



Excellent product for procurement



New transportation technology



Performance Certification



Patent



Venture company



Intersection notification device

Non-signal intersection Collision Prevention System



| Excellent product for procurement | New transportation technology No. 21

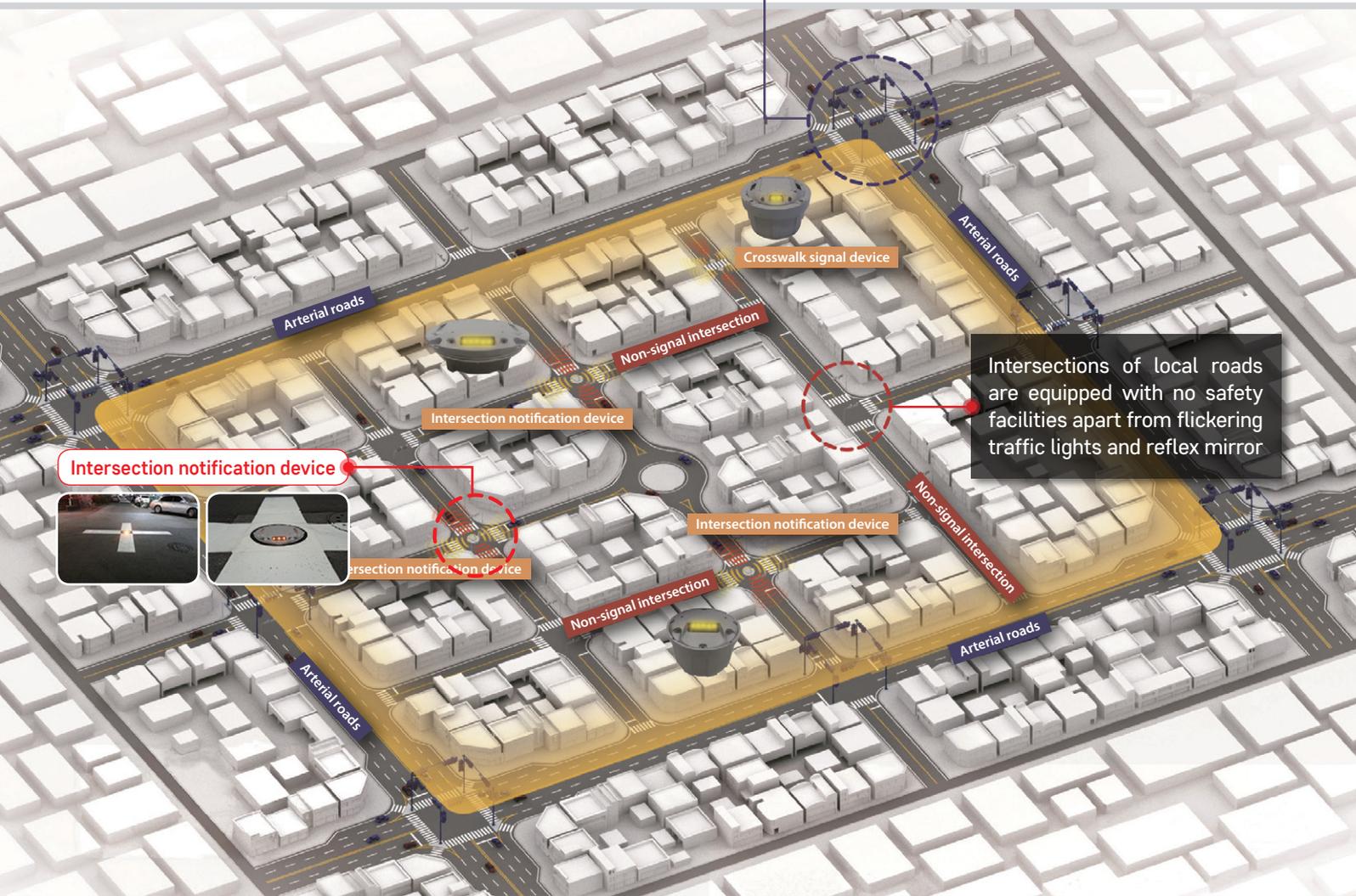
Maintenance Instructions for Non-signal intersection included /

National Traffic Safety Initiative included



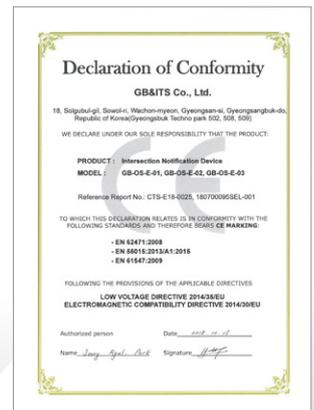
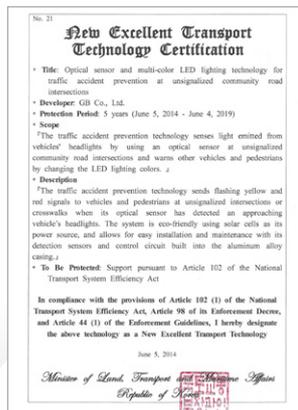
(주) 지비
GB & ITS

