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The Importance of Product Selection: Considering Building Performance and Futureproofing External Façade Compartmentation

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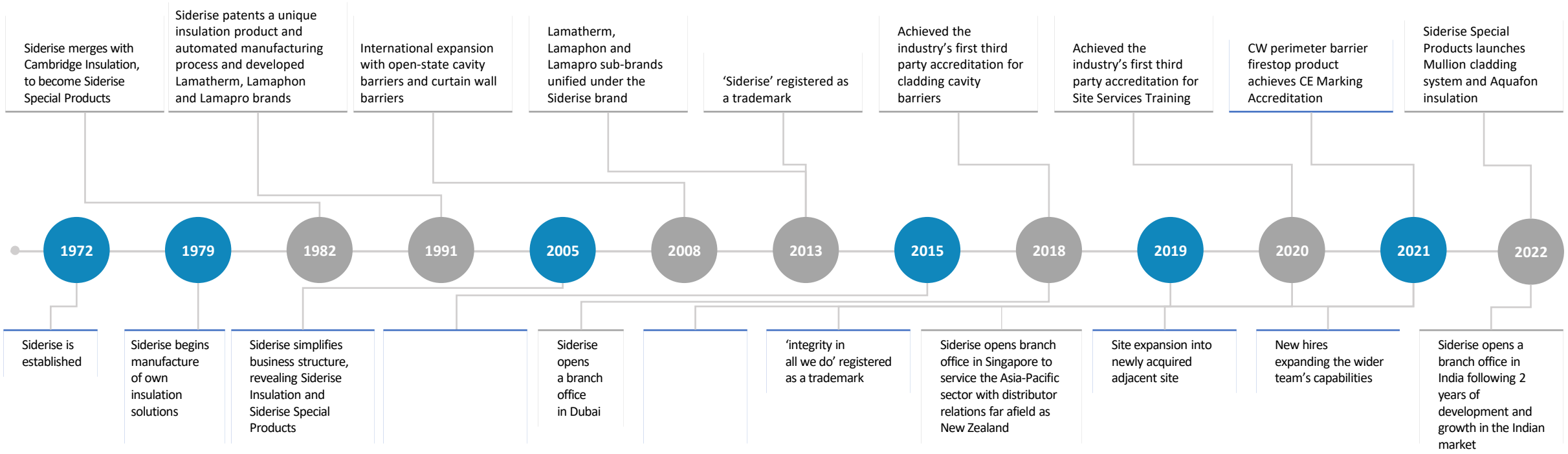
Product & Brand



Accreditations

BY YOUR SIDE®

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Full suite of unique certified products, Technical Services and Site Services

Products

- Unique product design and manufacture
- Critical fire safety applications
- Fully certified products
- Specialist acoustic solutions

Value-add free of charge services

- End-to-end services
- Differentiated
- Provides reassurance and ensures quality

Proactive drive for industry betterment

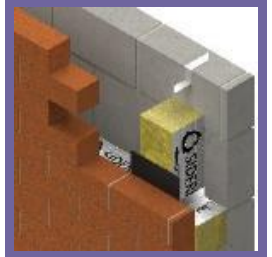
- Driving improved competence, skills, knowledge and behaviour

Siderise Insulation

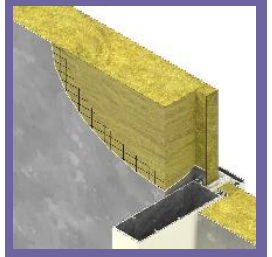
Curtain Wall

Cladding

Masonry

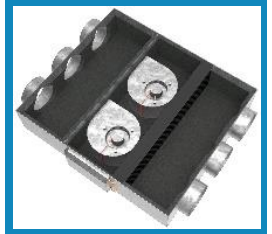


Nexus



Siderise Special Products

Acoustics



Thermal

Site Services

- Site installation training & support
- Site audit and inspection

Technical Services

- Collaboration across industry stakeholder groups
- Technical education
- Technical design support
- Technical specification support

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Strong foundation, now building a global presence

50
years old this year

165
employees

90,000
sq. ft. across
2 UK production sites

2 divisions
Siderise Insulation
Siderise Special Products

No. of countries supplied to per region (Group):

21 Europe
5 Middle East & India
8 Asia-Pacific
1 US

>250
system tests conducted

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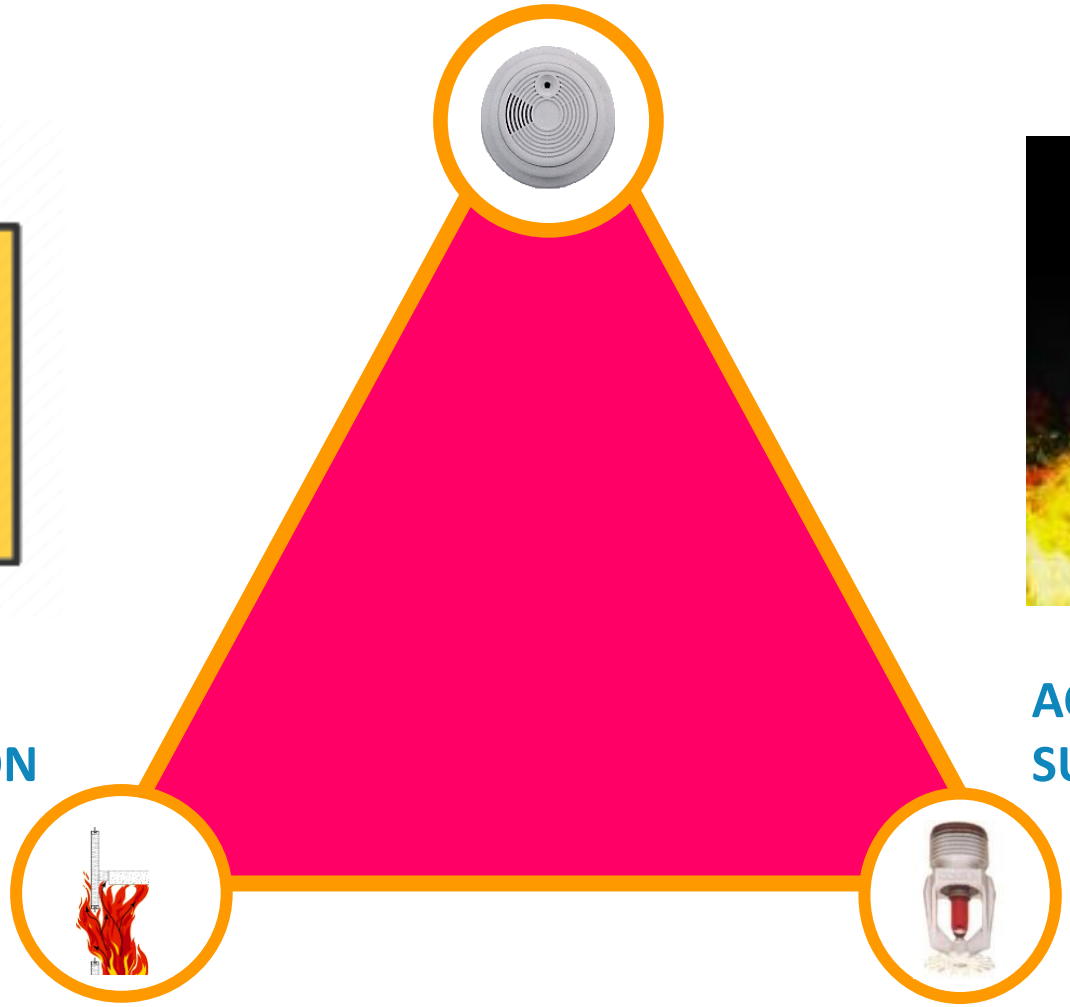
PASSIVE SYSTEM
COMPARTMENTATION



ACTIVE SYSTEM
SUPPRESSION

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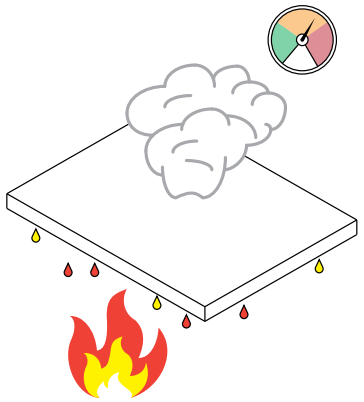
- FUNDAMENTALS OF FIRE
- TERMINOLIGY & DEFINITION

Reaction To Fire

European Classifications: EN13501-1

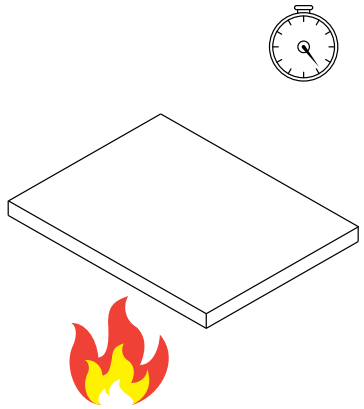
"Reaction to Fire. Response of a product in contributing by its own decomposition to a fire to which it is exposed, under specified conditions." – EN13501-1, 3.1.15



Fire Resistance

Ratings: EN13501-2

"Fire resisting (Fire resistance) The ability of a component or a building to satisfy, for a stated period of time, some or all of the appropriate criteria given in the relevant standard." – ADB Vol2 appendix A



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Reaction to fire
– this is classification

- Class A1 (Non- Combustible)
- Class A2 (Limited – Combustibility) and so on..

