# SPECIFYING EXTERIOR RESTORATION IN THE REAL WORLD*

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## Introduction

Let us imagine that you are simply the owner of an older, perhaps historic building, and wish to contract for its exterior restoration.

Where would you start? What would you do? One way would be to hire a qualified preservation professional, tell him to use his own good judgement and to call you when the job is finished. If you hire the right person, and he or she is on the job just about everyday to supervise what is done and make decisions on the go as new situations develop, then you can rightfully expect good results.

All jobs should receive such careful attention . . . unfortunately not all do. Most are done in a more regimented manner where an architect draws up a specification, and someone becomes the low bidder. And all of this happens before any actual work begins.

The flaw with this approach is basic: how can you specify what is to be done, if you do not yet know what all of the problems are . . . which is usually the case in restoration work.

This article deals with how to develop specifications which will result in the practice of sound preservation technology, yet which can be accomplished in the everyday world of budgets and bank loans.

Having recognized that the technology of preservation has been developed in the laboratories and carefully monitored jobsites of APT professionals, the next question is this: How can we specify this technology for the countless private sector projects that do not have Parks Canada, the NPS, or Lee Iaccoca (Statue of Liberty fundraiser) looking out for them?

First, consider how specifying is done at the other extreme. That other extreme is the "new construction" approach where everything is planned in advance and then reduced to a spec book and a set of blueprints, such that any competent general contractor could build the structure, so designed and specified. This is the other extreme to the daily planning and review which hallmarks truly historic restoration.

The "new construction" approach does not work for older structures or even the recently new. Changing conditions which may effect both the scope and extent of needed interventions simply cannot be fully known until after the work starts and the fabric begins to unfold.

With the "new construction" approach, someone must decide ahead of time what the conditions will be. This in turn dictates a given repair procedure which leads to a given dollar amount. The dollar amount is the key.

When a job is underway, and newly found conditions become apparent, what will happen? Often, in the interest of expediency, changing conditions may be ignored and the building loses.

## Specification Options

The membership of APT represents the bedrock of preservation technology across the North American continent. APT has served as a forum for the sharing of knowledge among preservation professionals. This is how the body of knowledge as a whole has grown and expanded.

Many of our members work for Parks Canada and the US National Park Service. Each of these groups have many of each country's truly historic structures in their care and custody.

By necessity, the exercise of this stewardship has been done in a most careful fashion with master archi-

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tects and eminent scientists hovering about jobsites, monitoring the work at close range. Decisions are made on a daily basis with no hesitation given to stopping the work, whilst pondering what to do next.

Much of the technology of caring for older and historic structures has been developed in this manner. And just in time . . . because in recent years the Preservation Movement has gone mainstream and is becoming a dominant force in the industries of Real Estate Development, Construction, and Architecture. Preservation has entered the private sector where construction costs are paid for with someone's cash instead of congressional appropriations or massive Statue of Liberty-type charitable drives.

For these economic reasons, not all of the techniques of historic preservation can be feasibly duplicated in the private sector.

The architect may call attention to changing conditions and force the contractor to spend money he does not have in the job, and the contractor loses.

The contractor may be strong enough to press for a change order, but there may be no money for change orders and then the architect loses face and perhaps the client's next project.

The point is that someone is bound to get shortchanged or at least feel that way. The building, lacking a voice, often winds up the ultimate loser.

So we have two systems of specification. The "open pocket book" for the truly historic, and the "new construction approach" for the rest. The owner often cannot afford the former, and the building usually cannot afford the latter.

There has to be another, better way. What is needed is a hybrid form of specifying, somewhere between these two extremes. Good, practical specifications should reflect a system of planning and specifying which addresses the needs of all parties: The philosophic concerns of the preservation professional, the budgeting and economic needs of the developer, and the structural needs of the building itself.

**Specification for Exterior Restoration**

Specifying exterior restoration is a good example of how special problems are overcome.

The major problem is that the exterior surfaces are usually obscured by dirt, vines, old paint and other matter, particularly the upper, out-of-the-way sections. Not only are the problems hidden, but they are difficult to get at even if a person wished to. By contrast, the interior is not affected by weather and is accessible from every floor. Furthermore, interiors have often been altered over the years, even gutted, and work proceeds much like "New Construction". That is usually the Rehab part of a Restoration/Rehab project. Restoration is largely for the exterior.

