

JICA Technical Seminar

Road Survey Sample in Myanmar

Country : Myanmar

**Company : TOA Road Myanmar Co.,Ltd.
[TOA Road Corporation(JPN) Group]**

**TOA Road Myanmar Co.,Ltd.
Managing Director**

Kenji MURAKAMI



Survey Tools and Purpose

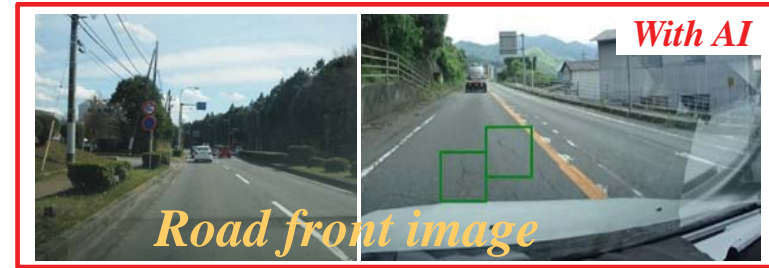
In Case of Survey Target is “Simple Survey”,

1 Smartphone only required.

(Shown Sample Data surveyed by this method)

For Detail Survey, A smartphone and a camera linked to it are installed in front of the vehicle, and IRI is calculated from the road front image and road profile.

Automatic extraction of road surface cracks using AI (machine learning) was developed from the front image from a 4K camera. From these results, it was possible to rank cracks at the inspection level.



*Camera
&
Smartphone*

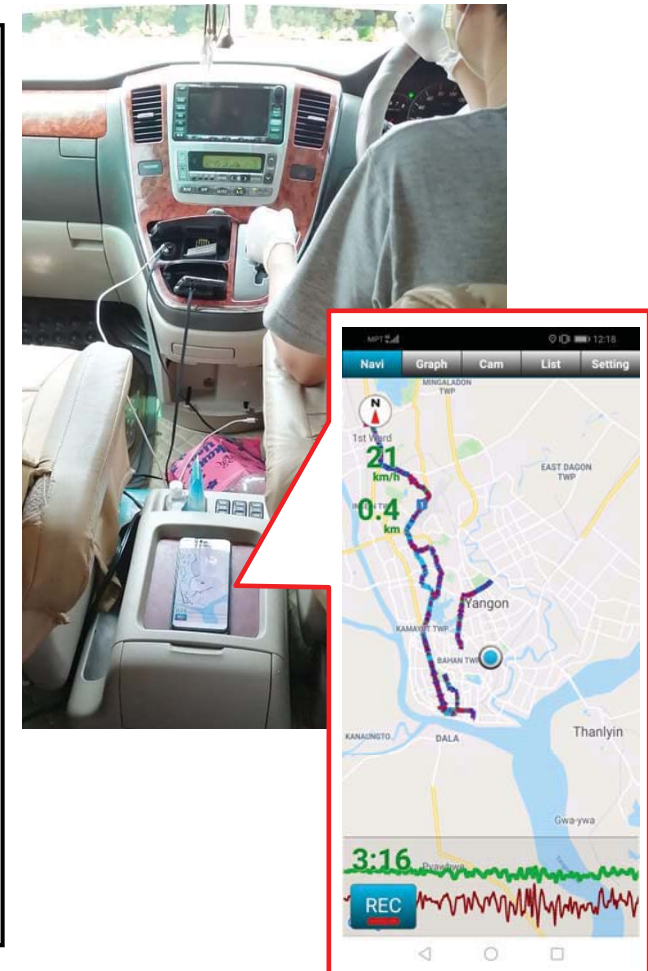
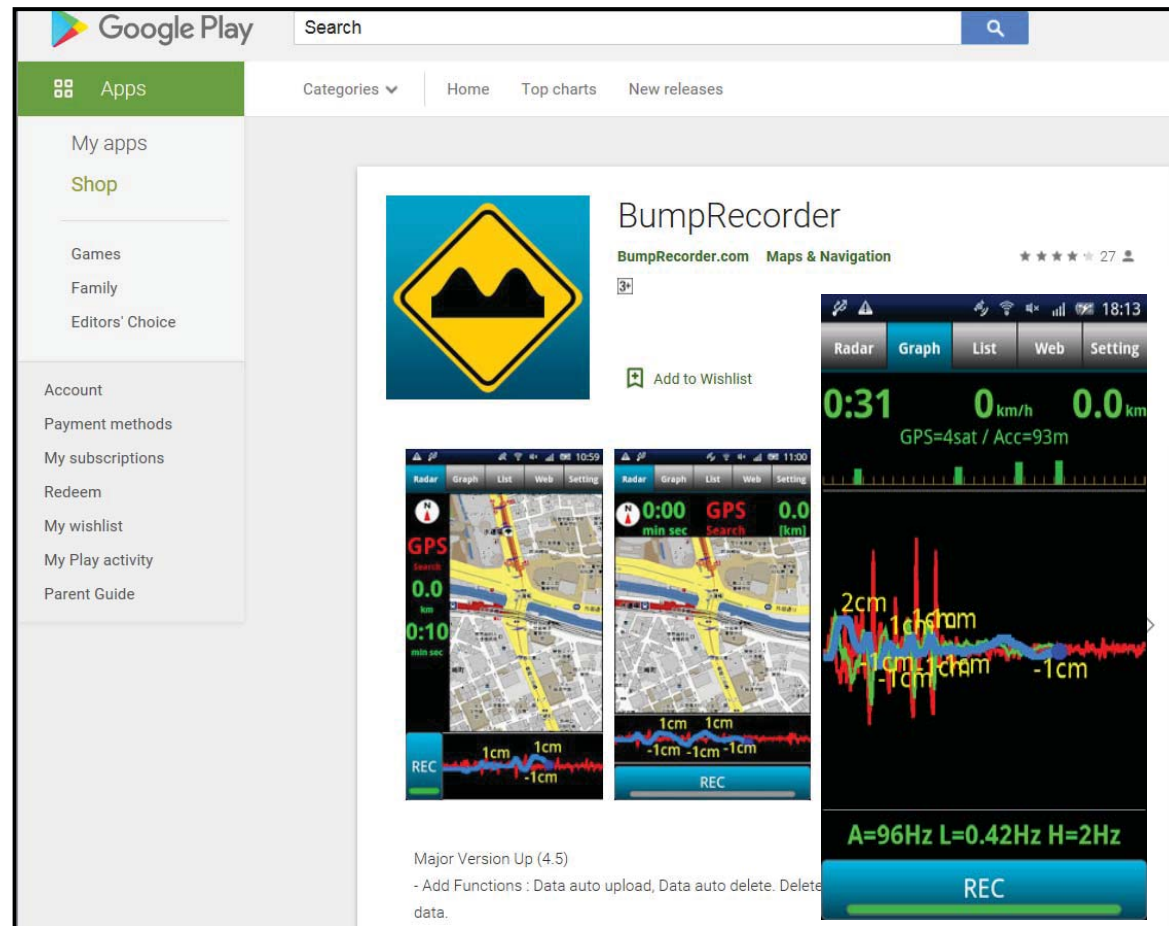


