# PRESERVATION AT TALIESIN

*A concrete pumping truck is used to deliever concrete into the Guest Wing.*

# Report Key

## Report Contents

*East elevation of the Taliesin Residence, the Guest Wing is located underneath the main floor.*

## Project Information

Because it provides the foundation on which the residential wing is constructed, the Guest Wing, located below the main floor of the Taliesin Residence, has been the starting point for many structural projects at the Taliesin Residence. This project, the foundation underpinning, is part of a decade-long effort to stabilize the entire wing. Previous work included a comprehensive site water management project, followed by extensive jacking and structural work at the south end of the Guest Wing below the Wrights' bedrooms.

The purpose of this project is to underpin and repair the Guest Wing foundations walls, which were constructed over stone rubble. These so-called Welsh footings have served well over time; however, they are unable to resist the lateral forces that are pushing the exterior walls down the hillside. Work performed includes: underpinning the foundations; the creation of small pilings to tie the foundation walls into the bedrock of the hill; and the creation of lateral grade beams to tie into the interior and exterior stone walls in order to stabilize them laterally.

*One of the stone walls that is failing due to lateral forces.*

*Hand mixing was neccessary so that as sections underneath walls were excavated they could be filled.*



## Project Progress

This project involved three major areas of the Guest Wing: the rooms below the Living Room; the stone walls of the boiler room; and the stone foundation underneath Mr. Wright's Bedroom.

Underpinning was carried out with the use of needle beams, where sections of walls are excavated and given new footings. After these sections are poured the remaining gaps are filled in to create a continuous foundation. The concrete pilings were formed by drilling nine-inch diameter holes into the underlying bedrock on both sides of the foundation, installing steel reinforcing, and then filling the holes with concrete. Grade beams were installed both adjacent to the exterior walls to provide lateral stability and also between walls at 90 degrees to the hill slope in order to tie interior and exterior walls together. The underpinning, grade beams and pilings, including the steel reinforcing, were tied together for stability. Most of this work has been completed and the Preservation Team is about to move to the next phase, as described below.

As a necessary part of this project, interior finishes, much of which had either been damaged by moisture, structural movement, or alteration, were removed, along with the concrete floors. This gave the Preservation Team an opportunity to plan for the next phases: the replacement of the original single pipe radiator system with updated Heating, Venting and Cooling systems for the Guest Wing and the routing of the necessary piping to update the HVAC in the two levels above the Guest Wing. After the mechanical, electrical, and plumbing work is completed, the historic finishes will be restored, based on physical and photographic evidence.

*Wall excavated with needle beams- the gaps were filled with concrete to provide a continuous footing.*

*Room #5, located underneath the Living Room, team members had to hand dig grade beam trenches and move earth out iwth 5 gallon buckets.*

*Detail of rebar connection between grade beam and pier.*

*Same room as above with trenches completed, these were poured continuously using a concrete pump truck.*

*Underpinning at the stone foundation under Mr. Wright's Bedroom.*

*After concrete has been poured*

*Trench in the boiler room ready for concrete to be poured.*



## Project Projection

As with all undertakings at Taliesin, research and documentation are an integral part of the project and work in the Guest Wing is no exception. From a historical perspective, the most obvious result of this research is restoration of original features and finishes. Work in the Guest Wing takes this research even further to document the original underlying structure and to preserve these features wherever possible. For example, failing framing members are nearly always left in-place and augmented.

Beyond the foundation work, all future rehabilitation work will be carried out so as to restore the interior's historic appearance. An example of this is the rehabilitated HVAC system which will consist of radiant floor heating, where possible, and retention of historic radiator enclosures even when the radiators have been replaced with fan coils. And every attempt will be made to integrate new plumbing and electrical systems invisibly into the historic fabric.

When completed, the Guest Wing will provide the necessary structural stability to preserve the significant spaces above. The Guest Wing rooms will be restored helping to revitalize the life at the Taliesin Residence.

*North interior elevation of room #4 with finishes and floor removed.*

*North interior elevation historic photo, this will be used to guide the restoration of this room. Photo courtesy of the Frank Lloyd Wright Foundation.*