

The Restoration of St. Paul's Liberty Lutheran Church

For reference purposes, the overall plan for the restoration of the bell tower and the church is reproduced here. The project is organized by the various phases of the process, which includes the recommendations from the comprehensive assessment of the church that was created with recommendations of Facility Engineering and Vogel Brothers and completed in 2019. At the annual meeting in January 2020, the congregation approved of going forward with Phases, I, II, and III and to begin working on additional phases as funding permits.

Phase I.) Restoration of the Bell Tower - Total \$74,011

- restoration of six stained glass windows \$21,425
- repair and/or replacement of window framework and trim \$13,685
- installation of vented storm windows \$8,700
- restoration of the stonework \$21,300
- restoration of church masonry \$8,900
- repair of roof timbers



Phase II.) Restoration of Church Structure and Exterior Components - \$119,182

- repair and/or replacement of wood cladding and trim \$109,360
- Replace gutters and Downspouts \$6,090
- waterproof basement area \$3,732



Phase III.) Restoration of the Church Interior – Part 1 \$48,484

- upgrade furnaces, ducts, and control system \$45,553
- improve circulation throughout church and bell tower
- upgrade electrical components including burying line \$2,931



Phase IV.) Restoration of the Stained Glass – Sanctuary minimum of \$300,000

- restoration of the eight stained glass windows
- installation of six vented storm windows
- repair and/or replacement of window framework and trim

Phase V.) Restoration of the Church Interior – Part 2 \$63,969

- repair interior plaster (sanctuary and bell tower)
- paint interior (sanctuary and bell tower)
- restoration of the chandeliers- electric work donated by Troy and Jilly Coffey,
 - Bill Boerst restored light fixtures



Phase VI.) Restoration of the Basement and West Annex - \$15,000-60,000

- repair and paint walls in basement area
- renovate old kitchen area
- renovation of bathrooms in west annex

Phase VII.) Restoration of Church Grounds - Funded by RG Huston Company Inc

- modification of retaining wall on north side
- repair of concrete stoops (old narthex and south entrance to west annex)
- re-contour the landscape adjacent to south and west sides of church
- install walkway to the back of the church



Phase I and Phase II — (2019-2020)

Restoration of Bell Tower Stained Glass

Phase I of the restoration project actually began on July 8th, 2019, when Oakbrook Esser removed the six stained glass windows from the bell tower and transported them back to their studio in Oconomowoc. Since that time, the stained glass specialists at Oakbrook Esser have completely disassembled the windows, removing the entire lead structure of each. Special care was taken to preserve all original materials, but when broken glass needed to be replaced, new pieces were skillfully cut and carefully matched. During the summer and fall of 2020, they began re-assembling each window. Sections were glazed (or re-leaded) piece by piece using “restoration lead” that contains trace levels of alloy metals to insure stability and longevity. The final step was the cementing (or sealing) process, which helps to strengthen and weatherproof the windows. This process has been completed on all six windows, which means they are currently ready for installation as soon as the new framework and storms are in place.

Restoration of Bell Tower Structure

Restoration efforts on the bell tower structure began in mid-May of 2020. R.D. Woods Co., Inc. from West Allis started off by cleaning all stone surfaces with medium pressure water and an extremely mild detergent to ensure that all airborne dirt and soot were removed without any damage to the masonry or other surfaces. After finishing the three sides of the bell tower, it was determined that the front of the church and portions of the new narthex also needed cleaning, so those walls were washed as well. An aerial lift was brought on site to reach the upper portions of the church and the bell tower. It should be noted that a final sealant was not applied to the stone surfaces, since the recommendation was to let the church “breathe,” at least for now.

After completing the cleaning process, the masons inspected the bell tower and the church for damaged mortar joints and broken stones. They subsequently began cutting out the damaged areas with grinders and hand chisels so as not to loosen any adjacent joints or injure the edge or corners of masonry units. The final step involved the rather intricate process of pointing these joints with specialty mortar that is compatible with the original construction. The mortar was applied in layers and firmly pressed into place, then it was finished off with a beaded profile to match the existing design. The south side of the bell tower was in the worst condition, but as the new mortar continues to cure, it will look like new again. There were numerous cracks around the perimeter of each of the large, stained glass windows on the south side of the sanctuary – those have all been repaired. And the stonework at the back of the church (west side) was badly in need of restoration, but those cracks have now been repointed and the expansion joints have been caulked.

