BIMclay

IMPROVE TECHNIFICATION AND LCA QUALIFICATION OF WORKERS IN CERAMIC SECTOR WITH THE SUPPORT OF BIM APPLICATIONS

INTELLECTUAL OUTPUT 2. BIMclay Multimedia Materials. New interactive BIM-learning methods

TASK IO 2.1 IT production of BIMclay Multimedia Cards

Final version of the BIMclay Multimedia Cards

Channel of YouTube: BIMclay Project

https://www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A/featured

Playlists of BIMclay Project on YouTube

https://www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A/playlists

Extra content

ORC of the BIMclay web page

http://www.bimclay.eu/orc.html

Reports of the project

http://www.bimclay.eu/reports.html

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INTRODUCTION

In this tasks O2.A1 “IT Production of BIMclay Multimedia Cards”, an ICT based tool has been produced including 12 Multimedia Cards based on BIM technology.

These 12 animations include sustainable construction methods and procedures used for the placement of the most commonly used ceramic and clay products in the construction sector. The methods explained in the 3D animations are those selected in task O1/A2 "Sustainable construction methods and procedures used for placing clay products".

All the placement methods treated in the BIMclay Multimedia Cards are systems that serve to extend the life of clay products, thereby achieving greater sustainability of these products.

They have been designed and produced to support the implementation of BIMclay course and the ORC (Online Resource Centre).

The BIMclay Multimedia Cards are available for free in the project website (www.bimclay.eu) as well as on the BIMclay project's YouTube channel (www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A?view_as=subscriber).

All the multimedia material developed during the project is key for companies for the companies of ceramic and clay sectors. Graphic multimedia material clearly explains how to place the most common clay products in detailed sketches that has been used in companies of the consortium project countries to be shown to workers of the sector.

The content of the BIMclay Multimedia Cards has been developed by teachers and professionals from the consortium organisations, therefore, the didactic materials have an educational aspect from the pedagogical point of view, so that the contents included in these 3D animations are easier to assimilate by the main target groups of this project. These target groups and end users of the project products are:

- Companies related to industry of clay products.
- Companies related to architecture, construction and heritage.
- Workers of industry of clay products and architects, building engineers, etc.
- VET institutions giving courses in sector of clay products.
- Universities giving courses in sector of clay products.
- Any type of organisation giving courses in architecture, construction and heritage.

All the information is available about the animations and more technical documentation in the following url:

- BIMClay project web: www.bimclay.eu

In the sections:

- ORC: http://www.bimclay.eu/orc.html
- BIMCLAY PRODUCTS: http://www.bimclay.eu/cards.html
- Channel of YouTube: BIMclay Project: https://www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A/featured
- Playlists of BIMclay Project on YouTube: https://www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A/playlists
- Reports of the project: http://www.bimclay.eu/reports.html

PRESENTATION FINAL VERSIONS OF 3D ANIMATIONS OF BIMclay PROJECT

ANIMATION 01. ROOF DRY TILING PROCESS

This animation describes the steps for the construction of microventilated roofs with dry fixing of the tiles.

The micro ventilated roof with dry fixing of the ceramic tiles allows the micro ventilation between the tile and the support by means of the entry of air through the lower part of the roof (eaves and valley), and its exit through the upper part of the roof (ridge and hip rafter).

The 3D animation is available in the following link: https://www.youtube.com/watch?v=4AdRDkNJ3iA

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

ANIMATION 02. TILE INSTALLATION PROCESS WITH MORTAR

This animation describes the steps for the construction of traditional roofs, in which the means of fixing the tiles used is mortar.

Despite the disadvantage of the construction system explained in this animation, the lack of microventilation under the tiles, the project consortium decided to include it because in most of the restored buildings this system is still used.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=g_SMQLUFcUA&t=3s