To successfully deal with the problems of exterior restoration, we need to develop some tactics.

Tactic #1. Recognize that the predetermined, rigid, detailed specification and bid procedure is inappropriate for existing structures; the older the structure, the more inappropriate. The rigid "spec/bid" procedure attempts to deal with a highly subjective matter in a very objective fashion.

Tactic #2. Use and enforce the Quality Assurance provisions of your specification. Typically in "New Construction", it is assumed that "if one is smart enough to work up a price, he is therefore qualified to do the work." Such, of course, is not the case.

Establish quality assurance requirements for the critical sections. And, what part of a restoration is not critical? Then make it very clear that these will be observed. General Contractors are notorious for talking unqualified would-be subcontractors into agreeing to do just about anything, banking on the idea that the sub will get it done somehow, even if it bankrupts him, which it often does. Do not let a General Contractor separate your project from the craftsmanship and expertise which it will need.

Tactic #3. Use common sense. Imagine that you are restoring your own building, and you came up against something you weren't sure about. You would call on someone for advice. Someone who logically would know "how to fix it". You would pick someone who has a good reputation for dealing with such things. So why not write a specification the same way? Doing so is an exercise in common sense.

Tactic #4. Don't go it alone. Assemble a team of specialists. Why not select the craftsmen and specialty contractors whom you know have the requisite — experience, skills, integrity and financial resources to get the job done — and make them part of the planning team. Challenge them to make suggestions for streamlining the workflow and improving the end product.

Establish a budget range with their help. If it won't fit, find some more money, or enlist their help to determine where the project can best be scaled back. People who have been there before, and survived, can usually pick the price range with reasonable accuracy even before they know exactly how the money will be spent.

Do not be misled into believing that you have a duty to let every would-be contractor have a shot at your project. There is nothing unpatriotic about using sound business judgment in protecting the investment of your client. "Public bid" and "free enterprise" are not synonomous terms.

Consider again that we are talking about your own building. Why not seek the best talent available? Common sense dictates that you avoid those with bad reputations or no reputation at all.

Tactic #5. Avoid resorting to the phrase "repair as needed" as a substitute for offering specific guidance and direction. Consider what happens when the language "repair as needed" is used to cover the repointing and other needs of a multi-story building which has received no attention in recent memory. To fully appreciate the impact, let us consider the contractor's response when he sees the phrase "repair as needed" in the bid package.

The unknowledgeable or inexperienced will probably bid low because they don't even know what to look for.

The prudent contractor will assume that a high percentage of the building will need repointing, "better safe than sorry".

The unscrupulous contractor will bid low to get the job, banking on change orders to bail him out.

Now suppose this last guy gets the job. If he would purposely "low ball" his bid, he won't hesitate to "low ball" the quality either.

Now suppose the good guy gets the job, but it later develops that the extent of needed repointing is not nearly as severe as he earlier thought. Do you think he will ask to renegotiate his contract?

Even worse, he may feel duty-bound to deliver all that was bargained for. This will cause the removal of good, sound mortar joints with the attendant risk of damage for the adjacent brick facings. The end result could be the installation of a *lesser* joint than was removed.

Worst of all, the money wasted here might have paid for replicating the missing cornice work with the real material instead of concrete or fiberglass.

Tactic #6. This tactic deals with what to do when the bid procedure is mandatory. The strategy here is to sequence the work to eliminate as much guesswork as possible. For example, one might "look" at a building before deciding what is wrong with it!

This can be done by first cleaning the building with a safe, non-destructive procedure. This will allow observation of the true substrate condition. "Before and after" pictures indicate the great visual similarity of dirt and decayed mortar.

Because it is necessary to get up and around the building to clean it, there will exist the opportunity to look at it up close and free of masking contaminants.

Should the architect not desire to climb scaffolding or ride in a lift device, the process can be taken one step further to include documentation during this phase of the project. Documentation can be in the forms of marking charts or drawings, photographing or even videotaping.

