

PRIOR ART · STONEMASONRY

What is already written down

A digest of published stonemasonry method, assembled from sources that carry no copyright, for the use of a successor preparing to elicit. It is not a record, it is not instruction, and it is not to be read to a master. Its purpose is to supply the questions that a blank protocol cannot.

The rule that governs this document. It goes to the successor and to nobody else. A master shown a book agrees with the book instead of saying what they do, and that contamination cannot be undone once it has happened. The successor reads this before elicitation, performs the practice under §4 Act IV, and then puts the divergences to the master as questions. The master is never told what a source says until the record is ratified.

Why a digest at all

The elicitation protocol at Annex K asks good questions in general. What it cannot supply is the specific question — the one that names a step the master performs without noticing, or a figure the published record gives differently. Experts cannot see their own assumptions, and a successor with no prior reading has no way to find the seam.

The published record is the cheapest available source of seams. Where a federal specification names a tolerance, a successor can ask whether the master works to it. Where two federal documents contradict each other, a successor can ask which is right and why. Where the record is silent on something every mason must do, that silence is the most valuable finding in the digest, because it marks knowledge that has never been written down by anyone.

What the sources are, and what they are worth

Two bodies of material qualify: works of the United States Government, which carry no copyright under 17 U.S.C. §105, and works published in 1930 or earlier, whose United States copyright has expired. Everything cited below falls in one or the other. Material still in copyright may be consulted — reading a book to form a question is not a derivative act — but nothing from it is reproduced here or in any Practice Record.

Source	Standing	What it carries
UFGS 04 03 00, Conservation Treatment for Period Masonry (USACE / NAVFAC / AFCEC, 2025)	Federal	The most operationally precise federal document on historic stonework. Repointing, in-situ retooling, dutchman repair, crack injection. Mortar consistency, lift depths, curing cycles, mandatory mock-ups.
Preservation Brief 2, Repointing Mortar Joints in Historic Masonry Buildings (National Park Service, 1998)	Federal	Mix proportions by volume, joint cutting depth and geometry, a ranked order of cutting tools, lift sequence, tooling timing and the cues that say it is wrong, curing schedule, failure modes.
TM 3-34.44 / FM 5-428, Concrete and Masonry (Department of the Army, 2012 and 1998)	Federal	The only federal source for laying stone rather than repairing it. Rubble work: bedding, bonding stone frequency, sighting by eye against building to a line, and the instruction never to slide a stone once set.

Source	Standing	What it carries
Preservation Brief 48, Preserving Grave Markers in Historic Cemeteries (National Park Service, 2016)	Federal	Stone setting and resetting. Bedding preparation, drainage, pinning, lifting rigs, cleaning pressures and test patches.
Preservation Brief 42, Cast Stone (National Park Service, 2001)	Federal	Fabrication rather than repair — dry-tamp and wet-cast processes, curing, surface de-filming.
Building Materials and Structures Report 139, Studies of Stone-Setting Mortars (National Bureau of Standards, 1953)	Federal	Not method. The laboratory evidence that explains why the craft rules exist — why vertical joints fail before horizontal ones, and why lime goes into the mix.
E. G. Warland, Modern Practical Masonry (London, 1929)	US public domain	A banker mason's manual. Sixty-odd named hand tools with their uses, then the working sequence for each class of stone: marginal drafts, boning by sighted straight-edges, voussoirs, niche and dome stones.
Fred T. Hodgson, Practical Stonemasonry Self-Taught (Chicago, 1907)	US public domain	The American counterpart, written for a journeyman teaching himself.
Vicat, trans. Smith (1837); Pasley (1838); Van der Kloes, trans. Searle (1914)	US public domain	Mortar judgment. How to test a lime in front of you, what its slaking tells you, how to gauge, and what goes wrong. Pasley reports his failures as fully as his successes.
Rondelet, Traité théorique et pratique de l'art de bâtir (Paris, 1802–1817)	US public domain	French. The richest single body of practice on the Continental side — materials, lime, quarrying, scaffolding, hoisting and site organization alongside the stereotomy.

Warland and the mirrors. Modern Practical Masonry was published in London in 1929 and entered the United States public domain on 1 January 2025. The United Kingdom and European Union measure copyright from the author's death, and Edmund George Warland's death date could not be established from library authority records. Since §17.2 mirrors the corpus internationally, Warland is consulted and not quoted until that is settled. Where an English-language quotation is needed, Hodgson serves instead: Frederick Thomas Hodgson died in 1919, so his 1907 manual is out of copyright in every jurisdiction applying a life-plus-seventy term as well as in the United States.

THE QUESTION BANK

Eight areas, and what to ask in each

Each area below states what the published record already says, then the questions that statement generates. The questions are for the successor to put to the master after performing the practice, not before. A question the master declines is recorded as declined.

1 • Reading the stone

What the record says. The Army manual directs that each stone be laid on its broadest face, that the largest go in the lower courses, and that porous stone be moistened first so it does not draw water out of the mortar. It says nothing about the natural bed, about quarry sap, or about how a mason decides which way up a block goes.