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

ANIMATION 03. CONSTRUCTION OF LARGE FORMAT HOLLOW BRICK MASONRY WALLS

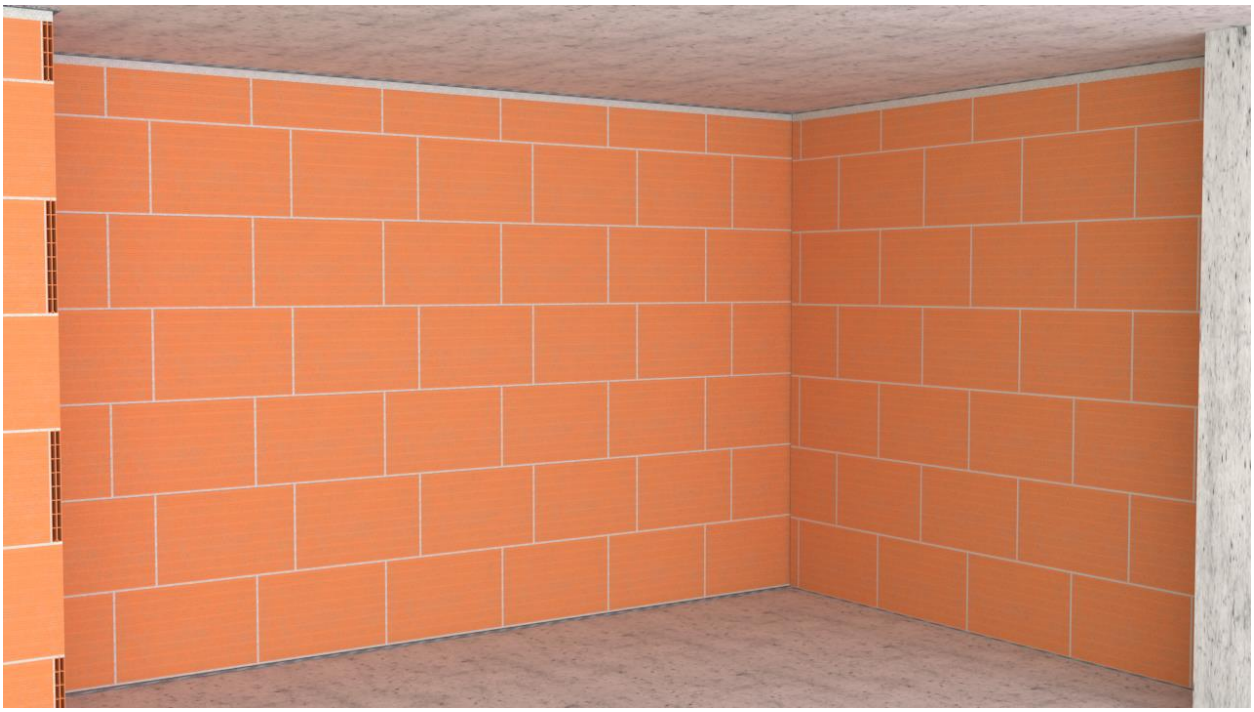
This animation deals with the construction of a party wall, that is, the wall that separates adjoining houses. This type of wall has both acoustic and thermal insulating properties.

The bearing wall structure of brick factory is a spatial structure, box structure. This means that it is essential to brace the whole, achieving this through the existence of transverse walls to the load-bearing ones.

This construction system is widely used in construction as it is the method used to divide the different rooms of a house, this type of wall has both acoustic and thermal insulating properties.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=k-tHj2zEyIU

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



Source: BIMclay project website.

ANIMATION 04. CONSTRUCTIVE DETAILS OF LARGE FORMAT HOLLOW BRICK MASONRY WALLS

This animation describes the method of building an interior wall using large-format hollow bricks, cladding of pillars within a passenger compartment and junctions between single walls and load-bearing wall.

This Multimedia Card is a continuation of animation 03. Construction of large format hollow brick masonry walls.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=IlTSgE_jxgw

