



**ASH GROVE ALTERNATIVE PROVISION  
(AP) ACADEMY**

**STAGE 3 REPORT CIVIL &  
STRUCTURAL**

**240171-KOD-Z1-ZZ-T-S-0005**

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## Document Management

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## Structural Engineering Stage 3 Summary

This section summarises the RIBA Stage 3 structural proposals for the proposed Ash Grove Alternative Provision Academy at Milton Road, Radcliffe. The building is proposed as a two-storey steel framed education facility with associated substructure, suspended ground floor construction and coordinated external works. The structural information below is intended as a concise summary for inclusion within the architect's Stage 3 report and should be read alongside the KODA Stage 3 structural drawings and wider design team information.

### Site and Ground Conditions

The site comprises an open parcel of land off Milton Road, bordered by residential development, existing pedestrian routes and boundary vegetation. The ground investigation identifies variable made ground across the site overlying natural cohesive strata and weathered bedrock. Made ground is typically recorded between approximately 0.40m and 2.65m thick, with a local area of deeper made ground and softer organic strata noted towards the north-east of the site. Groundwater was encountered locally and will need to be considered during excavation, foundation construction and below-ground works.

The site is affected by historical coal mining legacy risk. The coal mining assessment identifies a potential residual risk of instability in parts of the site and recommends proof drilling and grouting below proposed buildings and highways in the northern and western areas. The stabilisation works are to be developed by a specialist contractor and agreed with the Mining Remediation Authority prior to construction.

Contamination testing has identified elevated lead and PAH concentrations within near-surface made ground, together with trace asbestos in one shallow sample. Appropriate remediation, clean cover, construction worker protection and waste management measures are to be incorporated into the project remediation strategy. The coal mining assessment also recommends precautionary CS2 ground gas protection measures unless further monitoring demonstrates that these are not required.

### Substructure Strategy

The proposed ground floor construction comprises a suspended reinforced concrete slab, generally 250mm thick, with deeper reinforced concrete boot thickenings around the perimeter and local thickening as required to suit the final structural arrangement. The suspended solution is proposed due to the variability and thickness of made ground, which would increase the risk of settlement for a conventional ground bearing slab.

Pad foundations are currently proposed, founded in competent natural strata or bedrock following inspection of the formation by a suitably experienced engineer. Soft, loose, organic, rubbly or otherwise unsuitable material is to be removed and replaced with lean mix or mass concrete as required. In localised areas, particularly where deeper made ground or softer strata are present, foundation depths and/or treatment requirements may need to be reviewed as the design develops. Buried concrete is currently anticipated to be specified to DS-1 / AC-1 exposure classification, subject to confirmation by the final ground model.

## Superstructure Strategy

The superstructure is proposed as a two-storey hot rolled steel frame, comprising primary and secondary steel beams supported on steel columns. Lateral stability will be provided by vertical bracing in both principal directions, with braced bays positioned to suit the architectural layout, elevations and internal room planning. The steel frame is to be designed to the relevant Eurocodes and UK National Annexes, with structural steelwork generally grade S355 and executed to Execution Class 2 unless noted otherwise.

The first floor and roof structures are proposed as 200mm deep precast hollowcore planks with a 100mm structural concrete topping. The floor and roof construction will be designed to act as diaphragms, transferring lateral loads back to the braced bays without separate plan bracing. KODA will develop the topping reinforcement, transverse tying reinforcement, broken-out core reinforcement and steel-to-plank tie details to suit the structural load paths, coordinated with the specialist precast supplier's plank layout, unit design, bearing details and installation sequence.

The building is to be classified as Consequence Class 2b and designed to satisfy the robustness and disproportionate collapse requirements of the relevant Eurocodes and UK National Annexes. Horizontal tying will be provided through the steel frame, precast planks, structural topping and perimeter edge details. Vertical tying will be provided to columns where required, with column splices, base connections and foundation interfaces designed to maintain a continuous load path through the structure.

## Design Loads and Contractor Designed Elements

Design loading will be developed in accordance with BS EN 1991 and the associated UK National Annexes. Current Stage 3 allowances include imposed loads appropriate to school accommodation, including teaching spaces, offices, circulation areas, assembly spaces, plant areas, roof maintenance access and specific plant zones. Allowances are also included for partitions, ceilings and services, structural screed, roof plant, PV loading where proposed, wind loading, snow loading and local drift or accumulation effects.

Contractor designed elements are expected to include steelwork connections, holding down systems, precast hollowcore units, lifting and installation methodology, temporary works, lightweight metal framing, curtain walling, masonry support systems, balustrades and barriers, and any associated secondary support steelwork. These items are to be developed by the relevant specialist contractors and coordinated with the KODA structural drawings, architectural details, fire strategy, durability requirements and construction sequence.

## Civil Engineering

The proposed site levels rise from the Milton Road junction, with the building platform raised as far as practicable to minimise excavation and reduce the volume of material requiring removal from site. External levels are designed to fall away from the building and provide suitable routes for exceedance flows away from the development.

The drainage strategy comprises separate surface and foul water systems within the site, ultimately discharging to the existing combined public sewer. Surface water will be attenuated on site through a

combination of below-ground attenuation and permeable construction to the parking and MUGA areas. United Utilities has advised that a surface water discharge rate of up to 8 l/s may be acceptable, subject to agreement with the Lead Local Flood Authority.