



Hydraulic Automatic Bollards

CONSTRUCTION & INSTALLATION SPEC.

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Site Investigation & Matters Needing Attention

SITE INVESTIGATION & MATTERS NEEDING ATTENTION

Observe and record the surrounding environment according to the installation location specified by the customer, especially the following points



Confirm the best installation location according to the site environment and customer requirements

Ensure convenience and ease installation and the overall aesthetic effect



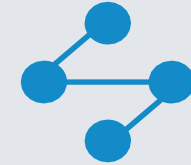
Road Surface Composition

1. Cement pavement, asphalt pavement, paving masonry pavement, etc.
2. Confirm the road recovery method



Installation area obstacles

Whether there are drainage wells, communication wells, exposed installation network power facilities, etc.



Confirm the underground pipeline structure of the installation area

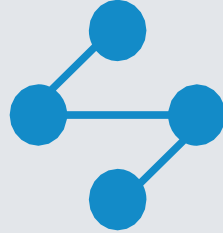
1. Determine the pipeline location, type, depth and other relevant information
2. Open the manhole cover near the installation area and check the direction of the line

SITE INVESTIGATION & MATTERS NEEDING ATTENTION



Confirm the power supply location with customers

1. Confirm the power supply location & that it meets the requirements of the equipment
2. Inform relevant personnel to direct the main power to the equipment control .



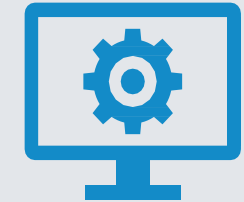
Confirm the installation position of control cabinet, electric well and control box

1. Confirm the pipeline route from control box to electric well and button box (principle of proximity)
2. Draw out the locations in the inspection list and ask the person in charge to sign off.



Confirm the grouping of equipment

1. No more than 6 controls in a single group. If there is any excess, need record it.
2. Whether there is linkage between two groups or more.



Ask customer's assist to understand the underground water level and soil structure

Preliminary determination of rainwater discharge mode, rational selection of stone seepage layer or water diversion pipe drainage



Construction Equipment, Tools & Materials

CONSTRUCTION EQUIPMENT, TOOLS & MATERIALS



Ink Fountain

- 1 Draw a line before slotting



Concrete Saw

- 2 Cut the road according to the marked line



Excavator

- 3 Break and dig the road surface



Dump Truck

- 4 Clean and transport the mud and debris



Gravel

(Approx. 1 cm in Diameter)

