

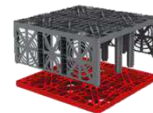
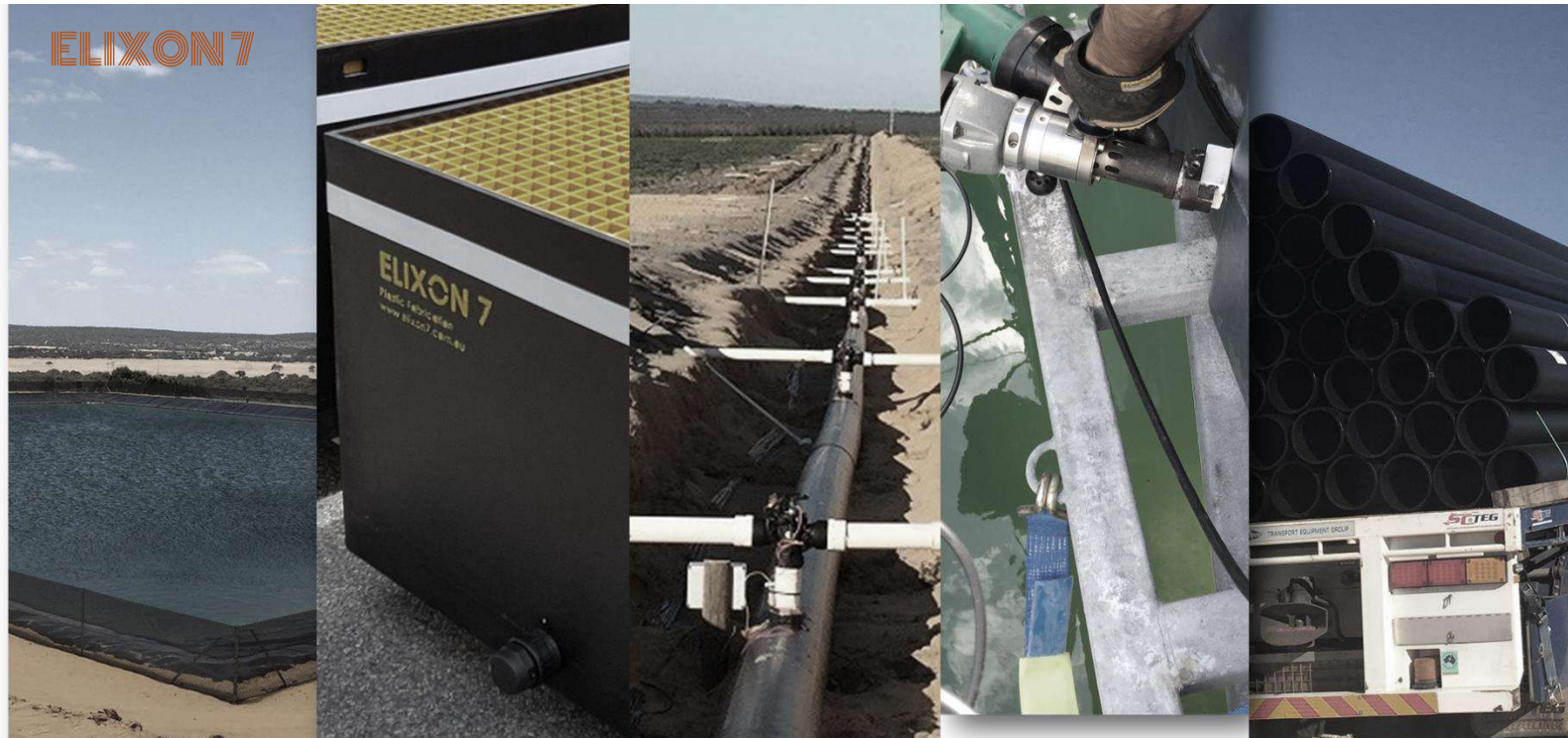
ELIXON7

POLYWELDING SITE SERVICES



STORMWATER, RAINWATER, SEPRATOR TANKS

ELIXON7





Storm-water Installation Documentation

ON-SITE INSTALLATION OF ECO-BLOCK MODULES AND WELDING OF PE LINER & FITTINGS

PRCB04022019



This document is designed and constructed as a summary for quality control review and warranty application. For further assessment and interpretation, please make a request via info@elixon7.com.au referencing project identification number.