Survey Type	Smart Phone	Camera	AI	Purpose
Detail Survey 詳細調査	○	○	○	・ Maintenance or Rehabilitation 事業計画の詳細設計
Basic Survey 基礎調査	○	○ (SP Camera OK)	No Need	・ 道路の構造評価 舗装表面破損 or 下層破損の チェック
Simple Survey 簡易調査	○	No Need	No Need	・ 道路の破損箇所ピックアップ (フィルタリング) ・ 舗装出来型管理

Existing Road Simple Survey Method (Filtering & Management)

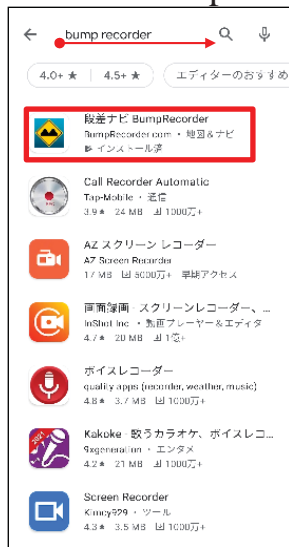
“BumpRecorder” Simple Road Surface Survey Method by Smart Phone

Easy to Summary Road Data; Visualization



How to Use?

APP. Download & Startup

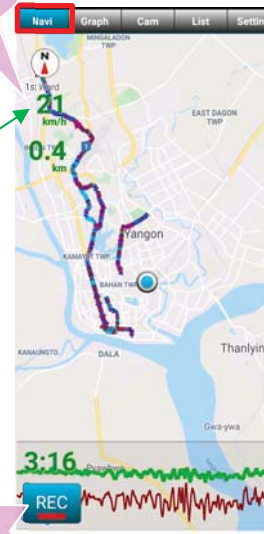


