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18TH EDITION COMPLIANT

The impact of the 18th Edition Wiring Regulations on the selection of suitable cable supports

WHAT YOU NEED TO KNOW ABOUT THE LATEST CHANGES TO UK WIRING STANDARDS & RECOMMENDATIONS

ANOTHER FANTASTICALLY INTERESTING POWER POINT PRESENTATION BY A TECHNICAL GUY...

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WHO IS THIS GUY...??

A BIT ABOUT ME...

APPRENTICE ELECTRICIAN
ELECTRICIAN
PROJECT MANAGER

GRADUATE ELECTRICAL ENGINEER
ELECTRICAL ENGINEER

SENIOR
ELECTRICAL ENGINEER

MANAGING DIRECTOR OF

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AND TECHNICAL ADVISOR TO

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BS 5839-1:2002

Fire resistant cable supports have always been a requirement for fire alarm and critical path cabling

EXTRACT FROM ABOVE:

"f) Methods of cable support should be such that circuit integrity will not be reduced below that afforded by the cable used, and should withstand a similar temperature and duration to that of the cable, while maintaining adequate support.

NOTE 7 In effect, this recommendation precludes the use of plastic cable clips,cable ties or trunking, where these products are the sole means of cable support."

Fire resistant cable support are required for emergency lighting circuits under BS5266 Part 1: Code of Practice for Emergency Lighting

8.2.3 Cable support

Methods of cable support and fixings should be non-combustible and such that circuit integrity will not be reduced below that afforded by the cable used, and should be able to withstand a similar temperature, duration and water application to that of the cable, while maintaining adequate support.

NOTE In effect, this recommendation precludes the use of plastic cable clips, cable ties or trunking where these products are the means of cable support. Steel and copper are examples of materials that are likely to be suitable.

Fixings and clipping distances should be in accordance with the manufacturer's recommendations.

Where cable management system support is provided by drop rods, either alone or in conjunction with other support methods, the drop rod size should be calculated in accordance with BS 8519.

Current Recommendations

Pre Jan 2019

"21.11.201 Wiring systems in escape routes shall be supported such that they will not be liable to premature collapse in the event of fire.

The requirements of Regulation 422.2.1 shall also apply, irrespective of the classification of the conditions for evacuation in an emergency.

NOTE 1: Non-metallic cable trunking or other non-metallic means of support can fail when subject to either direct flame or hot products of combustion. This may lead to wiring systems hanging across access or egress routes such that they hinder evacuation and firefighting activities.

NOTE 2: This precludes the use of non-metallic cable clips, cable ties or trunking as the sole means of support. For example, where non-metallic trunking is used, a suitable fire-resistant means of support/retention must be provided to prevent cables falling out in the event of fire."

THE TRAGIC EVENTS BEHIND THE CHANGES....

HARROW COURT, 2ND FEB 2005

Two fire-fighters and a resident died in a fire in a high-rise block of flats. The fire-fighters were trapped by fallen fire alarm cables prior to an event of abnormal rapid fire development.

Following an inquest in March 2007, HM Coroner Mr Edward Thomas issued several recommendations through a Rule 43 letter [1, 2] including a recommendation to social housing providers regarding the support of fire alarm cables which should conform (as a minimum) to BS 5839 – Part 1 : 2002; clause 26.2 (f:) [3].

ATHERSTONE-ON-STOUR, 2ND NOV 2007

Four fire-fighters died in a large, highly-insulated warehouse fire.

It was noted from witness statements that fire-fighters were being caught up in fallen cables during the incident. It is unclear whether the four fatalities were trapped by cables.

Source: ifpmag.mdmpublishing.com

SHIRLEY TOWERS, 6TH APR 2010

Two fire-fighters died while fighting a fire in a high-rise block of flats after being trapped by fallen cables prior to an event of abnormal rapid fire development.

Following an inquest in February 2013, HM Coroner Mr K Wiseman issued recommendations in several Rule 43 letters [1, 5] including reiterating the recommendations made by HM Coroner Mr Thomas after the Harrow Court inquest. Mr Wiseman made a further recommendation to have "… Building Regulations amended to ensure ALL [sic] cables, not just fire alarm cables, are supported by fire-resistant cable supports". Mr Wiseman recommended an "amendment to BS 7671 (2008)…" to achieve this [6]

THE TRAGIC EVENTS BEHIND THE CHANGES....

Southampton Shirley Towers death fire images released

Jim Shears and Alan Bannon lost their lives in the blaze at Shirley Towers. The inquest into their deaths has heard they became tangled in fallen cables.

18TH EDITION REQUIREMENTS

Further changes effective from 1st January 2019 will push the requirements for fire resistant cable fixings beyond escapte routes to the complete installation.

