

BATTLE PRIMARY SCHOOL



BRICKWORK REPAIRS

**PREPARED BY:
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(CHARTERED BUILDING SURVEYOR)**

DATE: 10/09/2016

Client Name : Battle Primary School

Project Title : Brickwork Repairs

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1.0 PROJECT SUMMARY

Surveyors to Education were instructed by Battle Primary School to carry out a detailed condition survey of all external brick facades after prolonged issues of loose bricks falling from height which is now posing a major health & safety concern. Water ingress through defective brickwork is also apparent internally.

The report aims to clarify the cause of the defects and evaluates the facades overall condition and remaining life expectancy and recommendations for repair or replacement.

The existing school condition survey will be analysed in detail and used to support or finding to provide further independent advice.

Project Name: Façade Repairs/Replacement

Project Type: Condition

Key Feature of Project: Building Fabric

Additional Remarks: Repairs to existing brick walls to prevent falling brickwork

Project Scope: Single Block

Block: Main Building Facades

1.1 PROJECT OUTLINE:

Condition Survey Grade (Carried out by Ridge & Partners) August 2014 **Condition Grade C1**

Updated survey grade in accordance with DFE criteria:

- EFA Building A - 20% of brickwork **condition graded D1 (September 2016)**
- EFA Building A – 10% of brickwork **condition graded C2 (September 2016)**
- EFA Building A – 70% of brickwork **condition graded B3 (September 2016)**

The above condition survey covered all elements of the buildings and did not focus solely on the condition of the brickwork. **The school have since carried out a more detailed analysis of the brickwork employing a specialist stone mason called Stone Technical Services. There report has been included in Appendix A of this report.**

A Summary of the project issues have been identified below;

- High level brickwork has perished due to general age and constant freeze thaw cycles. The brickwork is now starting to fall off the building from height
- Protruding brick gable parapets above the existing roof line are leaning and require repointing and tying back into the existing structure
- Approximately 30% of existing brick and mortar above and below the DPC line has perished allowing water to ingress into the internal fabric of the building causing damp walls, and blown plaster
- To replace brickwork and repoint brick facades categorised as condition D1 and C2

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1.2 OUTPUTS TO BE ACHIEVED:

- To address **urgent condition needs and prevent falling brickwork from height** that could result in a potentially serious incident
- To protect the wellbeing of pupils and building occupants
- To repoint existing brickwork that has perished
- To ensure pupils can be taught in a safe damp free environment
- To provide structural stability of high level gable parapets
- Make the building fit for purpose as required by the Workplace health, safety and welfare Regulations.

1.3 KEY OUTPUTS:

KEY OUTPUT	COMPONENT	M2	UNITS	COST PER M2	COST PER UNIT	OTHER DESCRIPTION
Component Replacement	Building Fabric	N/A	1	£0	£256K	Based on tender information

1.4 OVERVIEW OF SCHOOL BUILDING.



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2.0 PROJECT NEED & RESPONSE

2.1 URGENCY OF NEED - TECHNICAL ASSESSMENT BY S2e (Chartered Building Surveyors)

SUMMARY

Battle Primary School is a Grade II listed building constructed in 1893 comprising of traditionally built solid brickwork with decorative features include brick gables, cornicing, external semicircle arches, tall inset brick chimneys with decorative features and verged intersections between roofing levels. The building has generally remained in a very good condition throughout.

The listed status means any repair work undertaken must be carried out in strict accordance with traditional craftsman techniques satisfying the Local Council Conservation Officer. This would include lime mortar to colour match existing and old weathered imperial reclaimed brickwork.

DEFECTS

The school is currently experiencing major health & safety concerns as a result of defective brickwork that has perished and lost its adhesion with existing mortar.

Brickwork is now starting to work loose and fall from height. This has been identified in photograph 5 & 6.

The slender decorative brick gables that protrude beyond the existing roof line are a concern as they are now starting to lean. Access is very difficult to ascertain their true condition without expensive scaffolding however, it is imperative this is checked by a structural engineer. **It is envisaged this brickwork will require repointing and tied back into the existing structure using stainless steel straps**

As a result of **constant freeze thaw cycles, differential movement has caused the facing brickwork to spall and blow the surface coating increasing the porosity of the brick.** Over time further saturation has gradually deteriorated the brick and mortar resulting in the mortar no longer providing an adequate bond with the brick. This is more prominent to the high level exposed brickwork particularly to the parapets and brick gable ends.

