

SAINT ROSE CATHOLIC CHURCH
A Narrative on its Construction
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The Shasta College Field Archeology class excavated the Saint Rose Catholic church located in French Gulch, California during spring semester of 1999. The church had been destroyed by fire with the resultant ruins largely undisturbed. An attempt was made during the course of the excavations to note those details that would make possible a record of how the church had been constructed. Such a record would be an aid in understanding the present structure and hopefully assist the community of French Gulch in future efforts should it decide to rebuild the church.

Initial impressions of the Saint Rose Catholic church ruins consisted of a perimeter stone foundation with its interior space deeply layered with charcoal and ash, unidentifiable fragments of charred wood, miscellaneous sections of twisted metal materials, and sections of burned framing members. Although many of the damaged floor joists still spanned the foundation there was no framing in a standing position. What little remained of the frame had either toppled into the interior conflagration or fallen outside of the buildings perimeter before the flames were extinguished. In any regard, the resultant jumble offered little resemblance to the orderliness of a wood frame structure.

Given what little remained as a result of the fire, any attempt to recreate how the church was constructed relied upon many sources such as physical measurements of the materials on hand, a knowledge of common framing and construction techniques, photographic records, oral interviews with people associated with the church and its history, viewing existing examples of contemporary framing located in French Gulch, and an experience in wood framing that allows for an interpretation and understanding of the evidence as it came to light. From the ground up, the following is a description of how the Saint Rose Catholic church was most probably built.

FOUNDATION: (Note—all dimensions given are from the corners of the actual wooden frame of the structure and not the foundation which extended beyond the wood frame.) The perimeter foundation of the church was basically a rectangle measuring 41 feet east to west and 21 feet north to south. The 21 foot span was divided equally by a center support foundation that extended the entire 41 foot length—creating two halves to the sub-floor crawl space. The front entry steeple/bell tower was centered on and projected from the west side an additional 5'2" with a width of 10'2". A monolithic pour concrete front entry porch and steps provided the west foundation of the steeple/bell tower and afforded access from the surrounding grade level to the front door.

Prior to laying the stone for the foundation, footings trenches were dug to the necessary dimensions to accommodate the planned stone work. During the course of digging the footing trenches, some of the excavated material was thrown to the outside of the building foundation by the workmen and some was thrown to the inside. After the stone work was completed, the outside material was backfilled into that part of the footings trench remaining outside the foundation, creating a relatively level and smooth grade around the building. The interior material however was allowed to remain where originally piled and resulted in a domed surface highest in the middle and sloping off each side down to a point against the stone foundation much lower than the corresponding point outside the foundation; therefore, much more of the interior surface of the foundation stone work is exposed than the exterior. As there is a center support foundation with the sub-floor crawl space divided equally in half, the earthen floor of each half

was similarly dome shaped. The same method was used in the stone foundation under the protruding portion of the steeple/bell tower.

The only exception to the above was in the south east corner of the structure where the sub-floor crawl space access door was located—a metal framed opening in the stone foundation to allow access and egress to the crawl space area. In order to create maneuvering room under the church floor, much of the excavated material from the footing trenches in this area was removed with the resultant earthen crawl space floor being much lower overall than the outside grade. One would have been hard pressed to crawl under much of the church as the clearances, especially in the center of each half where the earth was heaped, were very close. Additionally, there was no provision to get from one half of the crawl space to the other or into that area under the steeple/bell tower.

The stone foundation, including the center support foundation and that for the steeple/bell tower, was of the same height throughout, allowing for the wood framing to start at an equal elevation overall. The site grade however varied from a high point at the west front entry almost equal in height to the top of the stone foundation, to a low point at the east end (back of the church) where the top of the foundation was approximately 30"-36" above ground. The foundation utilized native stone that did not appear to have been trimmed or dressed in any way beyond a random blow to knock off a protrusion if convenient. The stone was simply laid with the best surface to the exposed exterior and an effort made to create a presentable vertical surface plain. The interior received no such attention and is very uneven in appearance and not vertical in plain. Rather it varies in width at the top from 10"-12" to probably 6"-10" wider than that at the bottom where it disappears into the dirt. No reinforcement was used.

The stone work is mortared into place with what appears to be the original material. Pointing of the joints between stones was rudimentary on the exterior and non-existent on the interior. The foundation was fairly consistent in cross section with the exception of the southeast corner where it is tallest in overall height. In this area (especially the southeast end of the south wall) the wall is dangerously thin near the top (possibly some of the stone work has sloughed off in the past) and recent repair efforts have "smeared" additional mortar to the interior surface to reinforce the stone work.

