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Change Request #:	65
Assigned OGC Document #:	10-048
Name:	*Claus Nagel
Organization:	*Special Interest Group 3D (SIG 3D)
Email:	*claus.nagel@tu-berlin.de
Document Name/Version:	*City Geography Markup Language (CityGML) Encoding Standard / 1.0.0
OGC Project Document:	*08-007r1

If this is a revision of a previous submission and you have a Change Request Number, then check here: ☐

Enter the CR number here:

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Title:	*Thematic module for man-made subsurface structures
Source:	*Special Interest Group 3D (SIG 3D)
Work item code:	
Category:	* B (Addition of feature)

Reason for change:	* Man-made subsurface structures such as tunnels, pedestrian subways, underground stations or subsurface buildings are essential urban objects which have to be adequately represented in virtual 3D city and landscape models. However, CityGML 1.0 does not provide a semantic model explicitly dedicated to man-made subsurface structures. The only possibility to model and exchange subsurface objects in CityGML 1.0 is to use a GenericCityObject as proxy. Alternatively, a corresponding ADE could be defined. Both approaches face disadvantages. First, GenericCityObjects are simple in structure and are hence not suitable to replace a semantically rich model for underground objects. Second, subsurface structures are not specific to just a single application domain. Several ADEs could emerge proposing different semantic models. What is required is a common and standardized thematic module on man-made subsurface structures in CityGML.
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	The Special Interest Group 3D (SIG 3D, initiator of CityGML) of the national Spatial Data Infrastructure of Germany (GDI.DE) has developed a comprehensive data model for subsurface structures. It comprises a rich semantic model for underground objects such as tunnels as well as their geometric representation in four different LODs. The model is based on the CityGML 1.0 Core module and is realized as CityGML ADE. By this means, compliance to the CityGML standard is ensured and existing concepts of CityGML (e.g., appearance modelling, grouping of objects, generic extensions) can be directly applied to the subsurface features.
Summary of change: ⓘ	* Extend the CityGML data model by a new thematic module for man-made subsurface structures. The thematic module should be based on the SubsurfaceStructureADE developed by the SIG 3D. This extension can be realized without breaking backwards compatibility.
Consequences if not approved: ⓘ	Although underground objects are essential features of 3D city and landscape models, there is no standardized way to model and exchange subsurface structures in CityGML. This considerably hinders semantic interoperability since either GenericCityObject proxies or several non-standardized ADEs will have to be used for modeling subsurface structures.
Clauses affected: ⓘ	* 7, 10
Additional Documents affected: ⓘ	
Supporting Documentation: ⓘ	The SubsurfaccStructureADE proposed by the SIG 3D has been published on the CityGML Wiki and can be accessed through this link: http://www.citygmlwiki.org/index.php/CityGML_Subsurface_Structure_ADE. The available documentation comprises the XML Schema definition, a UML diagram of the data model as well as example datasets.
Comments: ⓘ	
Status: ⓘ	Assigned
Disposition: ⓘ	Reffered