

THE GERMAN STLB-BAU SPECIFICATION SYSTEM

Among the German specification systems the STLB-Bau (*Standardleistungsbuch für das Bauwesen*), the library of specification texts for standard construction works, is the only one which enables the user to dynamically build up a single specification text out of a non-restricted number of text fragments. The library texts are compiled by working groups within the GAEB (*Gemeinsamer Ausschuss Elektronik im Bauwesen*), the joint committee for information technology in building & construction, produced by the software company Dr. Schiller und Partner GmbH and published by DIN, the German Institute for Standardization.

As the STLB-Bau is the library of specification texts for new and re-development, the STLB-BauZ, compiled by different working groups within the GAEB and also published by the DIN, provides texts for repeating works under a fixed-term contract. In the following this treatise will purely concentrate on the STLB-Bau

The GAEB, founded in 1966, is now one of the three steering committees of the “German Committee for construction contract procedures” under the umbrella of the German Federal Ministry of Transport, Building and Housing. Among its members are building departments of the federal government, central organizations of the building and construction technology industries, public building authorities, central municipal organizations, associations of architects and engineers and professional associations. They support the work of GAEB by sending honorary members to its approximately 100 working groups. The DIN, also a member of GAEB, gives secretarial and some administrative support.

The texts of the STLB-Bau and the STLB-BauZ are based on the ‘German construction contract procedures’ (*Vergabe- und Vertragsordnung für Bauleistungen - VOB*) which all construction contracts of the public authorities must, by law, be based upon. Not only does the VOB specify the awarding of construction contracts but also contains general technical specifications in 60 different trades (VOB edition 2005). These, amongst other things, identify which tasks have to be specified, which tasks are to be seen as included without being mentioned (special and associated tasks) or how the accounts in the different trades should be settled.

The accomplishment of the construction work is object of a contract based on the VOB. Taking additionally into account that according to the VOB the construction work also covers the supply of the relevant materials, the specification texts of the STLB-Bau only have to contain the description of construction components to describe an item of work sufficiently.

STRUCTURING AND CLASSIFICATION OF THE GERMAN STLB-BAU SPECIFICATION SYSTEM

The STLB-Bau library has a tree structure with four hierarchical levels:

1st level: trades (*Leistungsbereiche - LB*)

2nd level: groups of (similar) work items (*Teilleistungsgruppen - TLG*)

3rd level: criteria of a work item (*Beschreibungsmerkmale - BSM*)

4th level: properties of a criterion (*Ausprägungen - APR*)

By working through the criteria of an item of work (BSM - 3rd level) and choosing respectively one of their text-forming properties (APR - 4th level), the user of the STLB-Bau system composes the specification text for one item of work.

While there are 76 trades (2005-04 – see also <http://www.gaeb.de/download/Stlbbumf.pdf> [German]) within the STLB-Bau, there are (theoretically) no restrictions to the number of TLG (2nd level) within one trade, the number of BSM within one TLG, nor accordingly to the number of APR within one BSM.

To prevent data redundancy within the STLB-Bau library, the BSM are placed into a global pool, from where they can be linked to several TLG .

The STLB-Bau provides the tendering, awarding and invoicing software via an interface not only with the specification texts but also with a communication tool for altering the specification texts in retrospect: an unique alphanumeric key for each text for an item of work. It consists of the following: Version date of the STLB-Bau, LB-ID, TLG-ID and any number of combinations of BSM-ID and APR-ID. While the three-digit number of the LB ranges from 000 to 099, the TLG, BSM are identified by automatically generated growing numbers.

