

## SPECIFICATION DUKESFIELD ARCHES

### **Specification 1: Repointing stonework.**

The object of the repointing is to provide effective shedding of water for the long term protection of the stonework.

Cut back existing mortar minimum depth of 50 mm or deeper if required to solid base. Carefully remove and set to one side any loosened galletting. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Rebed loosened galletting as work proceeds. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.

Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 2: Deep tamping existing facework.**

The object of the deep tamping is to stabilise loose masonry and prevent water ingress.

The mortar joints in the specified areas are largely empty with deep voids, and must be deep tamped to bring them forward to the required depth.

Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Wedge loose stones as the work proceeds. Carefully remove any small stones or galletting and set aside for rebedding.

Brush out all loose material from the joints. If any old weathered joints have been colonised with lichens, algae, etc apply an approved biocide as part of the cleaning out.

Using hand sprays, thoroughly pre-wet the joints and deep tamp with the specified mix thoroughly filling the joints and consolidating the work bringing the mortar forward.

Pointing to facework to be completed with slightly recessed joints, as specification 1

Mix for deep tamping

1 : 2.5, NHL 3.5 natural hydraulic lime: course washed sharp sand.

### **Specification 3: Consolidation of wall heads - Soft Capping**

The object of the consolidation of walls heads to stabilise loose masonry and prevent water ingress and complete with a 'soft' vegetation capping

The extent of rebuilding is indicated. Precise areas to be agreed on site with the architect and will be dependant on the condition of the wall heads.

Prior to taking down stonework record and number stones. Much of the upper stonework was consolidated previously. It is anticipated that only the upper stone=s will require rebedded where the mortar has cracked. Carefully remove a maximum of 1 linear metre at a time and consolidate the exposed core. Relay the removed facework to match original, using numbered stones, introducing corework as the work proceeds with flush pointing struck off and washed with fine spray after first set to give impervious weathered surface to the upper level of the structure and to ensure proper shedding of water.

Pointing to facework to be completed with slightly recessed joints. Refer to Specification 1: Repointing stonework.

Soft tops formed with turf cut locally at a location to be agreed. To the perimeter of the wall head lay the turf upside down and fold back over to form a raised edge, cover the wall head with compacted moist top soil to a depth of approximately 50mm. Lay turf on top of the soil. Fix turf with canes at approx 600mm centres.

Mix for rebedded facework

1 : 3, NHL 5.0 natural hydraulic lime:course washed sharp sand

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : course washed sharp sand.

## **Specification 4: Consolidation of exposed corework.**

The object of corework consolidation is to stabilise loose masonry, with the minimum of disruption, complete with effective shedding of water.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework, and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced. The new rubble should match in size and colour the surrounding work.

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : coarse washed sharp sand.

## **Specification 5: Rebuilding with exposed core**

The object of the new corework is to support loose masonry by building out new exposed corework to support walling above without the need for new facing stones to be introduced.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. Rubble stonework to be finished as above to resemble corework. Salvaged stone rubble blocks to be used, face to be set back approximately 75mm from the facework. New stone to match the original as closely as possible in size, shape, colour, texture and durability.

The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced.

Mix for consolidated corework.

1 : 3, NHL 3.5 natural hydraulic lime : coarse washed sharp sand.

## **Specification 6: Removing vegetation and trees.**

**Removing Trees:** Free seeded trees to be cut down to stump level. Stumps to be injected with suitable root penetrating herbicide prior to being removed.

Tree and ivy roots to be carefully removed from stonework following consultation with architect and stonework repaired/rebuilt and repointed as necessary. Track roots through the stonework to remove all significant roots as possible. Wedge displaced stones as necessary to avoid undue further disturbance to surrounding stone work until the mortar joints have been reinstated. Introduce new gallets where stonework has been significantly displaced. .

Trees to be removed are indicated.

**Removing Vegetation:** Existing vegetation and organic growths to be carefully removed from the standing walls. Areas of soil and decayed organic growth to be removed.

