

February 15, 1957

MEMORANDUM TO: MR. H. O. REED, ENGINEER OF DESIGN

SUBJECT: Geological Report
Project 13-75 S-311 (3), Part I
Stations 96/00 to 331/50
Pottawatomie County

We are transmitting herewith five copies of the
Geological Report for Project 13-75 S-311 (3), Part I
in Pottawatomie County.

John D. McNeal
Chief Geologist

JDMcN/df
Encl.

STATE HIGHWAY COMMISSION OF KANSAS

AUGUST 1956

MEMORANDUM TO: MR. H. O. REED, ENGINEER OF DESIGN

FROM: MR. JOHN D. McNEAL, CHIEF GEOLOGIST
By Wallace K. Taylor, Billie J. Johnson
and Larry Knoche, Geologists
Vance L. Darland, Regional Geologist

SUBJECT: Geological Report, Part I
Project 13-75 S-311 (3)
Stations 96/00 to 331/50
Pottawatomie County

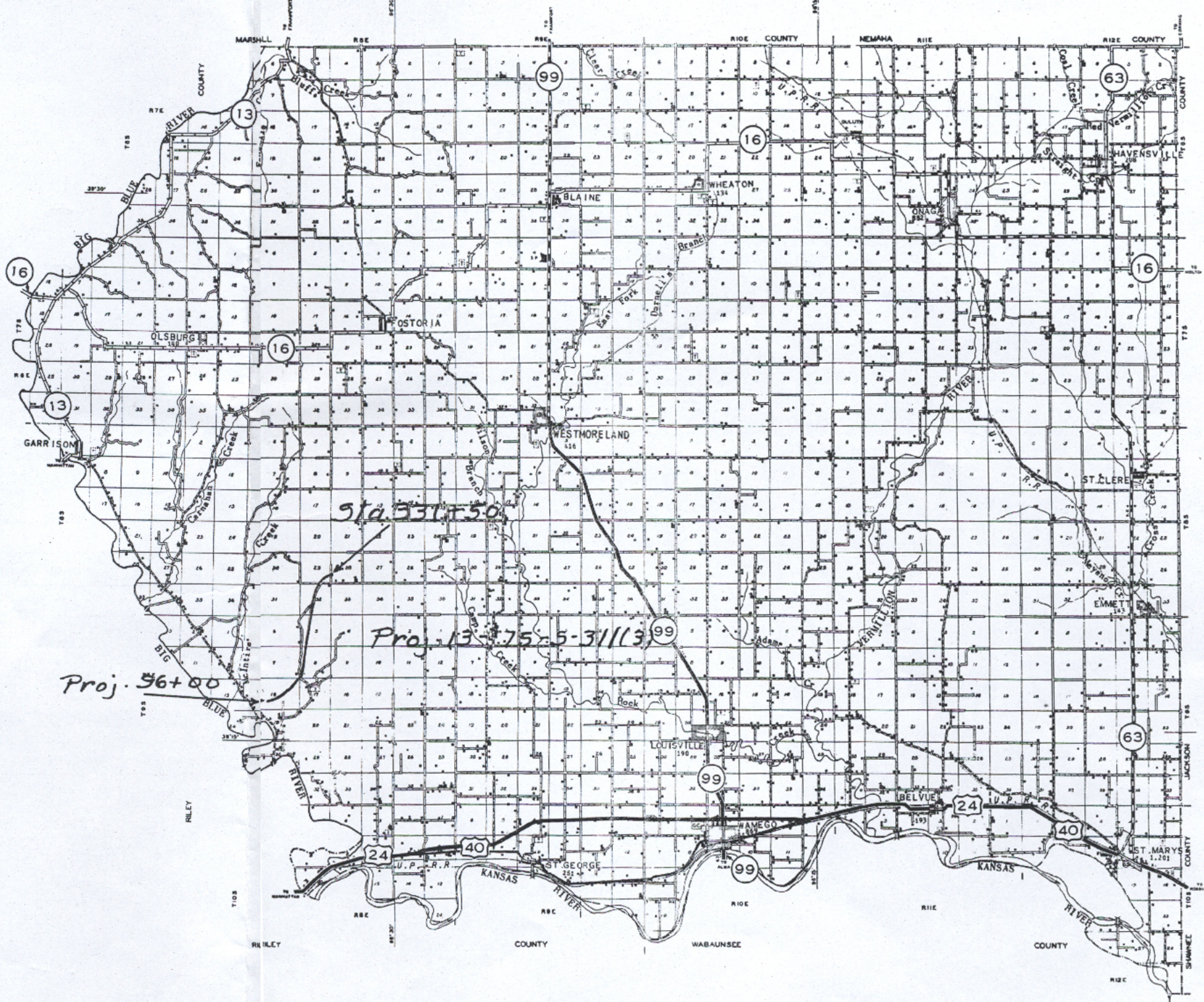
I N T R O D U C T I O N

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 affected by the geology of the project.

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

RESUME OF SECTIONS

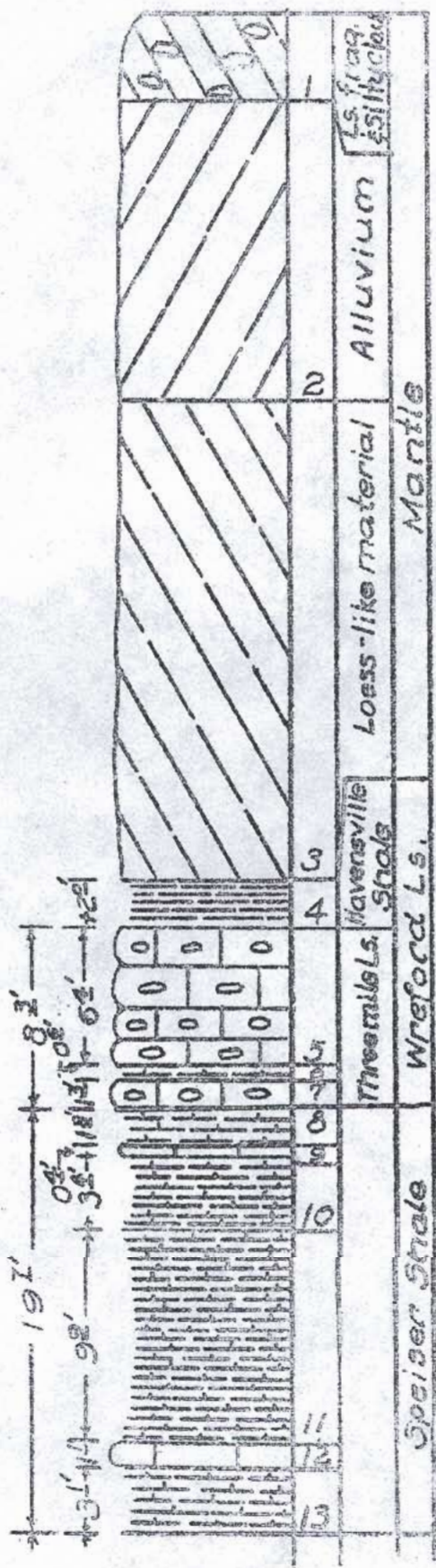
Section I	Geological Description and Formational Sequence
Section II	Geology of the Project
Section III	Geo-Engineering Aspects



