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Restoration and Traditional Building

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Pratt Hall, The Montgomery Historical Society

Montgomery, Vermont

A Preservation Trust of Vermont Technical Assistance Report

Pratt Hall, the home of the Montgomery Historical Society, was formerly St. Bartholomew's Episcopal Church until its deconsecration by the Diocese in 1974. Built during 1833-35, the height of the Greek Revival in Vermont, it stands out as among the few rural Gothic Revival churches of the time. While it is possible that it received some of its Gothic decorative features at a later date, it is clear that the frame of the church, including the semi-engaged tower at front center, was integral to the original construction. The clock and belfry stages have been completely rebuilt recently and there is no way to say whether they were based on original, or merely old, photographed forms. Bishop J. H. Hopkins of Burlington consecrated the church in 1835, praising it highly, and Hopkins is well known as a proponent of the Gothic style of church architecture. The pitch of the roof however is closer to Classical Revival slopes. Pratt Hall is on the National Register of Historic Places.

The nave of the church is 37 ft. wide and 50 ft. long with a narrower chancel added at a later date to the rear. The tower stands at the front on its own foundation, protruding 8 ft. 4 in. from the front of the church and extending 4 ft. into the body. The extension of the tower into the body of the church is carried out at the attic level by ingenious hammer beams that cantilever off the tall posts that pass through the gable plate of the nave where the tower crosses it. These hammer beams and associated double braced framing are original to the church and thus so is, at least, the main elevation of the tower. I have seen cantilevered tower framing like this once before, at St. Paul's Episcopal 1822) in Windsor, Vt. and this raises the question of whether the Diocese had some architectural services available to its member churches?

Pratt hall is covered in white painted clapboard with green trim. There is 4 ft. of rusticated boarding around the bottom of the tower. The clapboard has a 4 1/2 in. exposure on the sidewalls and 3 ½ on the tower. The main entry is a small

lancet arched pair of doors. Other medieval detailing is found in small window halfway up the tower and the trim around the belfry louvres, and the crenellated battlement at the top of the steeple. The long walls have three tall lancet windows on each side. 5 of them have large and beautiful sash of stained and painted glass depicting Biblical scenes. 5 have lexan protection over them and 4 also have the original, or at least older, pairs of divided sash with their particular tracery at the top. The roof is sheet metal and recently worked on to stop leaks on the south side. The 1985 National Register nomination form gives a fuller treatment of this building's considerable architectural significance.

The foundation is a mixture of stone, new concrete, and older concrete over stone. The concrete poured against the stone of the south eaves wall protrudes beyond the building and is a factor in the rotting of the sill, regardless of the fact that it's joint has been recently caulked.

The front steps and handicap ramp, made of stone and slate come level with a concrete threshold under the main entry doors and also are rotting sill and entry floor joists.

The interior of the church is very striking with the tall lancet windows and the deep blue panels of the coffered ceiling divided by representations of the bottom chords and paired wind bracing of the magnificent trusses in the ceiling and roof system. However, these are representations, not expressions, since the roof trusses are on different spacing, and slightly above the ceiling dividers. The flooring is original wide board spruce.

Pratt Hall is of timber framed construction and very substantial for a building its size. The wall posts are 8" x 10" and carry a 10 x 11 plate. The roof trusses are themselves somewhat medieval in form and clear span the nave. Each truss has a 10" x 11" tie beam in spruce or pine, a 10 x 10 beech kingpost, and 8" x 9" spruce upper rafters. The upper rafters carry purlins and common rafters. 4" x 5" inner rafters, made of mixed hardwood species, drop to the tie beam at a steeper angle than the roof. Where these inner rafters bear on the tie beam they are strutted by side by side pairs of 4 x 4 hardwood bracing rising at a low angle from the wall posts. Another hardwood 4 x 5 strut rises from a mortise low on the kingpost, passes the inner rafters lapping itself only, and helps support the outer rafters near their midspan. Longitudinal girts and diagonal bracing connect a post on the rear gable to all the kingposts and terminate in a post on the front gable. The spacing of the trusses is irregular, alternating 8'2" and 5' 8", probably to allow the wall posts to accommodate window spacing.