- 5 Seepage layer/Preliminarily stabilized cylinder



Leveling Line

- 6 Equipment leveling



Angle Grinder

- 7 Cutting pipe fittings



Cable Drill

- 8 Fixed wiring and control box

CONSTRUCTION EQUIPMENT, TOOLS & MATERIALS



Drilling Machine

9

Wall trepanning



Infrared Leveler

10

Equipment leveling



C30 Concrete

11

Concrete



Concrete Vibrator

12

Eliminate honeycomb surface in concrete



Insulated Rubber Tape

5

Cable joint insulation



High Pressure Insulation Tape

6

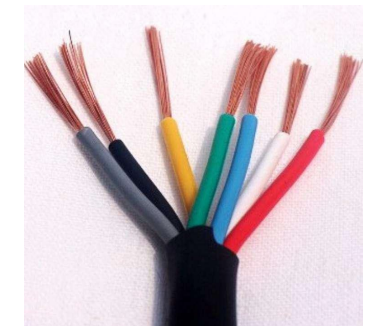
To waterproof cable joints



φ32PE Pipe

7

Cable protection



RW National standard soft sheathed cable

8

Transmission control line number and power supply

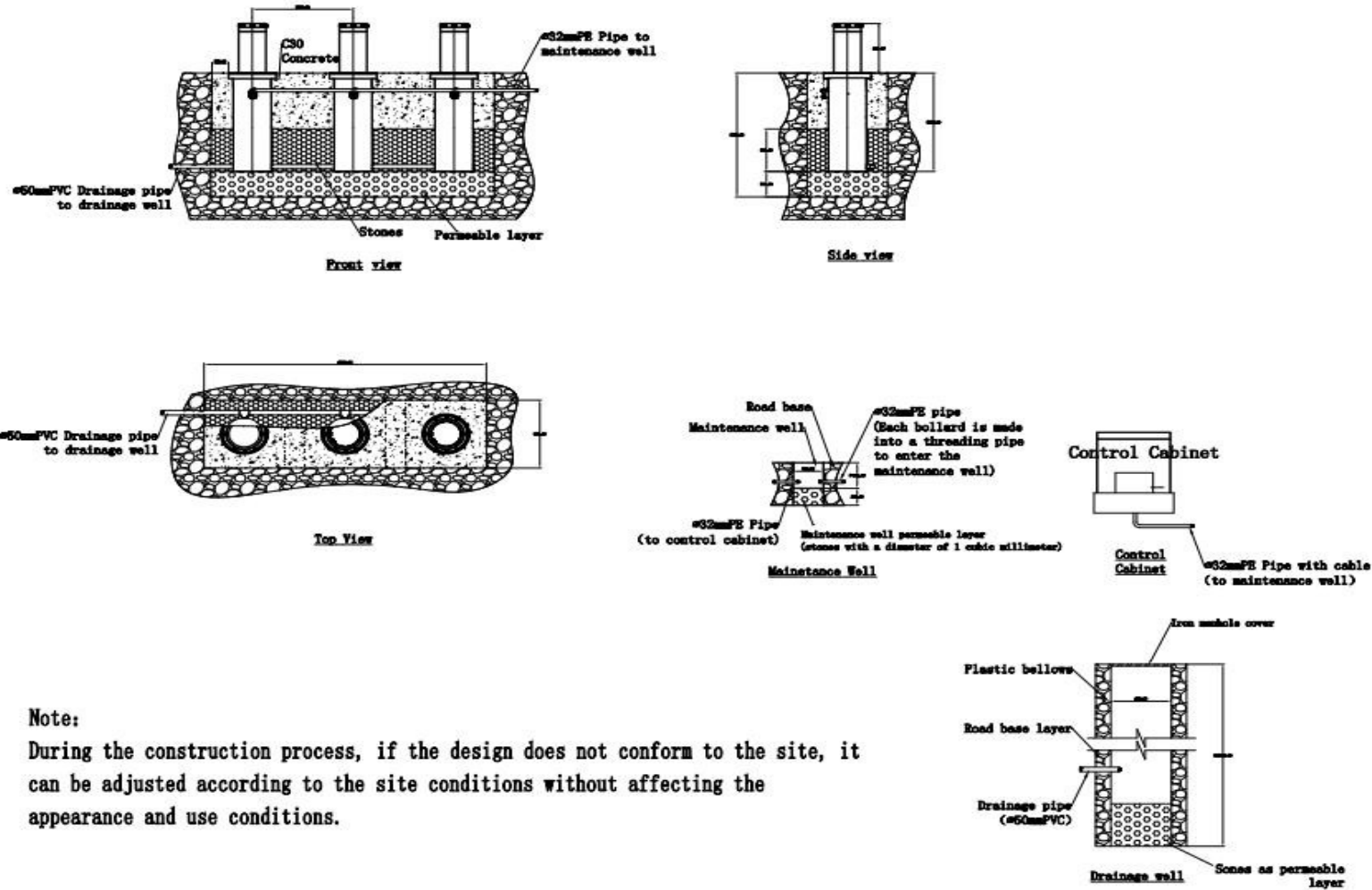


Construction Process

CONSTRUCTION PROCESS



CONSTRUCTION DRAWING OF DRAINAGE METHOD



Note:

During the construction process, if the design does not conform to the site, it can be adjusted according to the site conditions without affecting the appearance and use conditions.

EXCAVATION OF FOUNDATION TRENCH



Dig the basic groove according to the product dimensions. General base groove dimensions:

Length: Determine dimensions according to site road conditions

Width: 800mm

Depth: 1400mm (Include 300mm of seepage layer or diversion pipe drainage)

EXCAVATION OF FOUNDATION TRENCH - MARK



1. Mark the installation position clearly with an ink fountain or scribing pen. Cut the road surface according to the mark.

Tools: ink fountain, Road Cutter

Construction requirements:

1. The line must be horizontal, vertical and clearly visible
2. The cutting depth shall not be less than 5cm.
3. Mark a deviation line within 2cm
4. If the pavement is stone or floor tile should be removed according to its size. Principle: width greater than 800mm

EXCAVATION OF FOUNDATION TRENCH - BROKEN



1.2 The breaking hammer of the excavator breaks the cutting part

Tools: Excavator (with hammer)

Construction requirements :

1. Do not touch the non-working area when crushing
2. Only key personnel should be in the ground breaking operation
3. Ensure to observe during the demolition if there are any other obstacles, such as cable pipes.

