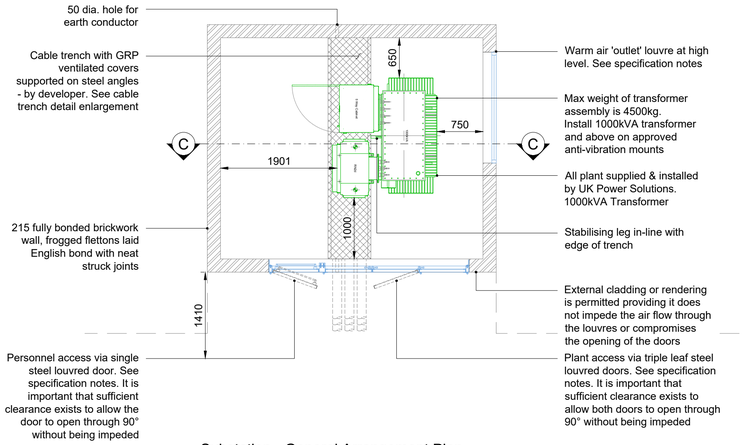
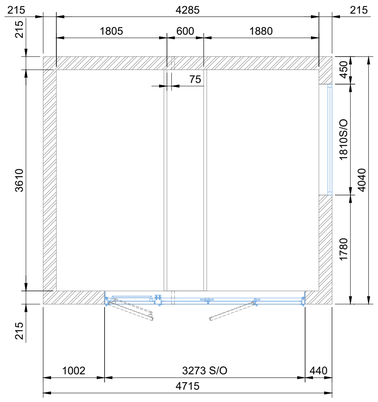


Substation - General Arrangement Plan
(Scale 1:50)



Substation - Setting Out Dimensions
(Scale 1:50)

Specification Notes

General notes:
- Do not scale from this drawing. No variation to the stated dimensions or materials specified will be permitted without prior written consent from UK Power Solutions.
- All dimensions are in millimetres.
- The running of sprinkler system, heating, gas, telecoms, water and other services through or under the substation area is not permitted.
- Workmanship and materials to conform to the latest edition of the relevant codes of practice or British standard.
- A minimum of 1000mm clear area is required around the whole substation in order to maintain ventilation and for maintenance purposes.

Planning, Location and Position:
- Position and orientation of the substation shall be agreed with UK Power Solutions prior to the commencement of any building works on site.
- Substations shall be located adjacent to a public highway or reached by a private dedicated access way with full control and associated legal rights.
- The developer is responsible for obtaining all planning consents and building regulation approvals.
- Unimpeded access for IDNO personnel is required at all times, 365 days of the year (24/7). Any doors or gates on the access route shall be locked with the standard IDNO locking suite.
- Access via 24 hour security is unacceptable.
- Proposed soft landscaping adjacent to the substation (e.g. planting schemes) shall allow for future plant growth without compromising access or ventilation through doors and louvres.

Foundation and Reinforced Concrete:
- As stated on drawing or to suit the site condition.
- Sufficient cover to the reinforcement to achieve a 4 hour fire rating (50mm minimum).
- For preliminary design, assume 50kN/m² increase in ground pressure at formation level.
- Structural concrete to be poured on 50mm GEN1 mix concrete blinding on 1200 gauge geomembrane, on sand blinding, on well compacted DTp1 type material.
- Reinforcing bars to be electrically continuous.

Floor Slab:
- To the structural engineer's specifications to sustain loads shown. The entire access route is to be capable of sustaining the equipment load.
- Standard floor slab thickness of 225mm minimum reinforced concrete with a suitable wearing screed with a minimum compressive strength of 40N/mm² after 28 days. Concrete works finished with steel float to within +/-2mm over 2000mm.
- Reinforcement to developer's structural engineer requirements.

