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## "Perseverance"

**A Grand River Valley Church is Resurrected from Ashes**



*In 1856 the town of Shakopee was on the frontier's edge. Once an Indian village on the Minnesota River, it now beckoned settlers from eastern states and Europe to come further west, to break the prairie land and farm its rich soil. St. Mark's Catholic Church of Shakopee was borne from the vestiges of these hard working and visionary people. "Whoever perseveres until the end will be saved," reads a cross given to the church by Jesuit missionary priest Father Francis Xavier Weninger. A credo perhaps intended as a reminder to the unified beginnings of the parish and its goal to build a church, but also personifying the spirit of will the descendants of these pioneers retain to this day.*

It seems only fitting that a church with the history of St. Mark's (See "The Remarkable History of St. Mark's"), decides to refurbish as the 150<sup>th</sup> anniversary of its founding approaches. So in 1999 a concerted effort began to fix crumbling lime mortar around the exterior stone walls, replace the roof and even add air conditioning to the storied old church. In 2005, attentions were placed on the interior, with the most notable treatment being the dramatic change in color from the minimalist

period that the Catholic church went through in the 1970's. "The church was painted in shades of gray, nine shades to be exact," expressed Father Bill Stolzman, Pastor of St. Mark's. During the minimalist period, beautiful altars



were replaced with bare bones sheets of granite or marble. Decorations, including the "Stations of the Cross" were altered so as not to detract from the focus of the priest at the communion table. Fortunate for St. Mark's, the altar was not replaced. Unfortunate was the fact that the

church's original grandeur blended into shades of gray.

The interior restoration brought color once again to what had become a bleak and dreary interior. Stenciling was added to the now pastel colored walls around the historic stained glass windows. The groined and vaulted plaster ceilings were repaired and painted a light shade of blue. Statuary once again came back to life and up-lighting created a warm reflectance off of gold leafing on the altar and columns that were capped with capitals containing angel sentinels.

### Up in Smoke

Just two weeks before the church was set to reopen its newly awakened splendor to her parishioners', tragedy struck. During the early waking hours of August 24, 2005 a fire broke out in the sanctuary. The cause of which was later determined to be the result of spontaneous combustion. That morning a passerby spotted smoke and the nearby sensors in the parish center set off an alarm. Even though the Shakopee Fire Department arrived almost immediately, the fire could

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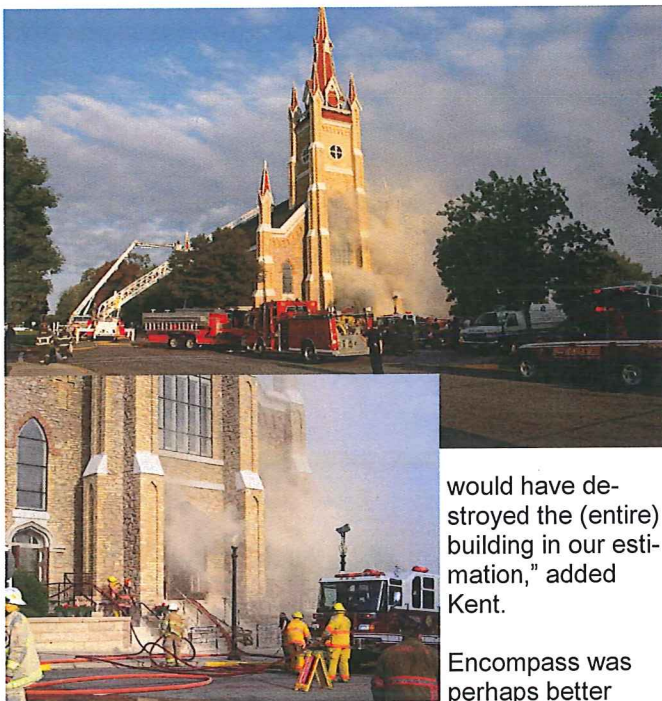


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not be put out. "The floor had been furred with several layers to it," Father Stolzman explained. "Those layers provided fuel for the fire," he reflected. "And because the basement was basically a crawl space with a series of trenches cut through it, it was a very difficult fire to put out." In the end it took thirteen fire departments, eleven hours to help put out the smoldering fire. In an effort to provide relief from smoke damage, two of the historic stained glass windows on either side of the altar were sacrificed. Holes were also made in the roof and the fire was finally extinguished by twice flooding the crawl space and floor with water.

