2023

Hydraulic Automatic Bollards Construction & Installation Spec.

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Contents

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Site Investigation & Matters Needing Attention

1 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

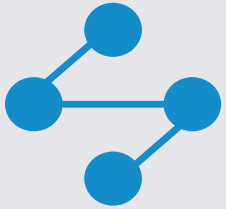
Ensure convenient and smooth installation and overall aesthetic effect

Road Surface Composition

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

Obstacle of installation area

Whether there are green belt, drainage Wells, communication Wells, exposed installation network power facilities, etc



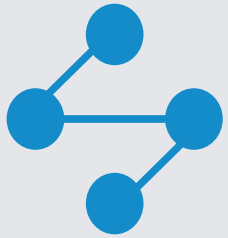
Confirm the underground pipeline structure of the installation area

1. Determine the pipeline location, type, buried depth and other information to relevant personnel;
2. Open the manhole cover near the installation area and observe the direction of the line;

1.2 Site Investigation & Matters Needing Attention

Confirm the power supply location with customers

1. Confirm the power supply location and meet the requirements of the equipment ;
2. Inform relevant personnel to direct the main power to the control box of the equipment.



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 pictures on the inspection list and ask the person in charge to confirm.

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

2

Construction Equipments, Tools and Materials

2 Construction Equipments, Tools and Materials

Ink Fountain

1 Draw a line before slotting

Road Cutter

2 Cut the road according to the marked line

Excavator

(with crushing hammer)

3 Break and dig the road surface

Muck Truck

4 Clean & transportation the muck

Stone

(Diameter about one centimeter)

5 Seepage layer/ Preliminarily stabilized cylinder

Engineering line

6 Equipment leveling

Angle Grinder

7 Cutting pipe fittings

Cable Drilling Tool

8 Fixed wiring and control box

2 Construction Equipments, Tools and Materials

Drilling Machine

9 Wall trepanning

Infrared Gradienter

10 Equipment leveling

C30 Concrete

11 equipment concreting

Concrete Vibrator Shaft

12 Eliminate honeycomb surface in concrete

Insulated Rubber Tape

5 Cable joint insultation treatment

High pressure self-adhesive tape

6 Cable joint waterproof treatment

ϕ32PE Pipe

7 Protect cable

RVV national standard soft sheathed cable

8 Transmission control line number and power supply

3

Construction Process

3 Construction Process

01 Excavation of foundation trench

02 Set up a rain drain layer

03 Adjust equipment level and installation position

04 Wiring arrangement of cable pipe

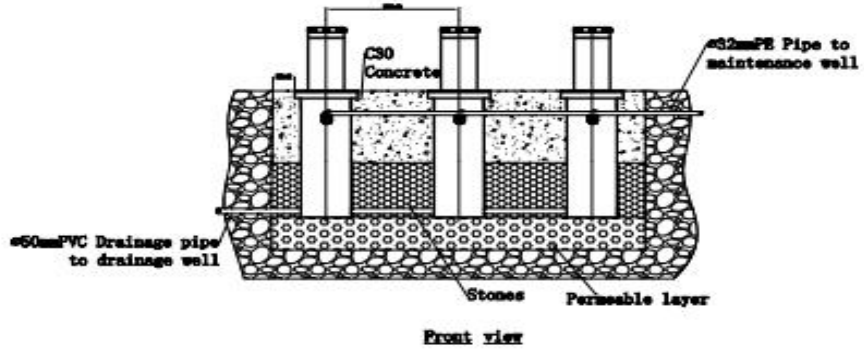
05 Backfill stones to stabilize the column

