NBS – Connecting information & construction knowledge

Paul Swaddle
Head of Business Solutions
New brand development
Specialist knowledge and tools that empower the construction industry

Tools and Services
Discover industry-standard specification, building product and construction knowledge tools - powerfully connected, essential for BIM.

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Consult insight and analysis from NBS specialists to help you make informed decisions and deliver the best projects for your clients.

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What is a U-value? Heat loss, thermal mass and online calculators explained

01 February 2015 | by Anthony Lymah

Although the main focus of environmental performance of buildings is now on energy efficiency, there is still a need to consider thermal performance of the building fabric as a cost-effective component of the design. Performance is measured in terms of heat loss, and is commonly expressed as a U-value or R-value. U-value calculations will invariably be required to assess the thermal performance of the building fabric and to compare construction strategies. A number of the terms have subtly similar meanings, and conflicting definitions can be found across the internet. The various terminologies, and how they relate to the building fabric, will be explained in this article.

Classifications can group similar content together
The Periodic Table of BIM

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Digital Plan of Work stages

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<td>Handover and commission</td>
<td>Ongoing</td>
<td>End of Bc</td>
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Find support on your BIM journey at theNBS.com/BIM
NBS and RIBA Enterprises
NBS and RIBA Enterprises

NBS

#ribaproductselector.com

Plus

National BIM Library

ribabookshops.com

RIBA Publishing

RIBA Appointments
NBS Create provides master specification content based on access to standards.
Building specification templates with associated guidance

**Masonry external leaf system**

**Products**
- 45-45-65/430 Polyisocyanurate (PIR) foam board
  - Manufacturer: Contractor's choice.
  - Standard: To BS EN 13165.
  - Third party product certification: British Board of Agrément Certificate.
  - Thermal conductivity (maximum): 0.021 W/mK.
  - Cross section: Tapered.

**Thickness (nominal):**
- Face size (length x width):
- Reaction to fire:
- Density:
- Compressive strength at 10% deformation:
- Recycled content:
- Facing:
- Edges:

**NBS Values**
- 50 mm
- 60 mm
- 70 mm

**Contractor's Selection**

**Execution**
- 25-10-55/600 Adverse weather:
- Air temperature:
  - Cement gauged mortars:

**Notes**

*Thickness (nominal)*

Where tapered insulation is used insert minimum and maximum thicknesses.

Rigid foam board may lose some of its insulative value over a period of time and this may influence choice of thickness. Check with manufacturer. BS 4841-3. Annex E, table E1, gives minimum board thicknesses for laying over a metal roof deck. BS 4841-3. Annex B, table B1, gives minimum roofboard thicknesses for laying over a metal roof deck.

See also BRUFMA 'Building Regulations for the conservation of fuel and power. Impact Assessment: England and Wales edition' (British Rigid Urethane Foam Manufacturers' Association Ltd).
Develop and embed office knowledge through user guidance
Develop the information through the project timeline.
Specify the performance of a system
Specify the products that make up a system.

90-10-65/315 Copper pipeline fittings
- Manufacturer: Contractor's choice
- Standards: NBS Values

Capillary
- Compression: To BS EN 1254-1, solder ring
- Flanges: Manufacturer's standard
- Press fittings: Contractor's choice

Capillary fittings can be supplied complete with a solder ring or suitable for 'end feed' joining.

Compression
- BS EN 1254-2 specifies copper and copper alloy fittings with or without plating, for type A and type B compression fittings for joining copper tubes to BS EN 1957.

Type A compression fittings are used on tubes with ends cut square and deburred or chamfered. Type B compression fittings require the tube end to be formed.
Specify the workmanship and system completion

- **System completion**
  - 60-45-40/830 Commissioning boiler plant
    - Pre-commissioning: In accordance with CIBSE Commissioning code B.
    - Commissioning: In accordance with CIBSE Commissioning code B.
    - Notice (minimum):

- **Commissioning**
  - See CIBSE Commissioning code B sections B8 and B9.

- **Notice (minimum)**
  - NBS values:
    - In accordance with CIBSE Commissioning code B. - NBS default value
  - NBS values:
    - In accordance with CIBSE Commissioning code B. - NBS default value
  - NBS values:
    - In accordance with CIBSE Commissioning code B. - NBS default value
  - NBS values:
    - In accordance with CIBSE Commissioning code B. - NBS default value
  - Notice (minimum):
    - 24 h
    - 48 h
    - One week
Specify products from manufacturers

Isover Foil Faced Pipe Insulation

Isover Foil Faced Pipe Insulation is designed to provide thermal and acoustic insulation of copper and steel pipework. These are strong, lightweight pre-formed ‘snap on’ sections, manufactured from up to 80% recycled content.

