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M40 – CERAMIC TILING

M40	CERAMIC TILING To be read in conjunction with Section A and other related sections of the Specification, Preliminaries and Contract Conditions.
M40.1000	SCOPE, SUBMITTALS AND TESTING
M40.1100	SPECIFICATION AND SCOPE
M40.1101	Prescriptive Works <ul style="list-style-type: none">a) Supply, deliver, install and warrant the works in strict compliance with the materials and workmanship requirements of the Specification.b) Where required to prepare drawings these shall be limited to final detailing of components, systems, etc. indicated on the Design Drawings, necessary to demonstrate their safe installation.c) Where alternative products are offered by the Contractor for acceptance by the Architect, provide full supporting documentation in respect of the complete system or installation.
M40.1102	Scope of Works This section of the Specification, when read in conjunction with the Design Drawings, provides particular requirements with respect to the following: <ul style="list-style-type: none">a) Floor tiling.b) Wall tiling.
M40.1200	SYSTEM TYPES
	Ceramic Floor Tiling
M40.1201	Type PAV 1 Ceramic Floor Tiling Rectangular format ceramic floor tiling.
M40.1202	Type PAV 3 Ceramic Floor Tiling Square format ceramic floor tiling.
	Ceramic Wall Tiling
M40.1203	Type EWL 6 Ceramic Wall Tiling Square format ceramic wall tiling.
M40.1300	SUBMITTALS AND TESTING
	Tender Submittals
M40.1301	Tender Response Not required.
	Samples, Mock-ups, Prototypes and Quality Benchmarks
M40.1302	Pre-contract Samples Not required.
M40.1303	Post Contract Samples In accordance with Section A.4000, post contract samples of the following shall be provided: <ul style="list-style-type: none">a) Typical module or minimum A4 size range of samples.b) Grout sample.c) Movement joint material minimum 300mm.
M40.1304	Mock-ups Not required.
M40.1305	Prototypes Not required.
M40.1306	Benchmark Requirements The following quality benchmarks shall be provided in accordance with Section A.4000: <ul style="list-style-type: none">a) First fully installed and completed area of each type of the works as accepted by the Architect.
	Testing
M40.1307	Test Requirements <ul style="list-style-type: none">a) Provide evidence/ testing data and reports to demonstrate that all materials/ products proposed have been tested.

- b) The source of each material chosen shall be confirmed by an independent stone consultant, demonstrating that the quantity and consistent quality of material can be maintained at the required rates of production to supply the project.

M40.1308 **Impact Testing**
Impact tests shall be carried out to establish the soundness of all screeded substrates. Refer to Section M10. Testing shall include both light tap and heavy weight impact using 4kg, as directed by the Architect in compliance with the BRE screed tester information paper 11/ 84.
Alternative substrate testing methods may be put forward for consideration and acceptance by the Architect.

M40.1309 **Sealant Testing**
a) Staining: Test in accordance with BS 3712: Part 2. Perform test on each type of tiling in contact with sealant(s).
b) Adhesion: Test elastomeric sealants for peel strength in accordance with BS 3712: Part 4.

M40.1310 **Grout Staining**
Evaluate the risk of staining, as recommended by the manufacturer. Seek advice of specialist/ manufacturer if discolouration occurs on trial areas.

M40.1311 **Slip Resistance Testing**
a) Testing for slip resistance shall comply with the following documents:
 I) 'Assessing the slip resistance of flooring' by The Health and Safety Executive (latest published version).
 II) 'The assessment of floor slip resistance, the UK Slip Resistance Group guidelines' by The UK Slip Resistance Group (latest published version).
b) Testing shall be performed by an independent UKAS accredited laboratory accredited to perform the specified test methods.
c) Pendulum Test: Internal flooring shall be evaluated in both dry and wet conditions using the TRL Pendulum Tester in accordance with BS 7976 (BS EN 14231 for natural stone) and the recommendations of the UK Slip Resistance Group to obtain the pendulum test value (PTV) specified.
d) Roughness Test: Internal flooring shall be evaluated using a surface roughness meter, in accordance with the recommendations of the UK Slip Resistance Group, to obtain the surface roughness (Rz) value specified.
e) Samples shall be tested at the following stages of the project:
 I) Approval.
 II) Production.
 III) Post-installation (in situ).
f) Submit test results to the Architect for acceptance in due time, prior to each of the project stages or as agreed with the Architect.
g) Test samples must include any surface sealer or treatment to be applied to the finished internal flooring.