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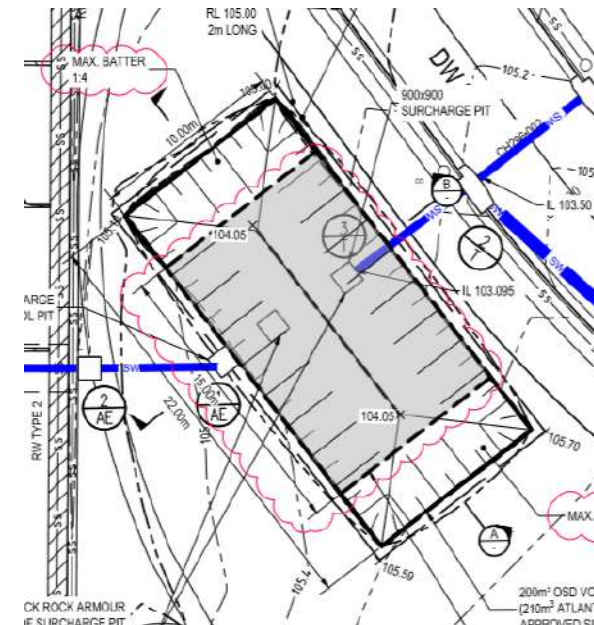
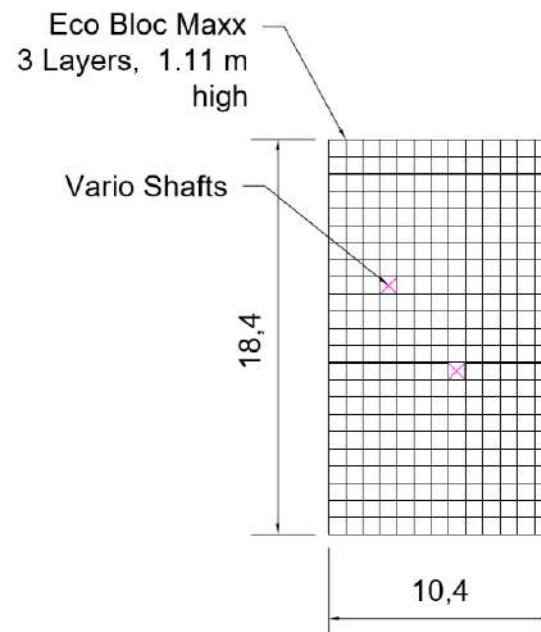
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System Overview

This modular system has been designed and constructed to reduce peak discharges to the sewer system during rain events by requiring greater onsite storage of storm water runoff and slower release.. The first stage of this system consisted of installing approximately 200 m³ of GPA EcoBloc Max modules. Further steps took place to completely enclose constructed structure with polyethylene geomembrane installing one outlet fitting. The Inlet Vario Inspection shaft have been isolated with a HDPE 4mm fabricated bund with inflow and entrances cut out to designed specifications. Once the structure has been installed, modules were then backfilled with appropriate material.

System Parameters

Total volume	200m ³ *
Number of outlets	1
Number of Inspection Shafts	2
Steps	0
Corners	4
Block Layers	3
Lining material	1mm LDPE
Outlet Material	LLDPE



For Detailed structure surveying and design drawings, please forward your request to Cleary Bros (Bombo) Senior Site Engineer

