HOW ADVANCED WALLING SYSTEMS CAN PRODUCE SUSTAINABLE OUTCOMES IN THE BUILT ENVIRONMENT

CPD PRESENTATION

SPECWALL
ADVANCED WALL SYSTEMS

INTRODUCTION

- THIS SESSION AIMS TO EXPLORE EVOLVING TRENDS IN WALLING SYSTEMS AND ITS RELATIONSHIP WITH SUSTAINABLE CONSTRUCTION METHODS
- OFFSITE CONSTRUCTION CONTRIBUTES TO NET ENERGY SAVINGS
- FIRE SAFETY CONSIDERATIONS AND THE REQUIREMENT FOR CLASS A RATED CONSTRUCTION MATERIALS

WHO ARE WE?

- MANUFACTURERS AND SUPPLIERS OF AN ADVANCED WALLING SYSTEM THAT PROVIDES AN ALTERNATIVE TO TRADITIONAL BLOCKWORK, SFS AND PLASTERBOARD SYSTEMS
- BASED IN MANCHESTER WITH A LONDON & MANCHESTER SHOWROOM
- PART OF THE PROPERTY ALLIANCE GROUP & HARWAL GROUP

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AIMS AND OBJECTIVES

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LEARNING OBJECTIVES

1. UNDERSTAND THE CONCEPT OF DESIGNING OUT WASTE AND ITS IMPACT ON SUSTAINABLE PRACTICES WITHIN THE BUILT ENVIRONMENT

2. CONSIDER HOW RECENT CHANGES IN BUILDING REGULATIONS CAN, AND SHOULD, INFLUENCE YOUR DESIGN STRATEGY FOR PRODUCING FIRE SAFE BUILDINGS

3. LEARN HOW ADVANCED WALL SYSTEMS ARE BEING UTILISED IN THE CONSTRUCTION OF INTERIOR AND EXTERIOR WALL ASSEMBLIES

4. GET A BETTER UNDERSTANDING OF HOW THESE SYSTEMS ARE BEING INSTALLED ON SITE

CONSTRUCTION WASTE REDUCTION BY DESIGN

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A STUDY FOUND...

. . . waste management is not a priority in the design process.

Additionally, the architects seemed to take the view that waste is *mainly* produced during site operations and *rarely* generated during the design stages; however, about one-third of construction waste could essentially arise from design decisions.

Osmani, Glass & Price (2008)

