

Case Study: 206 S Main Street – Greenville, SC

Downtown Commercial & Retail LiDAR Scanning + Scan-to-BIM Documentation

Client: City of Greenville & DP3 Architects

Location: 206 S Main Street, Greenville, SC 29601

Project Type: Downtown Commercial / Retail Building

Project Size: Approximately 90,000–100,000 SF

Completion Date: March 3, 2026

Project Overview

Quantum Reality Capture (QRC) was engaged by the City of Greenville and DP3 Architects to provide comprehensive LiDAR scanning and Scan-to-BIM services for a multi-story downtown commercial and retail building located at 206 S Main Street in Greenville, South Carolina. The project involved documenting approximately 90,000–100,000 square feet of existing building conditions to support redevelopment planning, architectural coordination, and future renovation initiatives. The City of Greenville required highly accurate existing conditions documentation that would provide architects, engineers, and stakeholders with reliable digital assets for design development and project planning. Utilizing advanced mobile LiDAR scanning technology, QRC captured both interior and exterior conditions throughout the property and translated the collected data into scalable BIM deliverables and coordinated documentation packages.

Project Challenges

Downtown commercial redevelopment projects often present unique challenges due to occupied spaces, complex building layouts, aging infrastructure, and limited access within active urban environments. The 206 S Main Street project required accurate documentation across multiple commercial and retail levels, efficient field workflows within an active downtown environment, rapid project turnaround to support redevelopment planning, reliable coordination between project stakeholders and design teams, and high-quality BIM deliverables suitable for renovation and planning workflows. The project demanded a streamlined reality capture workflow capable of delivering highly accurate documentation within an accelerated timeline while maintaining consistency and quality across all deliverables.

QRC Solution

QRC implemented a structured LiDAR scanning and Scan-to-BIM workflow designed to maximize speed, accuracy, and efficiency throughout the project lifecycle. Using advanced mobile LiDAR scanning technology, QRC captured comprehensive interior and exterior building conditions with survey-grade precision. Strategic scan planning allowed the project team to efficiently navigate the multi-story commercial property while minimizing disruptions to daily operations and surrounding downtown activity. Collected scan data was registered, cleaned, and processed into highly accurate survey-grade point clouds. Rigorous quality assurance procedures ensured reliable alignment and consistency throughout the dataset before BIM translation and documentation development. QRC translated the processed point cloud data into an LOD 200 Revit model representing the building's existing architectural conditions. In addition to BIM modeling, QRC delivered coordinated site plans, floor plans, reflected ceiling plans, exterior elevations, and roof plans to support redevelopment planning and future renovation workflows.

Results & Impact

Completed within an accelerated 15–20 day timeframe, the 206 S Main Street reality capture initiative provided the City of Greenville and DP3 Architects with highly accurate digital documentation that streamlined redevelopment planning and reduced project uncertainty. The resulting survey-grade point clouds and BIM deliverables enabled stakeholders to reduce field verification and return site visits, improve coordination between architects, engineers, and consultants, accelerate planning and redevelopment workflows, minimize design risk associated with outdated or incomplete documentation, and establish reliable digital records of existing building conditions. By leveraging advanced LiDAR scanning and Scan-to-BIM workflows, QRC helped create a scalable digital foundation for future redevelopment efforts while improving efficiency, coordination, and project decision-making.

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 speed, mobility, and accuracy. Combining LiDAR sensors, visual cameras, IMU technology, and AI-powered SLAM processing, the Lixel L2 Pro enabled real-time spatial mapping and accelerated local processing capabilities. The lightweight handheld workflow allowed QRC to efficiently navigate interior retail spaces, exterior conditions, and complex building layouts while minimizing disruptions to active businesses and surrounding downtown operations. The technology significantly reduced field collection time, accelerated Scan-to-BIM workflows, minimized return site visits, and improved overall project efficiency for this large-scale downtown redevelopment initiative.

Deliverables

- Survey-grade registered point clouds
- LOD 200 Revit model
- Coordinated site plans
- Floor plans
- Reflected ceiling plans (RCPs)
- Exterior elevations
- Roof plans
- Quality-controlled digital documentation package

About Quantum Reality Capture

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