Project Roles and Responsibilities

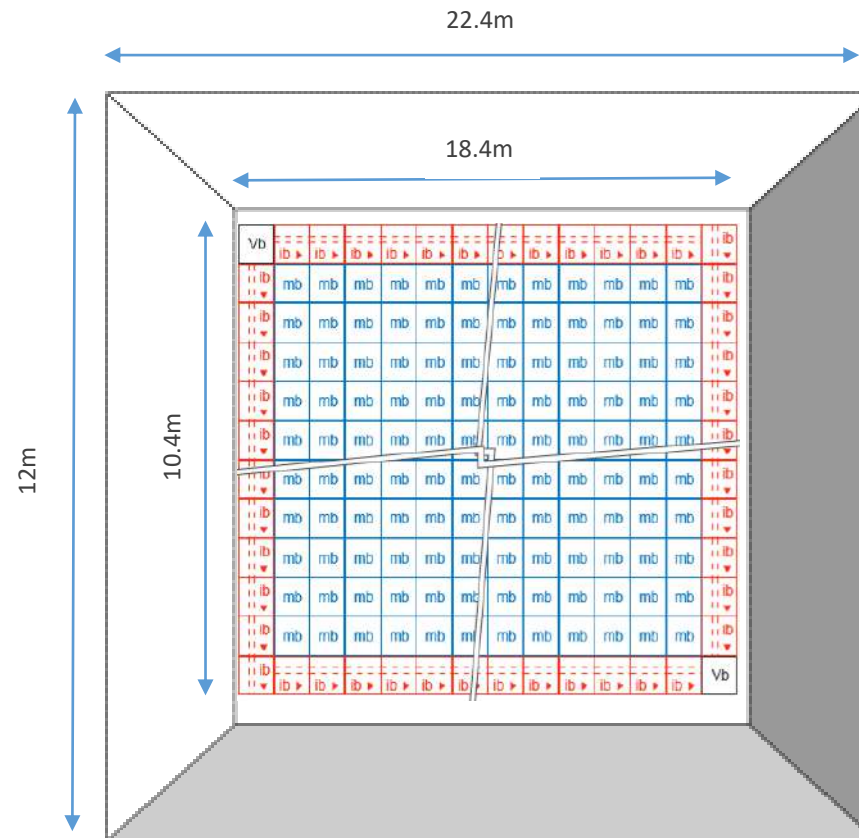
Principle Contractor	CLEARY BROS (BOMBO)
Cleary Bros (Bombo): Alan Curren 39 Five Islands Road Port Kembla NSW 2505 Phone: (02) 4275 1000 Fax: (02) 4274 1125 Email: alancurren@clearybros.com.au	• Design & Configuration support • Planning/Scheduling • On-Site Administration • Associated Earthworks • Associated Plumbing • Commissioning • Design Review and acceptance
Supply & Installation Contractor	ELIXON 7
ELIXON 7 Representative: Artem Riapolov 19 Success Way, Henderson Western Australia 6166 Phone: (08) 6446 6983 Fax: (08) 6446 6984 Email: artem@elixon7.com.au	• Supply of Material • Fabrication Preparation and Wrapping of Geotextile/Geomembrane Membrane • Unloading of Eco Bloc modules • Construction of Eco Bloc modules • Wrapping and Seaming Geotextile Membrane • Fabrication and installation of pipe boots and outlets • Outlet shaft isolation • Geo membrane liner testing for leaks

Installation Methodology

1. Excavate trench allowing appropriate clearances for Storm water system
2. Compact Foundation
3. Delivery and position of Eco-Block Modules for installation
3. Positioning Lining
4. Assemble Eco Bloc Modules
5. Attach pipe boots and connectors where applicable
6. Cover the top, sides and ends of the drain with appropriate lining
7. Install and Seal pipe connectors
8. Backfill with specified raw material
9. Place clean fill/topsoil over the sand layer and compact using machinery on track not exceeding manufacture's specification.

Excavate trench allowing appropriate clearances for Storm water system

Earthworks have been prepared by principle contractor with allocation of extra space around each corner. For fittings and large diameter in-lets that are placed at the bottom of the tank, allow extra space for welding and installation.



Compact Foundation Leveling is to be set and sharp objects, larger stones and similar foreign objects were removed.

Leveling has been performed by principle contractor, applying blue-metal or similar material layer at the bottom of the pit. Installation area was then inspected and screening has been performed to eliminate sharp objects, large stones and similar foreign objects that could obstruct installation.



Delivery and position of Eco-Block Modules for installation

Majority of modules arrived on semi-trailer. Eco block Maxx are designed to be stacked in one another to reduce transportation costs. Tele-handler was used to unload pallets. Blocks were unloaded and positioned within 10 meters of installation area. In order to maintain speed and efficiency of installation, a slide has been constructed to send modules down to the pit.