It should also be noted that the masons concluded their work by restoring the supporting structure for one of the purlin timbers in the attic above the sanctuary. Using high-strength concrete, the stonework was reinforced to ensure the purlin will be stable, especially when the roof is loaded.

Restoration of Bell Tower Structure

With the aerial lift on site, carpenters from Vogel Brothers removed the existing storm windows and frames from each of the three upper, circular windows on the bell tower. New wooden frames constructed by Steve Holmes were installed by the carpenters and anchored into the stonework via concrete screws. Steve then used scaffolding to access the three lower windows for the removal of the old storms and framework, followed by the installation of the new wooden frames. For now, plywood coverings are being used over the openings until the new storm windows are installed. We sincerely thank Steve for his truly exceptional work in replicating the framework to match the original construction. By custom-making each frame to fit its opening, he has preserved the historical nature of our church.

Respectfully submitted by R. Engelstad

Phase I and Phase II — (2020-2021)

Stained Glass Windows and Framework:

During the summer of 2020, Vogel Brothers, along with Steve Holmes, removed the existing storm windows and original framework for each of the bell tower windows. New wooden frames constructed by Steve Holmes were installed and anchored into the stonework. Steve custom-made each frame to match the original construction, thus preserving the historic nature of our church.

In March of 2021, Klein-Dickert Glass fitted new storm windows into each of the frames, which was followed by Oakbrook Esser installing the restored stained glass windows, as well as the air vents around the perimeter of each frame. The stained glass windows had all been sealed for weatherproofing and strengthening before the installation, and horizontal bars had been added to the windows (as needed) for reinforcing. In essence, the restoration of the stained glass windows in the bell tower has been completed. Future maintenance will include monitoring all caulking to ensure that bonding remains intact.

Attic Ventilation:

It was originally thought that when the ridge vents were installed on the roof of the church, they were never opened up to the attic cavity. We have since learned that this is not the case – the ridge vents are open.

Respectfully submitted by R.L. Engelstad

Phase II and Phase III (2023)

Upgrading the HVAC System

Harker Heating and Cooling, Inc. (from Madison) was contracted to upgrade the HVAC system in the sanctuary, add fresh air intakes and exhaust ventilation, and improve the circulation in both the sanctuary and the bell tower. In June, they began by removing the two old furnaces and the two old air conditioning (AC) units and cleaned the dust and debris from all the existing ductwork that serviced the sanctuary.

Two new furnaces and two new AC units were then installed in the furnace room of the basement and on the west side of the sacristy (exterior), respectively. The new HVAC equipment still utilizes the existing ductwork, which includes two air supplies (located in the front of the sanctuary) and five return vents (located in the baseboard of the sanctuary). However, for the fresh air intake and exhaust venting (for the two furnaces), new PVC pipes were installed through the existing basement window on the west side of the sacristy.

In order to improve the air circulation in the sanctuary, Harker installed a third AC unit, with an additional seven air supplies and one return. The fan/coil components were mounted horizontally in the east side of the attic above the balcony, and the condenser was positioned outside the west side of the new narthex. A fresh air intake was installed within the belfry, and the ductwork, which was both insulated and flexible, was installed in the attic. For the air supplies, three openings were cut in the ceiling of the sanctuary: two in the ceiling of the balcony, and two in the ceiling of the bell tower. One larger opening for a return unit was cut in the ceiling of the balcony. To match the trim and decor of the sanctuary, specialty register covers (for the new air supplies and return) were purchased.

(Amendment by Pastor Holly in 2025: The pvc pipe got warm and bowed in the attic causing an overflow of water to seep through the ceiling in June of 2024. Jordan from APT Heating and Cooling came and added another hoop to raise the pvc pipe in 2024. When he serviced the system in Spring 2025 he recommended the following precautions which we authorized to have completed. Jordan installed a new condensate pump to replace the existing gravity drain system, ensuring proper drainage

and preventing potential water damage. He adapted the pump to pvc piping in the attic and positioned the pump inside a waterproof tray for added protection. He relocated one of the wet switches into the tray to shut down the AC unit in case of pump failure and equipped the condensate pump with an 80dB audible alarm to provide immediate failure notifications. He then installed a dedicated GFCI outlet on the air handling unit (AHU) for the condensate pump power supply.)

Early in 2023, Steve Holmes installed the register covers in the balcony area, which included repairing the plaster around the perimeter of the openings, reworking the metal sleeves within the ductwork, and then firmly attaching the covers over the vents. The remaining covers were installed when the sanctuary was painted in June 2025. Steve Holmes created wooden frames to make up for the smaller vents in the bell tower. Dave from Schmelzer painting caulked and painted around each vent cover.

