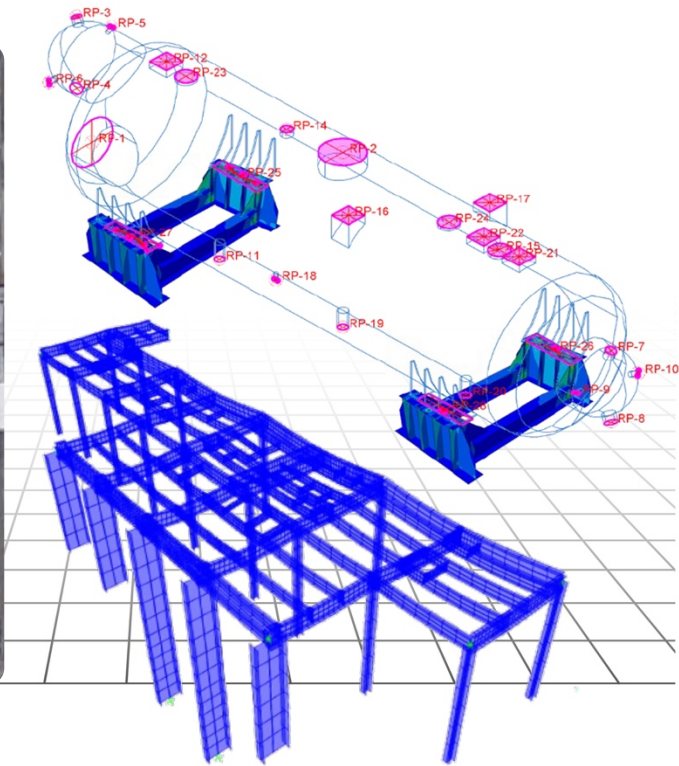


TURBINE BUILDING STRUCTURAL EVALUATION FOR REPLACEMENT OF EQUIPMENT

McGuire Nuclear Station



PROJECTS

CLIENT

Duke Energy
McGuire Nuclear Station
Charlotte, NC

PROJECT LOCATION

McGuire Nuclear Station
Huntersville, NC

ASSIGNMENT SUMMARY

- Planned replacement of Moisture Separator Reheaters in the Turbine Buildings.
- Original floor design did not account for pipe thermal loads on MSR's nozzles.
- Evaluate the adequacy of existing support frames and floor framing to support the weight of the new equipment.

PROJECT DESCRIPTION

SIA developed 3-dimensional mathematical models of the MSR units and their support frames and the floor framing at the operating floor of the turbine building. SIA evaluated all structural elements part of the MSR load path and confirmed the structure's adequacy to resist the demands due to the design loads provided by Duke Energy.

- Assessed combinations of pipe dead and thermal loads acting at MSR nozzle attachment locations to determine the most critical loading condition on the support frames and floor framing.
- Performed ABAQUS stress analysis of support frames to evaluate structural elements, welds, and bolted connections.
- Performed SAP2000 analysis of floor framing.
- Calculated framing member and connection capacities using the provisions of AISC 360 and ACI 318.



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