

CATHEDRAL CEILING REPAIR REPORT

What Happened

In late July, a large section of the ceiling plaster, about 4 ft. x 8 ft, fell over the middle of the right-side aisle (looking toward the altar). Given the large weight and size of plaster chunks which fell nearly 40 feet, we were very fortunate that no one was underneath it.



Why Did This Happen

We hired the engineering firm Wiss, Janney, Elstner & Associates (WJE), a large, nation-wide, company specializing in structural and architectural analysis of construction-related problems to evaluate the problem and determine the cause. Their evaluation reported that the plaster had slow growing cracks emanating from ceiling cutouts, such as lights, and ducts that separated the plaster from the underlying lath board. They have seen this failure before in buildings of this vintage (120 years old).



They discovered other areas of the ceiling where the plaster had cracked away from the lath and, based on dirt on the crack interface. The presence of dirt indicate that the cracks had been growing for a number of years.

Picture (left) of a second large area of the ceiling where the plaster was cracked and bowed down away from the lath. Evaluations from in the attic showed more areas around light cannisters where the plaster is cracked and separated from the lath board.

How Do We Fix It

The engineering firm, WJE, has provided a method for us to detect if there is underlying cracking and provided a method to mechanically reinforce areas where cracking has not started, or is still minor, which will prevent cracking in the future. It is very important to not just repair the damaged spot, but we must fix any additional areas where the cracking condition is underway. Also, to assist with technical issues and project management, we hired Nick Lardas of NIKO Contracting. Nick's company performs restoration work and he has a life-long connection to our Cathedral.

In a nutshell, the steps in the repair plan are

1. Protect all items in the church that could be damaged by a falling chunk of plaster including the Bishop's chair, altar screen, pulpit, and stained glass windows.
2. Erect scaffolding under the entire high portion of the ceiling for testing, plastering, and painting.
3. Test the structural integrity of the plaster across the entire ceiling. WJE will perform the testing
 - If an area has a good bond, install mechanical supports to prevent future problems
 - If an area has cracked away from the lathe board, remove the damaged plaster
4. Replaster both the area that has fallen and areas where cracked plaster needed to be removed. The newly plastered areas will use modern steel lath boards which provides much better structural support. Several coats of plaster will be required.
5. Paint the ceiling
6. Remove scaffolding and all protective enclosures and coverings.
7. Clean dust from the entire church.

What Has Happened So Far

The pictures below show the protections initially installed. Additional protections, (stained glass iconography) will be installed after the scaffolding is installed.



Protective covering over altar screen, Bishop's Throne and marble floor

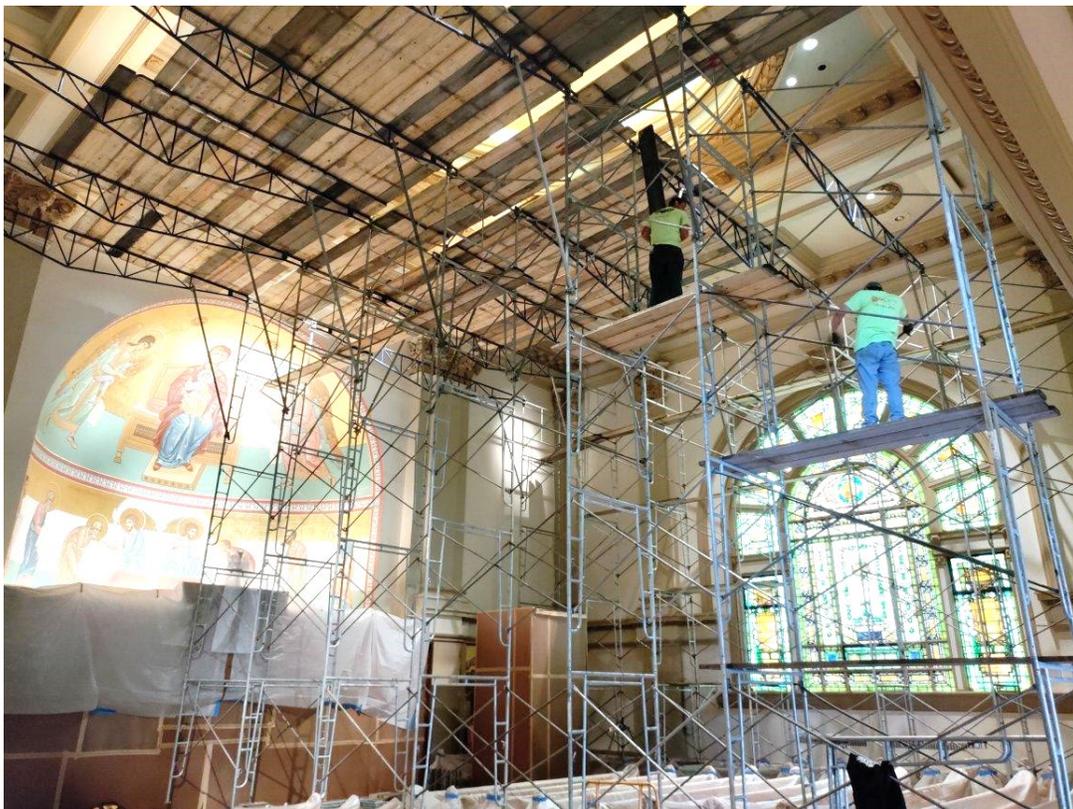


Protection over carpet, Baptismal font, carpet. Nektarios Icon removed from church



Pews wrapped. Scaffolding will stand between pews. Choir loft covered

Step 2 of the repair work has started – erecting the scaffolding. The scaffolding company, Arsenal, is erecting a wall-to-wall platform 32 feet above the floor. This will provide access and workspace for the plasterers, painters, and test engineers. The pictures below show what our church looks like at the half-way point of the scaffolding installation.





After the scaffolding is complete; the engineering company, WJE, will inspect the entire ceiling for debonding. This will determine how much of the ceiling plaster needs to be replaced.

How Do We Pay For The Repair

Based on the information currently known, we estimate the total repair cost to be nearly \$400,000. However, the actual cost will depend on how large the required repair area will be and the specifics of the repair procedures. The way we see the cost at this point.

Scaffolding	\$ 95,000	Known costs - but the number of months is not final.
Protecting Cathedral Contents	\$ 40,000	Final costs not known but good estimate
Engineering, Inspection & Project Mgt	\$ 60,000	Cost will vary by the extent of repairs
Plastering, bolting, and painting	\$170,000	This is a very rough estimate. Will vary by the extent of repairs needed
Construction and detailed clean up	<u>\$ 20,000</u>	Good estimate
Total Estimated Cost	\$385,000	

Our parish has the funds for these first two steps. The Building Fund has \$150,000 available. This money was our reserve funds and our savings toward the eventuality of a new roof. The Foundation Fund had a record income in 2021 of \$51,000 which is now committed to the project.

In order to have the funds available to complete the repairs as quickly as possible, we are arranging two shorter term loans. A parishioner has generously committed to loan the church \$100,000 for one year at no interest. This money will allow work to proceed without delay. Secondly, we are arranging a \$100,000 line of credit against the Foundation Fund balance. These loans will be paid back through donations and fundraising activities. Fundraising activities are in the early concept stage and any ideas would be welcome. We would deeply appreciate donations toward this repair project. This was an unforeseen event, but an event that that our community can overcome. Between the parish's current financial resources and the generosity of our parishioners, we can accomplish the repair and end up with a better facility than we had before.