



CEMENT BLANKET



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Tai'an Nuolian Engineering Materials Co.,Ltd



诺联工程材料
NUOLIAN
GONGCHENG





Fast



Labor Saving



Durable



Eco-friendly



Water
Construction



Roads



Railway



Agriculture



Electricity



Petrochemical
engineering



Mine
engineering



Breeding

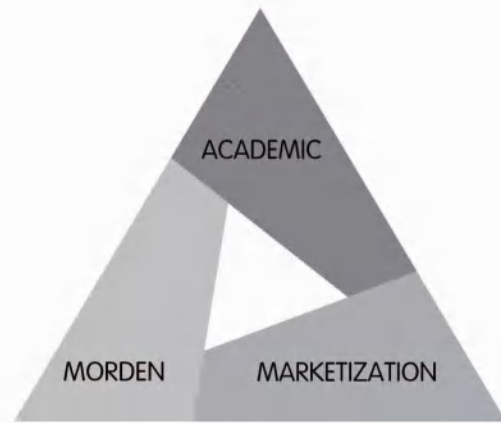


Others



COMPANY PROFILE

Taian Nuolian Engineering Materials Co.,LTD is a new materials company which get technique support from many famous academicians and experts, and have the ability of product invention, production and technique support. We always adhering to the concept of product and technological innovation, creating an academic R&D platform, modern production and a market-oriented operating mechanism.



TECHNICAL ENTRUSTING UNIT



China Institute of Water Resources and Hydropower Research

Hebei Institute of Hydraulic Research



Hohai University



Northwest A&F University



Product Invention

Our product Nuolian Cement Blanket has accumulated a lot of successful experiences in various fields of engineering in China. Product quality & service have been widely praised by customers.



Self-invention



Patent Licensing



ISO&SGS Quality



Best Material



Automated mass production



International Standard

This product is authorized by the state patent, Quality inspection by CTC of National Building Materials Testing Center of National Inspection Group and SGS of the world's leading testing and certification organization. Prove that the material has excellent performance in compression, impermeability, frost resistance, wear resistance, erosion resistance, acid and alkali resistance, and aging resistance. The raw materials of the products are independently researched and developed by the company, and some of the products are formulated with imported raw materials. High standards of raw materials and quality management systems are the guarantee of high quality cement blanket.



The company has two independent production lines independently developed, with an annual output of 2 million square meters. It is the first company in China to realize automated mass production of cement blanket.

Service Area



Project Design

With hydraulic design qualification and expert team, we can provide project design according to the site survey.



Product customization

Customers can customize products according to engineering needs and adjust some technical parameters.



Construction Support

Equipped with professional and technical personnel, on-site technical training and installation guidance.

Product introduction and application

The cement blanket is a special engineering composite material with three-dimensional structure. It is made of special cement, aggregate and other cementitious materials and three-dimensional fabrics. It can be widely used in water conservancy, railway, highway, environmental management, slope protection, structural slope protection and other fields. The main functions are anti-seepage, lining, emergency, etc.



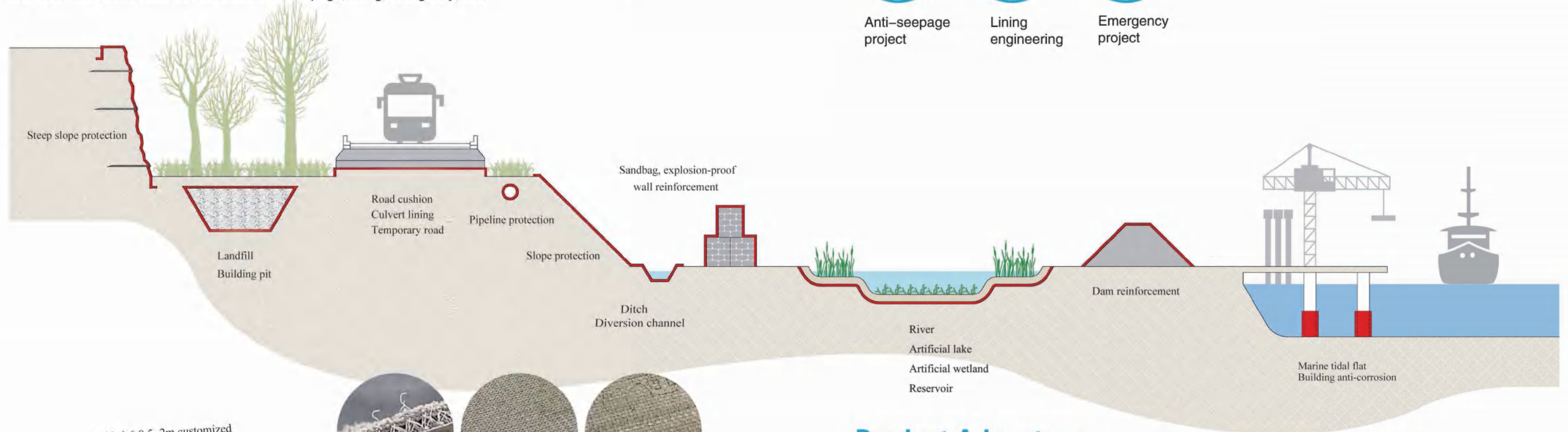
Anti-seepage project



Lining engineering



Emergency project



Can be cut to any desired shape before laying

Laying on demand, adapting to denaturation

Gradually solidified after even watering

The construction is completed after the product is solidified.

