



## The Americo Vespucio Oriente II Project Chilean Ministerio de Obras Publicas

**Location:** Santiago, Chile

**Date:** 2016 - 2017

**Structure:** The Americo Vespucio Oriente II

**Length:** 5.2 Kilometers (3.2 miles)

**Cross-Section:** 2 Tunnels of 250m<sup>2</sup> to 300m<sup>2</sup> (2,690ft<sup>2</sup> to 3,230ft<sup>2</sup>)

**Geology:** Fill, Vashon till, Vashon advance outwash, Pre-Vashon glaciolacustrine, other Pre-Vashon deposits fluvial and lacustrine

**Cost:** \$800 million USD

**Client:** Chilean Ministerio de Obras Publicas (MOP)

**Owner:** Chilean Ministerio de Obras Publicas (MOP)

and clayey sand. Vashon advance outwash that consists of layers on sand; silty sand to gravel; and silty, sandy gravel. Pre-Vashon glaciolacustrine deposits composed of cohesive clay, silty clay, to clayey silt with thin beds or laminae of fine sand and silt. Other Pre-Vashon deposits-fluvial and lacustrine composed on pre-vashon, non-glacial deposits including dense sand and silt. Anomaly Zone composed of a chaotic assortment of angular clasts.

Gall Zeidler Consultants (GZ) provided MOP a summary report outlining considerations for design and construction of the AVO II tunnels to assure operational continuity of the Metro de Santiago Line 4. The report identified and detailed the requirements that the bidders must include as part of the proposals (Method Statement, experience, structural design, impact assessment, etc.) and provided guidance to MOP on how to structure their team from the procurement phase through construction.



**Figure 1.** Schematic design of AVO II tunnels under Metro's Line 4 (Courtesy of Chilean Ministerio de Obras Publicas).

### Design and Construction Considerations for the Project as Part of the Procurement Services:

The Americo Vespucio Oriente II (AVO II) is the construction and operation of 2 traffic tunnels under the same name road, with a length of 5.2 Km between the districts Principe de Gales in the north and Los Presidentes in the south, closing the Americo Vespucio ring around Santiago with an approximate investment of USD \$800 million.

The tunnels will have the cross section between 250m<sup>2</sup> and 300m<sup>2</sup> run semi-parallel under metro's Line 4 at a depth that early analysis consider will create small deformations in the tunnel and the rails of metro's line, as seen on Figure 1. Also, the AVO II tunnels will pass under the station Plaza Egana, where already two levels of metro tunnels cross for Lines 3 and 4.

The topographic ridge is underlain primarily by fills of variable thickness that overlie a glacially consolidated stratigraphic sequence. In descending order from the youngest to oldest, the stratigraphic sequences consist of the following: Fill that are composed of nonstratified, mixtures of silt, sand and grave, with trace of cobbles, wood and brick fragments. Vashon Till that are composed of sediments varying from silts, sandy silt, silty sand,