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REPORT ON TRINITY CHURCH
ROUTE 175
HOLDERNESS, NEW HAMPSHIRE

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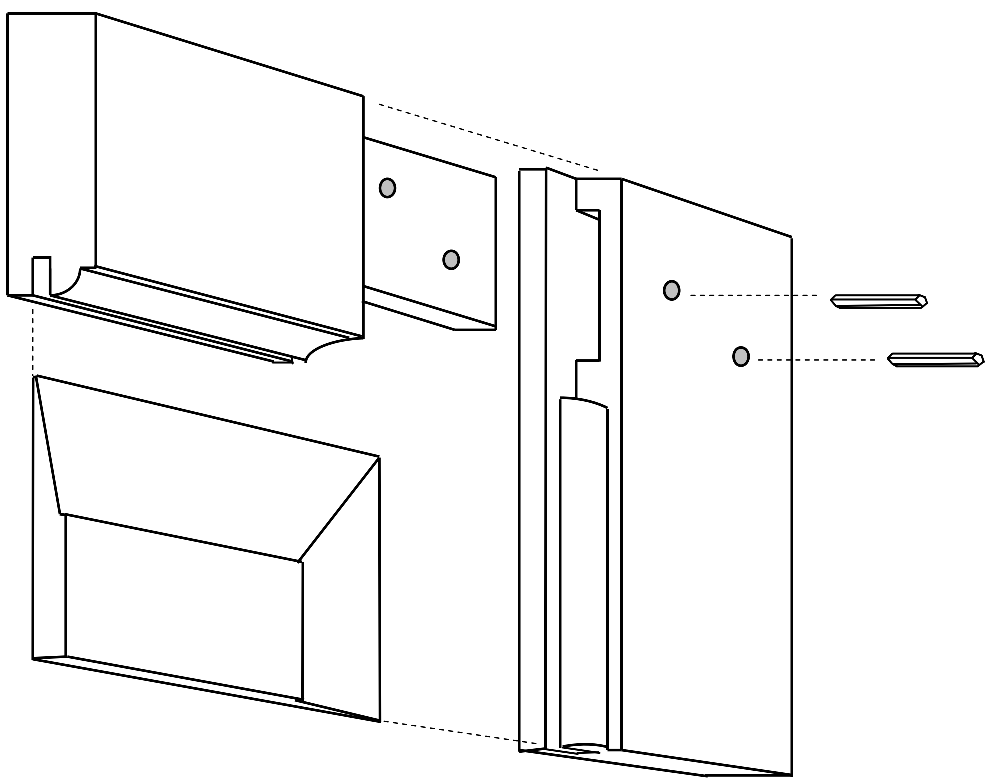
OCTOBER 8, 2004

Summary: The purpose of this report is to provide a brief discussion of the construction history and current condition of Trinity Church and to make recommendations for the treatment and future care of the building. By providing a baseline narrative as of October, 2004, this report may serve as documentation for further study of the building and its condition, or as a mechanism for raising funds for future treatment or care of the building. The report is based on an inspection of the building on October 6, 2004, in the company of trustee Barry Borella.

Trinity Church is unique in New Hampshire as a small chapel built for Episcopal services in a rural region in which the established church was normally Congregational. The building has undergone remodeling at various periods (described below) and remains in sound condition. Like many eighteenth-century buildings, Trinity Church suffers from excessive internal moisture. This condition has led to the deterioration of clapboards and to the frequent failure of paint on the exterior. For the greater security and preservation of the entire building and for improved longevity of its exterior cladding and its paint, moisture should be moderated by one or several of the methods suggested below.

History of the building and changes since construction: As documented in the nomination of Trinity Church to the National Register of Historic Places, written by David L. Ruell in February, 1984, the structure was built by Samuel Livermore (1732-1803) in 1797 and was provided with the services of rector Robert Fowle (1766-1847), who also served as tutor in the Livermore family. Although the town eventually voted to support Robert Fowle as its settled clergyman (thereby becoming one of few eighteenth-century New Hampshire towns to establish the Episcopal Church as its standing order), the church building was never conveyed to the town or to the Episcopal diocese. Along with the adjacent and surrounding burying ground, the church building was retained as private family property until Arthur Livermore, Jr., deeded the land and building to Churchyard Cemetery Association in June, 1854. By that time, the Episcopal parish in Holderness had dwindled to insignificance, and adherents to the Episcopal Church thereafter attended services at St. Mark's Church in Ashland. The church building served as the chapel for nearby Holderness School between 1879 and 1884. This arrangement gave the building its last intensive period of use and perhaps explains some of the improvements, described below, that were made to the structure during that general period.