Product Advantages



Easy construction

Completed in only 4 steps: Cutting, laying, lapping, hydrating. No need for large machinery. Available in rolls or in bulk easy for transportation, handling and installation.



Fireproof and UV resistant

Classification of combustion properties of building materials and products: Class A
UV aging resistance: 500 hours > 95% strength retention



Eco-friendly and low carbon

Compared with traditional methods, the amount of gravel is greatly reduced, and the CO2 is reduced by more than 90%.



Eco-friendly

No need to deal with the foundation, adapt to deformation



Labor and time saving

The efficiency can reach 400m²/day, work can be done by only 2 people, the tools are simple, no professional technology is needed. Rapid prototyping in any shape without multiple curing.



Strong and sturdy

Compressive/reflex strength > C40 concrete
Durable for 50 years



Water condition workable

Workable in the water



Low overall cost

Significantly reduce labor costs and appliance costs.
No cracking, settlement and dislocation

Product Model



Model	Thickness (mm)	Width (m)	Density (kg/m ²)	Lenth (m/roll)	Square Meter (m ² /roll)	Working time after adding water(min)	Main features
X 5	5	1.25	8	100	125	120	Thin&light, easy to construct, suitable for roof, pipe, pond,diversion canal etc.
X 10	10	1.25	16	45	56	120	Excellent comprehensive performance, high strength, pollution resistance, corrosion resistance, fire resistance, suitable for impermeable lining projects and corrosive working environment
A 10	10	1.25	14	45	56	180	Cost-effective, suitable for ditches, pools, dams.
T 10	10	1.25	14	45	56	5	Rapid solidification, suitable for emergency engineering projects

Note:Width can be customized from 0.5m to 2m,lenth can be customized form 10m to 100m

Main indicators

Test	Test Result					Test Standard
	1d	3d	7d	28d	After freeze-thaw cycle	
Breaking strength	7.0MPa	9.8MPa	10.7MPa	11.0MPa	/	GB/T29756-2013
Compressive strength	/				10.6MPa	JC/T1004-2006
	51.0MPa	52.3MPa	61.5MPa	66.1MPa	/	GB/T29756-2013
	/				69.4MPa	JC/T1004-2006
	Average Value: 37.4MPa					ASTM C109-16a
Bending strength	Machine direction: 29.4MPa		Cross Machine direction: 23.1MPa			ASTM C1185-08
Impervious performance	1.3MPa					JGJ/T70-2009 15
Leaching toxicity test	Plumbum(count total amount)mg/l	<0.5				GB5085.3-2007
	Chromium(chromium VI)mg/l	<0.004				
	Mercury(count total amount)mg/l	<0.002				
	Barium(count total amount)mg/l	0.018				
	Arsenic(count total amount)mg/l	<0.001				
	Inorganic fluoride(not contain calcium fluoride) mg/l	1.01				
Cyanide(count as cn-)mg/l	<0.001					

Product application advice

Typical applications	S10	X10	A10	T10	
Ditch laying	++	++	++		Model selection depends on ditch specifications and water conservancy conditions
Slope protection.Building foundation pit protection	++	++			Slope protection needs the guidance of civil engineering professionals
Dam reinforcement	++	++	++		
Reservoir, pond	++	++	++		
Marine engineering tidal land	++	++			Landing cable protection, erosion protection
Sewage black and foul water cofferdam and river treatment	++	++			
Sewage industry sewage related anticorrosion and anti-erosion landfill leachate pool	++	++			In the case of corrosion by sewage
Sandbag reinforcement, explosion - proof wall reinforcement	++	++			
Light load path	++	++	++		
Temporary diversion canal	++	++			
Mine roadway support			++		
Pipeline protection	++				
Roof material	++	++			Roof material, Waterproof layer and working layer integration
Low temperature and construction work				++	Temperature below 5 degrees Celsius
Flood control, dam reinforcement				++	
Urgent rescue projects		+	+	++	

Note: choose different products according to the application, ++ recommended use, + optional use.

FAQ

Q: Material service temperature

A: it is recommended to apply above 5°C and T10 products are recommended for winter construction.

Q: Delivery time

A: The product is fully automated and the delivery time is around 2 weeks.

Q: Is it OK to adjust the setting time?

A: Yes. The setting time can be adjusted based on customer's requirements, working environment and temperature.

Q: Product color

A: According to customers' requirements, we can customize products color

Q: Construction protection requirements

A: The construction process should be equipped with personal protective equipment, such as gloves, masks, etc.

Q: Affects on aquatic plants & animals

A: This material has been tested by the China National Building Materials Testing Center for toxicity and exudation in water and aquatic areas.

Plant, fish have no influence, can apply safely. The cementing material used in the material is inorganic material without adding any chemical auxiliaries.

Q: Product packaging and storage

A: This material is in the form of coil. PVC waterproof package with wooden pallet.The shelf life of the product is 1 year in the packaging bag of our company. The shelf life of the product can reach 6 months in the dry environment after the original package is opened. When storing this product, it shall not be directly folded down, and shall be kept on a shelf.



Construction steps



1.Cutting



2.Laying



3.Overlapping



4.Hydration

Cutting

Required tools: utility knife, grinding and cutting machine.

Technical points: Cement blanket can be cut with basic hand tools. But The dust in the material will make the blade dull, so it is recommended to change the blade. For large projects, a grinder can be used.

Laying

Laying method: manual laying, crane assist.