□ Road network map



- ➔ Traffic accident prevention system at non-signal intersection of local roads in residential areas, commercial areas, school zones, industrial complex areas and back roads
- ➔ A smart safety facility to prevent traffic accidents by installing the signal light on the road and visually warning drivers and pedestrians of vehicles with a built-in light sensor.
- ➔ Eco-friendly system supplied by solar power

□ Certification



01 Road accident status

The intersections of high-traffic roads and auxiliary lanes are controlled by the traffic light while those of sub roads have no traffic signal, which means that drivers should pass the intersection at their discretion.

In particular, drivers tend to make a careless mistake and experience a car accident at a no-signal intersection in places where it is hard to install traffic lights for small space and light traffic flow, e.g., residential areas, school zone, and roads where there are many intersections.



02 Installation area

As shown in the photo, it is difficult to install traffic lights for small space and light traffic flow and identify a traffic intersection situation by a building or parked vehicles; the traffic flow depends on drivers' discretion, at which a car accident often occurs as they tend to be careless and neglectful. Improvement measures for non-signal intersections should be urged to prevent the casualty and save the social cost.



03 Effect analysis

Case study of installation and accident reduction effect in Japan

Road surface marking



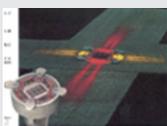
A four-sided solar road marker installed at an intersection where obstacles are around can notify drivers particularly at night of the intersection

Intensive maintenance of traffic safety facilities to ensure safe passage of pedestrians on the street in residential areas

70% reduction

Car accidents decreased from 45 to 13 in 6 months

Tokushima traffic safety equipment and facility



At the non-signal intersection

By wrong turns

→ At night
60% reduction

→ Car Accidents
90% reduction

夜間事故が6割、自転車関連事故が9割減少

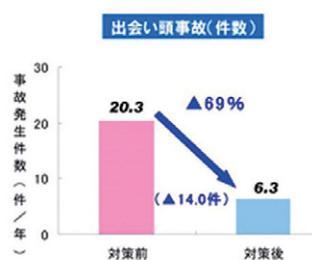
(整備前H12~9) (整備後H11~14)

- ・死傷事故件数 : 12.6件/年 → 7.8件/年
- ・夜間事故件数 : 4.8件/年 → 2.0件/年
- ・自転車関連事故件数: 4.1件/年 → 0.3件/年

Yamanashi Traffic Safety Measures

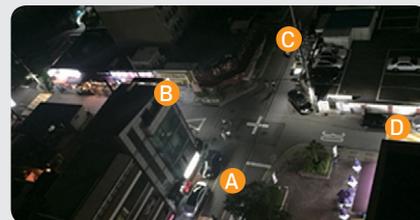
出会い頭事故対策実施箇所(22箇所)

- ・警戒標識
- ・自発光式交差点標 等の実施



Analysis of installation effect in the domestic environment

Intersection notification pilot operation analysis report of Seoul traffic management



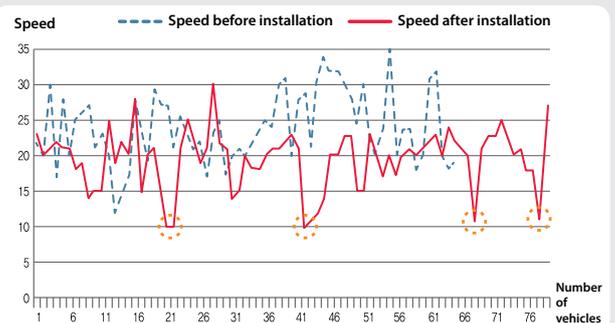
→ Approaching vehicle speed
16% reduction

Satisfaction with Intersection Notification



Classification	Direction A	Direction B	Direction C	Direction D
Detection rate	99%	100%	100%	100%

