



Installation Standard Guide for License Plate Recognition Integrated Machine

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1. Precautions for Pre-sales Site Survey

1.1 Requirement Confirmation

The following items must be clearly defined before sales:

- ① The incoming and outgoing lines of equipment at project site, and the project equipment plan for product configuration;
- ② The specific functional requirements, and whether the existing standard product can satisfy the requirements;
- ③ Verifying the parking products and system functions of our company based on the technical proposal for the project.

1.2 Site Survey Tool and Material Preparation

- ① Digital camera (or smartphone): used for taking photos of the site.
- ② Tape: used for measuring the size and distance of road surface.
- ③ Multimeter: used for measuring the power supply performance and coil ground sense.
- ④ Others: electric pen and screwdriver.

1.3 Entrance & Exit Position Survey Records Reference

- ① With the entrance & exit as the center, take 1-2 pictures of the road scene within 20 meters of the entrance & exit, and measure the width and depth of each lane. Take 2 panoramic views of road, one of which is the road to be taken from the entrance & exit and the other is the entrance & exit to be taken from the road.
- ② Find the network access way and bandwidth at the entrance & exit by asking the property company or other related personnel.
- ③ For unreasonable or intractable requirements, communicate with the customer timely. In terms of site issues that may affect project quality or project progress, sign memos or minutes with the customer as required.
- ④ Generally, the power supply should be connected from the nearest place, that is, from the doorman box or duty room at the gate booth or duty room at the entrance & exit. Before site survey, it is suggested to communicate with the property company to avoid unnecessary disputes later.



1.4 Design Standards for Entrance & Exit Position

- ① The coil width can be set 0.5-1 m, the coil length can be set 1-2 m.
- ② The camera and fill light should be installed in front of the barrier gate;
- ③ The gap between the machine and barrier gate should be greater than 0.2 m.
- ④ Use a high-speed barrier gate with a gate rod of 1-3 m long, and a medium- or low-speed barrier gate with a gate rod of 3-6 m (or recommend according to the specific requirements of the customer).

2. Equipment Installation & Layout and Application Features

2.1. Equipment Installation & Layout Principle

Design the layout of the parking based on the road conditions by taking the following items into consideration:

- ① Road length
- ② Road width
- ③ Ensuring minimum turning radius of vehicles
- ④ Slope degree
- ⑤ Sundries on road surface

If vehicles enter and exit at the same position, determine the installation position of the entrance management equipment based on the site conditions:

- ① If the road width is within 6 m, the entrance and exit barrier gates share the same equipment.
- ② If the road width is within 6-8 m, the entrance and exit lanes should be separated and the automatic barrier gates should also be separated. (In China, the steering wheel is located at the left side of the car, so the recognition equipment at the entrance should be installed at the proper position).
- ③ If the road width is over 8 m, a safety island for fixing the system equipment should be built at the road center with a general size of 5.5 m x 1.3 m x 0.18 m. This is designed to provide ease of use for vehicle