Nickles Electric (also from Madison) was contracted to extend the wiring needed for the two new furnaces and two new AC units, then provide the new circuiting from our electrical panels to the condenser and the fan/coil components in the attic. By July, the new HVAC system was fully operational.

Upgrading Electrical Components

One of the restoration goals is to waterproof the basement area below the sanctuary, specifically where water is infiltrating through the abandoned windows into the old Sunday school classrooms along the south side. The first step in sealing off the basement was to relocate the conduit (with the power lines) that entered the church through one of those abandoned windows. It was best to move this conduit to the back of the sacristy and enter the church through the furnace room.

Moreover, with the installation of the two new furnaces and two new AC units, along with the addition of a third AC unit, it was determined that the existing 200-amp service to the church may not be sufficient. Upgrading to a 320- amp service was recommended, especially since there may be additional loading on the system in the future as we continue with our restoration efforts. Since the power lines were going to be moved, now was the time to change over to the higher amperage service.

In August, to prepare for the service upgrade, Nickles Electric installed a new meter pedestal on the west side of the sacristy. Then in September, WE Energies replaced the utility pole and transformer near the road, using directional boring (instead of trenching) to install underground power lines from the road, along the sidewalk on the south side, to the new pedestal at the back of the church. Nickles Electric then worked with WE Energies to remove the old power lines and meter pedestal and complete the change over to the 320-amp service. Additional interior circuiting, including a new panelboard, was installed by Nickles Electric.

It should be noted that having the power lines removed from the south side of the church (and relocated underground) made a significant difference when the restoration efforts began on the wood cladding and trim for the fascia and soffit areas. Also, early in 2023, WE Energies will be installing an LED yard light on the new utility pole to provide illumination for the steps and sidewalk, as well as the handicap parking stall.

Replacement of the Wood Cladding and Trim

The \$100,000 anonymous gift towards the restoration project (given late in 2021), provided the needed funding to proceed with the replacement of the wood cladding and trim on the exterior of the church. Vogel Brothers was contracted for the removal, and subsequent rebuilding, of the fascia, soffit, and decorative trim. Steve Holmes was commissioned to cut the molding and decorative pieces, contour them to match the original woodwork, and then apply a primer coat of paint before the installation process began. We are sincerely grateful to Steve for his continuous dedication to this project and his expertise in woodworking to ensure we preserve the historic character of our church.

For the removal of the original wood cladding and trim, Vogel sub-contracted to Robinson Brothers, an

environmental company (from Waunakee) that specializes in lead-based paint abatement. An aerial lift was used throughout the removal process, allowing Robinson Brothers to complete this work in just a few days. Near the end of September, Vogel carpenters then began rebuilding the soffit area around the perimeter of the roof, replacing the wood cladding, decorative trim, corbels, and molding while using the aerial lift to expedite their efforts.

Since all gutters needed to be removed during this replacement process, it was decided to rebuild the fascia with a vertical face to accommodate the installation of a new gutter system. The carpenters also caulked the joints, especially between the wood trim and the stone masonry. To aid in ventilation, 27 circular, louvered-style vents were added to the newly rebuilt soffit area.

Originally, the plans were limited to the replacement of the wood cladding and trim associated with the original structure of the church. However, it was evident that portions of the soffit on the east side of the new narthex had water damage and needed to be replaced as well. In addition, pieces of decorative trim were missing on all three sides of the new narthex. Vogel carpenters completed these repairs and rebuilt the fascia so new gutters could be installed on the new narthex, which would be compatible with the church. They completed their work by November 18th. We are especially gratefully to Vogel Brothers for helping us to achieve our restoration goals by assigning experienced structural engineers, supervisors, and carpenters to oversee our restoration efforts and guide us through the challenges of preserving our historic structure.

Nickles Electric was also hired to reinstall the light fixture previously located in the soffit area in the northeast corner of the church. Since the original light was an older halogen fixture, Nickles Electric donated a new LED fixture to illuminate the turnabout and sidewalk area in front of the new narthex. We thank Nickles Electric for their donation and their continual support of this restoration project.

In December, Madison Aluminum Products installed new gutters and downspouts covering both the older sections of the church, as well as the new narthex. The contract included 6-in., K-Style, oversized gutters that were seamless and fascia mounted. The downspouts were also oversized with extensions that could be modified as landscaping around the perimeter of the church is addressed in the future.

