Orthogonal sets of both joints and conjugate normal faults formed in tabby walls of colonial (1757) Fort Dorchester during the 1886 Charleston, South Carolina, earthquake. The principal joint set (080^{o} +/-20^{o}) is identical to joints (080^{o}) observed in wells in 1886 and is subparallel to both 063^{o} SH_{MAX} and late Quaternary joints (065^{o} +/-20^{o}). The orthogonal joint set (170^{o} +/-20^{o}) is subparallel to: joints (~330^{o}) observed in 1886; the dominant trend of borehole-breakouts (~335^{o}); and orthogonal late Quaternary joints (335^{o} +/-20^{o}). Intersections of mean planes for each set of conjugate normal faults are subparallel to the orthogonal joint sets and plunge 7^{o} at 255^{o} and 8^{o} at 342^{o}. Post-1886 earthquake activity resulted in mode I opening (joint-reactivation) of some of these normal faults with subhorizontal separation of hanging and footwalls rather than shearing, hence, only five faults with minimal displacement-vectors were used to determine the 1886 orthogonal planes of slip of 069^{o}, 74^{o} and 159^{o}, 89^{o} preserved in the walls. Coeval orthogonal joint/fault sets require orthogonal tensile stresses, inferred to have resulted from slight arching of the area beneath the fort in 1886, consistent with (1) previously documented uplift of the epicentral area east of the Ashley River, (2) deflection of Cypress Swamp and Cooper River on opposing flanks of this uplift, and (3) deflections and terminations of Pleistocene coastal features which are consistent with uplift east of the Ashley River and subsidence to the west.

These orthogonal planes of slip approximate the attitudes of two reverse faults which could have caused the arching and produced the strike-parallel and cross-strike joint/fault sets. Most FPS define the nearby south-southeast-trending, steeply southwest-dipping, Ashley River zone of seismicity (4-8 km depth) characterized by reverse faulting. These FPS, though, have a wide range of orientations which are generally unfavorably oriented to severely misoriented with respect to the 063^{o} SH_{MAX}, and hence, are likely reactivated pre-existing surfaces. Orientations of FPS are strikingly similar to normal fault orientations in the fort walls, suggesting FPS-reactivated surfaces originated as normal faults (c.f., a southeast-trending, Late Eocene, growth-fault analogue near Williston, South Carolina). There, orthogonal sets of normal faults, developed in an arch above the main reverse-fault, were reactivated as reverse faults during subsequent growth. We suggest that the source fault, herein named the Dorchester fault, was probably a nearly vertical, northwest-trending, oblique (right-lateral) reverse fault that extends downward (8 to 13+ km) from the base of the Ashley River zone of seismicity and that it is seismically dormant since seismic monitoring began long after its strain release in 1886. The Dorchester fault had a rupture length and depth consistent with the large moment magnitude (M 7.3) for the 1886 Charleston earthquake, whereas the Ashley River zone of seismicity represents post-1886 strain-accommodation in the arched shallow crust.