



## Giving advise on public surveys under the Survey Act as the competent governmental authority

Public works such as road construction and river improvement for disaster prevention are conducted in many places around us. Planning and designing such public works must always be based on land surveys conducted for developing maps and determining the reference of positions.

GSI, the competent governmental authority under the Survey Act enacted for ensuring accurate and efficient surveys, offers advice on survey operations and examines survey results so that surveys can steadily be conducted in the country.

### Improving productivity by introducing new technologies – Use of unmanned aerial vehicle

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is promoting a program called “i-Construction” which aims to enhance the appeal of work at construction sites with improved productivity by introducing Information and Communication Technology (ICT) and other tools. As drawing a land with a 3D models helps to precisely grasp its topographic features, the application of 3D models is increasing. Furthermore, the latest survey technologies including UAV are expected to more widely be applied in various processes of construction.

In this context, GSI has developed a tentative manual “Public Survey Manual” describing how to create 3D point cloud data (base data for 3D modeling) from graphic data acquired by a digital camera on board an UAV and a laser scanner. This manual can be read at its website. The manual is widely consulted in survey operations because 3D models can efficiently be developed at low costs and with a certain level of quality.

In addition, GSI personnel are constantly striving to improve their skills in and accumulate know-how on operating UAV to appropriately update the Manual and properly respond to inquiries about technologies.



Photography with UAV and 3D modeling

## Efforts in public surveys

### Preparation of Rules for Operating Specifications and Survey Manual

Surveys are classified into a basic survey conducted by GSI and a public survey conducted by the national and local governments.

A document “Operating Specifications” stipulating type of survey machinery, surveying and calculating methods and mapping methods must be prepared when national or local governments conduct a public survey (Article 33, the Survey Act). GSI has established “Rules for Surveying Specifications” describing the standard operating methods and other subjects as an example of Surveying Specifications (Article 34, the Survey Act) and has also prepared manuals for surveys using new technologies involving vehicle-mounted, UAV-mounted and terrestrial laser scanners to catch up with new technologies. GSI has released these manuals on its website. The “Rules for Operating Specifications” is updated by incorporating the survey methods described in the manual for new technologies on a timely basis.



Explanatory meeting

### Technical advice and review of survey results

GSI gives technical advice on public surveys and examines their results. When the national and local governments submit a plan for conducting a survey, GSI examines the contents in terms of adaptability of the selected method to the plan’s purposes, accuracy and possibility of duplication with past surveys. GSI then provides technical advice (Article 36, the Survey Act). Once a public survey is completed, GSI examines the results documents submitted by the national and local governments (Article 41, the Survey Act). Public survey results considered as fully accurate in this examination are widely used, for example, to develop maps for daily use.



Technical advice given on public surveys

## Japan Profile for Geographic Information Standards (JPGIS)

Geospatial information standards include international standards (ISO standards) and Japanese Industrial Standards (JIS).

These standards include many rules that are not generally used in public surveys. Therefore, GSI has compiled minimum sets of necessary rules for public surveys as “the Japan Profile for Geographic Information Standards (JPGIS)” and keeps them updated. By following JPGIS, public survey results are consequently compliant with the latest international standards.



## Examination and registration of surveyors and assistant surveyors

A “surveyor” and an “assistant surveyor” are the national certification titles required for engaging in a basic survey or a public survey. A surveyor draws up survey plans and conducts survey operations while an assistant surveyor is in charge of survey operations in accordance with the plan drawn up by a surveyor (Article 48, the Survey Act).

GSI conducts examinations and registration of surveyors and assistant surveyors.

### Eligibility Requirements (Articles 50 and 51, the Survey Act)

Surveyor	Academic background and work experience	<ul style="list-style-type: none"> <li>- To acquire credits for subjects concerning the survey at a university, junior college or national institute of technology, to graduate from the above-mentioned school and to have the prescribed practical experience;</li> <li>- To obtain professional knowledge and skills at a survey technical training school and to have prescribed practical experience in surveying;</li> <li>- To be an assistant surveyor who has acquired advanced knowledge and skills in surveying at a survey technical training school; or</li> </ul>
	Examination	- To pass the surveyor examination held by GSI
Assistant Surveyor	Academic background	<ul style="list-style-type: none"> <li>- To acquire credits for the subjects concerning the survey at a university, junior college or national institute of technology and to graduate from the above-mentioned school;</li> <li>- To obtain professional knowledge and skills at a survey technical training school; or</li> </ul>
	Examination	- To pass the assistant surveyor examination held by GSI