The LSST uses a modified Paul-Baker 3-mirror optical design with 8.4-m primary, 3.4-m secondary and 5-m tertiary mirrors. The 3-mirror telescope feeds a 3-element refractive camera with a 5-m inner clear aperture to accommodate the 5-m diameter tertiary mirror (M3). The 3.4-m camera secondary mirror (M2) has a 5-m perforation that matches the annular shape of M1 and accommodates the assembly of the camera into the overall system. The annular geometry of M1 produces 15-35 m of on-axis collecting area, equivalent to a 6.7-m diameter unobstructed aperture that is required to meet the sensitivity requirements dictated by the science.

A measure of survey capability is the integrated throughput or effective area, defined as collecting area × FOV solid angle (AΩ), which for this design is 3318-m²sr. The intrinsic image quality from this design is excellent. The 80% encircled energy is <0.2" in all spectral bands and <0.2" in r and i spectral bands which are both predominate wind directions for limited turbulence within the observation cone. The effective focal length of the optical system is 10.23 m, which matches the final-focuser (12.345 m). The image scale is 0.55 m per second at the focal surface. The LSST uses a modified Paul-Baker 3-mirror optical design with 8.4-m primary, 3.4-m secondary and 5-m tertiary mirrors.