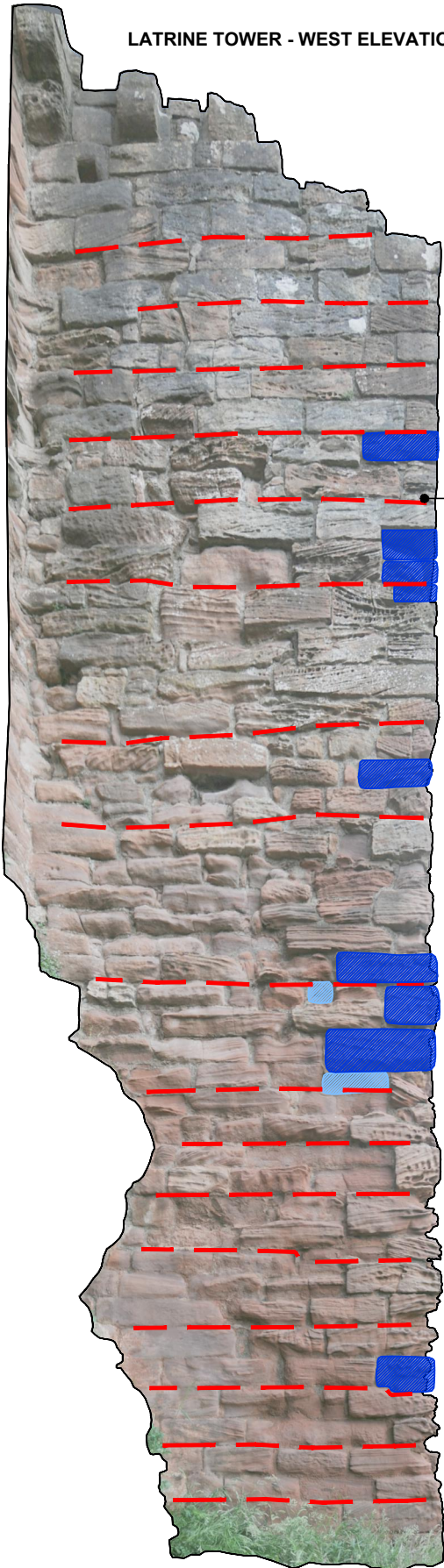


*NOTE: Projecting corbels have not been photographically rectified.

LATRINE TOWER - WEST ELEVATION



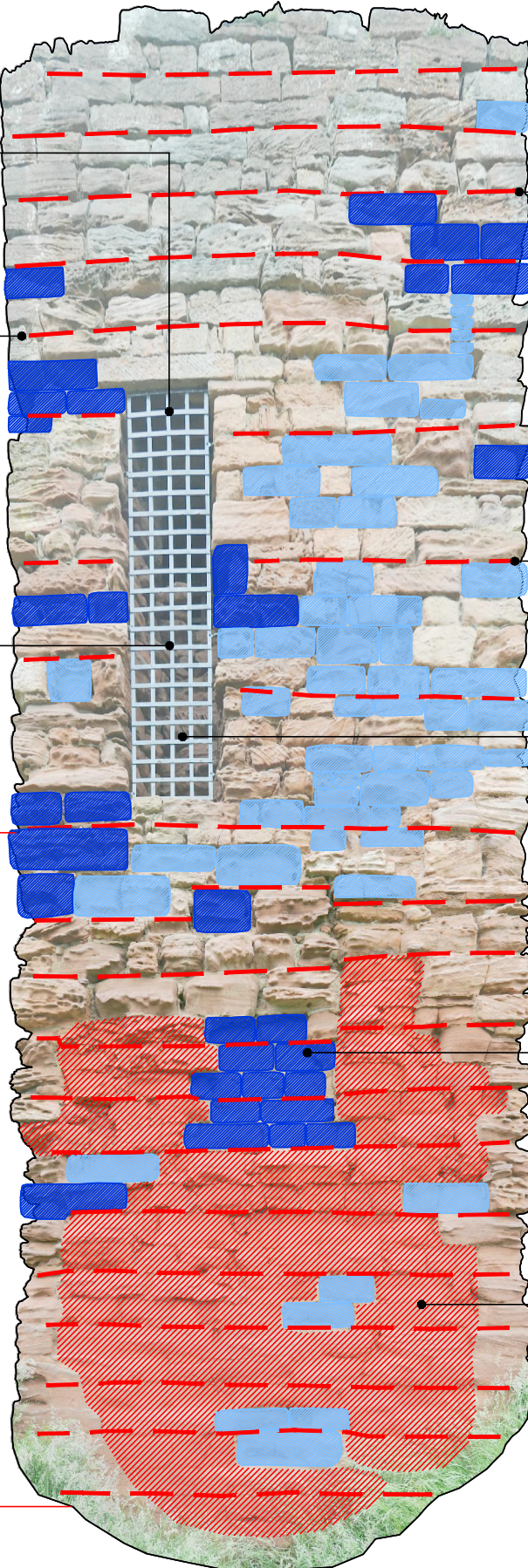
Opening previously consolidated as large vertical opening with yett which appears not to be historically correct. Pay particular regard to opening west jamb stones when carrying out repairs to ensure all evidence of original build and configuration is retained, or recorded and replicated in indents.