- **How do you find the natural bed on a block with no obvious lamination, and what happens if you get it wrong?**
- **What tells you a stone is still green, and how long do you leave it?**
- **Which stone in a delivery do you reject, and what are you looking at when you reject it?**
- **You moisten porous stone before laying. How wet is right, and how do you know when it is too wet?**

2 • Dressing your own tools

What the record says. Warland names more than sixty tools and what each is for — points, boosters, claw chisels, waster, jumpers, drags, cock's combs, dummy. Preservation Brief 2 ranks cutting tools in order of preference and prohibits power tools on vertical joints. **Neither says how a tool is sharpened, to what angle, or how it is tempered.** This is the largest single gap in the published record and the most likely to be lost.

- **Show me how you prepare a point. What angle, and how do you check it?**
- **Where did you learn to temper? What color are you working to, and what do you quench in?**
- **How does the tool tell you it is losing its edge — before the work tells you?**
- **Which of your tools did you make or alter, and why was the bought one wrong?**

3 • Setting out and working a face

What the record says. Warland gives the full sequence: a guiding line cut up with hammer and pitching tool, corners cut in with mallet and drafting chisel, a marginal draft about three-eighths of an inch wide worked between them and tested with a straight-edge, then a third point selected and two straight-edges sighted through until their edges read parallel — the operation he calls boning.

- **Work a marginal draft and talk me through it. What are you sighting for when you bone?**
- **Warland works to a draft about three-eighths wide. What do you work to, and what governs it?**
- **What do you do when the block will not give you a square corner to start from?**
- **How much do you take off in one pass, and what happens if you take more?**

4 • Mortar

What the record says. Preservation Brief 2 gives mix proportions by volume from Type M through Type O and straight lime, selected against stone hardness and exposure; a thirty-minute working window; prehydration; lime putty chopped, beaten and rammed with a wooden mallet; cement added as a slurry so it does not ball. Vicat and Van der Kloes give the older judgment — how to test a lime you have in front of you and decide what it is good for.

- **How do you know a mortar is right before it goes in the wall?**
- **What do you do with a sand you do not trust?**
- **Describe the moment a batch has gone off. What changes first?**
- **Who taught you the mix you use, and what did you change about it?**

5 • Joints

What the record says. Brief 2: cut back at least two to two and a half times the joint width, leaving square corners at the back of the cut. UFGS: two and a half times, a clean square face at the back, feather-edging prohibited, chisels no wider than half the joint on historic lime mortar, diamond blade narrower than the joint and only through the middle third. UFGS also gives a consistency — the mortar should resemble brown sugar going in, dry enough to pack tightly and to avoid shrinkage cracking.

- **Two and a half times the width is the written figure. What do you actually cut to, and why?**
- **Brown sugar is the federal description of the consistency. Is that how you would describe it? What would you say instead?**
- **How do you know a joint is packed and not just filled?**
- **What does a joint that is going to fail look like on the day it is finished?**

6 • Laying

What the record says. The Army manual is the only federal source that covers this. Lay by eye with frequent sighting where the wall need not be exactly plumb, or by line with corner posts where it must; do not try to lay rubble in level courses. One bonding stone through the full thickness for every six to ten square feet. Spread mortar far enough ahead but no further. And: if a stone must come off the bed after it has been set, lift it clear and reset it — never slide or rock it back.

- **Why must a stone be lifted clear rather than slid? What have you seen happen when it is slid?**
- **How far ahead do you spread, and what tells you that you have gone too far?**
- **Six to ten square feet is the written figure for bonding stones. What do you work to?**
- **When do you stop for the day, and what governs where you stop?**

7 • Tooling and curing

What the record says. Tool at thumbprint hard. Too soft and the joint comes up lighter with hairline cracks; too hard and you get dark streaks — tool burning — and poor closure. Curing by misting hourly, tapering to every three or four hours, burlap for three days, plastic only if tented and never against the wall. UFGS requires high-lime work to be misted through nine full wet-and-dry cycles, and warns against sealing off air movement because carbonation needs it.

- **Thumbprint hard is the written test. How do you actually judge it?**
- **Have you seen tool burning? What did it look like, and what had gone wrong?**
- **What do you do differently in heat, in cold, and in wind?**

- **How long do you keep coming back to a wall after you have finished it?**

8 • Failure

What the record says. Hard impermeable mortar traps moisture, salt crystallizes behind the face, and the stone spalls rather than the joint. Inadequate cutting depth produces popouts. Abrasive cleaning removes the protective outer skin of the stone, raises its permeability and erases tool marks. Laboratory work at the National Bureau of Standards found bond in vertical joints markedly weaker and more variable than in horizontal ones, which is the measured reason behind rules masons have followed by habit.

- **What is the worst piece of masonry failure you have been called to, and what had the last mason done?**
- **What fails first in your work, and how early can you see it coming?**
- **What would make you refuse a job outright?**
- **What do you know is wrong in the way the trade is taught now?**

G A P S

What the published record does not contain

These are the findings of the survey rather than its yield, and they are where the register's value lies. Each is knowledge that a master holds and no published source carries.

