200 E Bay Street – Charleston, SC Historic Commercial / Office Building Case Study

Client: City of Charleston & Cullum Mechanical
Location: 200 E Bay Street, Charleston, SC 29403
Project Type: Historic Commercial / Mixed-Use Building
Project Size: Approximately 50,000–65,000 SF
Completion Date: March 19, 2026

Project Overview

Quantum Reality Capture (QRC) was engaged by the City of Charleston to provide comprehensive LiDAR scanning and Scan-to-BIM services for the historic multi-story commercial building located at 200 E Bay Street in downtown Charleston, South Carolina. The project required the accurate documentation of existing building conditions to support future planning, coordination, and renovation efforts while preserving the integrity of the historic structure. Leveraging advanced mobile LiDAR technology, QRC captured detailed interior and exterior conditions throughout the property and translated the collected data into highly accurate digital deliverables. The final package included survey-grade point clouds, a Level of Development (LOD) 200 Revit model, and coordinated architectural sheet sets consisting of floor plans, elevations, and roof plans.

Project Challenges

Historic structures present unique documentation challenges due to irregular geometry, aging construction methods, and limited or outdated as-built information. The 200 E Bay Street project required accurate capture of complex architectural features, efficient scanning of occupied commercial spaces, reliable coordination between stakeholders, rapid turnaround times, and high-quality BIM deliverables suitable for renovation and facility management workflows. Maintaining precision while minimizing disruption to building occupants and operations was critical throughout the duration of the project.

QRC Solution

QRC implemented a structured reality capture and BIM workflow utilizing advanced mobile LiDAR scanning technology to efficiently capture interior and exterior building conditions with survey-grade accuracy. Strategic

scan planning ensured complete coverage of all accessible areas while minimizing field time and operational interruptions. Collected scan data was registered, cleaned, and processed into a unified point cloud dataset before being translated into an LOD 200 Revit model representing the building's existing architectural conditions. QRC also delivered coordinated floor plans, elevations, and roof plans to support future design and renovation workflows.

Results & Impact

Through a combination of advanced LiDAR technology, experienced BIM workflows, and rigorous quality assurance procedures, QRC successfully delivered highly accurate digital assets on an expedited timeline. The resulting deliverables enabled the City of Charleston and project stakeholders to reduce field verification requirements, minimize uncertainty during planning and coordination, improve design decision-making, and establish a scalable digital record for future renovations and facility management initiatives. By providing precise, data-driven existing conditions documentation, QRC helped streamline project workflows while reducing risk associated with incomplete or outdated building information.

Technology Used – XGRIDS Lixel L2 Pro

The XGRIDS Lixel L2 Pro handheld LiDAR scanning system was utilized throughout the project to rapidly capture high-density point cloud data with exceptional mobility and efficiency. Combining LiDAR sensors, visual cameras, and integrated IMU technology with AI-powered SLAM processing, the device enabled real-time data acquisition and fast local processing capabilities. The lightweight handheld workflow allowed QRC to move efficiently through occupied and complex historic spaces while maintaining survey-grade accuracy. The technology significantly reduced field time, minimized return site visits, accelerated Scan-to-BIM workflows, and improved coordination between stakeholders throughout the project lifecycle.

About Quantum Reality Capture (QRC)

Quantum Reality Capture (QRC) specializes in LiDAR scanning, reality capture, drone mapping, and Scan-to-BIM services for the architecture, engineering, construction, and real estate industries. QRC delivers highly accurate digital documentation solutions that help clients reduce risk, improve coordination, and make informed project decisions with confidence.