6mm diameter stainless steel helical bars to be installed at regular intervals (provisionally every 2nd or 3rd bed joint as built permits) and returned 3m on each side. At the opening, helical bars to be returned into interior space as far as possible.

Existing modern yett grille to be removed for works. Assess weight and determine method of removal. Unbolt from existing fixing straps which are to remain in-situ. If operation proves difficult, cut yett to enable removal in preference to damaging fixings. On completion of works allow for re-setting any loose fixing straps into resin and adding additional bronze or stainless steel fixing straps of similar design into joints if required. Repair, overhaul, or replace yett to similar design and re-instate back into opening.

This area to be assessed on site once safe access is available to determine if helical bar reinforcement is required into joints
*(provisionally shown helical bars at every second joint below south facing opening).

LATRINE TOWER - SOUTH ELEVATION



6mm diameter stainless steel helical bars to be installed at regular intervals (provisionally every 2nd or 3rd bed joint as built permits) and returned 3m on each side. At the opening, helical bars to be returned into interior space as far as possible.

6mm diameter stainless steel helical bars to be installed provisionally at every fourth joint here and returned 3m on each side. At the opening, helical bars to be returned into interior space as far as possible. See details below right for helical bar installation.

Arrange safe access to latrine shaft voids to inspect structure and stonework condition and submit any further proposals for structural and masonry repairs found necessary to consolidate the latrine tower interior (see drawing 90038-150714-003). Include for temporarily removing and re-instating any yetts to allow access.

To consolidate, restore structural integrity and prevent erosion of core material, re-instate missing area of facework shown to have disappeared since after 1899 archive photo was taken. Prior to carrying out these works, provisionally cut out small area of core and eroded facing stone behind, within shaft, to determine overall thickness of wall, facing stone thicknesses and build quality which will inform stone indent requirements to badly eroded back facework at base.

Within red hatched base area identify severely decayed stones in locations required for structural build/facing thickness investigation to confirm structure is sound. Carefully cut out and open up. From this, determine extent of stone replacement required to maintain across area to ensure structural performance. Note, provisionally allow for 70% indenting here.

1:25@ A1

*NOTE: Projecting corbels have not been photographically rectified.

LATRINE TOWER - EAST ELEVATION



LEGEND:

- Stones to be indented (TBC on site once scaffold has been erected and close quarters inspection can take place).
- Stones likely to be indented (TBC on site once scaffold has been erected and close quarters inspection can take place).
- New 6mm helical bar reinforcement grouted into joints.

Specification/method statement for inserting helical bar into joints:

- Agree means of removing existing mortar with DA to reduce risk of damage to existing stones. Rake out or cut out mortar joints to specified depth and at the required vertical spacing.
- Vacuum out the slots and dampen with water.
- Protect adjacent stone faces and using grout gun insert a bead of approved cementitious grout into the back of the slot.
- Push the stainless steel helical bar into the grout to obtain good coverage.
- Insert a bead of approved cementitious grout over the exposed rod and iron into the slot using the finger trowel.
- Point up the joint with lime mortar kept slightly back from the face to maintain sympathy with eroded masonry. Liaise with DA.
*NOTE: where joints are tight, carefully cut back stone to widen bed joint to take bar. Carborundum rub any sharp arris created to maintain sympathetic appearance.

Nominal 20mm thickness lime mortar pointing.

6mm diameter stainless steel helical bar in cementitious grout.

Depth of slot 55-75mm.

SECTION ON HELICAL BAR INSERTION: 1:10@A1

Nominal 20mm thickness lime mortar pointing to face.

Depth of slot 55-75mm.