Example of a preliminary English version:

item of work: cast-in-situ concrete of the external walls, thickness 25 cm, as reinforced concrete, normal-weight concrete C 20/25 DIN EN 206-1, DIN 1045-2

Version date:	STLB-BauEn 12/2004		
trade number:	013		
group of items of work	104		
BSM-ID	APR-ID	BSM	APR (text fragment)
2136	1	billing unit	m2
3170	10	technology concrete works	cast-in-situ concrete
2795	10	construction component, wall/rising	external wall
39	27	thickness [cm] wall	25
2205	5	number sloped side surfaces	not specified
2206	10	design upper concrete surface	not specified
2826	20	concrete classification by reinforcement	reinforced concrete
5879	1	concrete classification by bulk density/use	normal-weight concrete
15702	6	strength class concrete DIN EN 206-1, DIN 1045-2	C 20/25
16262	2	standards regarding concrete	DIN EN 206-1, DIN 1045-2
17470	1	exposure class corrosion caused by carbonation	not specified
2204	8	special quality concrete	not specified
10164	1	final planning documents	not specified

While the German national construction authorities are bound by decree to use the STL-Bau for their calls for tender, there are also private architects and engineers among the users of the 15,000 copies (2004).

The main advantages of the STL-Bau texts for all user groups:

- compliance with the general technical specifications of the VOB
- up-to-date references of national and international standards

Additional reasons for public authorities:

- neutral and non-proprietary texts
- the non-profit and non-partial GAEB-organisation with its honorary members.

As the STL-Bau is 'only' the library of specification texts for standard construction works, there is still a need for an external software to complete e.g. BoQ documents.

The STL-Bau-specifications are composed of a number of text fragments. Within the tree structure of the STL-Bau-library these text fragments are the properties (4th level) of a set of criteria (3rd level) which describe work items (2nd level). There are different ways of generating the texts:

1. by working down the tree structure beginning at the table of the 76 trades (1st level)
2. by typing in keywords (or synonyms) which lead the user directly to the required text fragment, selecting it and thus starting the compilation
3. by looking up and selecting the keywords (or synonyms) from a complete list and thus starting the process (as a new feature in the version 10-2005)
4. by typing in numbers of standards (DIN, CEN and ISO) which lead the user directly to the reference to the required standard, selecting the appropriate text fragment and thus starting the compilation.

Working through the set of criteria for a work item, i.e. selecting one property of each criterion can be done in different modes:

- a) by being forwarded in the given order
- b) by selecting the criteria from the overview one by one

At any point in the process there is the option of letting the system suggest a complete text, which can be revised at will. Programmed rules make sure that only coherent combinations of properties are possible.

After completion, the texts can either be transferred directly to the external software or be collected in a list beforehand. The unique alphanumeric key of each work item is transferred with the texts. As the texts are outside the STL-Bau-system at that moment, they can be altered. But if this is done, this key will be lost and it will no longer be identifiable as original STL-Bau text, something which is of importance for the public authorities. (Since Version 2005-04 an additional application is now included on the STL-Bau CD-ROM. This application can verify whether specifications received electronically in the GAEB data exchange format have been compiled with the STL-Bau or not)

MAINTENANCE OF THE GERMAN STL-BAU SPECIFICATION SYSTEM

Within the organisation of the GAEB, there are for each of the STL-Bau trades 76 working groups who compile the texts of the STL-Bau. Their membership is honorary and open to all interested experts. GAEB offers all supporting company/authorities the opportunity of being listed on its homepage. As there are system-updates in April and October each year, the working groups meet on average once or twice a year (more often if required). Their tasks are:

- maintaining the texts, i.e. keep them on a level with the current state of (construction) technology
- setting the rules which ensure that only coherent combinations of properties are possible
- defining the standard choice of properties for the automated compilation
- defining the keywords (and their synonyms) for the search function of the STL-Bau and
- keeping the references of national and international standards up-to-date.

Before releasing the texts to be published, the working groups can check the implementation with a none public online version of the STL-Bau, which is updated once a month.

The DIN, the German institute for standardization, gives support by providing:

- secretaries for each working group
- the link between the working groups and the software company of the STL-Bau system
- the information about national and international standards
- an internet-based cooperation and knowledge management tool (*Livelink*).

PROPRIETARY REFERENCE IN THE GERMAN STL-B SPECIFICATION SYSTEM

The STL-Bau does not include proprietary references, but details of manufacturers and trade names can be added to work items in project specifications without losing the unique identification key of the work item.

GUIDANCE FOR USERS OF THE GERMAN STL-B SPECIFICATION SYSTEM

Even though there is no printed manual for the system, guidance is still available for STL-Bau users:

- The quick-start document on how to get started
- the *help* button with the explanation of all the icons and the functions of the STL-Bau.

