F21 NATURAL STONE ASHLAR WALLING/ DRESSING

To be read with Preliminaries/ General conditions and Sections AA/31 and AA/90.
Items in this section to Contractor's Design as shown.

TYPES OF WALLING/ DRESSINGS

110 ASHLAR WALLING - PLINTH TO LIBRARY EXTENSION:
Include in Contractor's Designed Portion for Stonework

REV C1 - Drawing reference: **597-14632, 597-14633, 597-14634, 597-14635, 597-14636, 597-14637**.
- Background:
  - Ground Floor: Reinforced concrete**/steel** frame as Structural Engineer's drawings and specification.
  - Medium density blockwork infill as F10/350.
- Stone: To BS EN 771-6.

REV C3
  - Name (traditional): **Cadeby Magnesian Limestone.**
  - Petrological family: **Cadeby formation of the Permian Age.**
  - Colour: Cream White. ~~**with clustered shells.**~~
    - To match approved sample range.

REV C4
  - Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
  - Finish: Fine rubbed.
  - Supplier and reference: **Dolomite Quarry, Warmsworth, Doncaster, South Yorkshire, DN4 9RG** ***Magnesian Limestone.***
  - Unit size:

REV C4
    - Face size (nominal, including joints): As drawings. ~~(TBC).~~

REV C1
    - Thickness: **150 mm.**

REV C3
    - Profile: 50 x **80** mm chamfer to front of top edge.
  - Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at corners and reveals) ± 0.5 mm] (TBC).

REV C3
  - Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
    Mean value (minimum): Supplier to advise.
    Characteristic value (minimum): Supplier to advise.
    Category: Supplier to advise.

REV C3
  - Open porosity: **17% Supplier to advise.**
  - Additional requirements:
    - Freeze/ Thaw resistance: Supplier to advise.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143)
    www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval.

REV C1
- Bond: Bond pattern - ~~half-lap stretcher~~ as drawings **597-14632, 597-14633, 597-14634, 597-14635, 597-14636, 597-14637.**
- Joints: Flush.

REV C2
  - Width: **4.0mm** ~~2.0 mm~~.
  - Pointing: Brushed.
- Fixings and accessories: As section F30.
- Special shapes:

REV C4
  - ~~Cut-and-stick mitre to corner and reveal units with 4 x 4 mm bird's-mouth rebate.~~ **5x5mm bird's mouth rebate**

- Special requirements:
  1. Plinth incorporated into planter to north elevation as drawing **597-14632, 597-14637**.

REV C2
   - Waterproof lining and drainage points as **drawings** ~~???~~
  2. Pre-formed rebates and dowel-holes in top and bottom edges of stone units to suit support and restraint ties and joint width requirements.
  3. Preformed grooves (8 mmø) as weep holes to bottom edge of stone units above cavity tray at equal centres (900 mm maximum), as drawings

REV C2
  4. **Pre-formed drip to underside of overhanging elements**
  5. **Exposed surface to be impregnated as M60/190.**

115 ASHLAR WALLING - WINDOW PERIMETER LININGS TO LIBRARY EXTENSION:
Include in Contractor's Designed Portion for Stonework

REV C1
- Drawing reference: **597-14632, 597-14633, 597-14634, 597-14635, 597-14636, 597-14637**..
- Background:

REV C1
  - Ground Floor: Reinforced concrete**/steel** frame as Structural Engineer's drawings and specification.
  - First Floor: Steel frame as Structural Engineer's drawings and specification.
  - Medium density blockwork infill as F10/350.
  - Secondary steelwork as GG10/140.
- Stone: To BS EN 771-6.

REV C3
  - Name (traditional): **Cadeby Magnesian Limestone.**
  - Petrological family: **Cadeby formation of the Permian Age.**
  - Colour: Cream White**.** ~~**with clustered shells.**~~
    - To match approved sample range.

REV C4
  - Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
  - Finish: Fine rubbed.
  - Supplier and reference: **Dolomite Quarry,**
    Warmsworth, Doncaster, South Yorkshire, DN4 9RG
    Magnesian Limestone.