An examination of the church building reveals various changes that postdate construction of the building in 1797. In general, the interior of the structure remains remarkably unchanged from what appears to have been its original plan and finish. The paneled walls of the box pews, the door leading from the entry into the main room, and the wall paneling that lines the pulpit recess all reflect the typical eighteenth-century pattern shown below. This pattern of raised paneling persisted until the end of the eighteenth century, especially in rural areas where there was little awareness of the incoming Federal style until after 1800.



Because the building remained the property of the Livermore family until 1854, some of the changes noted below will not be documented, unless in the Livermore family papers.[1] While certain alterations to the building certainly postdate 1854, their documentation will similarly depend on the completeness of financial or narrative records kept by the Churchyard Cemetery Association—or, for the five years between 1879 and 1884 when the

[1] There is a collection of Livermore manuscripts at the New Hampshire Historical Society in Concord, New Hampshire.

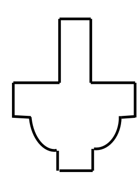
building served as the chapel for Holderness School, on the completeness of that school's records during that period.

It should be noted that there is a possibility that the structure was originally planned as a traditional meeting house, with its entrance in the middle of the south side and with the pulpit directly opposite, on the shorter axis of the building. While this theory may never be proven, there is a patch in the frieze board above the central window on the north elevation. This window would probably have been raised to a slightly higher level than others in the building if it served as a pulpit window, and the patched area above it suggests that the window was indeed once higher than the rest.

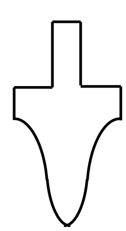
Where it is possible to examine nails in the pulpit vestibule on the eastern end of the building, most appear to be cut rather than hand-forged nails, while other visible nails in the main body of the structure are mostly hand forged rose-headed or clasp (finish) nails. Hand forged nails persisted throughout the eighteenth century, whereas machine-made or cut nails began to appear after about 1795, first in urban areas near the seacoast and later (generally after 1800) in inland locales as trade networks supplied the newer product to locations that were more remote from nail factories. Thus, it appears possible that the pulpit projection postdates the main body of the building, and that placement of the pulpit at the eastern end of the church was an afterthought. If that should be proven, then it is of course likely that the hip-roofed entry extension on the western end of the building was likewise an afterthought, and that the two additions were intended to reorient the main axis of the church along the longer dimension of the building in keeping with Episcopal practice.

The paneling that lines the pulpit recess was not designed for that space. It is pieced together, with some skill, from smaller units than would be expected for paneling designed for the size of the enclosure. It appears likely that the paneling in this area was created from pew doors. As noted below, all the current pew doors in the building are relatively new reproductions.

The original window sashes of the building have been replaced by newer units, with the single exception the original set of sashes in the church: the pair that lights the tiny closet behind the pulpit. The muntin profile of the original sashes is as follows:



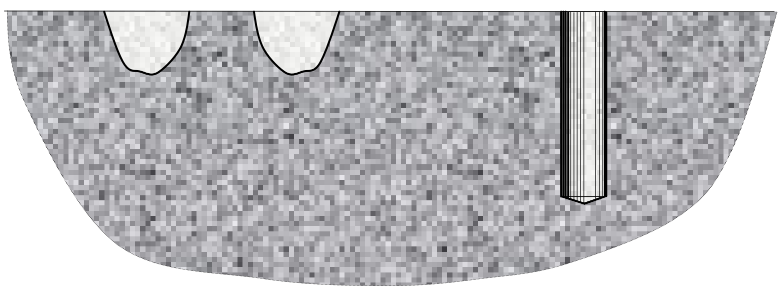
With the exception of this closet window, all the sashes in the building are twelve-over-twelve units with the following muntin profile:



This muntin profile appeared about 1840 and remained commonplace until about 1880, with examples persisting until about 1900. Thus, there was apparently a considerable investment in the building after 1840.

