

Utilize Khmer **GEONET** data in the construction project

IKEE PAVING SYSTEMS Co., Ltd / TOPCON CORPORATION

■ About Us

IKEE Paving Systems Co., Ltd.

- Established in 2015 as part of the esteemed IKEE Group in Japan
- Our objective was clear: to revolutionize road construction through the introduction of cutting-edge Japanese technology.

Our commitment is to provide excellence in both construction methodologies and superior road materials, ensuring smoother journeys and brighter futures for all.

In addition to road construction, IKEE Paving Systems Co., Ltd is also demonstrating a new road survey technology that uses GNSS for very accurate positioning. This shows our commitment to improving road quality through advanced technology and precise methods.

■ About Us

TOPCON CORPORATION.

In September 1932, Tokyo Kogaku Kikai Co., Ltd. (Tokyo Optical Co., Ltd.) was established with the aim of domestically producing surveying instruments upon request from the Army Ministry, based on the surveying instruments division of K. Hattori & Co., Ltd.

Since the 1990s, through overseas M&As and alliances, we have expanded our business into new fields, especially Positioning business, in addition to optical technology, we are developing ICT construction machinery systems that use positioning technology using GNSS, laser technology, and hydraulic control technology, contributing to improving the productivity of the construction process.



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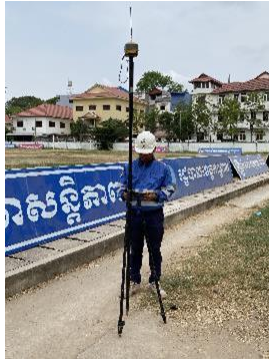
■ Project Overview

In this project, it was decided to evaluate the accuracy and workability of the conventional survey method for civil engineering construction and GNSS-based surveying using 3 cases.

1: Comparisons between Local RTK and N-RTK surveys (used Khmer **GEONET**)

2: Comparisons between the conventional survey (level survey) and GNSS survey (RTK survey by mmGPS)

3: Comparisons between Static survey and N-RTK(used Khmer **GEONET**)



Pick up “No.2 case” Results of comparison accuracy & workability

STATION/Survey Result	E1			E2			E3		
	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)
281+820	0.053	0.051	0.045	0.053	0.052	0.045	0.057	0.055	0.045
281+830	0.057	0.049	0.045	0.059	0.051	0.045	0.063	0.051	0.045
281+840	0.061	0.049	0.045	0.055	0.052	0.045	0.061	0.056	0.045
281+850	0.054	0.046	0.045	0.063	0.052	0.045	0.066	0.055	0.045
281+860	0.059	0.045	0.045	0.063	0.052	0.045	0.064	0.056	0.045
281+870	0.058	0.053	0.045	0.063	0.059	0.045	0.065	0.058	0.045
281+880	0.051	0.052	0.045	0.058	0.055	0.045	0.061	0.058	0.045
281+890	0.045	0.054	0.045	0.054	0.056	0.045	0.055	0.058	0.045
281+900	0.049	0.053	0.045	0.053	0.052	0.045	0.051	0.054	0.045
281+910	0.052	0.057	0.045	0.056	0.062	0.045	0.050	0.059	0.045
281+920	0.051	0.060	0.045	0.056	0.060	0.045	0.050	0.058	0.045

STATION/Survey Result	E4			E5			E6		
	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)	Paving thickness (Level) (m)	Paving thickness (mmGPS) (m)	Thickness regulation (over 0.045)(m)
281+820	0.058	0.053	0.045	0.062	0.051	0.045	0.052	0.064	0.045
281+830	0.063	0.052	0.045	0.053	0.055	0.045	0.062	0.059	0.045
281+840	0.061	0.056	0.045	0.059	0.054	0.045	0.062	0.059	0.045
281+850	0.059	0.051	0.045	0.053	0.046	0.045	0.045	0.045	0.045
281+860	0.061	0.057	0.045	0.053	0.050	0.045	0.052	0.051	0.045
281+870	0.066	0.059	0.045	0.060	0.060	0.045	0.055	0.054	0.045
281+880	0.069	0.060	0.045	0.053	0.055	0.045	0.056	0.058	0.045
281+890	0.056	0.059	0.045	0.054	0.054	0.045	0.061	0.063	0.045
281+900	0.052	0.054	0.045	0.051	0.048	0.045	0.066	0.062	0.045
281+910	0.054	0.059	0.045	0.054	0.060	0.045	0.051	0.060	0.045
281+920	0.052	0.055	0.045	0.049	0.056	0.045	0.054	0.064	0.045

	See Bck sight	Set up base	Preparation of survey	surveying time (1 cross section)	Number of Surveying staff	Working productivity
Level Survey	2mins	0mins	5mins	5mins	5 persons	○
RTK(mmGPS)	0mins	20mins	5mins	5mins	2 persons	◎

■ Pilot Project Conclusion

As a general review, the results obtained when N-RTK used Khmer **GEONET** data is used in the construction field are as follows.

1: Accuracy equivalent to conventional methods can be ensured.

2: Work productivity is significantly higher than conventional methods

■ Way Forward

IKEE PAVING SYSTEMS Co., Ltd

We are engaged in construction work locally in Cambodia with a focus on infrastructure construction. Being able to use real-time, high-precision positional information for on-site surveying and construction will make it possible to survey and confirm the exact location regardless of the worker's technical ability, allowing us to prevent mistakes before they can occur and enabling highly productive construction. We would like to use the real-time data from Khmer **GEONET** for any projects within the applicable range.

TOPCON CORPORATION

Through this JICA pilot project (surveying), we demonstrated how GNSS (mmGPS) can be used at construction sites to improve the surveying efficiency and the productivity of N-RTK surveys using real-time data from Khmer **GEONET**.

We would like to educate local users in Cambodia about the benefits of using real-time data from Khmer **GEONET** in N-RTK surveys and other activities to improve the efficiency of surveying using GNSS at construction sites.

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