

SHELL OVERHEATING ADJACENT TO MANWAY





During a recent heat up of a sulfur furnace, the shell started glowing around the manway as the sulfur furnace temperature approached 1500° F. The heat up was stopped and the furnace blown cold.

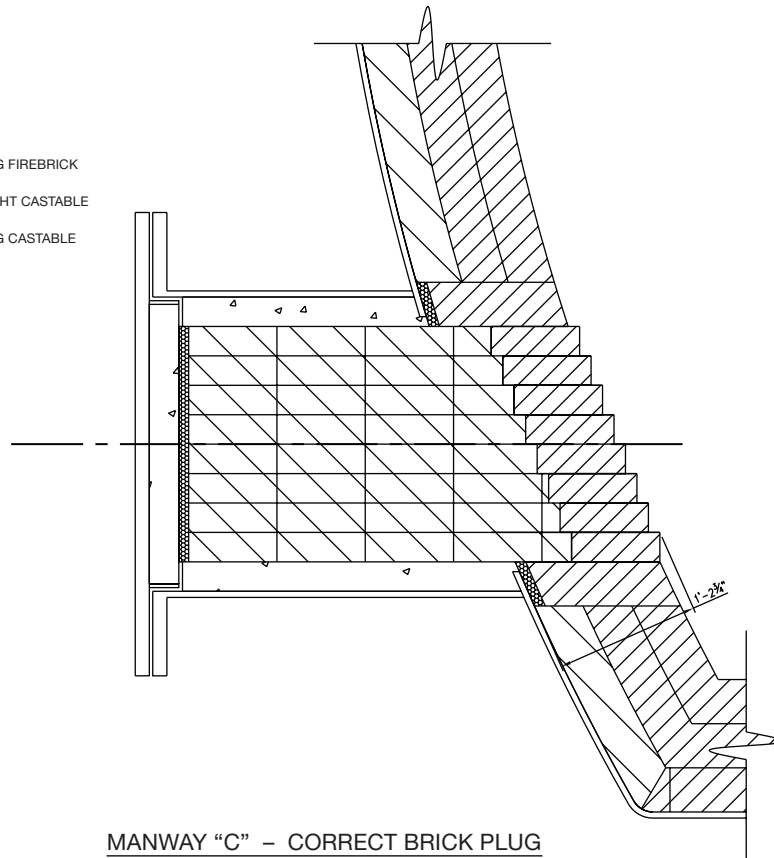
After inspecting the refractory plug that was inserted in the manway and referring to the design drawing for the furnace brick work details, the reason for the hot spot on the shell was obvious. A square ended plug had been inserted in the manway of the dished head of the furnace until it lined up with the upper bricks in the manway. This resulted in the plug only partially covered the bottom of the manway brick lining and did not provide a sufficient thickness of refractory lining between the gas and shell on the bottom side of the manway. The heat, from the hot furnace gas, penetrated the refractory at bottom of the manway and overheated the metal in the furnace shell.

A correctly configured manway plug was then installed and the furnace was reheated and put in operation without any addition problems. The bricks on the inner edge of the new plug were stepped to maintain the required insulation thickness at both the top and bottom of the manway.





Refer to the following sketches of the correct and incorrect refractory plugs.

LEGEND

-  FIREBRICK
-  INSULATING FIREBRICK
-  LIGHTWEIGHT CASTABLE
-  INSULATING CASTABLE



LEGEND

-  FIREBRICK
-  INSULATING FIREBRICK
-  LIGHTWEIGHT CASTABLE
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