The frame of the tower suffered severe water damage and rot in the past and is now much altered and augmented. Originally four tall 10x 10 posts, 2 at the front tower corners, and 2 slightly less tall rising from the front sill of the nave at the tower corners formed the basis of the tower frame. The two rear posts carried a girt from the front posts that cantilevered across them ,and, with the help of a pair of rising 4 x 4 diagonal braces, continued 4 ft. into the attic space of the church. A post rises from the ends of these hammer- type beams and forms the rear wall of this first, tall stage of the tower. Additional large dimension braces rise from the lower rear posts to assist this cantilevered rear wall frame to remain erect, with good success. This rear system remains largely intact although augmented with steel truss rods. The front wall posts became severely rotted in

the past and were largely abandoned sometime in the 20th century in favor of two large verticals laminated of 2 x12 plank rising to the full height of the first tower. Other built up beams run from the rear wall, cross the forward laminated posts and holds up, in cantilever fashion the front wall of the tower. The symmetry of the old rear and the new front cantilevered structural systems can only be wondered at. The new support for the front of the tower is a confusing mass of nailed, bolted and screwed planks and timbers; redundant, but there is so much of it that the tower is probably stable and need not be considered a priority except for its rotted front sill, which it hangs above anyhow.

The bell deck of the tower is covered with what appears to be sheet vinyl, cut, patched and glued into shape. It may be waterproof but it is not very strong and should be monitored for holes produced by falling ice.

The floor system over the basement is composed of full length transverse carrying beams and half round spruce joists of good size. The sanctuary has a slightly more modern style with hewn and sawn timber and plank. The basement is remarkable in that it has been framed and plastered to form a sloping walled plenum taking furnace heat to little doored opening in the floor between the pews.

Maintenance Needs:

Front Entry: The newer front entry platform and concrete threshold are too high and have contributed to the further rotting of the front sill. Related to this the interior floor joists of the entryway have fallen from the rotten sill and depressed the floor.

The solution is to remove as many floor boards as possible from the front hall, find a way to support the front door posts and wall posts either from within or from without on jacks, and replace the sill using solid 8" x 9" softwood timber. It will be necessary to dismantle some of the front tower stone foundation to accomplish this. Several of the front hallway joists need replacement as well. They can be the same size as the originals and can half lap into the new front sill but may need to hang on a ledger or joist hangers if they cannot be made to enter the concrete wall poured under the front wall of the church. Jacking the entire front tower to any new level is probably precluded by the complicated structural system installed in recent years. While the floor is open, make sure that the tall laminated columns that have superseded the original front corner posts have good footings, since they are crucial to the stability of this tower.

The exterior steps and the tastefully done handicap ramp have to be altered so that a step of at least 8 inches is between the top step and the bottom of the threshold, in order to protect the sill.

The best way to keep the ramp working is to have a temporary wooden platform that takes the place of the upper portions of the steps and ramp. This platform will drain to the lower masonry and not press directly against the tower trim.

The concrete threshold should be replaced with a very wide piece of hardwood, sloping slightly to drain outward.

South Wall: I'm going to discuss several problems on the south wall as one because they are related and need to be fixed together.

Foundation problems on the south lead, long ago, to concrete being formed and poured against the rubble stone wall on the outside, producing an exterior concrete shelf that introduces water into the sill. Right now, buckling of clapboards all along this wall indicated that the wall posts are crushing into this sill. Examined from within, the sill appears good, except that it is unusually deflecting over some stones, meaning that it is likely rotted to the outside.

Contributing to the rotting of this sill was a long time roof leakage problem along the middle of this wall. In addition to draining water all the way down to the sill, it caused the rot of at least 2 mid wall posts, and the tenons and bearing of their double braces, and the rot and disconnecting of at least 3 truss bottom chords where they meet the south wall posts. There may be plate damage as well at these joints. The 2nd, 4th and 5th interior tie beam ends from the front are bad where they bear on the post and one has fallen almost 2 inches from its correct position. This is a serious problem and expensive to fix, and it is manifesting itself not only in buckled clapboard but in distortion of the frame of the mid south stained glass window, some uplift of the roof eaves, and subtle openings and curves developing near there in the coffered ceiling. Left unrepaired, the posts will continue to sink and tie beams to sag until real damage to the windows and ceiling occur. (see Fig. 1)

west

The solution to this problem involves opening a large section of the mid south wall, jacking the posts until they are level, and, using structural scaffolding and small holes in the interior ceiling, jacking the 3 or 4 depressed tie beam ends back to their correct height. Any structural scaffolding within the nave must rest on flooring cribbed from the basement. When this is done, replace two wall posts, approximately 8 x10 x 20 ft. spruce timbers, in their entirety, engaging and repairing or replacing all the surrounding joinery that entered these posts. (It may be possible to do this without disturbing the interior plaster and sheetrock but possibly not) The bad tie beam ends can have scarfed repairs and then be sistered with 3" plank or LVLs to midspan near the kingpost. I normally do not recommend partial truss chord replacement, but there are so many large trusses over such a short span, none of them carrying the steeple load, that I feel it can be safely done at this church. Also, any joint in tie beam can be suspended by a steel rod dropping from the upper rafter at the point where the strut rising from the kingpost meets it. Finally replace all the bad sill along this wall in solid softwood timber of the same size as the original.