M40.2000 SYSTEMS, MATERIALS AND FABRICATION

M40.2100 SYSTEM DESCRIPTIONS

Ceramic Floor Tiling

M40.2101 Type PAV 1 Ceramic Floor Tiling
Rectangular large format ceramic floor tiles as indicated on the Design Drawings.

- a) Tiles:
 - I) Manufacturer/ Supplier: Solus Ceramics, Tel: 08700 553191 or acceptable equivalent.
 - II) Product reference: AUGMR 050.
 - III) Colour: Anthracite Bright.
 - IV) Finish: Honed.
 - V) Slip resistance value: R9
 - VI) Size: 600mm x 300mm module including joints.
 - VII) Thickness: 9.5mm nominal.
 - VIII) Background/ base: Raised Floor.
 - IX) Setting out: As Design Drawings.

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- b) Bonding: Proprietary adhesive as recommended by the tile manufacturer, nominally 3mm thick.
- c) Joint widths: 3mm nominal.
- d) Grout:
 - I) Proprietary coloured grout as recommended by the tile manufacturer.
 - II) Colour: Anthracite.
- e) Additional requirements:
 - I) Movement joints: Schluter DILEX BWB, 10mm wide with coloured insert between stainless steel brush finished plates.
 - II) Thresholds as Design Drawings.
 - III) Interfaces with external cladding, internal glazing systems and primay steel structure shall include a 10mm mastic joint to match grout colour.
 - IV) Floor box interface to comprise circular hole factory water jet cut to centre of tile.

M40.2102

Type PAV 2 Ceramic Floor Tiling

Square format ceramic floor tiles as indicated on the Design Drawings.

- a) Tiles:
 - I) Manufacturer/ Supplier: Solus Ceramics, Tel: 08700 553191 or acceptable equivalent.
 - II) Product reference: Altai 2CPD809.
 - III) Colour: Off White.
 - IV) Finish: Matt.
 - V) Slip resistance value: R9
 - VI) Size: 100mm x 100mm module including joints.
 - VII) Thickness: 8mm nominal.
 - VIII) Background/ base: Screed.
 - IX) Setting out: As Design Drawings.
- b) Bonding: Proprietary adhesive as recommended by the tile manufacturer, nominally 4mm thick.
- c) Joint widths: 2mm nominal.
- d) Grout:
 - I) Proprietary coloured grout as recommended by the tile manufacturer.
 - II) Colour: Off White.
- e) Additional requirements:
 - I) Thresholds as Design Drawings.

Ceramic Wall Tiling

M40.2108

Type EWL 6 Ceramic Wall Tiling

Square format ceramic floor tiles as indicated on the Design Drawings.

- a) Tiles:
 - I) Manufacturer/ Supplier: Solus Ceramics, Tel: 08700 553191 or acceptable equivalent.
 - II) Product reference: Altai 2CPD809.
 - III) Colour: Off White.
 - IV) Finish: Matt.
 - V) Slip resistance value: R9
 - VI) Size: 100mm x 100mm module including joints.
 - VII) Thickness: 8mm nominal.
 - VIII) Background/ base: Blockwork/ Plasterboard and skim.
 - IX) Setting out: As Design Drawings.
- b) Bonding: Proprietary adhesive as recommended by the tile manufacturer, nominally 4mm thick.
- c) Joint widths: 2mm nominal.
- d) Grout:
 - I) Proprietary coloured grout as recommended by the tile manufacturer.
 - II) Colour: Off White.
- e) Additional requirements:
 - I) Joints to align with pavement joints.

