/066	DATE	28 DEC 2020

DRAWING TITLE:

TYPICAL DETAILS OF HANGING TYPE SILT CURTAIN



G AND E COMPANY LIMITED  
 14/F., Kiu Yin Commercial Building  
 361-363 Lockhart Road,  
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 Tel: 2570 0103  
 Fax: 2570 0089



## Geotextile Specification





## **G AND E COMPANY LIMITED**

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### **GESC Silt Curtain Specification**

<b>Silt curtain system</b>	<b>Material</b>		<b>GESC-15</b>
Silt Curtain Length	-		Length 10m / 15m / 20m per span
Silt Curtain Depth	-		Depth up to 15m
Float element	-		300mm - 480mm diameter float
Type of Silt Curtain	-		Hanging type
Fabrication	-		Fabricate in Korea
<b>Geotextile</b>	<b>Unit</b>	<b>Test Method</b>	<b>GESC-15</b>
Geotextile Model	-		SN15
Tensile Strength	kN/m	ISO 10319	150/150
Elongation	%	ISO 10319	20
Coefficient of permeability (h=50mm)	cm/sec	ISO 11058	$>1.0 \times 10^{-2}$
Weight	g/m <sup>2</sup>	ISO 9864	400
Material	-		Polypropylene
Colour	-		White
Recommended application			Medium term project in sheltered water (Normally, the silt curtain under sea water without external destruction, it can keep about 1-2 years)



Silt Curtain  
Component Material and Coating

## Silt Curtain Component Material and Coating

<b>Item</b>	<b>Material</b>	<b>Coating</b>
Eyelet	0.2% Low Carbon Mild Steel	Painting (oil-based paint)
Steel Plate		Galvanized (50 - 80µm)
Reinforced Steel Plate		Hot Dip Galvanize (over 80µm)
Bolt & Nut		Galvanized (50 - 80µm)
Ballast Chain		Coal Tar Painting
Shackle		Galvanized (50 – 80µm)



ISO 9001:2015 Certificate

# REGISTRATION CERTIFICATE

this is to certify that the management system of

***G and E Company Limited.***

have been assessed by AJA EUROPE and registered against the requirements of

***ISO 9001:2015***

s c o p e o f r e g i s t r a t i o n

***General Construction installation work Service and sales of Construction material such as Geosynthetics***

*14/F Kiu Yin Commerical Building 361-363 Lockhart Road, Wan Chai, Hong Kong*

Sites Registered

**28**

**AJAEU/21/16729**

EAC

Certificate Number

**22nd January 2014**

**8th May 2021**

**27th March 2024**

Date Original Registration

Date Of Re-registration

Expiry Date

**27th January 2024**

**N/A**

**N/A**

Next Re-Audit Due Date

Revision Date

Previous Expiry Date



**Alfonso Pagliuca, President & Founder, AJA Europe Ltd**



0273





## Job Reference List



## G and E Silt Curtain

Date	Project	Client	Consultant	Model	Size (W x Lm)	No. of Span
Jul-03	CV/2002/04 Penny's Bay Reclamation Stage 2	Gammon Construction Ltd	Scott Wilson Ltd		20 x 5 10 x 5	86 256
May-13	DC/2011/01 Drainage Maintenance and Construction in Mainland South Districts (2011-2015)	World Diamond Engineering Ltd	Drainage Services Department	GSP 15	20 x 5 5 x 3 2 x 3 13 x 3	1 10 1 4
Apr-14	HY/2012/07 Dual 2-lane carriageway between HZMB BCF and North Lantau Highway	Gammon Construction Ltd	AECOM Asia Co Ltd	DSP15	20 x 6 20 x 7 20 x 9	24 10 10
Mar-15	16/WSD/11 Replacement and rehabilitation of water mains at Peng Chau, Sunshine Island and Hei Ling Chau	Pipe Tech Ltd MIRDTEC HK Ltd	AECOM Asia Co Ltd	DSP 15 DSP 15 DSP 15	20 x 0.6 20 x 1.2 20 x 1.5	1 22 6
Mar-15	P552 Deep Cement Mixing Trial Works	Penta Ocean Construction Co Ltd	Atkins China Ltd & Mott MacDonald	DSP30 DSP30	20 x 8 25 x 8	2 6
Dec-15	HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West	China State - Leader JV	AECOM Asia Co. Ltd	DSP30 DSP30 DSP15 DSP15	20 x 10 10 x 5 20 x 10 20 x 9 20 x 8	6 6 5 5 5
Dec-16	C3203 3rd Runway System Project DCM Ground Improvement Works (Package 3)	Sambo E & C Co Ltd	Atkins China Ltd & Mott MacDonald	DSP 30 Barge Type	10 x 4 10 x 2 9 x 4 9 x 1.6 9 x 2.8 9 x 1.8 9 x 2	46 2 246 4 2 2 2
Dec-16	C3204 3rd Runway System Project DCM Ground Improvement Works (Package 4)	CRBC-Sambo JV	Atkins China Ltd & Mott MacDonald	DSP30	6 x 5.3 6 x 11.3 6 x 12.3 6 x 12.8 6 x 13.8 6 x 6 20 x 3	2 2 20 4 4 100 10
Jan-17	C3201 3rd Runway System Project DCM Ground Improvement Works (Package 1)	Penta Ocean-China State- Dong Ah JV	Atkins China Ltd & Mott MacDonald	DSP 30	6 x 8	154
Feb-17	P560 Aviation Fuel Pipeline Diversion Works	Kat Yue Construction Engineering Ltd	Mott MacDonald HK Ltd	DSP15	20 x 1.5	8
Jul-17	Refuse Boom at Tai O by World Wide Fund	G and E Co. Ltd	World Wide Fund	DSP15	20 x 0.5	3
Aug-17	Lyric Theater Complex and Extended Basement Project for the WKCD Authority	Gammon Construction Ltd	AECOM Asia Co. Ltd / Mott Macdonald HK Ltd	DSP15	20 x 8	6
Mar-18	HK/2009/02 Wan Chai Development Phase II Central - Wanchai Bypass at Wanchai East	Chun Wo - CRGL JV	AECOM Asia Co Ltd	DSP15	20 x 7	13
Apr-18	NL/2017/03 Tung Chung New Town Extension - Reclamation and Advance Works	Build King - SCT JV	AECOM Asia Co Ltd	DSP15	20 x 4.7 20 x 6.4 20 x 6.9	699 90 37



## G and E Silt Curtain

Date	Project	Client	Consultant	Model	Size (W x Lm)	No. of Span
					20 x 7.4	33
Apr-18	NE/2017/01 TKO - Lam Tin Tunnel Road - TKO Interchange and Associated Works	CW - STEC - CMGC JV Sam Woo Bore Pile Foundation Ltd	AECOM Asia Co Ltd	DSP15 Barge Type	14 x 4 14 x 5 14 x 6 12 x 5 12 x 6 14 x 10 14 x 14 14 x 12	28 44 46 36 18 10 10 22
May-18	NE/2015/01 TKO - Lam Tin Tunnel - Main tunnel and associated works	Leighton - China State JV	AECOM Asia Co Ltd	Silt Curtain	20 x 0.8 20 x 10	20 56
Jun-18	Lago Nam Van, Macau	Sunley Engineering & Construction Co Ltd	WSP	DSP15	20 x 1.1 20 x 1.9	17 3
Jun-18	Sai Sha Road Widening between Kam Ying Road and Future Trunk Road T7	Gammon Construction Ltd	Highways Dept	DSP15	14 x 1.5	2
Oct-18	HY/2014/07 Central Kowloon Route - Kai Tak West	Gammon Construction Ltd	Arup - Mott MacDonald JV	GESC-15	10 x 3 20 x 2 20 x 3 20 x 4 20 x 4.5 20 x 5 20 x 6 20 x 7 20 x 7.5 15 x 7.5	1 2 1 10 2 17 18 13 11 2
Nov-18	Proposed Residential Development at Site N TKOTL 70RP, Lohas Park Package 6	Hip Hing Construction Co Ltd	Meinhardt (M&E) Ltd	GESC 15	20 x 1.5 10 x 1.5	1 2
Nov-18	YL/2017/03 Development of Lok Ma Chau Loop; Land Decontamination and Advance Engineering Works	Sang Hing - Kuly Joint Venture	Black & Veatch Hong Kong Ltd	GESC15	20 x 2	14
Jan-19	C340B 輕軌媽閣站主體建造工程 - 臨時道路工程	Hai Fai Construction	AECOM Asia Co Ltd	DSP 15	20 x 3	12
Apr-19	NE/2016/01 Site formation and infrastructure work for development of Anderson Road quarry site	Chun Wo - STE Vastream JV	AECOM Asia Co Ltd	GESC 15	10 x 4	4
Jun-19	HY/2014/16 Hiram's Highway Improvement Stage 1 - Between Clearwater Bay Road and Marina Cove	China State Construction Engineering (Hong Kong) Limited	Meinhardt Infrastructure and Environmental Ltd	GESC 15	20 x 4 15 x 2.5	5 2
Aug-19	金銀島名勝世界酒店	駿農工程有限公司		GESC 15	20 x 3	40
Sep-19	HEC 18/8004 Lamma Power Station Extension - Unit 12, New LPS - LMX Cable Bridge	Sunley Engineering & Construction Co Ltd	HK Electric Co Ltd	GESC 15	4 x 1 10 x 2	2 4
Dec-19	NKIL 6575 Proposed Residential Development, Kai Tak	China Overseas Building Construction Ltd	SYW & Associates Ltd	GESC 15	20 x 4	3
Mar-20	EP/SP/9/91 Development and Management of West New Territories (WENT) Landfill	SUEZ NWS R & R (Hong Kong) Ltd	Black & Veatch Hong Kong Ltd	GESC 15	15 x 2 15 x 2.5 20 x 2 20 x 1.5	1 1 1 2





## G and E Silt Curtain

Date	Project	Client	Consultant	Model	Size (W x Lm)	No. of Span
					20 x 4	1
Mar-20	13/WSD/17 First Stage of Desalination Plant at TKO	China State Construction Engineering (Hong Kong) Limited Friendly Benefit Engineering Ltd	Black & Veatch Hong Kong Ltd	GESC-15	10 x 6 10 x 10 15 x 10 20 x 6 20 x 13 20 x 15	8 14 4 9 4 7
Apr-20	EP/SP/66/12 Integrated Waste Management Facilities Phase 1	Zhen Hua Engineering Co Ltd	AECOM Asia Co Ltd	GESC-10	20 x 2 20 x 5	40 15
Apr-20	HEC 18_8005 Lamma Power Station Navigation Channel Improvement	UDL Holding Ltd	HK Electric Co Ltd	GESC-15	18 x 7 18 x 10	8 8
Apr-20	DC/2017/01 Construction of dry weather flow interceptor at Cherry Street Box culvert	B.C. Contractors Ltd	Black & Veatch Hong Kong Ltd	GESC-15	20 x 2	5
Jun-20	Development of Industrial Estate 2.0 Project C - Advanced Manufacturing Center	Friendly Benefit Engineering Ltd	Andrew Lee King Fun & Associates Architects	GESC-15	20 x 7 20 x 7	5 8
Aug-20	CV/2016/09 CEDD Maintenance contract for piers (2017-2022)	Sun Fook Kong (Civil) Limited	Civil Engineering and Development Department, Port Authority	GESC-15	15 x 3	2
Oct-20	C18W10 North Commercial District Footbridge	Friendly Benefit Engineering Ltd	Mott MacDonald	DSP-15	20 x 8.5	5
Nov-20	C19W10 Intermodal Transfer Terminal - Bonded Vehicular Bridge	Will Pak Engineering Ltd	Mott MacDonald	GESC-15	10 x 8 14 x 10 14 x 11 20 x 8 20 x 10	2 16 4 6 18
Jan-21	C18W02 Intermodal Transfer Terminal Building	Build King Construction Ltd	AECOM Asia Co Ltd	GESC-15	20 x 7	3
Jan-21	19-83014 Lamma Power Station Extension	Paul Y. Construction Co. Ltd	Arcadis	GESC-15	15 x 3.5	3
Feb-21	NKIL 6574 Kai Tak Area 4B, Site 3	China Overseas Building Construction Ltd	New World Development Co. Ltd	GESC-15	20 x 4	2
Aug-21	Offshore LNG Terminal	Yun Lee Marine Holdings Ltd Tapbo Civil Engineering Co. Ltd	ARUP	GESC-15	20 x 2 20 x 4 20 x 6 20 x 16	30 5 60 15
Aug-21	C3802 APM / BHS Tunnels	Gammon Engineering & Construction Co. Ltd	Mott MacDonald	GESC-15	20 x 4.7	3
Dec-21	Aviation Fuel Receiving Facility at Sha Chau	Kat Yue Construction Engineering Ltd	ERM	Oil Fence	20 x 0.7	6
Mar-22	DC/2018/03 Expansion of Sha Tau Kok Sewage Treatment Works, Phase 1	Maritime Construction Engineering Ltd	Binnies Hong Kong Ltd	GESC-15	20 x 9	9
Mar-22	DC/2020/02 Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works	Maritime Construction Engineering Ltd	Black & Veatch Hong Kong Ltd	GESC-15	20 x 9.5 12 x 9.5	16 1