### Assessing the Damages

As a source of fuel for the fire, the floor and many of the pews were perhaps the most obvious loss. The main altar made it through the fire relatively unscathed, however a delicately carved butternut side altar was toppled and severely damaged. An organ installed in the mid 70's had to be replaced, as did the new air conditioning. "The new AC system had never been turned on before the fire," noted Kent Jones P.E. of Encompass Engineering. "One thing the church had going for it was the abundant plaster lining the interior walls. (And) if not for the fact that the masonry walls weren't combustible the fire



The fire department of Shakopee and thirteen other communities were called on to put out the fire.

would have destroyed the (entire) building in our estimation," added Kent.

Encompass was perhaps better equipped to handle the forensic investigation of the building than most engi-

neering firms, because they had worked with the church on the exterior renovation in 1999. "We knew what this building meant to the parishioners and what they were willing to invest to restore the church rather than replace

ceiling without a stable base to erect scaffolding," he noted.

### Calculated Gamble

This is when Encompass decided to recommend a step that is highly unusual in the field of building forensic inspection: The renovation would have to begin before the investigation had become complete. More specifically, the floor would have to be addressed before the top of the church could be more thoroughly evaluated. To complicate matters, it would not make sense to construct the floor without addressing foundation and utility related issues that could not be excluded. What could not be answered, is whether this would be money well spent, or simply thrown away; because completely rebuilding the roof and ceiling structure may in the end make the cost of the entire renovation prohibitive. The least disruptive solution was to eliminate the floor structure entirely and fill the crawl space with Flow-crete; a low strength concrete product that would lock in the footings that rested under the columns. This also would save significant costs in manpower and any necessity for heavy equipment that might do more harm than good. "Thinking ahead as we did this," said Kent Jones, "we planned for the construction of hollow trenches within the concrete to accommodate future mechanical and electrical components." In the end 50 truck loads of Flow-crete were required for the new floor.

### Thank God for the Plaster

Using a rolling scaffold over the newly installed concrete floor, the walls and the ceiling could now be more closely scrutinized. Although the fuel for the fire was attributed mainly to the original wooden floor, an argument can probably be made for the heat restraining capacity of the gypsum plaster in keeping the fire from consuming the walls and ceilings also. This is perhaps a history lesson that should not be lost on today's younger designers: Before we had sprinklers that often cause as much damage as the fire they suppress, our forbearers often considered



The fire smoldered and consumed most of the floor over a period of eleven hours.

it," offered Howard Noziska P.E. and Principal of Encompass. "The problem we faced, with the floor now gone, was that there was no way to inspect the

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# The Remarkable History of St. Mark's



Interestingly if were not for a strange quirk of fate, the site of the current St. Mark's church may have actually been what we now know as St. John's University. You see the original Benedictine University was intended for land that was donated at what is now Collegeville Minnesota. It seems however that the title transfer for that land was under challenge for several years, so a foundation for a college building was laid at the present site of the church. Now comes the quirkiness: By the time the foundation had been built, the title for the original site was cleared of encumbrances and the Benedictine missionaries decided to abandon the site in Shakopee.

What to do with a foundation without a building? Well I suppose you could build a church, but the community had a more pressing need. In 1862, President Abraham Lincoln signed a declaration known as the Homestead Act to accelerate occupancy of lands west of the Mississippi. As a result, the influx of settlers into Shakopee and beyond, went from a trickle to a downpour. This didn't sit well with the Sioux tribes in the area, as they saw their land and rights as an indigenous people being pushed aside by the influx of new homesteaders. During an uprising that lasted some 5 months of that year, the good people of Shakopee saw the three-foot thick foundation walls as a protecting fortress. And perhaps in a move more as a deterrent than a defense, moved a cannon into the area that is now the sanctuary of the church. Whilst sustainability probably did not enter anyone's mind, it was realized some two years later that the original structure used as the church was becoming too small for the burgeoning parish. So what better use could be made from the erstwhile university/ fort, but as the foundation for a new church.

What happened next could not be totally unexpected. St. Marks had become decidedly German speaking, so those of Irish descent decided to separate and erect a church of their own. Considering the entire population of the county surrounding the town was a little over 5,000 at the time, it was curious that it could support two Catholic parishes. Even more curious was the fact that St. Mary's, the new parish, was only four blocks from St. Marks.