This is also reflected in the crown "molding" on the horizontal eaves of the building. In contrast to the well-defined ogee (S-curved) crown moldings seen within the structure, these exterior features are merely flat boards, mounted at a 45-degree angle. It may be assumed that the exterior of the building was originally treated with ogee crown moldings. The substitution of flat boards is characteristic of practice during the Greek Revival period, from about 1830 to about 1850.

Similarly, the building was underpinned with the current granite slabs after 1830. The present underpinning stones reveal evidence of splitting with plug drills and plugs and feathers (a set of wedges of a type designed for a round hole). Prior to about 1830, granite was split with flat wedges placed in narrow, elongated slots chiseled into the face of the stone. The characteristic marks of the flat wedge splitting technique are shown at the left of the drawing below. That of the plug drill and plug-and-feathers splitting technique, dating after about 1830, is shown at the right. Where splitting marks are visible, the underpinning stones of Trinity Church display the characteristic evidence shown on the right.



Thus, evidence in the stone underpinning of the building, the window sashes, and the exterior cornices indicate an investment of labor and materials sometime after 1830. Assuming that all this work was done at once, the style of the window sashes suggest a date of 1840 or later for the rehabilitation of the building. One might assume that this work was done either at the time that the building passed from Livermore family ownership to the custody of the Churchyard Cemetery Association (1854), or during the period when Holderness School was responsible for the use and care of the building (1879-1884). Although future documentary research may clarify this matter, stylistic clues seem to point more to the period around 1854 than to the later period when the school used the building as its chapel. The exterior door leading into the entry vestibule, however, could easily date from the Holderness School period.

Much more recently, some fairly extensive building renovations have been undertaken. Presumably carried out over a period of years, these renovations included covering the plaster walls and ceiling of the building with gypsum board and a skim coat of plaster or drywall compound; placement of reproduction doors on all pew entrances; reproduction of limited areas of other paneling in the church room; and removal of a wood-shingled roof and its underlying sheathing, followed by "sistering" the roof purlins, re-sheathing the roof frame with circular-sawn pine boards, and re-roofing with the present asphalt shingles.

The re-plastering of the interior postdates the 1984 National Register nomination of the building. Photographs of the interior, taken by David L. Ruell in November, 1983, show original (or at least old) plaster, which was cracked in several areas. The plaster of Trinity Church was applied over split-board lath, which is a technique that is characteristic of the late 1700s and the first half of the nineteenth century. Plaster applied over this type of lath frequently experiences cracks and losses, and the general condition of the old plaster apparently prompted the application of the gypsum board throughout the interior of the building.

The gypsum board can be seen in the attic of the building, near the center of the ceiling, where the new material extends across an opening in the old lath and plaster. The application of gypsum board over the old lath and plaster added at least ⅜ inch of thickness to the walls and ceiling. This added thickness brought the new wall and ceiling surface above the edges of the original window casings and of the room cornice. To provide a stop for that added material, thin wooden splines were applied to the top of the crown molding and to the bottom of the cove molding of the cornice. Similarly, new backband moldings were added around the outer edges of all door and window casings. These casings had formerly been plain, square stock, and their edges served as grounds for the plaster.

Another element of the recent refurbishment of the interior is the application of new pew doors. Pew doors were described in David Ruell's National Register nomination of 1984, so these elements had already been installed by that date and thus predate the resurfacing of the plaster in the building.

The pew doors can be recognized as new by several subtle forms of evidence. This evidence includes wood color, saw and planer marks, applied rather than integral moldings around the panels, and new hinges.

Similar types of evidence show that the long panels at the back of the room, facing the door from the entry, are also of recent date. This paneled breastwork was apparently copied from the nearly identical joinery at the front of the room, facing the pulpit. The paneling at the front of the room appears old.

Another major change carried out on the building in recent years was the removal of earlier roof sheathing and wooden shingles, and the substitution of new circular-sawn roof sheathing and asphalt shingles. Some wooden shingles can be found in the building's attic, where they probably fell during the removal of the older sheathing boards. These shingles are circular sawn, and appear to have been applied in relatively recent times, having been fastened with wire shingle nails.

The building was already shingled with asphalt when David Ruell photographed it in 1983. Thus, we may assume that the replacement of the roof sheathing predated that year, though the work appears fairly fresh.