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

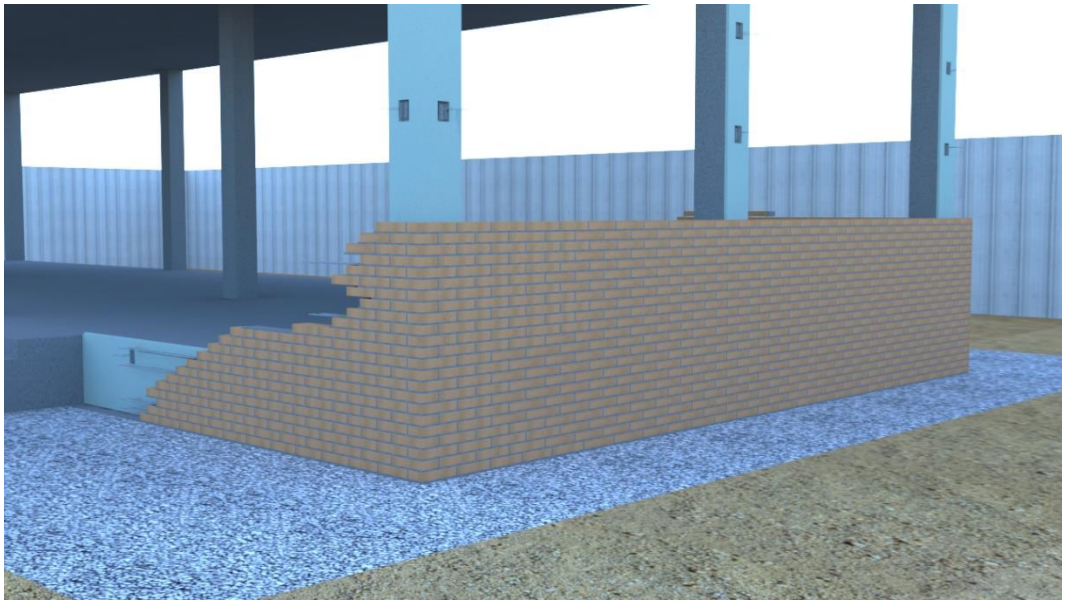
ANIMATION 05. VENTILATED FAÇADE CONSTRUCTION PROCESS

The construction process developed in this animation is the one used for the construction of a ventilated facade, that is to say, it is an exterior enclosure made up of an interior wall, an intermediate layer with thermal insulation in front of the structure of the building and an external wall that is not watertight.

This system is widely used today as it allows for durable, high quality finishes and offers good thermal performance.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=p19AqDgPnnw

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



Source: BIMclay project website.

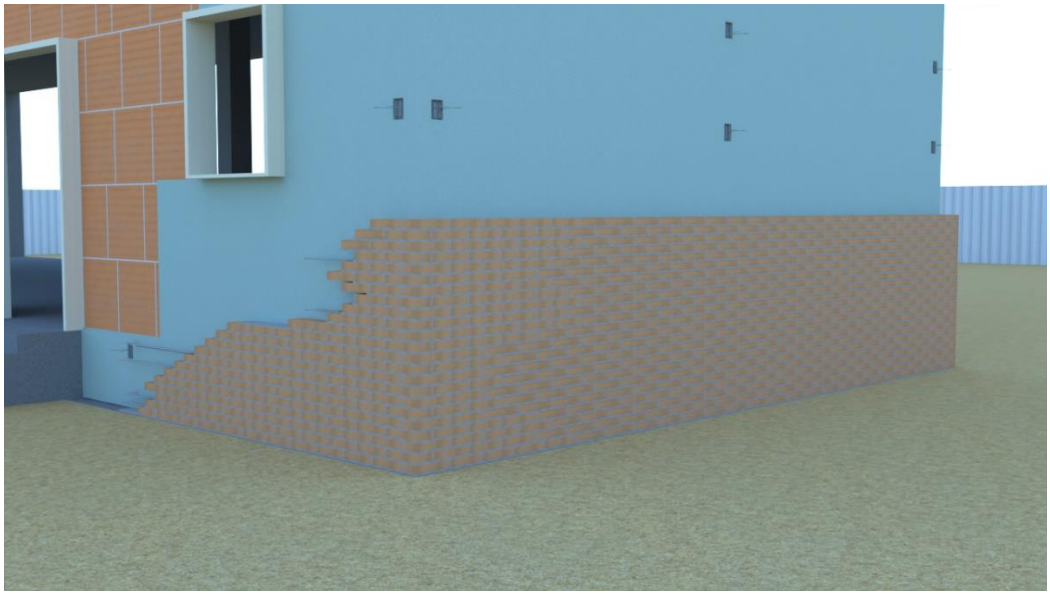
ANIMATION 06. NON-VENTILATED FAÇADE CONSTRUCTION PROCESS

The construction process developed in this animation is the one used for the construction of a non-ventilated façade, that is to say, it is an exterior enclosure composed by means of the execution of exterior leaf - intermediate covering - insulation - interior leaf. In this type of façade there are no openings for the ventilation of the air chamber, so the flow of air through the chamber is not allowed.

