

PLANNING, CONCEPTUAL DESIGN, AND ALIGNMENT SELECTION FOR THE DEEP SEWER TUNNELS FOR THE DOWNTOWN REDEVELOPMENT OF AUSTIN, TEXAS

Jon Kaneshiro¹, P.E., G.E., C.E.G.
Eric Dawson², P.E.
Russel Jernigan³, P.E. Ph.D.
Lewis Yates⁴, P.E.
Stan Evans⁵, P.E.
Michael Boyle⁵, P.E.

¹ Parsons, 110 W. "A" Street, Suite 1050, San Diego, CA 92101

² Parsons, 8000 Centre Park Drive, Suite 20, Austin, TX 78754

³ Brierley Associates, 8613 Cross Park Drive, Austin, TX 78754

⁴ Fugro Consultants LP, Cross Park Drive, Austin, TX 78754

⁵ City of Austin Clean, PO Box 1088, Austin, TX 78767

ABSTRACT

Deep sewer tunnels are required to meet future growth and demands of downtown redevelopment and growth for the City of Austin. The project requires trenchless construction to avoid surface disturbance. Various alternative construction methods were evaluated including pipe jacking/microtunneling, trenched construction, and deep tunnels. In addition because of traffic considerations, the project requires avoidance of shafts, thus limiting the opportunities for microtunneling methods. Consequently, deep tunnels were selected to limit the number of shafts. Moreover, the selection of the route involved the evaluation of four major alignments, many sub-alternatives, and the location of major construction shaft locations. The finished diameters of the conveyance lines vary from 24 inches to 96 inches with total alignment lengths varying from 19,000 to 29,000 ft in length with 1 to three crossings of Austin's Town Lake and up to 6 shafts. Downtown redevelopment as well as an active and healthy community put significant limitations and constraints on alignment selection and shaft locations. Geology too played a major role in final alignment selection. While the geology in downtown Austin is often considered ideal in terms of uniformity, there were many foundations to be concerned with, and the final alignment crosses Town Lake three times under faulted and potentially difficult ground with low cover.

This paper discusses a major underground project for downtown Austin and discusses the alignment selection process and the alignment selected to carry through for design and construction. The paper presents the opportunities the team took toward optimizing the project configuration from type of conveyance structure to alignment and shaft site selection and will be of interest to planners, designers, and contractors.