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KALAHEO AVENUE RECONSTRUCTED SEWER (EMERGENCY WORK): RESOLVING DIFFICULT GEOTECHNICAL DESIGN AND CONSTRUCTION ISSUES

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ABSTRACT: The Kalaheo Avenue Reconstructed Sewer (Emergency Work) project completes the installation of approximately 4,000 linear feet (originally 12,000 feet) of 48-inch diameter gravity sewer using microtunneling methods, approximately 2,000 linear feet of rehabilitation of an existing 54-inch diameter gravity sewer using CIPP methods, and installation of approximately 6,000 feet of collector sewer using pilot tube microtunneling methods and open trenching methods. The sewer alignment traverses a narrow very busy two lane roadway in the town of Kailua, on Oahu, Hawaii.

The project was initially bid and awarded to a joint venture contractor in 1999 (Contractor A). Contractor A claimed unconstructable shaft problems, and mainly due to unanticipated geological conditions, this contract was terminated. With supplemental geotechnical investigation and modification of specifications and contractor qualification requirements by a new trenchless and geotechnical engineer, the project was re-bid within a few months and awarded to Contractor B. Contractor B proved that the shafts and microtunneling can be constructed as work restarted in 2003 but work site cleanliness was a significant problem to the surrounding neighborhood, and the second half of the contract was re-bid under emergency procurement in view of the delays, the deteriorated state of the existing sewer, and related sewer collapses. Contractor C overcame the problematic ground conditions, including flowing sands, steel debris and steel pile remnants in shaft excavation and microtunneling zone. The MTBM mined through a buried steel sheet piles, was flooded once and repaired and re-launched. Important aspects of geotechnical design approach, specification requirements, qualifications requirements and construction management approach will be described and discussed. Pros and cons of pilot tube microtunneling and open trench excavation in flowing sands will be discussed.