The exterior concrete should be removed and the original wall relaid, with mortar in this case.

Reboard and clapboard the dismantled exterior and replace any roofing and interior ceiling that needed to be removed.

Basement framing:

The floor frame above the basement is based upon large transverse carrying beams that sit on block piers along the north repaired foundation wall and may need to be supported at their south ends on stone piers after the south

sill work is done, since their tenons may have rotted away. The joists between are bouncy though adequate but one particular area of springiness can be remedied. A joist hear the plenum to the east of the furnace on the north side is broken and needs another joist, perhaps a 3 x 8 x 10 ft. timber, slipped in amongst the ductwork and attached to the carrying beams, to support the floor boards.

A larger problem, though relatively easy to fix, are the too small posts that support the tie beams, 2 in each span. The sq. inches of bearing atop these 4 x 4s is inadequate and they are compressing into the tie beam grain. The bases of these posts are sitting down in the gravel and membrane designed to keep the basement dry, on stone or concrete piers, but the post bottoms will get wet under these conditions as all moisture under the membranes tries to exit by the holes cut for the posts. One of these small posts has already begun to move from its position by ¾ in.

At all 6 of these small post positions, support the carrying beams on jacks and cribbing and remove the post. See what sort of footing it has, if the drainage is good, and it seems to be in the basement, a large stone will do, which it may already have. Add another stone or concrete block to the top of the existing footing, or of one you build, to get the post bottoms above the gravel, and install 8 x8 or larger posts.

Grading and drainage:

This problem has been addressed repeatedly here and, hopefully, the cracked plaster at the NW nave and both walls of the chancel are old conditions. Currently the historical society members are monitoring the NW corner. The grade is good at the south and east, but, since the concrete facing of the south will be removed and the stone relaid, it would be wise to be assured there is good drainage installed along the new wall.

The slope at the north and west is more problematical and if any water is seen entering the church basement, dig out the NW corner of the nave and chancel and make sure that drainage is good. Some work appears to have been done in the ground there but it is unclear how deep it went.

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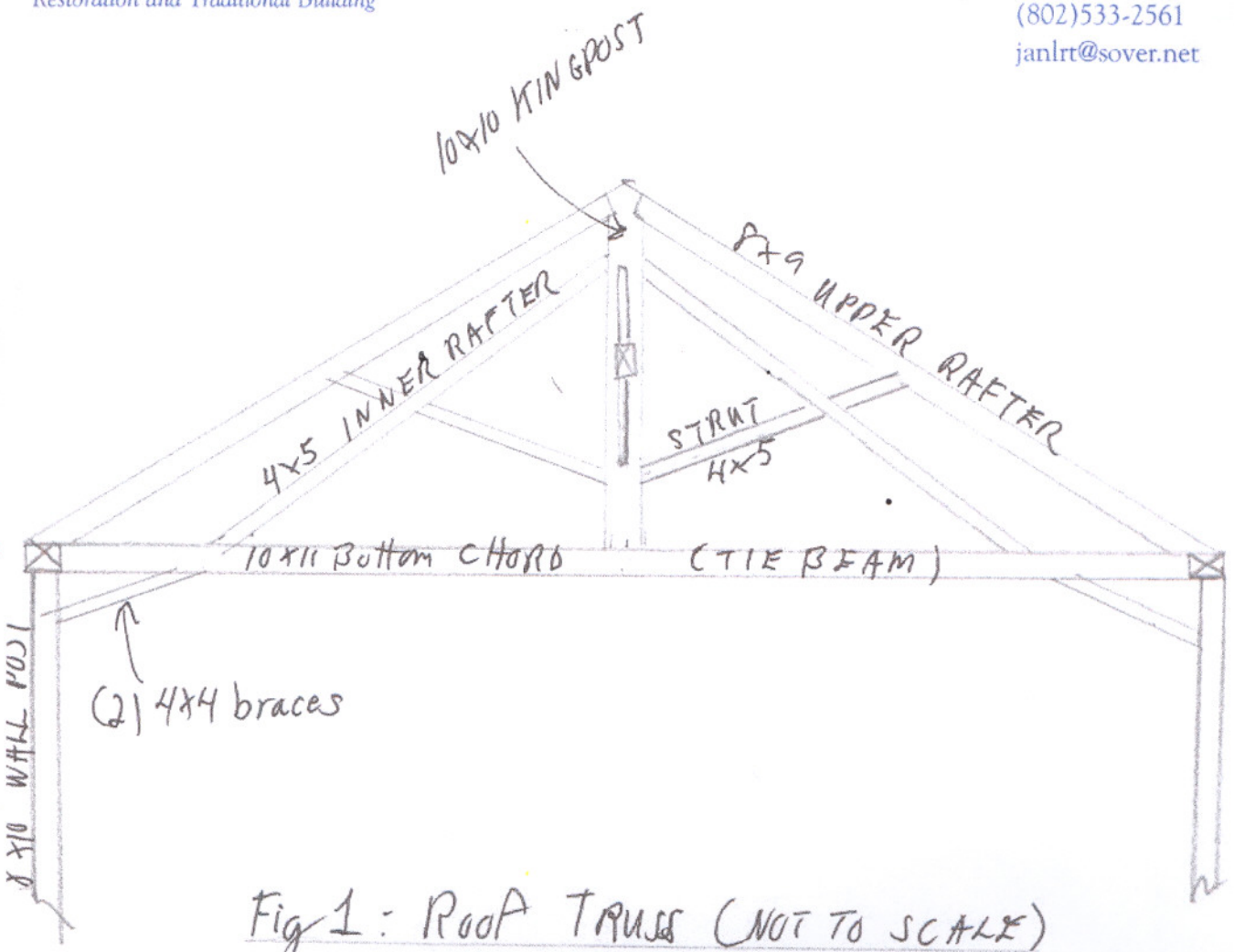