Intersection notification monitoring - Yeongdeungpo

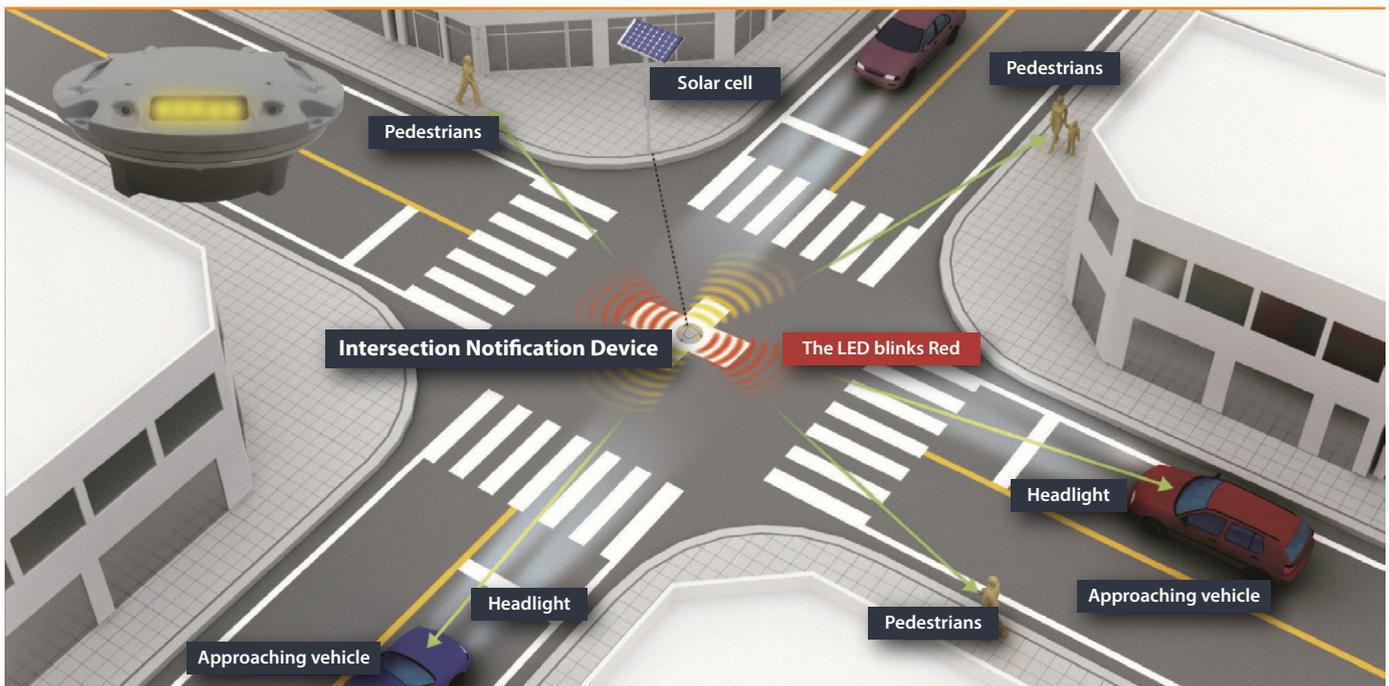


In particular, when the red light blinks for vehicles approaching at the right angles at night, the vehicle speed is reportedly decreased by 7 ~ 10 KM / H lower than the average speed (indicated as ⚡)

01 Intersection Notification Device for Perpendicular intersections (Inter)

- This system prevents car accidents in advance by giving visual warnings to drivers and pedestrians using an Alarm Device (signal lamp) on the roads of residential areas, business areas, School zones, local housing areas, back roads and non-signal based intersections
- It is an environment-friendly system using solar energy (commercial electrical power version also available)
- It is an active and intelligent safety facility that detects vehicles with the built-in optical sensors of the signal lamp and warns about the approach of vehicles to drivers and pedestrians

Conceptual diagram



Operating principles (installation outline)

- ▣ This is done by installing a signal lamp including an LED and sensors to detect the vehicles (the optical sensor detects the vehicle's headlights) at the center of the intersection, supplying the power is supplied using a solar cell (Commercial electrical power is also available)
- ▣ It gives a warning sign to the approaching cars or pedestrians by blinking the LED, if the entry of cars is detected