At the time that the roof sheathing was replaced, all original purlins were "sistered" with modern sawn members. The original purlins were hewn on at least their upper and lower faces, and were relatively straight. Nevertheless, the contractor for the re-roofing evidently felt that the new roof sheathing required additional support.

General condition of the building: Trinity Church is in good, well-maintained condition. As evidenced by the maintenance and restoration work described above, the trustees have clearly invested funds in the preservation of the structure when they felt the need to do so.

The building displays some of the sources of deterioration that are common to all buildings. Issues that will need to be addressed in the near future include moisture conditions, re-roofing, repair of clapboards, and re-painting. Except for the need to re-roof the building in the near future, most of the deleterious conditions observed in the building are traceable to excess moisture.

Roof shingles: The asphalt shingles on the roof of Trinity Church are in a state of incipient failure. The roof is not leaking at present, but the tabs of the shingles are beginning to curl, and a few have broken off from high winds or other causes.

The current shingles appear to have been applied after David Ruell photographed the building in 1983. The shingles may, however, be nearly twenty years old. Whatever their age, they are reaching the end of their useful life.

Typically, an asphalt shingle roof remains fairly sound up to a point, and then begins a course of very rapid failure. If the roof is not replaced while in a state of incipient failure (as at present), the rapidity with which it may later deteriorate may catch the building's custodians by surprise and may result in leaks and damage within the structure. For this reason, it would be prudent to plan to replace the building's shingles in 2005.

Clapboards: The clapboards that are currently on the church date from various periods, but none of them appear to date from near the time of construction of the building in 1797. Clapboards made in the eighteenth and early nineteenth centuries were hand-shaved, and typically exhibit a slightly undulating surface when seen in a raking light. Such clapboards were normally applied with their ends beveled with a drawknife so that the end joints are lapped. By contrast, all clapboards on Trinity Church appear to be have a regular surface, suggestive of machine production. Their end joints are butted, not lapped. Thus, it appears that the building has been fully re-clapboarded at some time, possibly at the same time that the window sashes were replaced and the exterior cornice was altered, as described above.

The condition of most clapboards is good. A few near the bottom of the building are suffering from decay. This is attributable to moisture from within the building and from splashback of roof water, as described below.

Description of moisture conditions: Trinity Church is suffering from high levels of moisture. On October 6, 2004, following a night when temperatures had been close to freezing, this moisture was evident in the condensation of water droplets on the inside of the window glass on the cooler, shaded sides of the building. The moisture was likewise evident in readings taken by a moisture meter both inside the building and on the clapboards of the exterior. The upper surfaces of the floor boards inside the church, especially those near the perimeter of the building, showed moisture content readings of 20% in some cases—the upper limit of the scale on the moisture meter. It can be assumed that if the finish floor boards registered such a high moisture content, the subfloor boards and the sleepers that support the floor were still more saturated.

Evidence of limited powder post beetle infestation was seen at several points along the front board of the dais below the pulpit of the church and, to a lesser extent, at the base of a few pew walls. This evidence takes the form of a fine yellow powder ("frass") collecting below small holes where the beetle larvae have been active in the wood. Powder post beetle infestations are encouraged by high moisture content. Reduction of such insect activity is another reason to try to reduce moisture in a building.

Much of the moisture that pervades the interior atmosphere of Trinity Church originates in the crawl space under the building. The soil that characterizes the area around Trinity Church is classified as Adams loamy sand, which is a deep, sandy soil with excellent drainage.[2] Moisture conditions in Trinity Church are therefore not a product of the soil that lies under and around the building. Rather, the moisture that is found in the building, as described below, results strictly from the management of precipitation and from the condensation of humidity in the ambient atmosphere at various times of the year.

In most buildings with exposed soil beneath them, enough moisture will emanate upward from the unfrozen soil under the structure to condense and freeze as hoarfrost on many interior surfaces during cold weather. This is especially common on the points of roofing nails that project through the roof sheathing and conduct cold from outside the building, and also on the undersides of the roof sheathing boards. There is some evidence, in the form of staining on the surfaces of the pews in Trinity Church, that such condensation occurs in the building during the wintertime. Inspection of the attic during cold weather would probably confirm the presence of condensed and frozen water vapor in the upper part of the building.