## G and E Silt Curtain

Date	Project	Client	Consultant	Model	Size (W x Lm)	No. of Span
Apr-22	NL/2020/05 Tung Chung New Town Extension - Site Formation and Infrastructure Works at Ma Wan Chung	Build King - Richwell Civil JV	Ove Arup and Partners HK Ltd	GESC-15	20 x 2.2	10
May-22	ND/2019/02 Kwu Tung North New Development Area, Phase 1	Chun Wo - Kwan Lee JV	AECOM Asia Co	GESC-15	20 x 3.5	4
Sep-22	1002EM19A Additional District Cooling System at the Kai Tak Development	Paul Y - Qianhai JV	Ove Arup and Partners HK Ltd	GESC-15		



## Photo References



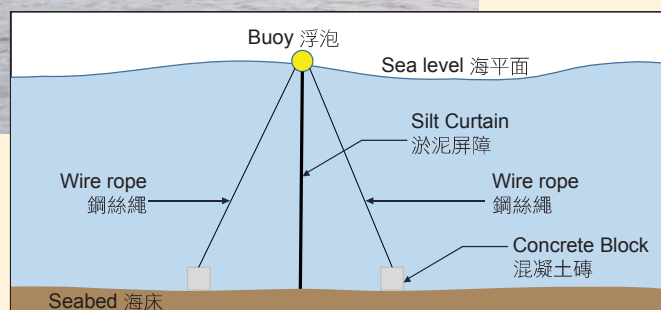
## 防止水質污染 - 淤泥屏障 Prevention of Water Pollution – Silt Curtain

淤泥屏障是填海工程期間避免水質污染的緩解措施之一。在整個施工期間，填海區外圍以淤泥屏障隔離，以減低施工時對水質的影響。於每天施工前，工程人員須檢查淤泥屏障的狀況，包括其完整性及位置，確保淤泥屏障正確安裝及有效運作後，方可施工。另外潛水員會定期對淤泥屏障進行水底檢查。如發現任何破損，會即時維修或更換，以防止水質污染。

Provision of silt curtain is one of the mitigation measures to prevent the water pollution in reclamation works. During the course of construction, silt curtains are installed at the periphery of the reclamation area in order to minimise the impact on water quality. Our staff conduct daily check of the condition of the installed silt curtains prior to works commencement, including its integrity and location, so as to ensure the silt curtains are installed properly and function effectively. Furthermore, our diving team inspects the underwater condition of silt curtains regularly. In case of any defects found, the project team will repair or replace silt curtains immediately in order to prevent water pollution.



淤泥屏障  
Silt curtains



淤泥屏障橫切面圖  
Cross section of Silt curtain



## 資訊與聯絡 Information and Enquiries

如欲了解更多資料，請瀏覽東涌新市鎮擴展工程項目網頁：

For further information, please visit the website of Tung Chung New Town Extension project:

<http://www.tung-chung.hk>



如對東涌新市鎮擴展 - 填海及前期工程有任何意見及建議，歡迎提出。

Your views and comments on Tung Chung New Town Extension - Reclamation and Advance Works are welcome.

24 小時熱線 24-hour hotline

**5976 1853**

電郵 email

**enquiry@nl201703-bsjv.com**



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<b>Date</b>	July 2022
<b>Project</b>	Contract No. DC/2018/03 Expansion of Sha Tau Kok Sewage Treatment Works, Phase 1
<b>Client</b>	Drainage Services Department
<b>Consultant</b>	Binnies Hong Kong Ltd
<b>Main Contractor</b>	Maritime Construction Engineering Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	9 spans



<b>Date</b>	March 2020
<b>Project</b>	Contract No. EP/SP/9/91 Development and Management of West New Territories (WENT) Landfill
<b>Client</b>	Environmental Protection Department
<b>Consultant</b>	Black & Veatch Hong Kong Ltd
<b>Main Contractor</b>	SUEZ NWS R&R (Hong Kong) Ltd
<b>Works</b>	Silt Trap at Outfall
<b>Material</b>	Silt Curtain
<b>Quantity</b>	1 span





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<b>Date</b>	August 2021
<b>Project</b>	Construction of Hong Kong Offshore Liquefied Natural Gas Terminal
<b>Client</b>	CLP Power Hong Kong Limited
<b>Consultant</b>	ARUP
<b>Main Contractor</b>	Yun Lee (Tim Kee) Marine Construction Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	110 spans



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<b>Date</b>	April 2018
<b>Project</b>	Contract No. NL/2017/03 Tung Chung New Town Extension - Reclamation and Advance Works
<b>Client</b>	Civil Engineering Development Department
<b>Consultant</b>	AECOM Asia Co Ltd
<b>Main Contractor</b>	Build King - Samsung C & T JV
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	859 spans





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<b>Date</b>	October 2018
<b>Project</b>	Contract No. HY/2014/07 Central Kowloon Route - Kai Tak West
<b>Client</b>	Highways Department
<b>Consultant</b>	Arup - Mott MacDonald JV
<b>Main Contractor</b>	Gammon Construction Ltd
<b>Works</b>	Turbidity Control around Piles
<b>Material</b>	Silt Curtain
<b>Quantity</b>	37 spans



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<b>Date</b>	May 2021
<b>Project</b>	Contract No. C19W10 Intermodal Transfer Terminal - Bonded Vehicular Bridge
<b>Client</b>	Hong Kong International Airport
<b>Consultant</b>	Mott MacDonald
<b>Main Contractor</b>	Will Pak Engineering Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	46 spans



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<b>Date</b>	December 2020
<b>Project</b>	Contract No. ND/2019/04 Fanling North New Development Area, Phase 1: Fanling Bypass Eastern Section
<b>Client</b>	Civil Engineering & Development Department
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	DCK JV
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	14 spans



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<b>Date</b>	January 2021
<b>Project</b>	Contract No. HKE 19_38014 Lamma Power Station Extension
<b>Client</b>	HK Electric
<b>Consultant</b>	Arcadis
<b>Main Contractor</b>	Paul Y. Construction Co. Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	3 spans





<b>Date</b>	December 2018
<b>Project</b>	Contract No. YL/2017/03 Development of Lok Ma Chau Loop; Land Decontamination and Advance Engineering Works
<b>Client</b>	Civil Engineering and Development Department
<b>Consultant</b>	Black & Veatch Hong Kong Ltd
<b>Main Contractor</b>	Sang Hing - Kuly Joint Venture
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	14 spans



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<b>Date</b>	June 2020
<b>Project</b>	Contract No. 13/WSD/17 First Stage of Desalination Plant at TKO
<b>Client</b>	Water Supplies Department
<b>Consultant</b>	Black & Veatch Hong Kong Ltd
<b>Main Contractor</b>	China State Construction Engineering (Hong Kong) Limited
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	46 spans



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<b>Date</b>	October 2020
<b>Project</b>	Development of Industrial Estate 2.0 Project C - Advanced Manufacturing Center
<b>Client</b>	Hong Kong Science and Technology Parks Corporation
<b>Consultant</b>	Wong & Ouyang (Building Services) Ltd
<b>Main Contractor</b>	Gammon Construction Ltd Friendly Benefit Engineering Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	9 spans





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<b>Date</b>	August 2020
<b>Project</b>	EP/SP/66/12 Integrated Waste Management Facilities Phase 1
<b>Client</b>	Environmental Protection Department
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	Zhen Hua Engineering Co. Ltd
<b>Works</b>	Marine Park Protection
<b>Material</b>	Silt Curtain
<b>Quantity</b>	25 spans





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<b>Date</b>	March 2020
<b>Project</b>	Contract No. EP/SP/9/91 Development and Management of West New Territories (WENT) Landfill
<b>Client</b>	Environmental Protection Department
<b>Consultant</b>	Black & Veatch Hong Kong Ltd
<b>Main Contractor</b>	SUEZ NWS R&R (Hong Kong) Ltd
<b>Works</b>	Site Drainage Outfall Silt Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	1 span



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<b>Date</b>	June 2018
<b>Project</b>	Lago Nam Van, Macau
<b>Client</b>	Direcção dos Serviços De Protecção Ambiental of Macau
<b>Consultant</b>	WSP
<b>Main Contractor</b>	Sunley Engineering & Construction (Macau) Co Ltd
<b>Works</b>	Environmental Mitigation Measure
<b>Material</b>	Silt Curtain
<b>Quantity</b>	20 spans



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<b>Date</b>	May 2019
<b>Project</b>	Contract No. NE/2016/01 Site Formation and Infrastructure Works for Development of Anderson Road Quarry
<b>Client</b>	Civil Engineering and Development Department
<b>Consultant</b>	AECOM Asia Co Ltd
<b>Main Contractor</b>	Chun Wo - STEC - Vasteam JV Tinkle Construction Engineering Co Ltd
<b>Works</b>	Site Drainage Outfall Silt Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	4 spans



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<b>Date</b>	January 2019
<b>Project</b>	C340B Main works for Barra Station, Macau
<b>Client</b>	MTR Railway Operations (Macau) Company Limited
<b>Consultant</b>	AECOM Asia Ltd
<b>Main Contractor</b>	China State Construction Engineering Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	12 spans





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<b>Date</b>	October 2018
<b>Project</b>	Contract No. HY/2014/07 Central Kowloon Route - Kai Tak West
<b>Client</b>	Highways Department
<b>Consultant</b>	Arup - Mott MacDonald JV
<b>Main Contractor</b>	Gammon Construction Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	30 spans



<b>Date</b>	July 2017
<b>Project</b>	"ALL Hands on Deck", Reduce Ocean Gabbage Campaign
<b>Client</b>	Worldwide Fund for Nature Hong Kong
<b>Consultant</b>	G and E Company Limited
<b>Main Contractor</b>	G and E Company Limited
<b>Works</b>	Refuse Boom
<b>Material</b>	Silt Curtain
<b>Quantity</b>	3 spans



## G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building  
361-363 Lockhart Road  
Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: www.g-and-e.com



<b>Date</b>	March 2014
<b>Project</b>	Contract No. HK/2009/02 Wan Chai Development Phase II Central - Wan Chai Bypass Wan Chai East
<b>Client</b>	Civil Engineering and Development Department
<b>Consultant</b>	AECOM (Asia) Ltd
<b>Main Contractor</b>	Chun Wo - CRGL Joint Venture
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	13 spans



## G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building  
361 - 363 Lockhart Road,  
Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	April 2017
<b>Project</b>	Contract No. HKHA20120023 Public Rental Housing, Shek Mun Estate
<b>Client</b>	Housing Authority
<b>Consultant</b>	Housing Authority
<b>Main Contractor</b>	Hin Sum Engineering Co. Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	2 spans





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Wanchai, Hong Kong  
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website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	October 2016
<b>Project</b>	Contract C3201 Three Runway System Project Deep Cement Mixing Works (Package 1)
<b>Client</b>	Hong Kong Airport Authority
<b>Consultant</b>	Atkins in association with Mott MacDonald
<b>Main Contractor</b>	Penta Ocean-China State - Dong Ah JV
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain Barge Type
<b>Quantity</b>	154 spans



## G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building

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Wanchai, Hong Kong

Tel: 852-2570 0103 Fax: 852-2570 0089

website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	June 2014
<b>Project</b>	Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section
<b>Client</b>	Highways Department
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	Dragages - Bouygues JV
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	85 spans



## G AND E COMPANY LIMITED

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361 - 363 Lockhart Road,  
Wanchai, Hong Kong  
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website: www.g-and-e.com



<b>Date</b>	March 2016
<b>Project</b>	Asia Pacific Gateway (APG) - Tseung Kwan O Section
<b>Client</b>	China Mobile International Limited
<b>Consultant</b>	Environmental Resources Management
<b>Main Contractor</b>	Maritime Mechanic Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	12 spans



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website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	May 2014
<b>Project</b>	HY/2012/07 Tuen Mun - Chek Lap Kok Link- Sothern Connection Viaduct Section
<b>Client</b>	Highway Department
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	Gammon Construction Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	44 spans



## G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building  
361 - 363 Lockhart Road,  
Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: www.g-and-e.com



<b>Date</b>	February 2014
<b>Project</b>	HY/2012/07 Tuen Mun - Chek Lap Kok Link- Sothern Connection Viaduct Section
<b>Client</b>	Highway Department
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	Gammon Construction Ltd
<b>Works</b>	Silt Curtain
<b>Material</b>	Woven Geotextile Bontec SG110/110
<b>Quantity</b>	10,500 sqm





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Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: www.g-and-e.com



<b>Date</b>	April 2015
<b>Project</b>	Contract No. 16/WSD/11 Replacement and Rehabilitation of Water mains, Stage 4 Phase 2
<b>Client</b>	Water Supplies Department
<b>Consultant</b>	AECOM Asia Company Limited
<b>Main Contractor</b>	Pipe Tech Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	6 spans