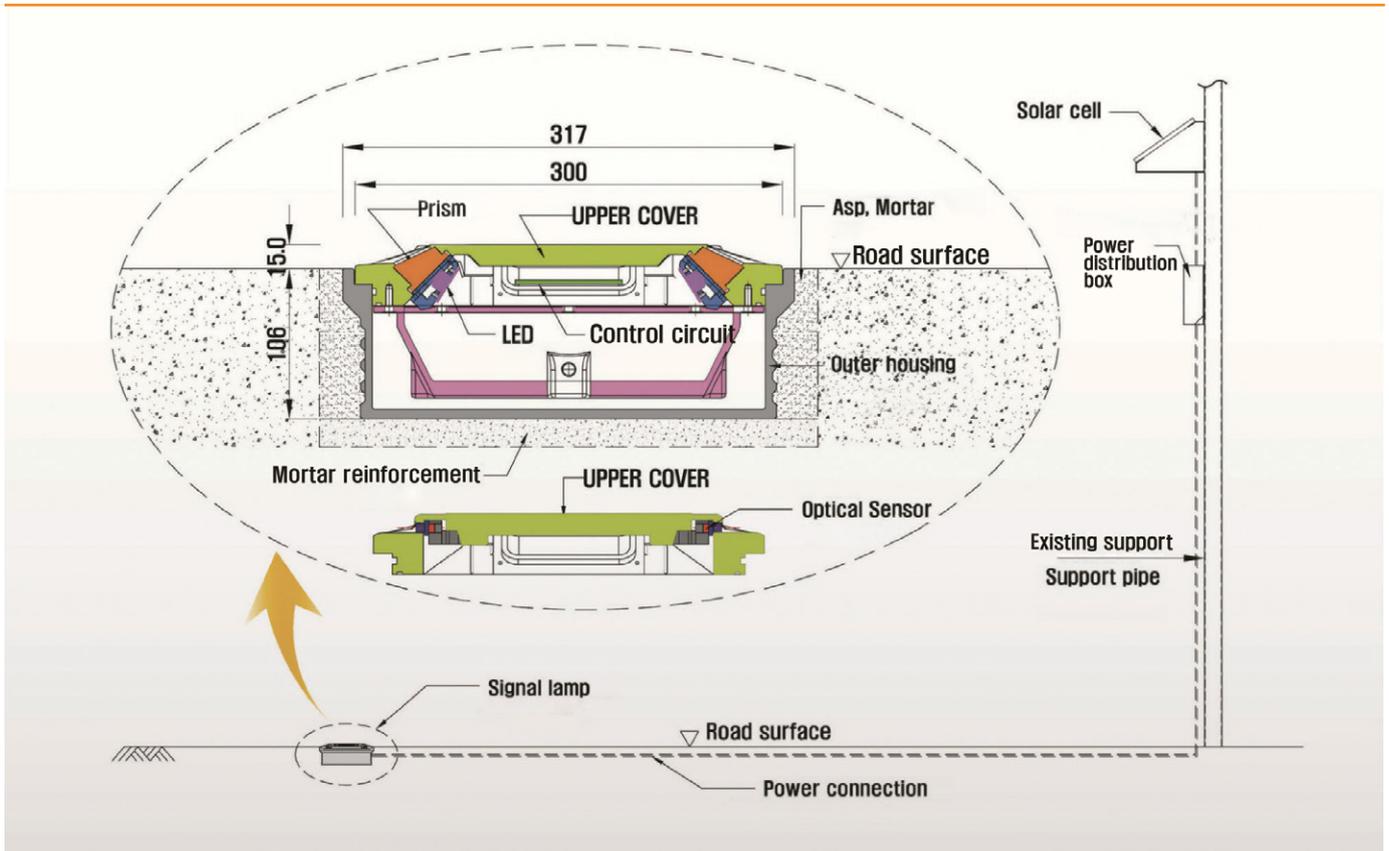
Operating

- ▣ **Daytime** | The Yellow LED blinks all the time
This gives a warning to cars entering the intersection and also warns pedestrians
- ▣ **Night time** | It detects vehicles using the optical sensors in the signal lamp.
- ▣ **If there are no vehicles** | ● The LED blinks yellow
- ▣ **If there is an Approaching vehicle** | ● The LED blinks Red

The optical sensors in the signal lamp detect headlights at night time, if a vehicle approaches the intersection, it will visually give a warning to any vehicles in the other direction by turning on the blinking Red LED (on the left and right side of the approaching vehicle)

Intersection collision prevention system)

Installation section



Product image



Applications

- ▣ Intersections without signals (unsignalized)(Residential areas, Commercial Zones, Local housing roads etc.)
- ▣ 30km/hr limit Zones (School zones, retiree zones, etc.)
- ▣ Bicycle lanes
- ▣ Curved and dangerous roads