Roof:
- 180mm minimum normal density reinforced concrete or greater to suit the span with sufficient concrete cover to reinforcement to achieve 4 hour fire rating.
- Pitch roof designs will require the standard concrete roof slab below but the requirement for mastic asphalt can be reduced to two coats of waterproofing treatment or built-up proprietary roofing (e.g. RIW 'Synthaprufe' or similar).
- Roofing components shall be low maintenance i.e. UPVC fascia boards instead of timber, roof void shall be adequately vented.
- Hollow beams, precast planks or lightweight concrete on metal decking are not be permitted.
- Reinforcement to developer's structural engineer requirements.

Walls:
- Option 1: 215mm fully bonded brickwork. Frogged flettons constructed in English bond with neat struck joints, walls to be fair faced on the inside.
- Option 2: two skins of brickwork laid with E.M.L. horizontal bed joint reinforcement every 3' course with no cavity, inner skin to be of common flettons, external skin to harmonise with adjacent brickwork.
- Option 3: 180mm min. RC concrete with sufficient concrete cover to reinforcement to achieve a 4 hour fire rating.
  - Concrete to be RC30 / 37, with 20mm aggregate, to BS 8500-2 (2006) with a cement combination to ensure sulphate resistance or sulphate resisting Portland cement to BS 4027.
  - Reinforced concrete construction to present a smooth dense true finish as per BS 8110 cl.7.2.7.3 Type B with projections removed and holes filled in.
  - Cast in situ reinforced concrete walls to have sufficient minimum cover to reinforcement as to provide 4 hours fire rating/blast proofing and provide a smooth finish internally.
  - Please note: This fire rating must be confirmed by the building controller as well.
  - All reinforcement shall have a minimum cover of 50mm screed to achieve a 4 hour fire resistance. Reinforcement shall be to BS4449 - Strength grade: B500B. Fabric reinforcement shall be to BS4483.
- Engineering brick or block are not permitted.
- Pre-cast concrete is not permitted. All the reinforced concrete must be cast in situ.
- Providing that non-combustible material is used, brickwork walls may be rendered or clad externally if specifically required by the planning conditions.

Doors:
- Approved powder coated mild steel louvre door with anti-vermin mesh to rear with 300mm(H) louvre panel over door frame. Typical door height is 2100mm. To the dimensions as shown with minimum clear opening of 3273(W) x 2400(H). Threshold elevations to be 225mm Max. - 100mm Min. external and internal.
  - Active leaf to be right hand hung and fitted with a 2 point locking system secured externally by hasp & staple and operated internally by Briton panic bar (padlock free issued by UKPS).
  - Passive leaves to be fitted with a 3-point locking system operated internally. Mastic to outside of door frame surround.
- Steel doors shall be connected to the substation earthing system via the earthing lug on the door frame.
- Passive leaves shall have approved heavy duty stays to lock the doors open safely at 90 degrees without being impeded.
- Mastic pointing to frame surrounds externally.

Ventilation Louvres:
- Approved vents shall be fitted.
- Approved louvred vents are made of mild steel fully welded into an angle frame and secured internally by suitable anchor fittings into the brickwork. Standard colour green 14-C-39.
- Mastic pointing to frame surrounds externally.

Ducts:
- 125mm internal diameter twin walled high density polyethylene ducting to ESI 12-24 or BS EN 61386, laid flat and level.
- Number and entry positions shall be verified by UK Power Solutions.

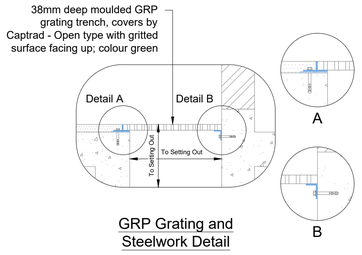
Waterproofing:
- Whole of the substation must be impervious to the ingress of water.

Finishes:
- Floor to receive two coats of grey concrete floor paint.
- Walls and ceilings to receive two coats of white emulsion.
- Approved doors and vents to receive power coated finish, standard colour green 14-C-39 or developer to specify the colour to harmonise with the adjacent premises and advise the manufacturer.

Infill to Area Around Cables:
- After cable installation, seal all cable ducts, fill trenches with sand with 100mm above top duct and to a minimum of 500mm below the top of gratings.