This type of façade is widely used in the countries participating in this project, whose origins are from middle and southern Europe.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=j5MjGGPcsD4

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



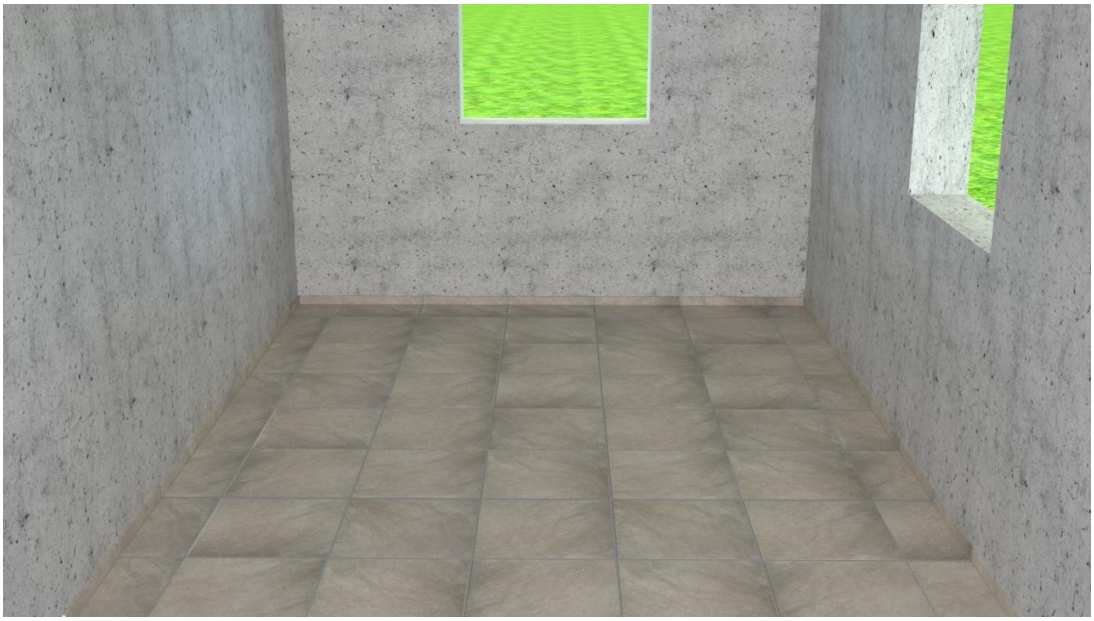
Source: BIMclay project website.

ANIMATION 07. CERAMIC FLOOR LAYING PROCESS

This animation explains the steps to follow to lay a ceramic floor by direct adhesion to the concrete surface of the housing. The tile installation system selected is thin-bed because of the dimensions of the tile to be installed (small format, it means, tile with a side greater than 40 cm).

The 3D animation is available in the following link: https://www.youtube.com/watch?v=wjORCx8lUB0

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



Source: BIMclay project website.

ANIMATION 08. INSTALLATION PROCESS OF CERAMIC FLOOR OVER EXISTING FLOOR

The animation describes the renovation process of an existing floor. In this case, the ceramic tiles are placed on top of the existing ones by direct adhesion to the concrete surface of the housing. The ceramic floor installation system selected is that of double grouting due to the dimensions of the new tile to be installed (large format, i.e. tile with a surface area greater than 1000 cm2).

The 3D animation is available in the following link: https://www.youtube.com/watch?v=dEaZYHsSYFk