CONSTRUCTION WASTE REDUCTION BY DESIGN

- ARCHITECT HAS A DECISIVE ROLE IN HELPING REDUCE WASTE THROUGH DESIGNING OUT WASTE

MATERIALS RESOURCE EFFICIENCY

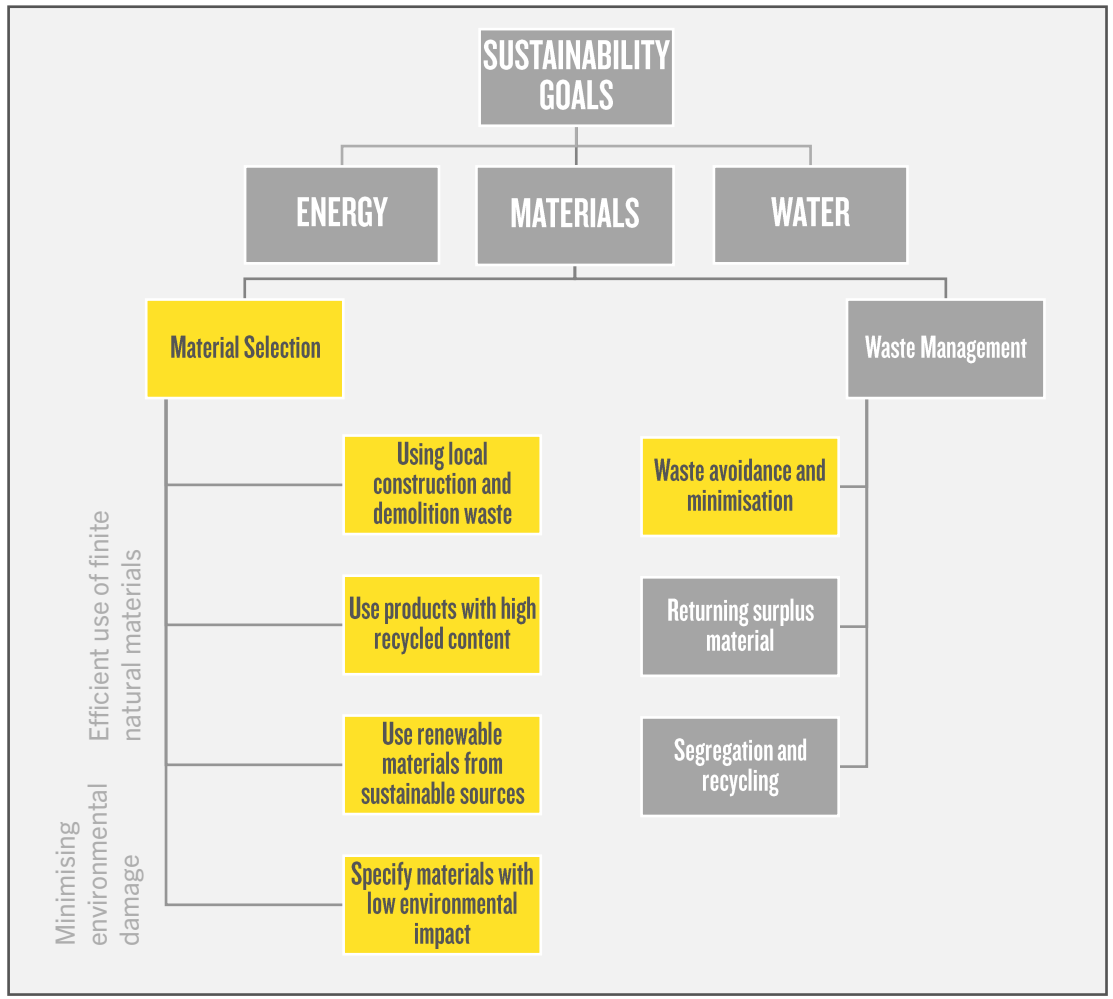

Figure 1. Materials resource efficiency as part of sustainable construction

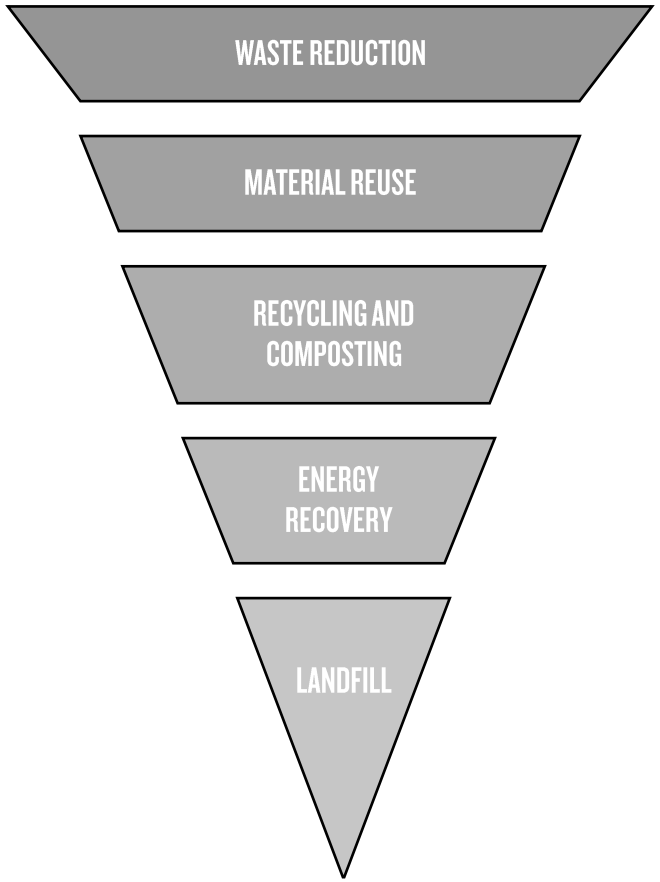

Figure 2. Waste hierarchy, focussing on reducing waste

Designing out Waste: a design team guide for buildings, WRAP

THE ROLE OF THE SPECIFIER

- SMART DESIGN CHOICES
- EVALUATING MATERIALS MORE CAREFULLY
- LOWER CARBON FOOTPRINT
- SOUND FINANCIAL CHOICES

WALL CONSTRUCTION

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WALL CONSTRUCTION

PRIVACY AND ACOUSTICS

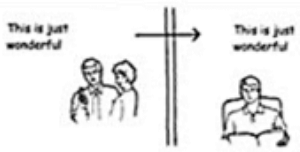