Satellite Supplement Checking



If Standby OK,
GPS Change to
Green Speed
Display

Recording



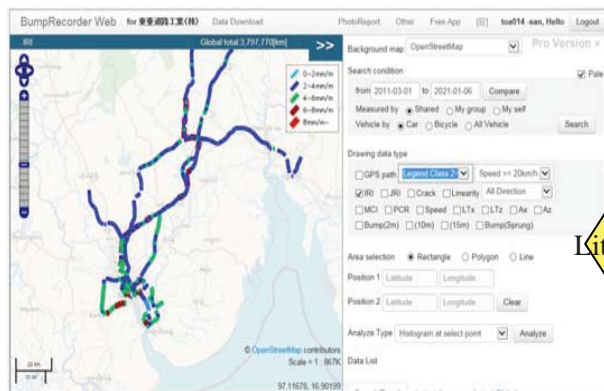
Data Saving



After Stop Rec,
Automatically Save
Window Opening

Data
Saving

BumpRecorder WEB Site

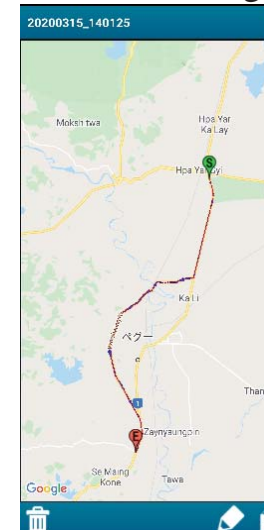


Lit. Waiting

Data Upload



Data Checking



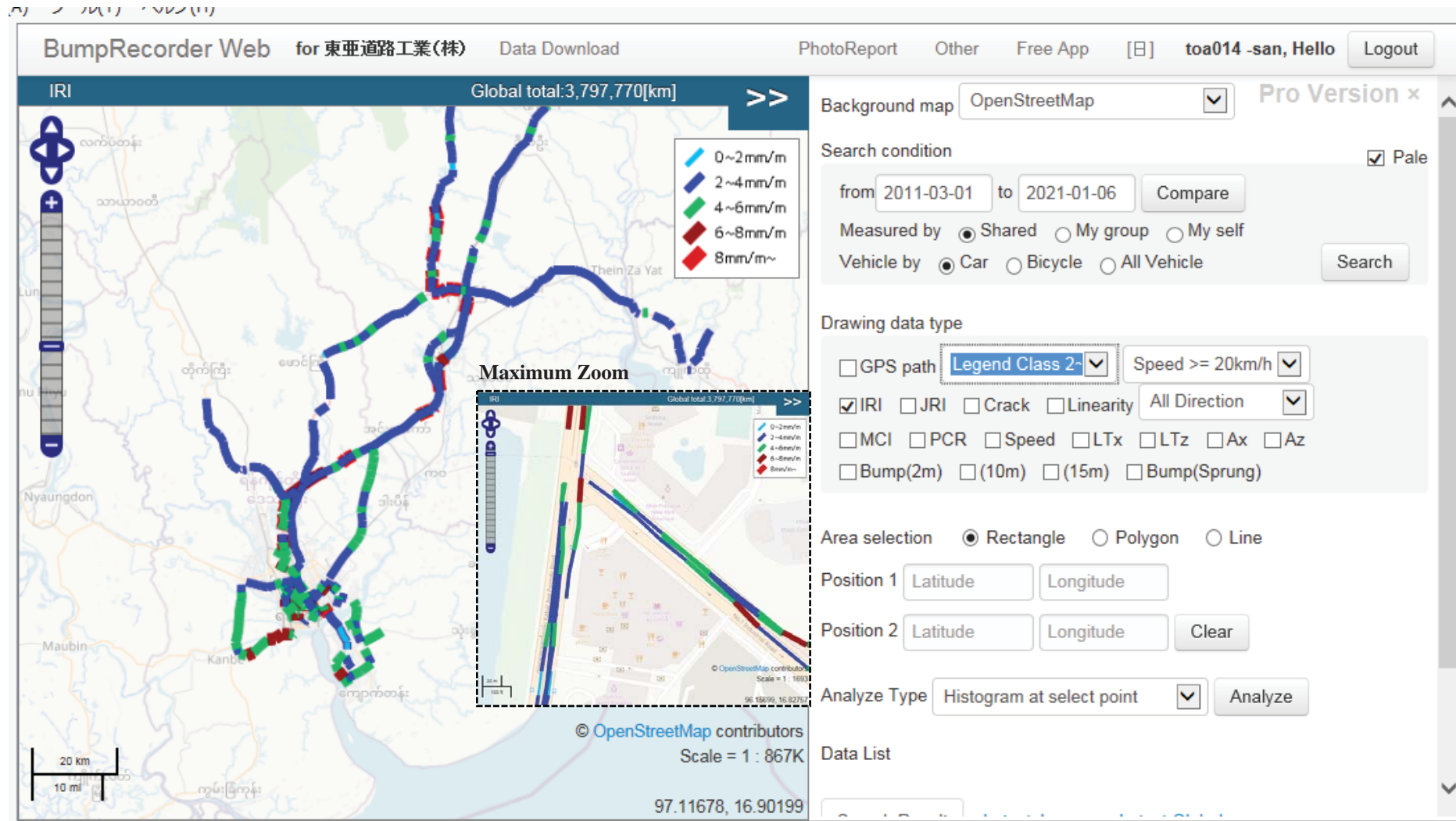
Saved Data List



Note ; Saved Data can be Uploaded as Public or Own Group.
In case of the Upload to Own Group,
User ID & Password should be Set on "Setting" TAB