NOTE: Stop immediately once cables or other dangerous items are found.

EXCAVATION OF FOUNDATION TRENCH – DIG TRENCH



1.3 After the road is broken (the bucket is replaced by the hammer), remove the gravel, and proceed to dig the foundation groove according to the cutting mark

Construction tools: Excavator (with bucket), shovel, dump truck.

Construction requirements:

1. The size of the groove must meet the requirements of 3-1-1, with an error of 2cm
2. The foundation groove must be cleaned out and ready to use.
3. During the operation, it must be ensured that there is a qualified person to locate cables, pipes and other obstacles in the trench. If found, stop immediately.

EXCAVATION OF FOUNDATION TRENCH – ELECTRIC WELL



1.4 Confirm the position of electric well and make electric well

Construction tools: Diameter 30cm bellows, manhole cover

Construction requirements:

1. Distribution well diameter 300mm, depth 400mm. The error is no more than 2cm
2. Ensure electric well as far as possible cut in the side, to avoid rolling vehicles
3. The bottom of the electric well shall be laid with 300mm stones as a drainage layer
4. Ensure that each equipment line enters into the electrical well and is free to pump, and no cement is allowed.
5. The pipeline should enter the electric well from the side and be sealed
6. If there are no bellows on site, the well can be built with red brick. The size requirements are the same as above.

SET UP DRAIN LAYER



2.1 Permeable Layer:

At the bottom of the foundation trench, about 300mm stones are placed upward as a seepage layer. The seepage layer is compacted and leveled to prevent the equipment from sinking, which is conducive to adjusting the height and horizontal position.

Construction requirements:

1. The diameter of stones should be about 10mm laid flat.
2. The depth of the seepage layer shall be 300mm, and the error shall not exceed 20mm.

Drainage Layer:

A 300mm cement foundation shall be built at the bottom of the foundation trench. Drainage pipes shall be reserved in the foundation, and drainage outlets shall be reserved at the bottom of each equipment. When rainwater enters the inside of the column body, it should go into the drainage pipe through the outlet and finally into the drainage well to drain water out.

Construction requirements:

1. The leveling error of cement foundation is cannot exceed 5mm.
2. All drains should be sealed and cement is not allowed.
3. ***The joints of the drainage system should be coated with a sealant and secured to prevent floating when pouring cement.***

SET UP DRAIN LAYER



Seepage and drainage:

300mm stone should be used at the bottom of the foundation trench, and a drainage pipe is set in the foundation. A drainage outlet is set up at the bottom of each device. When rainwater enters the cylinder it should enter the drainage pipe and finally to the drainage well through which water seepage or drainage can be carried out.

Construction requirements :

Same as above

Side drainage:

Drill the drainage pipe into the drainage well from the bottom side of the outer tube

Construction requirements :

- 1.The water pipe entering the outer tube shall not exceed 5mm.
- 2.Water pipes and outer tubes must be sealed to prevent cement from entering.

MAKING RAIN DRAIN LAYER



Construction tool: Cement truck, vibration pump, shovel, steel tape

TIPS :

1. When digging the foundation pit, if the underground soil is loose sand soil, the gravel seepage layer can meet the drainage requirements.
2. If the subsurface soil is whole clay or all the surrounding rainwater flows to this place, consider using additional drainage. Adding a drainage pipe inside the seepage layer leading to a drainage well.
3. If there is ground water in the pit when digging the foundation pit, (there is groundwater up and down) a closed drainage system should be constructed (i.e. adding a drainage pipe inside the concrete for better drainage).
4. If there is an obstacle at the bottom of the foundation pit and the equipment can't be lowered to make a drainage system, then use a side drainage system.

NOTE:

The storm water drainage layer is very important. Be sure to make a drainage plan that meets the needs of the area to prevent future disasters.

EQUIPMENT INSTALLATION & LEVELING



3.1 Before you lower the column, measure and mark the approximate position of the column. Using that mark the operator will lower the cylinder into the foundation pit. The cylinder spacing must be measured with a box ruler, and the horizontal degree of the cylinder must be measured with an infrared ray.