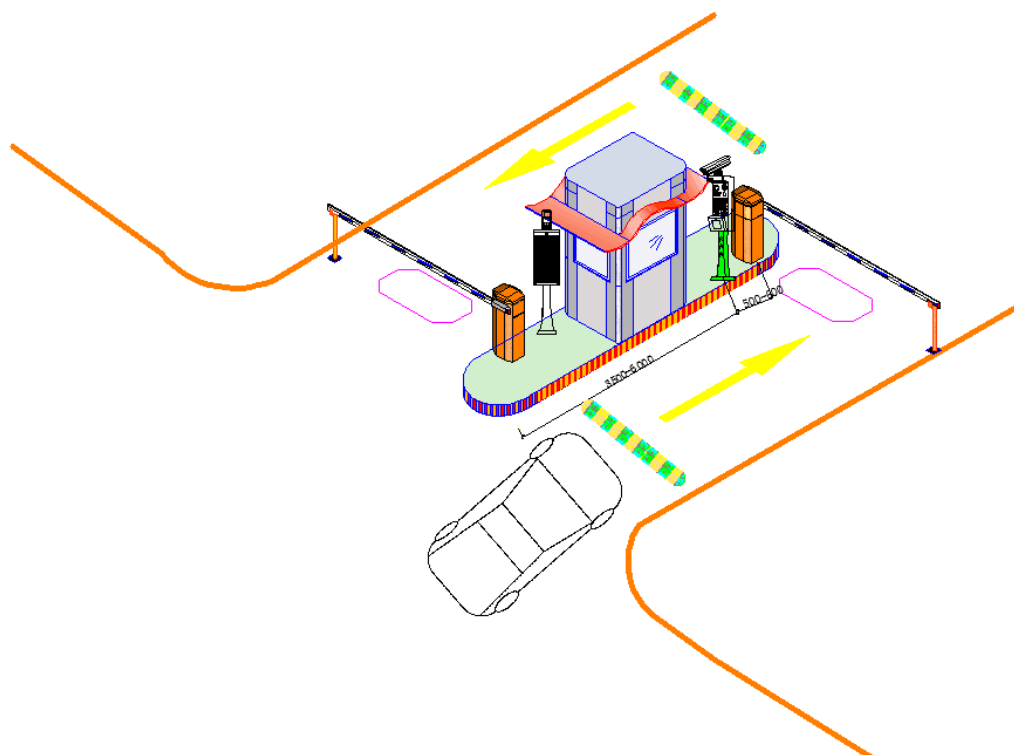


owners as well as conform to traffic rules.

2.2. Barrier Gate Installation and Layout Principle

- ① It is recommended to build cement base of 10-15 cm high, on which the equipment can be installed.
- ② In principle, the license plate recognition machine should be installed in front of the barrier gate, with a gap of 0.5-0.6 m.
- ③ The equipment should be vertical to the ground, with a slope of less than 1°.
- ④ The box bottom tightly touches the ground, and the gap between them should be sealed with cement.
- ⑤ The box body should not beyond the lane line, with a minimum distance to the lane edge of 5 cm.
- ⑥ The equipment must be fixed firmly and reliably, without shaking. Even under an impact of 100 kg/s, the equipment has no movement or looseness.

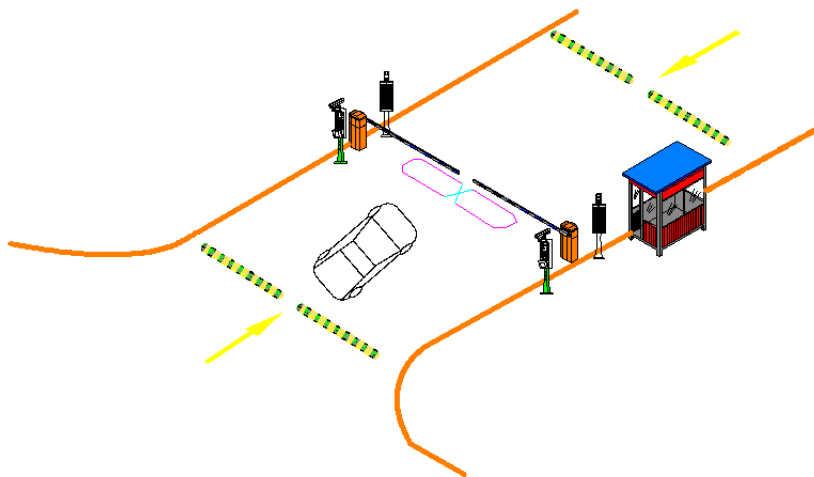
2.3 Typical Installation Cases





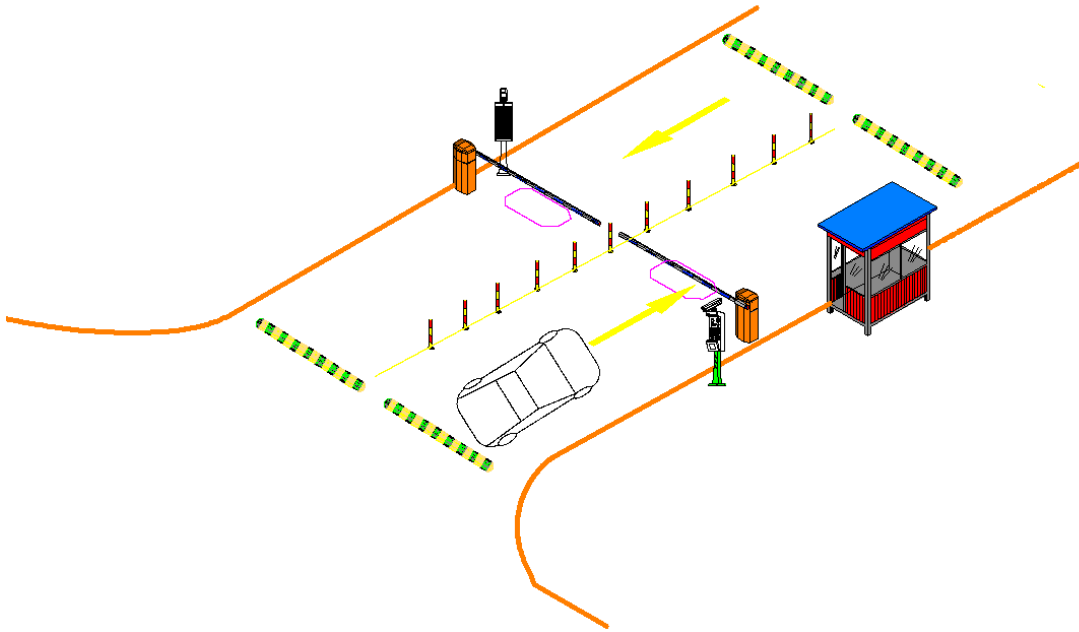
Case 1

Description: When the road width is over 8 m, the method described in case 1 may be adopted. That is, build a safety island at the road center to realize the two-lane model, one entrance lane and one exit lane.