## G AND E COMPANY LIMITED

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website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	March 2015
<b>Project</b>	Contract No. P552 Deep Cement Mixing Trial Works
<b>Client</b>	Hong Kong Airport Authority
<b>Consultant</b>	Atkins - Mott MacDonald
<b>Main Contractor</b>	Penta Ocean Construction Co Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain Barge Type
<b>Quantity</b>	8 Spans



## G AND E COMPANY LIMITED

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Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	September 2013
<b>Project</b>	DC/2011/01 Drainage Maintenance and Construction in Mainland South Districts (2011-2015)
<b>Client</b>	Drainage Service Department
<b>Consultant</b>	Drainage Service Department
<b>Main Contractor</b>	Paul Y. Construction Co. Ltd
<b>Works</b>	Inflow Interceptor
<b>Material</b>	Silt Curtain
<b>Quantity</b>	16 spans





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Wanchai, Hong Kong  
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website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	December 2015
<b>Project</b>	Contract No. HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West
<b>Client</b>	CEDD
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	China State Construction Engineering Co. Ltd
<b>Works</b>	Turbidity Control
<b>Material</b>	Silt Curtain
<b>Quantity</b>	27 spans



## G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building  
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Wanchai, Hong Kong  
Tel: 852-2570 0103 Fax: 852-2570 0089  
website: www.g-and-e.com



<b>Date</b>	May 2013
<b>Project</b>	Contract No. HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West
<b>Client</b>	CEDD
<b>Consultant</b>	AECOM Asia Co. Ltd
<b>Main Contractor</b>	China State Construction Engineering Co. Ltd
<b>Works</b>	Silt Curtain
<b>Material</b>	Woven Geotextile Bontec SG110/110
<b>Quantity</b>	42,000 sqm

# Clarification Email from the Proposed Supplier "G & E Co Ltd

**From:** Natural Tsui <natural@g-and-e.com>

**Sent:** Tuesday, February 28, 2023 3:36 PM

**To:** LM Yuen <yuenlm@prosperch.com>

**Cc:** <HK River> FAN Tao <tqfan@163.com>; HKR-吴春 <wuchun72@163.com>; 李岩 <liyans163@163.com>; Aidan Law <aidanlaw@prosperch.com>

**Subject:** RE: DC/2019/09 - Material Submission - Silt Curtain

Dear Mr. Yuen,

Please see the below comparison table of DSP15 & GESC-15:

Properties	Geonia DSP15 Silt Curtain	GESC-15 Silt Curtain	Remark
Tensile strength of silt curtain	150kN/m	150kN/m	In section 2.1 details of the proposed silt curtain part B - Deployment of Silt Curtain. As specified of DSP15 silt curtain properties, the tensile strength 150kN/m geotextile for silt curtain to be used, float device using high tenacity colored yarn with PVC coated fabric and 5kg chain. GESC-15 silt curtain properties and performance are same as DSP15. Therefore which is equivalent to DSP15
Float size	D500	D500	
Float cover material	High tenacity yarn with yellow colour PVC coated	High tenacity yarn with yellow colour PVC coated	
Chain weight	5kg	5kg	
Eyelet Coating	Painting (Oil based paint)	Painting (Oil based paint)	Components coating requirement of DSP15 and GESC15 are the same. Hence, they are same durability.
Steel Plate Coating	Galvanized (50- 80um)	Galvanized (50- 80um)	
Reinforced Steel Plate Coating	Hot dip Galvanized (50- 80um)	Hot dip Galvanized (50- 80um)	
Bolt & Nut Coating	Galvanized (50- 80um)	Galvanized (50- 80um)	
Chain Coating	Coal Tar Painting	Coal Tar Painting	

The GESC-15 silt curtain material properties, performance and durability is equivalent to DSP15.

Regards,

Natural

G and E Co Ltd

## Appendix B – Location Plan of Silt Curtain and Anchor Block









Silt Curtain and Anchor Block for Submarine outfall (Location B)

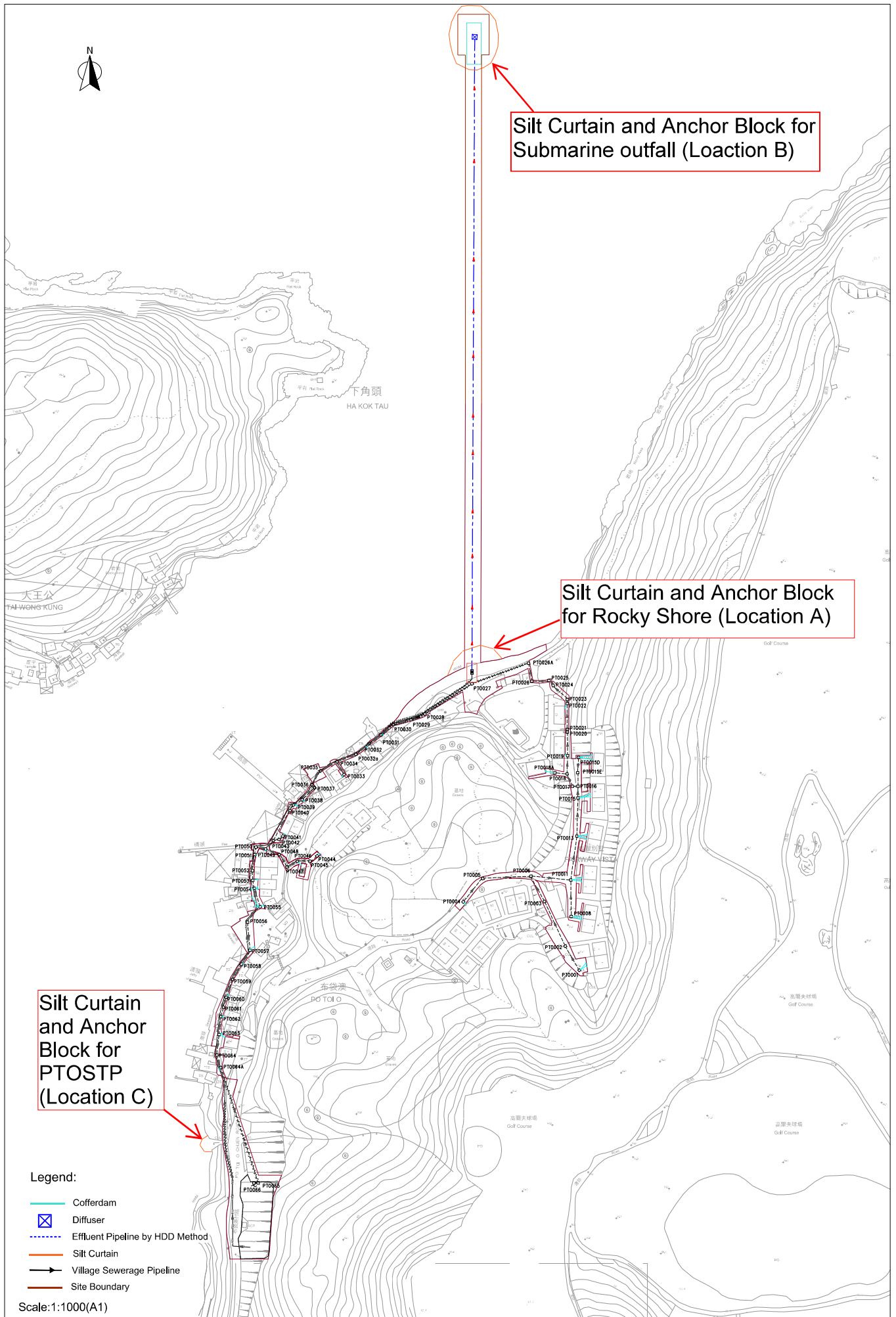
Silt Curtain and Anchor Block for Rocky Shore (Location A)

Silt Curtain and Anchor Block for PTOSTP (Location C)

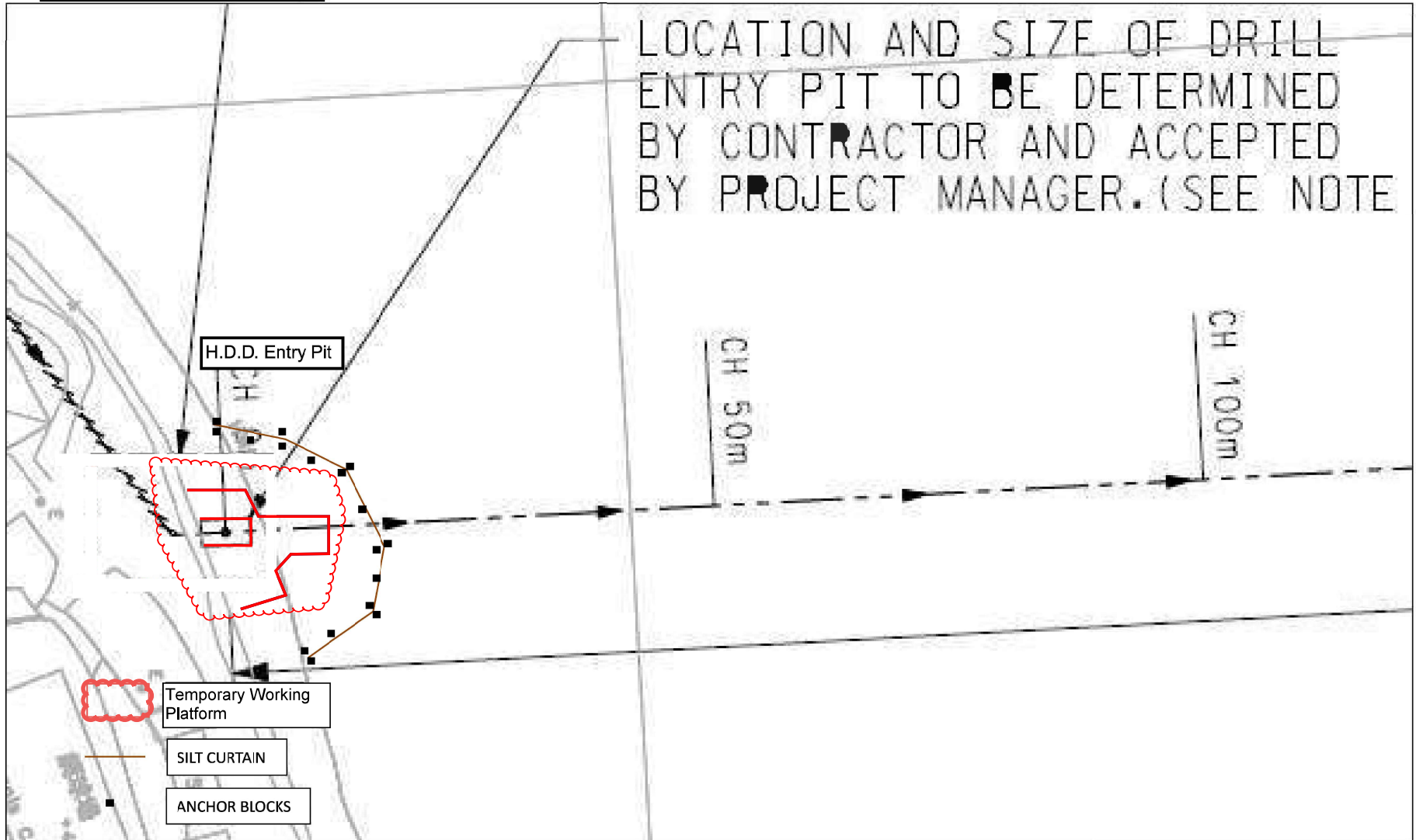
Legend:

-  Cofferdam
-  Diffuser
-  Effluent Pipeline by HDD Method
-  Silt Curtain
-  Village Sewerage Pipeline
-  Site Boundary

Scale: 1:1000(A1)