REV C4
    ~~*Ancaster Hard White.*~~
  - Unit size:

REV C4
    - Face size (nominal, including joints): ~~(TBC).~~ **As Drawings**

REV C3
    - Thickness: Varies as drawings; allow for **75 mm** nominal to match brick ~~(TBC).~~ **As Drawings**
  - Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at corners and reveals) ± 0.5 mm] ~~(TBC).~~ **As Drawings**

REV C3
  - Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
    Mean value (minimum): Supplier to advise.
    Characteristic value (minimum): Supplier to advise.
    Category: Supplier to advise.

REV C3
  - Open porosity: **17% Supplier to advise.**
  - Additional requirements:
    - Freeze/ Thaw resistance: Supplier to advise.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143)
    www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval.
- Bond: Bond pattern - as drawings
- Joints: Flush.

REV C2
  - Width: **4.0mm** ~~2.0 mm~~.
  - Pointing: Brushed.

- Fixings and accessories: Generally as Section F30 with masonry support system as F30/265.
- Special requirements:
  1. Dressed stone profiles.
  2. Special mitred reveal stones to openings, with epoxy adhesive and stainless steel dowels.
  3. Pre-formed rebates and dowel-holes in top and bottom edges of stone units to suit support and restraint ties and joint width requirements.
  4. Preformed grooves (8 mmø) as weep holes to bottom edge of stone units above cill DPC/cavity tray at equal centres (900 mm maximum), as drawings

REV C2
  4. **Pre-formed drip to underside of overhanging elements**
  5. **Exposed surface to be impregnated as M60/190.**

117 ASHLAR WALLING - NEW STONE COPINGS:
Include in Contractor's Designed Portion for Stonework

REV C1
- Drawing reference: **597-14632, 597-14633, 597-14634, 597-14635, 597-14636, 597-14637**.
- Background: Top of brick cavity walls and stone cladding.
- Stone: To BS EN 771-6.

REV C3
  - Name (traditional): **Cadeby Magnesian Limestone.**
  - Petrological family: **Cadeby formation of the Permian Age.**
  - Colour: Cream White. ~~**with clustered shells.**~~
    - To match approved sample range.

REV C4
  - Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
  - Finish: Fine rubbed.
  - Supplier and reference: **Dolomite Quarry, Warmsworth, Doncaster, South Yorkshire, DN4 9RG** ***Magnesian Limestone.***
  - Unit size:
    - Face size (nominal, including joints): As drawings. ~~(TBC).~~
    - Thickness: 75 mm nominal ~~(TBC).~~ **As Drawings** with cross-fall.
  - Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at corners and reveals) ± 0.5 mm] ~~(TBC).~~ **As Drawings**

REV C3
  - Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
    Mean value (minimum): Supplier to advise.
    Characteristic value (minimum): Supplier to advise.
    Category: Supplier to advise.

REV C3
  - Open porosity: **17% Supplier to advise.**
  - Additional requirements:
    - Freeze/ Thaw resistance: Supplier to advise.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143) www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval.
- Joints: Flush.

REV C2
  - Width: **4.0mm** ~~2.0 mm~~.
  - Pointing: Brushed.
- Special requirements:
  - Corner units as drawings.
  - DPC as F30/330 under coping stones laid over cavity closer.

REV C4
  - Lead Capping / Gutter Lining below Stone as H71/254 & H71/210
  - Pre-formed rebate to underside of stone to allow for thickness of DPC set back to maintain joint width at face.
  - Bed copings solid in mortar.

- Restraint fixings as F30/290.

REV C2
- **Pre-formed drip to underside of overhanging elements**
- **Exposed surface to be impregnated as M60/190.**

120 NEW AND EXISTING ASHLAR WALLING - NEW ENTRANCE GATEWAY WITH ORNAMENTAL DRESSINGS TO SOUTH WALL OF SOUTH TERRACE (NEW SQUARE):
Include in Contractor's Designed Portion for Stonework
To be read with Sections C25 and C41 and Structural Engineer's drawings.