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

ANIMATION 09. TECHNICAL OR FLOATING FLOOR INSTALLATION PROCESS

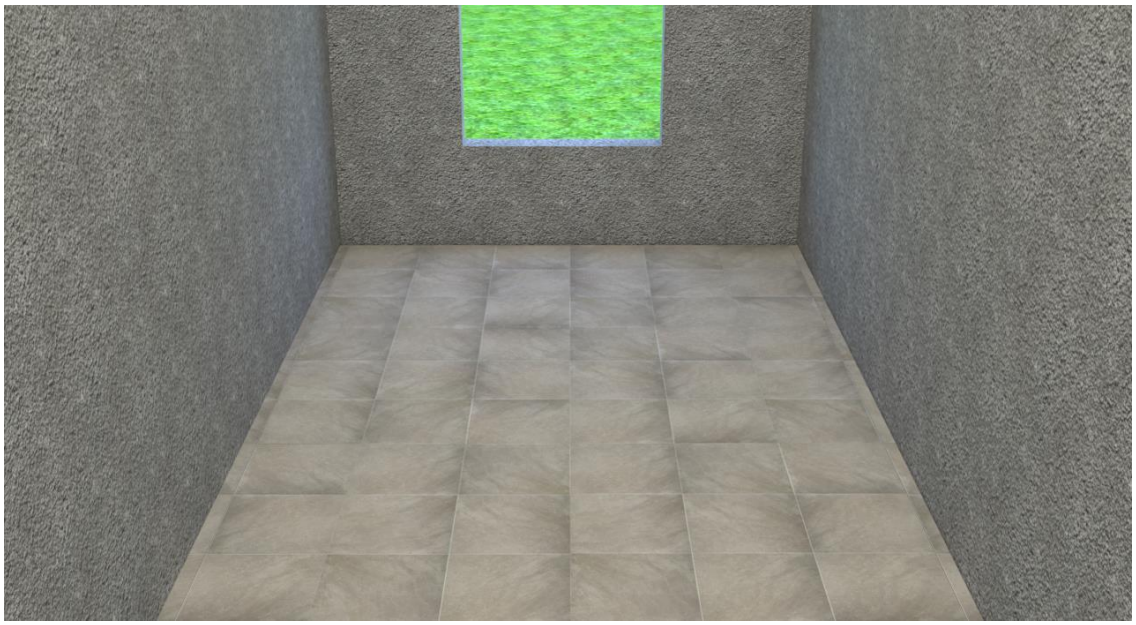
This animation details the installation of a technical or floating floor, consisting of an elevated bearing structure on which the tiles will be installed, leaving a free space between the support and the passable tiles. In this space, all the electrical cables, telephone cables, alarms and the rest of the wiring and pipes are normally placed. In this way, the plates or tiles are easy to remove in order to carry out any revision or modification in the installations, without the need to demolish them.

For this reason, technical or floating floors are mainly used in renovation or new construction works, which require great design flexibility, constant performance in wiring systems or periodic inspection of cables and pipes.

The technical floor system is composed of a load-bearing structure made up of adjustable metal supports and crosspieces and the panels or tiles that are installed on the structure without the need for masonry work or the use of mortars or glues.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=Pd4b-XbDhgw

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



Source: BIMclay project website.

ANIMATION 10. MOSAIC TILE INSTALLATION PROCESS

In this animation you can see the process of mosaic placement, which are generally square and small pieces, considering as such those that can be inscribed in a square of 7 x 7 cm, but generally measure from 2 x 2 cm to 5 x 5 cm. The name of the mosaic only refers to the measures of the pieces, but not to the class of product.

In general, for ease of installation, they are glued to perforated sheets of paper on the face or, on the back, to a textile, paper or plastic net, as in the case of the mosaic included in this animation. In this way, they are kept in regular sets of 30 x 30 cm or 30 x 60 cm or similar, made up of equal pieces of one or more colours or even forming drawings. The paper on the exposed side is easily detached after installation and the dorsal net is incorporated into the gripping material, so that this auxiliary structure remains totally invisible once the installation process has been completed.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=vZF1ZqtP32w&t=7s

