Chapter 15

The Leaning Tower of St. Moritz

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This chapter explores the history of the Leaning Tower of St. Moritz and describes the stabilization attempts.

15.1 Introduction

The 13th-century Leaning Tower of St Moritz (Figure 15.1), is located in the historic centre of the famous Swiss ski resort town in the compression zone of the 10 million m^3 Brattas Landslide. Over hundreds of years, this slowly creeping landslide, which is blocked by a rock outcrop below the tower, had damaged the adjacent St. Mauritius church to such an extent that it had to be demolished already in 1893 due to dangerous differential settlements and cracks. The fact that the 33 m tall tower has survived its 5.40 degrees downslope inclination should not be taken for granted: this is an outcome of a century-long effort by several outstanding Swiss engineers who came up over the years with original stabilization solutions [1].

15.2 The Brattas Landslide

The Brattas-Fullun landslide, which constitutes the major factor for the special geotechnical conditions of the Leaning Tower, is located on the northern slope above the village of St. Moritz [2]. It is composed of a 600 m wide clastic flow bounded on both sides by almost parallel shear surfaces (Figure 15.2, top). The detachment zone is located on the southern edge of the terraced surfaces of the Val Saluver at an altitude of 2400 m a.s.l., and the area stretches over a horizontal distance of 1.5 km to a lower altitude of 600 m with the average inclination of about 20°. The clastic flow consists of two parts (Figure 15.2, bottom), with some geological evidence of a rock outcrop at the boundary between them.

The upper zone, which extends from the detachment zone between Sass Runzöl and Sass da Muottas to the crest at an altitude of approximately 2100 m, is composed of a rockfall with boulders reaching 2-3 m in diameter. The lower 600-700 m long zone, which