Leveling:

1. The height of the column shall be level with the highest point of the pavement.
2. The columns follow the height of the road
3. Measure the difference between the column height and height of the road surface, use the median value

NOTE: One leveling method can be selected according to the actual situation on the spot. The technician must explain the advantages and disadvantages of each method to the customer

Construction tools: steel tape, gradienter

Construction requirements:

1. Cylinder spacing error within 2 cm
2. Level margin of error should be within 5mm
3. When you lower the column, lower it in turn according to the wiring length
4. In principle the height of the column must be the same
5. After leveling, use stones to fix the height at 500mm to avoid movement

NOTE: If the installation area is a slope, the width of the foundation pit can be widened to relieve the steps caused by the columns having to be kept level.



4.1 Wiring:

1. Only 40cm of cable should be left from the outlet of the barrel, cut off the remainder.
2. Measure the distance from each cylinder to the electric well and calculate the cable length based on this distance (the set up length at both ends should be fully considered).
3. Use the cylinder's cable to connect with external cable, and insulate the joints to waterproof.
4. Plug the cable back into the cylinder 1.2 meters. Mark each cable with the component it is connected to in the electrical well, to facilitate debugging and wiring identification.

Construction requirements:

1. Intercept cable length margin of error should be within 5 cm
2. No less than 50cm cable should be set up on one side of the electric well
3. At least three layers of insulation and two layers of waterproofing should be attached to the cable joints.
4. The main line should be at least 1.2 meters with a margin of error of no more than 5 cm using colored electrical tape mark the cutting point to avoid a too long or short pressure line. This will ensure the line can be out of the ground.
5. Be careful not to scratch the thread sheath when stripping, and check the sheath again before taping.
6. The cable must be national standard RVV soft sheath cable, and the color of the single wire is different, easy to distinguish.

NOTE: The above is for wiring work, which should be completed before the cylinder is lowered into the foundation pit



4.2 Joint waterproof insulation method:

Tape wrapping order:

1. Wrap a single cable with ordinary insulation tape
2. Next wrap using waterproof tape and completely cover the insulation tape extending to the cable insulation.
3. Finally, use insulation tape to cover the entire taped area.
4. **Note:** The whole cable should be wrapped with a layer of waterproof tape. The waterproof tape should be wrapped to each end of the outer sheath of the cable by more than 2cm. Finally, the insulation tape should be wrapped outside the waterproof tape to protect it.

INSTALLING CABLE PIPE



4.3 Use cable lifting column each separate ϕ 32 PE pipe threading call well, wear after the pipe together with wire fixed good, good seal processing on equipment outlet hole, prevent into the cement.

Construction requirements :

1. When threading, avoid flattening the PE pipe and replace it as soon as it is found
2. The pipe is not allowed to make a right Angle bend, must be able to easily twitch the cable
3. The line pipe shall not exceed 1 cm into the barrel
4. In the process of threading, observe the outlet cable mark at all times. Do not pull the reserved cable inside the cylinder.

INSTALLING CABLE PIPE



4.4 After the line control is completed, measure check the level of the cylinder again. Once, start to backfill stones uniformly. Put them down around the cylinder first to add stability, then they can be backfilled uniformly.

Construction requirements:

1. Backfill evenly
2. Backfill stones should not exceed 60cm from the bottom of the barrel
3. Backfilling of soil or project dregs is prohibited

FIXED SPOOL



The construction personnel must seal the use wire binding to fix pipe line and prevent it from floating, The pipe must be sealed to prevent concrete from entering the line pipe when backfilling concrete.



1. The construction personnel must safeguard the upper surface of the cylinder with tape and bubble mat to prevent the concrete from entering cracks of the equipment during pouring this will affect the normal debugging and use.
2. Generally, C30 tank type commercial concrete is used for pouring. When the weather is cold, antifreeze shall be added to the concrete as required. The pouring process of concrete must be uniform and slow. Do not cast directly on the cylinder or pipe,
3. After concrete pouring is completed, the equipment shall be measured again to ensure that the levelness and perpendicularity of the equipment have not changed. If there is any change, it shall be adjusted immediately.

Construction requirements :

1. The surface of the cylinder must be protected from cement.
2. Do not pour directly on the cylinder during pouring.
3. The levelness of the cylinder shall be measured at any time during the pouring
4. 4 hours after pouring, the surface foam can be removed and the cement pavement can be worn flat
5. It can pass people 24 hours after pouring, small cars 48 hours after pouring, and trucks 72 hours after pouring.