The top surface of the stone foundation was paved with a layer of mortar to compensate for stone irregularities and present an even surface for the wood framing. The mortar is currently severely compromised by the heat of the fire and has lost much of its adhesive strength—indeed, brushing with a broom during excavations would remove large quantities from between the stones of the interior surface.

The monolithic pour concrete front entry porch and steps included a ledge on its back side to support the floor frame work for the front (west) wall of the steeple/bell tower. This support ledge is only about 2" in depth. Not enough floor framing remained to conclude how the two inter-related. Examination of the concrete reveals that the original front porch and steps had been overlain with more recent concrete—most likely to repair deterioration of the original surfaces.

No sub-surface archeological excavations were done to determine the depth and extent of the foundation footings and stone work.

FLOOR SUPPORT: On the top surface of the completed stone foundation was a "mud" sill of rot-resistant wood (usually redwood or cedar) of undetermined species. Around the exterior perimeter, this was 4" thick, 9" wide on the bottom in contact with the mortar and 6" wide on the top surface with the resultant beveled edge exposed to the exterior to shed rain water away from the foundation and frame interior. In places on the exterior frame where this beveled mud sill was not used, specifically the buttress bases, a 2x beveled water trim matching the beveled mud sill was used for the same purpose.

The interior center support foundation had for a mud sill a double layer of 2x8s (full dimension cut) to equal the 4" depth of the exterior mud sill. The steeple/bell tower likewise had a 4" thick mud sill but it was not beveled as with the main structure and showed evidence of having had sections removed and replaced (possibly due to the closeness of the exterior grade and water-related rot problems) as multiple splices were evident in the 5'2" length. It was not determined how any of the mud sills were fastened to the stone foundation. In all cases, the stone foundation was of sufficient width to accommodate the 6" width of the mud sill plus the 3" width of the beveled edge/water trim.

The mud sill was installed so that the shoulder of the beveled edge formed a rectangle 21 feet by 41 feet and it was upon this that the floor joists were placed. The floor joists were full dimension rough-cut 2x12s of an undetermined fir species (definitely not pine) installed 24" on center starting from the east end of the building and progressing to the west and spanning the 21' in one piece. Each end was toe-nailed with two square-cut 20d or 30d nails and secured to the center mud sill with the same.

The floor joists were placed 24" on center but in a fashion that either spoke of the amateurish help involved or an effort to make maximum use of available materials. Joist lay out started at the east end and progressed 24" on center until encountering the first buttress at 13'9". Instead of placing the next joist at the expected 14' and going next to 16' etc., the joist jump 24" from 13'9" to 15'9" then 17'9" etc. until the next buttress at 27'2" from start. A joist was then thrown in at 28'2" (only 12" from the last one), another at 29' and then 24" on center from there until the steeple/bell tower floor support at 36'4". The remaining distance to 41' was then divided in half and a joist placed there (27"—30" on center). A consistent 24" on center joist lay out would have used the same number of floor joists as was actually used but would have been much easier to install flooring on with even 2' modules.

As mentioned above, there was a system of buttresses used to reinforce the two long exterior walls that involved using the floor joists as cross ties from one side of the building to the other. Each gable wall (21' long) had a buttress at either end that extended beyond the wall plain 30". Between the two end walls were two other intermediate buttresses the four of which divided the 41' length of the building into roughly three equal areas. The stone foundation extended out to support each buttress and at each buttress the floor joist extended the full 26' from outside of buttress to outside of opposing buttress. The forces imposed on the buttresses in reinforcing the walls was then effectively transferred down to the floor and foundation.

The 10'2" square steeple/bell tower encroached into the building 5'. Where the interior wall of the tower rested on the floor, the floor joists were doubled and blocked to create a 6" thick by 12" deep tower support floor joist directly under the tower wall.

All floor joists were braced at mid-span between the exterior foundation and the center support foundation on both halves of the floor. 1x4" diagonal bridge bracing was used in this regard to prevent rotation of the floor joists. It is interesting that solid 2x12 blocking was not used between the joists on the perimeter or down the center support foundation as is currently the practice.

FRAMING: There was enough material remaining in the north west corner of the structure to determine most of the framing details for the long side walls and part of the gables. Enough articulated framing existed to confirm the wall height and construction, corner construction, window rough measurements, bracing used and a complete buttress frame with associated bracing. It is assumed that the details from this area are applicable to the rest of the perimeter walls.