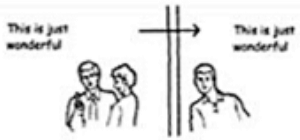
FIRE SEPARATION

FLEXIBILITY OF LAYOUT

SAFE NAVIGATION

PRIVACY AND ACOUSTICS

SOUND INSULATION

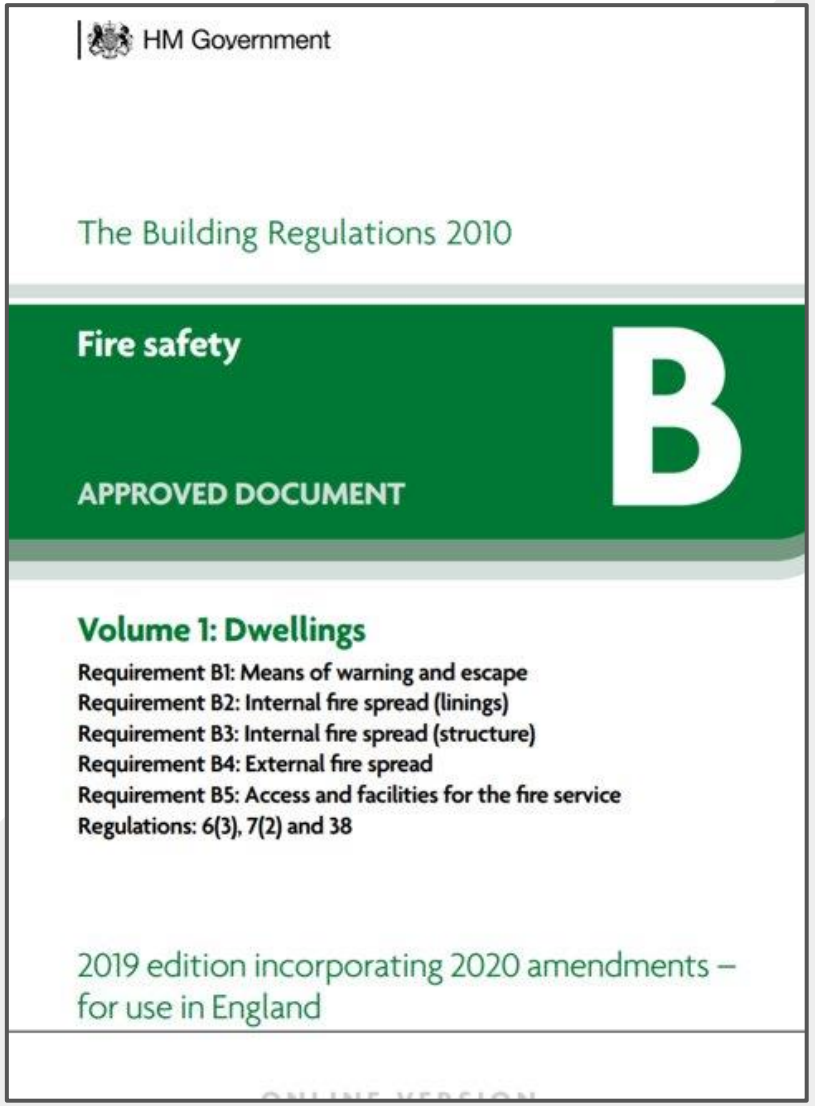
DW	Subjective description	
30dB1, 25dB2		Most sentences clearly understood
40dB1, 35dB2		Speech can be heard with some effort. Individual words and occasional phrases heard
50dB1, 45dB2		Loud speech can be heard with some effort. Music easily heard
60dB1, 55dB2		Loud speech essentially inaudible. Music heard faintly; base note disturbing
70dB1, 65dB2		Loud music heard faintly, which could be a problem if the adjoining space is highly sensitive to sound intrusion, such as a recording studio, concert hall, etc
75dB1, 70dB2 and above		Most noises effectively blocked