The **mortar has started to perish in numerous locations** exposing more of the solid brickwork. This is allowing rainwater to penetrate deeper into the existing brickwork increasing its porosity. **This is now starting to saturate the wall and damp walls are evident internally resulting in blown plaster and defective internal painted brickwork.**

Approximately **70% of the existing brickwork remains in fair condition** and should only require reactive maintenance in the next 5 years. We have categorised this as condition B3 in accordance with DFE grading criteria.

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The remaining **30% of brickwork has suffered from extensive deterioration since the buildings construction 120years ago as a result of high level exposure to the elements**, general orientation of the building and low level brickwork below the damp proof membrane. The south and east elevations are showing the worst of the deterioration. We have categorised the brickwork condition as C2 for 10% and D1 for 20

These areas will require attention immediately to safeguarding the wellbeing of building occupants and prevent brickwork from falling from height imminently.

If no action is taken now further deterioration will occur and will put the school at risk of an incident occurring.

The school are constantly battling with reactive patch repairs and localised making good of the defective brickwork and this is increasingly becoming extremely difficult to keep on top of particularly repairing brickwork at high level as access will be costly utilising purpose constructed scaffolding.

2.2 PHOTOGRAPHIC SURVEY

	
1 – High level brick gable parapets that are now leaning and unsafe	2 – High level brick gable parapets that are now leaning and unsafe

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3 – Further high level brick parapets



4 – Spalled brickwork



5 – Brickwork at high level about to fall



6 – Bricks that have fallen from height since June 2016



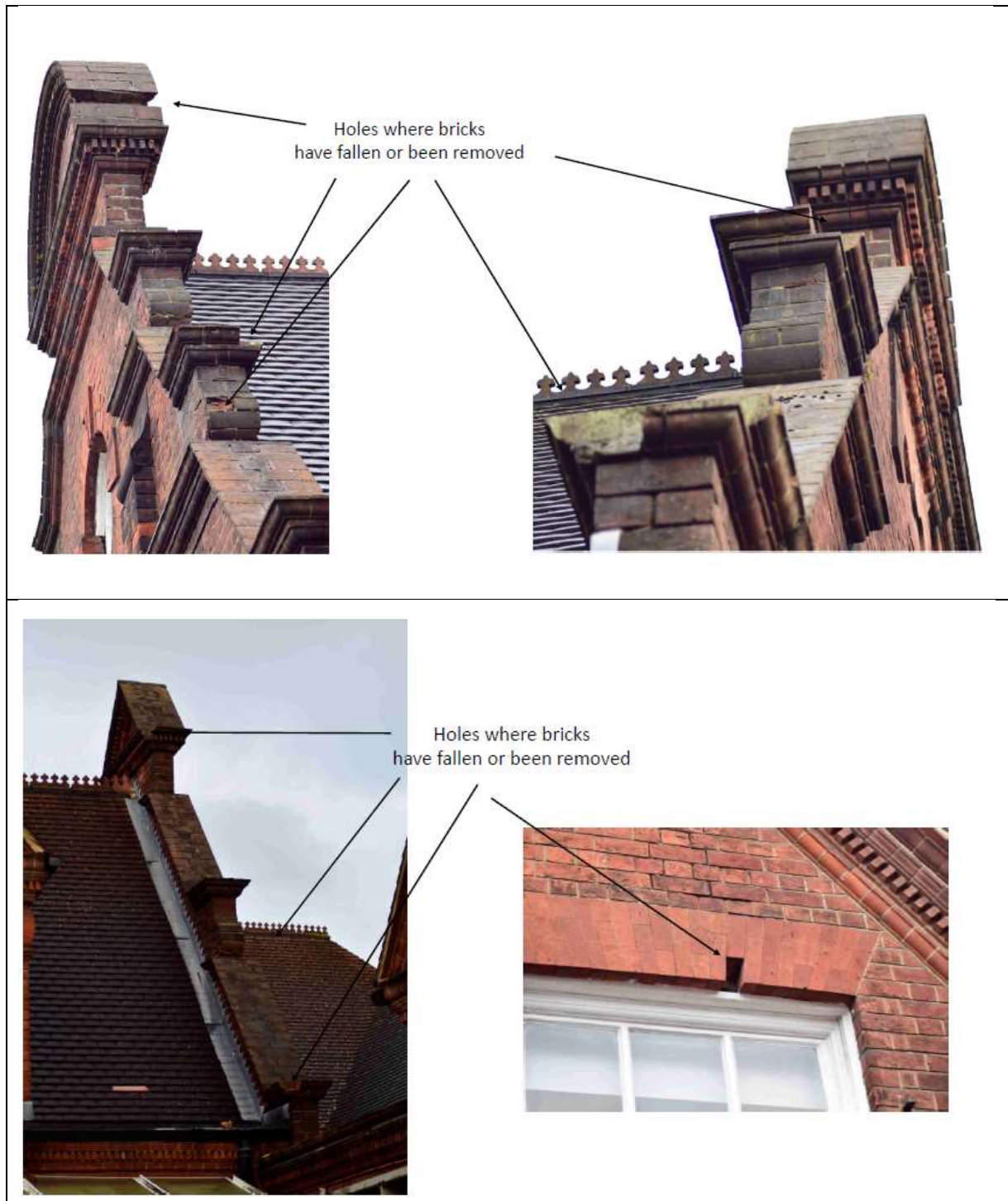
7 – Brickwork already fallen from high level