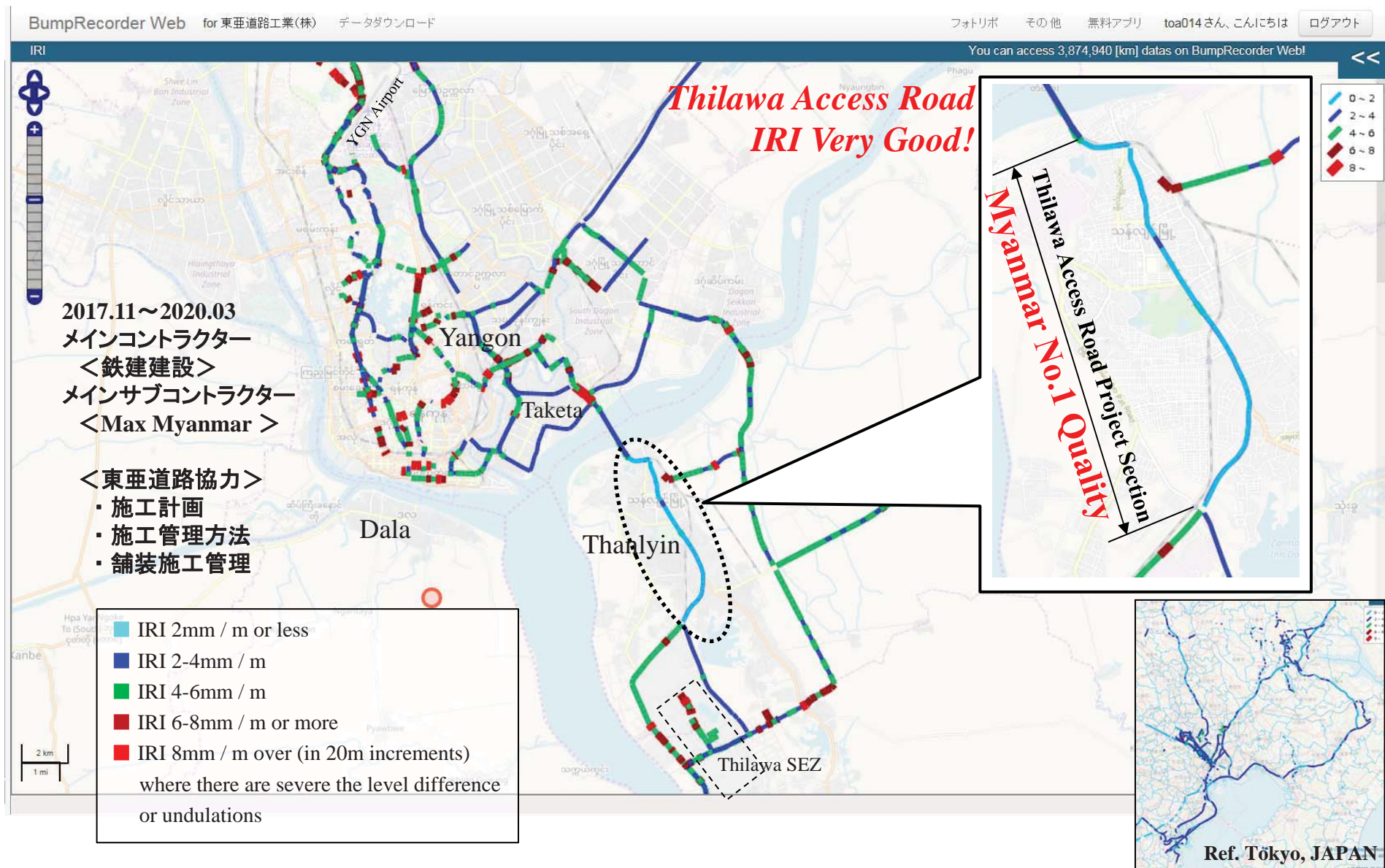
IRI (International Roughness Index) Sample View