The specific framing dimensions, as with all information recorded and confirmed on site for the foundation and floor supports, have been detailed in a set of plan drawings submitted as part of the class

work resulting from the excavations and will not be delineated here. Please refer to those drawings for more detailed information concerning the exact construction of the church.

The walls were built of full dimension rough cut material of an undetermined species with 2x6 studs placed 24" on center. The sole plate at the bottom of the wall was 3x6 and placed directly on the floor joists on the two long walls. The top plate was doubled 2x6 for an overall wall height from floor joist to top of top plate of 15'4". The 21' gable walls did not employ a bottom sole plate but rather had their studs notched to fit down over the rim joist to transfer loads directly to the mud sill and foundation. The remnant of gable wall was also 15'4" high with a double top plate but displayed no evidence of the necessary gable framing that would have extended the wall up to the underside of the roof.

The long walls were braced using 1x6 "let-in" braces running diagonally from the top plate near a buttress column top down to the sole plate approximately midway between the bottom of two buttress. Evidence shows that there was a let-in brace from the top of buttress "B2" diagonally down across the lower left corner of window "W1". Notching in the sole plate under window "W2" indicates that there were two braces running from the tops of buttress columns "B2" and "B3" down to meet under window "W2". Such a pattern indicates that there was at least four let-in braces in each long wall to control the left-to-right wracking of the walls.

The front gable wall did not evidence bracing but may not have had any because of the presence of the steeple/bell tower in the middle of the wall and a buttress located a short distance away at the end of each wall. The east gable wall was totally destroyed.

A complete buttress ("B1") remained with its associated buttress column (located in the wall frame) and bracing, and framing details. Enough of the intermediate buttresses remained to confirm their base and framing details. The function of the buttresses was to reinforce the long walls against the outward pushing forces of the gabled roof frame. Both the corner and intermediate buttresses are drawn in great detail in the accompanying plan drawings.

STEEPLE/BELL TOWER: The remnants of the exterior west wall of the tower collapsed outward from the building while the interior east wall fell inward. Enough remained of these two walls to determine their floor plan and layout of their respective door ways and door sizes. Framing was rather conventional in regards to the doorways and the general wall construction followed that outlined above with a 3x6 sole plate for the walls perpendicular to the floor joists and none for walls parallel with the joists. As with the main structure, the corners of the walls were tripled 2x6 laminates.

The interior wall did display some gable studding extending approximately 8' above the door header while the exterior wall gave some details about the framing over the door for the arched windows. Beyond that, little remained to indicate how the tower was framed in its upper reaches, whether it had an upper floor, how the bell was mounted or how the roof was constructed. All photos viewed were taken from across the road and creek from an elevated position of some distance and give a nice over-view but little interior detail.

FLOORING: The unusual aspect of the flooring from today's point of view is that it was installed after the walls were framed. The flooring was 1x4 tongue and groove fir applied parallel and adjacent to the long walls (perpendicular to the floor joists) and was notched around the gable wall studs to end on the rim (final) floor joist. It was also notched around the interior door frame of the steeple/bell tower, indicating that the door frame was also installed prior to the flooring.

The nail pattern is evidence that the flooring was started against the long south wall and installed with one square cut nail per board per floor joist through the tongue so that there were no exposed nails. The

nail heads slant away from the boards towards the north—being driven in to the south to force the board more tightly against the previously installed board immediately to the south.

It is not known why the flooring was installed after the framing. It must have made framing difficult while standing on the exposed floor joists or on temporary planking. Perhaps weather was a factor and it was desirable to have a roof on before installing the flooring to prevent water damage. Another building of age in French Gulch with missing siding showed the same technique—the floor joists with the wall studs passing through to the foundation and the flooring installed interior to both. Apparently an accepted practice of the day.

The flooring in the steeple/bell tower entry had been replaced with plywood. This is consistent with water damage to the mud sill. There most likely was rain water coming in from the open belfry above.

SIDING: The siding was pine 1x8 in a pattern now called "Shasta Cove". It is shaped so that the upper board when horizontally applied overlaps the lower (ship lap) and will shed water. It appears to be the original siding in that it was secured with 8d square cut nails (two per board) and had a thick multi-layer of paint. Evidently during a recent renovation, the siding was re-nailed as each board also was secured by two 8d galvanized wire nails.

The siding was trimmed at the outside corners with a $\frac{1}{2}$ "x3 W material secured with 8d galvanized wire nails. Both the trim and nails therefore are the result of renovation work. The inside corners (at the buttresses) were trimmed with 1" quarter round molding that appeared to be the original.