Regulation 521.10.202

"Requires cables to be adequately supported against their premature collapse in the event of a fire.
*This applies **throughout the installation** and not just in escape routes"*

CONSIDERATIONS FOR THE INSTALLER

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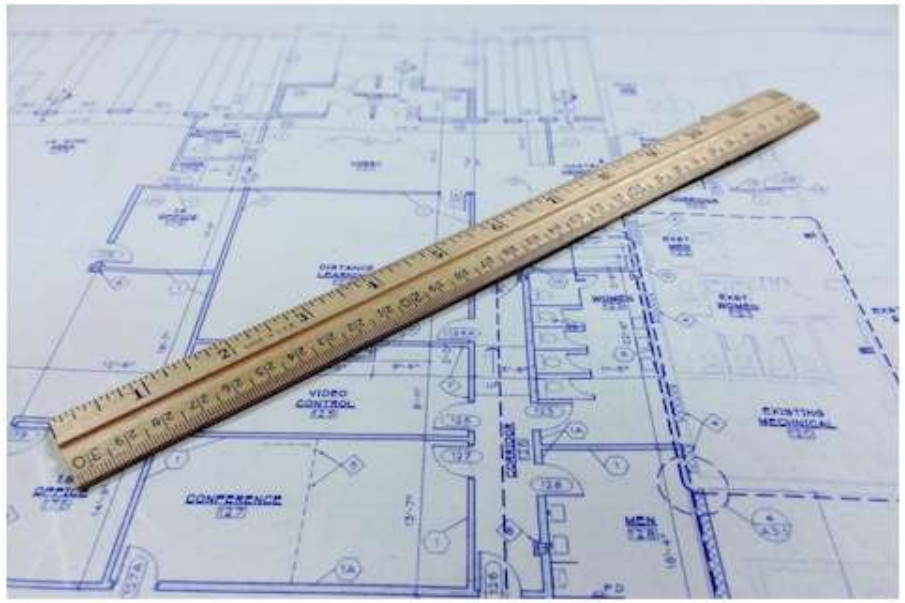
ARCHITECTURAL DESIGN



BUILDING CONSRUCTION / SUBSTRATE MATERIAL

LAYOUT

CEILING CONSTRUCTION

FIRE & ESCAPE STRATEGY

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STRUCTURAL DESIGN

CONSTRUCTION MATERIALS

STRUCTURAL CONSIDERATIONS

POSITIONING OF STRUCTURAL ELEMENTS

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STILL AWAKE?...

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M & E DESIGN

MECHANICAL SERVICES

LIFE SAFTEY SYSTEMS (CAUSE AND EFFECT)