Test standard

- EN 13501 – 1 : Flames Spread, Smoke Developed and Burning Droplets
- BS 476 – Part 4 : Flame Spread
- AS 1530.1 – Methods for fire tests on building materials, components and structures - Combustibility test for materials

Resistance to fire
– this is performance and a system

INTEGRITY (E) / INSULATION (I)

- EI 30
- EI 60
- EI 90
- EI 120

Test Standards

- EN 1364 -4 : Perimeter Barrier + Spandrel
- EN 1366 -4 : Linear Gap Seals
- EN 1364 – 6 or TG 19 : OSCB
- AS 1530.4 - Methods for fire tests on building materials, components and structures Fire-resistance tests for elements of construction

Reaction to fire
– this is classification

- Class A1 (Non- Combustible)
- Class A2 (Limited – Combustibility) and so on..

Test standard

- EN 13501 – 1 : Flames Spread, Smoke Developed and Burning Droplets
- BS 476 – Part 4 : Flame Spread
- AS 1530.1 – Methods for fire tests on building materials, components and structures - Combustibility test for materials

Large scale system Tests
– this is performance and a system

- NFPA 285
- BS 8414 – 1
- BS 8414 – 2
- BRE 135 CLASSIFICATION
- LPS 1582
- AS 5113
- HEARD BS 9414?

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Table 1.14.a.: MCM and ACP On Non-Fire Resistance rated and Non-Load bearing Exterior wall coverings-Test Requirements

OCCUPANCY AND TYPE OF BUILDING	TEST 1 MCM/ ACP CORE AND PANEL AS PRODUCT	TEST 2 MCM/ ACP PANELS WITH WALL ASSEMBLY
1. SUPER HIGHRISE BUILDING 2. HIGHRISE BUILDING 3. MALLS 4. THEME PARKS 5. SCHOOLS 6. HOSPITALS 7. ASSEMBLY	i. Core shall be tested to the criteria iii and iv. ii. Panel shall be tested with the thickness intended to the criteria iii and iv. iii. EN 13501-1 With pass criteria A1 OR A2-s1-d0 AND iv. ASTM D1929 MCM/ACP shall have self ignition temperature of not less than 343°C.	v. BS 8414 –1 Or 2 With pass criteria as per BRE 135 OR vi. NFPA 285 With pass criteria "Pass" OR vii. FM 4881 With pass criteria "Pass" OR viii. ISO 13785-2 With pass criteria "Pass"

8. LOWRISE BUILDING 9. MIDRISE BUILDING 10. WAREHOUSE 11. INDUSTRIAL	i. Core shall be tested to the criteria iii and iv. ii. Panel shall be tested with the thickness intended to the criteria iii and iv. iii. EN 13501-1 With pass criteria B-s1-d0 AND iv. ASTM D1929 MCM/ACP shall have self ignition temperature of not less than 343°C.	v. BS 8414 –1 Or 2 With pass criteria as per BRE 135 OR vi. NFPA 285 With pass criteria "Pass" OR vii. FM 4881 With pass criteria "Pass" OR viii. ISO 13785-2 With pass criteria "Pass"

Integrity (E) & Insulation (I)

"Fire resistance is a measure of one or more of the following.

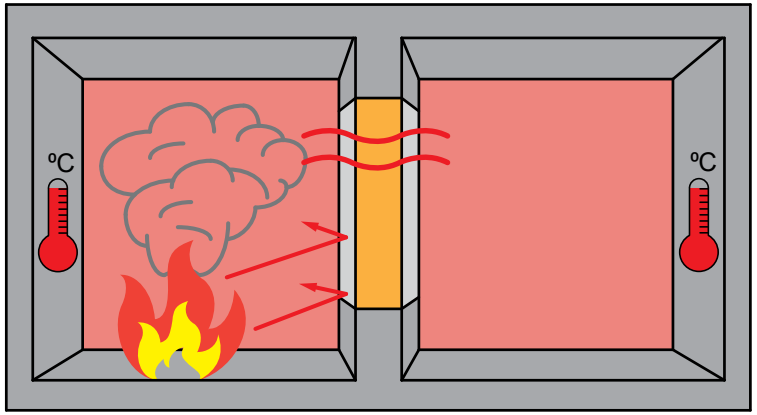
a. Resistance to collapse (loadbearing capacity), which applies to loadbearing elements only, denoted R in the European classification of the resistance to fire performance.

b. Resistance to fire penetration (integrity), denoted E in the European classification of the resistance to fire performance.

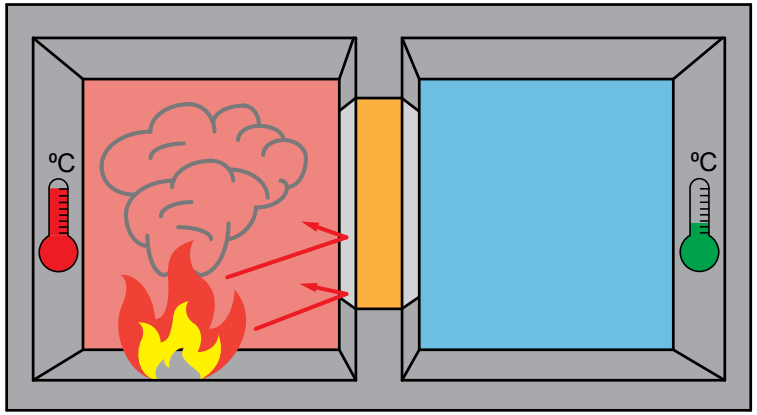
c. Resistance to the transfer of excessive heat (insulation), denoted I in the European classification of the resistance to fire performance."

ADB Vol2 B19

Integrity



Integrity & Insulation



Firestops and Cavity Barriers are non-loadbearing elements and do not require R, only E & I

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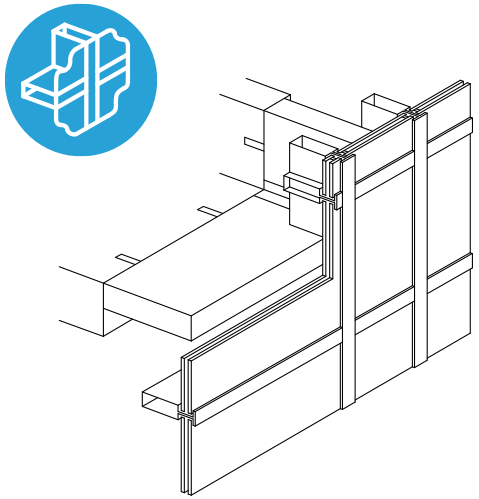
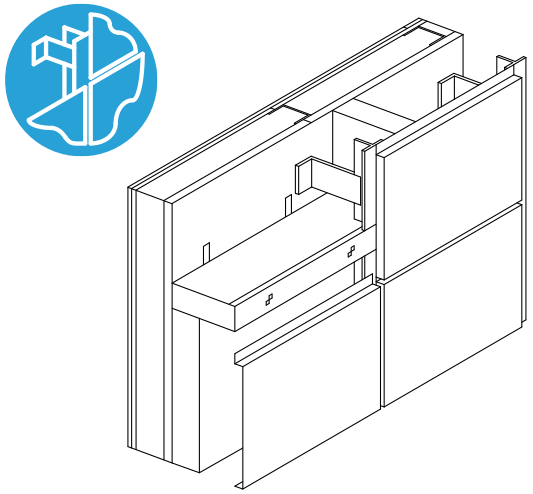
Three Key Façade Types