Technical points: Remove sharp objects before laying. Only 2 people can do the laying work by hand, also possible to use a crane to work with 3 people. Choose the appropriate laying method according to the project content, it needs to be laid in the direction of water flow and be constructed from the downstream to the upstream on water conservancy project.

Overlapping

Required tools: electric hand drill, hammer, screw, drill, expansion bolt, pressure article. Requires anti-seepage requirements: heat welder, sealant, mortar.

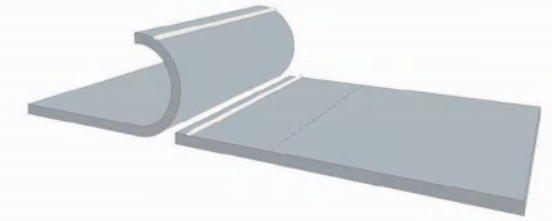
Technical point: the lap joint between the cloth and the cloth adopts the method of pressing the bottom side of the side, which is usually required 10cm lap joint, choose the appropriate lap joint according to engineering needs.



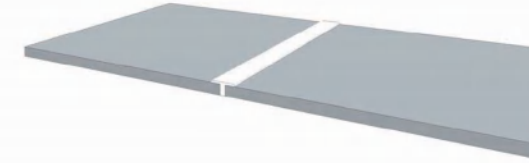
Main lap joint method



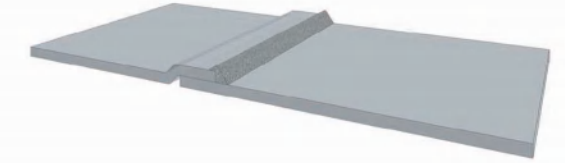
Method 1: Screw lap joint



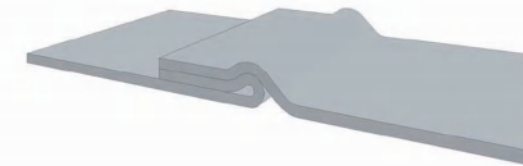
Method 2: Sealant overlay lap joint



Method 3: The sealant is relatively overlapped



Method 4: Mortar bonding



Method 5: Hot welding machine lap joint



Method 6: customized lap joint

Hydration

Tools required: hoses, pumps, nozzles.

Technical points:

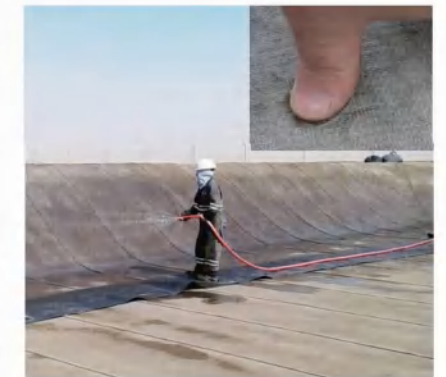
1.Optimum water volume: The weight ratio of water added is 40:60 (water : cloth), which is subject to the pressure of the finger to exude water. Can be directly put into the water for laying. Under the condition that unable to control the amount of water added, the quantity of water is better more than less.

2.Water quality requirements: There is no limit for water type. It can be rainwater, sewage or seawater. The water should not contain grease.However, the use of extreme sewage needs to be confirmed by the company's technical staff.

3. Water adding method: Do not use high pressure water flow to impact the cloth body. The use of atomizing nozzle is the best.

4. Strength: About 2 hours after adding water, it will start to condense and the intensity will gradually develop. The setting time is affected by the temperature.

5. Precautions after adding water: Do not drag cloth and people can not walk on it after adding water for 1 hour. Encountered high temperature and windy weather&steep slope, adding more water in time.



Application



Ditch lining

Applications

Ecological ditches, rain ditches
 Mountain ditches, highway drains,
 Temporary diversion channels
 Sewpage ditches

Engineering advantage

The construction efficiency is 20 times that of the traditional masonry method.
 Ditches or slopes do not require special bedding compaction.
 There is no need to mix mortar on site.
 Can work with water, can work in the rain.
 Excellent frost resistance and weather resistance
 Low carbon environmental protection, greatly reduce the use of sand.
 Simple and fast, shorten the construction period.
 After hydration, 24h can be used without repeated curing.



Comparison between traditional construction & cement blanket for ditch lining project

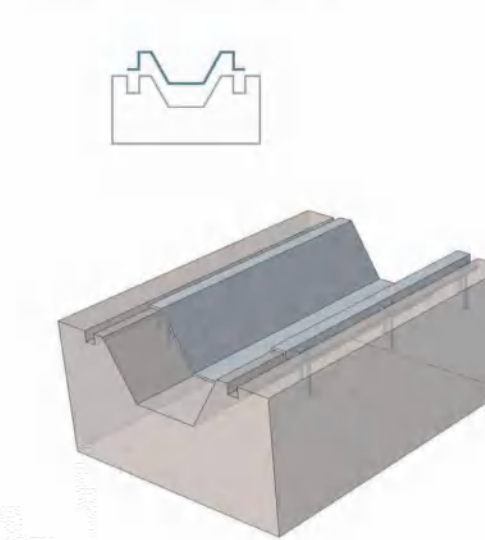
construction scheme	Content	Service life	Auxiliary tools	Labor-hour	Features
Building stones	Pulp block stone	25~40	Hammer head, shovel, bricklayer's knife	1m ³ /man ,d	Large quantities of sand and stone are needed Winter expansion, easy dislocation off
	Plasma build by laying bricks or stones				
Concrete	Plasma build by laying bricks or stones slab	30~50	Mixer/car/paver Vibrator, mould, inspection equipment	100-300 m ² /man ,d	Good durabilityLarge equipment, more labor cost
	cast-in-place				
	Prefabricated laid	20~30	Tile, rubber hammer, level, Hoisting tools	30-40 m ² /man ,d	Need foundation shaping, compacting treatment The construction period is long
Cement blanket	Fiber fabric, special cement mixture	≥ 50	Art knife, water pipe, hand drill	400 m ² /man ,d	The construction is quick and efficient, save labor&time No basic processing required Adaptation to base deformation Comprehensive cost advantage

