

State Highway Commission of Kansas

Topeka, Kansas

March 3, 1959

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

FROM: MR. VIRGIL A. BURGAT, CHIEF GEOLOGIST

SUBJECT: Supplementary Report - Hydrology
Project 16-75 K-1019 (3) Fr. E End of Tuttle Pool Bridge East
Pottawatomie County

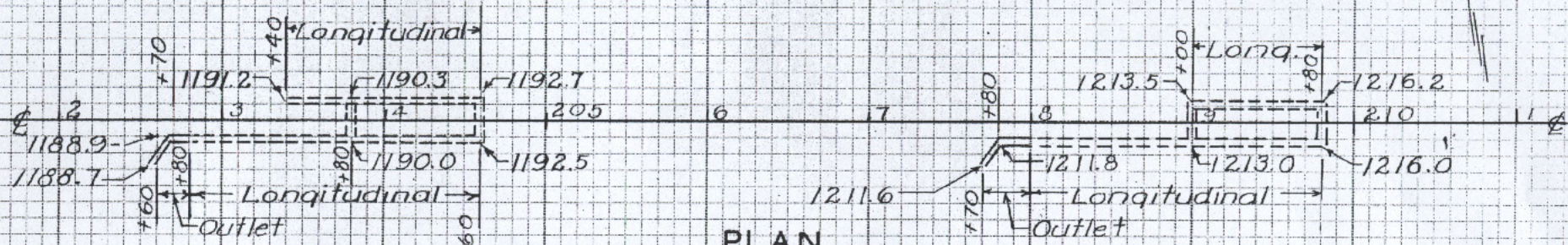
This report is an addition to the geology report of August, 1958 wherein no hydrology recommendations were given for the above project.

The grade line has now been determined and the underdrain recommendations as well as other recommendations regarding subgrade moisture are herein submitted.

In the area from Station 195/25 to Station 196/80 the subgrade will be composed of maroon and green shales and one thin limestone. Although some seepage can be expected from these horizons the amount of permeability is too low in this material to render underdrainage very effective. It seems desirable to design a surface over this area that will withstand, so far as possible, wet subgrade conditions. The area from Station 202/25 to Station 211/50 will be in cut with the subgrade in the wet zones of the Kinney limestone, the calcareous and maroon zones in the Blue Springs shale and at the base of the Florence limestone. The underdrains shown in Figure I are suggested to alleviate this condition.

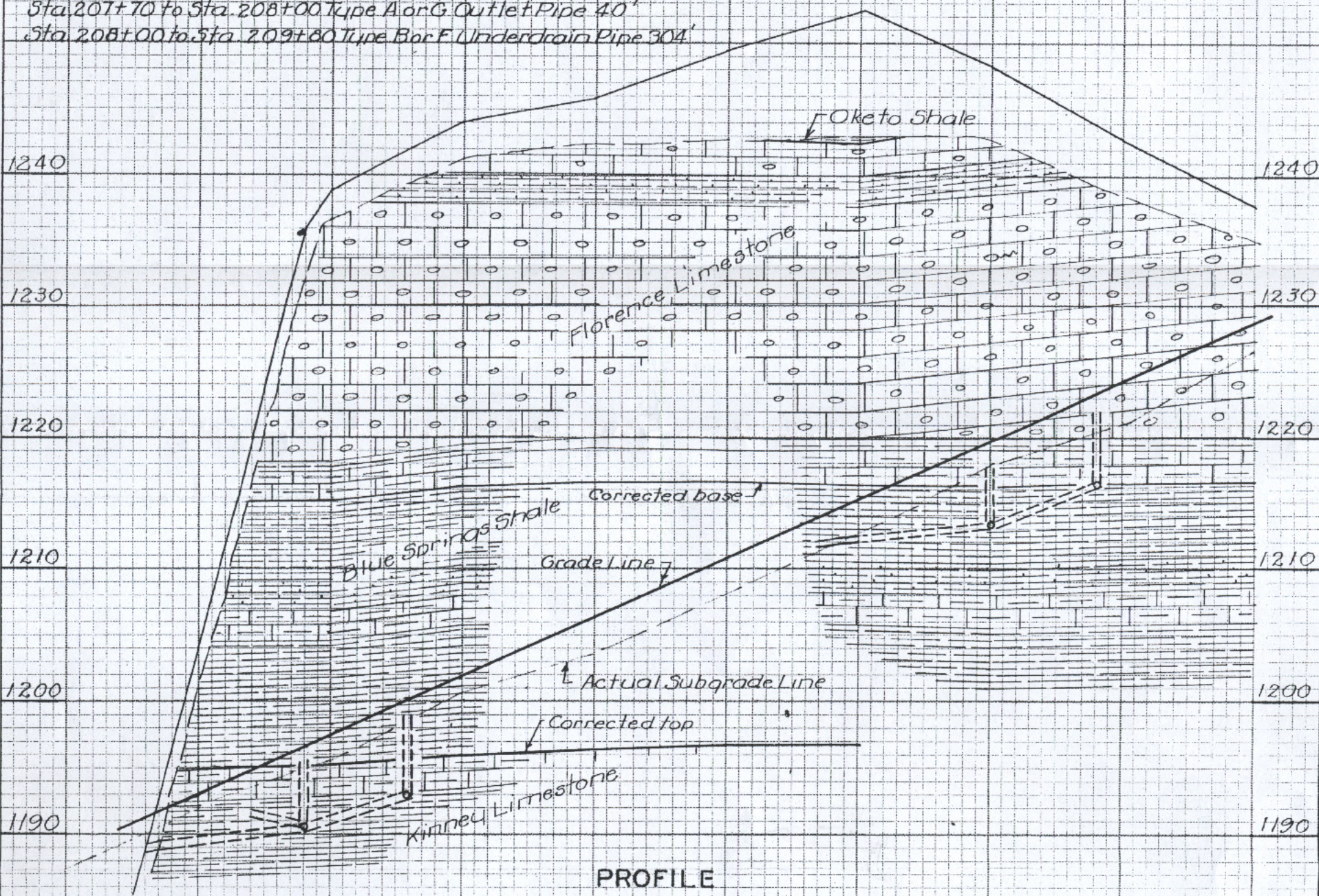
In the cut section from Station 229/00 to Station 235/50 the Holmesville shale has several water-carrying horizons in red shales and scattered limestone lenses. These horizons will occur in the planned subgrade between Station 229/00 and Station 233/40. The underdrain shown in Figure II is suggested to intercept seepage in the subgrade through this area.