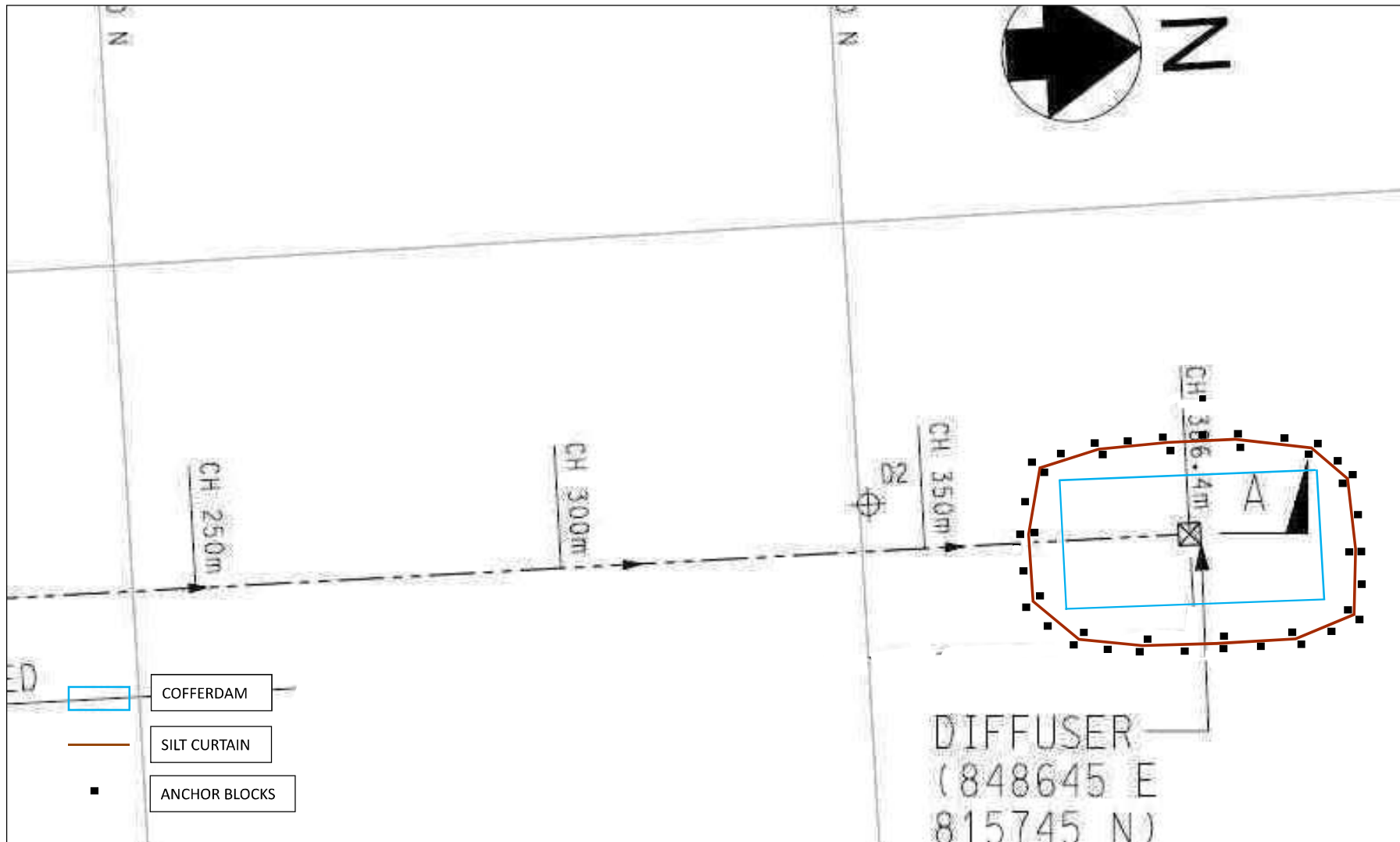


Temporary Working Platform

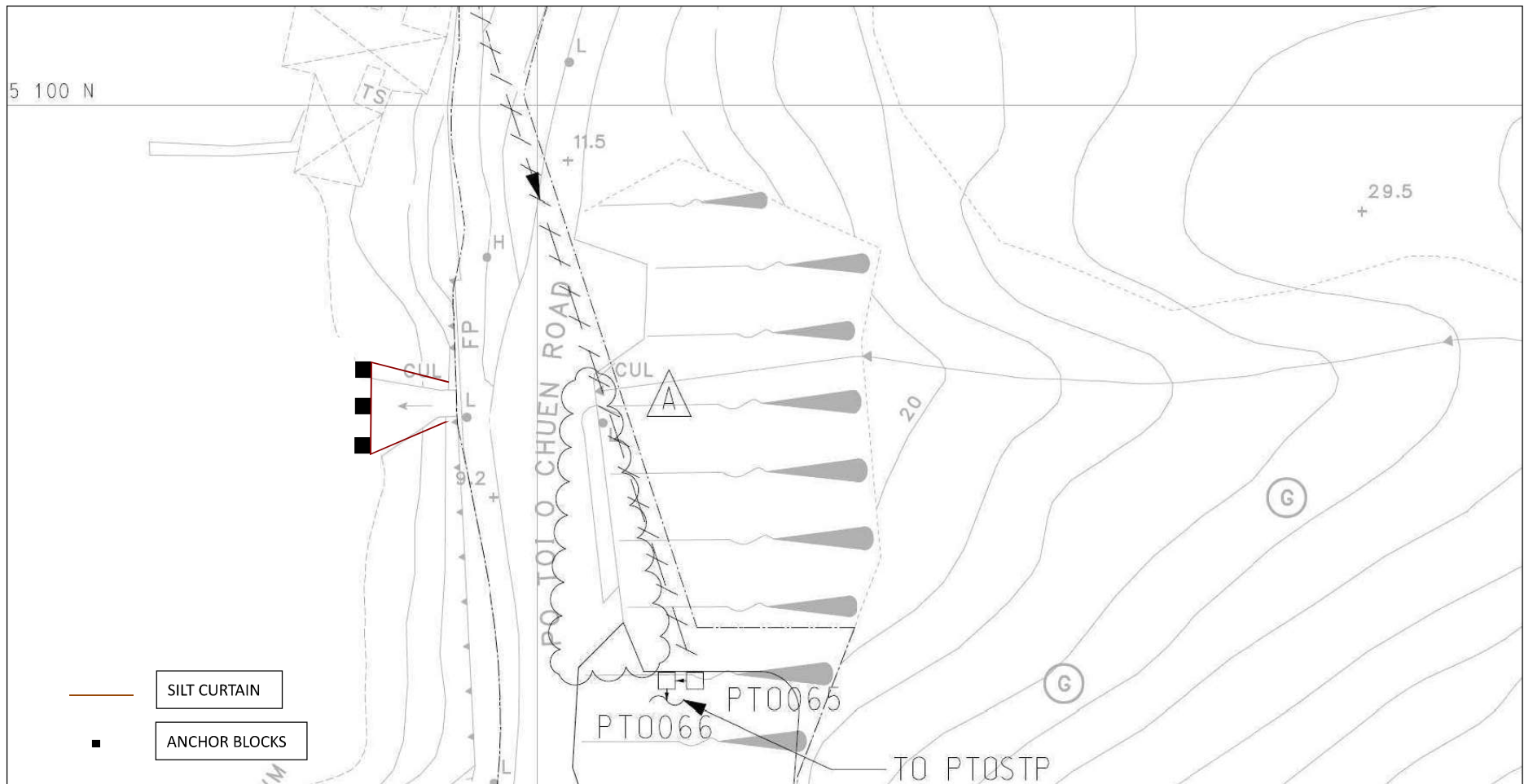


Location Plan of Silt Curtain and Anchor Block for Rocky Shore (Location A)

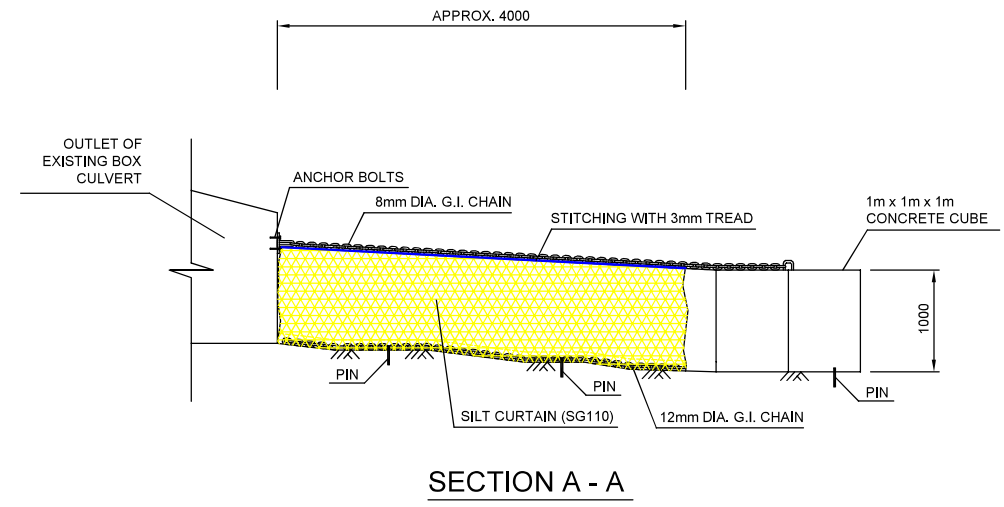
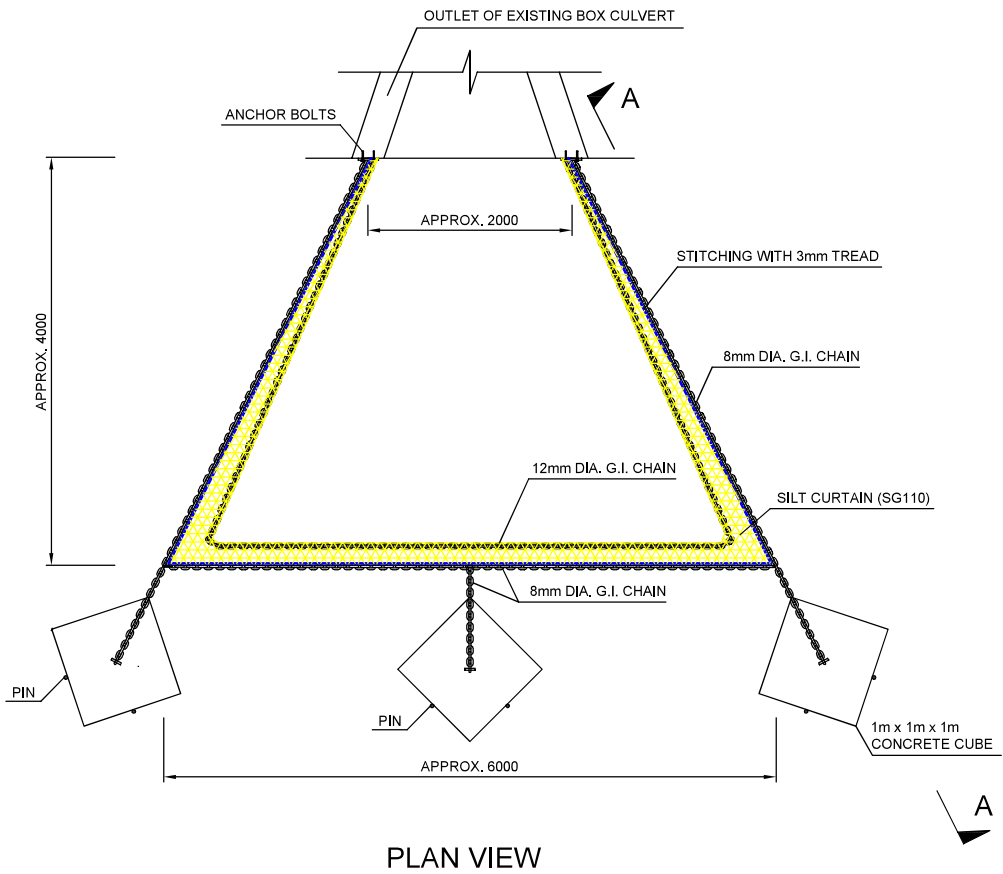




Location Plan of Silt Curtain Anchor block for submarine outfall (loaction B)



Location Plan of Silt Curtain and Anchor Block for PTOSTP (Location C)



**NOTES:**

1. NO EXCAVATION OF THE SEABED SHALL BE ALLOWED;
2. NO GAPS SHALL BE LEFT BETWEEN SILT CURTAIN AND SEABED;
3. LENGTH OF SILT CURTAIN TO BE APPROX. 15m, AND THE HEIGHT OF SILT CURTAIN TO BE APPROX. 1m – 1.5m;

**Deployment Plan for Silt Curtain at Location C**

## Appendix C – Inspection Checklists for Silt Curtain

### Visual Inspection Checklist for Silt Curtain

Location: \_\_\_\_\_

Inspection Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Item	Description	Condition		Follow-up Actions?		Remarks
		Yes	No	Yes	No	
1	Any floating debris / refuse within the silt curtain? 隔泥幕內有沒有漂浮的垃圾?					
2	Buoys in good condition? 浮泡情況是否良好?					
3	Tying rope(above sea) in good condition? 水面之繩索情況是否良好?					
4	Water in good condition? 海水情況是否良好?					
5	Others (please specify): 其他 (請註明):					

\*The checklist shall be properly signed by the Contractor.

### Diving Inspection Checklist for Silt Curtain

Location: \_\_\_\_\_

Inspection Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Item	Description	Condition		Follow-up Actions?		Remarks
		Yes	No	Yes	No	
1	Tying rope (submarine) in good condition? 水下繩索情況是否良好?					
2	Filter material intact and in good condition? 隔網是否完整? 情況是否良好?					
3	Sinkers in good condition? 墜重物狀況是否良好?					
4	Any Obstruction to water flow between the filter material? 隔網之間是否有物件阻礙水的流動?					
5	Any sea shells to be removed? 是否有貝殼需要清理?					
6	Others (please specify): 其他 (請註明):					

\*The checklist shall be properly signed by the Contractor.