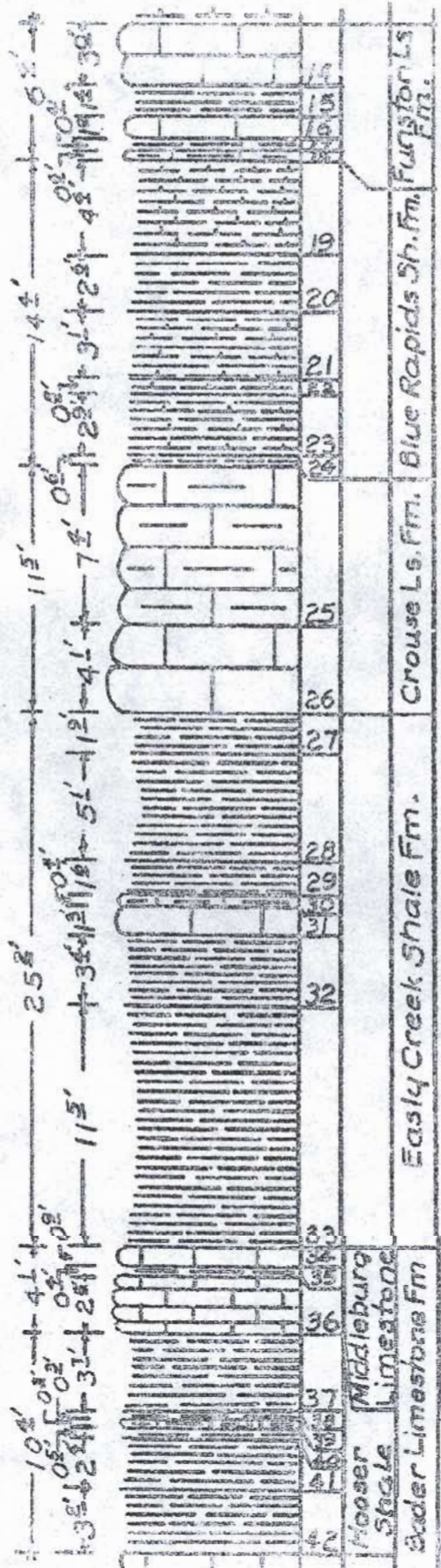
SCALE

Fold Line

Generalized Section
 (See Supplementary Section, Page 7, for use between
 Stations 96,00 to 130,00)



- Mantle
1. Limestone fragments and tan-brown silty clay.
 2. Alluvium, silty clay, light grey-brown.
 3. Loess-like material, silty clay, tan-brown.
- Permian System
Chase Group
Wreford Formation
- Havenville Shale Member
4. Shale, weathered green, platy.
- Threemills Limestone Member
5. Limestone, buff, blocky, cherty.
 6. Liny shale, grey, platy.
 7. Limestone, buff, blocky, cherty.
- Council Grove Group
Speiser Shale Formation
8. Shale, grey-green, liny, platy.
 9. Limestone, buff, blocky.
 10. Shale, green, blocky, liny.
 11. Shale, vari-colored, green and maroon, blocky, liny.
 12. Limestone, light grey, blocky, varies in thickness.
 13. Shale, green, blocky, liny.
- Fulton Limestone Formation
14. Limestone, brown, blocky, somewhat massive, water carrier.
 15. Shale, green and platy.
 16. Limestone, grey, fossiliferous, weathers out platy.
 17. Shale, green, platy.
 18. Limestone, grey, platy, somewhat shaly.



Blue Rapids Shale Formation

- 19. Shale, green, blocky, limy.
- 20. Shale, grey, blocky.
- 21. Shale, olive, blocky, somewhat limy.
- 22. Limy shale, light green, blocky, potential water zone.
- 23. Shale, olive, blocky, somewhat limy.
- 24. Shale, grey, blocky.

Crouse Limestone Formation

- 25. Shaly limestone, white, platy.
- 26. Limestone, grey, weathers brown, blocky, somewhat massive.