Lichens & mosses to be removed from joints which are to be repointed using knife blades and soft bristle brushes.

All large roots to be removed, fine roots raked out as far as possible. Affected areas of stone work to be rebuilt, deep tamped and repointed as necessary.

**Note:** All walls where vegetation is to be removed and trees are to be removed are to be carefully and thoroughly inspected by the contractor for nesting birds and bats prior to removing any vegetation/ stonework. If any nests or bats are found report to architect before commencing any work.

## **Specification 7: Structural stitching to brickwork**

Allow for structural repairs at cracks and to secure the loose brickwork provisionally as indicated. Assume every third joint in the loose areas has a rod installed. Architect to provide details of final locations.

Include for raking out bed joints to a minimum depth of 75mm x approx. 750 mm long (exact lengths to be determined on site. Clean out slots with blow pump and flush out with water to remove all debris. Using a grout gun inject a bead of Helicon MM2 thixotropic cementitious non shrinking grout to the back of the slot. Insert a stainless steel Helibar 6 mm dia 750mm rod into grout to obtain good coverage. Inject a further bead of Helibond MM2 inserted with injection kit to within 38 mm of work face. Point as specification 9

## **Specification 8: Pinning.**

Allow for pinning stones provisionally as indicated, agree with the architect on site the exact locations of specific pinning of stonework,

The object of pinning is to fix in position isolated stonework which will be difficult to support by conventional means of support from stonework beneath. It is also to be used to secure existing dressed stone window components and to secure broken/cracked lintels.

Drill holes to suit site conditions to accept 6 mm stainless steel rods (but minimum of 2x thickness of stone to be stabilised, and 200mm at hood moulding components are to be supported.

Flush out hole with solvent or water.

Fill hole with proprietary resin to approx 2/3 capacity. Insert pin and following curing, finish with lime mortar as necessary. Pinnings in indents to have suitable hole drilled into the adjacent stonework to receive the pins when installed.

## **Specification 9: Repointing brickwork**

The object of the repointing is to provide effective shedding of water for the long term protection of the brickwork

Cut back existing mortar minimum depth of 50 mm. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of brickwork. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.  
Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 10: Mortar repair of brickwork**

The object of the mortar repair is to provide protective finish to the bricks that have lost their surface i.e. that are broken or are spalling to prevent further deterioration which could potentially lead to brick replacement.

Brush out loose debris, wash out and wet prior to pointing. Apply Lithomex mortar pointing, compacting firmly into place and fill the void do not exceed a depth of 80mm and do not apply in thickness less than 5mm.

Apply in full accordance with the manufacturer's recommendations.

Shape and form the Lithomex to replicate the brick profiles, and to allow the brickwork to be repointed on completion.

A sample of the brick is to be crushed and sent off so that a colour match for the brickwork can be made.

Protection: Protect completed mortar repairs from adverse weather until they have fully set.

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Spray with fine mist spray to prevent rapid drying throughout the process.

Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 2: Deep tamping existing facework.**

The object of the deep tamping is to stabilise loose masonry and prevent water ingress.

The mortar joints in the specified areas are largely empty with deep voids, and must be deep tamped to bring them forward to the required depth.

Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Wedge loose stones as the work proceeds. Carefully remove any small stones or galletting and set aside for rebedding.

Brush out all loose material from the joints. If any old weathered joints have been colonised with lichens, algae, etc apply an approved biocide as part of the cleaning out.

Using hand sprays, thoroughly pre-wet the joints and deep tamp with the specified mix thoroughly filling the joints and consolidating the work bringing the mortar forward.

Pointing to facework to be completed with slightly recessed joints, as specification 1

Mix for deep tamping

1 : 2.5, NHL 3.5 natural hydraulic lime: course washed sharp sand.