8 – Missing brickwork to high level gable parapet

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Loose and damaged bricks still in position



Hole left when brick fell



Hole in roof where brick hit and bounced off

Position of brick where it landed narrowly missing a public road and footpath



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13 – Spalled brickwork



14 – Spalled brickwork



15 – Spalled brickwork



16 – Spalled brickwork



17 – Spalled brickwork



18 – Spalled brickwork

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19 – Spalled brickwork that has blown the brick face



20 – Spalled brickwork increasing brick porosity



21 – Defective mortar



22 – Defective mortar

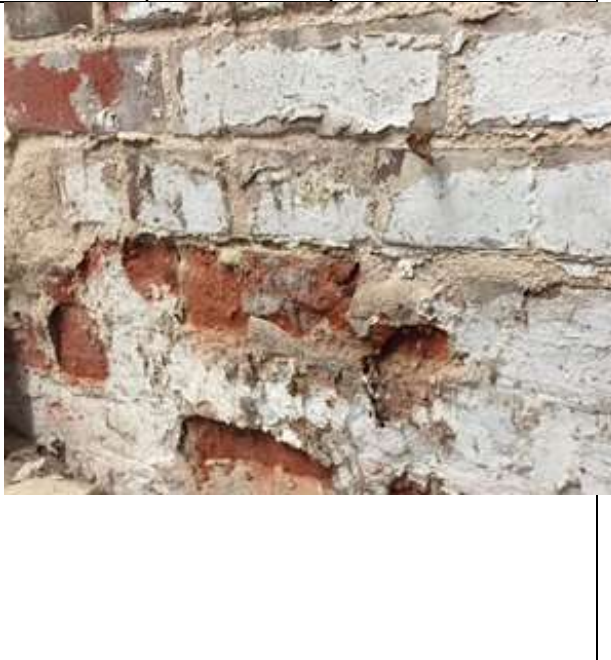


23 – Dampness to brickwork internally



24 – Dampness to brickwork internally

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25 – Blown plaster internally	26 – Blown plaster internally
	
27 – Defective internal brickwork	28 – Defective internal brickwork

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29 – Damaged plaster from water ingress

30 – Damaged plaster from water ingress

2.3 NATURE & EXTENT OF IMPACT IF FUNDING IS NOT RECEIVED

If the School do not rectify these defects immediately the following is likely to occur;

- More brickwork will fall from great height potentially injuring occupants below
- Leaning brick gable parapets above the roof level will continue to deteriorate and will require partial rebuild if left untreated
- Water will continue to ingress through the defective mortar and saturate solid brick walls leading to more internal blown plaster
- Repair costs will increase
- Chances of serious incident from falling brickwork is likely
- Potential for school to be sued if incident occurred

2.4 ALTERNATIVE OPTION

Alternative Option – REPOINT/REPLACE A GREATER PERCENTAGE OF BRICKWORK/MORTAR TO INCLUDE CONDITION RATED B3 ELEMENTS AS WELL AS C2 AND D1.

- More disruption to school
- Less manageable
- Larger project would mean longer time scales until completion.
- This option would be substantially more expensive than the preferred option
- **Would be addressing desirable need and not focus solely on 'urgency of need'**

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2.5 PREFERRED OPTION

REPOINT/REPLACE BRICKWORK TO CONDITION GRADED ELEMENTS C2 AND D1 ONLY.

