



Alto Maipo As-Built Operation and Maintenance Services

Alto Maipo SpA

Location: San José de Maipo, Chile

Date: 2019 – 2021

Structure: Water conveying tunnels and powerhouse caverns, intakes, slopes, discharge tunnels, shafts

Length: Approximately 41 mi (66 km) of TBM and Drill & Blast tunnels

Cross-Section: Circular / horseshoe / ovoid tunnels with diameters ranging from 4.5 to 7.7 m (15 to 25 ft)

Geology: Stratified sedimentary and volcanic / volcanoclastic rocks (limestones, shales, sandstones, conglomerates, gypsum, andesites, tuffs, volcanic breccias) intruded by andesitic and dacitic veins and dikes and small intrusive granodioritic bodies

Cost: US\$ 3.05 billion

Client: STRABAG SpA

Owner: Alto Maipo SpA

width x 30 m height (80 x 100 ft). Upon completion, the power plants will be capable of generating a combined total output of 531MW of electricity.

In previous stages of the project, Gall Zeidler Consultants (GZ) has been involved in Independent Verification Services during construction. This scope has now expanded to provide services to aid in the final completion of the civil work. These services include the development and review of As-Built Drawings and other necessary documentation, as well as the development of the Operation and Maintenance Manual for all tunnels and underground civil work. These items will be provided to the client during the hand over process of the Alto Maipo Hydroelectric Project.



Figure 1. Powerhouse Las Lajas Cavern.



Figure 2. Volcán Tunnel.

Development of Operation and Maintenance Manuals and As-Built Drawings for Tunnels and Civil Works:

The Alto Maipo Hydroelectric Power project comprises the design and construction of two run-of-the-river hydroelectric plants arranged in hydraulic sequence located in the high-altitude area of the Maipo River basin, 50 km (9.3 mi) southeast of Santiago, Chile in the municipal district of San José de Maipo.

The project captures the flow from the Colorado river basin in the north and the Volcán and Yeso river valleys in the south. The majority of the works will be underground, including powerhouse caverns, headrace and tailrace tunnels, access tunnels, surge and pressure shafts, intake and discharge tunnels, slopes, shafts constructed via raised boring method (RBM), and other water adduction systems. The tunnels of the project are excavated mostly in volcanic and volcanoclastic rocks under high hydrostatic pressure and ground cover reaching 2,000 m (6,500 ft). The two largest structures are the Powerhouse caverns. The Las Lajas Powerhouse cavern is 80 m (260 ft) long with a cross section of 20 m width x 36 m height (65 x 120 ft), and the Alfafal II Powerhouse cavern is around 70 m (230 ft) long with a cross section of 25 m