### **Specification 3: Consolidation of wall heads - Soft Capping**

The object of the consolidation of walls heads to stabilise loose masonry and prevent water ingress and complete with a 'soft' vegetation capping

The extent of rebuilding is indicated. Precise areas to be agreed on site with the architect and will be dependant on the condition of the wall heads.

Prior to taking down stonework record and number stones. Much of the upper stonework was consolidated previously. It is anticipated that only the upper stone=s will require rebedded where the mortar has cracked. Carefully remove a maximum of 1 linear metre at a time and consolidate the exposed core. Relay the removed facework to match original, using numbered stones, introducing corework as the work proceeds with flush pointing struck off and washed with fine spray after first set to give impervious weathered surface to the upper level of the structure and to ensure proper shedding of water.

Pointing to facework to be completed with slightly recessed joints. Refer to Specification 1: Repointing stonework.

Soft tops formed with turf cut locally at a location to be agreed. To the perimeter of the wall head lay the turf upside down and fold back over to form a raised edge, cover the wall head with compacted moist top soil to a depth of approximately 50mm. Lay turf on top of the soil. Fix turf with canes at approx 600mm centres.

Mix for rebedded facework

1 : 3, NHL 5.0 natural hydraulic lime:course washed sharp sand

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : course washed sharp sand.



## **Specification 4: Consolidation of exposed corework.**

The object of corework consolidation is to stabilise loose masonry, with the minimum of disruption, complete with effective shedding of water.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework, and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced. The new rubble should match in size and colour the surrounding work.

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : coarse washed sharp sand.

## **Specification 5: Rebuilding with exposed core**

The object of the new corework is to support loose masonry by building out new exposed corework to support walling above without the need for new facing stones to be introduced.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. Rubble stonework to be finished as above to resemble corework. Salvaged stone rubble blocks to be used, face to be set back approximately 75mm from the facework. New stone to match the original as closely as possible in size, shape, colour, texture and durability.

The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

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Mix for consolidated corework.

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## **Specification 6: Removing vegetation and trees.**

Removing Trees: Free seeded trees to be cut down to stump level. Stumps to be injected with suitable root penetrating herbicide prior to being removed.

Tree and ivy roots to be carefully removed from stonework following consultation with architect and stonework repaired/rebuilt and repointed as necessary. Track roots through the stonework to remove all significant roots as possible. Wedge displaced stones as necessary to avoid undue further disturbance to surrounding stone work until the mortar joints have been reinstated. Introduce new gallets where stonework has been significantly displaced. .

Trees to be removed are indicated.

Removing Vegetation: Existing vegetation and organic growths to be carefully removed from the standing walls. Areas of soil and decayed organic growth to be removed.

Lichens & mosses to be removed from joints which are to be repointed using knife blades and soft bristle brushes.

All large roots to be removed, fine roots raked out as far as possible. Affected areas of stone work to be rebuilt, deep tamped and repointed as necessary.

Note: All walls where vegetation is to be removed and trees are to be removed are to be carefully and thoroughly inspected by the contractor for nesting birds and bats prior to removing any vegetation/ stonework. If any nests or bats are found report to architect before commencing any work.

## **Specification 7: Structural stitching to brickwork**

Allow for structural repairs at cracks and to secure the loose brickwork provisionally as indicated. Assume every third joint in the loose areas has a rod installed. Architect to provide details of final locations.

Include for raking out bed joints to a minimum depth of 75mm x approx. 750 mm long (exact lengths to be determined on site. Clean out slots with blow pump and flush out with water to remove all debris. Using a grout gun inject a bead of Helicon MM2 thixotropic cementitious non shrinking grout to the back of the slot. Insert a stainless steel Helibar 6 mm dia 750mm rod into grout to obtain good coverage. Inject a further bead of Helibond MM2 inserted with injection kit to within 38 mm of work face. Point as specification 9

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Drill holes to suit site conditions to accept 6 mm stainless steel rods (but minimum of 2x thickness of stone to be stabilised, and 200mm at hood moulding components are to be supported.