- **Focus solely on 'Urgency of Need' rather than desirable need**
- Reduces the project cost
- Dramatically improve safety for school pupils/staff and eliminates the risk of any brickwork from falling
- Ensures the building remains watertight
- More manageable and less disruptive for the school

2.6 PREFERRED TECHNICAL SOLUTION

The cause of the brick defects and concerns relate to;

- Perished brickwork and mortar from 120 years of exposure to the elements
- High level brick gable parapets are leaning
- Repairs are no longer working as intended and are very expensive
- Difficult to repair high level brickwork due to access requirements
- Numerous external defects beyond the realistic capabilities of being patched

Doing nothing is not an option. Falling brickwork will only become more apparent and water ingress will only continue and lead to more expensive replacement of internal finishes.

2.7 PROJECT SPECIFIC TECHNICAL CONSIDERATIONS

- All mortar to incorporate lime to provide flexibility.
- All bricks to be replaced should match existing
- Scaffolding should be erected during holiday period utilising an Advanced Scaffolder
- Structural assessment of brick gable parapets will be required

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3.0 VALUE FOR MONEY

3.1 OPTION APPRAISAL - Costs

Do Nothing – Continue with Repair Costs	
Maintenance works required to keep area in operation (£ / year)	Estimated £4750 for repairs
Additional Maintenance staff (£ / year)	Site Manager hours @ 40/annum x £15/hr = £650
Wasted energy costs (£ / year)	N/A
Total Costs (£ / year)	£ 5,400
Disruption / issues arising to be managed	Damp internal walls disrupting lessons Safety of building
Key risks / concerns remaining	-bricks falling from height -Expensive replacement if left untreated

Alternative Option	
Scope	Repoint & Replace damaged brickwork to all D1, C2 & B3 condition elements
Nature of work	Component replacement
Difference compared to preferred option	The addition of B3 condition related elements
Cost estimate overall (£)	£412,750
Approximate Start Date	July 2017
Approximate Completion Date	February 2018
Issue/Risks relating to option	-Not cost effective -Project will run further into school term time - Would be addressing desirable need rather than urgency of need - Would provide more risk to the school occupants

Preferred Option	
Scope	Focused on repointing and replacing brickwork to C2 and D1 elements only
Nature of work	Component replacement
Difference compared to alternative option	Most cost effective spend of funding. Addresses urgent need.
Cost Saving overall (£)	£155,930.55
Approximate Start Date	July 2017
Approximate Completion Date	October 2017
Issues/Risks relation to option	See Risk Register

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3.2 TOTAL SAVINGS GENERATED FROM PREFERRED OPTION

DESCRIPTION	COST SAVINGS GENERATED
Annual Maintenance Savings	£4,750
Maintenance Staff Cost Savings	£650
TOTAL (A)	£5,400

3.3 COST ESTIMATE

A detailed cost estimate has been provided for the preferred option. The total cost equates to £256,819.45

The project has also been tendered and we therefore attach the lowest tender submitted by the Contractor.

3.5 COST CERTAINTY

Surveyors to Education (S2e) have tendered and delivered over 300 projects under the ACMF & CIF funding programmes and understand where best value costs should be. S2e Chartered Quantity Surveyors have bench marked the rates to inform 2017/18 bids and Spon's pricing documentation has been used to ascertain remaining costs for the projects refurbishment.

3.6 ACHIEVING VALUE FOR MONEY

- If left to deteriorate the gable parapets will require partial replacement increasing costs dramatically
- Spons pricing books have been used to accurately obtain repointing and brickwork replacement rates
- Project quotations have been obtained
- Chartered Quantity Surveyors have been used to obtain detailed budget costs
- Replacement will reduce further damage to internal plaster and brickwork from ingress.
- General annual maintenance costs of £5,400 will be saved
- Wasted site managers time rectifying leaks will be eliminated
- Preferred option focuses on 'Urgency of Need' only providing best value
- Cash Flow Forecasting has been provided

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4.0 PROJECT PLANNING

4.1 PRIORITISATION OF PROJECT SCOPE – See section 3.1 costed options appraisal

The repointing/brickwork replacement will consist of all areas categorized as condition C2 & D1 representing 30% of all areas

4.2 DISRUPTION ISSUES TO BE MANAGED

- Access/Egress from site
- Signing in / Contractors Compound
- Contractors Parking
- Fire Routes
- Insurances.
- Erection of scaffolding

4.3 PROGRAMMING OF WORK & IMPACT ON SCHOOL

S2e have evaluated all key tasks and timescales associated with the project to ensure the project can be delivered by the end of March 2018 if successful through the Condition Improvement Fund. Key dates have been highlighted on the enclosed project programme.