Early Creek Shale Formation

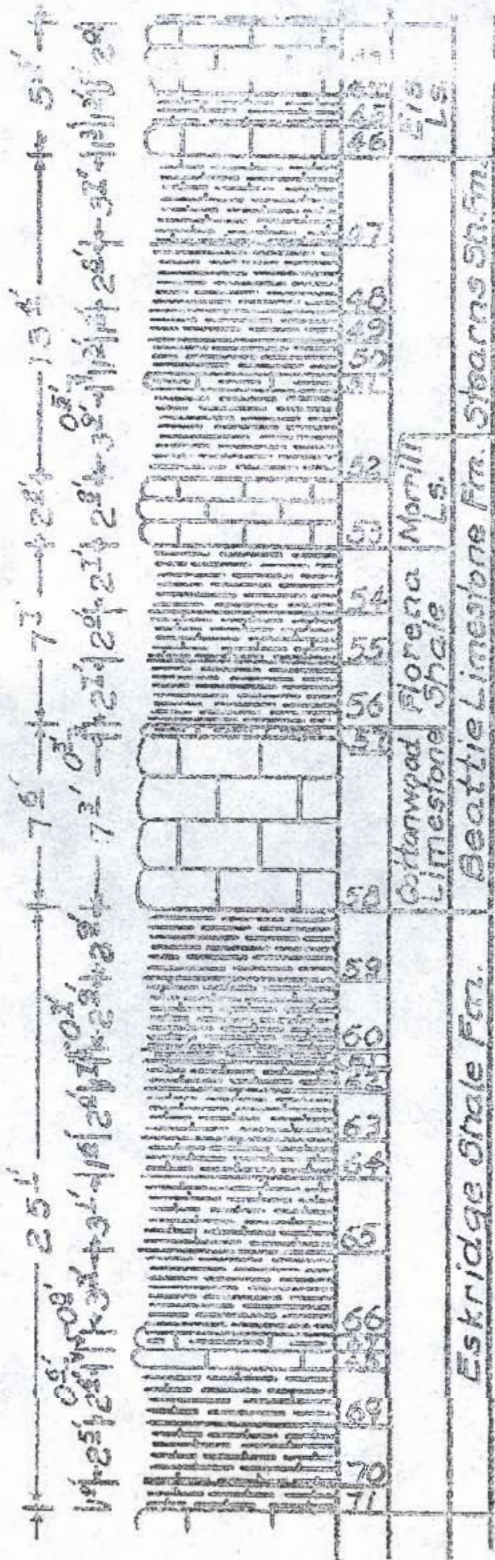
- 27. Shale, dark grey, platy.
- 28. Shale, dark blue grey, platy.
- 29. Shale, black, platy.
- 30. Shaly limestone, fossiliferous.
- 31. Limestone, light grey, blocky.
- 32. Shale, green, blocky.
- 33. Shale, maroon and green, blocky.

Bader Limestone Formation
Middleburg Limestone Member

- 34. Limestone, light grey, blocky.
- 35. Shale, green, blocky.
- 36. Limestone, light grey, blocky, has several horizontal partings.

Hooper Shale Member

- 37. Shale, green, blocky.
- 38. Shale, dark green, limy.
- 39. Shaly limestone, grey.
- 40. Shale, green, blocky.



41. Shale, brown, blocky.

42. Shale, green, blocky.

Miss Limestone Member

43. Limestone, light grey, blocky.

44. Impure limestone, light brown, nodular.

45. Shale, green, limy, blocky.

46. Limestone, light grey, blocky.

Spoons Shale Formation

47. Shale, grey, weathers green, limy, blocky.

48. Shale, grey, platy.

49. Shale, black, platy.

50. Shale, dark green, blocky.

51. Shaly limestone, white, nodular.

52. Shale, light to dark green, blocky.

Beattie Limestone Formation

Merrill Limestone Member

53. Limestone, light grey, blocky, contains three horizontal partings.

Florena Shale Member

54. Shale, gray-green, blocky.

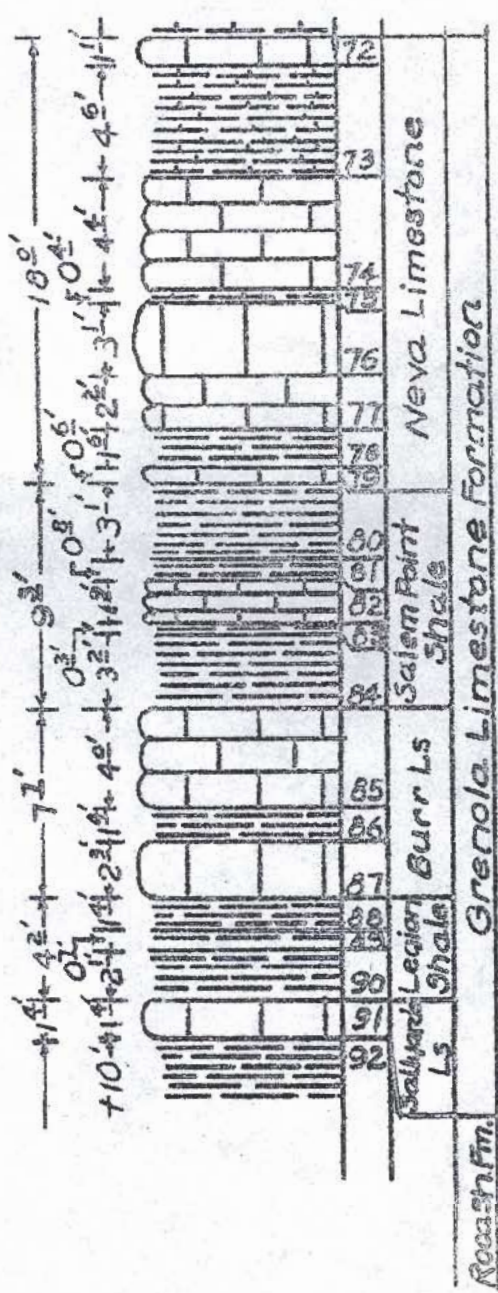
55. Limy shale, blue-grey, platy.