Flush out hole with solvent or water.

Fill hole with proprietary resin to approx 2/3 capacity. Insert pin and following curing, finish with lime mortar as necessary. Pinnings in indents to have suitable hole drilled into the adjacent stonework to receive the pins when installed.

## **Specification 9: Repointing brickwork**

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**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of brickwork. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.  
Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

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Apply in full accordance with the manufacturer's recommendations.

Shape and form the Lithomex to replicate the brick profiles, and to allow the brickwork to be repointed on completion.

A sample of the brick is to be crushed and sent off so that a colour match for the brickwork can be made.

Protection: Protect completed mortar repairs from adverse weather until they have fully set.

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Brush out all loose material from the joints. If any old weathered joints have been colonised with lichens, algae, etc apply an approved biocide as part of the cleaning out.

Using hand sprays, thoroughly pre-wet the joints and deep tamp with the specified mix thoroughly filling the joints and consolidating the work bringing the mortar forward.

Pointing to facework to be completed with slightly recessed joints, as specification 1

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Pointing to facework to be completed with slightly recessed joints. Refer to Specification 1: Repointing stonework.

Soft tops formed with turf cut locally at a location to be agreed. To the perimeter of the wall head lay the turf upside down and fold back over to form a raised edge, cover the wall head with compacted moist top soil to a depth of approximately 50mm. Lay turf on top of the soil. Fix turf with canes at approx 600mm centres.

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Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework, and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced. The new rubble should match in size and colour the surrounding work.

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## **Specification 6: Removing vegetation and trees.**

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Tree and ivy roots to be carefully removed from stonework following consultation with architect and stonework repaired/rebuilt and repointed as necessary. Track roots through the stonework to remove all significant roots as possible. Wedge displaced stones as necessary to avoid undue further disturbance to surrounding stone work until the mortar joints have been reinstated. Introduce new gallets where stonework has been significantly displaced. .

Trees to be removed are indicated.

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Lichens & mosses to be removed from joints which are to be repointed using knife blades and soft bristle brushes.

All large roots to be removed, fine roots raked out as far as possible. Affected areas of stone work to be rebuilt, deep tamped and repointed as necessary.

**Note:** All walls where vegetation is to be removed and trees are to be removed are to be carefully and thoroughly inspected by the contractor for nesting birds and bats prior to removing any vegetation/ stonework. If any nests or bats are found report to architect before commencing any work.



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Include for raking out bed joints to a minimum depth of 75mm x approx. 750 mm long (exact lengths to be determined on site. Clean out slots with blow pump and flush out with water to remove all debris. Using a grout gun inject a bead of Helicon MM2 thixotropic cementitious non shrinking grout to the back of the slot. Insert a stainless steel Helibar 6 mm dia 750mm rod into grout to obtain good coverage. Inject a further bead of Helibond MM2 inserted with injection kit to within 38 mm of work face. Point as specification 9

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Drill holes to suit site conditions to accept 6 mm stainless steel rods (but minimum of 2x thickness of stone to be stabilised, and 200mm at hood moulding components are to be supported.

Flush out hole with solvent or water.

Fill hole with proprietary resin to approx 2/3 capacity. Insert pin and following curing, finish with lime mortar as necessary. Pinnings in indents to have suitable hole drilled into the adjacent stonework to receive the pins when installed.

## **Specification 9: Repointing brickwork**

The object of the repointing is to provide effective shedding of water for the long term protection of the brickwork

Cut back existing mortar minimum depth of 50 mm. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS,** which can wedge in the joints and damage the edges of brickwork. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.  
Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 10: Mortar repair of brickwork**

The object of the mortar repair is to provide protective finish to the bricks that have lost their surface i.e. that are broken or are spalling to prevent further deterioration which could potentially lead to brick replacement.

Brush out loose debris, wash out and wet prior to pointing. Apply Lithomex mortar pointing, compacting firmly into place and fill the void do not exceed a depth of 80mm and do not apply in thickness less than 5mm.