### Inspection Checklist for Installation of Silt Curtain

Location: \_\_\_\_\_

Inspection Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_

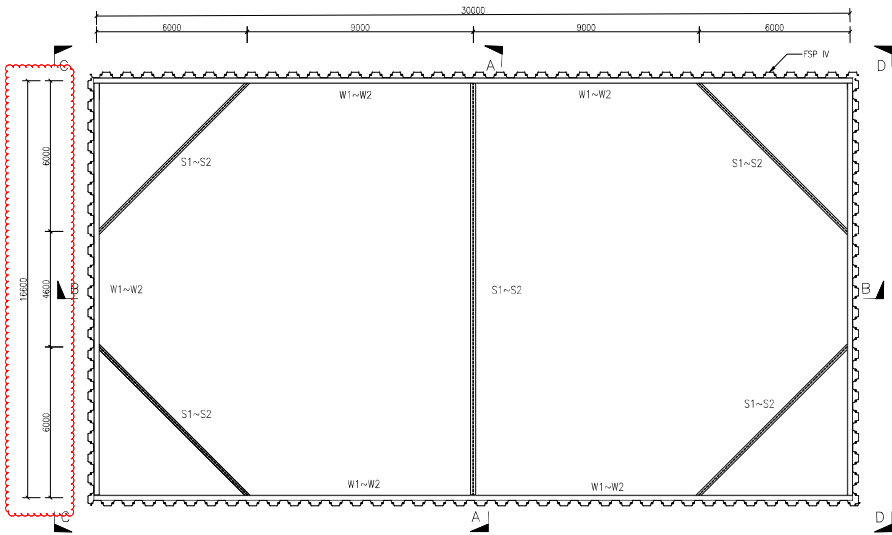
Checked by: \_\_\_\_\_

Item	Description	Condition		Follow-up Actions?		Remarks
		Yes	No	Yes	No	
1	Any defects on the product and if the components are complete before installation? 安裝前產品是否有問題，部件是否完整？					
2	Are the anchor blocks and silt curtains in the right positions? 墜重物 and 隔網是否安放在正確位置？					
3	Are the anchor blocks and silt curtains in good conditions? 墜重物 and 隔網的狀況是否良好？					
4	Are the connections between the anchor blocks and the silt curtains in good conditions? 墜重物 and 隔網的連接狀況是否良好？					
5	Others (please specify): 其他（請註明）:					

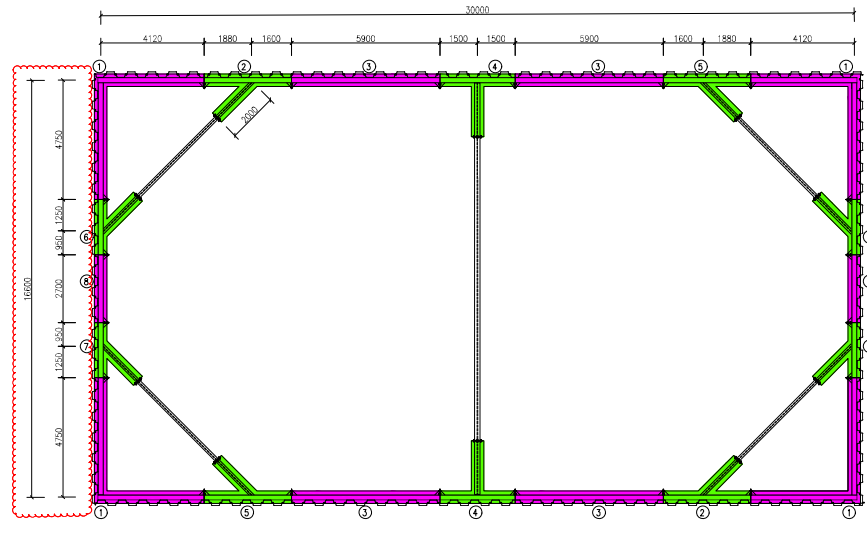
\*The checklist shall be properly signed by the Contractor.

## Appendix D – Drawings for Cofferdam Details

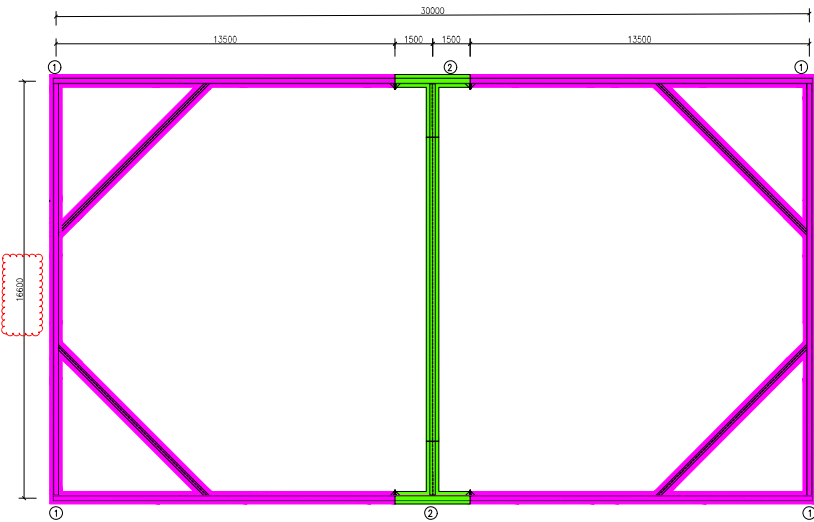




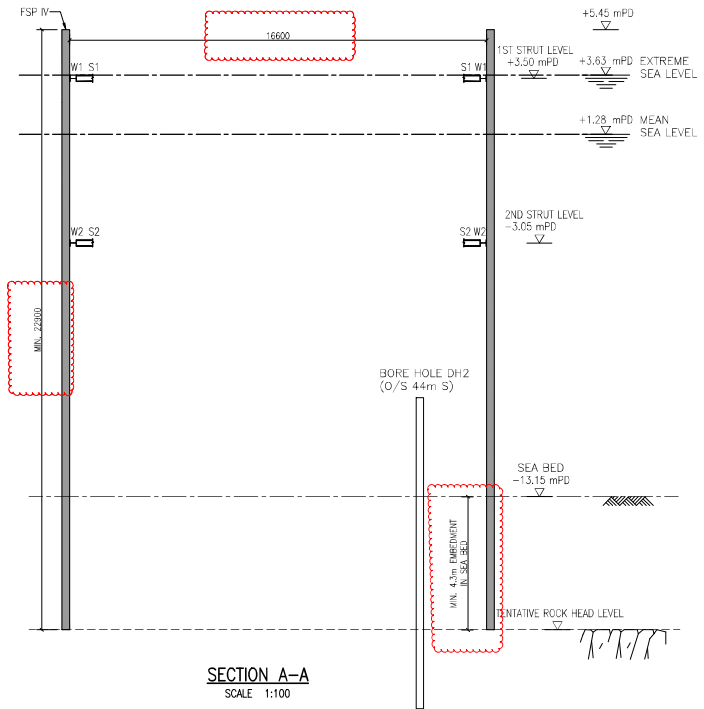
PLAN  
SCALE 1:100



DELINEATION PLAN (SCHEME 2)  
SCALE 1:100



DELINEATION PLAN (SCHEME 3)  
SCALE 1:100



SECTION A-A  
SCALE 1:100

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.  
 ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

SIGNATURE FOR SUBMISSION/ CONSTRUCTION

PROJECT NO.	22154
DRAWN BY:	DL 06/22
DESIGNED BY:	DL 06/22
CHECKED BY:	MM 06/22
APPROVED BY:	VI 06/22
SCALE:	AS SHOWN (A1)
DWG FILE:	WAC_22154_PTO_SWD_002-003

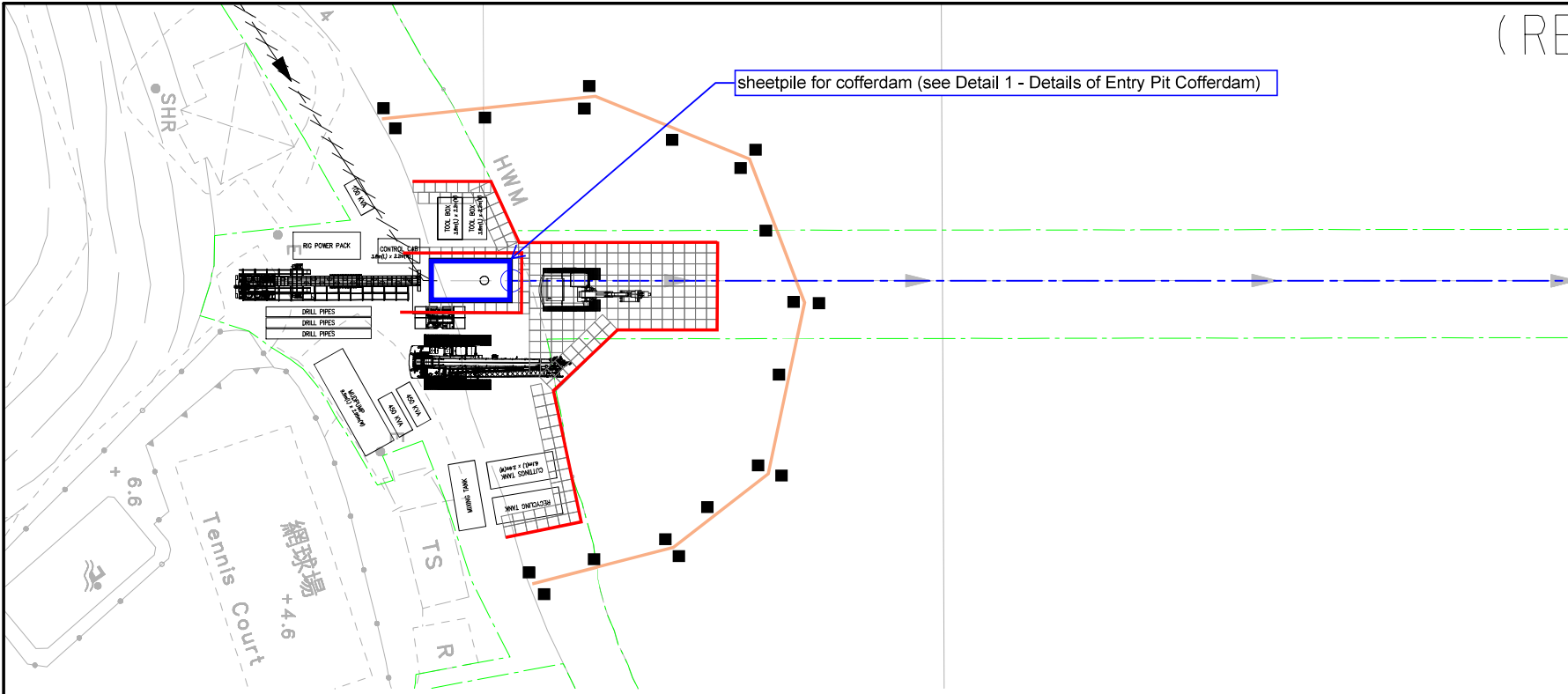
PROJECT:  
 CONTRACT NO. DC/2019/09  
 DESIGN SERVICES FOR OFFSHORE  
 COFFERDAM FOR HDD WORKS FOR  
 SUBMARINE OUTFALL

TITLE:  
 LAYOUT PLAN & SECTION  
 (SHEET 1 OF 2)

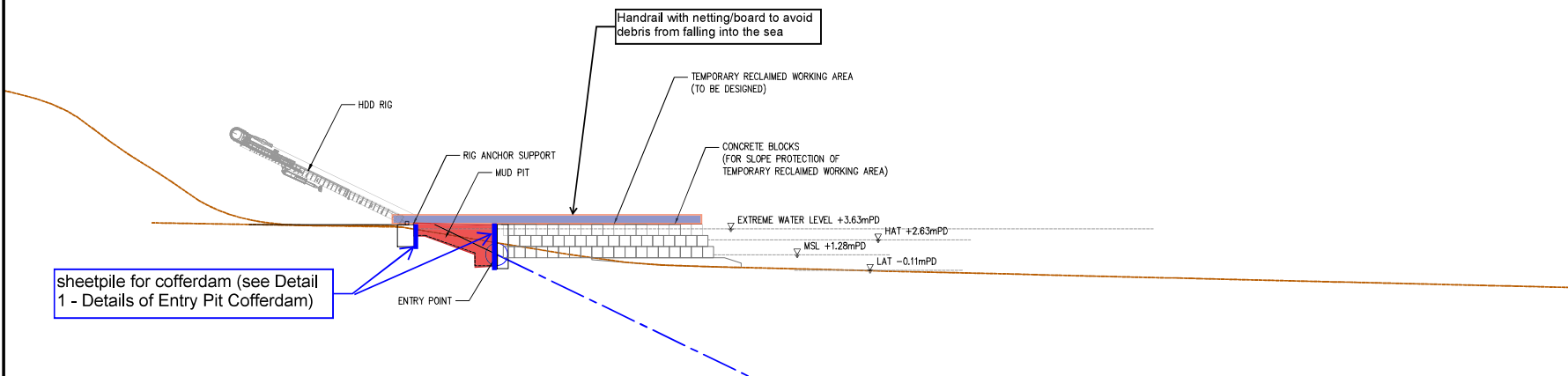
DRAWING NO.:	REV:
WAC/22154/PTO/SWD/002	-

