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ILLINOIS STATE
GEOLOGICAL SURVEY

Illinois State Geological Survey
Urbana, Illinois

Geological Resources Section

Report on Examination of Geological Situation
along a Proposed Highway near Palos Park

November 23, 1932

Approved:

M. M. Leighton
M. M. Leighton, Chief

Signed:

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Purpose. The object of the examination was to observe and determine so far as possible the geologic situation, particularly the occurrence and relations of peat and muck, along the proposed route of State Bond Issue Highway Route No. 52 near its intersection with and grade separation from State Bond Issue Highway Route No. 51, north of Palos Park. The examination was requested by Mr. Tuthill, assistant to Mr. E. C. Wenger, District Highway Engineer, Chicago, Illinois. Mr. Tuthill and Mr. F. A. Edwards, assistant engineer, were present during the examination. Mr. Edwards had made the soundings along the route and he had with him augers and plungers by which some samples were obtained during the examination.

Geologic Situation. The intersection of State Bond Issue Highways Routes Nos. 51 and 52 is located along and just north of the mid-point of the line between secs. 21 and 22, T. 37 N., R. 12 E., about a mile northwest of Palos Park. Route No. 52 runs generally east-west across the valley-flat on the south side of Calumet Sag Channel and crosses Route No. 51 on a raised grade separation. Numerous test-holes have been made along Route No. 52 and reveal that generally there is at the top a layer of solid peat uniformly several feet thick which grades through a few inches of marl to a layer of

light bluish clay and silt that varies in thickness due to the irregular surface of the bedrock on which it lies. At some places the peat is not so solidly developed and may be mixed with clay or marl, and elsewhere it is overlain by clayey sand. For the most part, the peat is saturated with water, but locally it has become sufficiently dried out that it is burning slowly.

Geological Interpretation. The valley of Calumet Sag Channel was one of the two outlets for glacial Lake Chicago. The large amounts of water that consequently flowed through the valley eroded all of the glacial drift that once filled it. When, as a result of recession of the glacier, outlets for the lake were opened up at lower levels to the eastward, the westward outlets were abandoned, and as the flow of water through them decreased, fine gravel, sand, silt, and clay were deposited. When the flow of water ceased, there was left a low, flat swampy, poorly-drained valley-bottom, in which peat accumulated. Wherever streams, such as Mill Creek for instance, flowed into the valley from its sides, a certain amount of sand, silt, and clay was washed in first to mix with the peat and later to cover it. The fan-like deposit or delta built by Mill Creek which lies a quarter of a mile east of the intersection of Routes Nos. 51 and 52 is obviously higher than the rest of the valley-flat. Similar deposits occur in front of other tributary streams.

Significance. Due to the erosion of the glacial drift in the valley by the water pouring from the glacial lake and to subsequent deposition of silt and peat, the material which now lies in the valley is soft, more or less unstable, and saturated with water. Due also to the fact that the erosion was accomplished by large amounts of water, the valley was eroded to a gradient much less than the small streams which now occupy it can control, and consequently the valley-bottom is in general a poorly-drained, swampy area.

Problem. The highway engineers desire to know if the peat and other material overlying the bedrock in the valley is so unstable and unsatisfactory as foundation material for the proposed highway that all of it should be excavated and replaced with more satisfactory material. They plan to remove all of the peat and silt for such distance along the highways as will be occupied by the approaches to the grade separation.

Opinion. It does not appear that the removal of the peat and silt along the proposed highway, except at its intersection with Route 51, is in general a necessary or desirable action, for the following reasons:

1. The peat is firm and solid, although saturated with water, so that it will not yield laterally

but will tend only to be compacted by the weight of overlying fill.

2. Although the material under the peat is marl and clay, most of it is so silty and sandy that it will not slide or slip readily, except that inasmuch as it is well saturated with water it may tend to flow laterally under pressure from above. However, it is so thin that even this tendency should not create serious effects. If adequate drainage could be provided, which is not possible, there would be absolutely no danger from this source.

3. At the places where the peat is covered by wash from side-tributaries, there is adequate support for the roadway.

In view of the fact that adequate drainage cannot be provided, the plan to excavate the peat and silt and replace it with more substantial fill material where the approaches to the grade separation are to be constructed is commended. The suggestion that coarser material be laid in the base of these fills, in order to permit ready drainage through from the south side to the north side, is also commended.