Apply in full accordance with the manufacturer's recommendations.

Shape and form the Lithomex to replicate the brick profiles, and to allow the brickwork to be repointed on completion.

A sample of the brick is to be crushed and sent off so that a colour match for the brickwork can be made.

Protection: Protect completed mortar repairs from adverse weather until they have fully set.

## SPECIFICATION DUKESFIELD ARCHES

### **Specification 1: Repointing stonework.**

The object of the repointing is to provide effective shedding of water for the long term protection of the stonework.

Cut back existing mortar minimum depth of 50 mm or deeper if required to solid base. Carefully remove and set to one side any loosened galletting. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Rebed loosened galletting as work proceeds. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.

Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 2: Deep tamping existing facework.**

The object of the deep tamping is to stabilise loose masonry and prevent water ingress.

The mortar joints in the specified areas are largely empty with deep voids, and must be deep tamped to bring them forward to the required depth.

Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Wedge loose stones as the work proceeds. Carefully remove any small stones or galletting and set aside for rebedding.

Brush out all loose material from the joints. If any old weathered joints have been colonised with lichens, algae, etc apply an approved biocide as part of the cleaning out.

Using hand sprays, thoroughly pre-wet the joints and deep tamp with the specified mix thoroughly filling the joints and consolidating the work bringing the mortar forward.

Pointing to facework to be completed with slightly recessed joints, as specification 1

Mix for deep tamping

1 : 2.5, NHL 3.5 natural hydraulic lime: course washed sharp sand.

### **Specification 3: Consolidation of wall heads - Soft Capping**

The object of the consolidation of walls heads to stabilise loose masonry and prevent water ingress and complete with a 'soft' vegetation capping

The extent of rebuilding is indicated. Precise areas to be agreed on site with the architect and will be dependant on the condition of the wall heads.

Prior to taking down stonework record and number stones. Much of the upper stonework was consolidated previously. It is anticipated that only the upper stone=s will require rebedded where the mortar has cracked. Carefully remove a maximum of 1 linear metre at a time and consolidate the exposed core. Relay the removed facework to match original, using numbered stones, introducing corework as the work proceeds with flush pointing struck off and washed with fine spray after first set to give impervious weathered surface to the upper level of the structure and to ensure proper shedding of water.

Pointing to facework to be completed with slightly recessed joints. Refer to Specification 1: Repointing stonework.

Soft tops formed with turf cut locally at a location to be agreed. To the perimeter of the wall head lay the turf upside down and fold back over to form a raised edge, cover the wall head with compacted moist top soil to a depth of approximately 50mm. Lay turf on top of the soil. Fix turf with canes at approx 600mm centres.

Mix for rebedded facework

1 : 3, NHL 5.0 natural hydraulic lime:course washed sharp sand

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : course washed sharp sand.

## **Specification 4: Consolidation of exposed corework.**

The object of corework consolidation is to stabilise loose masonry, with the minimum of disruption, complete with effective shedding of water.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework, and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced. The new rubble should match in size and colour the surrounding work.

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : coarse washed sharp sand.

## **Specification 5: Rebuilding with exposed core**

The object of the new corework is to support loose masonry by building out new exposed corework to support walling above without the need for new facing stones to be introduced.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. Rubble stonework to be finished as above to resemble corework. Salvaged stone rubble blocks to be used, face to be set back approximately 75mm from the facework. New stone to match the original as closely as possible in size, shape, colour, texture and durability.

The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced.

Mix for consolidated corework.

1 : 3, NHL 3.5 natural hydraulic lime : coarse washed sharp sand.

## **Specification 6: Removing vegetation and trees.**

Removing Trees: Free seeded trees to be cut down to stump level. Stumps to be injected with suitable root penetrating herbicide prior to being removed.