**W** WINDS & ASSOCIATES  
 CONSULTING ENGINEERS LTD.





PROPOSED EQUIPMENT LAYOUT PLAN - ON SHORE SIDE



PROPOSED RIG SET UP PLAN - SECTION VIEW

- LEGENDS:**
- PROPOSED HDD PROFILE FOR SUBMARINE OUTFALL PIPE
  - GROUND PROFILE
  - HAT
  - HIGHEST ASTRONOMICAL TIDE
  - LAT
  - LOWEST ASTRONOMICAL TIDE
  - MSL
  - MEAN SEA LEVEL
  - WORKS LIMIT
  - Handrail with Netting/Board
  - Silt Curtain
  - Anchor Block

HDD Subcontractor

MERSING (CHINA)  
CONSTRUCTION & ENGINEERING LIMITED

Project Consultant

Main Contractor

CAC 中国地质工程集团有限公司  
CHINA GEO-ENGINEERING CORPORATION


A	24/01/22	Issued for review.	IH	ATY
Rev.	Date	Description	Checked	Drawn

Approved

Contract no. DC/2019/09

Contract title  
PROVISION OF VILLAGE SEWERAGE IN SAI KUNG

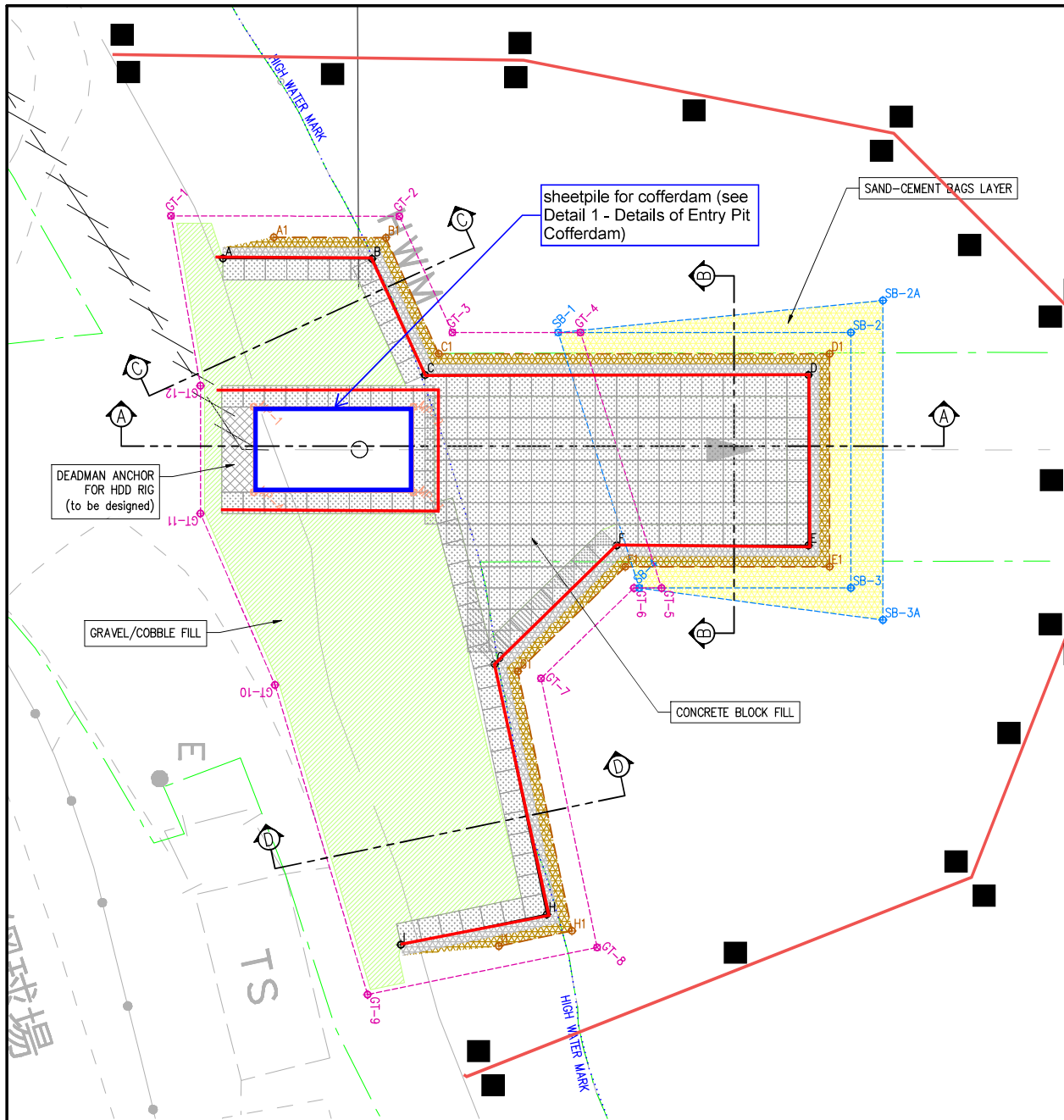
香港特別行政區政府工務署  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
DRAINAGE SERVICES DEPARTMENT

Drawing title  
PROPOSED SITE LAYOUT PLAN

Drawing no.	Revision
MCCE-DSD-PTO-HDD-002	A

Scale	Sheet no.
AS SHOWN (A3)	1/1





PROPOSED RIG PAD LAYOUT PLAN

**SURVEY POINTS**

RIG PAD PERIMETER LAYOUT COORDINATES				
Pt. ID	E	N	Z (mPD)	REMARKS
A	848654.6714	815352.2332	+4.03	Finished level
B	848674.7161	815359.2331	+4.03	Finished level
C	848640.1843	815361.7028	+4.03	Finished level
D	848640.2617	815379.7026	+4.03	Finished level
E	848648.2617	815379.6682	+4.03	Finished level
F	848648.2229	815370.6683	+4.03	Finished level
G	848653.7767	815364.91	+4.03	Finished level
H	848665.5343	815367.3099	+4.03	Finished level
I	848666.9291	815360.4519	+4.03	Finished level

SAND-CEMENT BAG LAYER COORDINATES				
Pt. ID	E	N	Z (mPD)	REMARKS
SB-1	848638.2112	815367.9629	+1.03	Finished level
SB-2	848638.2704	815381.7112	+1.03	Finished level
SB-3	848650.2703	815381.6596	+1.03	Finished level
SB-4	848650.2275	815371.7203	+1.03	Finished level
SB-2A	848638.2704	815381.7112		Verify actual sea bed level
SB 3A	848650.2703	815381.6596		Verify actual sea bed level

CONCRETE BLOCK FOUNDATION PERIMETER LAYOUT COORDINATES				
Pt. ID	E	N	Z (mPD)	REMARKS
A1	848653.6867	815354.6269	+2.03	Finished level
B1	848639.7203	815359.8825	+2.03	Finished level
C1	848639.187	815362.3496	+2.03	Finished level
D1	848639.2661	815380.7069	+2.03	Finished level
E1	848649.266	815380.6639	+2.03	Finished level
F1	84869.2247	815371.0701	+2.03	Finished level
G1	848654.1151	815365.9996	+2.03	Finished level
H1	848666.3148	815368.4898	+2.03	Finished level
I1	848667.0138	815365.0529	+2.03	Finished level

GEOTEXTILE LAYER PERIMETER LAYOUT COORDINATES				
Pt. ID	E	N	Z (mPD)	REMARKS
GT-1	848672.6562	815349.8069		Verify actual sea bed level
GT-2	848632.7244	815360.528		Verify actual sea bed level
GT-3	848638.1898	815362.9965		Verify actual sea bed level
GT-4	848638.2157	815369.0101		Verify actual sea bed level
GT-5	848650.232	815372.7695		Verify actual sea bed level
GT-6	848650.2264	815371.472		Verify actual sea bed level
GT-7	848654.4534	815367.0893		Verify actual sea bed level
GT-8	848667.0953	815369.6698		Verify actual sea bed level
GT-9	848669.2631	815358.8799		Verify actual sea bed level
GT-10	848654.7027	815354.5939		Verify actual sea bed level
GT-11	848646.6388	815351.128		Verify actual sea bed level
GT-12	848640.6388	815351.1538		Verify actual sea bed level

MUD PIT PERIMETER LAYOUT COORDINATES				
Pt. ID	E	N	Z (mPD)	REMARKS
MP-1	848641.6496	815353.6495	+4.03	Finished level
MP-2	848641.6819	815361.1494	+4.03	Finished level
MP-3	848645.6818	815361.1322	+4.03	Finished level
MP-4	848645.6496	815353.6323	+4.03	Finished level

**LEGENDS:**

- PROPOSED HDD PROFILE FOR SUBMARINE OUTFALL PIPE
- WORKS LIMIT
- Handrail with Netting/Board
- Silt Curtain
- Anchor Block

HDD Subcontractor

MERSING (CHINA)  
CONSTRUCTION & ENGINEERING LIMITED

Project Consultant

Main Contractor

CAC 中国地质工程集团有限公司  
CHINA GEO-ENGINEERING CORPORATION

Rev.	Date	Description	Checked	Drawn
A	24/01/22	Issued for review.		

Contract no. DC/2019/09

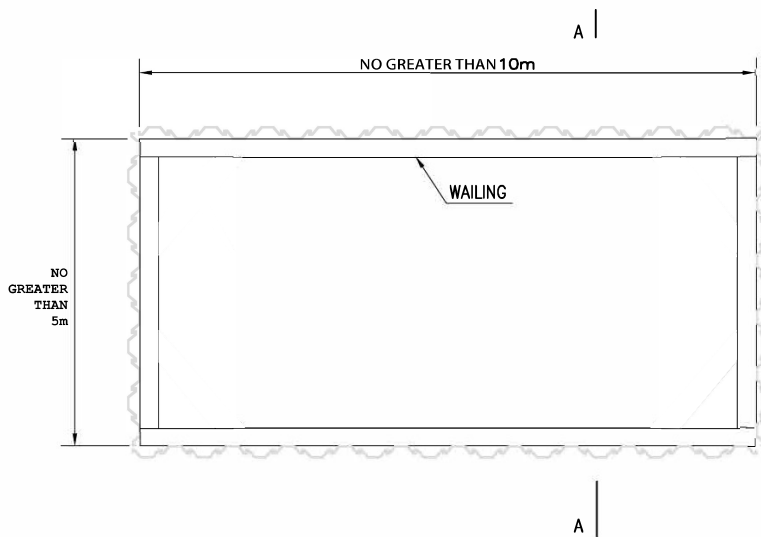
Contract title  
PROVISION OF VILLAGE SEWERAGE IN SAI KUNG

THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION  
DRAINAGE SERVICES DEPARTMENT

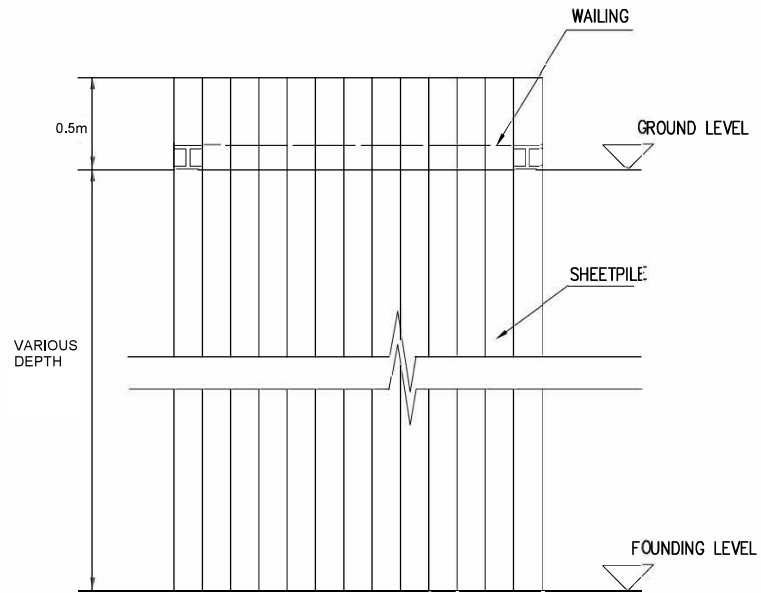
Drawing title  
PROPOSED RIG PAD DETAILS

Drawing no. MCCE-DSD-PTO-HDD-004	Revision A
Scale AS SHOWN (A3)	Sheet no. 1/1





PLAN VIEW



SECTION A-A

- NOTES:  
 1. TYPE OF SHEETPILE: LSP-3B;  
 2. TYPE OF WAILING AND STRUT: 100X50X10kg/m CHANNEL

DC/2019/09

PROVISION OF VILLAGE SEWERAGE  
 IN SAI KUNG

Drawing title

Detail 1 - Details of  
 Entry Pit Cofferdam

Drawing no.