Isover Foil Faced Pipe Sections provide a factory applied reinforced aluminium foil covering, incorporating a self adhesive overlap, providing an effective vapour control finish.

Features:

- High levels of thermal and acoustic performance.
- Consistent density and concentricity of bore positioning provides consistent performance along the length of the section.
- Euroclass A2 fire rating when classified with BS EN 13501-1.
- Manufactured from up to 80% recycled content.
- Isover Foil Faced Pipe Section corresponds to the BRE Global Green Guide online generic specification Class wool insulation - Density.
Not a traditional paper specification - but a clearly-structured data model.
BS 8300: 2009
Design of buildings and their approaches to meet the needs of disabled people - Code of practice (+A1: 2010)

British Standards Institution

Document Status
Current

Supplement
Core Supplement

Series

Abstract
Promotes good practice design principles to ensure new buildings and their approaches can meet the needs of disabled people and are convenient to use. Advising on provision for on-street and off-street car parking, setting down points and garaging, access routes to and around all
September 2015 Edition

Essential reading in September's CIS briefing

- The second part of the BS 8895 materials efficiency document suite has been published
- BSRIA has released an important document addressing Legionnaires disease
- BRE has issued a report on the health effects of different types of lighting
- A landmark ruling impacts government housing exemption policy

Read now
Publish the output that you define from the central information database.
Find BIM Objects
5,000 BIM objects authored to a quality standard
Insulation (394)

Filter your results

Category

- Top Ten
- All (31)

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- Roofs (69)
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- Walls (20)
- Bedding and underlay compounds (18)
- Plastics-based boards and panels (16)
- Doors (15)
- Membranes (10)
- Glazing sheets (10)
- Calcium sulfate-based screed systems (10)

Objects from

- Manufacturers (394)

ROCKWOOL® CAVITY - Insulation

ROCKWOOL

Object guide

Download

Eurothane® Silver - Insulation

RECTICEL

Object guide

Download
NBS BIM Object Standard

2014

2015
NBS BIM Object Standard

Section 2: Information requirements

This section defines the requirements for the section includes general requirements for properties.

ISO 12006-2: A product intended to be used as a construction resource. IFC defines a product as a physical object (manufactured, supplied or created) for incorporating into a project. It may be physically existing or tangible. A product may be defined by shape representations and have a location in the coordinate space.

2.5.1 The IFC object shall be xxxCommon that are relevant to the construction product and associated IfcTypeObject where available.

An IfcTypeObject defines the specific information about a type and can be further represented by a set of property set definitions. For example, IfcBoilerType can be further defined by Pset_BoilerTypeCommon which includes common attributes for boilers.

Example of expected IFC Common properties: Pset_BoilerTypeCommon

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property Type</th>
<th>Example Value</th>
</tr>
</thead>
</table>

Simple interface

Definitions explained

Expandable user guidance
NBS ‘Plug-in’ links the geometry model with NBS Create

Users are likely to build the geometry model first. The plug-in interrogates all of the objects in the model.
Objects can be dragged into the model from the NBL pane.

Concept generic objects for early stage design.
Detailed generic objects for developed design
Manufacturer objects with embedded and linked information
The NBS Guidance pane can also be opened in the model interface. This allows all designers access to core guidance, not just specifiers.
If practices have their own information in office masters, this is available to all users, not just specification writers - a true knowledge management system.
Pick the correct specification clause and annotate.
Over time and as users develop the designs, the two databases will go out of sync.

The plug-in association report highlights where problems need to be resolved.
The easy way to define who is doing what and when on your Level 2 BIM projects.

What you need to know in 90 seconds.

A low-level NBS BIM Toolkit will benefit both public and private sector construction projects. It provides a step-by-step guide to define, manage, and validate responsibility for information development and delivery at each stage of the project lifecycle.

This toolkit is an indispensable way of delivering projects to meet the requirements of Level 2 BIM, in preparation for the Government mandated use of this on all public sector projects by 2016.
Welcome, NBS User

Administrator Projects (3)

You've created the following projects and have full access to editing and all functionality:

- 007 Morning Sun Country Park
  - Work to the visitor centre, drainage to the old pit heap and work on...