- APPROVED DOCUMENT E
- THE REDUCTION IN SOUND ACROSS A PARTITION
- DOES NOT DESCRIBE THE LEVEL OF SOUND LOST WITHIN AN ADJACENT ROOM

FIRE SEPARATION

FIRE SAFETY

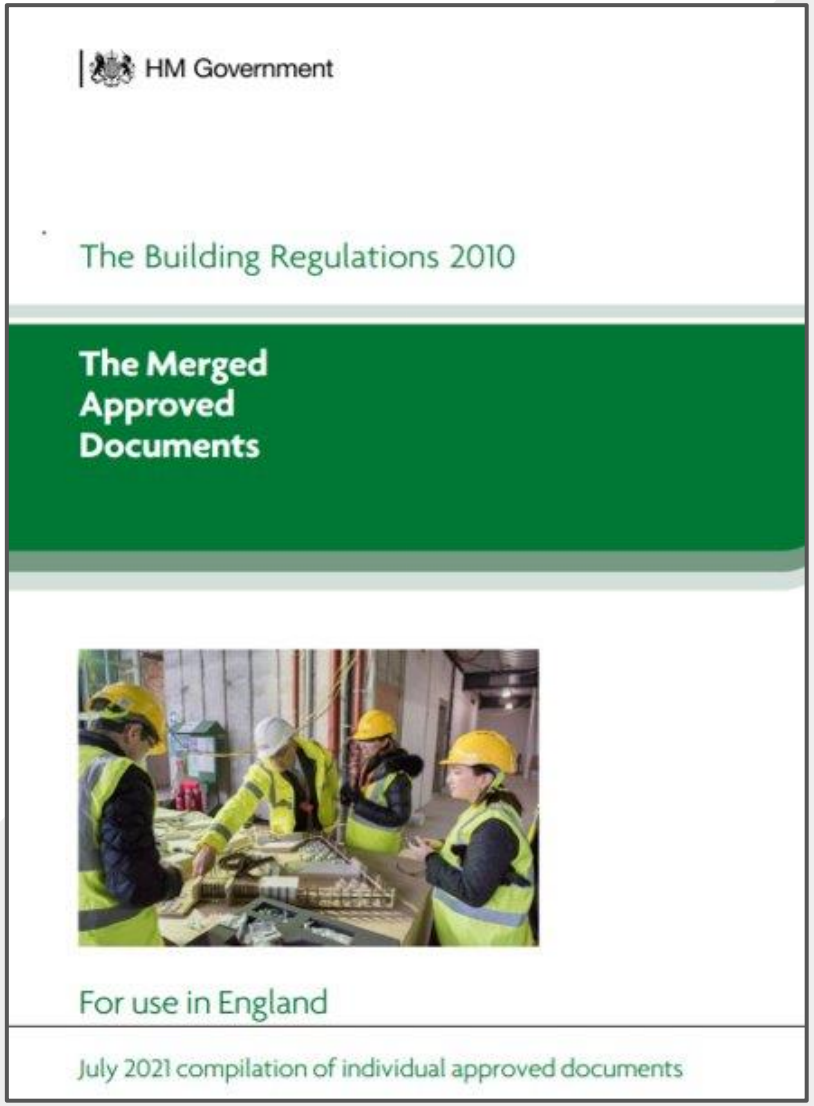
- APPROVED DOCUMENT B
- A NEW WALL MAY AFFECT THE MEANS OF FIRE ESCAPE
- AN ESCAPE WINDOW AND ONE OR MORE SMOKE ALARMS MAY BE NEEDED
- SOME WALLS AROUND STAIRWAYS WILL NEED TO HAVE FIRE RESISTANCE, EVEN IF HOUSES ARE TWO STOREYS OR LESS
- THE REMOVAL OF AN INTERNAL WALL SHOULD BE CAREFULLY CONSIDERED
- OTHER FIRE-RESISTANT FITTINGS MAY BE NEEDED (E.G. FIRE DOORS)