Revised

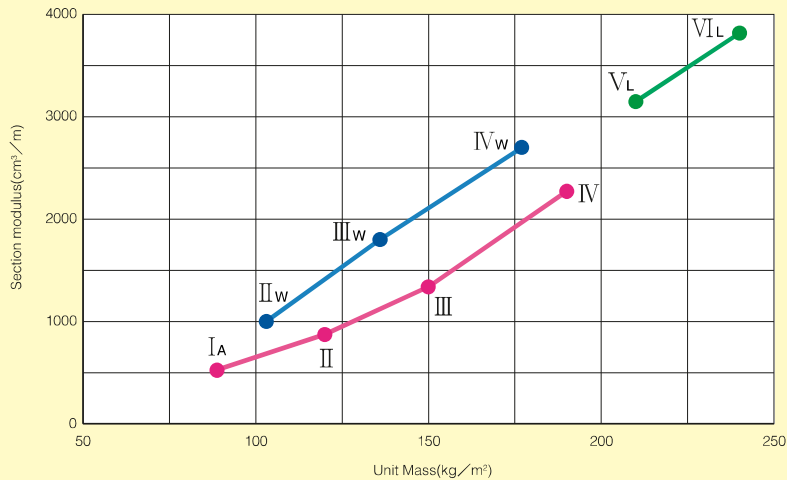
Scale

Appendix E –Sectional Properties of Sheetpile, Wailing and  
Strut


# SECTIONAL PROPERTIES

## U-type Sheet Pile

Type	Dimension			Per pile				Per 1 m of pile wall width			
	Effective width mm	Effective height mm	Thickness mm	Sectional area cm <sup>2</sup>	Moment of inertia cm <sup>4</sup>	Section modulus cm <sup>3</sup>	Unit mass kg/m	Sectional area cm <sup>2</sup> /m	Moment of inertia cm <sup>4</sup> /m	Section modulus cm <sup>3</sup> /m	Unit mass kg/m <sup>2</sup>
FSP- I <sub>A</sub>	400	85	8.0	45.21	598	88.0	35.5	113.0	4,500	529	88.8
FSP- II	400	100	10.5	61.18	1,240	152	48.0	153.0	8,740	874	120
FSP- III	400	125	13.0	76.42	2,220	223	60.0	191.5	16,800	1,340	150
FSP- IV	400	170	15.5	96.99	4,670	362	76.1	242.5	38,600	2,270	190
FSP- V <sub>L</sub>	500	200	24.3	133.8	7,960	520	105	267.6	63,000	3,150	210
FSP- VI <sub>L</sub>	500	225	27.6	153.0	11,400	680	120	306.0	86,000	3,820	240
NSP- II <sub>w</sub>	600	130	10.3	78.70	2,110	203	61.8	131.2	13,000	1,000	103
NSP- III <sub>w</sub>	600	180	13.4	103.9	5,220	376	81.6	173.2	32,400	1,800	136
NSP- IV <sub>w</sub>	600	210	18.0	135.3	8,630	539	106	225.5	56,700	2,700	177

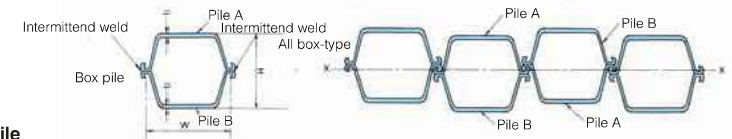


## Straight Web-type Sheet Pile



Type	Dimension			Per pile				Per 1 m of pile wall width			
	Effective width mm	Effective height mm	Thickness mm	Sectional area cm <sup>2</sup>	Moment of inertia cm <sup>4</sup>	Section modulus cm <sup>3</sup>	Unit mass kg/m	Sectional area cm <sup>2</sup> /m	Moment of inertia cm <sup>4</sup> /m	Section modulus cm <sup>3</sup> /m	Unit mass kg/m <sup>2</sup>
YSP-FL	500	44.5	9.5	78.57	184	45.7	61.7	157.1	396	89	123
YSP-FXL	500	47.0	12.7	98.36	245	60.3	77.2	196.7	570	121	154

Note:1. The straight web-type sheet pile of SYW295 and SYZ95 offers joint strengths of 4MN/m and over for YSP-FL and 6MN/m and over for YSP-FXL.

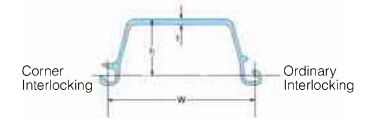


## Box-type Sheet Pile

Type	Dimension			Per pile				Per 1 m of pile wall width						
	Effective width mm	Effective height mm	Thickness mm	Sectional area cm <sup>2</sup>	Moment of inertia cm <sup>4</sup>	Section modulus cm <sup>3</sup>	Unit mass kg/m	Sectional area cm <sup>2</sup> /m	Moment of inertia cm <sup>4</sup> /m	Section modulus cm <sup>3</sup> /m	Unit mass kg/m <sup>2</sup>			
FSP- IV	FSP- IV	400	387	15.5	15.5	194.0	41,600	2,150	1,250	152	485.0	104,000	5,380	380
FSP- V <sub>L</sub>	FSP- V <sub>L</sub>	500	445	24.3	24.3	267.6	80,500	3,620	2,050	210	535.2	161,000	7,240	420
FSP- VI <sub>L</sub>	FSP- VI <sub>L</sub>	500	471	27.6	24.3	286.8	92,500	3,850	2,320	225	573.6	185,000	7,700	450
FSP- VI <sub>L</sub>	FSP- VI <sub>L</sub>	500	497	27.6	27.6	306.0	108,000	4,350	2,560	240	612.0	216,000	8,700	480

Note:1. The statical moment in the above table is the values required for determining weld lengths. These values represent statical moments of area about the neutral axis for one side of a box pile.

2. In addition to the box-type piles (pile A X pile B) shown above, the following 10 box-type piles are also available:  
 FSP-I<sub>w</sub>X FSP-I<sub>w</sub>, FSP-II<sub>w</sub>X FSP-II<sub>w</sub>, FSP-III<sub>w</sub>X FSP-III<sub>w</sub>, FSP-III<sub>w</sub>X FSP-III<sub>w</sub>, FSP-IV<sub>w</sub>X FSP-IV<sub>w</sub>, NSP-II<sub>w</sub>X NSP-II<sub>w</sub>, NSP-III<sub>w</sub>X NSP-III<sub>w</sub>,  
 NSP-IV<sub>w</sub>X NSP-IV<sub>w</sub>, NSP-IV<sub>w</sub>X NSP-IV<sub>w</sub>.



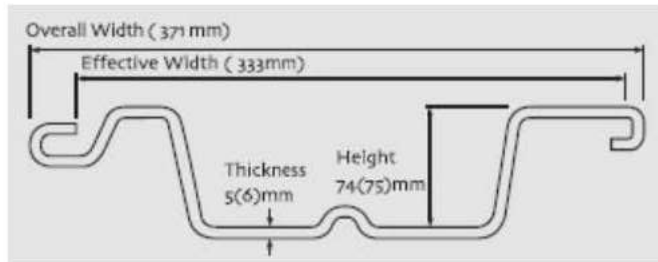
## Corner Sheet Pile

Type	Dimension			Per pile			
	Width mm	Height mm	Thickness mm	Section area cm <sup>2</sup>	Unit mass kg/m	Moment of inertia cm <sup>4</sup>	Section modulus cm <sup>3</sup>
FSP-C III	400	125	13	79.63	62.5	2,330	237
FSP-C IV	400	170	15.5	96.76	76.0	4,630	377





## Light Sheet Piling (SK-LSP-3B)



SK-LSP-3B

Section No.	Thickness (mm)	Effective Width (mm)	Height (mm)	Section Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Moment of Inertia Ix-Cm4
SK-LSP-3B	5.0	333	74	27.51	21.6	212
	6.0	333	75	33.01	25.9	254
Section No.	Thickness (mm)	Setion Modulus Zx-cm <sup>3</sup>	Radius of Gyration ix-cm	Kg/m <sup>2</sup>	Moment of Inertia ix-cm4/m	Setion Modulus Zx-cm 3/m
SK-LSP-3B	5.0	57.0	2.77	64.8	636	171
	6.0	68.0	2.78	7.77	762	204

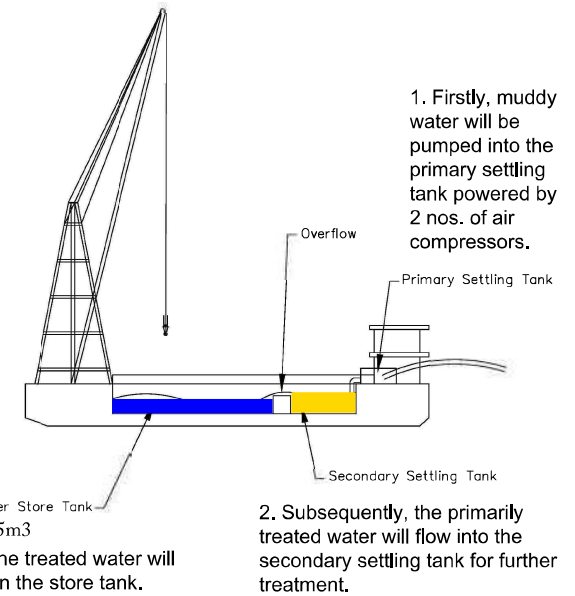
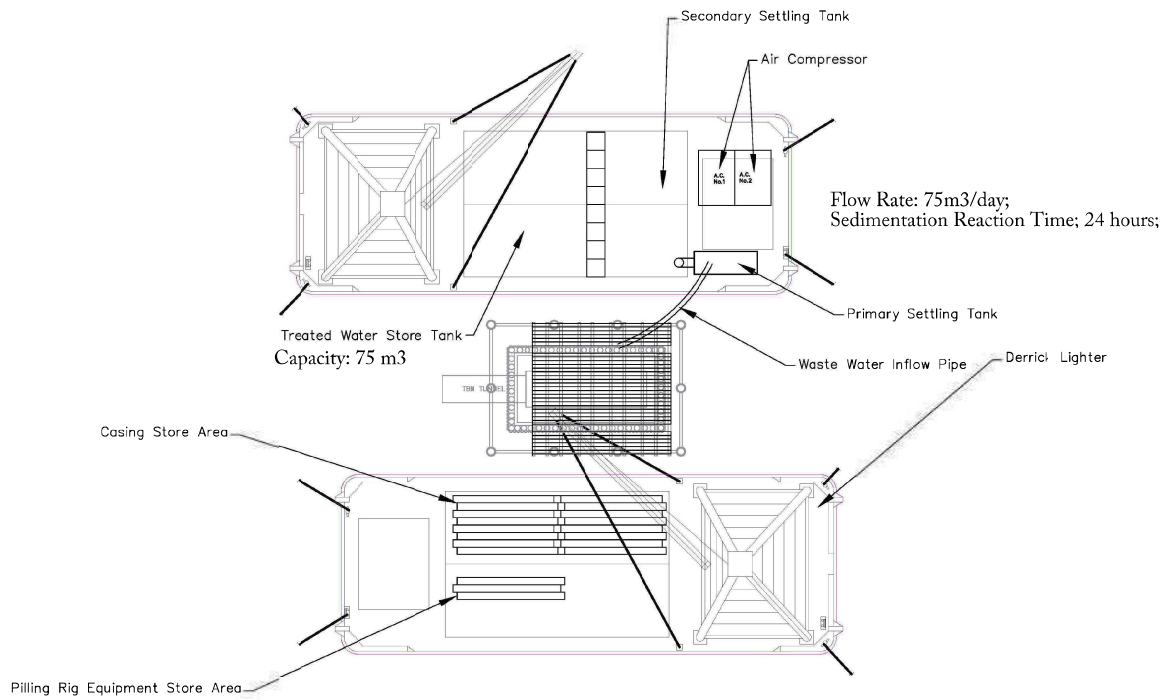
## Universal Columns to BS4 Part1 1993 - Dimensions & Properties