Yangon Region = West of Bago State



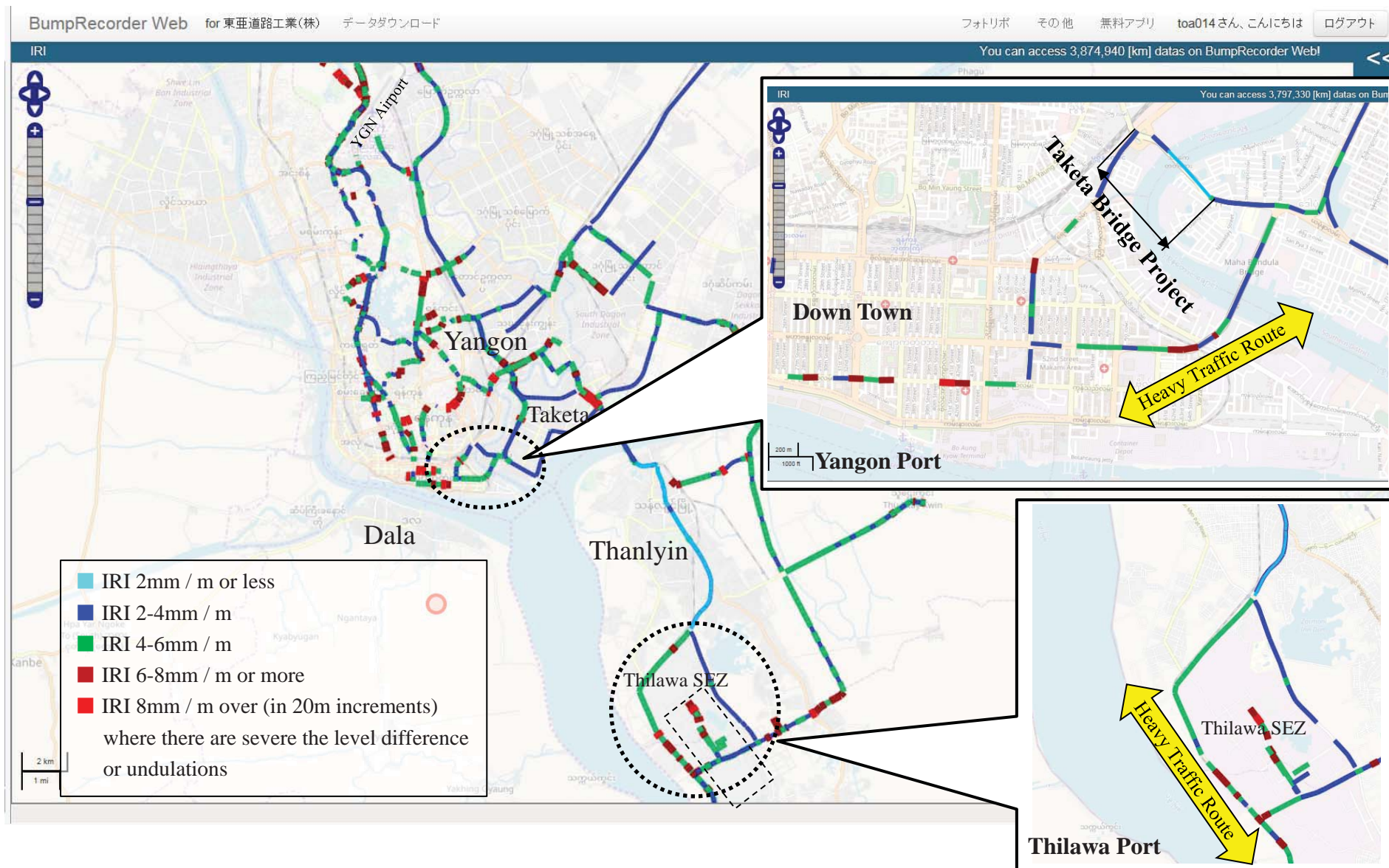
IRI (International Roughness Index) Sample View

