



CASE STUDY

Project: One Thames City
Client: Midgard (JRL Group)



Location: Nine Elms, Vauxhall, London
Classification: Large scale residential infrastructure
Build Type: Concrete shell and core
Item of works: EI120 service penetration seals above mechanical & electrical riser door heads (letter box seals)



- Requirements:** 120min Integrity and Insulation
- Services:** Non-combustible pipework (lagged), CVPC sprinkler pipes, cable trays & associated wiring
- Problems encountered:** Due to the EI120 rating, combined with use of metal cables, trays, and baskets the difficulty to get to an Insulation value of 120mins is increased. Further obstacles that were to be overcome was due to the cable trays only passing circa 70mm through the compartment wall into the riser
- Overview:** There was no Client specified Manufacturer or installation detail provided for this item of works. Therefore, following liaison with Manufacturer's, Fire Stopping London Ltd were able to offer our Client details for the mechanical and the electrical penetrations that would be in line with the Manufacturer's tested details.
- Solutions:** Detail 1 – Mechanical: was for a face fixed aka pattress install (to get insulation values up) onto the aperture, which would overlap the opening by a minimum of 50mm on 3 sides, and 30mm on the bottom, with wraps round each lagged (with phenolic) service. High Pressure Graphite mastic that has been certified as compatible with CPVC was to be used around said service. As this detail was issued on receipt and digestion of the drawn details for services, it was only when looking at the risers on site that we noticed in some locations the addition of a single electrical cable for the fire alarm had been installed. Due to this the addition of a stone wool lagging (min 40mm thick & 40kg/m³) held in place with lacing wire was to be installed at a minimum of 300mm along the service, which could be interrupted at the seal.
- Detail 2 - Electrical was for a face fixed aka pattress install (to get insulation values up) onto the aperture, which would overlap the opening by a minimum of 50mm on 3 sides, and 30mm on the bottom. Due to these penetrations holding cables trays, baskets and wires all of metal composition, the transfer of heat is increased. Therefore each of these were to have the addition of stone wool (min 40mm thick and 40kg/m³) was required to be held in place with lacing wire at a minimum of 300mm along the service, which could be interrupted at the seal. It then became apparent that in instances the cable trays did not extend 300mm into the riser cupboard but only circa 70mm, therefore when the face fixed batt (being 50mm thick) was installed this only left up to 20mm of tray exposed. As it was difficult to get lagging to hold to the tray, we installed an additional localised pattress which is of greater density than the 40kg/m³ requirement and the lagged the remaining cables back the required distance. This is acceptable as in EN1366-3:2009, E.1.5.6.6 it states that the density of insulation may be



increased but may not be reduced, therefore the detail still falls in line with the Manufacturer's tested solution.