The *help* button and the quick-start document can be found in the toolbar of the STL-Bau. The latter can additionally be selected in the STL-Bau block within the programs list of the MS Windows® Start menu.

While compiling the text, the user can ask for guidance by having the system complete the text automatically while all the thus proposed properties stay revisable. Using the same function, the system automatically suggests a completed text if the user starts by typing in keywords or numbers of standards (as a new feature in the version 10-2005)

For questions or comments there is an email button within the toolbar for contacting the DIN. Emails are answered or forwarded to the working groups. Additional information can be found on the GAEB website (<http://www.gaeB.de>), e.g. on the FAQ page.

THE USE OF COMPUTERS WITH THE GERMAN STL-B SPECIFICATION SYSTEM

Since its introduction in 1996 the STL-Bau has been purely computer-based. While most copies are sold on CD-ROM, there is also an online version (<http://www.din-bauportal.de>). Offline, the program only runs under MS Windows®. Users of Linux or MacOS are therefore restricted to the online version. The online version has been exclusively XML-based ever since its introduction (10-2003), but the offline version has only been exclusively XML-based since production of the DLL-based version was discontinued (04-2005).

As the STL-Bau is the library of specification texts for standard construction works it is only one link in a chain of software applications for the construction business. 34 software vendors in Germany have a STL-Bau interface for their tendering, awarding and invoicing software which is certified by the German Federal Association of Construction Software Producers which is also a member of the GAEB.

Ongoing developments such as the linking of the STL-Bau texts with the Industry Foundation Classes of the International Association of Interoperability or the development of a construction product classification at the DIN, the German Institute for Standardization, will strengthen and extend the chain of applications.

The GAEB has been developing its own data format for exchanging the bill of quantities and information about construction contracts since 1985. Since the EDI messages were never successfully introduced in the building sector in Germany, the GAEB format has become the standard for data exchange. It has been developed further and rewritten using XML. Since 2004 there is a stable version available (GAEB DA XML 3.0) and software vendors have been certified for the incorporation of the GAEB interface.

LINKS BETWEEN THE GERMAN STL-B SPECIFICATION SYSTEM AND OTHER DOCUMENTS

Within the XML version of the STL-Bau additional information such as simple text, drawings in png-format, pdf-documents, or hyperlinks to sites on the internet can be added to each level of the tree structure (see also Structuring and classification of the German STL-Bau specification system). The software which uses the STL-Bau as text library can also receive these add-ons via the STL-Bau interface.

SCALE OF USE OF THE GERMAN STL-B SPECIFICATION SYSTEM

There are about 15000 copies in use in Germany.

LEGAL AND CONTRACTUAL BACKGROUND IN GERMANY

The legal situation in Germany is determined by several legal codes. Competencies in planning and building legislation are equally distributed between the state, the federal states (*Länder*) and local authorities.

The Federal Comprehensive Regional Planning Act (*Bundesraumordnungsgesetz*, BROG) sets out the general principles for area development in Germany. It provides federal framework regulations for comprehensive development planning at the *Länder* level. As a legal framework, it is restricted to the principles of regional planning. The individual *Länder* also have their own land development plans (*Landesplanungsgesetze*). The local authorities are responsible for the implementation of the planning.

Building permits are obligatory for the construction, alteration, change in use, demolition or removal of any building. They cover planning and land use as well as public safety, welfare and environmental protection.

Building permits are issued by the local authority.

The essential constituents of the construction contract are:

- The provisions under public law, e.g. the German Civil Code, the Federal Building Act, and the Building Regulations of the *Länder*
- The German construction contract procedures, VOB (*Vergabe- und Vertragsordnung für Bauleistungen*)
- The conditions concerning contracts for supplies and services, VOL (*Verdingungsordnung für Leistungen*)
- The relevant technical codes, e.g. the DIN Standards
- The general and supplementary contract conditions of the client

Embedded in this framework is the most important part of the construction contract, the BoQ.

Of great importance for construction projects is the secondary building legislation in the areas of energy conservation, water rights, emission control and nature conservation, and of labour protection. In addition, there are a great number of regulations covering specific areas, e.g. construction suitable for the disabled.