How do you build the shell of a church in 1865? You start with native materials, basically limestone hauled by plough teams. You build a ramp and have the grit, sweat and determination of men to push the rocks, lime mortar and water used to construct the three foot thick walls up the steep incline with wheel barrels. Then you sharpen its corners and arrises with yellow clay brick, hauled from the only brick foundry located over five miles away. Three years later you have a church sans its spires. These were added in 1879.

## The Stained Glass Windows

In the Fall of 1917 St. Mark's gained a fresh face in the long lineage of pastors that have led the parish through the many years of its existence. Finding the church in some desperate need of updating, Father Mathias Savs is credited in giving the church a new lease on life with updating the heating plant, installing new floors, pews, insulating and yes re-plastering.



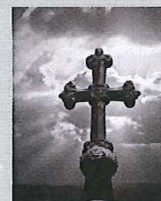
Franz-Josef

Father Savs was born in Austria in 1870 and spent time as a tutor to the offspring of the royal family whose patriarchal head was Emperor Franz- Josef. It was at this time in his life that Father Savs learned that the emperor had made plans to build a private chapel and commissioned the making of 10 ornamental stained glass windows which depicted 10 episodes of the gospel.

In 1914 the heir to the throne, Archduke Franz Ferdinand was assassinated in Sarajevo, which led to World War I. Around that same time as the first volleys of WWI were being fired, Father Savs went back to his homeland to discover that the now aged Franz - Josef had abandoned his plans for the chapel. Inquiring about the whereabouts of the windows, Father Savs learned that they were secretly buried

to prevent their discovery and destruction during the war. It was then that Father Savs negotiated to buy the treasured windows.

But for another quirk of fate, St. Mark's would not have been the beneficiary of these prized works of art, because Father Savs was working at another Minnesota church at the time that he negotiated their purchase.



*"Perseverance and spirit have done wonders in all ages."*

—George Washington 1776



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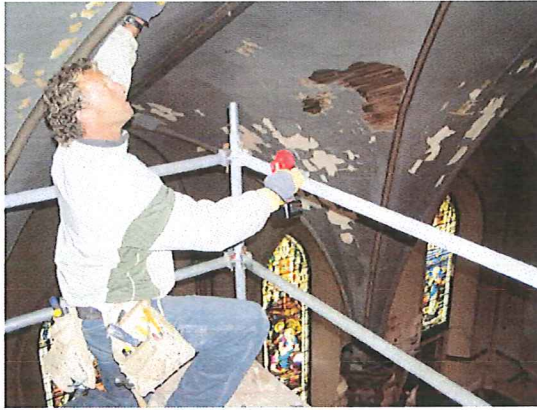
plaster for its fire resistive properties. In its hard state it is called "hemihydrate," which essentially means that it has returned to the rock like state of crystallization it had before it was mined from the earth. What makes it so great as a fire protective coating, is that as it consumes heat (calcines), it dissociates from the water molecules that were needed in its installation. The temperatures at which this transpires is in excess of 250° F. This perhaps explains why

some of the plaster through examination and subsequent lab testing was determined to have sustained serious damage. However what was remarkable and perhaps a testament to plaster's superior fire-resistive qualities is that the system of wood structural support behind the plaster also made it through the fire relatively unscathed.

"Originally we thought that much of the plaster could be spared," said Kent

Jones. Compromised areas were marked with red spray paint. "We thought that perhaps some of the loose plaster could be salvaged with a combination of washers and screws. Patching and flat work would then be skim coated with a layer of Dryvit Primus and reinforcing mesh." In the end it was determined that this process

would be too extensive. This was also exacerbated by smoke damage that continued to linger long after the smoldering fire had been extinguished. "I'm glad they decided to tear off the old plaster," said Rich Furry, Field Superintendent for Custom Drywall, who was in charge of renovating the plaster work. "There were spider cracks and failures all over the place and the smell would have never subsided without doing something about it," added Rich.



Inspecting the groined vaulted ceiling

#### Old Trade Meet New Trade

General Contractor, GuideOne Taylor Ball, is well known for its expertise in the construction of religious facilities, however Custom Drywall also had a

Rich. "We had a lot of experience going into this one."