Trinity Church has no gutters on front or back. Most of the water that falls from the roof therefore collects at the north and south foundations of the building, and a certain amount

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[2]Joseph W. Homer, *Soil Survey of Grafton County Area, New Hampshire* (United States Department of Agriculture [1999]), Sheet No. 82 and pp. 43-45.

of this roof water saturates the soil inside the underpinning stones. Capillary action in the soil also draws water upward from the soil directly under the church during wet seasons, so that at least the perimeter of the crawl space is constantly damp.

A crawl space beneath a building may remain unfrozen during many parts of the winter when the soil outside the building has frozen. The unfrozen earth under the building then acts as a source of water vapor during much of the year. During the daytime, the warmer air in the church room and the attic, being heated by the sun, is capable of absorbing some of the water vapor generated in the crawl space. Being a gas, this vapor is capable of migrating into the upper parts of the building, penetrating wooden floors and plaster walls or ceiling with ease. At night, when the building cools, this water vapor condenses on all cold surfaces. It is not uncommon in unheated buildings with dirt cellar floors to find condensation on window glass, as observed on October 6, 2004, or to find hoarfrost covering all walls during winter nights or on especially cold days. As noted above, such frost is especially common in attics, which tend to become the warmest areas in any old building during sunny days, but to cool most quickly at night. On warmer days, this frost melts, often inviting mildew or creating damaging condensation.

This cycle of migration and condensation of water vapor slowly saturates all the materials of a building. At Trinity Church, as noted above, moisture meter readings on the upper surfaces of floor boards near the outside walls were above the high end of the calibrated scale—above 20% moisture content. Moisture levels this high are conducive to decay in the wood, and nourish mildew spores and wood-destroying insects. The evaporation of this accumulated moisture during warmer weather is a chief cause of paint failure on the clapboards.

For this reason, it would be worthwhile to control the migration of water from the crawl space into the upper parts of the building. Experience has shown that this can be done by two means: excluding roof water from the crawl space, and placing a barrier between the damp soil and the air in the crawl space.

Exclusion of rainwater can be accomplished by intercepting the water either at the eaves, with gutters, or in the soil below the drip line. While gutters often cause problems of ice damming and roof leaks in heated buildings in New Hampshire, gutters can be mounted on unheated buildings with no fear of ice dam formation. Ice dams form only when roofs are artificially warmed, and when the meltwater from snow on the roof freezes as it reaches the colder eaves or drops into a cold gutter. In an unheated building, the only melting of snow that takes place is caused by the sun, and solar melting normally proceeds up the roof from the eaves, leaving the latter clear of ice.

If acceptable to the trustees, eaves gutters might be mounted on the front and rear of the building, taking care to conduct the roof water away from the building by a drain or storm sewer that discharges at a point well away from (and below) the house, or at dry wells.

One argument for the installation of gutters on Trinity Church is the condition of the lower clapboards on the north and south sides of the building. The clapboards on the lower zones of both north and south walls are quite new. Nevertheless, these clapboards exhibit very high moisture content—above 20% in many cases—and in a few instances have decayed to the point where they need to be replaced. Because the clapboards in the upper zones of the building's walls are considerably drier, it appears that much of the saturation of the lower walls can be attributed to the splashing of rainwater from the ground around the building. Installation of eaves gutters would prevent this concentrated fall of roof water.

As an alternative to eaves gutters, an in-ground collection trough could be placed along the front and rear drip lines of the building. Perforated PVC (polyvinyl chloride) pipes or pierced flexible drain conduits may be buried in the soil, usually cradled in a trough created by digging a trench, lining the trench with 6 mil black polyethylene, and filling it with crushed stone or gravel. The perforated collection pipes are usually connected to solid PVC piping that conducts the run-off to a distant point of discharge such as a dry well or an open-ended outfall.

As still another alternative, a trench with a sloping bottom may be dug from the foundation wall forward a few feet, to whatever depth is deemed necessary. The trench may be puddled with packed clay and/or lined with polyethylene, with a perforated drain pipe placed at its lowest extremity, as above. While this method requires more excavation, it shields a greater area of earth from roof water than the simple placement of a collection line directly under the drip line.

Because of the antiquity and historical significance of Trinity Church, no excavations should be undertaken near the building without an archaeologist in attendance. The faculty at Plymouth State University includes Dr. David Starbuck, an archaeologist of wide reputation. It would be prudent to consult with someone like Dr. Starbuck before disturbing the soil near the building in any way.