Tree and ivy roots to be carefully removed from stonework following consultation with architect and stonework repaired/rebuilt and repointed as necessary. Track roots through the stonework to remove all significant roots as possible. Wedge displaced stones as necessary to avoid undue further disturbance to surrounding stone work until the mortar joints have been reinstated. Introduce new gallets where stonework has been significantly displaced. .

Trees to be removed are indicated.

Removing Vegetation: Existing vegetation and organic growths to be carefully removed from the standing walls. Areas of soil and decayed organic growth to be removed.

Lichens & mosses to be removed from joints which are to be repointed using knife blades and soft bristle brushes.

All large roots to be removed, fine roots raked out as far as possible. Affected areas of stone work to be rebuilt, deep tamped and repointed as necessary.

Note: All walls where vegetation is to be removed and trees are to be removed are to be carefully and thoroughly inspected by the contractor for nesting birds and bats prior to removing any vegetation/ stonework. If any nests or bats are found report to architect before commencing any work.

## **Specification 7: Structural stitching to brickwork**

Allow for structural repairs at cracks and to secure the loose brickwork provisionally as indicated. Assume every third joint in the loose areas has a rod installed. Architect to provide details of final locations.

Include for raking out bed joints to a minimum depth of 75mm x approx. 750 mm long (exact lengths to be determined on site. Clean out slots with blow pump and flush out with water to remove all debris. Using a grout gun inject a bead of Helicon MM2 thixotropic cementitious non shrinking grout to the back of the slot. Insert a stainless steel Helibar 6 mm dia 750mm rod into grout to obtain good coverage. Inject a further bead of Helibond MM2 inserted with injection kit to within 38 mm of work face. Point as specification 9

## **Specification 8: Pinning.**

Allow for pinning stones provisionally as indicated, agree with the architect on site the exact locations of specific pinning of stonework,

The object of pinning is to fix in position isolated stonework which will be difficult to support by conventional means of support from stonework beneath. It is also to be used to secure existing dressed stone window components and to secure broken/cracked lintels.

Drill holes to suit site conditions to accept 6 mm stainless steel rods (but minimum of 2x thickness of stone to be stabilised, and 200mm at hood moulding components are to be supported.

Flush out hole with solvent or water.

Fill hole with proprietary resin to approx 2/3 capacity. Insert pin and following curing, finish with lime mortar as necessary. Pinnings in indents to have suitable hole drilled into the adjacent stonework to receive the pins when installed.

## **Specification 9: Repointing brickwork**

The object of the repointing is to provide effective shedding of water for the long term protection of the brickwork

Cut back existing mortar minimum depth of 50 mm. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of brickwork. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.  
Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 10: Mortar repair of brickwork**

The object of the mortar repair is to provide protective finish to the bricks that have lost their surface i.e. that are broken or are spalling to prevent further deterioration which could potentially lead to brick replacement.

Brush out loose debris, wash out and wet prior to pointing. Apply Lithomex mortar pointing, compacting firmly into place and fill the void do not exceed a depth of 80mm and do not apply in thickness less than 5mm.

Apply in full accordance with the manufacturer's recommendations.

Shape and form the Lithomex to replicate the brick profiles, and to allow the brickwork to be repointed on completion.

A sample of the brick is to be crushed and sent off so that a colour match for the brickwork can be made.

Protection: Protect completed mortar repairs from adverse weather until they have fully set.



## SPECIFICATION DUKESFIELD ARCHES

### **Specification 1: Repointing stonework.**

The object of the repointing is to provide effective shedding of water for the long term protection of the stonework.

Cut back existing mortar minimum depth of 50 mm or deeper if required to solid base. Carefully remove and set to one side any loosened galletting. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Rebed loosened galletting as work proceeds. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.

Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 2: Deep tamping existing facework.**

The object of the deep tamping is to stabilise loose masonry and prevent water ingress.

The mortar joints in the specified areas are largely empty with deep voids, and must be deep tamped to bring them forward to the required depth.

Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS**, which can wedge in the joints and damage the edges of stonework. Impact must be at an angle to the joint face and not perpendicular to it.

Wedge loose stones as the work proceeds. Carefully remove any small stones or galletting and set aside for rebedding.

Brush out all loose material from the joints. If any old weathered joints have been colonised with lichens, algae, etc apply an approved biocide as part of the cleaning out.

Using hand sprays, thoroughly pre-wet the joints and deep tamp with the specified mix thoroughly filling the joints and consolidating the work bringing the mortar forward.

Pointing to facework to be completed with slightly recessed joints, as specification 1

Mix for deep tamping

1 : 2.5, NHL 3.5 natural hydraulic lime: course washed sharp sand.

### **Specification 3: Consolidation of wall heads - Soft Capping**

The object of the consolidation of walls heads to stabilise loose masonry and prevent water ingress and complete with a 'soft' vegetation capping

The extent of rebuilding is indicated. Precise areas to be agreed on site with the architect and will be dependant on the condition of the wall heads.

Prior to taking down stonework record and number stones. Much of the upper stonework was consolidated previously. It is anticipated that only the upper stone=s will require rebedded where the mortar has cracked. Carefully remove a maximum of 1 linear metre at a time and consolidate the exposed core. Relay the removed facework to match original, using numbered stones, introducing corework as the work proceeds with flush pointing struck off and washed with fine spray after first set to give impervious weathered surface to the upper level of the structure and to ensure proper shedding of water.

Pointing to facework to be completed with slightly recessed joints. Refer to Specification 1: Repointing stonework.

Soft tops formed with turf cut locally at a location to be agreed. To the perimeter of the wall head lay the turf upside down and fold back over to form a raised edge, cover the wall head with compacted moist top soil to a depth of approximately 50mm. Lay turf on top of the soil. Fix turf with canes at approx 600mm centres.

Mix for rebedded facework

1 : 3, NHL 5.0 natural hydraulic lime:course washed sharp sand

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : course washed sharp sand.

## **Specification 4: Consolidation of exposed corework.**

The object of corework consolidation is to stabilise loose masonry, with the minimum of disruption, complete with effective shedding of water.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework, and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced. The new rubble should match in size and colour the surrounding work.

Mix for consolidated corework.

1 : 3, NHL 5.0 natural hydraulic lime : coarse washed sharp sand.

## **Specification 5: Rebuilding with exposed core**

The object of the new corework is to support loose masonry by building out new exposed corework to support walling above without the need for new facing stones to be introduced.

Hack back to sound material to form a suitable base for the consolidation. Rake out joints in the construction bed and face to form positive key and lay bed of mortar of specified mix and introduce corework.

Work must proceed slowly ensuring that all loose core is supported during stabilisation so that the finished work will provide support for the subsequent work above.

The corework will contain poor weathered material in places. These are to be removed along with any disintegrating stone and replaced with rubble matching the adjacent core as closely as possible.

The distinction between corework and facework must be clear. Consolidated corework must not be finished like rubble facing. Rubble stonework to be finished as above to resemble corework. Salvaged stone rubble blocks to be used, face to be set back approximately 75mm from the facework. New stone to match the original as closely as possible in size, shape, colour, texture and durability.

The mortar jointing should be kept slightly back from face exposing more stonework, with the surface carefully formed to provide good rainwater run off.

After first set, spray with fine jet to create a weathered and impervious surface.

Work must be protected from rain to avoid smearing of facework or corework and must be protected from excessive heat/cold.

Where there are patches of small exposed stones on the surface or where mortar jointing is disproportionately thick, these should be raked out and new rubble introduced.

Mix for consolidated corework.

1 : 3, NHL 3.5 natural hydraulic lime : coarse washed sharp sand.

## **Specification 6: Removing vegetation and trees.**

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Tree and ivy roots to be carefully removed from stonework following consultation with architect and stonework repaired/rebuilt and repointed as necessary. Track roots through the stonework to remove all significant roots as possible. Wedge displaced stones as necessary to avoid undue further disturbance to surrounding stone work until the mortar joints have been reinstated. Introduce new gallets where stonework has been significantly displaced. .