Installation method

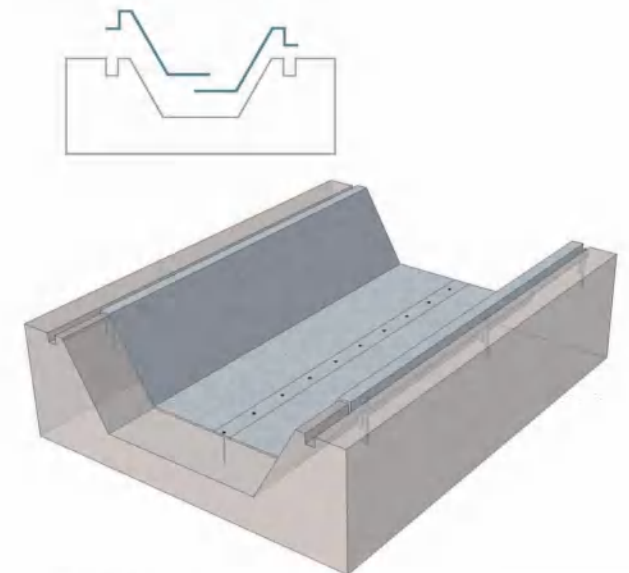
Ditch construction should take into account the design of groove, give full consideration to the width and depth of the groove, choose the appropriate laying method, and minimize waste. Four common laying examples are shown below.

According to the direction of water flow to determine the construction sequence, positioning overlap; Work begins downstream from the current. For blanket & blanket lap installation, usually need 10cm lap edge, press according to the need of anti-seepage requirements to choose the appropriate lap method. For the treatment of the shore, it is necessary to dig and fill the ditch at the top of the slope and play the drill bar by adopting the method of side part landfill and drill rod fixation. For large ditch, drill rod is required at the bottom corner of the side.

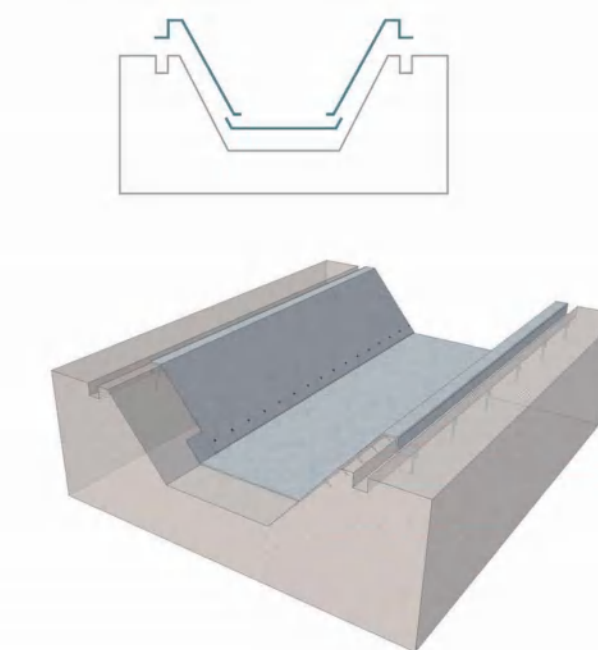
Single longitudinal layer of ditches laying method



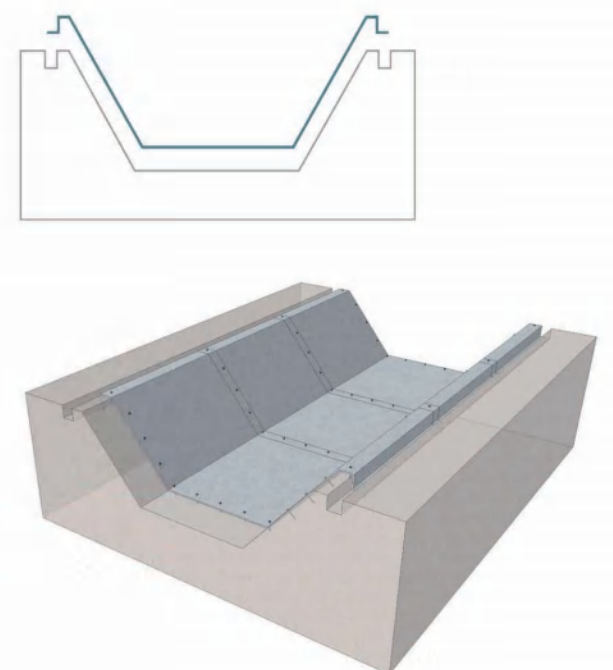
Double longitudinal layers of ditches laying method



