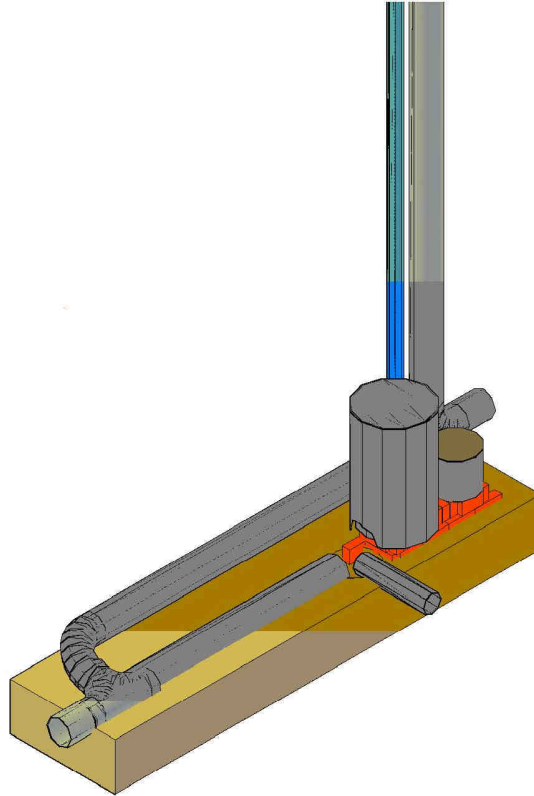


*Step 16 – 8" Horizontal Heat Exchange and Flue*



As discussed in Step 14 we had already roughly placed our horizontal heat exchange pipe. We leveled the horizontal pipe so that it sloped upwards  $\frac{1}{4}$ " per foot towards the vertical flue. We then fastened all of the pipe sections together using 3 x  $\frac{1}{2}$ " #8 self tapping sheet metal screws per connection. We placed a clean-out where the exchange

pipe has a 180 degree bend and where the vertical flue starts so that we could inspect and clean all straight runs of pipe. Originally, we had hoped to limit the total number of 90 degree elbows to two, instead we have three (two horizontally and one vertically). For the exhaust flue to exit the building close to the feed tube of the stove the heat exchange pipe needs to double back on itself (hence the 180 degree bend and three 90 degree bends total). The advantage of this layout is that we have access to the clean-out at the bottom of the vertical flue in reach of the person lighting the stove. The person lighting the stove can easily light and place a piece of paper in this clean-out to get the draft started on a cold stove. The disadvantage is the additional 90 degree

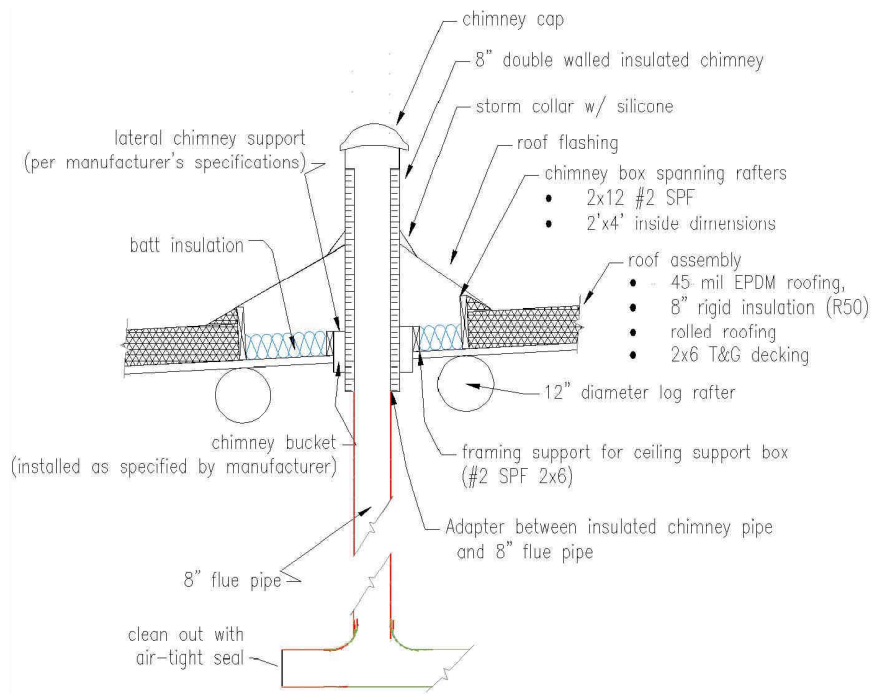
## ROCKET MASS HEATERS



elbow acts to slow down the flue gas. We are happy with this design as it makes lighting a cold stove simple. We have seen no issues with the additional elbow. We would be hesitant to add more turns, although we have seen photos of many stoves with more elbows than ours. We intend to line our clean-out openings with a layer of rock wool insulation. Otherwise, condensation could develop on the relatively cool clean-out caps.

(Notice by the photos that we are writing the steps in a slightly different order than we actually built the stove to link related steps together). We were now ready to get the stove exhausted outdoors. This includes 6' of double walled chimney starting 3' above the roof, continuing through it and ending 2' below the ceiling, as well as 6' of vertical single wall stovepipe

and 17' of horizontal heat exchange pipe, also single wall stovepipe, starting at the stove manifold.



A vertical flue limits the length of pipe that can be embedded in the cob bench. Many rocket mass heaters have been successfully constructed with used pipe and a flue that