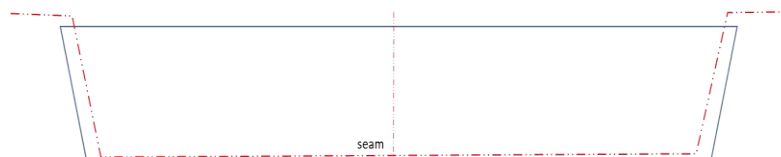
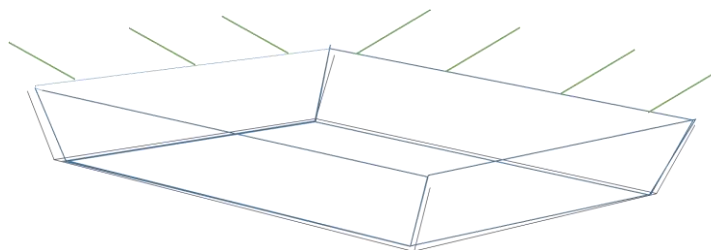
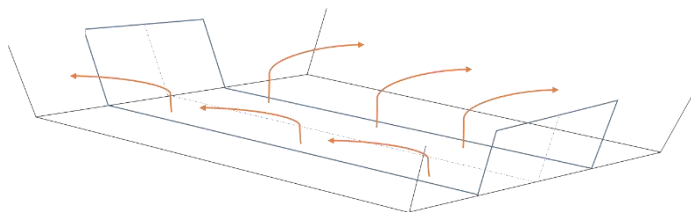


Prefabrication of PE Liner, Delivery and position.

Installation team placed Geo-textile lining as an external protective layer for geo-membrane.

Lining is then cut to specifications leaving excess where applicable. Taking into account the depth of the pit and other variable factors on site, PE Liner was prefabricated and folded to suit the floor, walls and 400mm overlap on top.

Specifically folded for easy on-site installation, PE Liner weld-seams were tested using high-pressure air lance procedures prior to arriving on site. Once arrived on site, PE Liner was positioned, unfolded and clamped into position. Sufficient length of internal geotextile layer is then placed inside geo-membrane 'Bund', serving as internal protection layer between geo-membrane and 'Eco Bloc' modules.

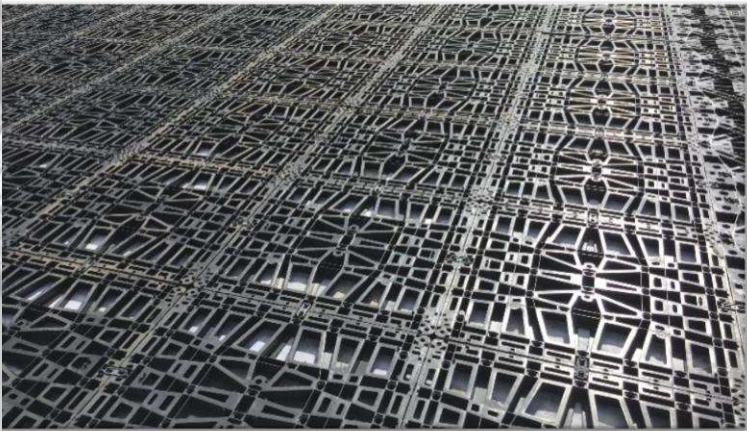




Assemble Eco Block Modules

Once satisfied with foundation, each module was placed clipped to base plates and connected with Eco Block clips. Process is repeated until height specifications was met. Connecting elements were fitted to fix each layer of Eco Block Modules. Two inspection shafts were installed as per specifications. Inspection tunnel entrances were drilled out and ends plates were fitted and holes were drilled for pipe connections. Once all modules are positioned, system was wrapped in internal geotextile and geo-membrane lining. External Geotextile was then secured in position.





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Pipe Connections and Shaft entrances

Once construction of blocks was completed, pipe boot was installed and welded on the inside of the liner. Pipe boot sits 20mm below the tank becoming the lowest drainage point. Conductivity element applied to base plate for spark-test procedure and Spark Testing method was performed around the weld. Inlet hole was drilled to suit concrete pipe work. Two shafts were lined with 4mm sheeting and DN450 holes were drilled out on each side of the shaft. Each shaft was then adjusted to construction RLs and strainer was installed.



Backfill with specified raw material

Place clean fill/topsoil over the sand layer and compact using machinery on track not exceeding manufacture's specification.

Final Stage consisted of wrapping the whole system in Geotextile lining. Liner is cut to overlap all around the modules to specified 400mm. Geo-textile is placed to cover whole structure prior to backfill. Principle Contractor assigned backfill operations to completing the final stage.