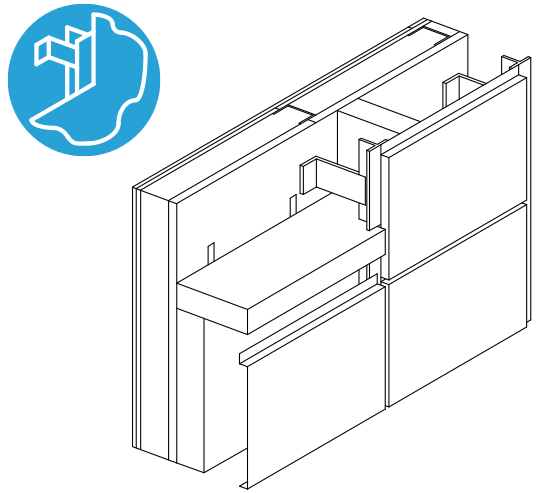
- Curtain Wall



Ventilated Façades



Non-ventilated Façades



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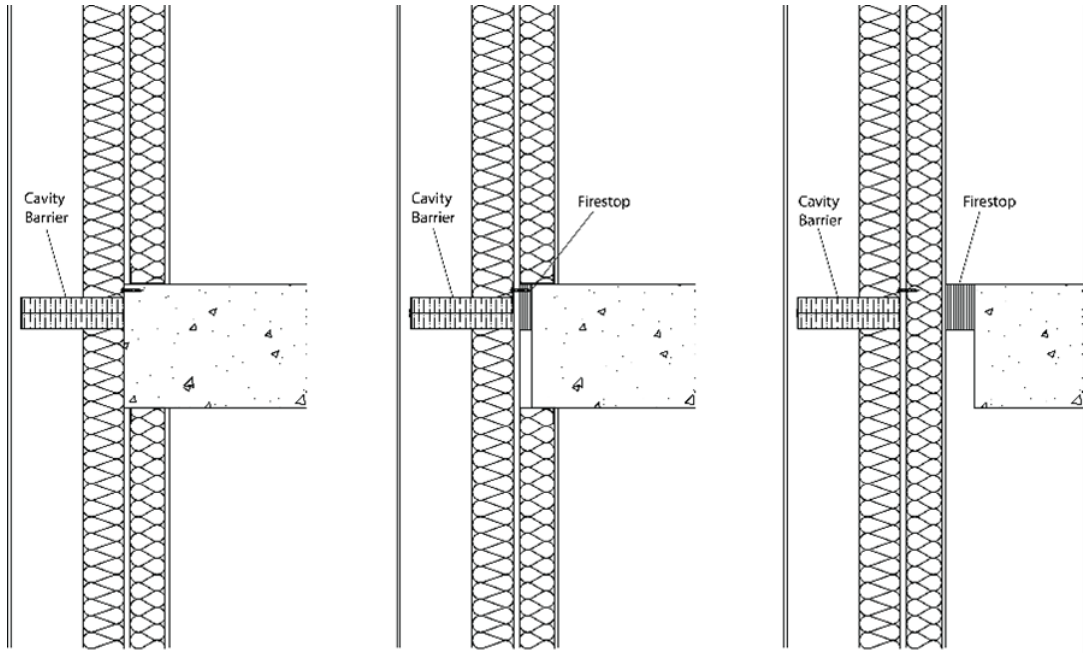
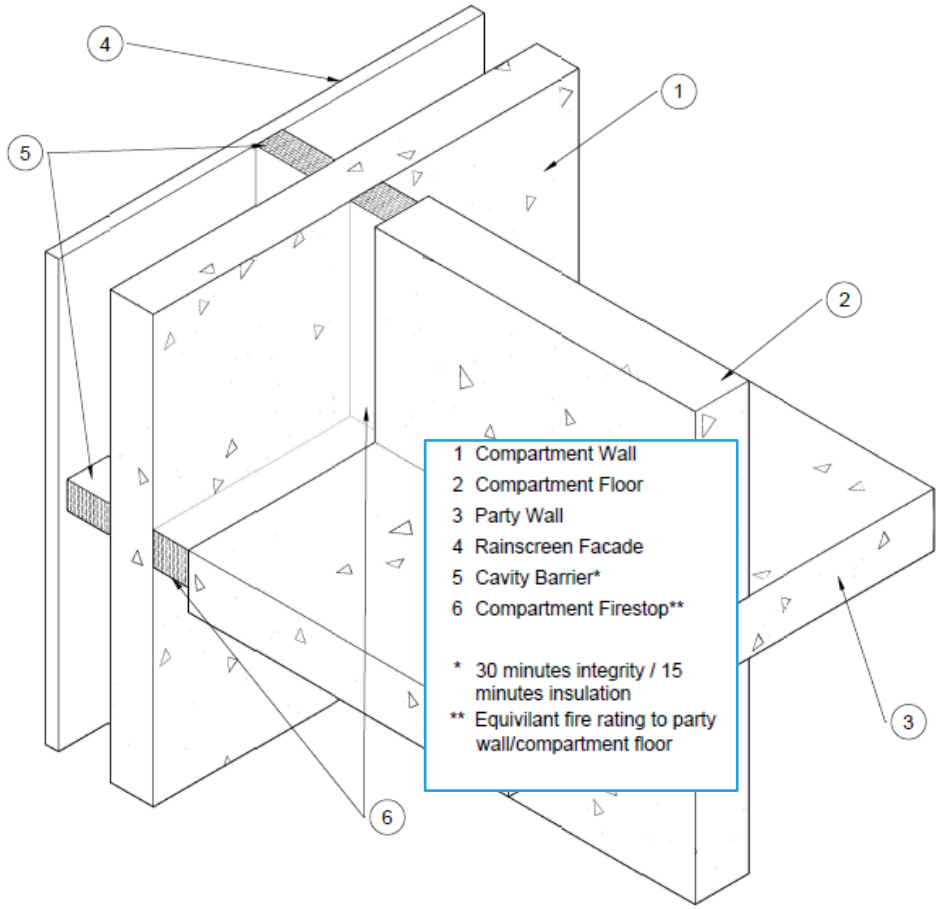
Compartmentation

"A building or part of a building comprising one or more rooms, spaces or storeys, that is constructed to prevent the spread of fire to or from another part of the same building or an adjoining building"

ADB Vol2 appendix A





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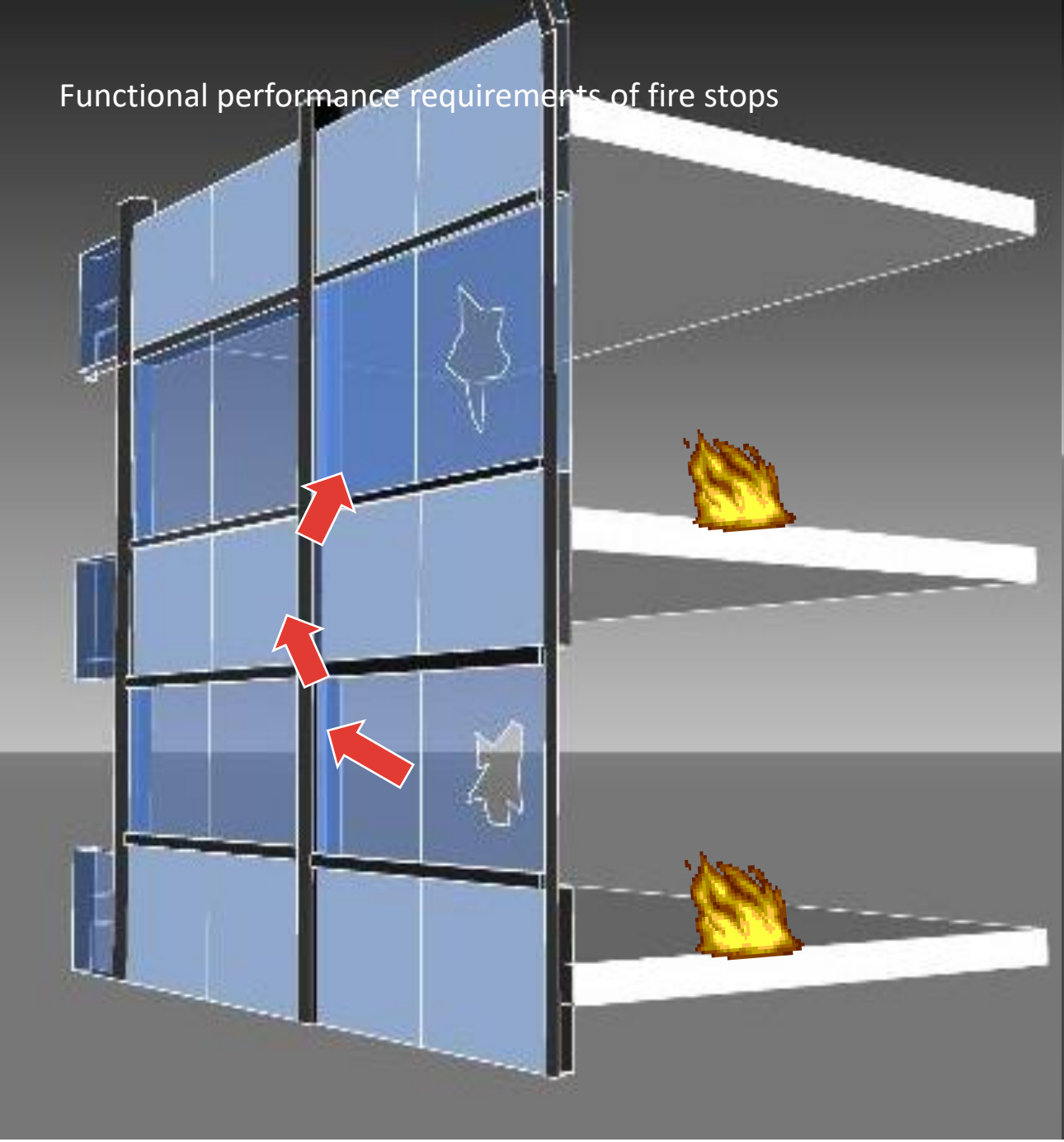
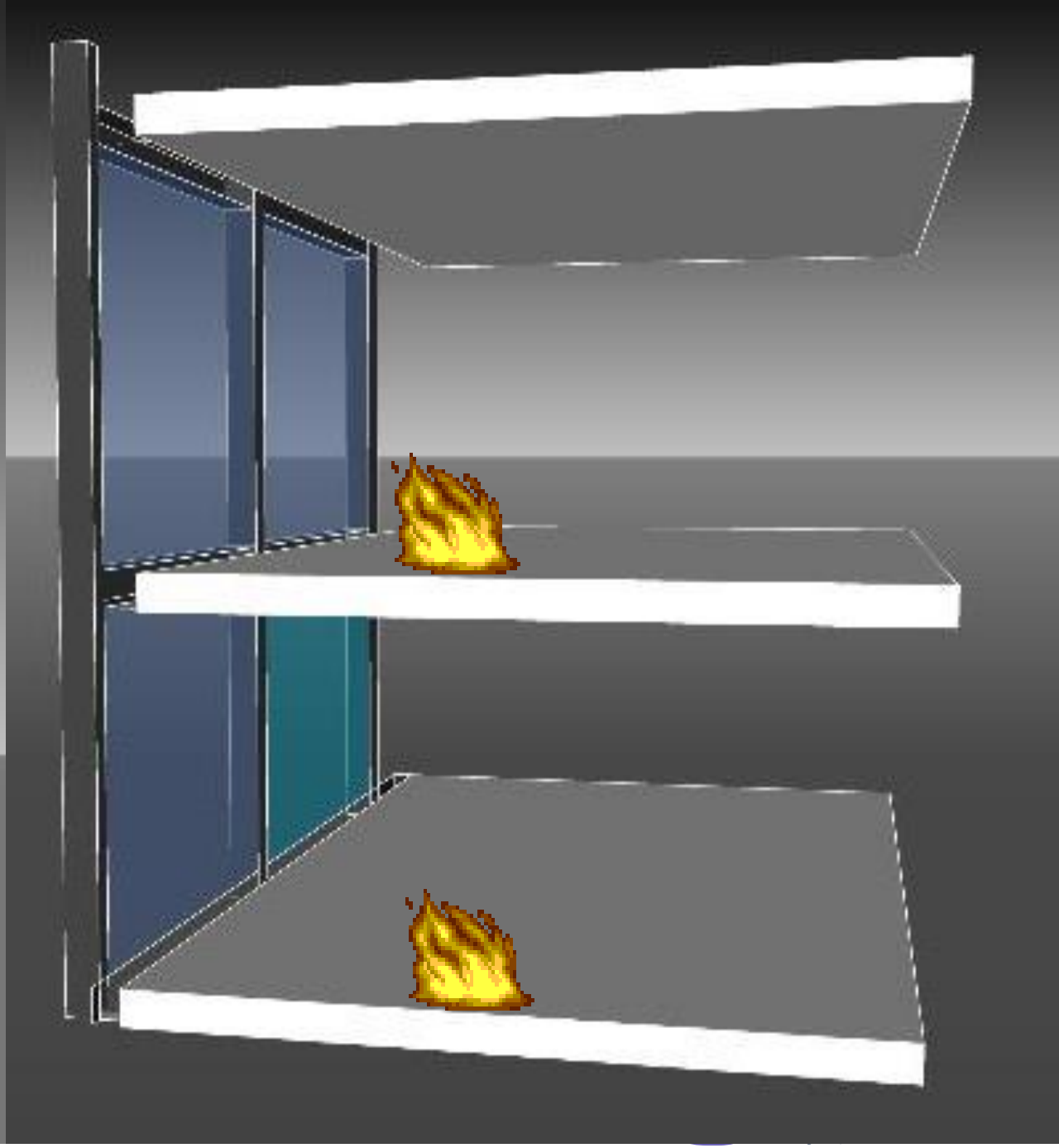
Functional performance requirements of fire stops