Trees to be removed are indicated.

Removing Vegetation: Existing vegetation and organic growths to be carefully removed from the standing walls. Areas of soil and decayed organic growth to be removed.

Lichens & mosses to be removed from joints which are to be repointed using knife blades and soft bristle brushes.

All large roots to be removed, fine roots raked out as far as possible. Affected areas of stone work to be rebuilt, deep tamped and repointed as necessary.

Note: All walls where vegetation is to be removed and trees are to be removed are to be carefully and thoroughly inspected by the contractor for nesting birds and bats prior to removing any vegetation/ stonework. If any nests or bats are found report to architect before commencing any work.

## **Specification 7: Structural stitching to brickwork**

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Include for raking out bed joints to a minimum depth of 75mm x approx. 750 mm long (exact lengths to be determined on site. Clean out slots with blow pump and flush out with water to remove all debris. Using a grout gun inject a bead of Helicon MM2 thixotropic cementitious non shrinking grout to the back of the slot. Insert a stainless steel Helibar 6 mm dia 750mm rod into grout to obtain good coverage. Inject a further bead of Helibond MM2 inserted with injection kit to within 38 mm of work face. Point as specification 9

## **Specification 8: Pinning.**

Allow for pinning stones provisionally as indicated, agree with the architect on site the exact locations of specific pinning of stonework,

The object of pinning is to fix in position isolated stonework which will be difficult to support by conventional means of support from stonework beneath. It is also to be used to secure existing dressed stone window components and to secure broken/cracked lintels.

Drill holes to suit site conditions to accept 6 mm stainless steel rods (but minimum of 2x thickness of stone to be stabilised, and 200mm at hood moulding components are to be supported.

Flush out hole with solvent or water.

Fill hole with proprietary resin to approx 2/3 capacity. Insert pin and following curing, finish with lime mortar as necessary. Pinnings in indents to have suitable hole drilled into the adjacent stonework to receive the pins when installed.

## **Specification 9: Repointing brickwork**

The object of the repointing is to provide effective shedding of water for the long term protection of the brickwork

Cut back existing mortar minimum depth of 50 mm. Clean out existing loose mortar using only fine chisels and a light hammer, fine saw blades and fine raking spikes, taking care not to damage the edges of the stonework, or to dislodge any stones.

**DO NOT USE ANGLE GRINDERS. DO NOT USE COLD CHISELS,** which can wedge in the joints and damage the edges of brickwork. Impact must be at an angle to the joint face and not perpendicular to it.

Brush out loose debris, wash out and wet prior to pointing. Apply mortar pointing, compacting firmly into place and fill the joint. Once the mortar has set knock back to show the arrisses of the stones, and brush back with a churn brush or similar followed by a soft brush.

Spray with fine mist spray to prevent rapid drying throughout the process.  
Work must be protected from rain to avoid smearing of facework and must be protected from excessive heat/ cold.

Mix for repointing

1 : 3, NHL 3.5 natural hydraulic lime: coarse washed sharp sand

### **Specification 10: Mortar repair of brickwork**

The object of the mortar repair is to provide protective finish to the bricks that have lost their surface i.e. that are broken or are spalling to prevent further deterioration which could potentially lead to brick replacement.

Brush out loose debris, wash out and wet prior to pointing. Apply Lithomex mortar pointing, compacting firmly into place and fill the void do not exceed a depth of 80mm and do not apply in thickness less than 5mm.

Apply in full accordance with the manufacturer's recommendations.

Shape and form the Lithomex to replicate the brick profiles, and to allow the brickwork to be repointed on completion.

A sample of the brick is to be crushed and sent off so that a colour match for the brickwork can be made.

Protection: Protect completed mortar repairs from adverse weather until they have fully set.