Quality control / Quality assurance Documentation

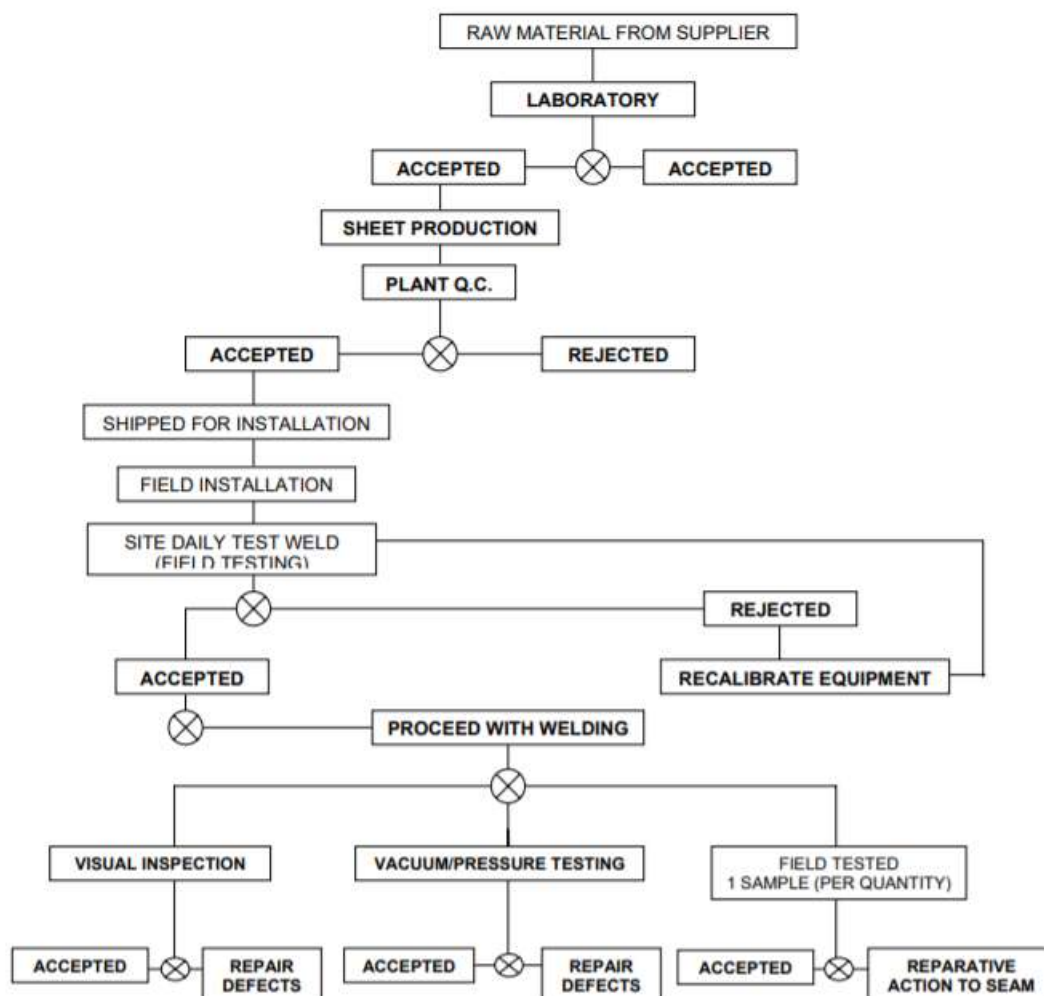
Quality Control

For the purpose of this specification, quality control shall be defined as a planned system of inspection and tests to directly monitor and control the quality of the work. The Contractor shall employ a quality control inspector who may be the same person as the installation supervisor.

Quality Assurance

For the purpose of this specification, quality assurance is defined as a planned system of activities carried out by the Owner or his Representative that provides assurance that the geomembrane liner was constructed/installed as specified. The quality assurance program may include tests similar to those carried out for quality control. The Contractor shall assist and cooperate with the Owner's Representative or the Engineer in the execution of the quality assurance program.