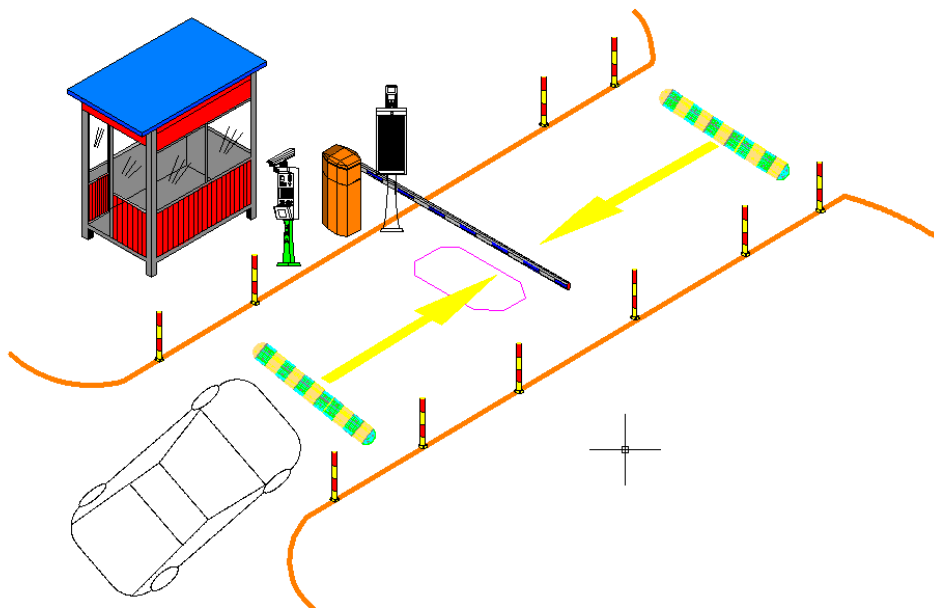
Case 2

Description: The road width is similar with that in case 1 (i.e. The width is over 8 m) while no safety island is allowed to be built, what's more, large vehicles will pass. In this case, the two-direction model as described in case 2 can be used and an assistant camera needs to be installed.



Case 3

Description: The road width is similar with that in case 1 (i.e. The width is over 8 m), and only small vehicles will pass. In this case, collision posts can be installed at the road center to separate the lanes and normalize the vehicle tracks. The installation mode as described in case 3 can be used.





Case 4

Description: Case 4 is a single-lane model which ensures only a lane width of 3.5 m. If the width is over 3.5 m, install collision posts or build pedestrian path based on actual conditions.

3. Construction Implementation Methods

3.1 Standard for Using Power Cables

Both the barrier gates and license plate recognition machine need power supplies of 220 V with three-core shielded wire (RVVP3*1.5). Generally, the power supply cables should be connected to special UPS line. In some cases, the AC 220 V power supply can also be connected at the nearest place. The connection must conform to related specifications and ensures that the earth wire in the AC 220 V socket is really grounded.

3.2 Other Signal Wires

Control wire (barrier gate - license plate recognition machine): The standard control lines for the parking shall be four-core shielded wires (RVVP4*0.5). The specific conditions should be determined according to the parking type.

3.4 Construction and Building of a Safety Island

Step 1: Pour asphalt onto the road.

Step 2: Excavate asphalt road to make the road base exposed.





Step 3: Make a mold and lay the wiring tube.

Step 4: Pour concrete on the road.



Step 5: Level the surface.



3.5 Size Requirements for Ground Sense Coil

The size of ground sense coil varies with the road width. The example sizes are shown in the following figure:

- ① The distance from the both sides of coil to road surface is 0.6-0.8 m.
- ② The coil width is obtained by subtracting 1.2-1.6 m from the road width.
- ③ The coil width can be set 0.5-1 m, the coil length can be set 1-2 m.
- ④ The horizontal distance between two adjacent coils is 1.3 m.
- ⑤ The anti-hit coils are set up in the 3-7 mode, in which 3/10 coils are set inside of the rod (car head direction) and 7/10 outside of the rod.

