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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 10303-325 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4, *Industrial data*.

ISO 10303 is organized as a series of parts, each published separately. The structure of ISO 10303 is described in ISO 10303-1.

A complete list of parts of ISO 10303 is available from the Internet: <http://www.tc184-sc4.org/titles>

## Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303-1. This part of ISO 10303 is a member of the abstract test suite series.

The purpose of an abstract test suite is to provide a basis for evaluating whether a particular implementation of an application protocol actually conforms to the requirements of that application protocol. A standard abstract test suite helps ensure that evaluations of conformance are conducted in a consistent manner by different test laboratories.

This part of ISO 10303 specifies the abstract test suite for ISO 10303-225, Application protocol: Building elements using explicit shape representation. The abstract test cases presented here are the basis for conformance testing of implementations of ISO 10303-225.

This abstract test suite is made up of two major parts:

- the test purposes, the specific items to be covered by conformance testing,
- the set of abstract test cases that meet those test purposes.

The test purposes are statements of the application protocol requirements that are to be addressed by the abstract test cases. Test purposes are derived primarily from the application protocol's application elements and application interpreted model, as well as from other sources such as standards referenced by the application protocol and requirements stated in the application protocol conformance requirements clause.

The abstract test cases address the test purposes by:

- specifying the requirements for input data to be used when testing an implementation of the application protocol;
- specifying the verdict criteria to be used when evaluating whether the implementation successfully converted the input data to a different form.

The abstract test cases set the requirements for the executable test cases that are required to actually conduct a conformance test. Executable test cases contain the scripts, detailed values, and other explicit information required to conduct a conformance test on a specific implementation of the application protocol.

At the time of publication of this document, conformance testing requirements had been established for implementations of application protocols in combination with ISO 10303-21 and ISO 10303-22.

Accordingly, this part of ISO 10303 only specifies test purposes and abstract test cases appropriate to such implementations.

For ISO 10303-21, two kinds of implementations, preprocessors and postprocessors, must be tested. Both these are addressed in this abstract test suite.

For ISO 10303-22, a class of applications will possess the capability to upload and download application protocol-compliant standard data access interface-models and/or schema instances to and from applications that implement the standard data access interface. This abstract test suite addresses such applications.

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# Industrial automation systems and integration — Product data representation and exchange —

## Part 325:

### Abstract test suite: Building elements using explicit shape representation

## 1 Scope

This part of ISO 10303 specifies the abstract test suite to be used in the conformance testing of implementations of ISO 10303-225. The following are within the scope of this part of ISO 10303:

- the specification of the test purposes associated with ISO 10303-225;
- the verdict criteria to be applied during conformance testing of an implementation of ISO 10303-225 using ISO 10303-21 or ISO 10303-22;

NOTE The verdict criteria are used to ascertain whether a test purpose has been satisfactorily met by an implementation under test (IUT) within the context of a given test case.

- the abstract test cases to be used as the basis for the executable test cases for conformance testing.

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The following are outside the scope of this part of ISO 10303-2004

- the creation of executable test cases;
- test specifications for tests other than conformance testing such as interoperability or acceptance testing;
- other implementation methods.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 8824-1:1998, *Information Technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO 10303-1:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles*

ISO 10303-11:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual*

ISO/TR 10303-12:1997, *Industrial automation systems and integration — Product data representation and exchange — Part 12: Description methods: The EXPRESS-I language reference manual*

ISO 10303-21:2002, *Industrial automation systems and integration — Product data representation and exchange — Part 21: Implementation methods: Clear text encoding of the exchange structure*

ISO 10303-22:1998, *Industrial automation systems and integration — Product data representation and exchange — Part 22: Implementation methods: Standard data access interface*

ISO 10303-31:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 31: Conformance testing methodology and framework: General concepts*

ISO 10303-32:1998, *Industrial automation systems and integration — Product data representation and exchange — Part 32: Conformance testing methodology and framework: Requirements on testing laboratories and clients*

ISO 10303-225:1999, *Industrial automation systems and integration — Product data representation and exchange — Part 225: Application protocol: Building elements using explicit shape representation*

### 3 Terms, definitions and abbreviations

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#### 3.1 Terms defined in ISO 10303-1

ISO/TS 10303-325:2004

For the purposes of this document, the following terms defined in ISO 10303-1 apply.

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- abstract test suite;
- application protocol (AP);
- implementation method;

#### 3.2 Terms defined in ISO 10303-31

For the purposes of this document, the following terms defined in ISO 10303-31 apply.

- abstract test case;
- conformance testing
- executable test case;
- test purpose;
- verdict criterion.

### 3.3 Abbreviations

For the purposes of this document, the following abbreviations apply.

AE Application element

IUT Implementation Under Test

## 4 Test purposes

### 4.1 Application element test purposes

Application element test purposes are derived from the application objects (4.2 of ISO 10303-225) and the application assertions (4.3 of ISO 10303-225). The test purposes are collected as test purpose groups; the test purpose groups are structured by the application objects.