- If successful the project has been scheduled with the school to commence 24th July 2017.
- It is estimated the contract duration will be 12 weeks completing 13th October 2017
- The School have requested the project is tendered to 4nr contractors to ensure appropriate accountancy procedures and audit trails are adhered to.
- It has been agreed the school will not be occupied during the summer holidays in 2017 to enable the scaffolding to be constructed.
- Project will have little disruption on teaching once scaffolding has been erected
- All high risk repairs to be carried out at the start of the summer holidays
- Detailed project programme provided
- Contingency incorporated into project programme

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4.4 PROJECT RISKS:

RISK DESCRIPTION	LIKELIHOOD (HIGH, MED, LOW)	IMPACT (HIGH, MED, LOW)	MITIGATION
Asbestos	Low	High	Asbestos management survey assessed. No asbestos present
Erection of scaffolding	Med	High	To prevent injury to occupants all scaffolding to be erected during school holidays/out of hours/weekends
Access/Egress to site	Low	Medium	Principal Designer to agree site management plan prior to commencement of work. Banksman always in place to walk deliveries to site compound
Signing in	Low	Low	All contractors to sign in at compound and remain in working zone at all times. School Site Manager to be informed if further access is required
Parking	Low	Low	Contractors to park off site
Fire Routes	Low	Medium	Fire management strategy has been reviewed with school. Alternative fire escapes may be required.
Insurances	Low	Low	School to contact insurances regarding work to ensure cover is in place
Decanting of classrooms	Low	Medium	High risk work carried out during holidays to reduce the need to vacate classrooms
Cost Certainty	Low	Medium	Accurate costs established using spons pricing index
Programme Slippage	Low	Medium	Contingency included in programme
Unforeseen work	Low	Medium	Contingency included in budget
Disruption to school	Low	Medium	Sequenced work to restrict working areas
Project Management	Low	Medium	Experienced CIF project managers appointed
Site Security	Low	Medium	Secure site setup provided. Premises staff on site during work.
Lack of Communication	Low	Medium	Weekly meetings with leadership team
Materials	Low	Medium	Supply chain confirmed availability
Health and Safety	Low	Medium	Construction Phase Plans approved and regular monitoring undertaken

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4.5 PROFESSIONAL ADVISORS

Surveyors to Education working in partnership with the academy are a firm of Chartered Building Surveyors who specialise in formulating Estate Strategies and the delivery of construction projects for Education establishments. Surveyors to Education are very experienced in delivering CIF and previously ACMF projects.

Scope of advice: Full Project Management Support

Procurement Route: Traditional Tender

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APPENDIX A – INITIAL CONDITION ASSESSMENT

Battle Primary Academy
FAO: ROBERT PYCRAFT
Cranbury Road
Reading
RG30 2TD

Our Ref: S19919/RC/DS

30th July 2016

Dear Robert,

Battle Primary School High Level Brickwork Inspection Report

Further to your instructions, we are pleased to confirm that the inspection of the above was completed on Friday 22nd July 2016. We trust the work has been carried out to your satisfaction. We enclose our report for your consideration and our summary of costs are laid out below. ***Please can I draw to your attention the conclusions below as we feel the high level brickwork to certain areas is very dangerous and unsafe with loose bricks ready to fall from height.***

Conclusions and Duty of Care

We conclude that a comprehensive schedule of remedial works is to be carried out to the external façades of the school buildings, driven by the requirement for future use and suitability of the structure, in order to provide a safe and serviceable work place and public facility. Issues aligned with masonry degradation and fixing detail require to be high on the agenda. **Critical issues are the vast majority of works which are structural to gable ends, chimneys, copings, fabric and these are deemed to be in a dangerous condition. Public areas to street facing elevations are concerning due to falling materials, including full bricks from compromised Fan gables and chimneys, roof coverings, guttering which have extensive damage and exhausted materials dating back to the initial build.** The usage of the building is educational and staff and pupils use communal access and play grounds directly under and adjacent to these conditions, we are of the opinion that these works are essential.

We trust we have interpreted your requirements correctly, please do not hesitate to contact us if we can be of any further assistance.

Yours Sincerely



David Stone
Managing Director
Email: dave@stoneservicesuk.com