- Location: New arched entrance opening formed within existing stone wall to south of South Terrace facing New Square, to match existing gateway towards west end of same wall.

REV C2
- Drawing reference: **597-40100, 597-41134.**
- Background: New in-situ reinforced concrete foundations and concrete frame within existing stone wall construction.
- Existing stone: Deconstructed and kept for reuse as C25/292 and C25/326, re-dressed as required.
- New stone: To BS EN 771-6.
  - Generally: To match existing.

REV C3
  - Name (traditional): **Cadeby Magnesian Limestone.**
  - Petrological family: **Cadeby formation of the Permian Age.**
  - Colour: Cream White. ~~**with clustered shells.**~~
    - To match approved sample range.

REV C4
  - Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
  - Finish: Fine rubbed. **To match existing.**
  - Supplier and reference: **Dolomite Quarry,**
    Warmsworth, Doncaster, South Yorkshire, DN4 9RG
    Magnesian Limestone.
  - Unit size:
    - Face size (nominal, including joints): To match existing (TBC).
    - Thickness: Varies with mouldings and other features. Allow for 120 mm nominal thickness to facing stones.
    - Coping stones (steeply pitched): 600 mm nominal width (front to back) as drawings
  - Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at corners and reveals) ± 0.5 mm] ~~(TBC).~~ **As Drawings**

REV C3
  - Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
    Mean value (minimum): Supplier to advise.
    Characteristic value (minimum): Supplier to advise.
    Category: Supplier to advise.

REV C3
  - Open porosity: **17% Supplier to advise.**
  - Additional requirements:
    - Freeze/ Thaw resistance: Supplier to advise.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143)
    www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval; colour of cured mortar to match existing.
- Stone profiles, mouldings and other ornamental dressings: Formed by skilled stone-masons to match existing or as shown on drawings.
- Core of existing wall: Make good solid in brickwork as F10/380 to back of concrete frame to suit ashlar finish.
- Joints: Flush.

REV C2
  - Width: To match existing (**4mm nominal** ~~2 mm nominal~~).
  - Pointing: Brushed.
- Fixings and accessories: As section F30.

- Other requirements:
  1. Pre-formed rebates and dowel-holes in edges of stone units to suit wall ties and joint width requirements.
  2. Lay DPC F30/330 under large coping stones, with pre-formed rebate in stone to allow for thickness of DPC set back to maintain joint width at face.

REV C3 122 NEW AND EXISTING ASHLAR WALLING - RECONSTRUCTED PARAPET WALL TO EAST TERRACE **(AS REQUIRED - TO BE ADVISED BY SPECIALIST STONEWORK SUBCONTRACTOR)**:
Include in Contractor's Designed Portion for Stonework

REV C2
REV C3
- Drawing reference: **597-41104, 597-41154, 597-41156, 597-41160, 597-41161, 597-41162, 597-41163, 597-41164, 597-41168, 597-42134.**
- Background: New insitu reinforced concrete frame.
- Existing stone: Deconstructed and kept for reuse as C25/292 and C25/326, re-dressed as required.
- New stone: To BS EN 771-6.
  - Generally: To match existing.

REV C3
  - Name (traditional): **Cadeby Magnesian Limestone.**
  - Petrological family: **Cadeby formation of the Permian Age.**
  - Colour: Cream White**. ~~with clustered shells.~~**
    - To match approved sample range.

REV C4
  - Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
  - Finish: Fine rubbed. **To match existing.**
  - Supplier and reference: **Dolomite Quarry,**
    Warmsworth, Doncaster, South Yorkshire, DN4 9RG
    Magnesian Limestone.
  - Unit size:
    - Face size (nominal, including joints): To match existing (TBC).
    - Thickness: Varies with mouldings and other features. Allow for 120 mm nominal thickness to facing stones.
    - Coping stones (steeply pitched): 600 mm nominal width (front to back) as drawings
  - Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at corners and reveals) ± 0.5 mm] (TBC).