Three longitudinal layers of ditches laying method



Lay ditches horizontally





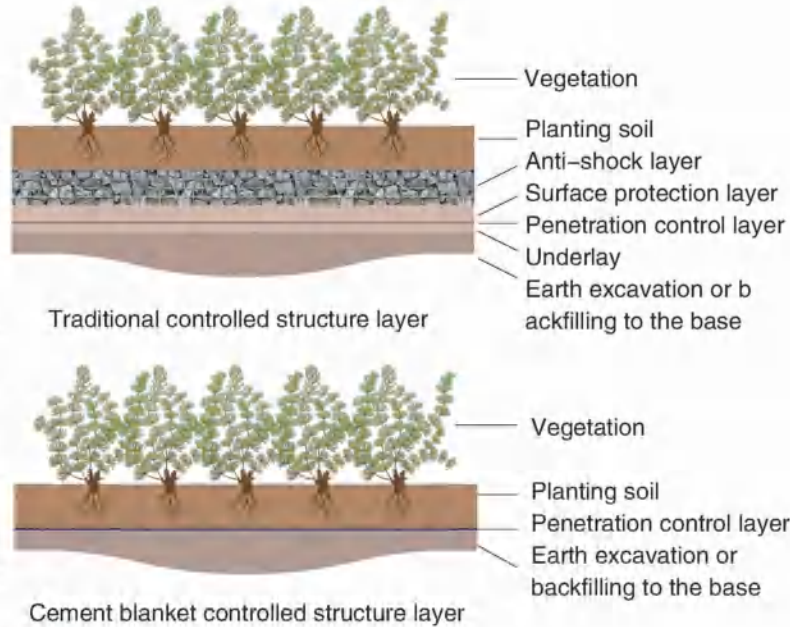
Rivers and lakes, wetlands

Applications

It is suitable for control penetration and protection of water conservancy and ecological engineering. Such as rivers and lakes, water treatment, surface wetlands, constructed wetlands, landscape water surfaces, ecological ditches, etc.

Advantages

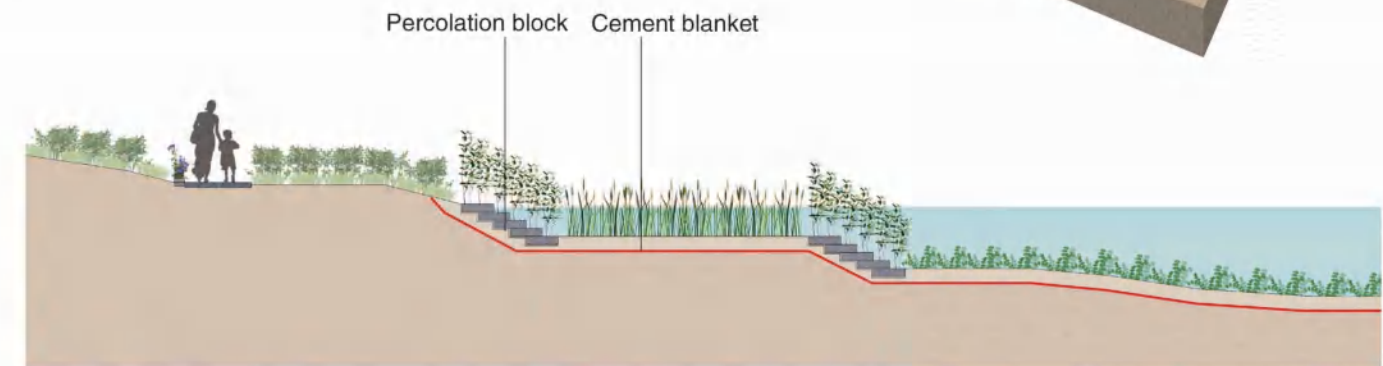
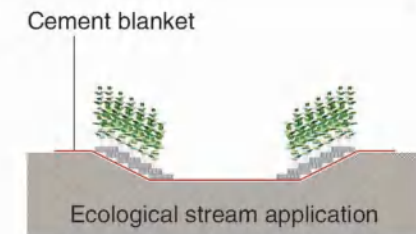
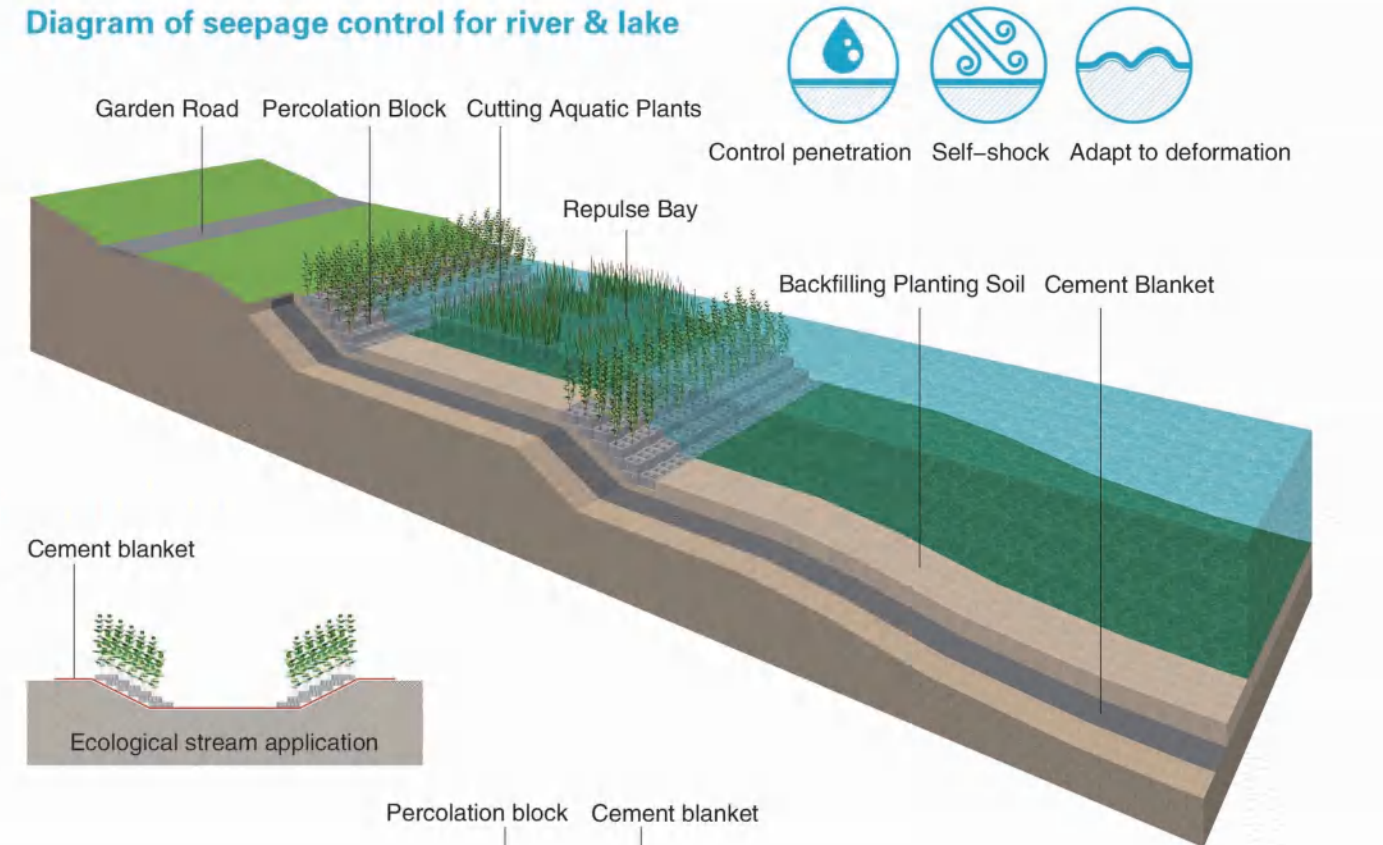
- Adapt to deformation, suitable for engineering with uneven foundation and soft foundation
- Allowed to directly bring into the water or directly into the water, the construction is not affected by the rain
- The material has large force area, high flexural strength and good integrity; effective anti-shock and anti-rain
- Water erosion, flood erosion
- Stretch resistance, freeze-thaw resistance; no misalignment, sedimentation, fracture