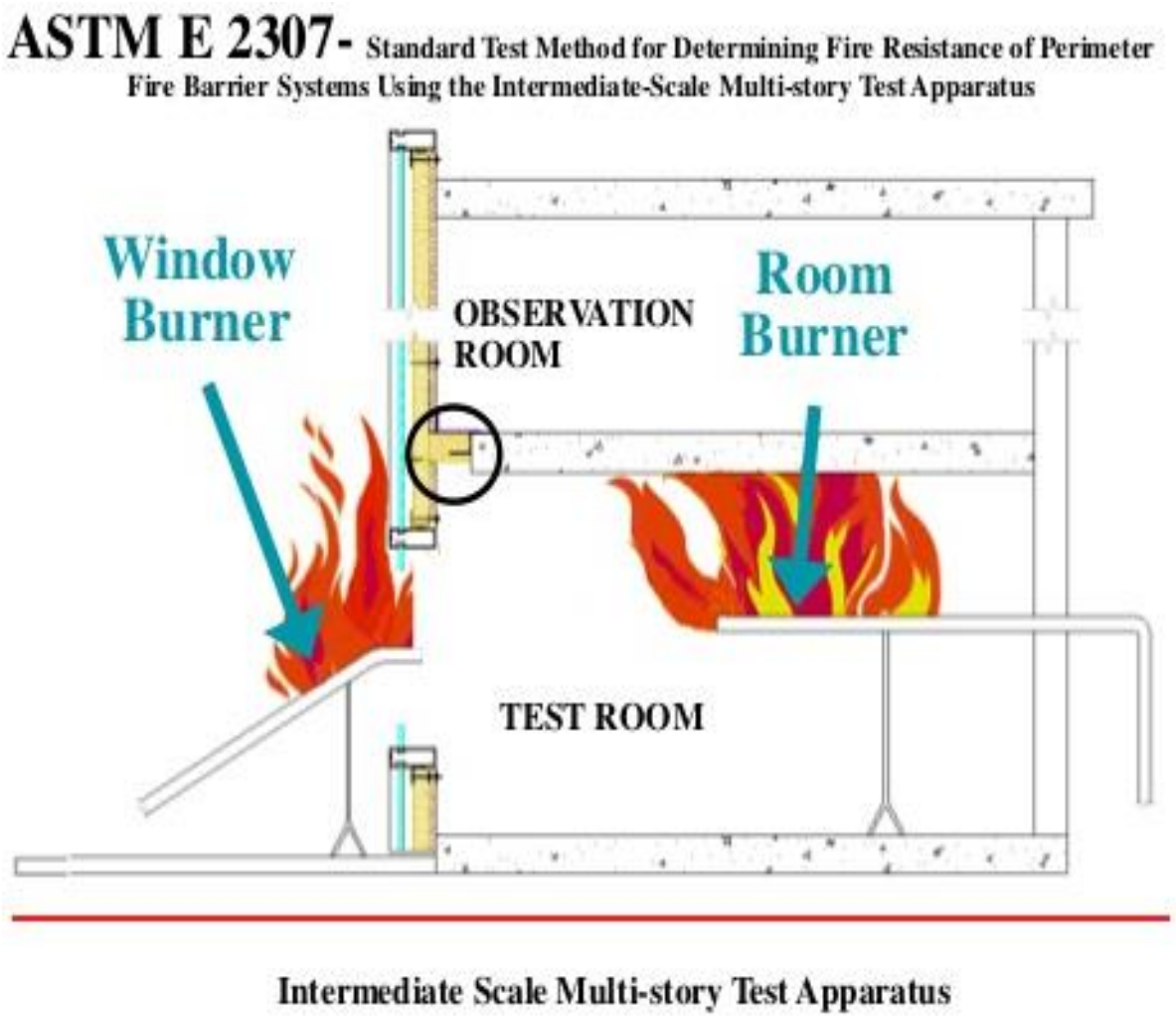


Leap-frog effect

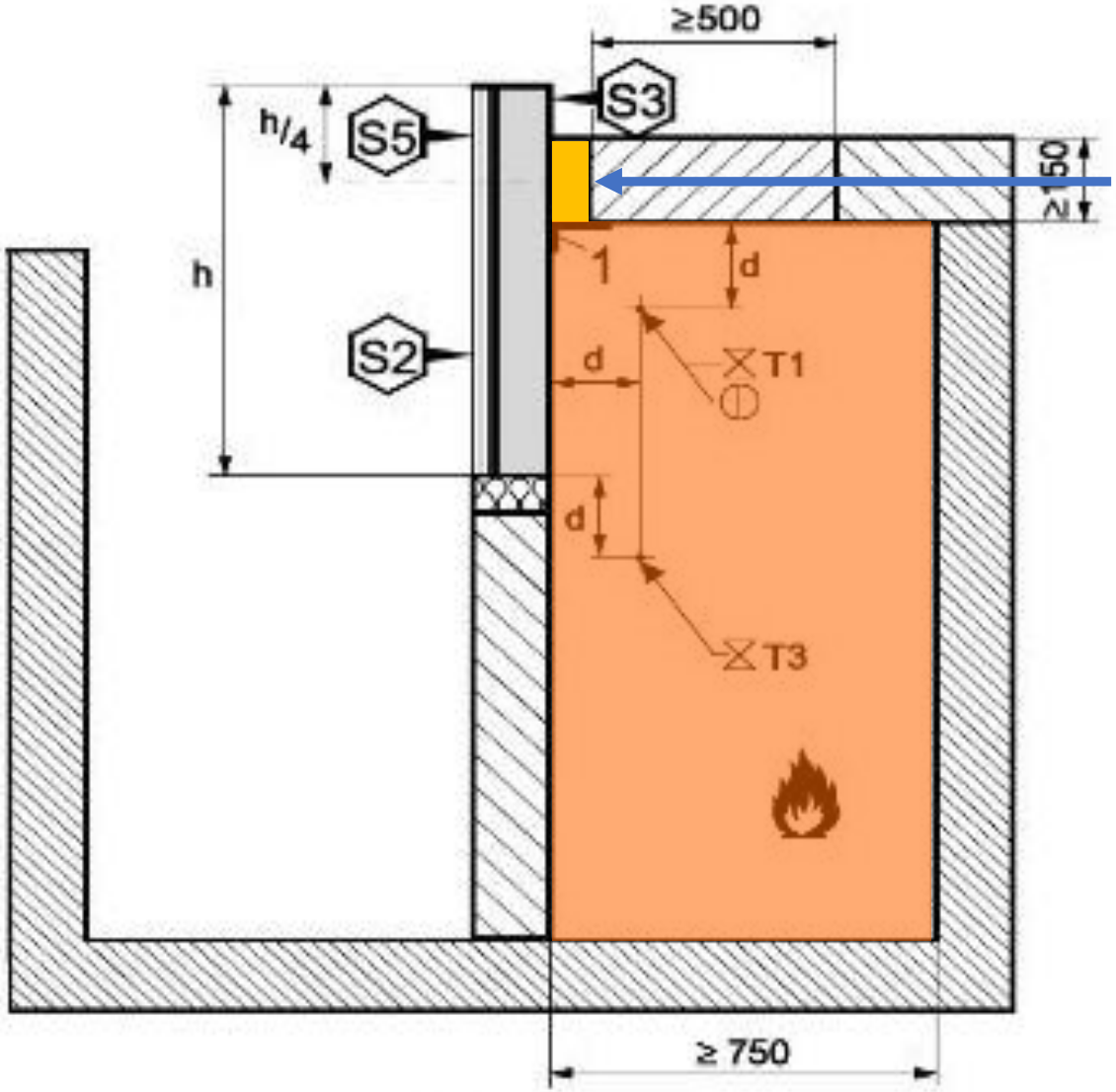


Internal spread of fire

ASTM E2307



EN 1364-4



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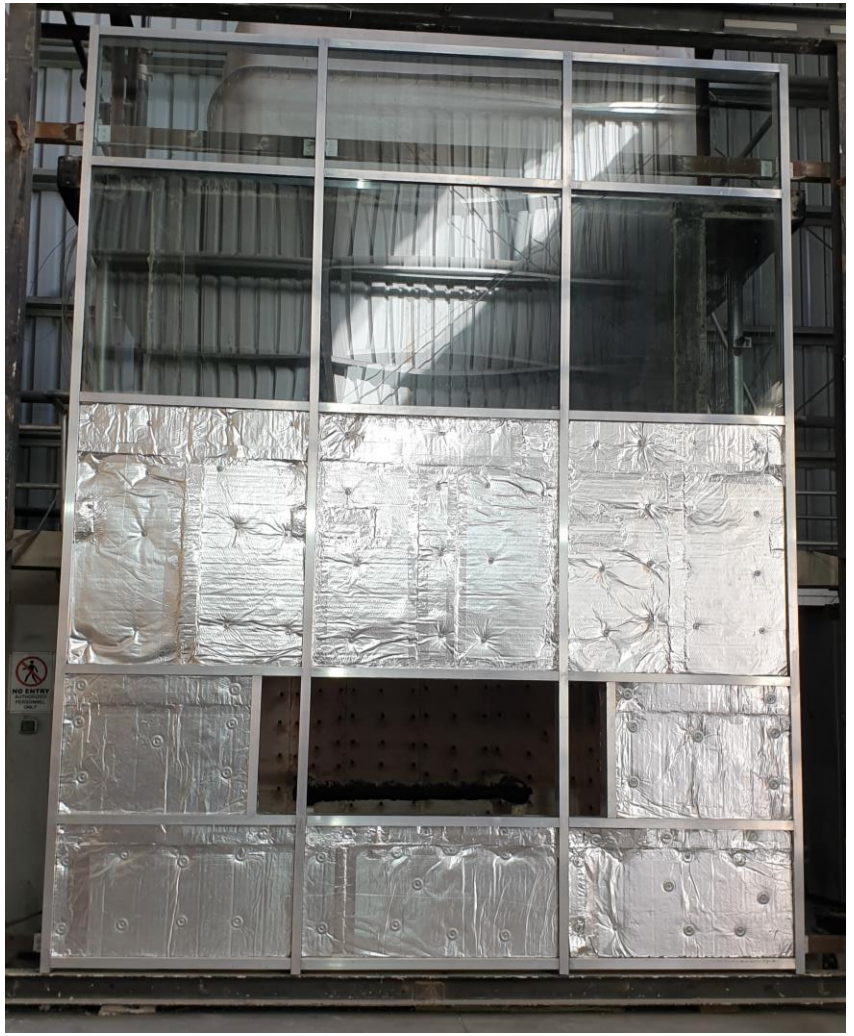
ASTM 2307

Inside View – Post Test

Post Test Image – Exterior

Pre Test



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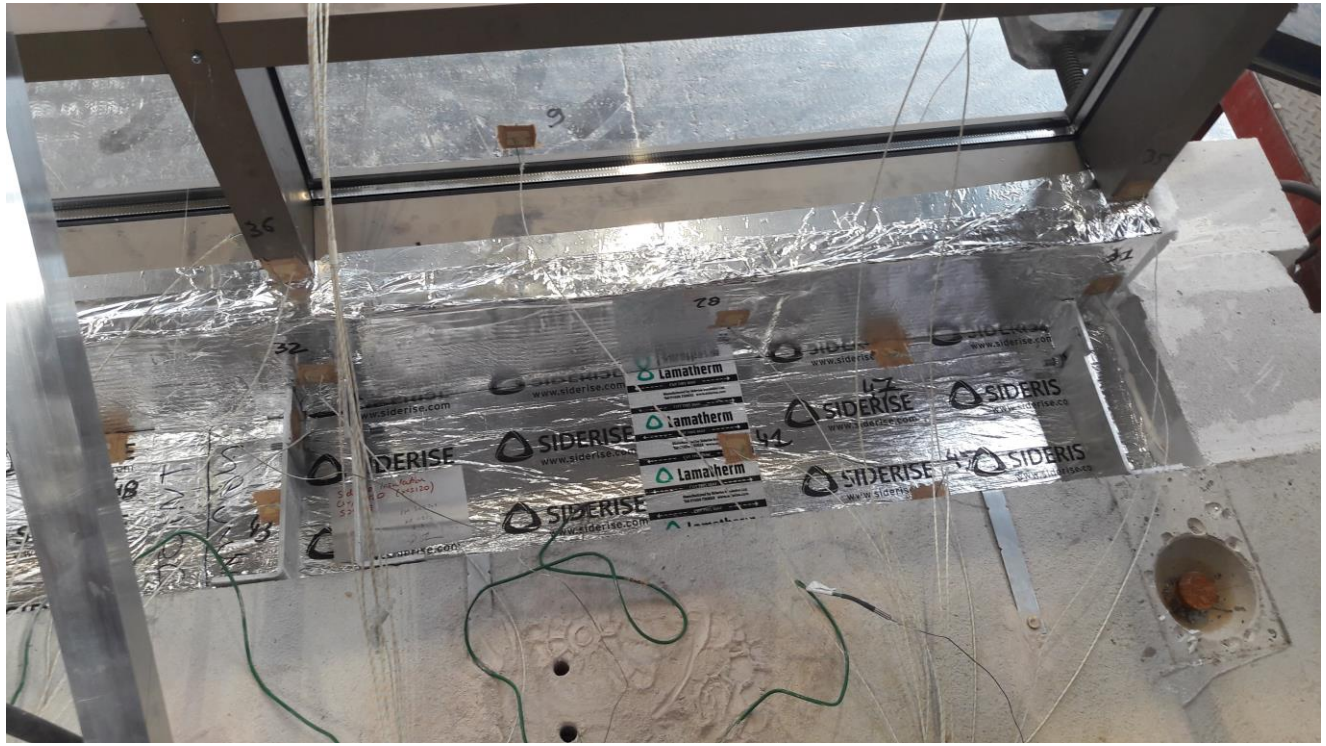

Pre-test

External View – Post Test

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ASTM E 2307

Refers to the following table within the standard for pre-cycling (cold) movement

TABLE 3 Conditions of Test Specimen Cycling

Movement Type	Minimum Cycling Rates (cpm)	Minimum Number of Movement Cycles
Thermal	1	500
Wind Sway	10	500
Seismic	30	100
Combined	30	100
	followed by:	
	10	400

EN 1364 - 4

Refers to ETAG 026 which is now replaced by EAD 350141-00-1106

2.2.14 Cycling of perimeter seals for curtain walls

The test construction shall be subject to cycling a minimum of 500 times between the minimum and maximum joint width corresponding to the movement capability for a certain nominal joint width. Cycling shall start at the nominal joint width and finish at the maximum joint width. Cyclic rates of 30 cpm (cycles per minute) shall be designated as seismic, cyclic rates of 10 cpm shall be designated wind sway, and those rates below 1 cpm shall be designated thermal. The applicant shall designate a cyclic rate that shall be recorded in the test report.