When HOT SPOT e-mailed Father Stolzman to be interviewed for this story, a rather curious reply came back with respect to the plaster: "An interesting tidbit," Father Bill wrote, "the original newspaper article reporting the 1868 dedication of the church spoke of the beauty of this church – except (for) its 3rd rate plaster job." That remark was not lost on Rich Furry who noted the irregularity of the compound curves that made up the vaulted ceiling and the crookedness of the rope moldings that divided the vaults into distinct features. "I took a ton of pictures," said Rich. "If they wanted us to put everything back to the way it was, we would have to be able to show them why we didn't want to do that."

#### Silk Purse Out Of Sow's Ear

The rehabilitation began by carefully taking down the plaster from the walls and the ceiling. What was left of the ceiling was the skeleton of the many wood laths that had been individually



Removal of plaster revealed the wood laths that had been nailed in place 150 years before. Note the "dance floor" staging built high above the sanctuary to expedite the renovation.



The wood framework skeleton that supported the complex ceiling.

reputation that had preceded them. You might

recall, it wasn't too long ago that this newsletter wrote about Custom's exceptional work in renovating the Pantages Theatre in Minneapolis. That particular project seemed to be a calling card for many well seasoned plasterers to come out of retirement. "That wasn't the case this time around" noted

nailed up by pioneers 150 years earlier. Laths were also exposed on the outside walls which had been furred out in 1917 to provide insulation and then replastered. This exposed some secrets that had been hidden for 90 years: The damaged remains of a painted fresco depicting the crucifixion was revealed. This was later sealed and re-covered for someone else to discover in another 150 years.

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Behind the plaster ceiling a system of wood framework was revealed that was tied into timber trusses that were spaced fifteen feet apart. The roof itself was supported by cross members equally spaced between the trusses. The columns that rose through the sanctuary were tied into the bottom chord of the trusses. Some thought had been given to removing these columns in the renovation, to provide an unobstructed sight line to the altar. It was also determined that they were not designed to support the weight of the roof in the original construction. However what had become evident in the investigation is that the roof had sagged over the years and that some of the roof's load had indeed been transferred to the columns. All of this notwithstanding, their removal would have taken a lot away from the aesthetics of the original architecture and may have associated even more costs to renovating the roof.

Staging beneath the ceiling was in itself a challenging proposition. Scaffolding was set to provide for a platform floor directly below the ceiling some forty feet above the sanctuary. This was termed a "dance floor" by the Custom crew because the plywood floor was constructed without gaps and the resulting curves of the columns and ceiling resulted in a kind of ballroom appearance. Still more scaffolding was used on top of the dance floor to get to the upper reaches of the complex ceiling.

Although the wood structure behind the plaster survived the fire, the smoky smell had permeated it. This was resolved by coating the wood with inhibiting coating that sealed in the smell before the plaster renovations began.

This time around Custom's crew which included experienced lather, Eric Demars, used lasers to sight in the compound curves of the ceiling. Rich Furry, himself a lather described this process of sighting and setting the beads as "buggy whip bends," which probably is

as visual an account as anything we could describe here. This type of ceiling is what is referred to as a "groined vault" or sometimes called a "double barrel vault" or "cross vault." These were common in the Gothic cathedrals of Europe because of their loftiness and visual pretense of the cross as a religious symbol. Custom Drywall probably did not know it, but the groined vault is also probably one of the most difficult geometries to lath and plaster.



*Ribbed lath was used to replace the wood lath because of its stiffness and ability to span between the supports.*

To take up the support for the plaster that was lost in taking off the wood lath off the ceiling, ribbed lath was used. What makes this product unique is its high standing ribs that cleat into the plaster in a distinct herring bone type pattern. This configuration is also beneficial for its heavy gage wire stiffeners that run parallel through the sheets. At the walls a paper backed lath was used to keep the fresh plaster from backfilling into the cavities cre-

ated by the wood stud furring placed over the masonry walls.

