

Agnieszka Bieda: **River Bank Boundary Determination** •
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Water is an element of very hard to control. Being in still movement, permanently alternates its environment. Mostly, it annexes neighbourhood lands in order to give back other ones, which were of its "possession", so far. It happens, that it exceeds cadastral boundaries.

In case of change of river course, or undermining banks by lake or sea waters and also drifting sediments and creating little islands, beaches and sand-bars, it is possible to determine these changes and, if it necessary to regulate legal status of lands situated close to the river. These operations are called "river bank boundary determination". It is delimitation between lands covered by waters and adjacent lands. It is performed by professional surveyor on the basis of delimitation project and accepted by suitable public authorities administration. It needs knowledge of surveying and mapping law regulation, hydrology and hydrography. It also demands high scrupulosity from surveyor. It is performed on the basis of application of parties, having legal interest.

Keywords: surveying documentation, grounds and buildings register (cadastre), river bank boundary, river course, water cadastre

Małgorzata Buśko, Robert Krzyżek: **Proposal for the Technology of Surveying Works Related to the Study of Deformation and Displacement of Fresh Steam Pipeline to a Boiler** •
Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The present paper describes the process of determining deformation and displacement of fresh steam pipeline to a boiler. Subject of the measurements was the pipeline located on several stores. Therefore, particular attention was drawn to determining the location of the test points of the pipeline and difficulties involved proper selection of the reference system and height system.

Keywords: displacement, deformation, test point, pipeline measurement

Roman Bykov, Teresa Eckes, Maria Trafas: **Quality Assessment of Reclaimed Disposal Areas of Strip Mines, by Example of Piaseczno Mine Dump** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The present paper aims to perform a detailed analysis of all available results of physical and chemical testing of recultivated land, in order to determine which of them significantly influence their quality, and should thereby form the basic criteria for the evaluation and for the development of the methods of management of lands subject to recultivation. The samples of soil from Piaseczno dump area were tested. The test results have allowed to state that the method proposed by Gruszczyński, based on the physical properties of soil, with special respect to the water and air properties and sorption abilities, allows to properly evaluate the quality of such soil. The method allows also to take account of changes in soil quality, occurring as a result of the soil-creation process initiated by the recultivation.

Keywords: recultivation, dumps, soil quality, physical soil quality

Janusz Dąbrowski, Tomasz Adamczyk: **Application of GAM Additive Non-Linear Models to Estimate Real Estate Market Value** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The research on the environment of real estate market conducted by the author confirmed the high reliability of nonparametric statistical models to analyze the GAM real estate market. The basic tool in the construction of the model is the cubic concatenated curve. The applicability of the Statistica package makes it much easier to use the GAM models to analyze real estate market. Given the large effort and a large number of calculations, GAM models without statistical programs were previously completely unused. Making reference to the methods and statistical analysis allow a fuller and deeper analysis of the real estate market environment. Very interesting results are provided by confidence interval of concatenated curve, it allows to determine the boundary conditions for a specific parameter, which in turn, allows the formulation of relevant applications without employing additional complex calculations.

Keywords: additive non-linear models, GAM, analysis of the real estate market environment

Adam Łyszczkowicz: **Refined Astrogravimetric Geoid in Poland – Part II** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

Deflections of the vertical were traditionally used for modelling geoid on local and regional scale. First astrogeodetic geoid model for

Poland was developed in 1961 while the last was calculated in 2005 in the framework of the project on precise geoid modelling. That model was developed using the improved deflections of the vertical, both astronomic and gravimetric. There are several effects, that were not fully considered, and problems that were not completely solved. They concern quality of archival astrogravimetric data, problem of weighting, the effects of plumb line curvature and elimination of outlying observations. In addition, all those geoid models were determined with the use of simplified astronomical levelling approach.

The aim of this study was to improve the astrogravimetric geoid model in Poland by improving the procedure of astrogravimetric geoid modelling and by using improved data. In the part I of this paper ("Geomatics and Environmental Engineering", Vol. 4, No. 1) theoretical background of astronomic levelling and least squares collocation methods are given. Then the accuracy of the components of the deflections of the vertical was estimated and the weights of astrogeodetic and astrogravimetric deflections of the vertical were determined. After that in the part II the astrogeodetic and astrogravimetric geoid models were determined from improved deflections of the vertical with the use of astronomical levelling. Other astrogeodetic and astrogravimetric geoid models were determined by least squares collocation with additional use of gravity anomalies. All four computed models were compared with the GPS/levelling geoid of the satellite POLREF network. The results obtained indicate that both astrogeodetic and astrogravimetric geoid models determined from the same input data using least squares collocation approach is by factor 5 to 7 more accurate than the ones obtained using classical astronomical levelling.

Keywords: geoid modelling, deflection of the vertical, gravity anomaly, astronomical levelling, least squares collocation

Marta Markiewicz, Izabela Michałkiewicz, Michał Strach: **Analysis and Comparison of Software Supporting Roads Projecting and Designing in Land Surveying** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The article contains the most important information concerning selected applications used in road designing and geodetic preparation of road project. Chosen applications include *Bentley InRoads*, *WinKalk*, *Drogownictwo 2000* and *C-Geo*. Each of them was used to prepare road project with identical parameters and conditions. It enabled to become thoroughly acquainted with these applications. As a consequence, numerous observations and remarks were achieved in the area of the most crucial task carried out in the everyday work of road designer and land surveyor in road designing and building.

Keywords: roads designing, geodetic preparing of road project, *Bentley InRoads*, *WinKalk*, *Drogownictwo 2000*, *C-Geo*

Grzegorz Mirek, Grzegorz Lenda, Rafał Kocierz: **Hallotron Sensor System for Control of Robotized Total Station Operations to Monitor Movements of Building Structures** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The paper presents a measuring system designed to monitor displacements and deformation of engineering structures. The main concept of the system is a control of ATR type robotized total station operation by specially designed sensors operating on the base of Hall effect and denoting the displacements occurring within the tested object in real time. This allows to quickly detect existing deformations and taking appropriate countermeasures, what is particularly important, e.g. at structure test loading. A specific electronic module of hallotron sensors was designed and built to be utilized within the system. A suitable system control software was also prepared, in order to facilitate the communication of sensors with a computer.

Keywords: Hall effect sensor, displacement sensor, robotized total station, measuring system

Natalia Poczta: **The Cost Approach for the Valuation of Grounds in Ukraine** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

The article presents the cost methods of valuation of grounds in Ukraine. The main Ukrainian legal acts were discussed, referring to the valuation of grounds. The methods of the qualification of the value of reproducing or the value of replacement and also methods of the qualification of the size of the damage are presented, regarding the object value.

Keywords: valuation of grounds in Ukraine, cost methods of valuation

Anna Trembecka, Anita Kwartnik-Pruc: **Acquiring Real Estate for the Construction of Public Roads in 1991–2006** • Geomatics and Environmental Engineering 2010, Vol. 4, No. 2

One of the basic stages of the investment process in public roads is acquiring of the land. This issue in practice causes numerous geodetic and legal problems and prolongs the investment. Due to the necessity of the acceleration of the development of road infrastructure, new legal regulations were introduced, including acquiring the land for the road construction. The article presents the ways of acquiring the grounds for road investments starting from 1st January 1991 till 15th December 2006, regarding legislation changes in the presented period.

Keywords: public roads, road construction, acquiring the grounds