- **Tool dressing and tempering.** Warland names sixty tools and their uses. No public-domain or federal source found describes how a mason sharpens or tempers one, to what geometry, or how the tool signals that it is going.
- **Ashlar laying on site.** The federal record covers repair thoroughly and rubble briefly. Nothing found covers the laying of cut stone as craft — the sequence, the sighting, the decisions a setter makes on the wall.
- **The Historic Preservation Training Center publishes nothing.** The one place the federal government still teaches this trade transmits it hand to hand. Its curriculum is not in the documentary record at all, which is the strongest single piece of evidence for the register's premise.
- **HABS records fabric, never making.** Ninety-three years of federally mandated documentation of historic structures asks who built a thing and where the stone came from. It never asks how the stone was worked. HAER's industrial format does require a process narrative, and quarry records sometimes carry extraction and fabrication — but never wall-building.
- **The Masonic corpus carries no method whatsoever.** Anderson's Constitutions of 1723 contains no occurrence of mortar, chisel, quarry, trowel, plumb, banker or scaffold; its single mallet is ceremonial. The Regius Poem of about 1390 and the Cooke Manuscript of about 1450 are apprenticeship terms, wage rules and dispute resolution. The operative technique was never written into these documents. The institution survived and the method did not, which is this register's thesis stated as history.

A disagreement in the federal record

Preservation Brief 2 states that retempering is not permitted. UFGS 04 03 00 permits it, within a window of two and a half hours from initial mixing and one hour from the addition of working water. Both are current federal documents and both govern work on historic masonry.

This is the single most useful question in the digest, because it cannot be answered by reading. Put both positions to the master and ask which is right, what the window actually is, and what they have seen go wrong when it was exceeded. An answer that reconciles the two is knowledge that exists nowhere in print.

PROTOCOL

The split trial

The conformance trial under §12.7 admits up to twelve transmissions. Six are conducted with this digest in the successor's hands and six without. The purpose is not to decide whether the digest is a good idea, which cannot be settled by argument, but to measure what it is worth on the one metric that determines what kind of business this is.

What is measured

Measure	Arm	Why it is the right measure
Share of Practice Records reaching §15.2 depth without a second, register-led interview	Both	The published falsifier. Below sixty percent across the trial, the design premise is wrong and the register is a services business with a modest ceiling. The digest is the cheapest intervention available on this number, and this is the only moment the sample can be split.
Median days from capture to ratification	Both	The second published falsifier, above forty-five days. Recorded per arm because a digest that raises depth while slowing the work has bought one metric with the other.
Questions asked that the digest supplied	Digest arm	Counted against questions the successor generated unaided. Separates the digest's contribution from the successor's.
Gaps closed	Digest arm	Where a master answered something the survey found no published source carries. The register's actual output, measured directly.
Contamination incidents	Digest arm	Any occasion on which a source was put to a master before ratification, self-reported and recorded whether or not it was deliberate. A single unreported incident invalidates that record for the purpose of the comparison.

How the arms are assigned

- **By trade, not at random.** Twelve is far too small a sample to randomize. Pairs are matched into six trades where two pairs are available and one of each assigned to each arm; where only one pair exists in a trade, it goes to whichever arm is behind.
- **The digest arm receives the digest before Act III elicitation**, and not before Act II. A successor who reads it before learning has been taught by the book rather than by the master, which is the failure this whole design exists to avoid.
- **Both arms use the same Annex K protocol**, the same forms and the same registrar. The digest is the only difference.
- **Masters in both arms are blind to the arms.** No master is told that a trial of the digest is running, because a master who knows the successor has been reading will perform to it.

What each outcome means

If	Then
The digest arm reaches depth materially more often	The digest becomes a standing product: one per trade, built from federal and public-domain sources, published free under the corpus license. It is then also the first thing the register can offer a program director before it holds a single Practice Record — useful on its own, and a reason to take the call.

If	Then
The arms are indistinguishable	The digest is dropped, the survey is published as a finding anyway because the gaps it documents stand on their own, and the elicitation problem is addressed some other way. Roughly four days of work is written off and the trial is unharmed.
The digest arm is slower without being deeper	The digest is too long. It is cut to the gaps and the disagreement, which are the parts no reading can supply, and retried on a later cohort.
Both arms fall below sixty percent	The digest is not the variable that matters. The §12.7 falsifier has fired, and the finding is published before 1.0 goes out for comment, as that section requires.

What is published

The trial findings are published in full under §12.7, including the failures, before version 1.0 goes out for comment. That obligation covers this comparison. A digest that turns out to be worth nothing is published as worth nothing, with the numbers that show it.

Root & Branch Register Inc. · Stonemasonry prior-art digest and split-trial protocol, September 2026. Assembled from works of the United States Government under 17 U.S.C. §105 and from works published in 1930 or earlier. Nothing in this document is a Practice Record, and nothing in it is attested by any master. Where this document and the Root & Branch Transmission Standard differ, the Standard governs.