Fig 1: Roof Truss (NOT TO SCALE)

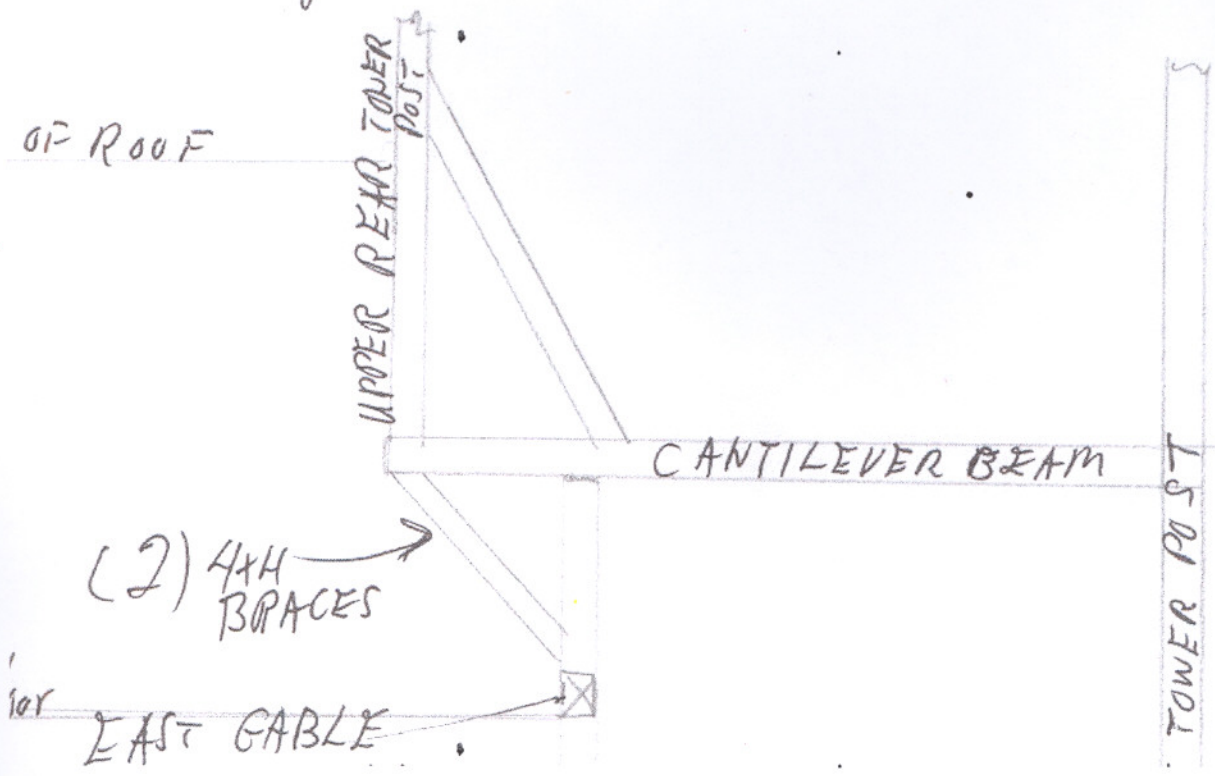

Fig 2
ORIGIN
TOWER
HAMM
BEAM
DESI

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9/24/08

RESTORATION AND TRADITIONAL BUILD

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VTGOMERY HISTORICAL SOCIETY

NTGOMERY, VT

re: PRATT HALL

	DESCRIPTION		
	Preservation Trust of Vermont Technical Assistance Report on Pratt Hall		$
		TOTAL:	$