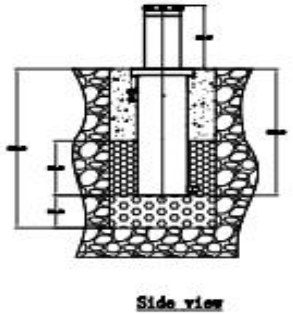
06 fixed spool

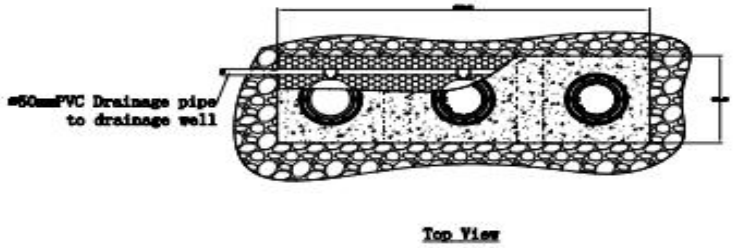
07 concreting

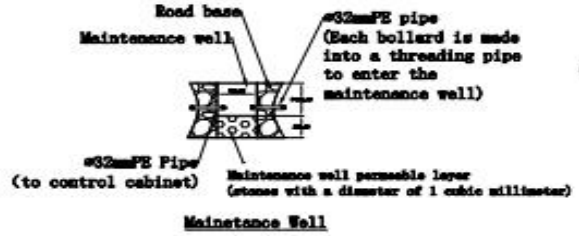
08 Install control box and debug

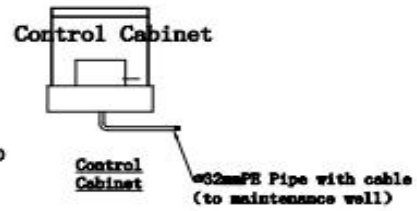
3 Construction drawing of drainage method





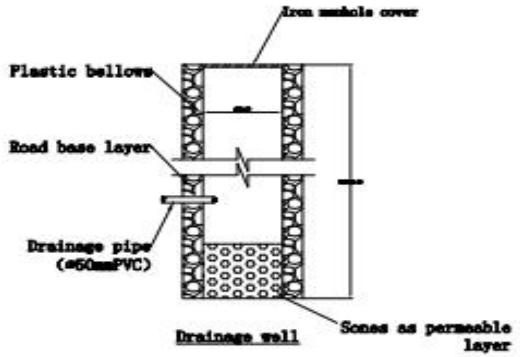






Note:

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.



3-1 Excavation of foundation trench

Dig the basic groove according to the dimension of the product, 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）

3-1 Excavation of foundation trench - mark

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

construction tool：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 5 cm

3、Mark line deviation within 2 cm

4、If the pavement is stone or floor tile should be removed according to its size。Principle: width greater than 800MM

3-1 Excavation of foundation trench - broken

1.2 The breaking hammer of the excavator breaks the cutting part

construction tool：Excavator (with hammer)

Construction requirements：
1、Do not touch the non-working area when crushing

2、Unrelated personnel should not be close to crushing operation

3、Arrange personnel to observe in real time whether there is any obstacle, such as cable pipe, and stop immediately once it is found

3-1 Excavation of foundation trench - Dig a trench

1.3 After the road is broken (the bucket is replaced by the hammer), the gravel will be removed, and the foundation groove will be dug out according to the cutting outline

Construction tool: excavator (with bucket), shovel, muck truck.

Construction requirements：

1. The size of the groove must meet the requirements of 3-1-1, with an error of 2 cm

2. The foundation groove must be standard and neat.

3. During the operation, it must be ensured that there is a special person to investigate whether there are any cables, pipes and other obstacles in the trench. If found, stop immediately.

3-1 Excavation of foundation trench - Making electricity well

1.4 Confirm the position of electric well and make electric well

Construction tool: Diameter 30 cm bellows, manhole cover

Construction requirements：
1. Distribution well diameter 300mm, depth 400mm.The error is no more than 2 cm

2. 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 seepage layer

4. It is necessary to 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 is no bellows on site, the well can be built with red brick. The size requirements are the same as above.

3-2 Set up a rain 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 shall enter into the drainage pipe through the outlet and finally be introduced into the drainage well, and water shall be seeped or drained through the drainage well.

Construction requirements：
1. The leveling error of cement foundation is no more than 5MM.
2. All drains should be sealed and cement is not allowed.
3. The joints of the drainage system should be coated with sealant and secured to prevent floating when pouring cement (attension please).

Seepage and drainage:
A 300MM stone is made at the bottom of the foundation trench, and a drainage pipe is reserved in the foundation. A drainage outlet is reserved at the bottom of each device. When rainwater enters the cylinder, it enters the drainage pipe through the drainage pipe and finally enters 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 meters.