REV C3
  - Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
    Mean value (minimum): Supplier to advise.
    Characteristic value (minimum): Supplier to advise.
    Category: Supplier to advise.

REV C3
  - Open porosity: **17% Supplier to advise.**
  - Additional requirements:
    - Freeze/ Thaw resistance: Supplier to advise.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143)
    www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval; colour of cured mortar to match existing.
- Stone profiles, mouldings and other ornamental dressings: Formed by skilled stone-masons to match existing or as shown on drawings.
- Core of existing wall: Make good solid in brickwork as F10/380 to back of concrete frame to suit ashlar finish.
- Joints: Flush.

REV C2
  - Width: To match existing (**4mm nominal** ~~2 mm nominal~~).

- Pointing: Brushed.
- Fixings and accessories: Generally as Section F30 with masonry support system to outer leaf as F30/265.
- Other requirements:
  1. Pre-formed rebates and dowel-holes in edges of stone units to suit masonry support system, wall ties and joint width requirements.
  2. Lay DPC F30/330 under large coping stones, with pre-formed rebate in stone to allow for thickness of DPC set back to maintain joint width at face.
  3. Inner face of wall to East Terrace to incorporate new recessed light fittings with concealed cable-routes as Services Engineer's requirements.
  4. Interface with structural glass rooflights H13/**122**.

REV C3 125 ASHLAR WALLING - NEW FACING AND REPAIR TO EXISTING STONEWORK **(AS REQUIRED - TO BE ADVISED BY SPECIALIST STONEWORK SUBCONTRACTOR)**:
Include in Contractor's Designed Portion for Stonework
To be read with Sections C25 and C41.

- Location: Great Hall - east elevation at plinth level; Library - north elevation at plinth level including Northwest Turret.
- Drawing reference: 597-___
- Existing stone: Salvaged from deconstruction as Section C25.
- New stone: To BS EN 771-6.

REV C3
- Name (traditional): **Cadeby Magnesian Limestone.**
- Petrological family: **Cadeby formation of the Permian Age.**
- Colour: Cream White**. ~~with clustered shells.~~**
  - To match approved sample range.

REV C4
- Origin: **Dolomite Quarry, Warmsworth, ~~Ancaster~~ South Yorkshire, UK.**
- Finish: Fine rubbed. **To match existing.**
- Supplier and reference: **Dolomite Quarry,**
  Warmsworth, Doncaster, South Yorkshire, DN4 9RG
  Magnesian Limestone.
- Unit size:
  - Face size: To match existing.
  - Thickness: 80mm nominal (TBC).
- Unit dimension tolerances: Close tolerances [length ± 0.5 mm, height ± 0.5 mm, width (exposed ends at reveals) ± 0.5 mm] (TBC).

REV C3
- Compressive strength (minimum): **80 N/mm² (MPa). Supplier to advise.**
  Mean value (minimum): Supplier to advise.
  Characteristic value (minimum): Supplier to advise.
  Category: Supplier to advise.

REV C3
- Open porosity: **17% Supplier to advise.**
- Additional requirements:
  - Freeze/ Thaw resistance: Supplier to advise.
- Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.

- Mortar: Hydraulic lime: sand mortar as section Z21.
  - Manufacturer/supplier: Lime Technology Ltd (0845 603 1143)
    www.limetechnology.co.uk

REV C4
    Limetec Traditional London Ashlar Mortar
    Factory batched - 1 : 2 hydraulic lime : sand.
    Indicative strength at 91 days: 2.5 N/mm² (approx).
  - Sand: Fine well graded sharp flint/quartz to BS EN 13139 and mortar supplier's recommendations. Max Aggregate: 2mm
    - Colour of sand: To Architect's approval.
- Bond: Bond pattern generally to match existing.
- Joints: Flush.

REV C2
  - Width: To match existing **(4mm nominal).**
  - Pointing: Brushed.
- Fixings and accessories: As section F30.