#### 4.1.1 Advanced\_b\_rep

ae012 Advanced\_b\_rep with b\_spline\_surface (see 6.12)

ae013 Advanced\_b\_rep is element of one Component\_shape\_representation (see 6.12)

#### 4.1.2 Advanced\_curve

ae022 Advanced\_curve with b\_spline\_curve type (see 6.24)

ae023 Advanced\_curve is element of one Component\_shape\_representation (see 6.24)

#### 4.1.3 Advanced\_face\_with\_thickness

ae032 Advanced\_face\_with\_thickness with underlying surface as b\_spline\_surface and boundaries as b\_spline\_curve (see 6.15)

ae033 Advanced\_face\_with\_thickness is element of one Component\_shape\_representation object (see 6.15)

#### 4.1.4 Advanced\_shell

ae042 Advanced\_shell defines the space shape of one Space (see 6.27)

#### 4.1.5 Approval

ae052 Approval with approver (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.25, 6.26, 6.27, 6.28)

ae053 Approval with date (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.25, 6.26, 6.27, 6.28)

ae054 Approval with purpose (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.25, 6.26, 6.27, 6.28)

ae055 Approval with status (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.25, 6.26, 6.27, 6.28)

ae057 Approval providing approval for one Building\_element\_component (see 6.13, 6.14, 6.15, 6.16, 6.17)

ae058 Approval providing approval for many Building\_element\_component (see 6.18)

ae0510 Approval providing approval for one Building\_item (see 6.18, 6.19, 6.25, 6.26, 6.27)

ae0511 Approval providing approval for many Building\_item (see 6.20, 6.28)

- ae0513 Approval providing authorization for one Change\_request (see 6.13, 6.14, 6.15, 6.17, 6.25, 6.26, 6.27)
- ae0514 Approval providing authorization for many Change\_request (see 6.20, 6.28)
- ae0516 Approval provides approval for one Item\_assembly (see 6.18, 6.25, 6.26, 6.27)
- ae0517 Approval provides approval for many Item\_assembly (see 6.19)

#### 4.1.6 Block

- ae062 Block is element of one Component\_shape\_representation (see 6.2)

#### 4.1.7 Building

- ae072 Building with address present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.20)
- ae073 Building with address not present (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae074 Building with description (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae075 Building with name (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae076 Building with owner (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae077 Building with status (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae078 Building is the positioned building in one Building\_position\_in\_complex (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae0710 Building contains one Section\_position\_in\_building (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae0711 Building contains many Section\_position\_in\_building (see 6.20, 6.28)

#### 4.1.8 Building\_complex

- ae082 Building\_complex with description (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30)
- ae083 Building\_complex with global\_position (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.25, 6.26, 6.27)
- ae084 Building\_complex with name (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30)
- ae085 Building\_complex with owner (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30)
- ae088 Building\_complex with surrounding\_grounds\_shape defined by zero Site\_shape\_representation (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae089 Building\_complex with surrounding\_grounds\_shape defined by one Site\_shape\_representation (see 6.29, 6.30)
- ae0810 Building\_complex with global\_position specified by zero Gis\_position (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.22, 6.23, 6.24, 6.28, 6.29, 6.30)
- ae0811 Building\_complex with global\_position specified by one Gis\_position (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.25, 6.26, 6.27)

- ae0812 Building\_complex contains zero Building\_position\_in\_complex (see 6.29, 6.30)
- ae0813 Building\_complex contains one Building\_position\_in\_complex (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae0814 Building\_complex contains many Building\_position\_in\_complex (see 6.28)

#### 4.1.9 Building\_document\_reference

- ae092 Building\_document\_reference with document\_type (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae093 Building\_document\_reference with identifier (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae094 Building\_document\_reference with item\_in\_document (see 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae096 Building\_document\_reference provides information for one Building\_item (see 6.13, 6.14, 6.15, 6.16, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae098 Building\_document\_reference provides information for one Building\_element\_component (see 6.17)

#### 4.1.10 Building\_element

- ae102 Building\_element with additions\_and\_subtractions (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18)
- ae103 Building\_element with additions\_and\_subtractions not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae105 Building\_element as Structure\_enclosure\_element (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae106 Building\_element as Service\_element (see 6.21)
- ae107 Building\_element as Fixture\_equipment\_element (see 6.9, 6.13, 6.14, 6.15, 6.19)
- ae109 Building\_element contains many Building\_element\_component (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17)
- ae1010 Building\_element has a main\_component shape defined by one Positive\_component (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)

#### 4.1.11 Building\_element\_component

- ae112 Building\_element\_component with approval\_information present (see 6.16, 6.17, 6.18)
- ae113 Building\_element\_component with approval\_information not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1118 Building\_element\_component with many approval\_information present
- ae114 Building\_element\_component with component\_characterization present (see 6.9, 6.10, 6.11, 6.12)
- ae115 Building\_element\_component with component\_characterization not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.22, 6.23, 6.24)
- ae1119 Building\_element\_component with many component\_characterization present (see 6.21)
- ae116 Building\_element\_component with component\_class present (see 6.10, 6.11, 6.12, 6.18)
- ae117 Building\_element\_component with component\_class not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1120 Building\_element\_component with many component\_class present