After cycling, the test construction shall be allowed to stabilise for 24 hours, without alteration before fire testing, if not, the reasons shall be stated in the report.

Joint seals tested at a higher frequency are deemed to perform at lower frequencies.

Compression set data shall be provided on test specimens relying solely upon compression for placement in joints to satisfy long term performance.

The resistance against movement is given as "cycle tested at 30 cpm", "cycle tested at 10 cpm", or "cycle tested at 1 cpm".

Durability & Service

Fire Stops:
Compressed – must accommodate movement

Siderise: Unique Lamella product accommodates movement where conventional horizontal fibre product doesn't

Fibre Orientation

Non-Compressible - Horizontal

Compressible - Lamella

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Certifications

Intertek

certifire

UKAS PRODUCT CERTIFICATION 087

CLASSIFIED UL

1. Materials / Product
2. Choosing Certification Partner
3. Material Certification Process / Material
4. Testing To Right Standard
5. Issuing Report
6. Issuing Test Certificate Local Coc
7. Field Of Application Acceptability
8. Repeat Factory Audit

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Test for the future

Considering the uniqueness of future building design – the product performance should be tested to future needed like:

- Spandrel performance
- Void Size
- Curtain wall system design
- Movement
- Installation and site condition
- Certification and Documents available for verification at any point in the future

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More Possibilities...

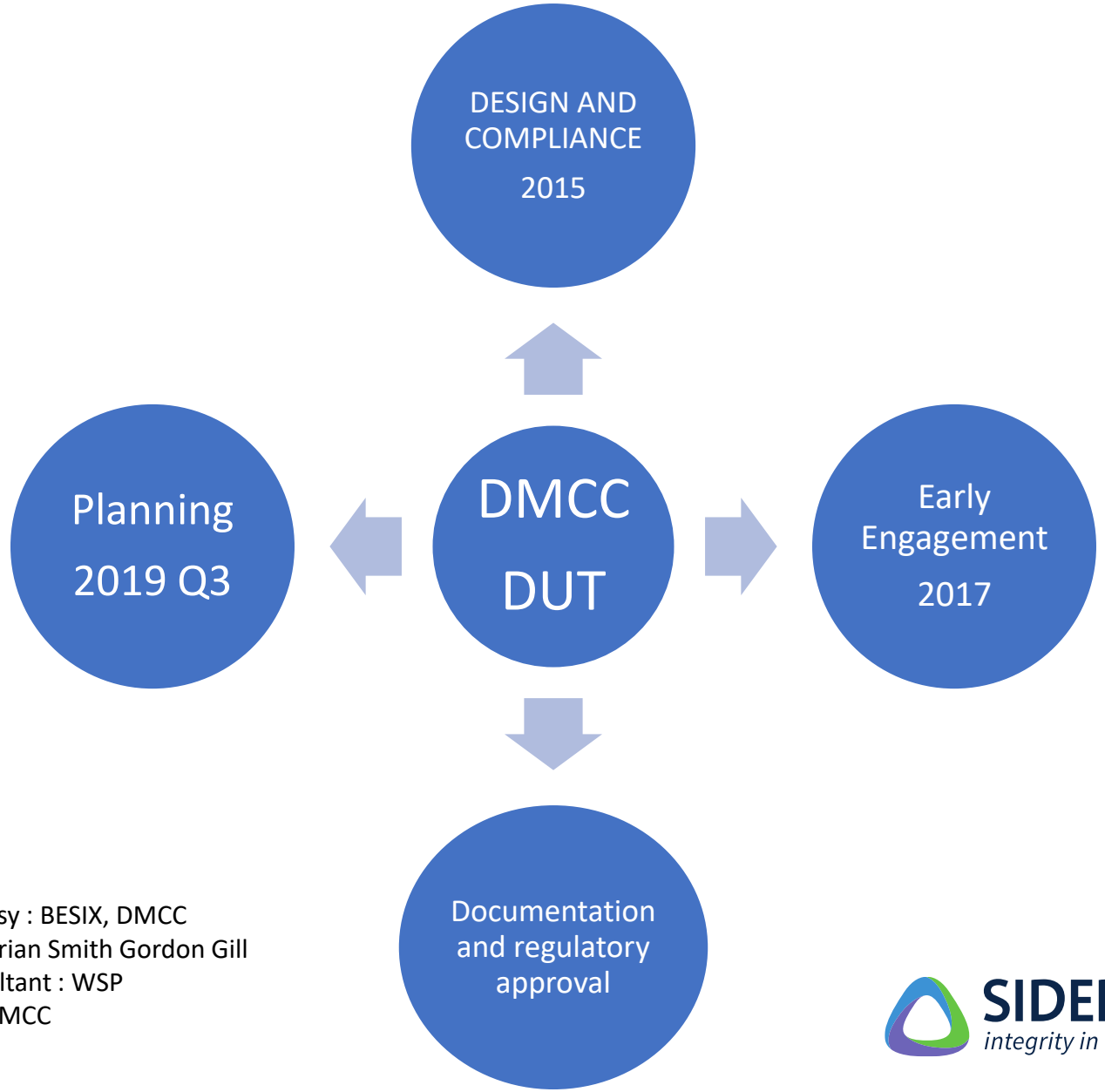

Image Courtesy : BESIX, DMCC
Architect : Adrian Smith Gordon Gill
Façade Consultant : WSP
Developer : DMCC

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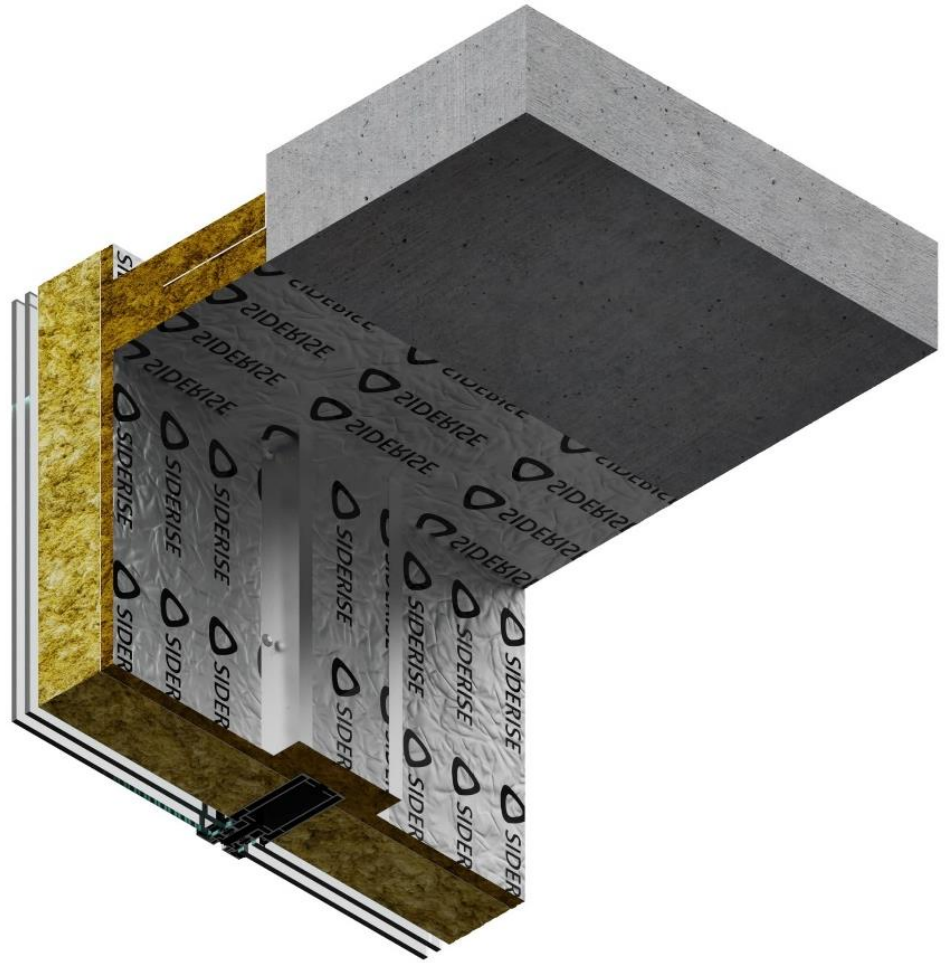
More Possibilities...