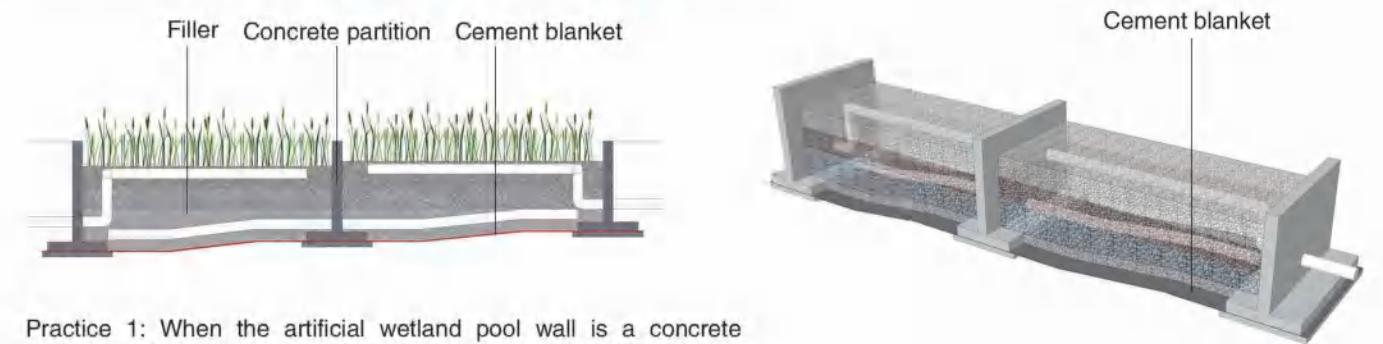
Penetration control materials comparison

Anti-seepage scheme	Bulk permeability coefficient K_0 (mm/d)	Current comprehensive permeability coefficient (mm/d)	Comprehensive cost comparison (RMB / m ²)	Construction efficiency (m ² / d)	Characteristics
Geomembrane	0	10~20	100-200	1200	The effect of reducing the permeability is good; but it is not natural material and isolating the connectivity of the upper and lower channels of the river, a large amount of earthwork is required to excavate and backfill. The upper part needs to be laid with an anti-shock protection layer, which increases the overall engineering works; and the settlement dislocation is easy to break.
Bentonite	0~0.09	20~50	150-250	900	The effect of reducing the permeability is good, and the impact on the natural ecosystem is less than Geomembrane; however, a large amount of earthwork is required for excavation and backfilling. Laying an anti-shock protection layer increases the amount of work for other materials.
Cement Blanket	Customized	Customized	160-200	2000	Appropriate permeability coefficient and ecological control can be customized according to needs, good ductility, can adapt to foundation deformation, anti-scour, easy construction, avoid a lot of earthwork excavation and other materials engineering increase, effectively reduce the duration and labor costs from the environment, good durability and weather resistance.