A second means of controlling the migration of moisture from the crawl space is by sealing the earth under the building. There are two ventilating openings in the underpinning stones: one near the southeast corner of the building, on its east end wall, and the second near the northwest corner, on the north wall. Both openings are low and are covered with screening, which inhibits observation under the building. From what can be seen, it appears that there is very limited vertical space between the earth and the sleepers that support the church floor.

If access is adequate and if there is room to work under the building, sealing the earth can be accomplished by the simple method of covering all exposed soil with sheets of 6 mil black polyethylene, well lapped (and taped if possible) at the edges. Before the earth is covered, it should be cleaned of all sharp debris, organic materials, or anything that may tend to puncture the plastic membrane. A cushioning layer of clean sand might be spread across the dirt for the same reason.

Again, if soil should be removed from the crawl space in preparation for laying the polyethylene, an archaeologist should be in attendance.

Experience has shown that the laying of plastic sheeting on the soil beneath a building reduces the amount of water vapor dramatically in the structure as a whole.

There is another source of moisture that requires different remedies from those described above. This is condensation. Condensation may become a serious problem, and a source of much liquid water, during the humid summer months.[3] Typically, an unventilated basement or crawl space under a building remains cool during the summer. When the outdoor humidity is high, the cool areas under the building are frequently below the dew point. In such a situation, humid air from the outdoors finds its way into the building, and the water vapor in that air condenses as water droplets on all surfaces, including wooden floor joists or sleepers. Even with the earth beneath the building sealed against moisture, the infiltration of outside air can introduce damaging amounts of water that will saturate the first floor frame and eventually cause decay. Water from this saturated wood eventually finds its way into the rooms above as well, causing problems similar to those created by water from an unsealed dirt floor.

If humid air does infiltrate a building, condensation can be prevented by two means: mechanical dehumidification or by warming the surfaces under the structure above the dew point.

Mechanical dehumidification is usually achieved by portable dehumidifiers. Dehumidifiers have the advantage of actively removing moisture from the air, lowering the humidity in any space where they are run. But these units require electricity, and must be emptied by hand or else drained through a hose to some point lower than the machine. They may also ice up in any space that remains below 55ºF. during the summer.

The second means of preventing condensation is by warming all surfaces of a given space above the dew point—the temperature at which water vapor condenses to liquid water. In humid summer weather, the dew point may sometimes be above 70ºF. Condensation in a crawl space may be prevented by heating the space above the dew point by some kind of heating element, or by drawing warm outside air through the space.

Both dehumidification and artificial warming require some mechanical equipment, surveillance of that equipment, and the consumption of electricity, as well as posing some degree of fire hazard to the building by the use of electrical appliances.

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[3] Condensation is most common in cool areas in or below buildings during humid weather in the summer. Condensation can, however, also occur in the winter on days when sudden warming and rain or fog create moisture that penetrates a cold building and condenses on its frigid surfaces. On such days, drops of liquid water may be seen to run down cold walls and windows. This phenomenon occurs only in unheated buildings.

For this reason, it is advisable to begin a program of moisture control by intercepting and controlling roof water and by sealing the earth beneath a building, if possible. If these simple methods prove ineffective, it may then be necessary to consider mechanical methods of controlling moisture.

In undertaking a program of moisture control, it is important to establish baseline documentation of conditions in a structure, preferably throughout an entire calendar year or more. With this information in hand, it will then be possible to see what degree of relative humidity occurs throughout the annual cycle and how often temperatures in a building drop below the dew point, inviting condensation.

To gain this baseline documentation, it is necessary to obtain an accurate record of temperature and relative humidity over time. This can be accomplished with some degree of accuracy by taking frequent readings on analog instruments placed in the building. An easier but slightly more costly method is to monitor conditions in the building through the use of digital data loggers. These devices store data on temperature, relative humidity, and dew point over a period of months. These data can be downloaded into computers to provide graphic or tabular records of moisture conditions over time, making it easy to identify areas of the building or seasons of the year when unfavorable conditions occur. The same data allow improvements in internal conditions to be monitored and measured after remedial actions are taken.

If the trustees wish to inquire about the cost of obtaining baseline environmental data through the use of data loggers, I suggest that they contact Marc A. Williams, American Conservation Consortium, Ltd., 85 North Road, Fremont, NH 03044; tel.: (603) 679-8307; e-mail: acc@conservator.com.