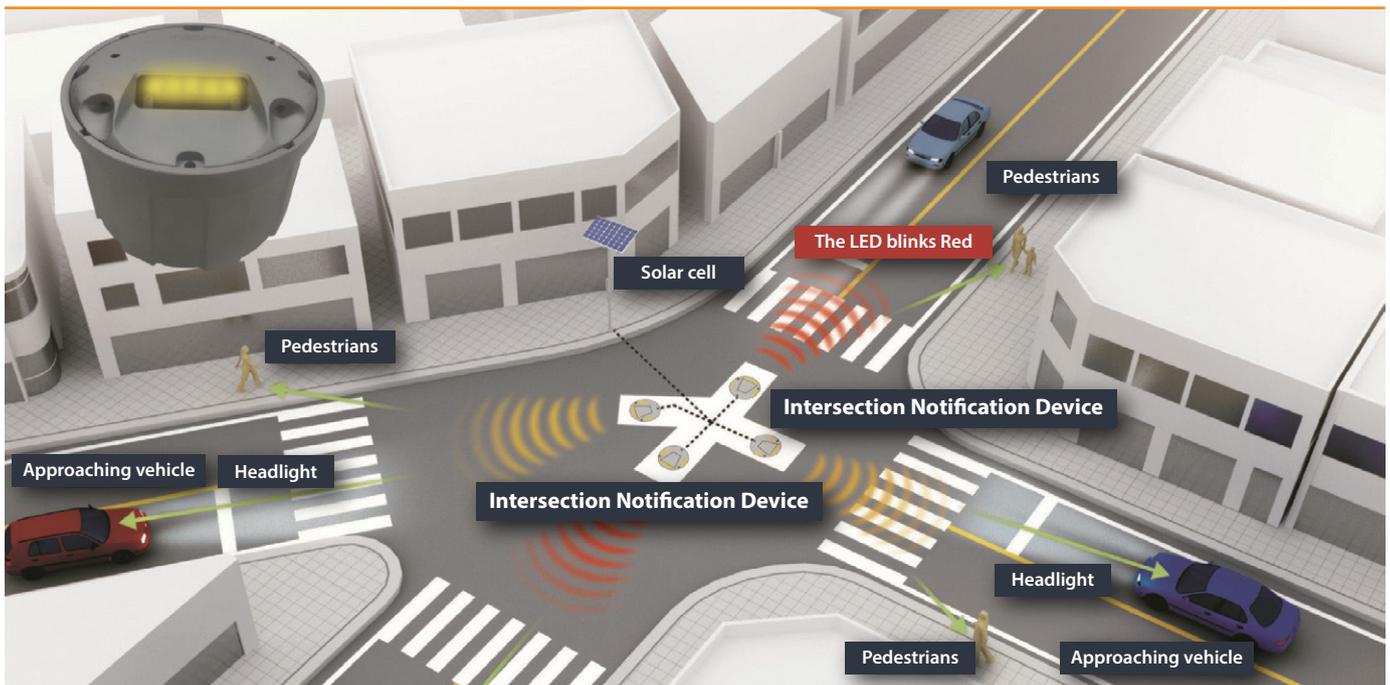
Specifications

Compressive Strength 200 KN	Dustproof and Waterproof IP 68	Operating temperatures -20°C ~ -65°C	Refer to the test report of 10 items apart from
--------------------------------	-----------------------------------	---	--

02 Intersection Notification Device - Acute intersection type (Intersection)

- This is for prevention against car accidents in advance by giving visual warnings to drivers and pedestrians with an Alarm Device (using a signal lamp) on the acute angle or longitudinal sloped roads of a residential area, business area, School zone, local housing area, backside road or non-signal intersection
- An environmentally-friendly system using solar energy (commercial electrical power system also available)
- An active and intelligent safety facility to detect vehicles with the built-in optical sensors of signal lamps that warns about the approach of vehicles to drivers and pedestrians

Conceptual diagram



Operating principles (installation outline)

- This is done by installing a signal lamp including an LED and sensors to detect the vehicles (the optical sensor detects the vehicle's headlights) at the center of the intersection, supplying the power is supplied using a solar cell (Commercial electrical power is also available)
- It gives a warning sign to the approaching cars or pedestrians by blinking the LED, if the entry of cars is detected