2. Water pipes and outer tubes must be sealed to prevent cement from entering.

3-2 Make a 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, we can consider using the method of seepage water and drainage, that is, adding a drainage pipe inside the seepage layer, resulting in a drainage well.

3、If there is water in the pit when digging the foundation pit, that is to say, there is groundwater up and down, then we have to do a closed drainage, that is, adding a drainage pipe inside the concrete to cause the drainage well.

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 we will consider the way of side drainage.

Attension：

The stormwater drainage layer is very important. Please make a drainage plan according to the situation on site to prevent future disasters.

3-3 Adjust equipment level and installation position

3.1 Before you lower the column, measure the approximate position of the column and mark it.According to the mark, the operator successively lowered the cylinder into the foundation pit. The cylinder spacing was measured with a box ruler, and the horizontal degree of the cylinder was measured with infrared ray

Leveling principle:
1. The height of the column shall be the same as that of the highest pavement.
2. The columns follow the height of the road
3. Measure the difference between the height and height of the road surface and then take the median value

Attension： 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 tool: steel tape, gradienter

Construction requirements：
1. Cylinder spacing error within 2 cm
2. The error of levelness is 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

Attension： 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.

3-4 Wiring

4.1 Wiring：

1、First of all, only 40 cm of the cable is left from the outlet of the barrel, and the rest is cut off.

2、Measure the distance from each cylinder to the electric well and calculate the cable length based on this distance (the reserved length at both ends should be fully considered).

3、The cylinder is connected with external cable by its own wire, and the joints should be insulated and waterproof.

4、Then plug the cable back into the cylinder 1.2 meters.Each equipment is connected to the cable in the electrical well is marked, to facilitate later debugging wiring identification.

Construction requirements：

1、The intercept length error of the cable is within 5 cm

2、No less than 50 cm cable is reserved 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.

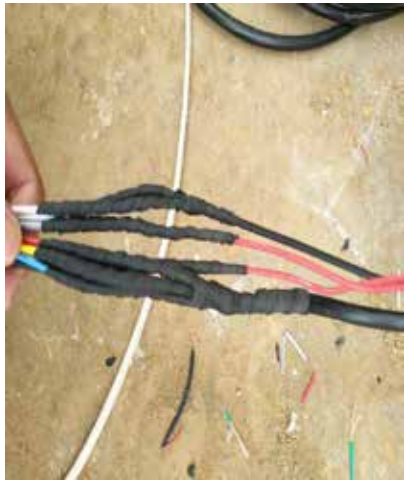
4、The error of 1.2 meters in the main body is not more than 5 cm, and the color electrical tape is wrapped around the mark to avoid too long pressure line or too short later cannot be lifted out of the ground.

5、Be careful not to scratch the thread skin when stripping, and check the thread skin again before the adhesive tape.

6、The cable must be national standard RVV soft sheath cable, and the color of the single wire is different, easy to distinguish.

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

3-4 Wiring waterproofing treatment



4.2 Joint waterproof insulation treatment method:

1. Tape winding order: a single wire first winding ordinary insulation tape, then wrapping waterproof tape, waterproof tape winding should completely wrap ordinary insulation tape and wire leather, finally winding insulation tape;

2. 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 2 cm. Finally, the insulation tape should be wrapped outside the waterproof tape to protect it.

3- 4 Lay cable pipe

4.3 Use cable lifting column each separate ф 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.

3-5 Backfill stones to stabilize the column

4.4 After the line control is completed, measure the levelness of the cylinder again. If it is confirmed that there is no problem, then start to backfill stones uniformly. Put them down around the cylinder first, and after they are initially stabilized, they can be backfilled uniformly.

Construction requirements：

1. It has to be backfilled evenly

2. Backfill stones should not exceed 60 cm from the bottom of the barrel

3. Backfilling of soil or project dregs shall be prohibited

3- 6 Fixed Spool

The construction personnel seal the fixed line pipe with wire binding to prevent the line pipe from floating and the concrete from entering the line pipe when backfilling concrete.