The last step in the restoration process was to apply the final coat of paint. Vogel sub-contracted with Schmelzer Paint Co (from Madison) to complete this task. During July of 2023, the painters used an aerial lift to apply the finishing coat of paint to the wood trim on the bell tower, the church, and the new narthex.

Repair of the Roof Timbers

Before the Vogel carpenters left the job site this fall, they were able to finish the repair of the water-damaged common rafter in the northeast corner of the attic above the sanctuary. A “sister beam” was used to reinforce the damaged rafter, as recommended by a practicing and licensed structural engineer. In 2023, the masons will be contracted to restore the stonework supporting the purlin under this same common rafter, which would prevent any unwanted movement of the timbers.

Waterproofing the Basement Area

One of the restoration goals was to waterproof the basement area below the sanctuary, specifically where water is infiltrating through the abandoned windows into the old Sunday school classrooms along the south side. The first step was to relocate the conduit (with the power lines) that entered through one of the abandoned windows. That was completed in 2022. In May of 2024 Zander Solutions of out Madison was contracted to seal the south side of the church. RG Huston Company Inc then replaced the sidewalk after Zander solutions had completed their work.

Respectfully submitted by R.L. Engelstad

Restoration of the Church Interior- Part 2

Repair of the Interior Plaster (sanctuary and bell tower)

May 18, 2025 members of the congregation removed all but two pews from the sanctuary and placed them in the sanctuary. Steve Holmes and Bill Boerst had numbered the pews so that they would go back into their original locations with ease.

Sherwinn Williams paint came to the sanctuary to match all the colors. All the interior colors remained the same as what was there.

Schmelzer Paint company out of madison was chosen to patch and paint the sanctuary and area leading down to the Sunday school opening room. Instead of going with plaster (which would be very expensive) we chose to apply fiberglass mating into polymer on walls to mask the cracking. This went on all the walls in the sanctuary, inside the windows and on the ceiling of the bell tower and above the balcony (due to some water damage from the air conditioning unit).

Dave from Schmelzer patched existing walls and ceilings. Dave and his crew of three repainted ceilings, walls, painted trim, painted railings and columns. Schmelzer special ordered the gold paint striping from California. The designs on the ceiling were a decal and so Dave painted around them. It took Schmelzer paint three and a half weeks to complete the work.

Phase IV.) Restoration of the Stained Glass –

Restoration of the Stained Glass Light Fixtures - Funded by Troy and Jill Coffey in memory of Bonnie Kingswan (2025)

We sent our bell tower light fixture to Oakbrook Esser to get an estimate on repair of the light fixtures. Oakbrook Esser indicated this was not part of their work because the fixtures were not stained glass but rather an acrylic material and the metal holding the fixture together was aluminum and not lead. John from Nickles Electric took down every light fixture and updated the light fixtures with LED capabilities. Bill Boerst cleaned and repaired the light fixtures and sprayed the aluminum metal with gold paint. Bill also bought matching stained glass fixtures for under and in the balcony. Nickles Electric hung all of the lights. Nickles Electric also fixed the lamps above the chancel area and also changed them to accommodate LED bulbs.

Phase VII.) Restoration of Church Grounds - Funded by RG Huston Company Inc (2025)

Dwight and Judy Huston in conjunction with RG Huston Company, Inc renovated the exterior area of the church beginning in April of 2025.

RG Huston Company, Inc removed all the large rock, stones, asphalt, plantings, bushes and concrete to begin their work.

- They sub-contracted Mindham Landscaping out of Blue Mounds to install stone walls around the church and sign.
- They subcontracted with Cattell Construction from Madison to lay concrete sidewalks on the south side of the church and leading up to both entrances of the church.
- They sub-contracted Payne and Dolan to lay asphalt and increase the size of the circle drive to allow for more parking near the church.
- They also added curb and gutter for ease of parking. Their crew worked with the Town of Deerfield to update the underdrain system to remove water more efficiently.
- Their crew also took out the railings, sanded down and repainted them at their fabrication shop and replaced them. They added railings where the additional parking was added. They repainted

the fence leading toward the cemetery and the metal arch leading to the church. Denny Rahn painted the lampole in the circle.

- They sub-contracted with Uselman Plumbing, Inc from Cottage Grove added a water spigot outside the narthex for ease in summer plant watering.
- RG Huston Co Inc also consulted with a landscape architect to choose native plantings that are easy to maintain. They planted those and added mulch.
- Badger Floor Coverings added a tan epoxy with silica to both sets of steps leading up to the church.