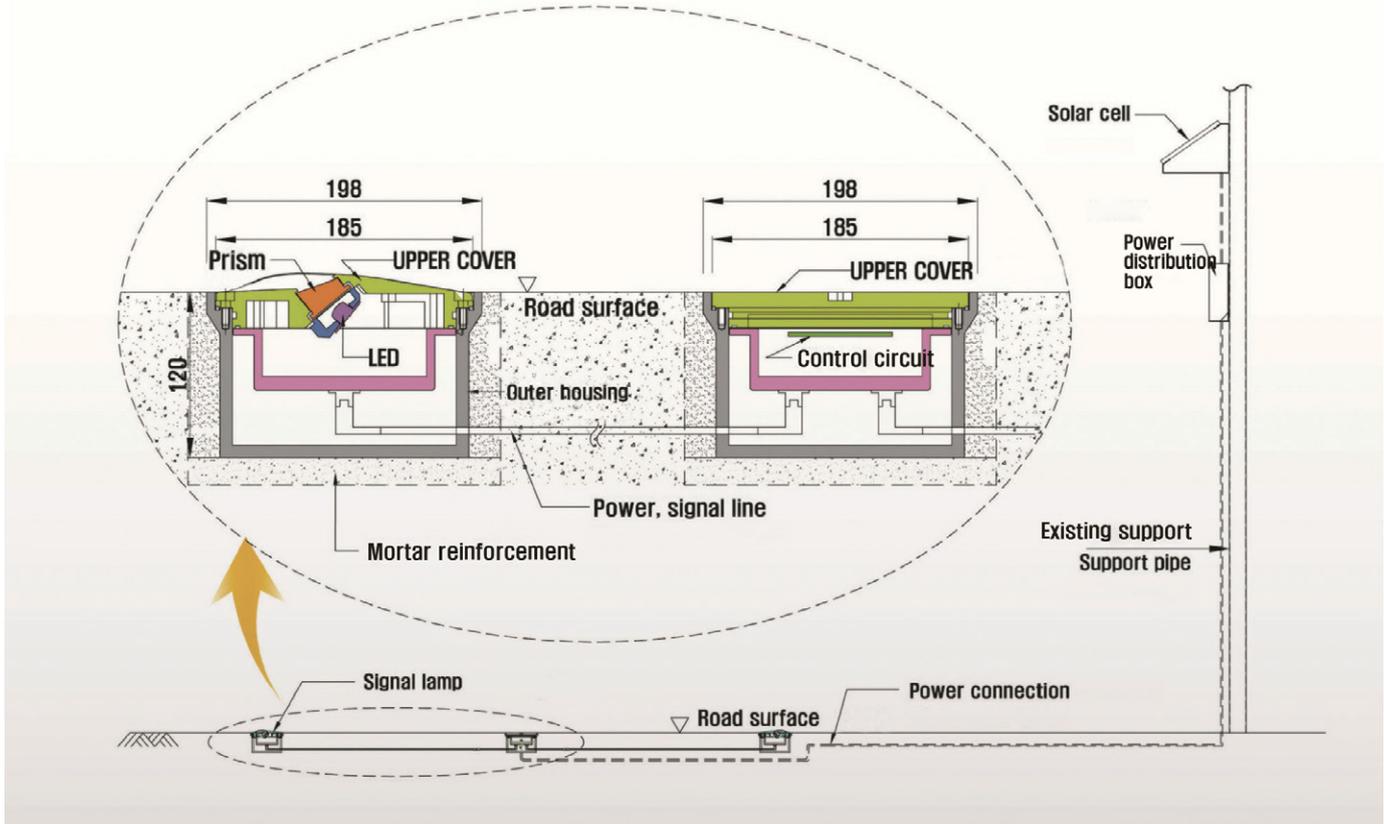
Operating

- **Daytime** | The Yellow LED blinks all the time
This gives a warning to cars entering the intersection and also warns pedestrians
- **Night time** | It detects vehicles using the optical sensors in the signal lamp.
- **If there are no vehicles** | ● The LED blinks yellow
- **If there is an Approaching vehicle** | ● The LED blinks Red

The optical sensors in the signal lamp detect headlights at night time, if a vehicle approaches the intersection, it will visually give a warning to any vehicles in the other direction by turning on the blinking Red LED (on the left and right side of the approaching vehicle)

on collision prevention system)

Installation section



Product image



Applications

- ❑ Intersections without signals (unsignalized)(Residential areas, Commercial Zones, Local housing roads etc.)
- ❑ 30km/hr limit Zones (School zones, retiree zones, etc.)
- ❑ Bicycle lanes
- ❑ Curved and dangerous roads