M40.2200

MATERIALS

General

M40.2201

Adhesive

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- The adhesive for the works shall be a proprietary adhesive as recommended by the product manufacturer.
- M40.2202 Sealant Movement Joints
Preparation and application shall be in accordance with the Specification, Section Z22. Joints shall extend through tiles and bedding to substrate. Joints shall coincide with any movement joints left in the substrate.
- M40.2300 FABRICATION**
- M40.2301 Tolerances
- a) Tile sizes stated in the Specification are nominal.
 - b) Tiles shall be butted/ manufactured with the tolerance of $\pm 0.5\text{mm}$.
- M40.2302 Damage
Tiles that are chipped, crazed, scratched, damaged or have any other physical imperfections shall not be used in the works.
- M40.3000 SITE INSTALLATION**
- M40.3100 WORKMANSHIP**
- M40.3101 Background Suitability
- a) Suitability of substrate and surface: Ensure that the substrate is sound (free from any hollows or unsoundness) and surface is even textured, clean and dry to receive the works. Report any ambiguities or non-conformances to the Architect.
 - b) Before the commencement of the works the background and bases shall be:
 - I) Sufficiently flat to permit specified flatness of finished surfaces, bearing in mind the permissible minimum and maximum thicknesses of the bedding material.
 - II) Allowed to dry out by exposure to the air for not less than the base manufacturer's written recommendations.
 - III) Dissimilar backgrounds: The necessary stainless steel lathing shall be installed to ensure that cracking to grout or tile does not occur due to differential movement.
- M40.3102 Preparation
- a) New in situ concrete shall be scrubbed with water containing detergent to complete removal of mould, oil, surface retarders and other materials incompatible with the bedding. It shall then be rinsed with clean water and allowed to dry, unless specified otherwise.
 - b) Blockwork walls shall be prepared for tiling using an accepted adhesive compound, to fill in any excessive indentations prior to applying the general adhesive.
- M40.3103 Underfloor Heating
- a) Once the screed has cured and dried, the screed shall be heated very slowly to its operating temperature and maintained at the operating temperature for several days before cooling down to room temperature, but not below 15°C , before installing the flooring.
 - b) Ensure that the heating system is contained within the pattern of expansion joints.
- M40.3104 Laying and Fixing
- a) There shall be no unintended colour/ shade variations within the tiles in each area/ room, tiles shall be sorted to ensure even distribution of colour, shade and visible variation.
 - b) Adhesive shall be compatible with the background/ base.
 - c) Tiles shall be cut neatly and accurately.
 - d) Unless specified otherwise, tiles shall be fixed so that there is adhesion over the whole of the background/ base and tile backs.
 - e) Before bedding material sets, adjustments shall be made to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
 - f) Surplus bedding material shall be cleaned from joints and faces of tiles, without disturbing tiles.
 - g) All cuts shall occur at the perimeter of the floor or around openings, obstacles, etc. and shall be trimmed in accordance with the Design Drawings. All cuts shall be made with a diamond tipped wet-saw and all exposed cut edges shall receive an arris to match uncut tiles. Proprietary tile cutting machines can be used if acceptance is received from the Architect.
 - h) All tiles shall be fixed in accordance with the relevant parts of BS 5385.
 - i) Wall surfaces shall be prepared for tiling using a suitable adhesive compound to fill in any excessive indentations prior to applying the suitable adhesive compound.
 - j) The tiling shall be set out plumb and square to the floor or wall finish.