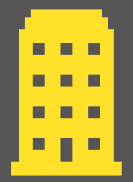


FLEXIBILITY OF LAYOUT

INTERNAL WALLS

- APPROVAL UNDER BUILDING REGULATIONS 2010
- CONVERSION PROJECTS
  - Adequate separation
  - Adequate fire resistance
  - May need to provide sound insulation





SAFE NAVIGATION

STRUCTURAL SUPPORT

- **NON-LOAD BEARING**

Walls that provide separation between rooms and are not required to transfer loads

- **LOAD BEARING**

Where the wall provides separation between rooms and is also required to transfer loads from other parts of the structure, roof and floors etc., Down to the foundations

EXPLORING DIFFERENT TYPES OF WALLS

- BLOCKWORK
- DRYLINING/PLASTERBOARD
- STEEL FRAME SYSTEMS (SFS)

BLOCKWORK

ADVANTAGES	CONSIDERATIONS
Solidity & Strength	Expensive
Good Soundproofing	Time consuming
Fire resistant	Multiple visits to the work face by trades
	Requires scaffold
	Debris & waste
	More men on site
	Heavy

Reference

- BLOCKWORK
- DRYLINING/PLASTERBOARD
- STEEL FRAME SYSTEMS (SFS)

DRYLINING/PLASTERBOARD

ADVANTAGES	CONSIDERATIONS
Economical	Multiple parts for construction
Improved thermal efficiency	Easily damaged
Acoustic performance	More men on site
Fire performance	Patressing for installation of fittings
	Many different wall types
	Complex details for fire stopping
	High wastage

Reference

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STEEL FRAME SYSTEMS (SFS)

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A MODERN APPROACH TO WALL CONSTRUCTION

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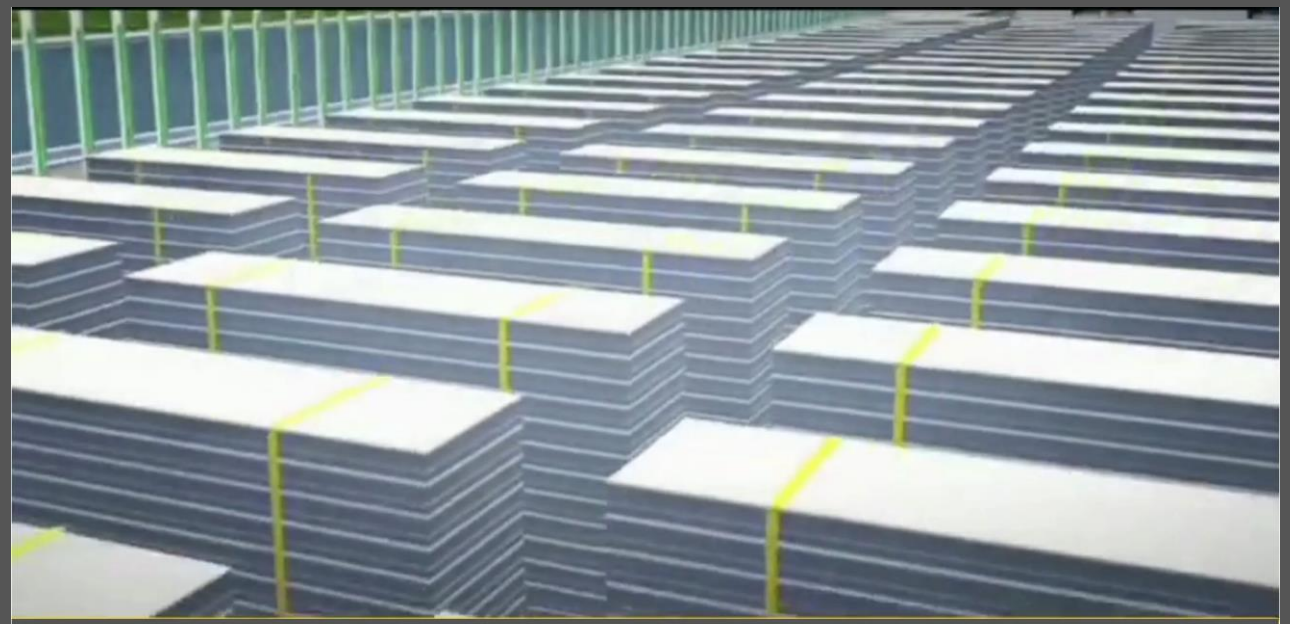
A MODERN APPROACH TO WALL CONSTRUCTION

