MEMORANDUM TO: MR. H. O. REED, ENGINEER OF DESIGNS
FROM: MS. JOHN D. MACOMER, CHIEF GEOLOGIST
By Wallace Taylor, R. R. Stuart and
Paul Clark, Geologists
Vance L. Batchelor, Regional Geologist
SUBJECT: Geological Report
Project No. 25-75 S-211 (3), Part II
Stations 124/90 to 70/00
Pottawatomie County

Fr. 1 M. W. of Fortuna
South 8 Miles

INTRODUCTION

This report presents geological information obtained by the Kansas Highway Commission through field study and is submitted for use in the design and construction of the above project with reference to the formations that occur and the engineering problems expected by the geology of the project.

The report is divided into three sections for the purpose of grouping the information and discussion of the different phases. This report is intended to be complete within itself, but is best used in connection with the Geo-Engineering Survey.

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SECTION I

Geological Description

and Pedological Sequence

Marl

Topsoil
1. Silty clay, gray-brown, contains chart fragments in some locations.

Glacial Till
2. Clay silt, reddish-brown, to a tan-brown, contains occasional sand grains.
3. Silty clay, tan.

Alluvium
4. Silty clay, grey-brown to tan-brown, with some chart and limestone fragments.

Residual Clay
5. Clay, dark red-brown.

Fort Riley Limestone Formation
Saracen Limestone Member
6. Shaly limestone, buff, platy.
7. "Bimrock", limestone, white, weathers buff, blocky, has a prominent horizontal break in its center.

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8. Very very shaly or shaly limestone, buff, platy.
9. Limestone, green, blocky.
10. Very shaly limestone, buff, platy.
11. Limestone, green, blocky.

Florence Limestone Member

12. Limestone, buff, blocky, contains scattered chert nodules.
13. Limestone, green, platy.
14. Limestone, buff, contains chert layers and nodules.
15. Limestone, green, platy.
16. Limestone, buff, contains numerous chert bands.
17. Limestone, green, platy.
16. Limestone, buff, blocky, has scattered chert.

17. Clay shale, green, platy varies in thickness.

18. Limestone, buff, blocky, contains chert, varies in thickness.

Murfreesboro Shale Formation

Blue Springs Shale Member

21. Shale, green, blocky, limy.

22. Shale, black, platy.

23. Shale, green, blocky, limy.


25. Shale, maroon, blocky, limy.

26. Shale, green, blocky, limy.

27. Shale, maroon, blocky, limy.

28. Shale, green, blocky, limy.

29. Shale, maroon, blocky, limy.

30. Shale, dark gray, blocky, limy.

31. Limestone, buff, blocky.

32. Shale, dark green, blocky, limy.

Murfreesboro Shale Formation

Elmwood Limestone Member

33. Limestone, gray, blocky, shaly, weathers brown.

34. Shale, bright green, platy.

35. Limestone, gray, blocky.
36. Shale, green, platy.
37. Limestone, buff, blocky, a variable zone, lenses.

Sandfield Shale Formation
Upper Sand Member
40. Shale, limy, tan, blocky, silty.
41. Impure limestone, light green, blocky.
42. Shale, bright green, platy.
43. Impure limestone, light green, nodular.
44. Shale, green, blocky, limy.
45. Shale, maroon, blocky, limy.
46. Impure limestone, light green, blocky, weathers to shale.
47. Shale, dark green, blocky, limy.
48. Shale, maroon, blocky, limy.
49. Shale, green, blocky, limy.
50. Impure limestone, light green, blocky.
51. Shale, green, blocky, limy.

Weyera Limestone Member
52. Limestone, light grey, blocky, somewhat massive pitted and solutioned ordinarily.
53. Shale, green, platy.
54. Limestone, buff, blocky.
55. Shale, green, platy, limy.
56. Limestone, buff, blocky, contains some chert.
57. Shale, green, platy.
58. Limestone, buff, contains 3 chert bands that are persistent. The chert bands vary in thickness from 0.4 to 0.8.
59. Shale, green, platy.
SECTION II.

OBJECTIVE OF THE PROJECT

This portion of the project begins approximately nine miles south of Fortuna and extends northeast for about eight miles. It follows, for the most part, the existing county road to the intersection of Highway 16.

This area is in the mature stage of its fluvial cycle. The hills are fairly steep and form prominent topographic masses which are capped by the highly resistant cherty limestones of the upper Pennsylvanian System. This area is typical of the Flint Hills type topography.

The mantle overlying the bedrock on this section of the project consists predominantly of a thin residual type which is composed of a reddish-brown clay with numerous chert and limestone fragments. On the flatter hills on the northern portion of this project there are some glacial till deposits. They consist mainly of a clay that contains some silt and scattered sand grains. The maximum thickness of the glacial till is 15 feet at Section 773/00.

The bedrock encountered on this project ranges from the Port Riley limestone member to and including the Blue Rapids shale formation. These limestones and shale formations are fairly uniform in lithology except for the Havenville shale member. The cherty limestones of this member tend in and out and may be completely absent locally.

There are a large number of good wells and several springs which parallel this project. A majority of these springs are still flowing even in a time of prolonged period of low rainfall.