Construction quality control chart



MATERIAL DATA REGISTER

Geo-textile

ProFab® FILTER GEOTEXTILE MINI ROLLS

FOR DRAINAGE, FILTRATION AND SOIL SEPARATION

Geo-Textile

Manufacturer	Global Synthetics
Material	ProFab Geotextile
Width	4000mm
Roll Mass	145kg
Batch Number	AS1071D
CODE	DL20193500057
Pore Size	0.2mm
Flow Rate	300 l / m ² / s
Grab Tensile	400 N

Geo-membrane

ProLiner® LLDPE SMOOTH GEOMEMBRANE

Manufacturer	Global Synthetics
Material	High Flex Engineered Geomembrane LLDPE
Width	8000mm
Thickness	1.00
Roll Mass	399 KGs
Roll Number	19052-CC
Batch No	BSGLL1.00219-AFLNA

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SUBGRADE SURFACE ACCEPTANCE

PROJECT: PRCB04022019 JOB NUMBER: PRCB04022019
LOCATION: Nurellen DATE: 05/07/19

I, the undersigned duly authorised representative of ELIXON 7 installation team, certify that upon visual inspection, the subgrade surface described below meets the criteria for the installation of a 1mm flexible membrane liner. By signing below, however, ELIXON 7 acknowledges no responsibility for the subgrade design, degree of moisture or compaction, integrity, elevation, or maintenance thereof, in any way.

Description of area Installation Pit (Eco Black System)
Flat surface filled with Blue-metal
or similar.
No sharp objects

Artem Riepstor

ELIXON 7 Representative

02/07/19

Date Inspected

A. L. L.

Signature

ELIXON7 Seam Pressure Testing Log

PROJECT # PRC04022019
PROJECT CLINTON BRIDGE
MATERIAL LDPE
QC ASTM D5820

OWNER _____
CONTRACTOR CLINTON
ENGINEER _____

[illegible]

QC Technician

QC/QC Approval

ELIXON7 **EXTRUSION WELDER QUALIFICATION**

PROJECT # ALC604022012 OWNER _____
PROJECT Clayton Numb CONTRACTOR Shrest
MATERIAL LDPE / HDPE ENGINEER _____
QC _____

1

∞[illegible]

QC Technician Q3036
QC/QC Approval J. L.

On-Site Installation Quality Control Check List

Item No.	Quality Control Measure/Check	Approval	Initial
1	Earthworks		
1.1	Has excavation been executed with 0.2m-2.25m allowance of earth covering above the top layer of EcoBloc System?	YES	AR
1.2	Is the base of the pit level consistent in all areas?	YES	AR
1.3	Has the substrate been tested for a load bearing capacity? Refer to following section for load bearing capacity test	N/A	AR
1.4	Has the substrate been cleared of all sharp objects, larger stones or similar foreign objects?	YES	AR
1.5	Is the gravel to be used as a foundation a grit of 8mm/16mm?	NO	AR
1.6	Is the thickness of the gravel foundation approximately 80mm?	N/A	AR

2	Covering with geotextile	Approval	Initial
2.1	Fill in the company responsible for manufacturing geotextile layer:	N/A	AR
2.2	Fill in the date of manufacture of the geotextile layer:	N/A	AR
2.3	Fill in the date of delivery of the geotextile layer: _____	NA	AR
2.4	Fill in the quantity supplied of the geotextile layer: _____	NA	AR
2.5	Has the geotextile layer been checked for any inconsistency, deformity or damage?	YES	AR
2.6	Has the geotextile layer been placed lengthwise on the blinding?	YES	AR
2.7	Have the geotextile layers been overlapped 300mm at the joints?	N/A	AR
2.8	Has it been ensured that sufficient coverage been provided?	YES	AR

3	Geomembrane	Approval	Initial
3.1	Fill in the company responsible for manufacturing geomembrane layer: _____	NA	AR
3.2	Fill in the date of manufacture of the geomembrane layer: _____	N/A	AR
3.3	Fill in the date of delivery of the geomembrane layer: _____	NA	AR
3.4	Fill in the quantity supplied of the geomembrane layer: _____	N/A	AR
3.5	Has the geomembrane layer been checked for any inconsistency, deformity or damage?	YES	AR
3.6	Has the geomembrane been layed on top of the protective geotextile layer?	YES	AR

4	'Liner' preparation for Hot Wedge Welding		
4.1	Have the liners been positioned to create an overlap of 90mm?	NA	AR
4.2	If the overlap needs to be adjusted, has the liner been floated into a better position? Avoid dragging the liner as this may damage it.	NA	AR
4.3	If the overlap is excessive, has the bottom liner been trimmed to required specification?	N/A	AR
4.4	If unable to trim bottom liner, has a shielded blade been used to trim the upper liner? This is to avoid damage to the bottom liner	N/A	AR