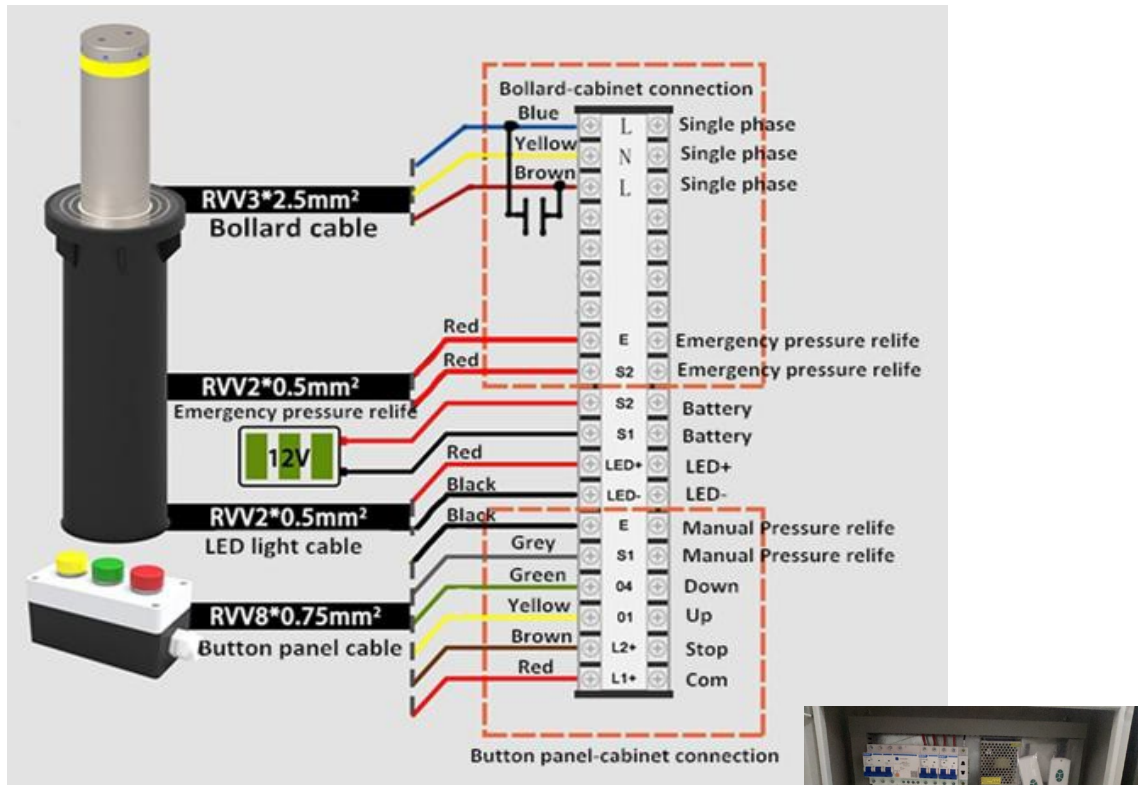
CONTROL BOX INSTALLATION AND DEBUGGING



Fixed control box:

The technician will mount the control box according to the installation position determined through consultation with the customer, and confirm whether the actual fixed position is firm and reasonable. Ensure if its an outdoor control box that it is weatherproof.