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

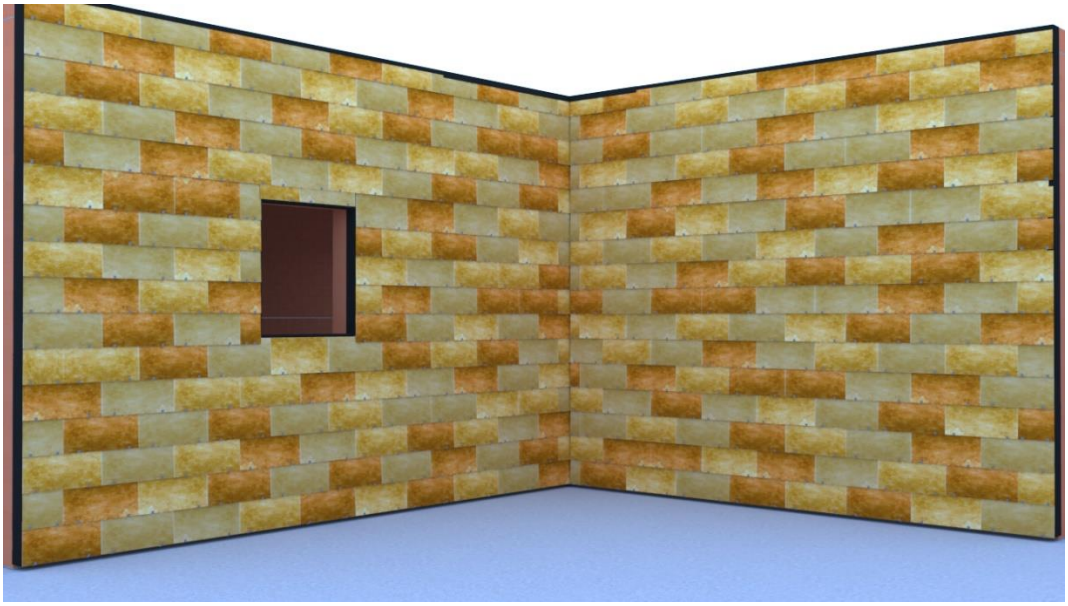
ANIMATION 11. VENTILATED EXTERNAL WALL CLADDING

This animation explains, first of all, the construction procedure of exterior walls using ceramic blocks, showing the execution of all the singular points to be treated within this system.

Secondly, once the explanation of the ceramic block has been completed, the explanation of the construction process of ventilated facades using metal fasteners for the laying of tiles on the facade, together with their respective thermal insulation, is shown.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=qhUtIvKcX1c

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html



Source: BIMclay project website.

ANIMATION 12. LAYING PROCESS OF CERAMIC PAVERS ON SAND BED

This animation describes the construction process of an exterior pavement on a bed of sand, or more commonly known as paving.

Pavers have been an essential element of paving for centuries, capable of supporting high loads and even road traffic. Cobblestones have supported traffic on roads from Roman times to the present day. In addition to the load-bearing capacities of these materials, they offer an infinite number of possibilities combining designs, colours and textures to create an architectural effect that only the imagination of technicians and designers can limit.

The 3D animation is available in the following link: https://www.youtube.com/watch?v=2kEaDVAYrMg

For more information about the procedure described in this animation, you can find the technical documentation in the ORC (Online Resource Centre) of the BIMclay project: http://www.bimclay.eu/tdocuments.html

Source: BIMclay project website.

SUMMARY OF LINKS

BIMclay project YouTube channel

https://www.youtube.com/channel/UCm1KRHbAvQwXQ_ffRSPhE7A

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BIMclay project. ANIMATION 04. CONSTRUCTIVE DETAILS OF LARGE FORMAT HOLLOW BRICK MASONRY WALLS

https://www.youtube.com/watch?v=IlTSgE_jxgw&t=12s

BIMclay project. ANIMATION 05. VENTILATED FAÇADE CONSTRUCTION PROCESS

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BIMclay project. ANIMATION 06. NON-VENTILATED FAÇADE CONSTRUCTION PROCESS

https://www.youtube.com/watch?v=j5MjGGPcsD4

BIMclay project. ANIMATION 07. CERAMIC FLOOR LAYING PROCESS

https://www.youtube.com/watch?v=wjORCx8lUB0&t=1s

BIMclay project. ANIMATION 08. INSTALLATION PROCESS OF CERAMIC FLOOR OVER EXISTING FLOOR

https://www.youtube.com/watch?v=dEaZYHsSYFk&t=7s

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https://www.youtube.com/watch?v=vZF1ZqtP32w

BIMclay project. ANIMATION 11. VENTILATED EXTERNAL WALL CLADDING

https://www.youtube.com/watch?v=qhUtIvKcX1c

BIMclay project. ANIMATION 12. LAYING PROCESS OF CERAMIC PAVERS ON SAND BED

https://www.youtube.com/watch?v=2kEaDVAYrMg&t=18s