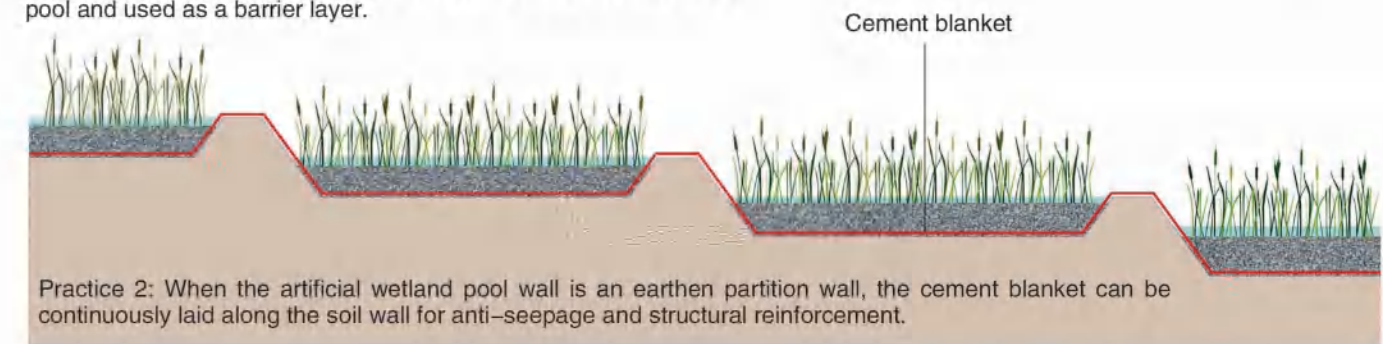
Diagram of seepage control for river & lake



Artificial wetland seepage prevention application



Practice 1: When the artificial wetland pool wall is a concrete partition wall, the cement blanket can be paved at the bottom of the pool and used as a barrier layer.



Practice 2: When the artificial wetland pool wall is an earthen partition wall, the cement blanket can be continuously laid along the soil wall for anti-seepage and structural reinforcement.



Pond

Range of application

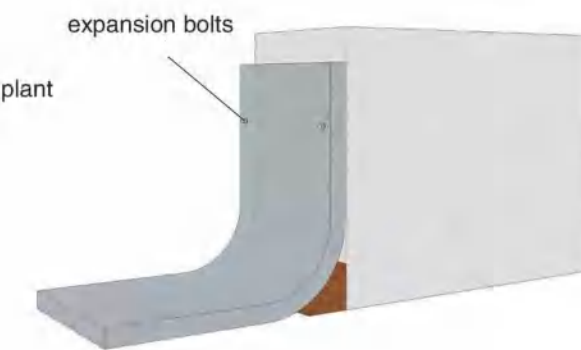
Reservoir
 Mineral Washing pool
 Property sewage reservoir
 Swirling sand sink and pumping station sink in sewage treatment plant
 Seepage prevention of fish pond and bank reinforcement,
 anti-erosion protection
 Mariculture, etc.

Product advantage

Corrosion resistance, erosion resistance,
 Anti-freeze, anti-aging, anti-uv
 Use environment at PH value of 3-12, no volatile substances
 Structural strength
 Anti-seepage effect is good, using hot-melt welding,
 anti-seepage effect is better
 Prevent weeds from damaging the bank

Methods

According to the size of the pond apply horizontal and longitudinal combination of laying. Cement blanket has flexibility, can bend with the shape, meet bend, corner and other parts can be completely covered, can match any pond shape.
 Can be applied for corrosion-resistant and scour resistant parts, anchoring to the cement blanket base level by gluing and anti-corrosion bolts. This product can work with water.
 When cement blanket apply to the shore, can be directly fixed with drill rod or used the method combination of side landfill and drill rod fixed, dig & fill ditches at the joint, about 250x250mm, at least 150mm of the material shall be reserved for backfilling.
 Choose corrosion resistant firmware according to specific conditions.



Technical points of wall construction:
 The connection of the wall shall be fastened with expansion bolts.
 According to the specific situation, choose fire-resistant fastener or corrosion resistant fastener.



Diagram of cement blanket laying for reservoir



Slope protection

Range of application

Mine slope protection, Roadside slope protection
 Construction foundation pit slope
 Collapse prevention & reinforcement of mine drainage slope & drainage ditch
 Coastal and wharf scour prevention, embankment protection, etc.

Product advantage

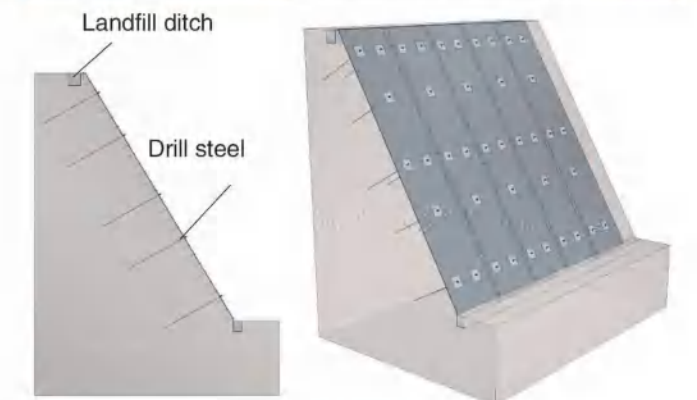
Suitable for any slope ratio
 Effective prevention of landslides
 The mechanical properties and durability are much higher than those of traditional mortar spraying.

Methods



General slope protection technical points:

The construction length of cement blanket is determined according to the equal distance between slope face and top face of slope, then cut and lay.
 Laid from top to bottom. When laying the second cement blanket, ensure the size of overlaps with the first cement blanket, attached two pieces of cement blankets with screw.