Yangon City Area (1) Thilawa Access Road



IRI (International Roughness Index) Sample View

Yangon City Area (2) Yangon Port & Thilawa Port



IRI (International Roughness Index) Sample View

Yangon City Area (3) Yangon Downtown



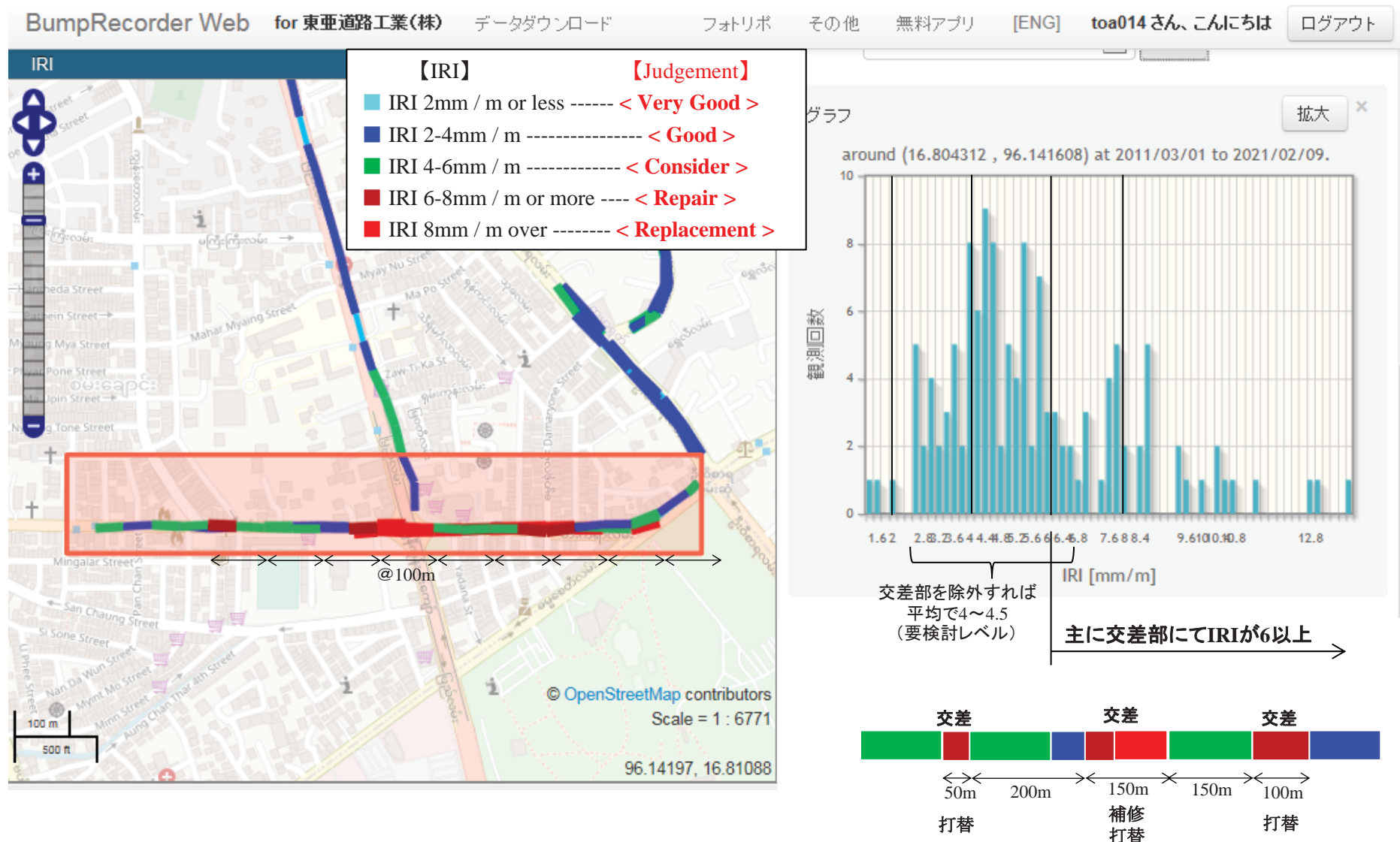
IRI (International Roughness Index) Sample View

Filtering Method (1)



IRI (International Roughness Index) Sample View

Filtering Method (2)