- ae118 Building\_element\_component with description (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae119 Building\_element\_component with document\_reference (see 6.10, 6.11, 6.12, 6.16, 6.17, 6.21)
- ae1110 Building\_element\_component with document\_reference not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1111 Building\_element\_component with identifier (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1112 Building\_element\_component with position (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1113 Building\_element\_component with shape (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1114 Building\_element\_component as Positive\_component (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae1115 Building\_element\_component as Negative\_component (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.18)
- ae1116 Building\_element\_component defining an addition to the shape of one Building\_element object (see 6.16, 6.17)
- ae1117 Building\_element\_component defining a subtraction from the shape of one Building\_element object (see 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15)

#### 4.1.12 Building\_item STANDARD PREVIEW

- ae122 Building\_item as Building\_element (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24)
- ae123 Building\_item as Space (see 6.25, 6.26, 6.27, 6.28)
- ae124 Building\_item with approval\_information (see 6.13, 6.14, 6.15, 6.18, 6.19, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae125 Building\_item with approval\_information not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.21, 6.22, 6.23, 6.24, 6.28)
- ae1217 Building\_item with many approval\_information present (see 6.25)
- ae126 Building\_item with description (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae127 Building\_item with document\_reference (see 6.13, 6.14, 6.15, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae128 Building\_item with document\_reference not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.14, 6.15, 6.17, 6.18, 6.21, 6.26, 6.28)
- ae129 Building\_item with identifier (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.27, 6.28)
- ae1210 Building\_item with item\_characterization (see 6.18, 6.19, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27)
- ae1211 Building\_item with item\_characterization not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.20, 6.28)
- ae1212 Building\_item with item\_class (see 6.19, 6.20, 6.25, 6.27, 6.28)
- ae1213 Building\_item with item\_class not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.21, 6.22, 6.23, 6.24, 6.26)
- ae1214 Building\_item with level\_assignment (see 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae1215 Building\_item with level\_assignment not present (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.18, 6.19, 6.21, 6.22, 6.23, 6.24, 6.28)
- ae1216 Building\_item with status (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.13, 6.14, 6.15, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)

### 4.1.13 Building\_item\_identification

- ae132 Building\_item\_identification with item\_identifier (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae133 Building\_item\_identification with administrator (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae134 Building\_item\_identification with project (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae136 Building\_item\_identification identifies one Building\_element\_component ((see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23)
- ae138 Building\_item\_identification identifies one Building\_item (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae1310 Building\_item\_identification identifies one Building\_level (see 6.16, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae1312 Building\_item\_identification identifies one Building\_section (see 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28)
- ae1314 Building\_item\_identification identifies Building\_item as unsatisfactory by one Change\_request objects (see 6.13, 6.14, 6.15, 6.25, 6.26, 6.27)
- ae1315 Building\_item\_identification identifies Building\_item as unsatisfactory by many Change\_request objects (see 6.20, 6.28)

### 4.1.14 Building\_level

ISO/TS 10303-325:2004

[https://standards.iteh.ai/catalog/standards/sist/24f9b37e-fc9f-4d73-a90e-](https://standards.iteh.ai/catalog/standards/sist/24f9b37e-fc9f-4d73-a90e-b4c3bb2ab697/iso-ts-10303-325-2004)

- ae142 Building\_level with identifier (see 6.16, 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae143 Building\_level with level\_characterization (see 6.17, 6.20, 6.25, 6.26, 6.27)
- ae144 Building\_level with level\_characterization not present (see 6.16, 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae145 Building\_level with level\_class (see 6.17, 6.20, 6.25, 6.27)
- ae146 Building\_level with level\_class not present (see 6.16, 6.17, 6.25, 6.26, 6.27, 6.28)
- ae147 Building\_level with name (see 6.16, 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae148 Building\_level with space\_shapes as Ground\_face (see 6.28)
- ae149 Building\_level with space\_shapes as Faceted\_shell (see 6.25)
- ae1410 Building\_level with space\_shapes as Elementary\_shell (see 6.26)
- ae1411 Building\_level with space\_shapes as Advanced\_shell (see 6.27)
- ae1412 Building\_level with space shapes not present (see 6.16, 6.17, 6.20)
- ae1413 Building\_level as Sublevel (see 6.16, 6.17, 6.25, 6.26, 6.27, 6.28)
- ae1414 Building\_level with Sublevels (see 6.16, 6.17, 6.25, 6.26, 6.27, 6.28)
- ae1415 Building\_level assigned zero Building\_item object (see 6.20, 6.28)
- ae1416 Building\_level assigned one Building\_item object (see 6.16, 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)
- ae1428 Building\_level is the positioned level in one Level\_position\_in\_section object (see 6.16, 6.17, 6.20, 6.25, 6.26, 6.27, 6.28)