Technical points of special slope protection:

If the slope has potential landslide, steep slope surface or unclear geological structure, in order to achieve special slope protection. The reinforcement of special slope protection can adopt side part landfill and steel bolt anchoring method. Dig a 250x250mm landfill ditch and fix the cement blanket in the landfill ditch with drill rods at the bottom, then backfill.

Construction case

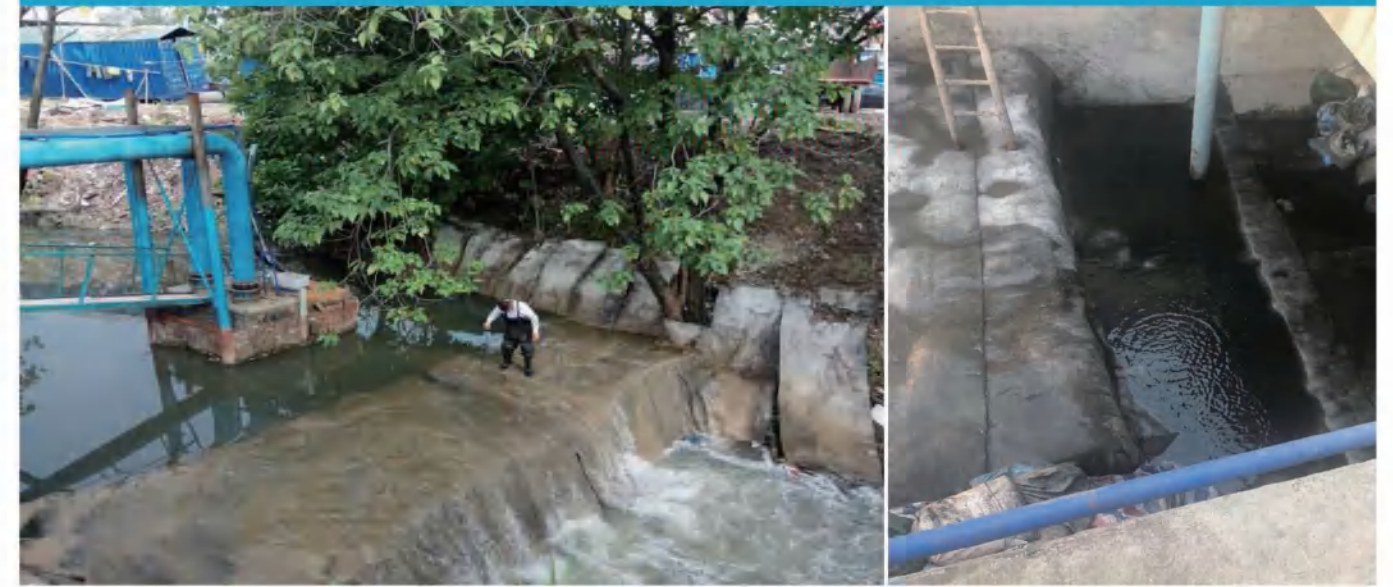
Drainage ditch of oil site in Yanan city Shanxi province



Jiangsu Yancheng Dongtai Luneng revetment project



Lianlong sewage treatment pond in Guangdong province



Hebei Dingxing factory reservoir project



Beijing Shunyi rural drainage ditch



Oil storage area protection



Pipeline protection



Lake bottom and bank slope of wuhan water park protection project in Hubei province



Temporary light road load



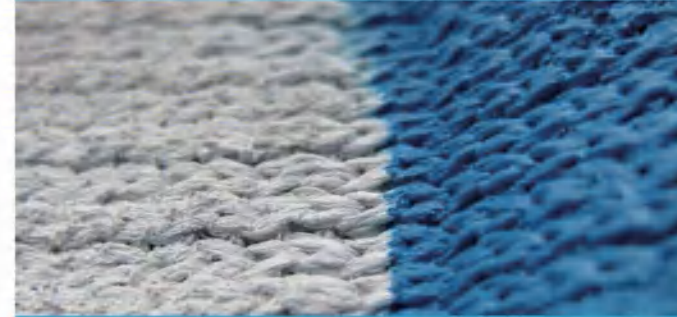
Mineral washing pool



Large culvert



Dyeable



Resistance to erosion



Convenience in construction



Anti-aging



Customizable



Anti-aging



Freely cutting



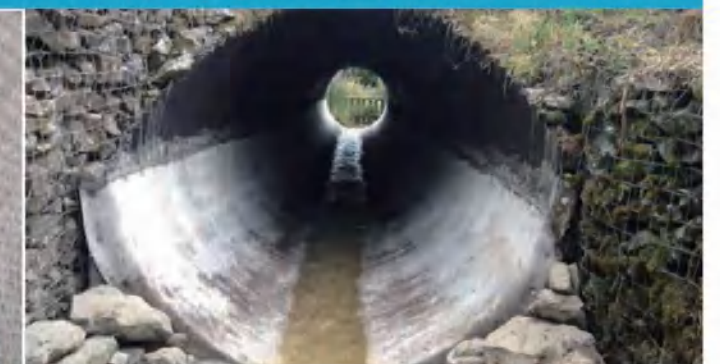
Corrosion resistance



Random shape



Waterproof, impermeable and freeze-thaw resistant



Cofferdam of Yinbai High Speed Material Yard of Gansu Province, Second Public Bureau of China Construction Company



Mineral washing pool



Large culvert



Construction site training meeting