4.5	Have all cutting operations been completed so that seaming may be conducted with no interruptions?	YES	AR
4.6	Have the contiguous liners been visually checked for excessive scratching, blemishes or flaws?	YES	AR
4.7	Has the seam area been checked for undulations (waves)? This can be caused by unequal slack between the liners	YES	AR
4.8	Has any unequal slack been corrected to avoid undulations? Slack is required for expansion/contraction due to weather changes	YES	AR
4.9	Has seaming area been wiped clean with rags?	YES	AR
4.10	Has the seaming area been cleared of all moisture?	YES	AR
4.11	Is the weather in an acceptable condition? Seaming cannot occur under any rainy conditions except for within an enclosure	YES	AR
4.12	If the weather is cold, have the sheets been preheated with a hot air blower? Are there any heat loss prevention measures?	YES	AR

5	Hot Wedge Equipment Preparation		
5.1	Is there a generator in the proximity of the seaming area with enough extension cord to range the length of the seam?	YES	AR
5.2	Is the fuel for the generator being kept off the liner?	YES	AR
5.3	Is the hot wedge/anvil symmetrically balanced and gradually tapered (no sharp edges)?	YES	AR
5.4	Has the chain drive powering the welder been synchronized, properly lubricated, and physically sound?	YES	AR

5.5	Have you inserted two sample materials into the nip drive rollers and above and below the wedge?	YES	AR
5.6	Has the wedge been locked into operating position?	YES	AR
5.7	Has the contour roller been adjusted to allow for liner thickness?	YES	AR
5.8	Has the maximum distance the wedge can move been adjusted in order to not damage the machine?	YES	AR
5.9	Can the machine disengaged from its forward position as it reaches the end of a seam in order to avoid damage?	YES	AR
5.10	Has the forward face of the machine been inspected for any sharp corners or irregularities which may damage the liner?	YES	AR
5.11	Has the temperature been adjusted to accommodate for liner thickness, ambient temperature and seaming rate?	YES	AR

6	Seaming		
6.1	Has the temperature been adjusted in accordance to the range of 300°C (hot, dry) up to 400°C (cold, damp)?	YES	GW
6.2	Has the machine been positioned properly for making the seam?	YES	GW

7	Installation of EcoBlock		
7.1	Position the base plates on the geomembrane according to the plan	YES	GW
7.2	Connect each joint between the ground plates with the EcoBloc connecting elements	YES	GW
7.3	Place the EcoBloc Maxx on the base plate connecting each layer with the connecting elements	YES	GW
7.4	Each layer above is turned 90 degrees to fit into the plate, or the layer below	YES	GW
7.5	The end plates are installed last along the outer layers, finishing off the product installation	YES	GW
7.6	A dremel drill, jig saw or similar tool is used to create any required pipe connections	YES	GW
7.7	Once all the blocks are in position, the geomembrane is wrapped around the entire construction to ensure watertightness and protection from an ingress of dirt.	YES	GW
7.8	Any inlets required are cut into the geomembrane as an X and welded into place	YES	GW
7.9	The vents are produced in the same way as 7.8	YES	GW
7.10	Before filling the installation, all inlets, vents and shafts must be connected.	YES	GW
7.11	Before backfilling, ensure that the geotextile is not pulled apart. Overlaps must remain in place when filling	N/A	GW
7.12	Surround the membrane with protective geotextile and refill.	YES	GW
7.13	Ensure no construction machinery drives directly over the EcoBlocs	N/A	GW

WARRANTY CERTIFICATE

DEAR VALUED CUSTOMER

Congratulations on the purchase of a Eco Block Storm Water System from ELIXON 7

Herewith we confirm a 25 years' warranty on the;

GRAF ECOBLOC MAXX



Warranty clause

Above mentioned 25 years' warranty refers to the GRAF EcoBlocs maxx as an integrated storm water system. Within the warranty period we offer free material replacement, further indemnifications are excluded. The warranty is only valid with the proof of purchase. Please also refer to our general business conditions.

ELIXON 7 PRODUCT MANAGEMENT DEPARTMENT

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Contact Information

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