The buttresses were sided and trimmed as per the main structure with the only difference being that the sloped upper surfaces (two—see drawings) were flashed with a sheet aluminum cap fashioned to prevent water penetration into the buttress framing. Water again must have been a problem in that these surfaces were layered with plywood—speaking of wood rot and recent replacement.

INTERIOR WALL SIDING: The interior walls of the church were sided with a 1x6 tongue and groove wainscot with 5'4" exposed and vertically applied. Only the bottom fragments of this siding survive and there is no indication of how it was nailed over its 15'4" length. Interior photos indicated that it may not have gone all the way to the ceiling as there appears to be a trim line about *T* below that point and perhaps another material above that.

There was no evidence in the wall framing of horizontal blocking installed to nail the interior siding to.

A 1x8 unshaped pine baseboard was used at the floor line and appeared to be of recent vintage although this is not certain. It could have been installed during recent re-carpeting of the church.

Remnants of 1x5 trim with 8d wire nails was found at the two door frames of the steeple/bell tower.

ROOF FRAME: Aside from inferences made from photographs, no evidence of the roof frame exists—it evidently collapsed into the building and was totally consumed. The author searched diligently amongst the char for something that could be identified as a rafter but nothing that couldn't be accounted for was found.

Photos show an exterior roof with at least a 12/12 pitch and possibly steeper and an interior vaulted ceiling pitch of about 5/12. This indicates a significant attic space with framing for both the exterior roof and the interior ceiling and possibly connecting bracing between the two. However, not even nailing patterns on the wall top plates to indicate rafter spacing could be found.

Conversations with the caretaker yielded no information as he had no recollection of an attic access (perhaps located in the belfry) and was unaware that the ceiling and roof were separate. More local interviewing would have to be done to garner any further information on the construction of the roof—some where is some one who stuck their head into the attic space during renovations and could relate what they saw.

The only hint at the roof frame was found at each of the four intermediate buttresses. Located inside the foundation in the char at the base of the four buttresses was a large heavy metal clamp-like device measuring approximately 3'-4' long and consisting of two parallel flat bars (possibly re-cycled wagon tire rims) wide enough for half its length to accommodate a 6" frame width (triple 2x6 buttress column?) and narrowed for the other half to take a 2" width frame member (2x rafter?). The clamp is also angled to go from the vertical (column) to a roof pitch (rafter). However, all attached wood was burned away and how and to what they attached is unknown.

ROOFING: Fragments of roof decking and roofing were found and one section actually had an attached 2x4 rafter. Again located in the north west corner which appeared to burn last, this roofing fragment had a section of 2x4 rafter with 1x4 "skip sheeting" (1x4 slats spaced approximately 4" apart) which was traditional preparation for a shake roof. The presence of cut 4d nails indicated the original shake roofing and 6d wire nails in the slats told of later shake roof repairs.

At some point in renovation, the original shake roofing was completely stripped off. This results in a certain amount of remaining 4d cut nails and 6d wire nails. The cut nails were driven flush into the slats and the wire nails were either bent at 90 degrees to the slat in the stripping process or bent during an attempt to drive them flush into the slat to yield a clean surface upon which to install a plywood overlay. Significant quantities of 90 degree bent 6d wire nails were reported in the excavated materials.

The skip sheeted roof was then overlain with 14" three ply plywood, covered with 15 pound roofing felt and shingled with contemporary "fake shake" fiber board roofing panels. At this time a 1 1/4" x 1 1/2" galvanized sheet metal drip edge was installed at the eave line.

A section of roofing with a 2x4 rafter attached is inconsistent with a large roof with a 12/12 pitch and therefore is possibly not representative of the roof as a whole. Several sections of roofing with attached roof decking were found upside down, parallel to and outside of the building long walls—indicating that the updrafts of the fire had blown them off the roof as the fire consumed the rafters. This fragment perhaps came from the steeple/bell tower which had a much smaller roof and could have been spanned by a 2x4 rafter.

Without benefit of original drawings, the ruins of Saint Rose Catholic church has yielded much information concerning its construction. However most frustrating is what cannot be known. The foundation, floor and bulk of the framing is fairly well represented while the interior can only be known from photographs and the steeple/bell tower and main roof are gone. However from these facts and hidden subtly amongst the char is revealed the human element. Unburned under the floor joist is the penciled lay out mark made by the carpenter—the same marks used by framers today—and protected by a stone in the crawl space is the flat carpenter's pencil he used to make that mark. But perhaps most poignant is the curl of a wood shaving fashioned from a hand held block plane over 100 years ago, appearing as if the maker had just gone down the street for lunch. His job is basically the same that we have today and done in much the same manner.