★ 舗装の連続性やライフサイクル(予算への配慮)から総合的に判断

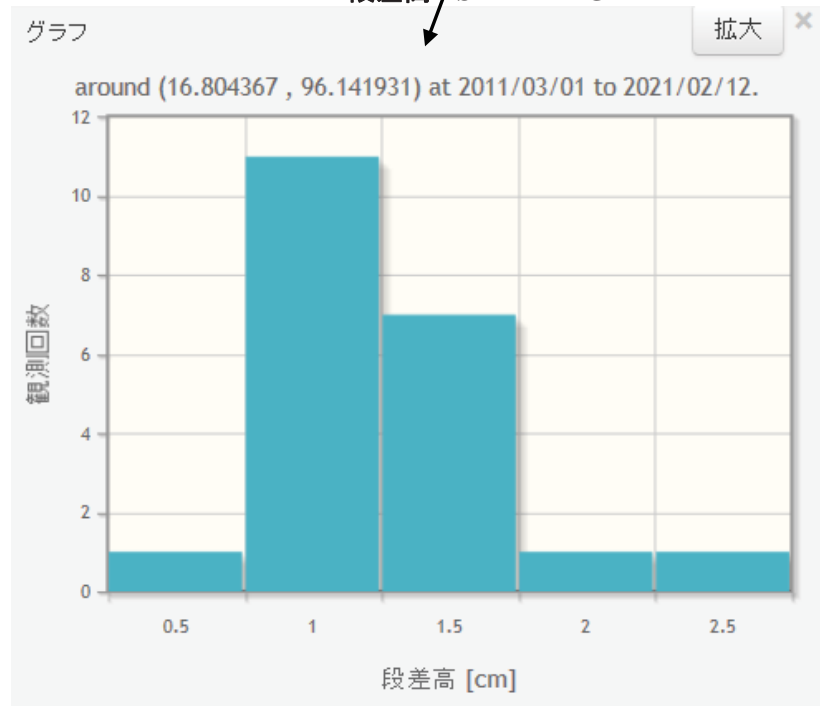
BumpRecorder WEB Sample View

Step Height and Flatness Research Results

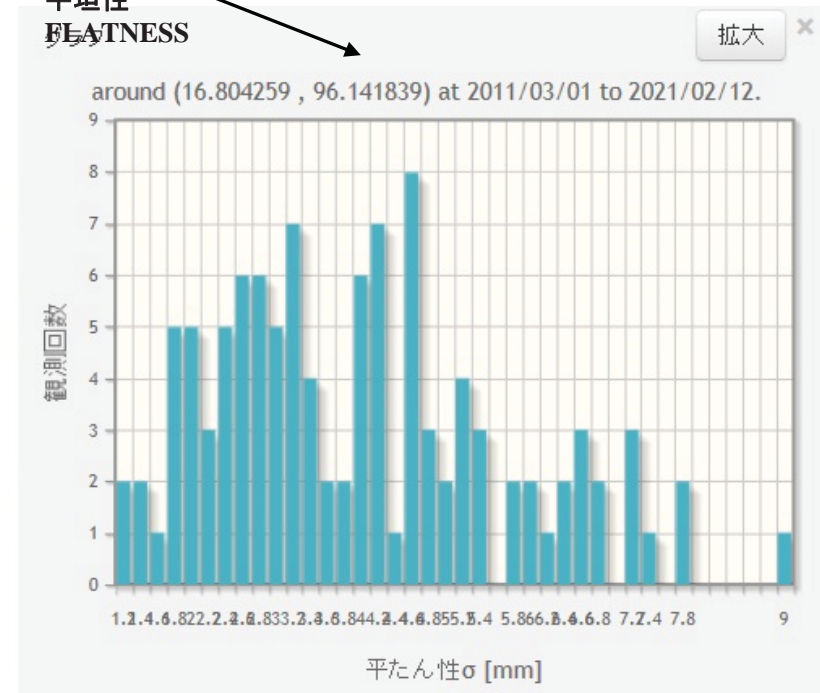


Easy to Check each Contents

段差高 STEP HEIGHT

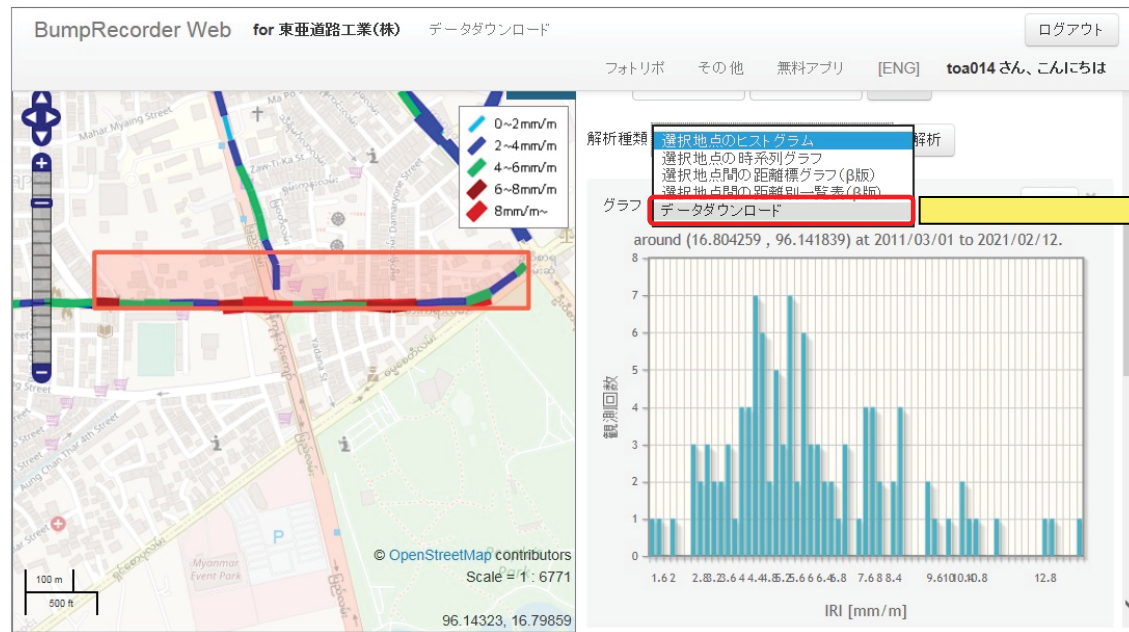


平坦性
FLATNESS



BumpRecorder WEB Sample View

Survey Data Download



**After Section Choses,
Survey Data can download
from Analysis Kinds.**

user_id	datetime	devicetime	meshsize	latcode	loncode	lat1	lon1	lat2	lon2	l	speed	iri	jri	crack	linearity	mci	pcr	lt_x	lt_z	max_ax	max_az
toa012	20191215	1.58E+12	4	139672	787592	16.80437	96.14209	16.80404	96.1416	63.6	7.2	3.73	2.23	0	7.03	9.45	84.3	90.22	85.54	0.92	0.69
toa012	20191215	1.58E+12	2	139676	787594	16.80437	96.14209	16.80419	96.14185	32.7	6.74	3.04	1.9	0	4.81	9.47	89.1	89.18	85.24	0.62	0.54
toa012	20191215	1.58E+12	2	139674	787592	16.80419	96.14185	16.80404	96.1416	30.9	7.68	4.48	2.53	0	8.2	9.43	80	91.32	85.85	0.92	0.69
toa012	20191215	1.58E+12	4	139672	787588	16.80404	96.1416	16.80386	96.14111	55.8	7.92	4.73	3.69	0	7.35	9.39	78.7	93.19	89.41	1.61	1.83
toa012	20191215	1.58E+12	2	139674	787590	16.80404	96.1416	16.80387	96.14136	32.4	8.28	4.41	3.38	0	7.84	9.4	80.4	92.5	88.34	1.61	1.2
toa012	20191215	1.58E+12	8	139672	787584	16.80404	96.1416	16.80385	96.14063	106	7.62	4.38	3.23	0	7.01	9.41	80.5	91.56	88.65	1.61	1.83
toa012	20191215	1.58E+12	2	139674	787588	16.80387	96.14136	16.80386	96.14111	26	7.48	5.14	3.97	0	6.45	9.38	76.8	93.97	90.61	1.38	1.83
toa012	20191215	1.58E+12	4	139672	787584	16.80386	96.14111	16.80385	96.14063	51.9	7.27	3.98	2.6	0	6.5	9.43	82.8	89.22	87.55	0.57	1.42
