

Change ID: 5.1-07

Vertical structure material

Summary

It is proposed to rename and re-define the ["material" attribute of VerticalStructure](#) and to update its data type [CodeMaterialType](#) with additional values.

Background

The [VerticalStructure](#) feature has a "material" attribute that indicates the predominant material of that structure. It's list of values is open (codelist).

Rationale for the change

The description of the attribute does not correspond to what is provided in the real world. In most cases, the information about vertical structure material refers to what is visible from the outside: the load-bearing structure, when exposed, or the exterior facing. Therefore, it is proposed to modify the definition of the attribute accordingly.

The list of values needs to be extended in order to increase the capacity of the model to represent the real-world data. It will also improve the interoperability with other community data models.

Change proposal details

Modify the attribute "material" of the VerticalStructure class:

- change its name into "visibleMaterial"
- Change its definition into: " *The type(s) of material that compose the load-bearing structure and/or exterior facing of a vertical construction (for example: a building or non-building structure)*".

Modify the data type CodeMaterialType

- new name = CodeVerticalStructureMaterialType
- definition = " *A coded list of values indicating the type(s) of material that could compose the load-bearing structure and/or exterior facing of a vertical construction*
- new list of values (all old values are removed):
 - ADOBE_BRICK = " *Brick made of adobe clay and straw, dried in the sun rather than by oven firing (as are standard bricks). Larger than standard bricks, adobe bricks require a type of clay that contains between 25 and 45 percent aluminium salts.*"
 - ALUMINUM = " *A light silvery ductile and malleable metal, not readily tarnished by air, which is a chemical element, atomic number 13. (Symbol Al.)*"
 - BRICK = " *Clay kneaded, moulded, and baked or sun-dried, used as a building material.*"
 - CONCRETE = " *A heavy-duty building material made from a mixture of broken stone or gravel, sand, cement, and water, that forms a stonelike mass on hardening.*"
 - FIBREGLASS = " *Any material consisting of glass filaments woven into a textile or paper, or embedded in plastic, for use as a construction or insulation material.*"
 - GLASS = " *A substance made by fusing soda and/or potash with other ingredients. Usually transparent, lustrous, hard, and brittle.*"
 - IRON = " *A malleable, magnetic, readily oxidizable metal which is a chemical element of the transition series, atomic number 26. (Symbol Fe.) Occurs abundantly in certain ores and in meteorites, and is widely used, chiefly in alloys such as steel.*"
 - MASONRY = " *Building materials (for example: stone, brick, concrete, hollow-tile, concrete block, gypsum block, or other similar building units or materials and/or a combination of the same) bonded together with mortar to form a structure (for example: a wall, a pier).*"

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- METAL = " Any of the class of substances that are characteristically lustrous, ductile, fusible, malleable solids and are good conductors of heat and electricity. For example, gold, silver, copper, iron, lead, tin, and certain alloys (as brass and bronze)."
- MUD = " Constructed principally from mud applied to a structural scaffold of plant material (for example: wooden posts). Effective only in extremely dry climates and usually must be resurfaced on a regular basis (for example: yearly) otherwise the structure steadily disintegrates under the effect of weather."
- PLANT = " Plant material (for example: straw and/or tall coarse grass), possibly also containing the slices of soil to which the plant material is attached. For example, used in thatching or sodding a roof."
- PRESTRESSED_CONCRETE = " Reinforced concrete in which internal stresses have been introduced to reduce potential tensile stress in the concrete resulting from loads."
- REINFORCED_CONCRETE = " Poured concrete containing steel bars or metal netting to increase its tensile strength."
- SOD = " A usually square or oblong piece or slice of earth together with the grass growing on it."
- STEEL = " Any of numerous artificially produced alloys of iron containing up to 3 per cent of other elements (including less than about 2.2 per cent carbon) and having great strength and malleability. Able to be tempered to many different degrees of hardness. Used for making tools, weapons, and/or machinery."
- STONE = " Pieces of rock or mineral substance (other than metal) of definite form and size, usually artificially shaped, and used for some special purpose. Used, for example, for building, for paving, or in the form of a block, slab, or pillar set up as a memorial and/or a boundary-mark."
- TREATED_TIMBER = " A timber that has been impregnated with chemicals (for example: cresote oil) to reduce damage from wood rot and/or insects. Often used for the portions of a structure that are likely to be in ongoing contact with soil and/or water."
- WOOD = " The hard, compact, fibrous substance of which the roots, trunks, and branches of trees and shrubs consist. Consists largely of secondary xylem, which forms the strengthening and water-transporting tissue of the plant."