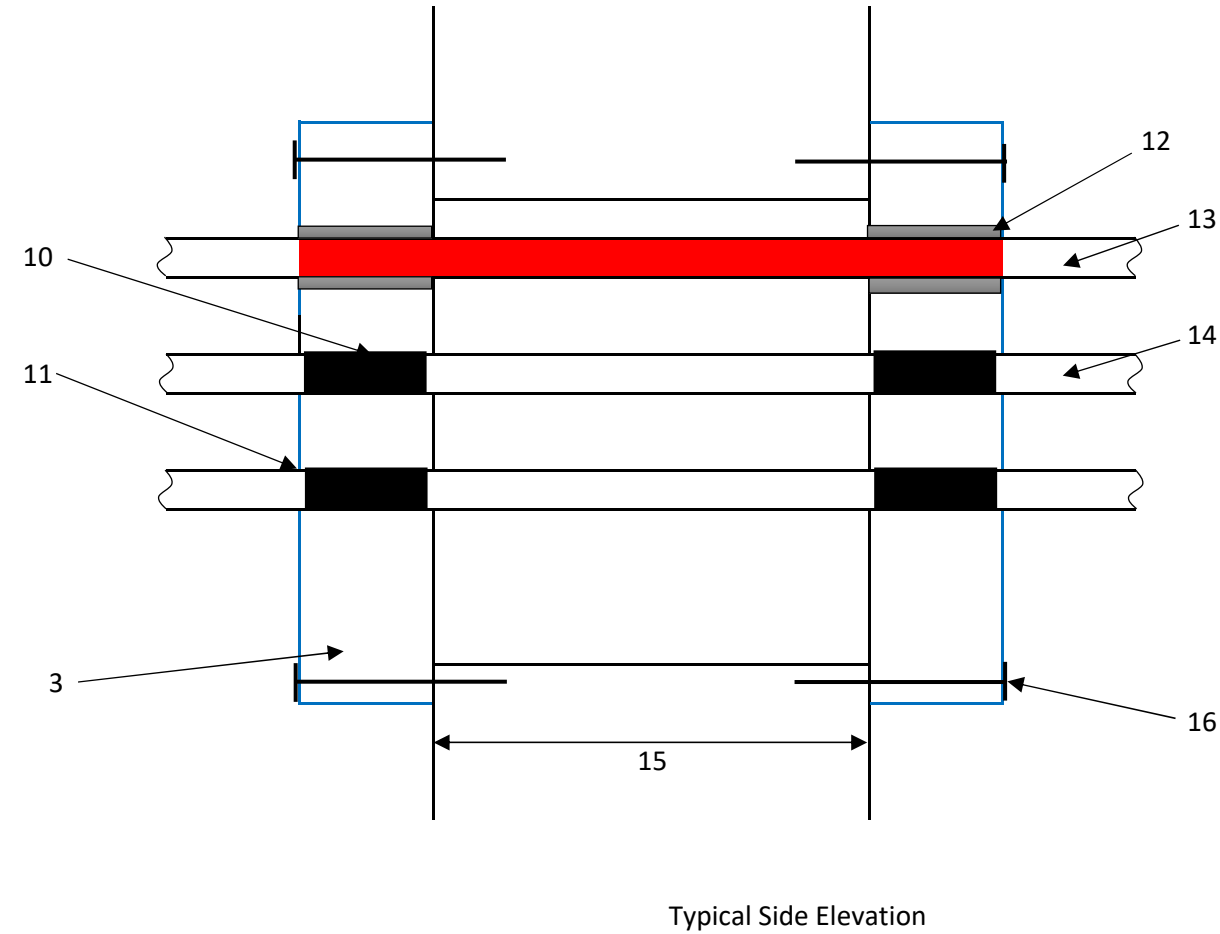
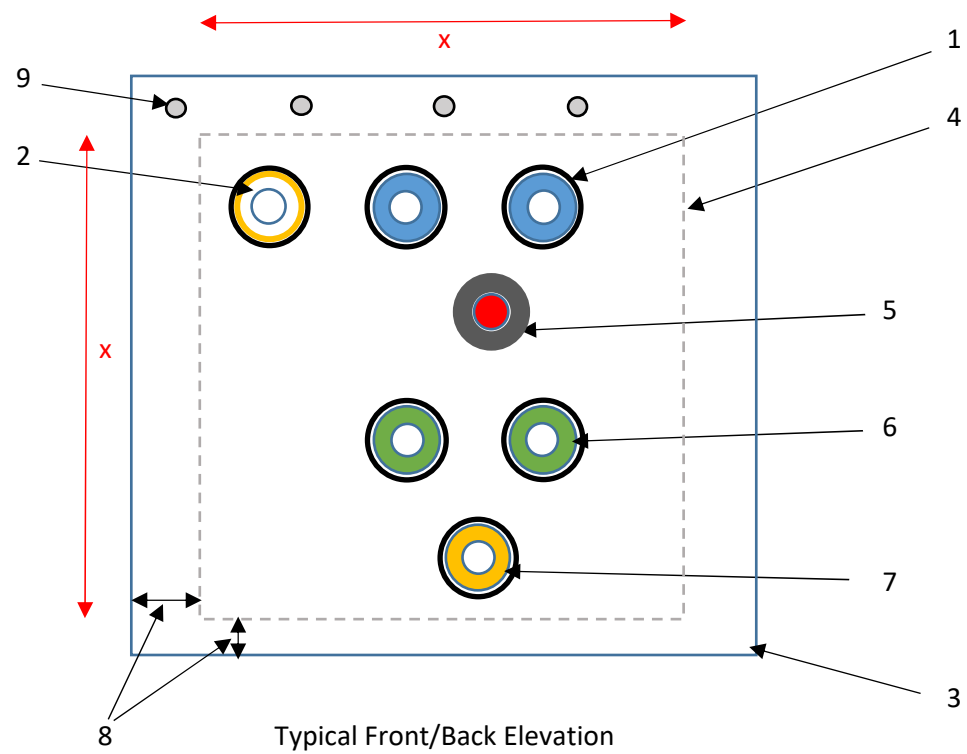
Value Engineering:




