



(51) International Patent Classification:

G08G 1/01 (2006.01) G08G 1/0968 (2006.01)
G08G 1/04 (2006.01)

(21) International Application Number:

PCT/IB2012/001768

(22) International Filing Date:

18 July 2012 (18.07.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/509,439 19 July 2011 (19.07.2011) US

(71) Applicant (for all designated States except US): **KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY** [SA/SA]; 4700 King Abdullah University Of Science And, Technology, Thuwal, 23955-6900 (SA).

(72) Inventor; and

(71) Applicant (for all designated States except US): **CLAUDEL, Christian** [FR/SA]; Office 3219, Building 4,

King Abdullah University For Science And, Technology, Thuwal, 23955-6900 (SA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: APPARATUS, SYSTEM AND METHOD FOR MONITORING TRAFFIC AND ROADWAY WATER CONDITIONS

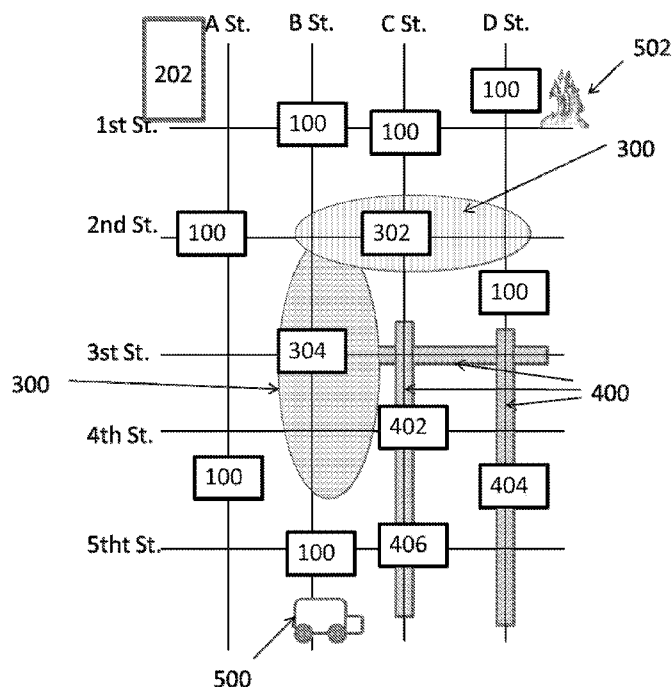


FIG. 5

(57) Abstract: An apparatus, system, and method for monitoring traffic and roadway water conditions. Traffic flow and roadway flooding is monitored concurrently through a wireless sensor network. The apparatus and system comprises ultrasound rangefinders monitoring traffic flow, flood water conditions, or both. Routing information may be calculated from the traffic conditions, such that routes are calculated to avoid roadways that are impassable or are slow due to traffic conditions.

**Published:****(88) Date of publication of the international search report:**

28 March 2013

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/001768

A. CLASSIFICATION OF SUBJECT MATTER
INV. G08G1/04 G08G1/0968 G08G1/01
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010/106415 A1 (PIERZ STEPHEN J [US] ET AL) 29 April 2010 (2010-04-29) Paragraphs [0010], [0011], [0013], [0016], [0023] -----	1-36
A	US 5 416 711 A (GRAN RICHARD [US] ET AL) 16 May 1995 (1995-05-16) column 1, line 7 - line 18 column 4, line 29 - line 52 column 9, line 13 - line 22 -----	1,3,4, 11,13, 14,18, 19,23,32
A	US 3 396 366 A (MIDLOCK BERNARD J ET AL) 6 August 1968 (1968-08-06) claim 8 ----- -/-	1,11,12, 23,25,32



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 January 2013

Date of mailing of the international search report

25/01/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Bourdier, Renaud

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/001768

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 341 368 A1 (VALEO SCHALTER & SENSOREN GMBH [DE]) 6 July 2011 (2011-07-06) abstract -----	1-4, 11, 12, 18, 20, 23, 25, 30, 32

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/001768

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010106415	A1	29-04-2010	NONE
US 5416711	A	16-05-1995	NONE
US 3396366	A	06-08-1968	GB 1134244 A 20-11-1968 US 3396366 A 06-08-1968
EP 2341368	A1	06-07-2011	DE 102009060190 A1 30-06-2011 EP 2341368 A1 06-07-2011