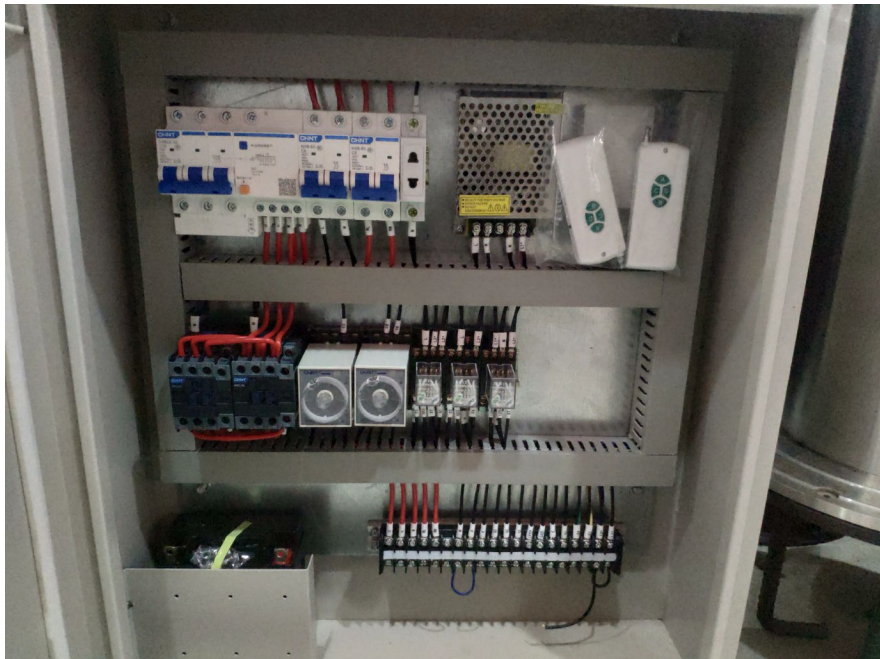
CONTROL BOX CONNECTION



1. Connect the cable in the distribution well to the corresponding terminal post in the control box according to the wiring diagram
2. Grouping conditions: according to the requirements, connect the same group of lifting equipment to the control box with a cable
3. Connect the battery and control box according to the wiring drawing
4. If the order of rise and fall is reversed, the main line phase order is reversed
5. If cannot rise to position adjust time relay

Construction requirements :

1. Prohibited to take electricity from the socket
2. When the cable enters the electrical box, the corresponding wire hole must be made at the bottom of the box. It is forbidden to open the bare wire or open the bottom plate. The electrical tape must be wrapped around the cable at the inlet
3. The cables inside the control box are clean and orderly, not allowed crossing
4. Make sure the voltage is normal before debugging
5. Check whether all terminals and joints are qualified
6. Observe for obstacles above the column



Before debugging, the technician should connect the cable in the distribution well to the corresponding terminal post in the control box according to the wiring diagram, and check the wiring position again to ensure that it is correct and there is no false connection.

Group control wiring, according to the wiring cable marks in the distribution well, re-check the marks of all cables according to the groups and connect them into the control box.

Confirm again whether the waterproof and insulation of the cable joints is intact before debugging.



Training, Inspection & Handover

TRAINING, ACCEPTANCE INSPECTION & HANDOVER



1. Show the user the correct method of operation of the equipment to include the emergency procedures in case of problems. Ask the person in charge to operate the equipment in person to ensure independent use.
2. Instruct user on how to lower the column in case of a power outage. Press the combination button to drop and stop at the same time to release pressure and lower the cylinder back to its starting position.
3. Alert user of any problems that may occur during the use of the remote control. Turn off the remote power supply when not in use.
4. Inform the user any matters needing attention in the use of the equipment and the troubleshooting of simple faults.
5. Handover related materials and spare parts to user

Construction requirements :

1. Training must be done in strict accordance with the instructions
2. The person in charge of user a must be present during the training
3. After the completion of the training and handover. The training handover form must be filled and be signed by the recipient and supervisor.



TROUBLESHOOTING



Common Fault	Inspection Method	Solutions
Remote doesn't work	Check whether the remote control battery has charge?	Replace the remote control battery
	Check whether the remote control is broken or the antenna is loose.	afterservice email: support@2mtechnology.net
Lifting column slide	Is there no lifting operation for more than 2 consecutive days? Is it normal after lifting operation?	Should lift operation once a day
	Do you operate the remote control by mistake?	Check the remote control
	Normal operation is still down	afterservice email: support@2mtechnology.net
Lifting column does not rise or does not rise in place	Check if there is any debris around the cylinder?	Clean up the sundry
	Is the remote operating normally?	Check the remote control
	Check if the control box has tripped?	Switching to try again
	According to the "product specification" still can not eliminate the fault	afterservice email: support@2mtechnology.net
Lifting column does not fall or does not fall in place	Check if there are any debris around the cylinder?	Clean up the sundry
	Is the remote operating normally?	Check the remote control
	Check whether the backup battery has power	to recharge a battery
	According to the "product specification" still can not eliminate the fault	afterservice email: support@2mtechnology.net

Note: Please refer to the product manual for other troubleshooting. If you can't identify and repair faults, please describe the fault and send pictures to afterservice email box: support@2mtechnology.net.



Construction Team Responsibilities

CONSTRUCTION TEAM'S RESPONSIBILITIES



1. All machines, tools and materials required for construction
2. Digging foundation pit
3. Drainage system set up
4. Equipment placement and leveling
5. Wiring and casing pipe
6. Backfilling and road surface restoration
7. Installing control box and wiring
8. Cleaning and ready for operation



THANK YOU!