Designation	Mass Per metre	Depth of Section	Width of Section	Thickness		Root Radius	Depth between fillets	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter
				Web	Flange			Flange	Web	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	
	kg/m	h	b	s	t	r	d	b/2t	d/s	I <sub>x</sub>	I <sub>y</sub>	r <sub>x</sub>	r <sub>y</sub>	Z <sub>x</sub>	Z <sub>y</sub>	S <sub>x</sub>	S <sub>y</sub>	u
356x406x634	634	474.6	424	47.6	77	15.2	290.2	2.75	6.1	274800	98130	18	11	11580	4629	14240	7108	0.843
356x406x551	551	455.6	418.5	42.1	67.5	15.2	290.2	3.1	6.89	226900	82670	18	11	9962	3951	12080	6058	0.841
356x406x467	467	436.6	412.2	35.8	58	15.2	290.2	3.55	8.11	183000	67830	18	11	8383	3291	10000	5034	0.839
356x406x393	393	419	407	30.6	49.2	15.2	290.2	4.14	9.48	146600	55370	17	11	6998	2721	8222	4154	0.837
356x406x340	340	406.4	403	26.6	42.9	15.2	290.2	4.7	10.9	122500	46850	17	10	6031	2325	6999	3544	0.836
356x406x287	287	393.6	399	22.6	36.5	15.2	290.2	5.47	12.8	99880	38680	17	10	5075	1939	5812	2949	0.835
356x406x235	235	381	394.8	18.4	30.2	15.2	290.2	6.54	15.8	79080	30990	16	10	4151	1570	4687	2383	0.834
356x368x202	202	374.6	374.7	16.5	27	15.2	290.2	6.94	17.6	66260	23690	16	9.6	3538	1264	3972	1920	0.844
356x368x177	177	368.2	372.6	14.4	23.8	15.2	290.2	7.83	20.2	57120	20530	16	9.5	3103	1102	3455	1671	0.844
356x368x153	153	362	370.5	12.3	20.7	15.2	290.2	8.95	23.6	48590	17550	16	9.5	2684	948	2965	1435	0.844
356x368x129	129	355.6	368.6	10.4	17.5	15.2	290.2	10.5	27.9	40250	14610	16	9.4	2264	793	2479	1199	0.844
305x305x283	283	365.3	322.2	26.8	44.1	15.2	246.7	3.65	9.21	78870	24630	15	8.3	4318	1529	5105	2342	0.855
305x305x240	240	352.5	318.4	23	37.7	15.2	246.7	4.22	10.7	64200	20310	15	8.2	3643	1276	4247	1951	0.854
305x305x198	198	339.9	314.5	19.1	31.4	15.2	246.7	5.01	12.9	50900	16300	14	8	2995	1037	3440	1581	0.854
305x305x158	158	327.1	311.2	15.8	25	15.2	246.7	6.22	15.6	38750	12570	14	7.9	2369	808	2680	1230	0.851
305x305x137	137	320.5	309.2	13.8	21.7	15.2	246.7	7.12	17.9	32810	10700	14	7.8	2048	692	2297	1053	0.851
305x305x118	118	314.5	307.4	12	18.7	15.2	246.7	8.22	20.6	27670	9059	14	7.8	1760	589	1958	895	0.85
305x305x97	96.9	307.9	305.3	9.9	15.4	15.2	246.7	9.91	24.9	22250	7308	13	7.7	1445	479	1592	726	0.85
254x254x167	167	289.1	265.2	19.2	31.7	12.7	200.3	4.18	10.4	30000	9870	12	6.8	2075	744	2424	1137	0.851
254x254x132	132	276.3	261.3	15.3	25.3	12.7	200.3	5.16	13.1	22530	7531	12	6.7	1631	576	1869	878	0.85
254x254x107	107	266.7	258.8	12.8	20.5	12.7	200.3	6.31	15.6	17510	5928	11	6.6	1313	458	1484	697	0.848
254x254x89	88.9	260.3	256.3	10.3	17.3	12.7	200.3	7.41	19.4	14270	4857	11	6.6	1096	379	1224	575	0.85
254x254x73	73.1	254.1	254.6	8.6	14.2	12.7	200.3	8.96	23.3	11410	3908	11	6.5	898	307	992	465	0.849
203x203x86	86.1	222.2	209.1	12.7	20.5	10.2	160.8	5.1	12.7	9449	3127	9.3	5.3	850	299	977	456	0.85
203x203x71	71	215.8	206.4	10	17.3	10.2	160.8	5.97	16.1	7618	2537	9.2	5.3	706	246	799	374	0.853
203x203x60	60	209.6	205.8	9.4	14.2	10.2	160.8	7.25	17.1	6125	2065	9	5.2	584	201	656	305	0.846
203x203x52	52	206.2	204.3	7.9	12.5	10.2	160.8	8.17	20.4	5259	1778	8.9	5.2	510	174	567	264	0.848

### Parallel Flange Channels - Dimensions and Properties

Designation	Mass Per metre	Depth of Section	Width of Section	Thickness		Root Radius	Depth between Fillets	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Elastic NA	Plastic Modulus		Plastic NA	Buckling Parameter	Torsion Index	Warping Constant	Torsion Constant	Area of Section
				Web	Flange			Flange	Web	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y		c <sub>y</sub>	Axis x-x						
	Kg/m	mm	mm	mm	mm	mm	mm	mm	b/T	d/t	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	cm			dm <sup>6</sup>	cm <sup>4</sup>
430x100x64	64.4	430	100	11	19	15	362	5.26	32.9	21940	722	16.3	2.97	1020	97.9	2.62	1222	176	0.954	0.917	22.5	0.219	63	82.1
380x100x54	54.0	380	100	9.5	17.5	15	315	5.71	33.2	15030	643	14.8	3.06	791	89.2	2.79	933	161	0.904	0.932	21.2	0.15	45.7	68.7
300x100x46	45.5	300	100	9	16.5	15	237	6.06	26.3	8229	568	11.9	3.13	549	81.7	3.05	641	148	1.31	0.944	17	0.081	36.8	58
300x90x41	41.4	300	90	9	15.5	12	245	5.81	27.2	7218	404	11.7	2.77	481	63.1	2.6	568	114	0.879	0.934	18.4	0.058	28.8	52.7
260x90x35	34.8	260	90	8	14	12	208	6.43	26	4728	353	10.3	2.82	364	56.3	2.74	425	102	1.14	0.942	17.2	0.038	20.6	44.4
260x75x28	27.6	260	75	7	12	12	212	6.25	30.3	3619	185	10.1	2.3	278	34.4	2.1	328	62	0.676	0.932	20.5	0.02	11.7	35.1
230x90x32	32.2	230	90	7.5	14	12	178	6.43	23.7	3518	334	9.27	2.86	306	55	2.92	355	98.9	1.69	0.95	15.1	0.028	19.3	41
230x75x26	25.7	230	75	6.5	12.5	12	181	6	27.8	2748	181	9.17	2.35	239	34.8	2.3	278	63.2	1.03	0.947	17.3	0.015	11.8	32.7
200x90x30	29.7	200	90	7	14	12	148	6.43	21.1	2523	314	8.16	2.88	252	53.4	3.12	291	94.5	2.24	0.954	12.9	0.02	18.3	37.9
200x75x23	23.4	200	75	6	12.5	12	151	6	25.2	1963	170	8.11	2.39	196	33.8	2.48	227	60.6	1.53	0.956	14.8	0.011	11.1	29.9
180x90x26	26.1	180	90	6.5	12.5	12	131	7.2	20.2	1817	277	7.4	2.89	202	47.4	3.17	232	83.5	2.36	0.949	12.8	0.014	13.3	33.2
180x75x20	20.3	180	75	6	10.5	12	135	7.14	22.5	1370	146	7.27	2.38	152	28.8	2.41	176	51.8	1.34	0.946	15.3	0.008	7.34	25.9
150x90x24	23.9	150	90	6.5	12	12	102	7.5	15.7	1162	253	6.18	2.89	155	44.4	3.3	179	76.9	2.66	0.936	10.8	0.009	11.8	30.4
150x75x18	17.9	150	75	5.5	10	12	106	7.5	19.3	861	131	6.15	2.4	115	26.6	2.58	132	47.2	1.81	0.946	13.1	0.005	6.1	22.8
125x65x15	14.8	125	65	5.5	9.5	12	82	6.84	14.9	483	80	5.07	2.06	77.3	18.8	2.25	89.9	33.2	1.55	0.942	11.1	0.002	4.72	18.8
100x50x10	10.2	100	50	5	8.5	9	65	5.88	13	208	32.3	4	1.58	41.5	9.89	1.73	48.9	17.5	1.18	0.942	10	0	2.53	13

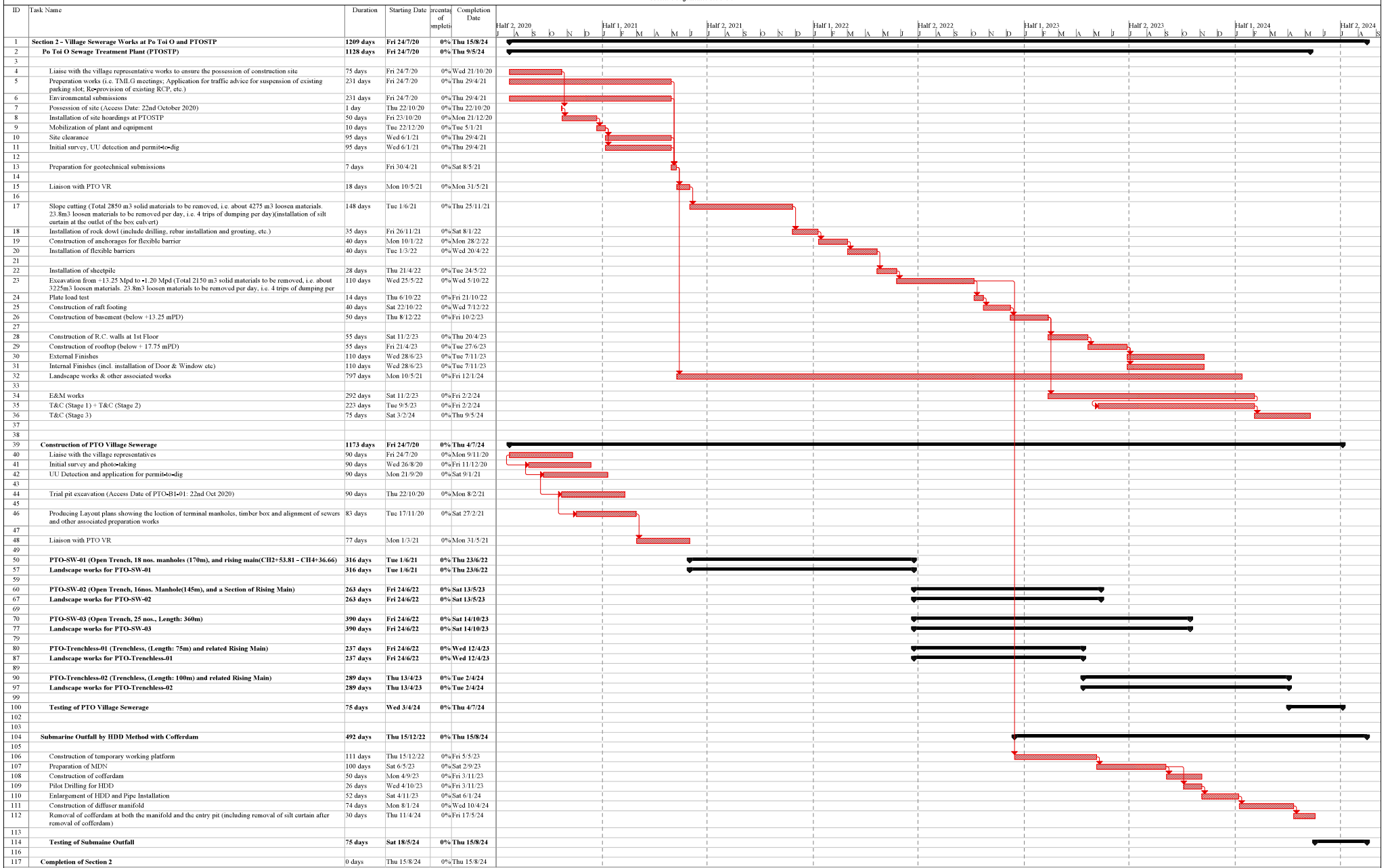
## Appendix F –Wastewater Treatment Facility on the Barge



Wastewater Treatment Facility on the barge

## Appendix G – Works Programme for Po Toi O





Project:DC/2019/09  
Date: August 2023

Task	Milestone	Project Guide: Critical Task	Project Guide: Critical Task	Milestone	Manual Task	Manual Summary	External Tasks
Split	Summary	Split	Progress	Inactive Milestone	Duration-only	Start-only	External Milestone
	Project Summary			Inactive Summary	Manual Summary Rollup	Finish-only	Progress
							Summary

## Appendix H – Visual Inspection Checklists for Treated Water

DC/2019/09 Provision of Sewerage in Sai Kung

### Visual Inspection Checklist for Treated Water

Location: \_\_\_\_\_

Inspection Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Item	Description	Condition		Follow-up Actions?		Remarks
		Yes	No	Yes	No	
1	Any floating debris / refuse in the treated water? 經處理後的海水中有沒有漂浮的垃圾?					
2	Turbidity in the treated water ? 經處理後的海水是否渾濁?					
3	Any debris/refuse in the water body? 水體中是否有垃圾?					
4	Does the treated water meet the requirements of discharge licence? 經處理後的水質是否符合排放證書之相關要求?					
5	Others (please specify): 其他 (請註明):					

\*The checklist shall be properly signed by the Contractor.