Phase VI.) Restoration of the Basement and West Annex (2025)

Repair and paint walls in basement area

Nickles Electric has been contracted to replace all the neon lighting in the basement area with LED lights. They also replaced the old “switches” with new switches.

Renovation of bathrooms in west annex

Bill Boerst had Uselman Plumbing cap off the urinal in the men’s bathroom. He purchased a larger utility sink to replace the other sink. He has painted the bathroom and replaced the flooring to give it an update. It will also be useful for those on altar guild preparing and cleaning up communion.

Respectfully submitted Pastor Holly Slater

Other work not specified under plan:

Repair of the Roof Timbers:

Initially, the repair of the roof timbers was to be focused on a cracked ridge beam and a water-damaged common rafter near the northeast corner of the attic. When Steve Holmes began his preparation work for these repairs (in mid-March of 2021), he noticed significant cracking in a number of other timbers associated with two of the three truss structures within the attic. After consulting with a structural engineer from Strategic Structural Design, LLC (recommended by Vogel Brothers) and subsequently filing a claim with our insurance company (Church Mutual), we were instructed to close the church until the appropriate repairs could be made.

Due to the possible instability of the truss structures, Church Mutual also directed us to have the two trusses shored up to prohibit any further damage, and of course, ensure the safety of others. In addition, we were given permission by the insurance company to contract Vogel Brothers to handle the setting up of the supporting structure from the basement floor to the ceiling of the sanctuary.

To substantiate our claim, Church Mutual sent a forensic engineer to determine the cause of the damages to the trusses. In the Structural Engineering Assessment report prepared for Church Mutual, the forensic engineer described the damages as such:

“King post trusses are commonly used in simple roof structures because they utilize the fewest number of truss members. Vertical (gravity) loads applied to a king post truss results in compression forces in the principal rafters and struts and tension forces in the king post and tie beam. Visual observations indicate that the north principal rafter at Truss 1 and the north strut at Truss 2 were twisted about their longitudinal axes. Twisting of a doubly symmetric structural member under compression loads is consistent with torsional buckling in combination with the eccentric connections between the truss members. The twisting of the north principal rafter at Truss 1 was partially restrained by the mortise and tenon joint at the king post connection, resulting in the formation of stress concentrations at the connection. These stress concentrations resulted in the splitting of the king post and cracking of the principal rafter. The

partially restrained twisting of the north strut at Truss 2 at the principal rafter connection has resulted in the cracking of the principal rafter.”

The engineering assessment report also provided the following explanation as to the cause of this damage:

“Observations of the cracks and fracture surfaces indicate that the damage to Truss 1 and 2 formed recently. The fracture surfaces were generally of a brighter color than the adjacent exposed surfaces, had sharp edges, and were free of dirt and debris accumulation. Available information suggests that the most likely cause of the observed damage to the roof trusses at the subject property is an increase in the compression forces on the principal rafters and struts due to the weight of snow and ice on the roof. Given that the damage was generally limited to the north side of the sanctuary roof, it is likely that snow accumulation was greatest on this side. Observations indicate it is plausible snow accumulation occurred in the valleys adjacent to the north annex roof resulting in unbalanced loads on the roof. Considering the age of the structure and the constant loading of the principal rafters and struts, it is likely that long-term creep effects have resulted in a gradual reduction in the strength of the truss members, such that damage formed when the roof was subjected to snow loads. There was no visually discernible evidence of damage to the roof trusses consistent with other factors, including building movement, ongoing exposure to moisture, age-related deterioration or wind.”

Consequently, by the end of April, we were told by Church Mutual that since the cause of the loss was the weight of snow and ice on the roof, the cost of the repairs would be covered under our insurance policy.

From May until the end of August, Vogel Brothers, Strategic Structural Design, and a structural engineer from Richard C. Pierce & Associates, LLC considered various design options for the repairs until they came to a consensus on the optimal design in terms of structural integrity, load capacity, and longevity. After the approval of Church Mutual, Vogel Brothers completed the repair of the two damaged trusses and reinforced the remaining third truss.

To finalize the repairs to the roofing structure, the Restoration Committee has again contracted Vogel Brothers to finish the repair of ridge beam and the water-damaged common rafter – this should be completed early in 2022. In addition, the masons will be contracted in the spring of 2022 to restore the stonework supporting the other purlins, which would prevent any unwanted movement of those timbers as well.

Respectfully submitted by R.L. Engelstad

New Narthex Doors

The framing on the narthex doors was rotting and the doors were rusted. We coordinated with City Glass out of Janesville to replace the doors with aluminum frames and glass to match the sanctuary doors in May of 2025.