- M40.3105 **Adhesive**
a) Tile adhesive shall be as recommended in writing by the manufacturer and applied strictly in accordance with printed recommendations.
b) All tiles shall be bedded in accordance with the manufacturer's instructions.
- M40.3106 **Checking Tile Adhesion**
In the presence of the Architect, it shall be verified that there is adhesion over the whole tile area.
- M40.3107 **Mortar**
All tiles shall be bedded in accordance with manufacturer's instructions.
- M40.3108 **Joint Widths**
Tile to tile grout joint widths between tiles shall be controlled by using spacer pegs.
- M40.3109 **Grouting**
a) Grout shall be sanitised and match the tiles. Grout shall not be applied until the bedding material has hardened sufficiently. The joints shall be a minimum of 5mm deep and free from dust and debris. All joints shall be completely filled, tooled to an accepted profile and wiped down to leave free from blemishes.
b) The works shall be grouted, as soon as bedding material has set firm.
c) All grout joints shall be installed to the full depth of the tile joint. All debris shall be removed from the joints prior to grouting. The grouting joint shall be a nominal 2mm, at no point greater than 3mm or less than 1mm and deviations shall be non-cumulative.
d) The grout joints shall be 'washed' joints, that is the grouting shall be washed out to the bottom line of the arris.
e) Seal grout with a proprietary water-based sealer.
f) Grout shall not stain tiles/ slabs.
g) Surplus material shall be immediately cleaned from surfaces of tiles.
- M40.3110 **Joints**
a) The movement joints shall be bedded fully in accordance with the manufacturer's instructions.
b) All galvanised mild steel/ aluminium/ stainless steel wall tiling trims shall be of a proprietary type fit for their purpose, with sections pop riveted together with no protrusions between the rear of the galvanised mild steel/ aluminium/ stainless steel surface and the face of the blockwork walls.
- M40.3111 **Protection**
a) Refer also to the Audi Tile Maintenance document.
b) The works shall be protected until practical completion and throughout any subsequent work.
c) The works shall be cleaned prior to completion in accordance with the product manufacturer's recommendations.
d) On completion, when joints are hard, tiling shall be polished with a dry cloth and protected.
- M40.3200 INSTALLATION TOLERANCES**
M40.3201 **Level of Floor**
The permissible deviation in level of surface of the works (allowing for thickness of coverings) and toppings from datum shall be $\pm 2\text{mm}$.
- M40.3202 **Flatness of Floors**
a) Sudden irregularities shall not occur.
b) When measured with a slip gauge to BS 8204: Part 1 or equivalent, the variation in gap under a straightedge placed anywhere on the surface shall be not more than the following:
 I) 2.5mm under a 3m straightedge.
 II) 1mm under a 1m straightedge.
c) Ensure that the installed works remain free from undulations, steps, ridges, bumps, ripples, rocking and lipping.
d) The works shall be flat, flush and true at abutments with adjacent surfaces at the same relative level.
e) The works shall be installed such that finished surfaces shall be installed to achieve the design tolerances, providing a flush, true and flat interface with adjacent finishes, free from steps, slopes or flaws.

- f) Bay divisions and movement joints shall be accommodated in the design and co-ordinated with joints and other elements as indicated on the Design Drawings.
- g) Cut-outs for interfacing works shall comply with the dimensions indicated on the Design Drawings $\pm 1\text{mm}$.

M40.3203

Flatness of Walls

- a) Sudden irregularities shall not occur.
- b) The variation in gap under a straightedge placed anywhere on the surface shall be not more than the following:
 - I) 2mm under a 3m straightedge.
 - II) 1mm under a 1m straightedge.
- c) Ensure that the installed works remain free from undulations, steps, ridges, bumps, ripples, rocking and lipping.
- d) The works shall be flat, flush and true at abutments with adjacent surfaces at the same relative level.
- e) The works shall be installed such that finished surfaces shall be installed to achieve the design tolerances, providing a flush, true and flat interface with adjacent finishes, free from steps, slopes or flaws.
- f) Bay divisions and movement joints shall be accommodated in the design and co-ordinated with joints and other elements as indicated on the Design Drawings.
- g) Cut-outs for interfacing works shall comply with the dimensions indicated on the Design Drawings $\pm 1\text{mm}$.

M40.3204

Level/ Plane of Tiling across Joints

The maximum deviation between tile surfaces either side of a joint, including movement joints shall be:

- a) 1mm for joints less than 6mm wide ($\pm 0.5\text{mm}$).
- b) 2mm for joints 6mm or greater in width ($\pm 0.5\text{mm}$).

M40.3205

Setting Out

- a) Finishes to areas of the works shall be set out on a grid and co-ordinated onto this grid, except where otherwise indicated on the Working Drawings.
- b) Joints shall be true to line, continuous and without steps.
- c) Joints in walls shall be parallel to the main axes of the space or specified features.
- d) Cut tiles/ slabs shall be kept to the minimum, as large as possible and in unobtrusive locations.
- e) Where positions of movement joints are not specified they shall be agreed with the Architect.

End of Section