SECTION ON HELICAL BAR AT LAP: 1:10@A1

6mm diameter stainless steel helical bars at vertical centres shown on the elevations. 500mm minimum laps. Locations to be marked out/agreed with the Engineer.

ELEVATION OF HELICAL BAR INSERTION: 1:10@A1

NOTE:

RECORDING:
Make detailed photographic/drawing records of areas where works are to be undertaken. Individual stones which require to be addressed in repairs will be identified in updated drawings. Where downstaging historic masonry, mark individual stones for re-instatement.

SUPERFICIALLY DECAYED STONEMWORK:
Brush back superficially decayed and delaminating/contour scaling surfaces of deteriorated masonry to a sound surface using a non-metallic brush.
Loose detaching fragments may require careful removal by hand to remove the risk of falling masonry.

REPAIRING DECAYED AND FRACTURED STONES:
Repair individual stones where they are capable of repair using the following methods:

- Dowel repair cracked stones using concealed stainless steel dowels set in resin where appropriate.
- Where dowels have to be inserted through face, keep resin & rod back from face min. 25mm and point up hole using lime mortar.
- Point up superficial cracks through stone with lime mortar.
- Inject fine fissures with acrylic resin.
- Point up with lime mortar where laminations retained within the build are opening up or pockets contribute to accelerated weathering.
- Selectively consolidate decayed faces using acrylic resin and/or lime mortar consolidation and edge pointing techniques. These techniques are particularly applicable where stones retain evidence of cutting and carving affording greater significance. Note that in certain locations, short term repair techniques may not be compatible with falling masonry risk, access limitations and the need to monitor.

INDENTING DECAYED STONE:

Where stones are disintegrating or eroded back to the extent that they are no longer performing structurally, or are aggravating moisture penetration problems and placing neighbouring stones at risk, replace using:

- best petrological and colour matching new stone.

Agree appropriate character for new stone dressing with District Architect according to location. Face to be set to original face line with top surface slightly weathered to throw water off ledge where existing stones above are eroded. Tooling to face to be agreed with DA informed by any existing tooling patterns revealed by close quarters inspection. If no original face tooling can be identified a generic tooling technique similar to that used on the existing lintol provisionally to be used. Artificial weathering should be avoided but dressing should ensure that all vestiges of machine cutting are removed so as not to present too jarring or crisp appearance. All replacements should remain distinguishable upon close scrutiny.

Samples of proposed dressing/tooling to be agreed with District Architect in advance.

DISMANTLING & RE-BUILDING:

Localised dismantling of groups of adjacent stones may be necessary. Where required, ensure thorough recording and re-instate sound stones to their original positions.

CRAMPS & FIXINGS:

Incorporate hidden stainless steel fixings where require for structural integrity and/or tying new stones back into build.

RE-POINTING:

Where appropriate, obtain original pointing mortar sample from the wall, and carry out mortar analysis to inform re-pointing specification. Remove any vegetation growth.

Carry out comprehensive re-pointing exercise to replace failing and cementitious pointing over this area.
Rake out open bed, joints and defective areas, retaining sandstone pinnings, but discarding hard win pinnings. Existing cementitious pointing is deemed to be having an adverse effect on masonry and should be removed where it can be cut out without damaging stones.

Point up around new stone and re-point elsewhere in appropriate lime mortar specification, re-incorporating pinnings and keeping mortar slightly back from face of stone. Where this would create water traps on the tops of projecting stones, work mortar line forwards to avoid.

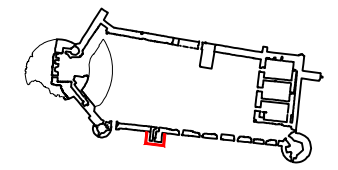
In some locations, small voids left by weathered or broken stones not considered to warrant indenting should be filled up by pinnings set in pointing mortar to make good the wall face.

Residual Risks

1. The work area is up to 30 metres above ground level. Care must be taken when working next to any drops. Access to the structure will be by scaffold. All appropriate safety precautions to be adhered to.

REV A: 24/02/2016 [KA/SD] - Added helical bars details, method statement and residual risks.

REV B: 26/04/2016 [SD] - Notes amended/added.



MONUMENT	BOTHWELL CASTLE
PROJECT	LATRINE TOWER CONSOLIDATION WORKS PROPOSED EXTERNAL ELEVATIONS WORKS



PROJECT DRAWING NUMBER	90038-150714-004B
SCALE	1:25&1:10@A1
DATE	19/02/2016
ARCHIVE NUMBER	-
Author	P.BEATON
Drawn by	S.DEASLEY