56. Shale, blue-grey, platy.

Cottonwood Limestone Member

57. Shaly limestone, light grey, blocky.

58. Limestone, light grey, blocky, several horizontal partings, contains fusulines.



Esbridge Shale Formation

- 59. Shale, bright green, blocky.
- 60. Shale, green, blocky, limy.
- 61. Shale, pale maroon, blocky, limy.
- 62. Shale, light green, blocky, limy.
- 63. Shale, grey-green, blocky, limy.
- 64. Shale, dark grey, blocky, limy.
- 65. Shale, maroon, blocky, limy.
- 66. Shale, green, blocky.
- 67. Shaly limestone, light green, platy.
- 68. Limestone, cream colored with brown streak, blocky.
- 69. Shale, green, dark green bands, blocky, limy.
- 70. Shale, maroon, blocky, limy.
- 71. Shale, green, blocky, limy.

Grenola Limestone Formation
Neva Limestone Member

- 72. Limestone, white, blocky.
- 73. Limy shale, green, nearly limestone, blocky.
- 74. Limestone, buff, blocky, contains several lensing impure zones, several horizontal partings.
- 75. Limy shale, light green, blocky.
- 76. Impure honey-combed limestone, brown, water carrier.
- 77. Limestone, brown, blocky, impure, contains solution holes and cavities.
- 78. Shale, green, platy.
- 79. Limestone, light grey, blocky.

Salem Point Shale Member

- 80. Shale, green, blocky.
- 81. Shale, dark green, very platy.
- 82. Shaly limestone, white, chalky, blocky, lenticular.
- 83. Shale, dark green, very platy.
- 84. Shale, green, blocky.

Burr Limestone Member

- 85. Limestone, light grey, blocky.
- 86. Shale, black, very platy.
- 87. Limestone, light grey, blocky.

Legion Shale Member

- 88. Shale, green, platy.
- 89. Shale, blue-grey, platy.
- 90. Shale, grey-green, platy.