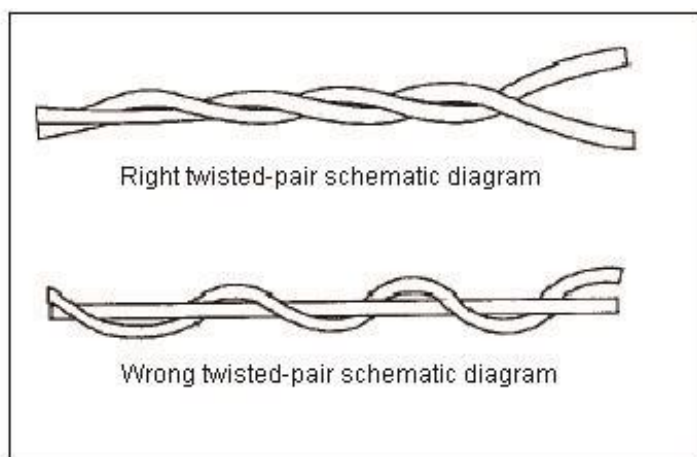


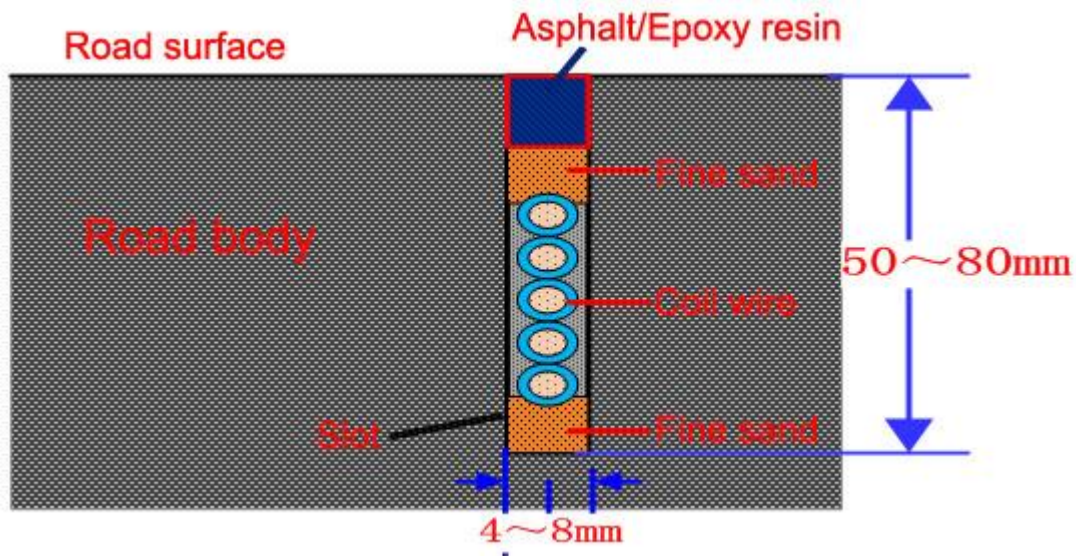
3.6 Construction Procedure and Technical Requirements for Ground Sense Coils

- ① As per the road conditions and product solution, draw the lines of the coil size on the road, and use concrete cutter to cut the coil slots along the lines.
- ② At the corner, cut a chamfering of 15 cm X 15 cm to protect the coils from being cut by hard and sharp concrete.



- ③ After slot cutting, clean the slot to ensure that there are no grits in the slot and the slot bottom is flat.
- ④ Wind the coil around the slot clockwise for 5 to 6 turns by using the right winding method, release the coil wire in the slot at natural and loose state, without any stress. The coil should be placed by turns and compressed to the slot bottom, as shown in the following figure:





- ⑤ Use the multimeter to measure the inductance value of the coil. The inductance should be 120 uh-300 uh as required.
- ⑥ Pour asphalt or fine sand as filler to fill the wire slot.

3.7 Precautions for Construction of Exit and Entrance

- ① The connecting wire leads of all external equipment should not be too long, avoiding short-circuit.
- ② Lay the 220 V strong power wire and signal wire in different tubes with a distance over 50 cm.
- ③ Make marks on the wires when laying for easy installation, commissioning and maintenance in the future.
- ④ All wires shall be covered with tubes, such as PVC tubes and galvanized tubes, to avoid being bitten by mouse which may cause faults.
- ⑤ Avoid open leads when laying wires.
- ⑥ Carry out the construction strictly according to the wire laying requirements.
- ⑦ Clean the tube before threading, and smear butter or talcum powder when threading and laying wires. The wires in the tube should be kept straight. Proper measures shall be taken for damp or corrosion prevention.
- ⑧ Make sure that the barrier gates and cameras at the entrance and exit should be of the same size and installed at the same position. The ground sense coils should be of the same size.