Dubai Uptown Tower, UAE
Concept – June 2013

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Contractor : BESIX
340m Height
Siderise Perimeter firestops and spandrel protection

Developer : DMCC

Image Courtesy : BESIX, DMCC
Architect : Adrian Smith Gordon Gill
Façade Consultant : WSP

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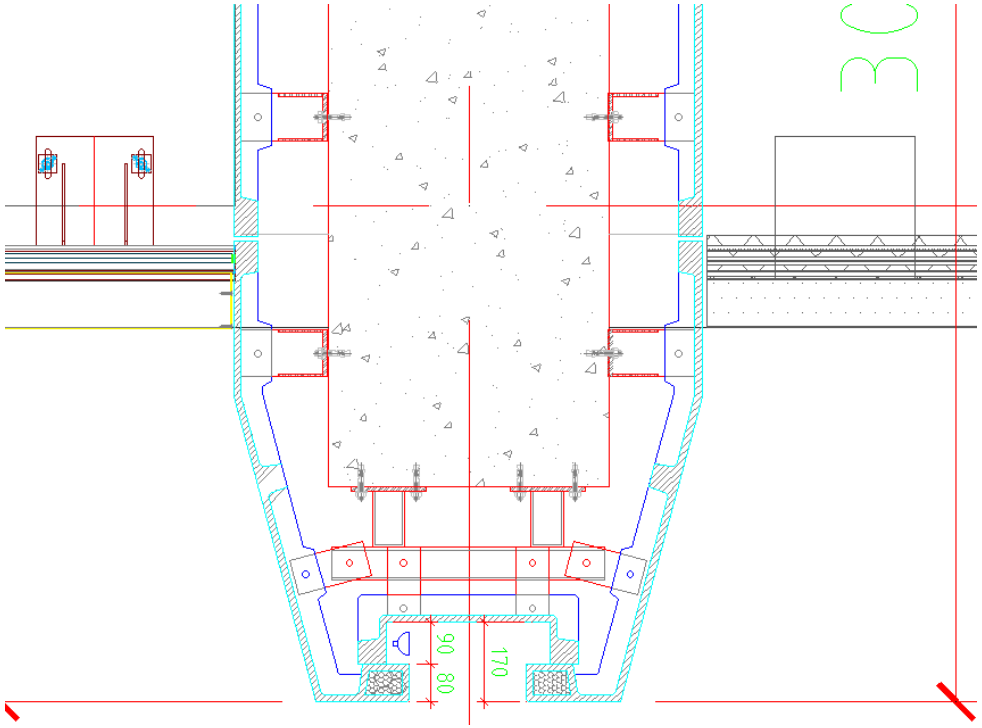
Project Case Study



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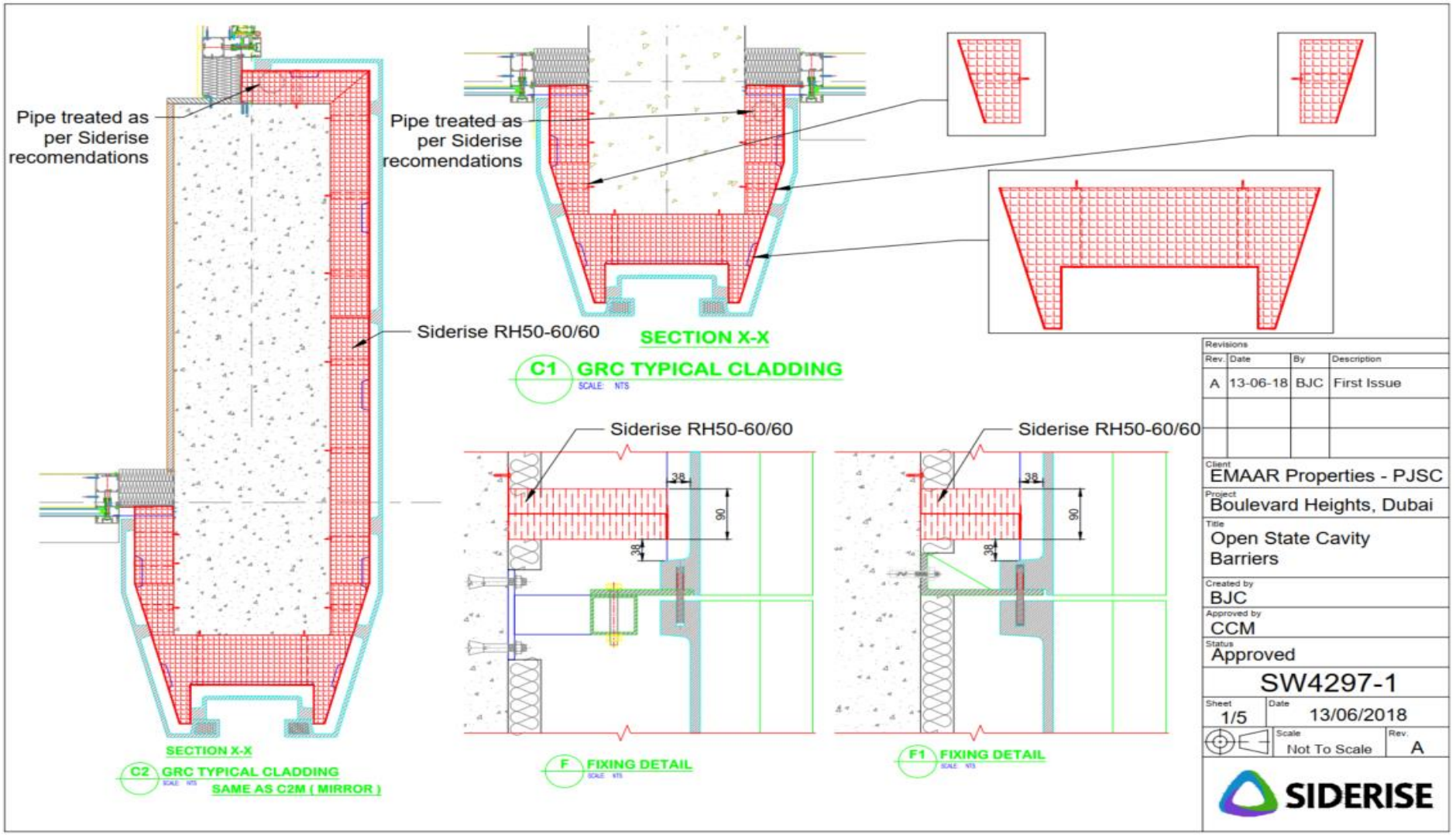

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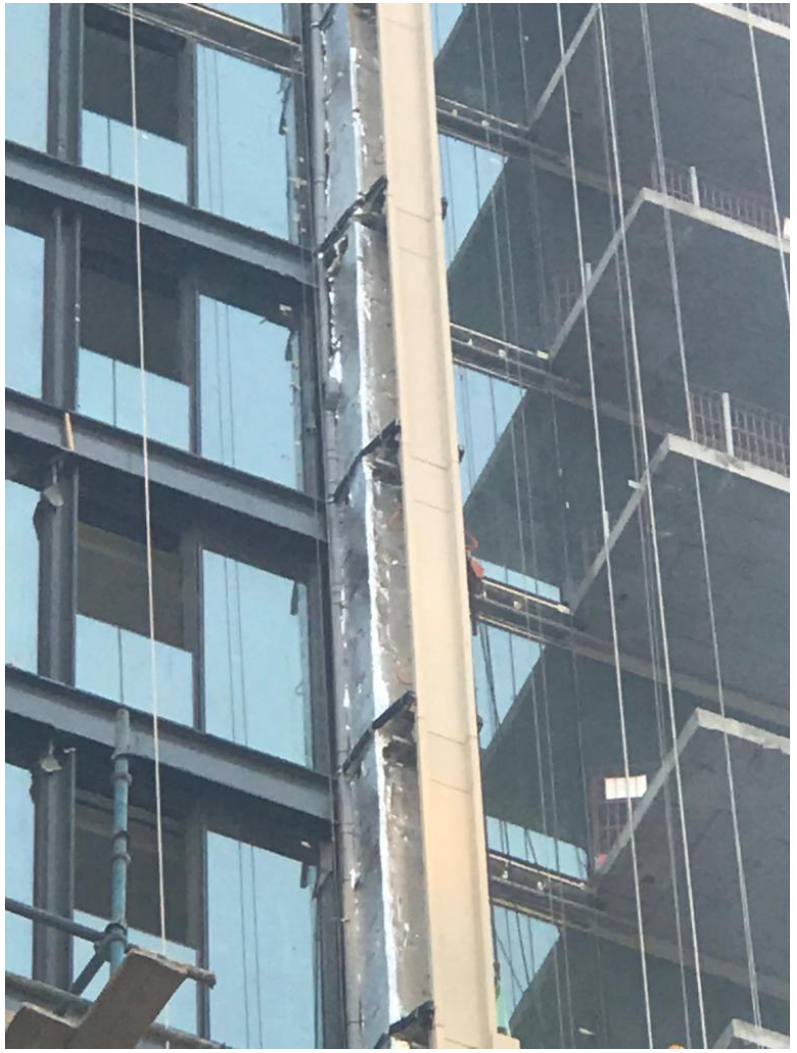

