

## Investigation of the granite related to faulting and engineering geology

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### 1. Introduction

At the southeastern part of Korean peninsula, there are five sets of the NNE trending faults such as Yangsan fault and one set of NNW direction fault which is Ulsan fault. Constructing Waste disposal site is located to eastern part of the Ulsan fault and around this area Quaternary faults are found last over decade by geologists.

The purpose of this study is the investigation the waste disposal area which is distributed by granite on the faulting and geologic characteristics sited by the report after KHNP & HEC(2008)

### 2. General geology and Faulting

The site is distributed by sedimentary rocks, granites, dike rocks, rhyolite and alluvium which is along the valley. The sedimentary rocks crop out the southern area and the granite is at the northern area (Fig. 1).

Five faults are developed at the area, which are two ENE direction faults (Z22 & Z31), two WNW trend direction faults (Z21 & Z32) and E-W fault (Z23) (Fig. 1). These faults were reactivated at least 6 times from late Eocene to present (Fig 2, a. KHNP & HEC, 2008). By the trends of these faults without consideration of the movement sense they were able to make R, R' the nearly E-W compression(O1) with P (Fig. 2 b). Also E-W direction of normal fault could make the compression regime.

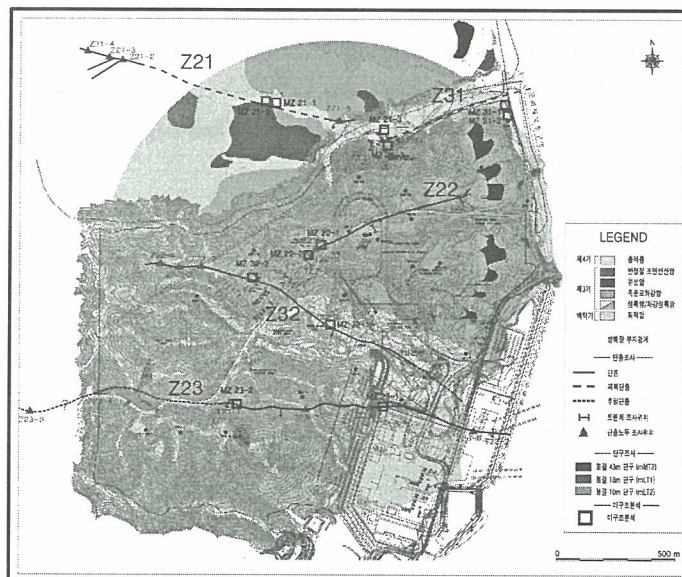


Fig 1. Geological Map of the W.D site (after KHNP & HEC, 2008)

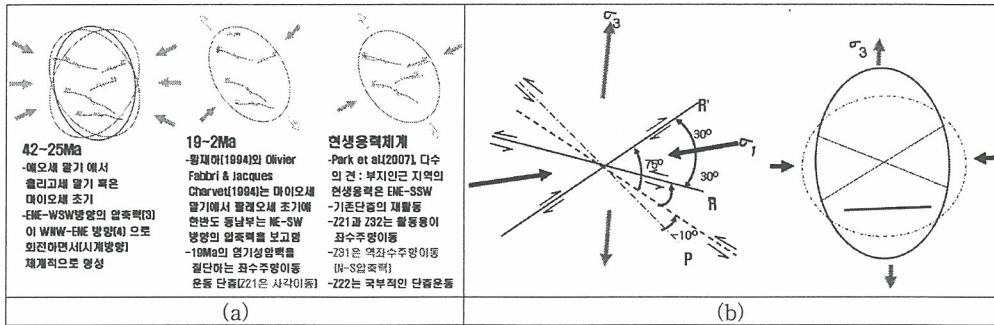


Fig 2. (a): sequence of faulting at the site (after KHNP & HEC, 2008)  
 (b): sinistral strike-slip zone, Riedel shear arrays for both sinistral and dextral faulting, R and R' form first, P shear 'come in' a little later [After Woodcock and Schbert(1994)]

### 3. Geo-engineering characteristics of Granite

The granite is formed by slowly cooling magma at the deep underground. So in general it is equigranular texture and relatively isotropic under the fresh and undeformed condition with over 1,500kg/cm<sup>2</sup> uniaxial compressive strength and 2,000m/sec by seismic velocity. However, when it is weathered, the feldspar is easily weathered and makes the residual soil like sand. During the weathering rock surface easily makes an exfoliation and the surface which is boundary between weather and fresh one, is very irregular (Fig. 3).

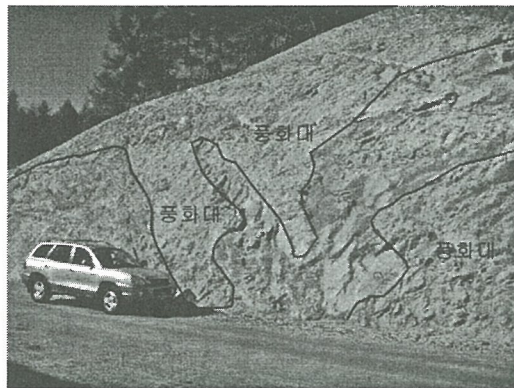


Fig. 3. Very irregular weathering contact at granite outcrop

### 4. Conclusion

The waste disposal site is located in eastern part of the Ulsan fault. The site is distributed by sedimentary rocks, granites, dike rocks, rhyolite and alluvium which is along the valley. Five faults are developed at the area, which are two ENE direction faults (Z22 & Z31), two WNW trend direction faults (Z21 & Z32) and E-W fault (Z23). These faults were reactivated at least 6 times from late Eocene to present. During the weathering the granite surface make an exfoliation and weathering surface is very irregular. By these geologic and structural conditions, the site can be have another directions of small faults except Z21, Z22, Z23, Z31 and Z32 and irregular weathering surfaces.