- 023 Quayside development
  - Inspirational design for new housing by the river.

- 009 City Centre Office
  - Refurbishment of listed building in centre of Newcastle.

Process and project management for the industry
Centrally managing data about active projects
007. Morning Sun Country Park

Newtown Old Pit, Newtown NE1 1RH

Details at Stage 1

Stage deadline: 1 November 2014
Construction start: 31 July 2015
Construction end: 30 December 2015
Construction cost: £2,500,000
Environmental assessment rating: BREEAM: Very Good

Stage notes:
Initial budget of £2.5m.
Key strategic objectives:
1. Positive impact on the community
2. Low environmental impact
3. Architecturally beautiful
4. BIM level-2 exemplar
5. Digital information to operate asset

Defining the project brief and capturing information
Assigning responsibility to generic roles and specific individuals.

<table>
<thead>
<tr>
<th>Role</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architect</td>
<td>ABC Architects</td>
</tr>
<tr>
<td>Building services</td>
<td>Wren Flites Ltd</td>
</tr>
<tr>
<td>Civil engineer</td>
<td>CCC Civils</td>
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<tr>
<td>Client</td>
<td>Newtown CC</td>
</tr>
<tr>
<td>Construction lead</td>
<td>Not required</td>
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<tr>
<td>Cost consultant</td>
<td>Wren Flites Ltd</td>
</tr>
<tr>
<td>Design lead</td>
<td>ABC Architects</td>
</tr>
<tr>
<td>Health and safety adviser</td>
<td>ABC Architects</td>
</tr>
<tr>
<td>Project lead</td>
<td>SJI Consult</td>
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</tbody>
</table>
Pre-authored and editable sets of the required project tasks

### Tasks at Stage 3

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<tr>
<th>Ref</th>
<th>Task Description</th>
<th>Responsibility</th>
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</thead>
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<td>3.010</td>
<td>Comment on Developed Design proposals.</td>
<td>Newtown CC (Client)</td>
</tr>
<tr>
<td>3.020</td>
<td>Sign-off Developed Design</td>
<td>Newtown CC (Client)</td>
</tr>
<tr>
<td>3.030</td>
<td>Comment on updated Project Strategies as requested.</td>
<td>Newton CC (Client)</td>
</tr>
<tr>
<td>3.040</td>
<td>Monitor progress of Developing Design.</td>
<td>Hudson Consult (Project lead)</td>
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<tr>
<td>3.050</td>
<td>Review Handover Strategy and Risk Assessments with project team.</td>
<td>Hudson Consult (Project lead)</td>
</tr>
<tr>
<td>3.060</td>
<td>Review and update Project Execution Plan.</td>
<td>Hudson Consult (Project lead)</td>
</tr>
<tr>
<td>3.070</td>
<td>Review Project Programme and agree any changes with project team.</td>
<td>Hudson Consult (Project lead)</td>
</tr>
<tr>
<td>3.080</td>
<td>Comment on stage Design Programme and Cost information.</td>
<td>Hudson Consult (Project lead)</td>
</tr>
<tr>
<td>3.090</td>
<td>Manage Change Control process.</td>
<td>Hudson Consult (Project lead)</td>
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<tr>
<td>3.100</td>
<td>Monitor and review progress and performance of project team.</td>
<td>Hudson Consult (Project lead)</td>
</tr>
<tr>
<td>3.110</td>
<td>Co-ordinates and comment on design proposals and Project Strategies as they progress.</td>
<td>Lynch Design (Design lead)</td>
</tr>
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</table>
Connecting those project tasks to clearly defined deliverables and outputs
Linking the tools – the product map

- Process Management
- Classification
- Specification and guidance
- Standards/Technical
- Building code

Geometry model

BIM objects library
Linking the tools – the product map

NBS BIM Toolkit

Geometry model

BIM objects library

Classification & Process Management

Specification and guidance

Standards/Technical

Building code
Individually effective
Powerfully connected

NBS BIM TOOLKIT
Classification & Process Management

NBS PLUG-IN FOR AUTODESK® REVIT®
Geometry Model

NBS NATIONAL BIM LIBRARY
BIM Objects

NBS CREATE
Specification & Guidance

CONSTRUCTION INFORMATION SERVICE
Technical, Standards & Regulations

Link to NBS BIM workflow video
Thank you