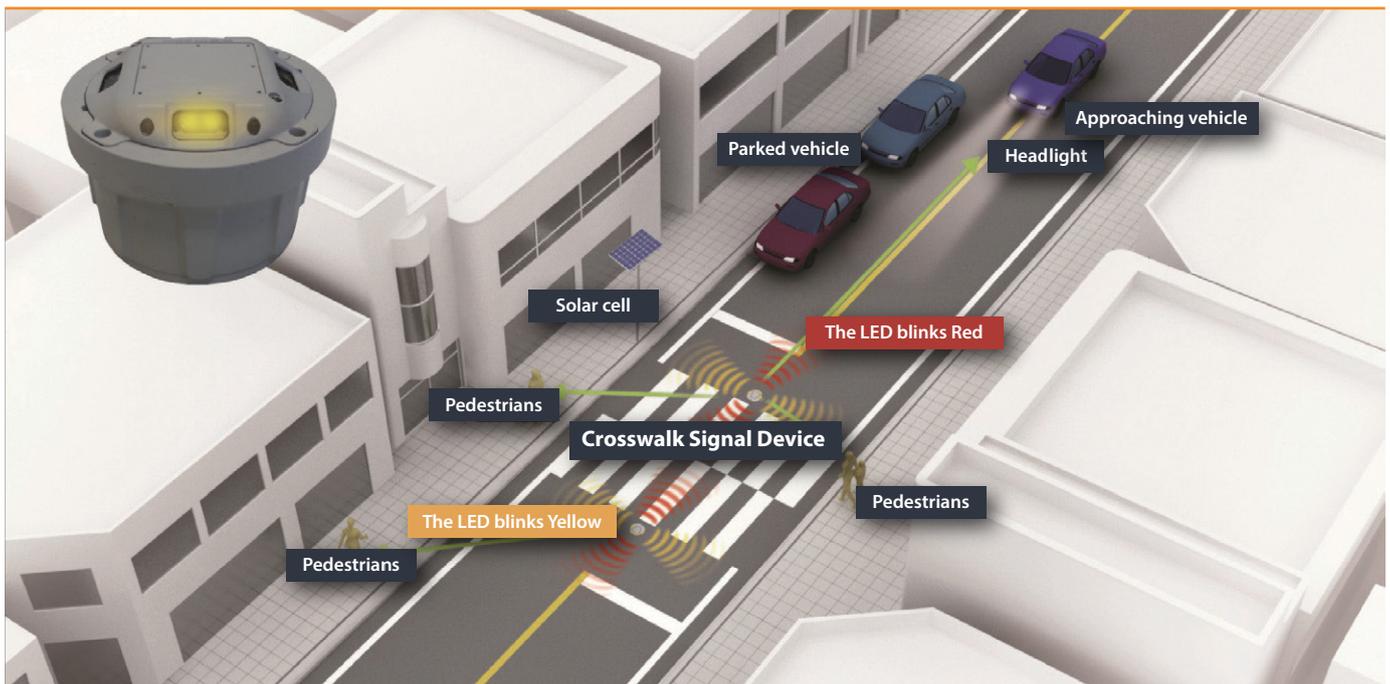
Specifications

Compressive Strength 150 KN	Dustproof and Waterproof IP 68	Operating temperatures -20°C ~ -65°C	Refer to the test report of 10 items apart from
--------------------------------	-----------------------------------	---	--

03 Crosswalk notification device (Crosswalk collision prevention system)

- This is to prevent against car accidents in advance by giving visual warnings to drivers and pedestrians using Alarm Device (using a signal lamp) on the roads of residential areas, business areas, School zones, local housing areas, back roads and non-signal based intersections
- An environmentally-friendly system using solar energy (commercial electrical power system also available)
- An active and intelligent safety facility to detect vehicles with built-in optical sensors within the signal lamps and to warn about the approach of vehicles to drivers and pedestrians

Conceptual diagram



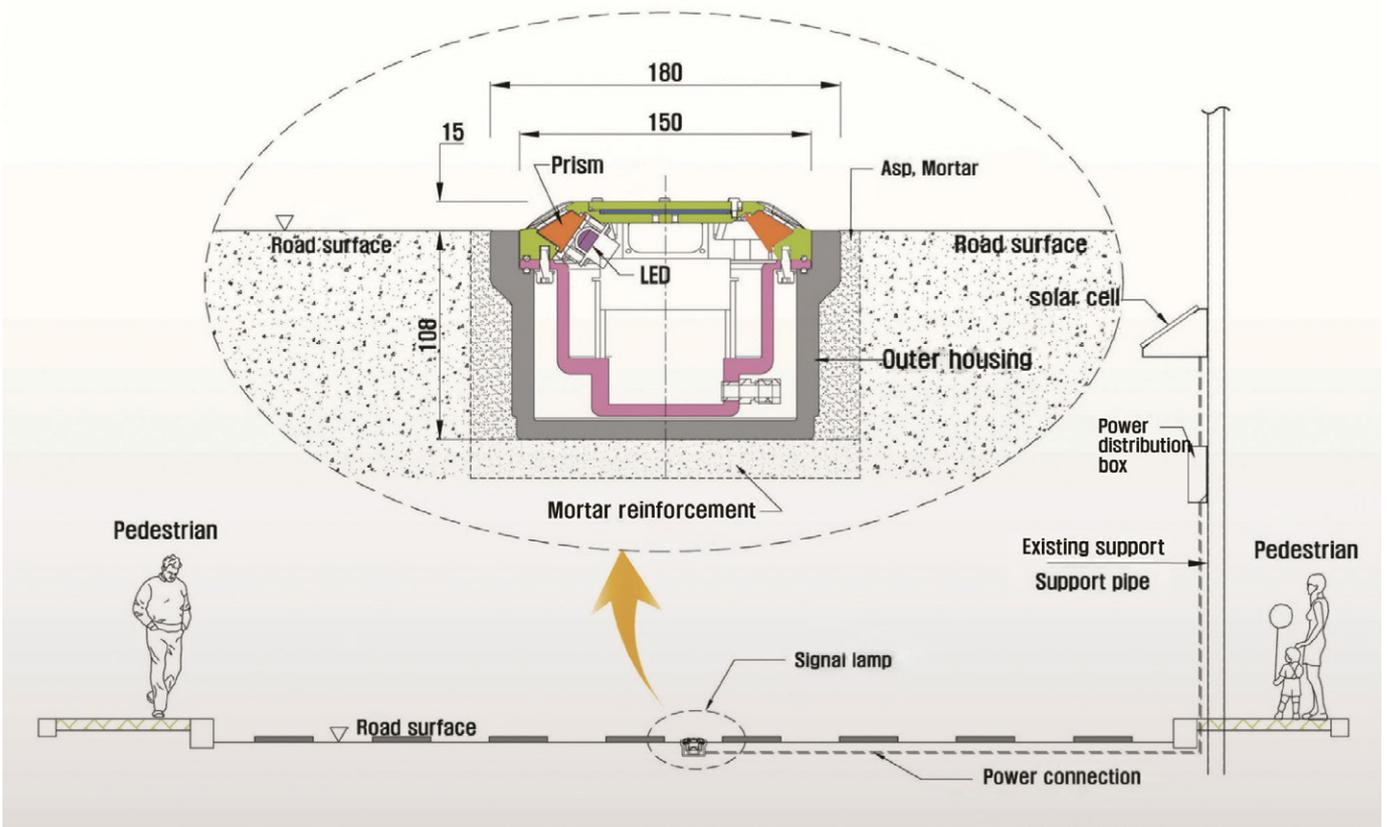
Operating principles (installation outline)