### Once Guesswork Now Flatwork

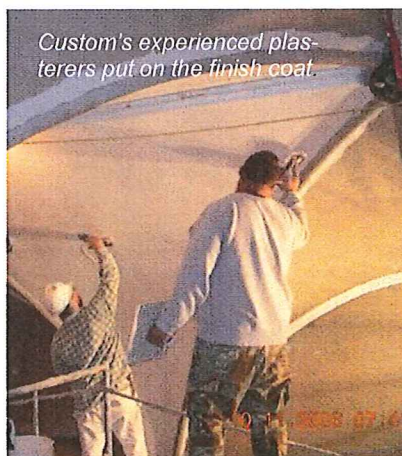
Where the old plaster had varied in thickness from 3/8" up to 2", it was corrected by modern plastering methods to a consistent thickness of 1". This was important in distributing the weight of the new ceiling more evenly. Plastering craftsman that employed their considerable technical skills included the likes of Greg Gouette and Greg Kannel of Custom's talented staff. Joe Salemi of USG was also instrumental in providing technical guidance along the way in the installation of Red Top gypsum plaster and Black Diamond finishing plaster. "Black Diamond," said Rich, "proved to be a little more forgiving in providing better workability and a little slower set time."

### Plaster? Do They Still Do That?

The ornamental work proved to be a process in combining new technology with old. The original molding that divided the vaulted ceiling into distinct panels was as crooked as a bucket of snakes. What seems apparent in the original construction is that given the compound curve configuration and thickness inconsistency of the plaster, a datum line could not be established to which a plaster mold could be run accurately. Nor could the molding be bench fabricated and then stuck in place without segmenting it into very small pieces.

Custom had a better idea. Based upon their considerable experience in using foam shapes for many EIFS projects over the years, they called upon their association with Dryvit Distributor, Tim Lutz to prefabricate eight foot arching pieces that could be prewrapped with Dryvit synthetic basecoat and reinforcing mesh on the ground and then positioned and fastened into place on the ceiling. Once up, a flap of reinforcing mesh from the new molding was feathered into place over the plaster flatwork with molding plaster for a seamless look. But that wasn't the extent of the issues that confronted Custom Dry-

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*Custom's experienced plasterers put on the finish coat.*





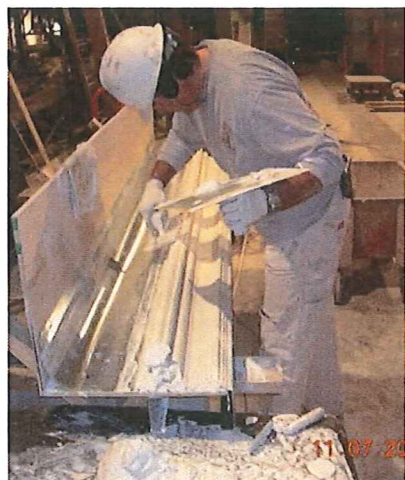
*Expanded polystyrene was used to replicate the rope plaster moldings dividing the vaulted ceiling into panels.*

wall: Several ornamental plaster moldings and cornice work had to be fixed and duplicated, including areas of trim under the balcony choir loft. Some of the capitals on top of the columns had to be recreated from molds created from originals out of silicone rubber.



*Making silicone molds of the original capitals with angel sentinels.*

Bases for the columns which could not be saved also had to have new molds made and plaster recast.



Another issue that remained to be addressed was duplicating the plaster columns that proved to be unsalvageable. Again modern technology had an answer for a 150 year old problem. Instead of fixing the columns, new ones were fabricated from fiberglass. But like what was done by hand long ago, plaster was employed to cover the forms and mend the seams between the sections that made up the new columns. Last but not least Custom even played a part in repairing some of the statuary, including the Crucifix that hung above the sanctuary.



*Plaster? Do they still do that? Yeah, they do it well thank you.*

### **3rd Rate Plaster No More**

Asked about Custom Drywall's manners and work ethic in supporting the renovation, Father Bill was enthusiastic in noting how respectful all of the workers were in showing their reverence to their surroundings.

I cannot end this article without one other little point about the plaster: As an ice-breaker in meeting Father Stolzman, I asked him if he knew that Saint Bartholomew is known as the Patron Saint of plasterers. Father Bill replied rather stoically, "No, I was not aware of that." Curious thing I mentioned, "Saint Bartholomew was martyred on August 24 (1572)." That happened to be the same day that St. Mark's tragically burned. Father Stolzman, understanding the implication, looked at me in stony silence. Frankly I felt like I was back in second grade. I hadn't met to be flippant or funny. But you have to admit it is a rather remarkable coincidence. Maybe old Saint Bart thought the original plaster work was 3rd rate also. It just took him a while to get around to doing something about it. *Steve Pedracine for HOT SPOT*