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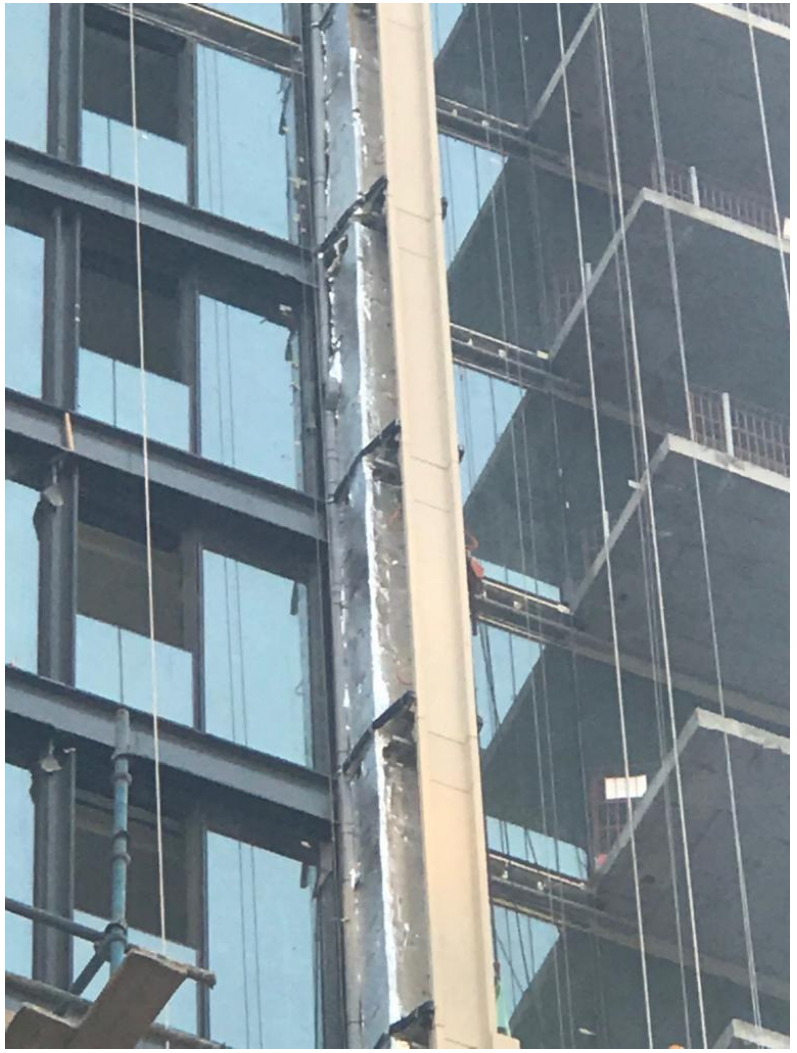

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Concept Design

Detail Design

Bespoke Solution

Site Services

Supply

Installation Support

Inspection App

Completion and Sign Off

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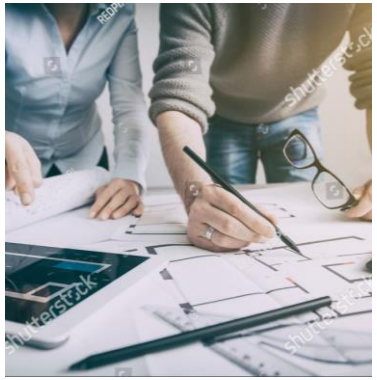
Seven steps to improve quality and construct safer buildings

01



Good Design

Every building must start with a good design

02

Buildability

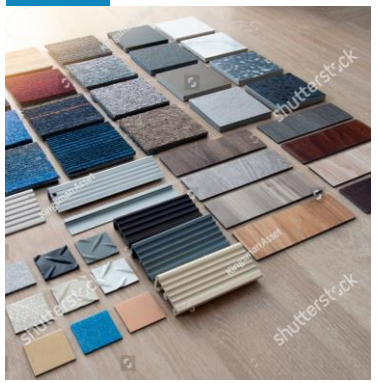
It has to be realistic in terms of being able to be built in line with the budget

03

Programming

A sensible programme of delivery has to be agreed

04



Materials

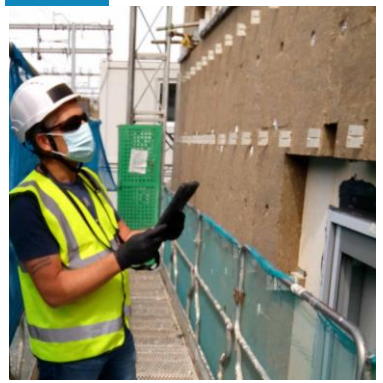
Appropriate materials for the job must be selected and maintained throughout

05

Site Management

The site should be managed professionally

06



Quality

installation of materials in line with design is critical

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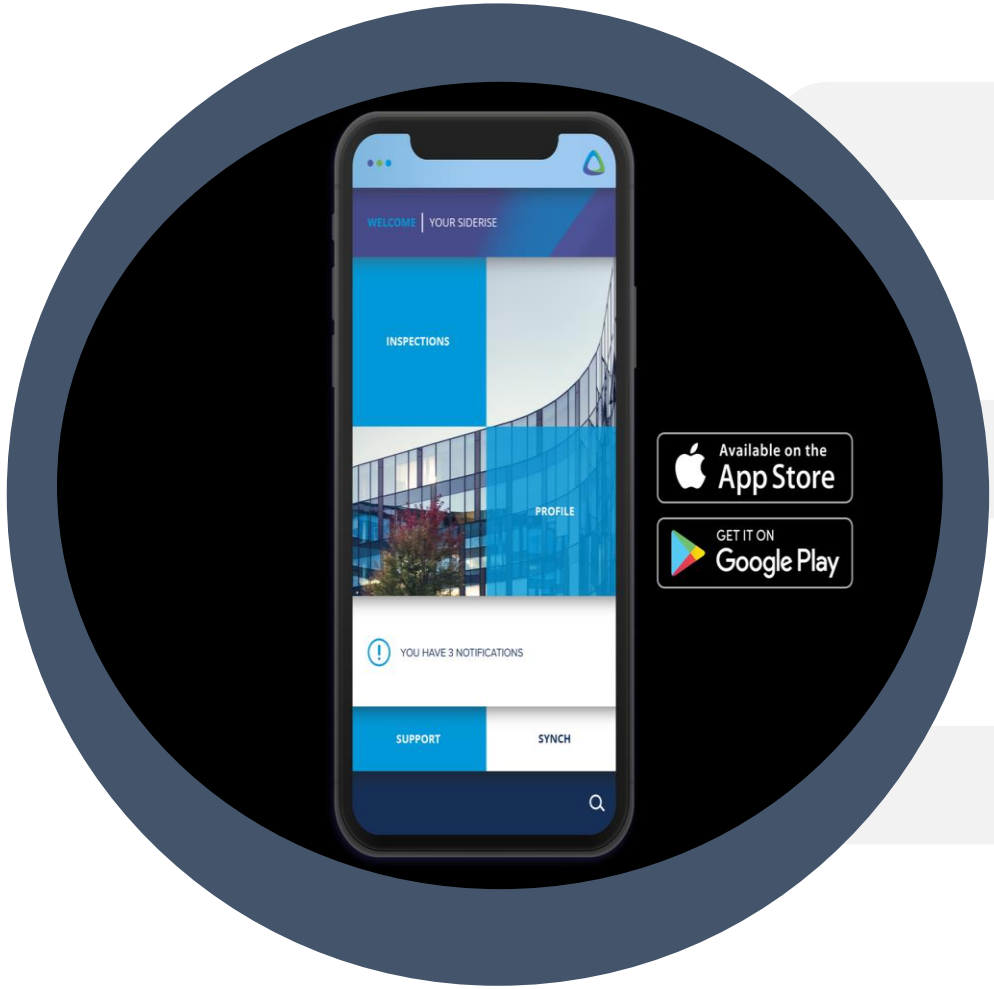
Final step to improve quality and construct safer buildings



What went well?

What was not optimal?

What lessons were learnt?

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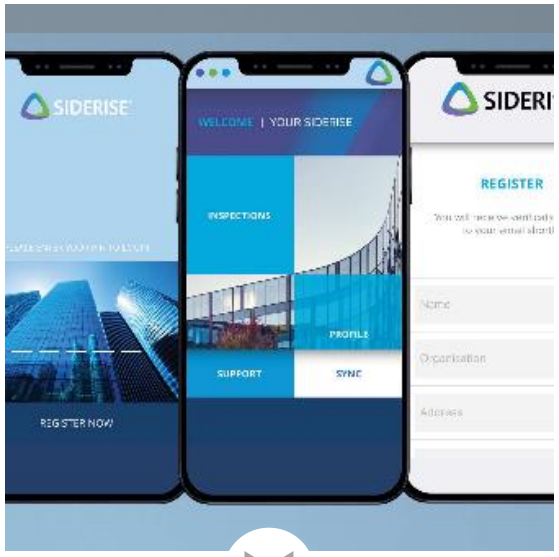
Siderise has a market leading product range, and is continuing to invest in technical innovation



First to provide a digital means of site inspection and reporting

First in industry to adopt bsi.identify to provide lifetime product information and traceability

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Thank you

Telephone: +44 (0)1656 730 833

Technical Services: technical.services@siderise.com.

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