

The Safest Project Site Recognized by the Ministry of Employment and Labor

Miryang-Ulsan Expressway (Section 2)



[Miryang-Ulsan Expressway (Section 2)]

The Miryang-Ulsan Expressway Section 2 project involves the construction of a 3.58-kilometer stretch of a four-lane road with a width of 23.4 meters and one long-span bridge (1,108 m) over 50 meters tall and two tunnels (1,990 m). For this project, the company predicted the possible risks related to quality, safety and the environment and engaged in safety management accordingly. This effort was recognized when the Korea Expressway Corporation (KEC) selected the site as the "2018 Best Project Site," an honorary designation granted to only one of the 61 project sites in Korea ordered by KEC. (Award benefits: 2 points [prequalification], 2 points [construction capability evaluation] and exemption from comprehensive inspection)



[On-site safety education]

Year	Awards & Recognitions
Jul. 2018	MOEL Industrial Accident Prevention Awards (MOEL Minister's Award)
Feb. 2018	KEC Best Project Site Awards (President's Award, Safety & Environment Category)
Dec. 2017	MOLIT Construction Safety Awards (Grand Prize/ MOLIT Minister's Award)
Nov. 2017	KEC Construction Safety Innovation Awards (Grand Prize / President's Award)
Jul. 2017	MOEL/KOSHA Safety & Health Best Practices Awards (Grand Prize / President's Award)
Jul. 2017	KISA Construction Safety Idea Contest (Bronze Prize / President's Award)

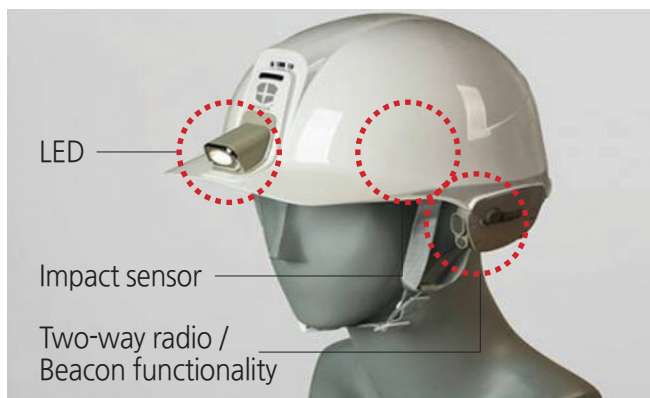
Project Overview

- **Project Name:** Miryang-Ulsan Expressway (Section 2)
- **Contractor:** Ssangyong E&C (61.8%), Shinsegae E&C (19.0%), Daeheung Construction (9.6%), KG Construction (9.6%)
- **Project Value:** USD 162.5 million (KRW 119 billion)
- **Location:** Sanoe-myeon and Danjang-myeon, Miryang, Gyeongsangbuk-do
- **Length:** 3.58 km (Width = 23.4 m: 4-lane road)
- **Project Period:** March 10, 2014–December 31, 2020 (2,100days)
- **Overview**
 - Bridge Construction: 1,108 m
 - Tunneling: 1,990 m
 - Earthworks: 666,000 m³ (cutting), 156,000 m³ (filling)
 - Road Paving: 14,232 m³ (concrete), 2,500 m³ (asphalt concrete)



[Action-cam and drone operating in tandem]

Active Use of Advanced Safety Equipment



[Intelligent safety helmet with impact sensor]

To ensure good safety management and accident prevention, this site exploits advanced equipment, including action-cams, drones, intelligent safety helmets and airbag-integrated safety belts. For blind areas that are hard to observe, real-time LTE action-cams attached on safety helmets are used, allowing the site management office to monitor, in real time via smartphone or PC, whether workers adhere to safety rules and check the safety of

work environment.

At the same time, drones are being used for real-time management of high-risk works as the project involves high-altitude construction of a long-span bridge that is over 50 meters tall and 1,108 meters long. Video analysis is also being used to improve risk factors.

As for intelligent safety helmets, any impact causes the sensor to send rescue signals to cellphones and two-way radios, enabling real-time responses. Moreover, an airbag-integrated safety belt can minimize a worker's physical injuries from falls, by reducing the impact to the body about 80 percent.

Visits to Safety Management Best Practices Site

With its superior safety management system, this site has become a popular tour location visited by public servants from Korea and overseas and by the staff of other major contractors. Even public servants from Myanmar's Ministry of Labor, Immigration and Population (MOLIP) visited the site, spending a fair amount of time asking, through an interpreter, questions about Korea's first LTE action-cam and drone-based real-time monitoring system. They thoroughly praised Ssangyong E&C's advanced on-site management that utilizes advanced communications technology. **S**



[Real-time safety management]



[Myanmar public servants visiting the site (June 15, 2017)]