ClairSRS-Solar/Wired Installation Guide

Version: 1.0

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1. Calibration method for the installation hole positions of smart road studs

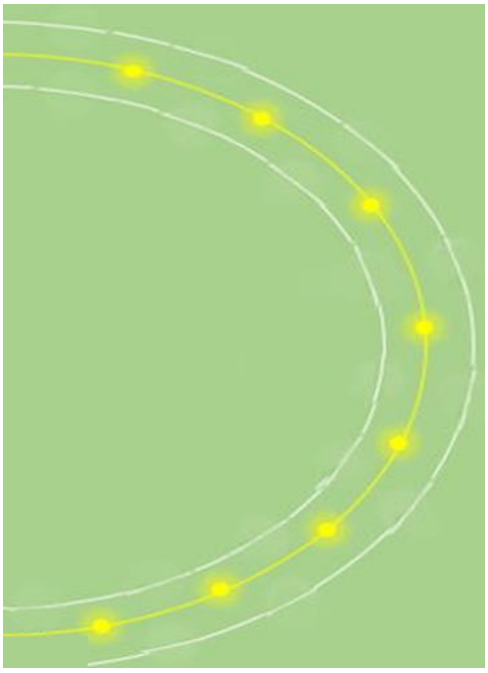
1.1 Tools

Measuring Tap	Ink Marker	Mark Pen
		

1.2 Operating Steps

1.2.1 Locating the Installation Holes for Road Studs on the Centerline

Refer to the figure below, where the yellow dots mark the hole positions for the centerline studs.



According to the project drawing requirements, select an appropriate location as the starting point and mark it with a highly visible marker. Using a tape measure, proceed along the centerline for 10 meters (or as specified in the actual drawings) and mark this as the second point. Repeat this process to mark all installation points for the centerline studs at equal intervals. (The quantity of centerline studs constitutes one-third of the total quantity.)

1.2.2 Selection of Installation Points for the Side Line Road Studs

Using each centerline stud installation point as a reference, employ a **line marker** to scribe a line perpendicular to the centerline. The intersection points of this perpendicular line with the two side lines are the installation points for the side line studs. Mark these points clearly. Repeat this process for all centerline reference points to mark all side line stud installation locations.

2. Stud installation

2.1 Tools

1. Core Drill (for pavement opening/coring)	2. Core Bit (188mm diameter)	3. Rapid-Set Cement (for filling installation holes and anchoring road studs)
		
4. Two-Part Epoxy Adhesive (Component A & B)	5. Mixing Tool (for epoxy adhesive and cement)	
		
6. Mixing Bucket (for rapid-set cement and epoxy adhesive)	7. Chemical-Resistant Gloves	8. Absorbent Sponge (for removing water from drilled holes)

		
9. Digital Scale (for proportioning epoxy components A and B)	10. Electric Demolition Hammer (for removing sharp debris from drilled holes)	11. Measuring Tape (for measuring the depth of the epoxy material relative to the road surface)
		
12. Long Tape Measure (for measuring the spacing between installation holes)	13. Line Marker (for ensuring the alignment of the left, center, and right rows of studs)	14. Traffic Cone

		
15. Depth Gauge (for verifying hole depth > 8cm)	16. Cleaning Kit for Optical Surfaces (including scrapers and cloths)	
		

2.2 Implementation Steps

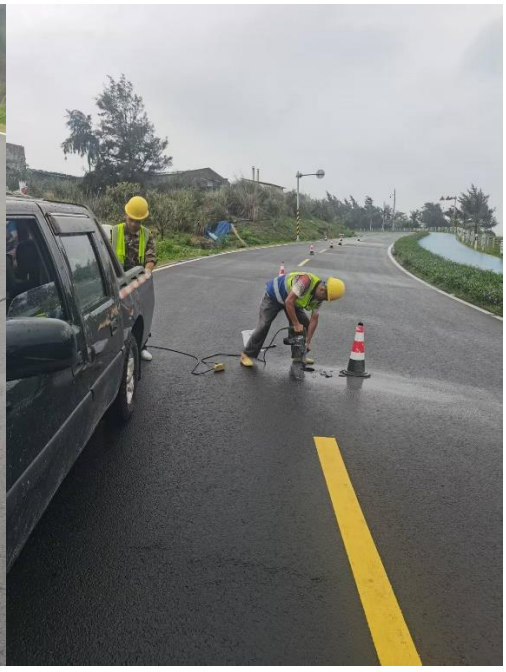
2.2.1 Closing the Travel Lanes



All road closure and construction operations shall be conducted in full compliance with the requirements of the relevant authorities and units, and in strict accordance with all applicable technical standards.

2.2.2 Drilling of Installation Holes





Based on the locations specified in the drawings, use a 188mm diameter core drill to create holes in the pavement. The hole depth should be between 80-100mm. Depending on the

actual condition of the road base, the core may be easier to remove if the drill bit reaches the interface between asphalt layers. The bottom of the hole must be level. If there are any sharp stones, use an electric demolition hammer to remove them, ensuring no sharp stones are exposed.

2.2.3 Soak Up the Wastewater

Use an absorbent sponge to soak up the wastewater from the hole. Then, allow it to air-dry or use a heat gun to speed up the process. Ensure the hole is completely dry before proceeding.

2.2.4 Continue Drilling of Holes

Following the above coring procedure, proceed to the next designated point on the drawings, ensuring consistent spacing and alignment for a visually uniform result. After a batch of holes has been cored, the depth of each installation hole must be inspected using a specialized tool. A hole is approved if its depth is no less than 8 cm.

2.2.5 Mixing of Installation Materials



Epoxy resin adhesives A and B are mixed at a 1:1 ratio (Note: Weigh adhesive A and adhesive B in separate containers). After thorough stirring, the mixed adhesive is combined with quick-drying cement at a 1:3 ratio and stirred again. (Note: The preparation of epoxy adhesive and cement mixture must be carried out in dedicated containers respectively.)

2.2.6 Installation of the Studs



Pour the mixed material into the installation hole.

Use a tape measure to check the fill level.

Ensure the distance from the surface of the material to the road surface is about 3 cm.



The smart road stud shall be installed with its light-emitting surface facing upward and any directional marking consistently oriented. It shall be pressed down until its surface is flush with the pavement. The annular gap between the stud and the hole shall be completely filled with the backing compound, with no voids.



Due to uncertainties in weather and temperature, minor floating of the smart road studs caused by the compound's properties cannot be ruled out. Therefore, a smooth-faced heavy weight must be placed on top of the adjusted stud to hold it in place. This serves to level the stud and secure its final height during the compound's curing process, preventing any unwanted upward movement (floating) or downward movement (subsidence).



After the compound has initially set (as determined visually), clean off any excess material from the raised surfaces and the light-emitting face. Ensure the luminous surface is clean, free of debris, and has no obstructions around it.



After cleaning is completed, the original weight should be reapplied for protection to prevent any compromise to the installation integrity from various potential factors.



Promptly clean up any spilled cement slurry and other debris around the work area to prevent increased difficulty in removal after they have hardened.

2.2.7 Site Cleanup



During the waiting period for the compound to set on one batch, installation can proceed with the next batch of studs. This multi-tasking approach streamlines the operation. Before moving to the next area, ensure the previous site is cleaned, adhering to the principle of "clean up immediately after installation, leave the road clean when the team departs."

2.2.8 Work Completion and Removal of Traffic Cones



The traffic cones and weighing objects may only be removed 24 hours after installation. This is to prevent damage from vehicle traffic, which could cause installation defects and compromise the performance of the device.