SECURITY AND ACCESS DESIGN

LIGHTING AND SMALL POWER

HV/LV INFRASTRUCTURE

ICT INFRASTRUCTURE

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SECTOR

PUBLIC BUILDING

HEALTH CARE

DEFENCE

ENERGY

RAIL

EDUCATION

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CABLE SELECTION

TYPE AND SPECIFICATION OF CABLE

APPLICATION OF CABLE

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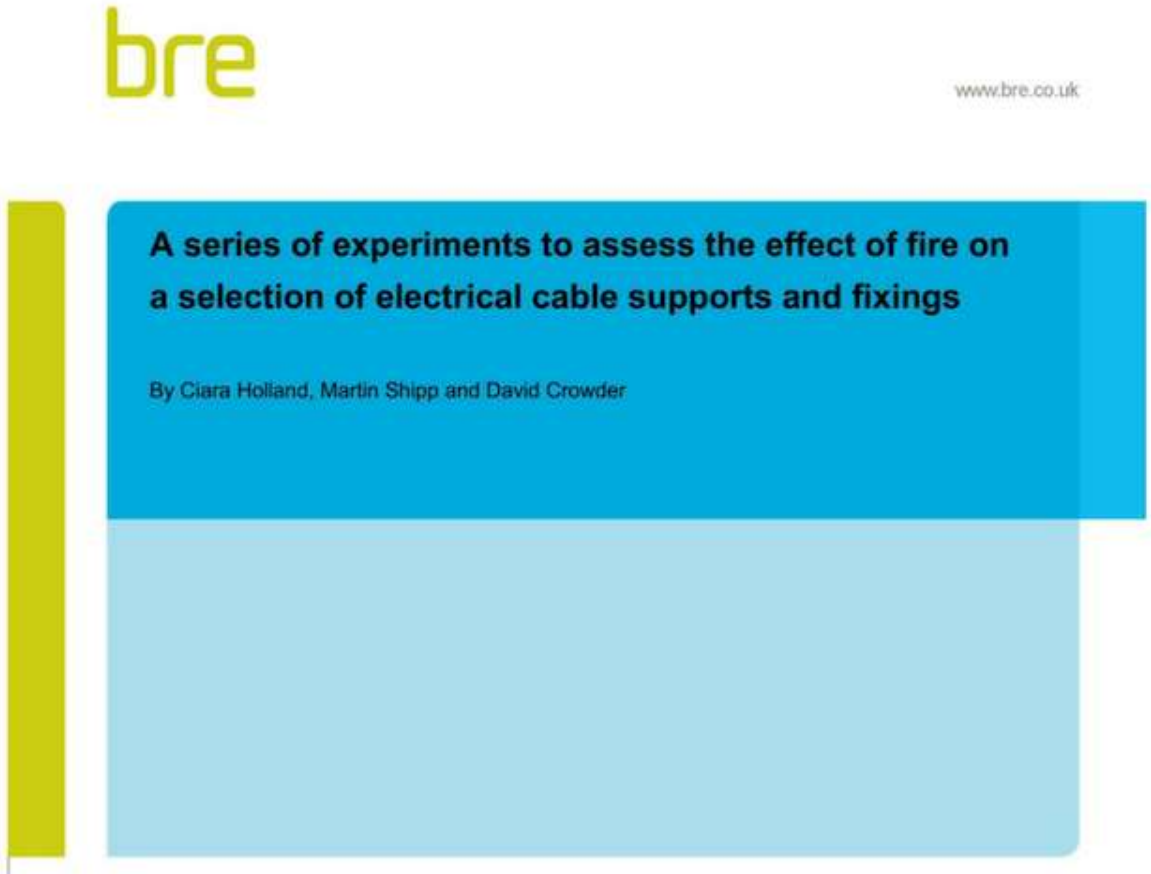
WHAT STANDARDS?

There are currently NO indpendant cable support standards in relation to the fire resistance of fixings....

LINIAN have devised a number of tests in partnership with

THE RESEARCH



To prevent the risk of failure of cable supports during an incident, cable supports capable of maintaining their mechanical strength when exposed to temperatures greater than 600°C should be used.

BRE TESTING WITH PLASTIC PLUGS - SET UP

Number	Detail
Fixing 1	Countersunk 6 mm x 45 mm concrete screw
Fixing 2	Multipurpose twin thread countersunk zinc plated 4 mm x 40mm screw with 5 mm lightweight plastic wall plug
Fixing 3	Hammer-in fixing 6 mm x 40 mm; nylon plug with drive screw
Fixing 4	Multipurpose twin thread countersunk zinc plated 4 mm x 40mm screw with 6 mm medium weight nylon wall plug
Fixing 5	Sleeve anchor M6 x 40 mm medium weight use

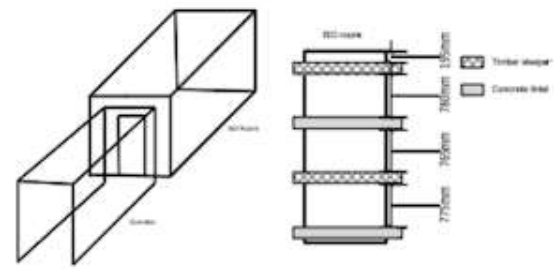


Figure 1 - Schematic of experimental rig, left, and plan view of corridor, right, indicating the layout of the timber sleepers and lintels to which the cable supports were fixed

Figure 2 – Images of experimental rig

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STILL PAYING ATTENTION?