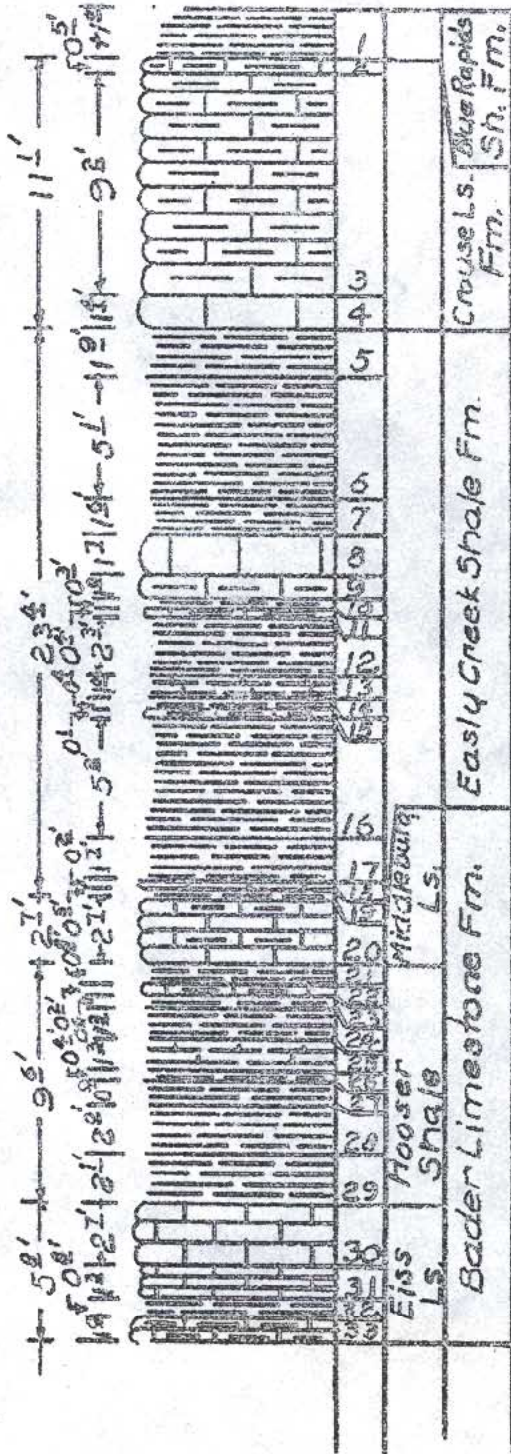
Sallyards Limestone Member

- 91. Limestone, light grey, blocky.

Roca Shale Formation

- 92. Shale, vari-colored, usually blocky, limy.

Supplementary Section
For use between Stations 96/00 and 130/00.



Permian System
Council Grove Group
Blue Rapids Shale Formation

1. Shale, weathered green.

Crouse Limestone Formation

2. Shaly limestone, light grey, platy, impure.
3. Shaly limestone, buff, platy, contains local shale zones.
4. Limestone, light grey, weathers brown, dense, blocky.

Easily Creek Shale Formation

5. Shale, dark grey, platy.
6. Shale, dark blue-grey, platy.
7. Shale, black, platy.
8. Limestone, grey, blocky, horizontal partings in center.

9. Shaly limestone, grey-green, blocky.

10. Shale, green, blocky.

11. Shaly limestone, grey-green, blocky.

12. Shale, light grey, blocky.

13. Shale, maroon, blocky, limy.

14. Shale, green, blocky.

15. Limy zone, light grey.

16. Shale, maroon, blocky.

17. Shale, green, blocky.

18. Limestone, blocky, dense.

19. Shale, grey-black, weathers tan, platy.

Bader Limestone Formation
Middleburg Limestone Member

20. Limestone, light grey, blocky, shaly, weathers platy.



Upper Shale Member

- 21. Shale, black, platy.
- 22. Shaly limestone, white, lenticular.
- 23. Shale, grey-green, blocky.
- 24. Limy shale, light green, blocky, limy.
- 25. Shale, green, blocky.
- 26. Limy shale, light grey.
- 27. Shale, green, blocky.
- 28. Shale, maroon, blocky.
- 29. Shale, green, blocky.

Lower Limestone Member

- 30. Limestone, light grey, weathers tan, cellular and granular, blocky.
- 31. Secondary limestone, cellular, brown, water carrier.
- 32. Shale, green, blocky.
- 33. Shaly limestone, light grey, blocky.

Stearns Shale Formation

- 34. Shale, green, blocky.
- 35. Shale, grey, platy.
- 36. Shale, black, platy.
- 37. Limestone, light grey, blocky, two horizontal partings.
- 38. Shale, dark green, blocky, limy.
- 39. Limy shale, grey mottled with green, has irregular partings.
- 40. Shale, green, blocky.
- 41. Shale, maroon, blocky.
- 42. Shale, grey-green, blocky.

Seattle Limestone Formation
Morrill Limestone Member

43. Limestone, light gray, blocky, dense.
44. Shale, light green, platy.
45. Impure limestone, brown, water carrier.
46. Shale, buff, blocky, limy.
47. Impure limestone, brown, blocky, water carrier.

Fluvina Shale Member

48. Shale, light gray, blocky.
49. Limy shale, light green, weathers brown, blocky.
50. Shale, green, blocky, limy.
51. Shale, gray, blocky.
52. Fossiliferous zone, brown.
53. Shale, light green, platy.

Cottonwood Limestone Member

54. Shaly limestone, light green, blocky.
55. Limestone, light gray, blocky, has several horizontal partings, numerous fusulines.