GRP Gratings and Supports:
- 38mm Deep moulded grp gratings, open type with gritted surface, green.
- Gratings shall be seated level with no noticeable rocking or sliding and shall be left in position.
- Cut off openings for cable penetrations ensuring the gratings can be removed with cables in-situ while remaining stable.
- Steelwork for GRP grating supports shall be galvanised.

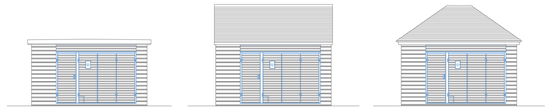
Equipment Which May be Used With This Design:
- Unit Substation with a 1000kVA transformer or below.



GRP Grating and Steelwork Detail

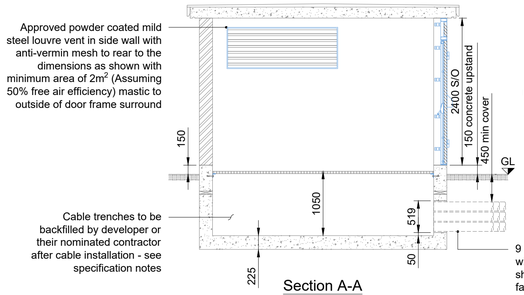
Grating at edges of floor slab, supported on mild steel angle (45x45x6) kerb supports with welded on lugs for bolting into concrete slab, pre-screeding. Available from Sunray Engineering

Grating at face of wall (only) supported on (50x65x6) mild steel angle, fixed to wall with Hilti HST anchor, resin fixings or similar approved. Available from Sunray Engineering

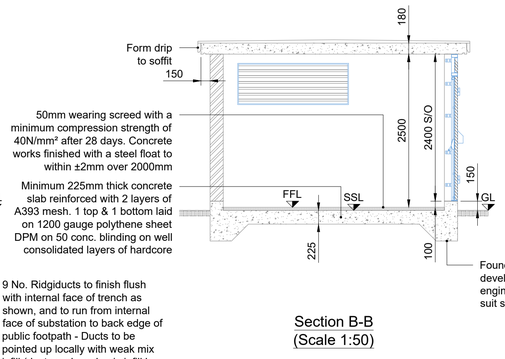


Note: All alternative roof designs to harmonise with adjacent premises are acceptable providing they still have the standard concrete slab detail below - in all cases, developers to submit detailed proposals for consideration. Guttering and downpipes omitted for clarity

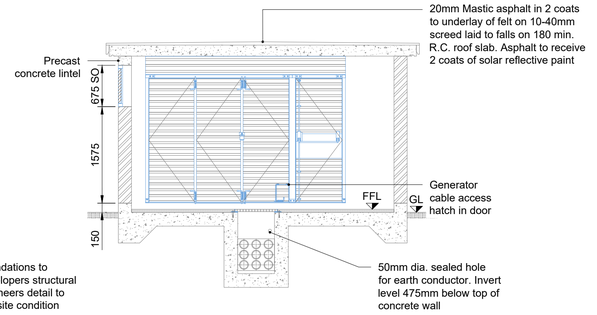
Standard and Alternative Roof Designs



Section A-A
(Scale 1:50)



Section B-B
(Scale 1:50)



Section C-C
(Scale 1:50)

REV	AMENDMENT	DATE	BY
1	Design Approved	18/03/25	HB
0	Preliminary Design	07/03/25	MC

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Client	Redrow Homes Ltd (Eastern Division)
Project	Great Wilsey Park, Harverhill
Title	Construction Details - Freestanding Brick-Built Substation - Substation 4 - IDNO
Design and Planning Engineer	Hamzeh Al-Badaineh
Contact No.	0845 257 7105
Project Manager	Neil Body
Contact No.	07719 063765
Drawn By	DR
Checked By	AF
Date	07/03/2025
Scale	As Shown
Sheet No.	1 of 1
Original Size	A1
Drawing No.	UKP7586 - DWG118
Client Ref.	N/A
Drawing Status	Approved for Construction
Rev	1