In the process of cleaning, inspecting and documenting, many of the major problems will manifest themselves or at least provide tangible clues. In this manner, attention can be directed where it is most needed.

Usually there is no good reason why the project cannot be divided into two phases: Cleaning and inspection as the first phase, then repair and preservation as the second, after all the facts are known.

Critical decisions (and therefore contractor pricing) can be based on facts, not guesswork. Yes, there will still be some new developments in the second phase, but their potential impact will have been minimized.

Substantial benefits can result from this sequencing tactic. Limited funds can be directed to the most pressing needs of the building instead of being spent for perhaps unnecessary, if not counterproductive, procedures. Work can be done to a higher standard.

Take repointing for example. If one attempts to repoint defective mortar joints before cleaning the surface as a whole, what then will he use as a guide for his new mortar? Will he match the adjacent dirty mortar? Will he match what he thinks the adjacent mortar will look like after it is cleaned? Or will he match the interior color of the existing mortar and tell the owner that in ten years it will all look the same?

Why repoint 100% of the building just because no one knows how to match mortar on a spot basis. There are those who can, but attempting it before cleaning amounts to working with a blindfold. A good repointing job cannot be seen, but a poor one shouts for attention.

"Cleaning first" is a simple, cost effective step. It can provide the data upon which subsequent intervention is based.

"Cleaning first" may have other benefits. It may help attract funding for a more glorious final treatment regardless of whether the project is private or public. A clean building is usually a more attractive building even before anything else is done.

Unfortunately, the majority of architects involved in preservation work are not familiar with the constraints and limitations encountered in specifying work on heritage properties.

How will he or she develop specifications which will result in cost-effective, appropriate levels of intervention? Many will not even know where to start, and may well be reluctant to ask for help.

Should they seek help, however, what options are available?

They could call in someone such as a preservation professional but this would present two very real problems.

First, they would have to share the fee and that is a monetary problem when the fee structure has already been established.

Secondly, doing so might be seen as admission to the client that they are not as expert as perhaps the client gave them credit for being. This is largely an ego problem, but a hinderance nonetheless.

There is a face-saving way out where everyone wins, including the building, even if the project is one which must be bid.

Tactic #7. Design quality into low bid contracts.

Just as you can specify the grade of material you want, you can also specify the grade of talent that will be needed on the jobsite. The architect who recognizes his or her limitations need only identify and specify the necessary levels of experience and expertise which will be needed to compensate for the architect's lack of a complete understanding of the subject matter involved!

The reader may be thinking . . . "If I wrote a requirement like that, there would be no one qualified to bid the job." Since this may be the case in a given instance, certain clauses should be added to the specification:

"If the prospective provider of service CANNOT meet the contractor Quality Assurance requirement, then the requirement may be alternately met by having the work done under the technical supervision of a qualifying third party restoration specialist whose conforming credentials must be approved by the project architect."

Other clauses are modified to provide that "jobsite sampling be done in the presence of the restoration specialist and that the results of same are to be documented by the restoration specialist for the project architect's review and approval."

Add also a clause that places a duty on the contractor for the "continuous re-evaluation of his procedures and results," and that "changing conditions be documented and reported, with delays built-in for architectural review and response." If new conditions are found the jobsite testing procedure is repeated.

Require that the restoration specialist inspect the finished product and prepare a "punchlist" for the project architect's consideration.

This will accomplish several things. First, it will make provision for the presence of someone on the jobsite who has both the technical expertise and level of responsibility to look out for the building's best interest.

And it will allow the project architect to place the cost of jobsite expertise down into the underlying contract and away from the notion that it should be paid for as part of the normal architectural fees. This takes care of the monetary problem referenced earlier.

It also takes care of ego problems because "no confessions" are required. He or she can sit back, listen and learn all at the same time. Each report can be taken under advisement. Knowing the credentials of the preparer and with enough credible facts available, the project architect can make sound judgments in an orderly manner.

In summary:

1. Avoid the rigid spec/bid procedure whenever possible.
2. Use and enforce Quality Assurance sections.
3. Do not forget that common sense is a key ingredient.
4. Use the Team Approach.
5. Avoid the phrase "repair as needed."
6. Sequence the work to minimize guesswork by all concerned.
7. For mandatory low bid projects, place the need for and cost of jobsite expertise into the underlying contract.