- This is done by installing a signal lamp including an LED and sensors to detect the vehicles (the optical sensor detects the vehicle's headlights) at the center of the intersection, supplying the power is supplied using a solar cell (Commercial electrical power is also available)
- It gives a warning sign to the approaching cars or pedestrians by blinking the LED, if the entry of cars is detected

Operating

- **Daytime** | The Yellow LED blinks all the time
- **Night time** | It detects vehicles using the optical sensors in the signal lamp.
- **If there are no vehicles** | ● The LED blinks Red (Vehicle direction, 2 times/ sec)
- **If there is an Approaching vehicle** | ●● Both of the Yellow and the Red LED blinks
- ● The Red LED will be blink on toward an approaching car (Blinking speed will be faster)
- ● The Yellow LED will be blink on toward pedestrian

Installation section



Product image



Applications

- Crosswalk without signals (unsignalized)(Residential areas, Commercial Zones, Local housing roads etc.)
- 30km/hr limit Zones (School zones, retiree zones, etc.)
- Bicycle lanes
- Curved and dangerous roads

Specifications

Compressive Strength
150 KN

Dustproof and
Waterproof IP 68

Operating temperatures
-20°C ~ -65°C

Refer to the test report
of 10 items apart from

Installation site



Operation image

No vehicle blinking yellow LED



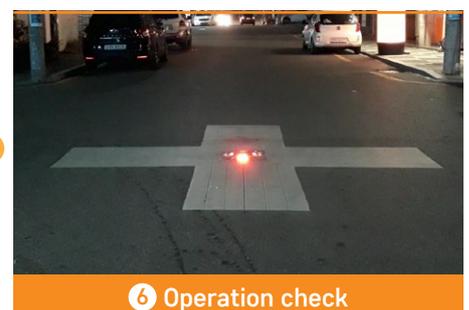
For the Approach of a vehicle blinking red LED



Test report | Light Emitting Marker (LED roadway surface marking) KS 7715 standard

Test Items	Test Method	Target value	Result	Remark
01 Compressive strength	KSD 6021	Concentrated weight (100KN) or more	Over 150 ~ 200KN secured	9KN strength test for roadway surface marking
02 Water and dust proof	KSA 7715	IP 68	Water and dust proof grade IP68 obtained	
03 Temperature cycling	KSA 7715	-20°C ~ 65°C	4 hour-long, 3 times repeat, clear	
04 Cold resistance	KSA 7715	-20°C	10 hour-long, clear	
05 Heat resistance	KSA 7715	65°C	10 hour-long, clear	
06 Chromaticity	KSA 7715	Within the standard range	Chromaticity within the standard range	
07 Luminous intensity	KSA 7715	Over KS standard value	Over KS standard value, obtained	Luminous intensity increased by 20 times more than the standard luminous intensity value
08 Sandblasting	KSA 7715	Over KS standard luminous intensity	Clear chromaticity and light intensity after sandblasting	
09 Salt water spray	KSA 7715	Normal operation after test	Clear, 168 hours after salt water spray	
10 Fatigue test	KSF 2374	Normal operation after test	Normal operation after 20,000 round wheel tracking	Additional tests
11 Lens Shock Test	KSA 3806	Normal operation after test	Clear	Additional tests
12 Weatherability	KSA 3806	Normal operation after test	Over KS standard value of luminous intensity and chromaticity	Additional tests
13 Vehicle detection	Request for examination (kcl)	Detection rate, over 95%	Detection distance, over 30m and securing high detection rate	Additional tests

Construction process



Non-signal intersection Collision Prevention System

Intersection notification device



(주) 지 비
GB & ITS

508~511, 18, Solgubul-gil, Wachon-myeon, Gyeongsan-si, Gyeongsangbuk-do, Republic of Korea
TEL. +82-53-852-9690 FAX. +82-53-852-9695 E-MAIL. gbnits@naver.com
www.gbnits.com