Due to the details requiring a face fixed/pattress solution, Fire Stopping London were able to advise the Client that the openings formed did not need to be framed and lined, therefore saving on the cost of materials and labour for dry lining works to be carried out.

Installation detail:

1. Double pattress batt and mastic with pipe wraps on all lagged non-combustible pipework and HPE Graphite mastic to CPVC sprinkler pipes. (all openings and services to be within sizing parameters as per Manufacturers tested details).
2. Double pattress batt and mastic with 40mm thick 40kg/m³ stone wool lagging to trays/baskets/cables (all openings and services to be within sizing parameters as per Manufacturers tested details).

Drawn installation detail – Mechanical Riser:



-  2 layers of 2mm thick, 40mm wide Fsi PipeBloc EL Pipe Wrap installed within both batts
-  20mm annulus, Fsi Pyropro HPE Graphite Mastic installed within both batts
-  80mm steel wood screws & penny washers

Materials:
 Fsi 50mm Stopseal Batt
 Fsi Pyrocoustic Sealant
 Fsi PipeBloc EL
 Fsi Pyropro HPE Graphitic Mastic

Notes:
 All dimensions are in millimeters unless stated otherwise

Fsi PipeBloc EL to have 5mm Pyrocoustic Mastic over face on both exposed sides.

The materials in the drawn detail is not waterproof

Only Fsi Pyropro HPE Mastic to be used in conjunction with CPVC Services

Minimum Service Separations:

Service to Substrate: 0mm
 This is from outside dia of lagging, or bear service to substrate
 Service to Service: 50mm
 This is from outside dia of lagging, or bear service to service

Maximum Opening Size:

1200mm x 750mm (0.9m² with services)

Services:

Services shown in this drawing are indicative only, each Riser will include specific services which will be sealed using the same process as that shown to the left.

- Item 1 25mm LTHW Heavy Gauge Steel sleeved in 20mm Phenolic
- Item 2 25mm 3-Core Electric in 40mm Plastic sleeve
- Item 3 Fsi 50mm Stopseal Batt
- Item 4 Plasterboard opening, lined with 2 layers of plasterboard as per manufacturers detail
- Item 5 40mm CPVC Sprinkler Pipe
- Item 6 32mm CW Heavy Gauge Steel sleeved in 20mm Phenolic
- Item 7 28mm Plastic Coated Copper Boosted Cold Water sleeved in 20mm Phenolic
- Item 8 Overlap = 50mm top and sides & down to 30mm on bottom edge
- Item 9 80mm long steel wood screws & penny washers - fixed at 300mm centres - over coated with Pyrocoustic Sealant

- Item 10 Fsi PipeBloc EL Pipe Wrap
- Item 11 5mm fillet Fsi Pyrocoustic Mastic over face or Pipe Wrap
- Item 12 20mm Annulus full depth Fsi Pyropro HPE Graphite Mastic
- Item 13 CPVC Sprinkler Pipe (40mm)
- Item 14 All other non-combusitible lagged services as noted to the left
- Item 15 Min Substrate Thickness of 750mm (with framed and lined openings)
- Item 16 80mm long steel wood screws & penny washers - fixed at 300mm centres - over coated with Pyrocoustic Sealant

Should any cables be included in these openings - these will be lagged back 300mm either side with 40kg or greater stone wool insulation.

x Length & width as required on site but must fall within "maximum opening size" and maintain "minimum service separations"

Contract:	Midgard
Originator:	Fire Stopping London Ltd
Location:	One Thames City
Title:	Typical EI120 Mech Riser Letter Box service penetration (pattress)



Drawing No.:	1000-004-OTC	Rev.01
Creation Date:	18/03/2021	
This sketch is not to scale		