- ADVANCED WALLING SYSTEM
- CONSTRUCTED OF A PATENTED CONCRETE-BASED INNER MIXTURE WHICH IS ENCAPSULATED BY TWO FCBs
- NOT AFFECTED BY WATER OR MOULD, CAN BE INSTALLED BEFORE BUILDING IS WATERTIGHT
- OFF-SITE MANUFACTURE
- AN ALTERNATIVE TO:
  - Blockwork
  - SFS
  - Drylining/plasterboard systems
  - Risers
  - Lift shafts
  - Concrete cores and stairwells
  - Bathroom pods

OFF-SITE MANUFACTURE



FIRE-RATED ADHESIVE MUST BE USED DURING INSTALLATION

WALL IS INSTALLED UP TO STRUCTURAL SOFFIT, REDUCING COSTLY FIRE STOPPING

TWO THICKNESSES: 75MM AND 100MM = UP TO (AND OVER) FOUR HOURS' FIRE RESISTANCE

FIRE RATING

A2 -S1 DO RATED

HEALTH & SAFETY AND LONG-TERM MAINTENANCE ISSUES

LESS MAINTENANCE REQUIRED

DAMAGE CAN BE EASILY REPAIRED

WALLS CAN BE RECONFIGURED

DESIGN AMENDMENTS CAN BE ACCOMODATED

If installing at height, cite Regulation 9.2 of the CDM Regulations 2015; regarding the principles of prevention from falls.

INAPPROPRIATE APPLICATIONS/ USES

NON-LOAD BEARING

Please note: Tests have been undertaken on a prototype, load bearing panel. This new system is expected to be launched in 2022.

AN OBJECTIVE COMPARISON

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AN OBJECTIVE COMPARISON

	75MM ADVANCED WALL SYSTEMS	100MM ADVANCED WALL SYSTEMS	PLASTERBOARD	AAC BLOCK
Fire Rating	2 hours	4 hours	2 hours	Max 3 hours
Acoustic Rating (dB Rw)	40 db	45 db	Varies	Up to 39 db
U-Value	1.52	1.25	2.3-2.8	0.3-0.4
Wet Areas	Acceptable	Acceptable	Requires treatment	Requires treatment
Plaster Requirements	Not required	Not required	-	Required
Wet Trades	Not required	Not required	Required	Required
Wastage	3%	3%	Around 25%	Around 20%
Manpower	50% Less	50% Less	100%	100%
Lintels	Not required	Not required	Required	Required

CONSIDERATIONS

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WHAT TO CONSIDER WHEN SPECIFYING WALLING SYSTEMS

LABOUR

PROGRAMME TIME

COST

WATER RESISTANCE

SUSTAINABILITY

EFFICIENCY

CASE STUDIES

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CASE STUDY #1: OXYGEN

CASE STUDY #2: ANGEL MEADOWS

RE-CAP LEARNING OBJECTIVE

- A FRESH PERSPECTIVE ON THE NOTION OF ‘DESIGNING OUT WASTE’
- DEVELOPED YOUR UNDERSTANDING OF DIFFERENT WALL SYSTEMS
- STARTED TO THINK DIFFERENTLY ABOUT THE PRODUCTS AND SOLUTIONS YOU SPECIFY

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