3– 7 Concreting

1. The construction personnel protect the upper surface of the cylinder with tape and bubble mat to prevent the concrete from entering into the cracks of the equipment during pouring, which 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.

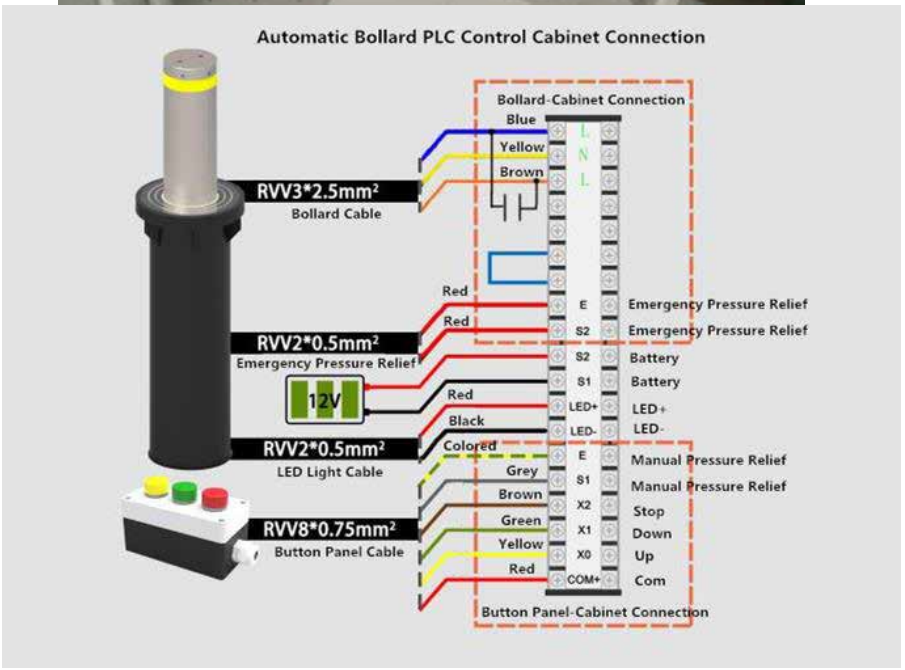
Construction requirements：

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.

3- 8 Install control box and debug

Fixed control box：
The technician shall fix 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.Please make the outdoor control box rain proof.

3– 8 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

3-8 Debug

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, false connection, flying thorn short connection and other phenomena.

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 work of the cable joint is reliable before debugging.

4

Operation Training, Acceptance Inspection and Hand Over

4 Operation Training, Acceptance Inspection and Hand Over

1. Inform the project leader of the correct operation method of the equipment and the emergency method in case of problems, and ask the person in charge to operate the equipment in person to ensure independent use;

2. Inform the project leader that when the power is off and the cylinder is in the rising state, press the combination button to drop and stop at the same time to achieve the pressure relief function and make the cylinder fall back to its position.

3. Inform party a of any problems that may occur during the use of the remote control. Remember to turn off the power supply of the remote control when not in use.

4. Please inform me of the matters needing attention in the use of the equipment and the troubleshooting of simple faults.

5. Handover related materials and spare parts

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 handover must fill in the training handover form and be signed by the recipient and supervisor.

4 Common troubleshooting

Common Fault	Inspection Method	Solutions
Remote doesn't work	Check whether the remote control battery is deficient?	Replace the remote control battery
	Check whether the remote control is broken or the antenna is loose.	afterservice email: soporte@qdigital.mx
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: soporte@qdigital.mx
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: soporte@qdigital.mx
Lifting column does not fall or does not fall 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 whether the backup battery has power	to recharge a battery
	According to the "product specification" still can not eliminate the fault	afterservice email: soporte@qdigital.mx

5

Responsibilities of the construction team

5 Responsibilities of the construction team

1. All machines, tools and materials required for construction
2. Digging foundation pit
3. Drainage system
4. Equipment placement leveling
5. wiring and casing pipe
6. Backfilling and road surface restoration
7. Install control box and wiring
8. Cleaning and back to normal

Thanks Very Much!