- Other requirements:
  1. Pre-formed rebates and dowel-holes in edges of stone panels to suit wall ties and joint width requirements.
  2. Back of stones to be solidly bedded in mortar.

GENERAL/ PRODUCTION

240 STONE SAMPLES
- Timing: Before placing orders.

REV C2
- Submit: Labelled samples of dressed stone or arrange for samples which represent the range of variation in appearance to be inspected. **Half of samples to be impregnated as M60/190.**

250 CUTTING AND DRESSING OF STONE
- Timing: After seasoning but before delivery to site.
- Accuracy:
  - Exposed and joint surfaces: Square, true planes free from hollow or rough areas.
  - Dimensions: Maintain specified joint widths.
- Orientation for natural bed of stones: Appropriate to properties of stones and positions in walling/ dressings.

260 IDENTIFICATION OF STONE UNITS
- Marking: Clearly and indelibly on concealed faces to indicate the natural bed and position in the finished work.

270 INSPECTION OF STONE UNITS
- Give notice: Before despatch to site, at appropriate stages of production.

280 SAND SAMPLES
- Timing: Before placing orders.
- Submit: Representative samples of F21/110 and F21/110A for approval of colour and grading.

LAYING AND JOINTING

300 REFERENCE PANELS
- General: Complete areas of specified walling types and obtain approval of appearance before proceeding.
- Walling type: F21/110 and F21/110A.

REV C3
- Location, size and features: **Refer to RMA Drawing 597-SK-411 for requirements.**

315A ADVERSE WEATHER (HYDRAULIC LIME/SAND MORTAR):
- Do not use frozen materials and do not lay on frozen surfaces.
- Do not lay bricks/blocks in hydraulic lime:sand mortars when the air temperature is at or below 8°C and falling or below 5°C and rising.
- Maintain temperature of the work above freezing until mortar has fully hardened. If, after application of hydraulic lime mortars, snow and/or frost are forecast or the temperature is expected to fall below 8ºC protect the area of work with dry layers of hessian or bubble pack to avoid the risk of frost damage during the curing process for as long as recommended by the mortar manufacturer. Further protect with plastic sheeting with sealed joints to prevent rain and snow ingress.
- Protect from rain and snow with plastic sheeting with sealed joints.
- In direct sunlight and high summer temperatures drape a damp hessian sheet over the brickwork/blockwork.. Maintain with mist spray to dampen down the surface.
- In drying winds drape a damp hessian sheet over the brickwork/blockwork..Maintain with mist spray to dampen down the surface.
- Generally for newly erected walling, repair work or re-pointing: Protect at all times as mortar manufacturer's recommendations, from:
  - Rain, snow and frost.

- Drying out too rapidly in hot conditions and in drying winds.
- Rake out and replace hydraulic lime mortar damaged by frost. When instructed by the CA, rebuild damaged work.

325 LAYING GENERALLY
- Stone selection: Do not use units with damaged faces or arrises.
- Accuracy:
  - Courses: Level and true to line.
  - Faces, angles and features: Plumb.
  - Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
- Absorbent stones: Dampen in warm weather to reduce suction. Do not soak.
- Mortar joints:
  - Laying: Full bed of mortar with all joints and voids filled.
  - Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
  - Appearance: Neat and consistent.
- Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains, not permitted.

330 WALLING BELOW GROUND LEVEL
- Extent of facework below finished level of adjoining ground or external works (minimum): 150 mm.

340 PUTLOG SCAFFOLDING
- Use: Not permitted.

360 OPENINGS
- Method of forming: Rigid templates, accurately fabricated to the required size.

370 JOGGLE JOINTS
- General: Fill with bedding mortar. Tamp to expel air.

380 COURSED WORK
- Location: Openings, copings, DPCs, cavity trays and the like.
- Courses: True to line and level.

395 BRUSHED FINISH TO JOINTS
- General: After the initial set has taken place, brush joints to remove laitance/ excess fines and give a coarse texture.

410 SUPPORT OF EXISTING WORK
- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.