Exterior paint problems: The exterior paint on the church shows localized failure. While most clapboards on the building are relatively new, some are old enough to retain considerable paint buildup. Others appear so new that they have only one or two coats of paint on their surfaces. Some of the trim on the building, especially the exterior cornices, corner boards, and rake boards on the roof, has heavy paint accumulation that seems to indicate that these elements are considerably older than the clapboards.

As noted above, moisture meter readings on the clapboards revealed varying degrees of dampness. In general, however, the lower zones of the walls, below about five feet in height, showed moisture content readings of 20% or higher. Although the moisture content of the clapboards may vary considerably over the course of a year, the present moisture level is excessive and is a clear precursor of paint failure. In fact, there is a strong correlation on Trinity Church between clapboard areas where paint is already failing and the highest moisture readings. Paint should not be applied to wood that registers higher than 14% moisture content, and already-painted wood that becomes wet enough to register in the range of 20% is almost certain to experience paint failure. Thus, it is important to gain control of moisture conditions before investing in a fresh paint job on the building.

Once control of moisture has been gained, the New Hampshire Division of Historical Resources recommends traditional painting practices, coupled with the application of the best paints obtainable.

The choice of priming and finish paints is especially important during this era when the quality of many paints is declining precipitously. This decline is due in part to the understanding by many American paint manufacturers that Americans move from house to house, on average, every four years. When they move, they generally re-paint their new home. For this reason, manufacturers have designed paints with an expected longevity of only about five years. Traditional exterior house paints, formerly hand-mixed from paste white lead and pure linseed oil, often endured for twenty years.

White lead, the best pigment for exterior painting, has been unavailable in the American market since the 1970s due to its poisonous nature if ingested. The "Clean Air Act," which strives to reduce volatile organic compounds (VOCs) released into the atmosphere during paint production, has also had an ever-more-detrimental effect on the quality of the chemicals available for paint manufacture.

In addition the American manufacturers whose products are available in most paint stores, there is a company in Woodstock, Vermont, that imports paints of unusually high quality made by the Hermann A. Schroeder Company (HASCO) of The Netherlands. While these Dutch paints are expensive, they are also enduring. Since the cost of materials constitutes only 15% of the expense of a good paint job, a higher materials cost may be more than offset by the longer life obtained by the use of the best quality of materials. For more information about HASCO paints, contact *Fine Paints of Europe*, P.O. Box 419, Woodstock, Vermont, 05091. [Tel: (800-332-1556; FAX: (802) 457-3984; http://www.fine-paints.com]. *Fine Paints of Europe* has at least one New Hampshire distributor: A&M Paint & Wallpaper, 46 Market Street, Portsmouth, NH, 03801 [Tel.: (603) 436-5366].

Traditional painter's practices place great emphasis on preparation for painting. Preparation should account for at least fifty percent of any paint job.

On method of paint preparation to avoid at all costs is the now-popular "pressure washing" or "water-blasting" of the building. Washing a structure with a damaged paint film, even under moderate pressure, drives a great deal of water into the fabric of the building. A washed building requires weeks and often months to dry to a condition fit for painting, yet many of the painters who now employ this method attempt to paint the structure within a short time after washing it.

The easy availability of pressure-washing machinery has tempted many painters to employ this method of preparing buildings for painting, usually with the justification that blasting off the loose paint will save labor. Labor should constitute about 85% of the cost of a paint job, and it is false economy to try to avoid hand work during preparation. Some painters may believe that because latex or acrylic vinyl paints are water-based and water-soluble, they can be applied over damp materials. This is utterly wrong. Once such paints have undergone the chemical reaction of drying, they are as susceptible to failure from underlying moisture as are oil-based paints. Water is the great enemy of a long-lasting paint job. The drying of a damp, washed building invariably causes paint failure in both oil-based and water-based paints.

There is no substitute for the traditional method of dry scraping and sanding of a painted surface. All exterior house paints are perfectly adapted to cover dry surfaces that have been scraped, sanded, and brushed with a dust brush. No paint requires a washed surface for good adhesion. On the contrary, paint adheres best to a slightly roughened surface like that created by traditional scraping, sanding, and dusting.