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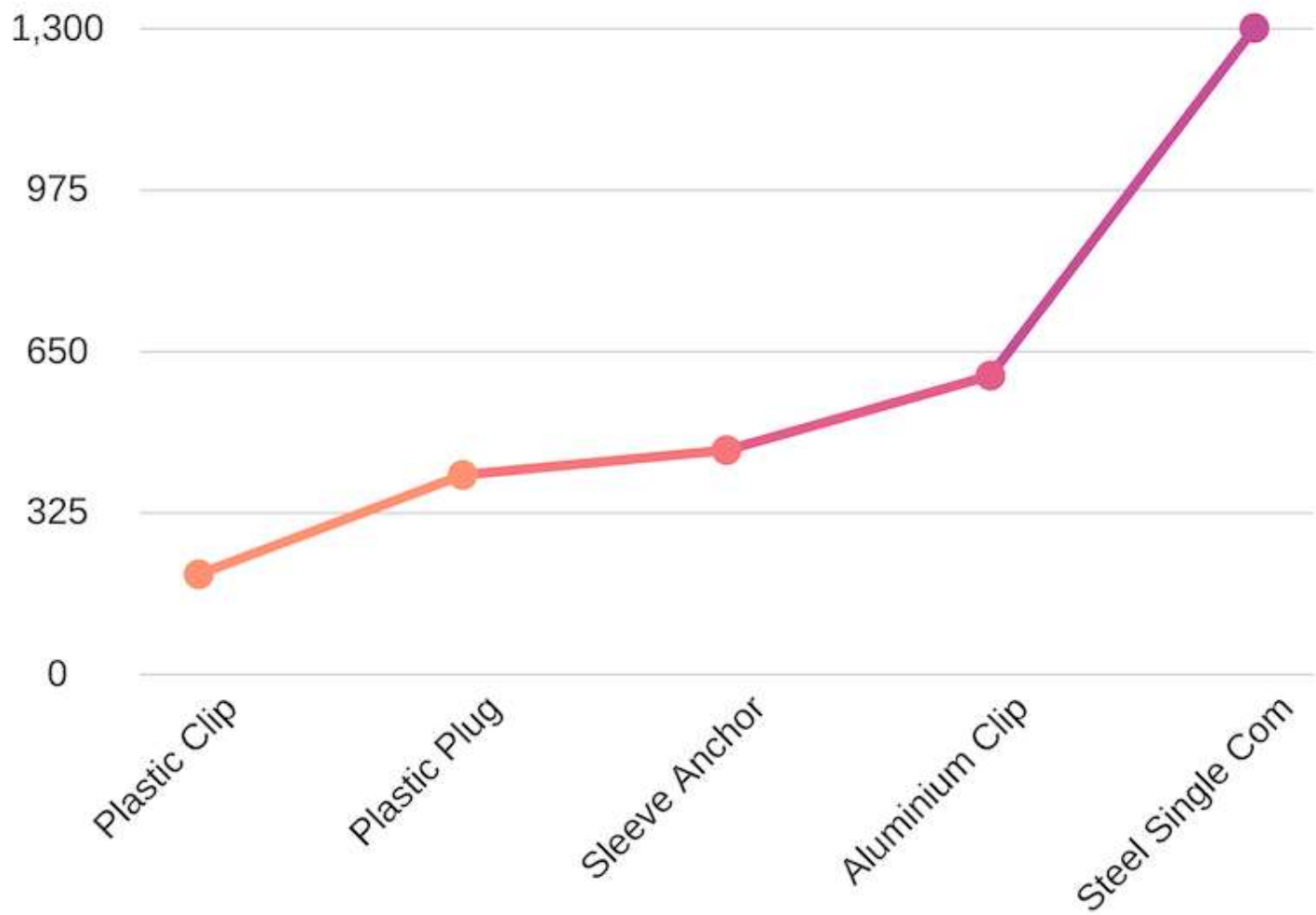
SELECTING CABLE SUPPORTS



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HERE IS A PICTURE OF A HORSE....

OPTIONS AVAILABLE

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P-CLIP

- LIMITED RANGE
- USES PLASTIC IN MANUFACTURING PROCESS
- SHOULD BE USED WITH CONCRETE SCREWS WHERE POSSIBLE
- MULTIPLE COMPONENTS
- INSTALLATION TIME
- BE CAREFUL OF MATERIAL (STEEL/STAINLESS WHERE POSSIBLE)

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METAL CLEATS

- EXPENSIVE
- ALUMINIUM MELTING POINT TO LOW
- MANUFACTURED FROM EXPENSIVE ALLOYS
- DESIGNED FOR LARGER CABLES
- INSTALLATION TIME
- MATERIAL CHOICE

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ALL ROUND BAND

- ONLY PRACTICAL FOR LARGER BUNCES OF CABLES
- MELTING POINT TOO LOW ON CHEAPER IMPORTED PRODUCTS
- SHOULD BE USED WITH CONCRETE SCREWS WHERE POSSIBLE
- LOOKS AWFUL

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NOT A SALES PRESENTATION

IF ONLY THERE WAS AN ALTERNATIVE THAT SOLVED ALL OF THESE ISSUES...

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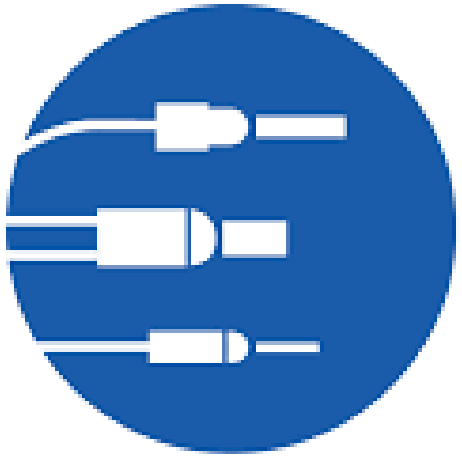

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THANKS FOR YOUR ATTENTION

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