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TUNNEL SECTION IN SOILS AND MIXED SOIL AND ROCK (cont'd):

The sensitivity of the formation to small amounts of water is shown by the slide caused by drill water at holes 6 and 7 and illustrated in plate 9.

The most likely place for a slide or mass movement of the material which would cause cracking resulting in further slides is between the two reck spurs in the vicinity of drill holes 3, 6 and 7. There is some suspicion that such a movement may already have taken place there and one purpose of the drilling as laid out was to obtain evidence on this point. This evidence would consist in distortions and/or dislocations of the fine bedding planes. Another purpose for the drilling was to determine the bedrock contours under the soils as these too might have an influence on the stability of the slope, favorable or unfavorable. Still another purpose was to find out whether or not the basal silt—clay strata have down slope dips which would be an unfavorable feature.

SUMMARY

No difficulties will be found in driving the rock section of the tunnel and there is no danger of the blasting having any affect on the springs or more than an insignificant affect on the appearance of the rock cliffs. It is the writer's opinion for what it may be worth that a nicely designed and neatly constructed tunnel entrance will not mar, and may even enhance, the beauty of the eastern approach of the Iron Gates and that the lower road will present the motorist with a more advantageous view of this magnificent canyon.

Notwithstanding the above remarks it is recommended that the specifications demand the use of the aforementioned methods of reducing

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