A sample specification which reflects these tactics and principles in CSI format will be found in Appendix A.

Preservation technology is the most appropriate technology for structures of all ages, not just the old and historic. APT members should strive to share the knowledge and serve as the basic resource for information and expertise. If not the APT member, then who?

**Appendix A**
Section 04500
Masonry Restoration

Part 1 — General
1.01 Scope:

A. All work is to be done in conformance with the Secretary of the Interior's Standards for Historic Preservation Projects, and its accompanying guidelines and underlying Preservation Briefs.

B. Cleaning: Clean masonry surfaces with the GENTLEST MEANS POSSIBLE to restore the surfaces to as near original appearance as possible CONSISTENT with SAFETY for the substrate. Cleaning procedures are to include and contemplate all adjacent fabrics. Particular attention is directed to . . . (you add special concerns or problem areas) . . .

C. Documentation: Concurrent with the cleaning, contractor is to document surface conditions by means of . . . (designate means) . . .

D. Repointing and Repairs: Repair or replace defective masonry units and repoint defective mortar joints using materials and techniques conforming to the adjacent sound materials as to structural composition, tooling, texture, color, and appearance in general.

1.02 Related Work:

A. SECTION 03700 CONCRETE RESTORATION
B. SECTION 07100 WATERPROOFING
C. SECTION 07150 DAMPPROOFING
D. SECTION 07900 JOINT SEALERS
E. SECTION 08400 DOORS and STOREFRONTS
F. SECTION 08500/8600 WINDOWS
G. SECTION 08800 GLAZING
H. SECTION 09800 SPECIAL COATINGS
I. SECTION 09900 PAINTING

1.03 Quality Assurance:

A. Work under this section must be performed by a firm which has been in the everyday business of BUILDING RESTORATION CLEANING and REPOINTING for a minimum of five years successful operation. Such experience must include projects of comparable scope and extent to this project. The qualifying firm must designate a given individual with commensurate experience to act as the "RESTORATION SPECIALIST" for purposes of this contract. Designation of the RESTORATION SPECIALIST must be approved by the PROJECT ARCHITECT.

B. If the preceding requirement cannot be met, the work must be done under the TECHNICAL SUPERVISION of a qualifying 3rd party RESTORATION SPECIALIST whose credentials conform to SECTION 1.03A. Designation of same must be approved by the PROJECT ARCHITECT.

1.04 Warranties:

A. Warrant for a period of two years that cleaning procedures will not harm substrate or adjacent materials including, but not limited to:
1. Discoloration of substrate from improper product usage.
2. Chemical damage from inadequate rinse procedures.
3. Abrasive damage from improper procedures.

B. Warrant for a period of two years the repointing and masonry repairs against:
1. Discoloration or mismatch of new mortar to adjacent old mortar.
2. Discoloration or damage to brick from improper mortar clean-up.
3. Loss of bond between mortar and brickwork.
4. Fracturing of brick/stone edges from improper mortar joint preparation procedures or improper mortar formulation.
5. Occurrence of efflorescence.

1.05 Submittals:

A. Proof of experience requirement for firm doing the actual work, or
B. Designation and qualifications for the RESTORATION SPECIALIST.
C. Product Manufacturer's Product Literature.
D. Proposed Work Plan: Work sequence, method of rigging, etc.
E. Submit copy of PRESERVATION BRIEF NO. 1 (and PRESERVATION BRIEF NO. 2 to evidence familiarity with these BASIC DOCUMENTS.)

Part 2 — Products
2.01 Approved Product Manufacturers:

A. RESTORATION CLEANING PRODUCTS
(list manufacturers and their product lines as opposed to specific products . . . list those which you know will have a sufficient range of products for determination of the "gentlest means possible".)

B. REPOINTING MORTARS
(state a product line, specific ASTM standards, or reference PB#2)

Part 3 — Execution
3.01 Test Panels

A. Work sequence is:
1. Clean masonry with restoration procedures.
2. Inspect and document surface conditions.
3. Review surface with architect.