toa012	20191215	1.58E+12	2	139674	787586	16.80386	96.14111	16.80387	96.14087	25.9	8.07	3.34	2.23	0	4.01	9.45	86.9	88.46	88.34	0.38	0.68
toa012	20191215	1.58E+12	2	139674	787584	16.80387	96.14087	16.80385	96.14063	26	6.4	4.69	2.95	0	8.42	9.42	78.9	89.63	87.13	0.57	1.42
toa012	20191215	1.58E+12	8	139672	787576	16.80385	96.14063	16.80374	96.13965	104.6	6.96	5.3	3.95	0	6.81	9.38	76.2	91.1	88.07	0.89	1.45
toa012	20191215	1.58E+12	4	139672	787580	16.80385	96.14063	16.80379	96.14014	52.3	7.39	3.9	2.55	0	7.29	9.43	83.2	88.4	86.57	0.89	0.9
toa012	20191215	1.58E+12	16	139664	787568	16.80385	96.14063	16.80379	96.13867	207.8	6.3	6.01	4.42	0	7.08	9.37	73.4	92.94	87.08	1.62	1.49
toa012	20191215	1.58E+12	2	139674	787582	16.80385	96.14063	16.80384	96.14039	25	8.3	3.15	1.85	0	4.46	9.47	88.2	86.17	85.89	0.83	0.64
toa012	20191215	1.58E+12	32	139648	787552	16.80385	96.14063	16.80383	96.13672	415.5	5.82	6.78	4.77	0.04	8.96	8.79	71	92.59	86.08	1.62	2.46
toa012	20191215	1.58E+12	2	139672	787580	16.80384	96.14039	16.80384	96.14037	1.7	7.9	2.66	0.93	0	0.4	9.54	92.1	89.42	82.53	0.89	0.29
toa012	20191215	1.58E+12	2	139674	787580	16.80384	96.14037	16.80384	96.14037	6.2	7.57	5.06	2.2	0	0.61	0.4	77.2	80.00	84.70	0.85	0.44

BumpRecorderによる道路調査について

- ① スマートフォン¹つで簡易に路面性状の調査が可能
- ② 車両での走行(移動)の際に併せて調査が出来る。
- ③ 簡易にポイントをピックアップ(数値化・視覚化)できる。
舗装打ち替えor表層のみの暫定的な予算確保のための
フィルタリングツールとして有効
- ④ 誰でも簡単にデータを収集・アップロードできるため、
測定者による精度、ばらつきには注意が必要。
自グループ内でデータ取得方法を周知し、管理すべき。
- ⑤ カメラやAIとリンクすれば、より詳細な調査が可能
- ⑥ 道路舗装の仕上りの出来形管理にも適用可能
- ⑦ GPS衛星を5つ以上補足する必要があるため、トンネルや
山間地域など、GPS信号がない場合にはデータ取得が不可能



Thank you for your Attention

お問合せ

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