Additive manufacturing enables the construction of near-arbitrary structures with the help of computational tool-path planning and print material properties. We explore an application of the technology to targeted repairs, such as mending holes or cracks, on 3D printed parts by using conformal tool-pathing, combining the precision of additive manufacturing with the strength and homogeneity of material adhesion. Repair configurations varying in shape, size, material, infill and loading type are tested in 3-point bending for structural strength and strain. We provide and summarize the collected data in addition to a structural analysis and optimization of parameters relevant to reparative 3D printing.