4. Prepare mortar joints to be repointed.
5. Repoint and repair.
6. Mortar residue clean-up.

B. Test panels shall be done under the technical supervision of the RESTORATION SPECIALIST (RS) as designated and approved under Section 1.03, QUALITY ASSURANCE. Architect shall have the option of DISQUALIFYING the contractor or subcontractor who is unable to TIMELY produce acceptable test panels. PRIME CONTRACTOR shall not be entitled to additional compensation as a result of such disqualification.

C. Clean -------- test panels of at least 25 square feet using the specified products and techniques demonstrating the required level of cleaning for the architect's approval. Architect shall specify the number and location of test panels. All work to be performed in accordance with PRESERVATION BRIEF NO. 1, "The CLEANING and WATERPROOFING of HISTORIC MASONRY BUILDINGS".

D. Provide -------- test panel areas of joint preparation, repointing, and mortar clean-up procedures. Each panel to be at least two square feet. One half of each panel to be left unrepointed to demonstrate joint preparation. All work to be done in accordance with PRESERVATION BRIEF NO. 2, "REPOINTING MORTAR JOINTS in HISTORIC BRICK BUILDINGS".

3.02 Performance:

A. The actual work performed is to be done using the products and techniques ESTABLISHED in the ACCEPTED TEST PANELS. Any proposed change of product usage must be submitted with the product manufacturer's recommendation, and written approval must be issued by the architect before being undertaken. Actual work is to be monitored by the RS.

3.03 Periodic Re-evaluation of Methods and Results:

A. As the work proceeds, the procedures being used and the results being obtained must be continually re-evaluated by the contractor in terms of the actual substrate conditions being found as the job proceeds. As a condition of the project, the contractor is responsible for reporting changing conditions to the PROJECT ARCHITECT and for interrupting the work as needed to allow for the architect's review, without request for additional compensation.

B. After the report and pause for changing conditions as noted above, the Jobsite testing procedures of Section 3.01B will be repeated until an acceptable new procedure is established. Work sequence then reverts to Section 3.02.

C. Contractor is not relieved of responsibility for damages or inadequate work when conditions change and the work is continued without notice to the architect.

3.04 Inspection Documentation:

A. At the end of the cleaning, repointing, and other masonry repair phases, the work is to be inspected and documented by the RS for the architect's consideration.

Instructions to User:

This sample specification has been prepared to illustrate the principles outlined in the 1984 APT Conference presentation by Larry D. Jones, entitled "SPECIFYING EXTERIOR RESTORATION in the REAL WORLD".

The ——→ notations refer to the separation point where the TWO PHASE specification and contract is adopted where CLEANING and INSPECTION is a separate project which precedes the REPAIR and PRESERVATION phase.

The specification is designed to place the need for and cost of necessary JOBSITE EXPERTISE into the underlying contract as opposed to being solely borne by the traditional architectural fees.

The specification, appropriately modified, can be used to guide the actual field work regardless of whether the work is let to qualified low bidder or negotiated directly with the contractor of the owner's choice.

The specification is designed to allow the ARCHITECT and CONTRACTORS efforts to be coordinated by a jobsite RESTORATION SPECIALIST in such a manner that job planning is done in a systematic manner which is always focused on the true needs of the structure. Provision is made for analysis of and reaction to changing or previously latent conditions which become apparent in the course of the work.

SECTION 1.02 references conform to the CSI MASTERFORMAT system, and are included to direct both architect and contractor attention to other requirements which may impact the subject work. For example, some operations must be done concurrently as would occur in paint surface preparation and general facade cleaning.

In SECTION 1.04 the two year warranties are suggested to allow that the surfaces to be subjected to a full cycle of climatic conditions and a following period of warranty inclusion for observation and reaction.

In SECTION 2.01 reference should be to PRODUCT LINES as opposed to specific products, since the most appropriate means can only be determined through the continuing JOBSITE TESTING procedures.

SECTION 3.03 is designed to ensure that changing conditions are compensated for by appropriate adjustments. Micro-environmental conditions, for example, could cause different conditions for originally homogenous construction.

In SECTION 3.04, the intention is to focus culmination of the contractors field work on quality and completeness as opposed to the "what the architect will buy".