The subgrade in the cut section from Station 246/30 to Station 266/25 will be in the Towanda limestone. This limestone may contain local layers



PLAN
Scale: 1" = 100'

Underdrain:
 Sta. 202+60 to Sta. 202+80 Type A or G Outlet Pipe 30"
 Sta. 202+80 to Sta. 204+60 Type B or F Underdrain Pipe 34"
 Sta. 207+70 to Sta. 208+00 Type A or G Outlet Pipe 40"
 Sta. 208+00 to Sta. 209+60 Type B or F Underdrain Pipe 30"



PROFILE
 Scale: Horiz. 1" = 100'
 Vert. 1" = 10'

**UNDERDRAIN
 AS
 REVISED AND CONSTRUCTED
 POTTAWATOMIE COUNTY
 PROJ. 16-75-K-1019 (3)**

Oct. 10, 1960

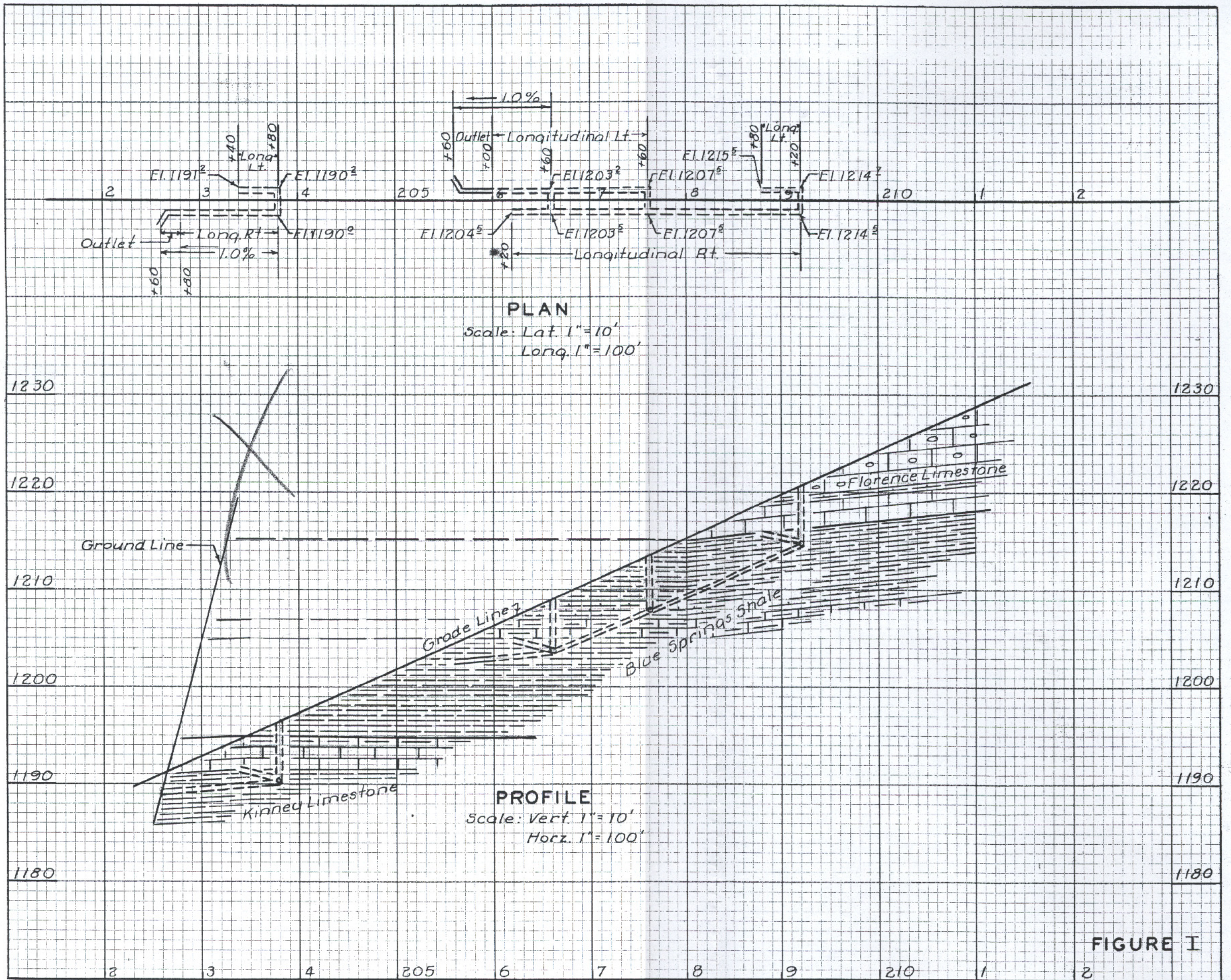


FIGURE I

Att. 10/10/10

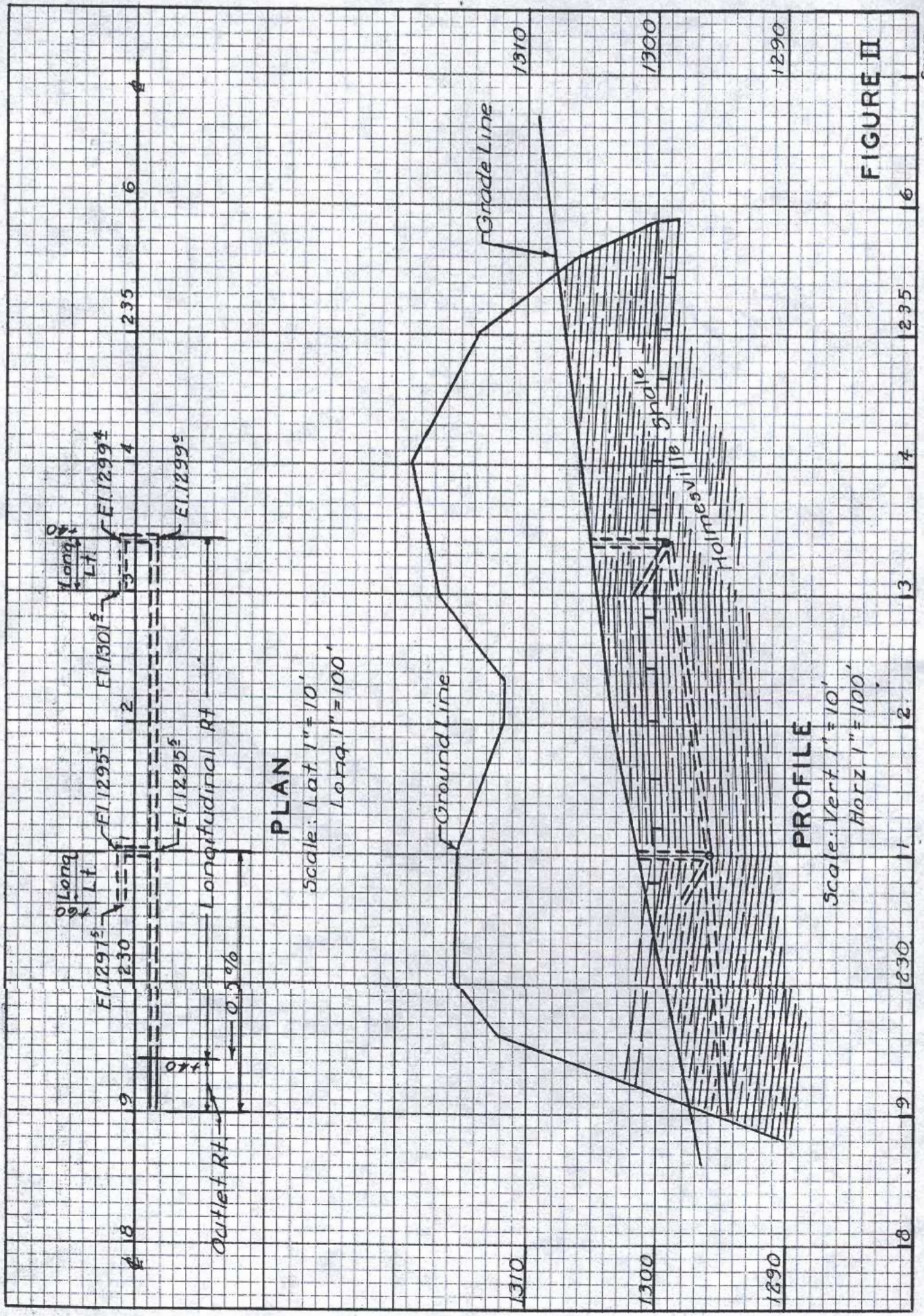


FIGURE II

SYMNS

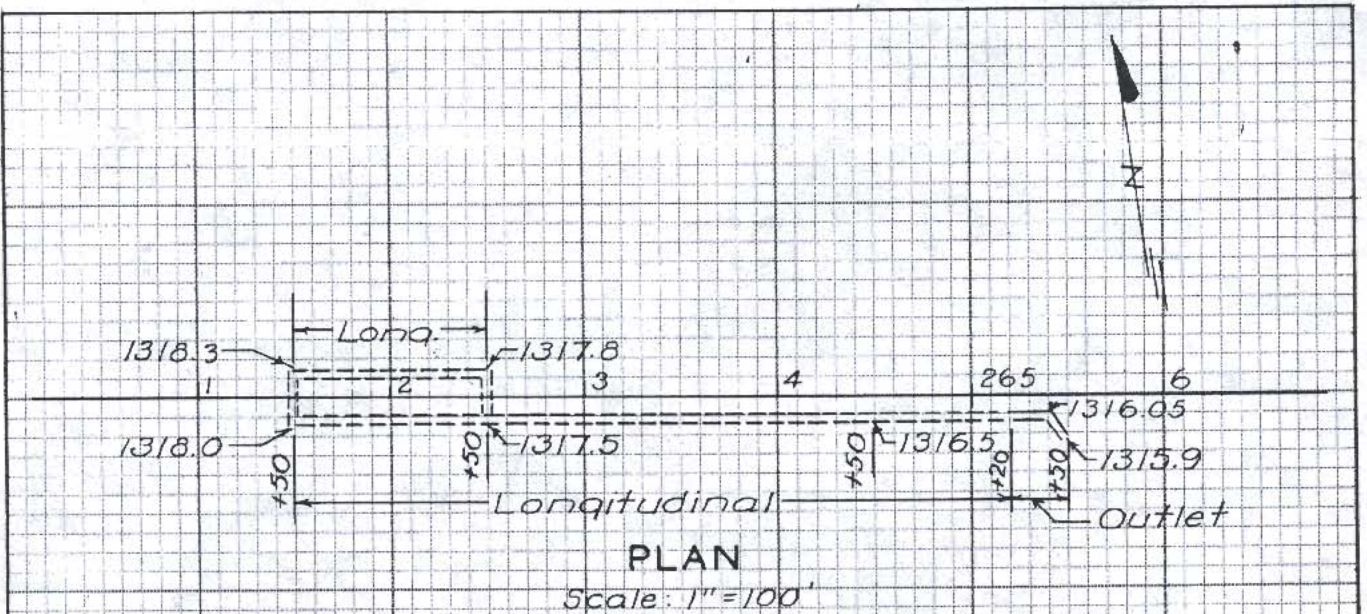
or lenticles of shale that may produce local seepage which cannot be determined accurately until the cut is open. The major seepage, however, will occur where the grade cuts the base of the Towanda, Station 262/40 and Station 265/40. The underdrain shown in Figure III is suggested to intercept the subgrade water through this area.

Soft subgrades that may possibly develop in the remaining portion of the cut within the Towanda limestone would have to be treated in some manner, either during construction or in the surfacing contract.

The Cut from Station 267/30 to Station 270/25 will have a subgrade in the Holmesville shale that contains limy zones of red shale bands which carry water in the area. The sharp, well-drained topography, however, provides an insufficient catchment area for quantities of ground water that would require underdrainage.

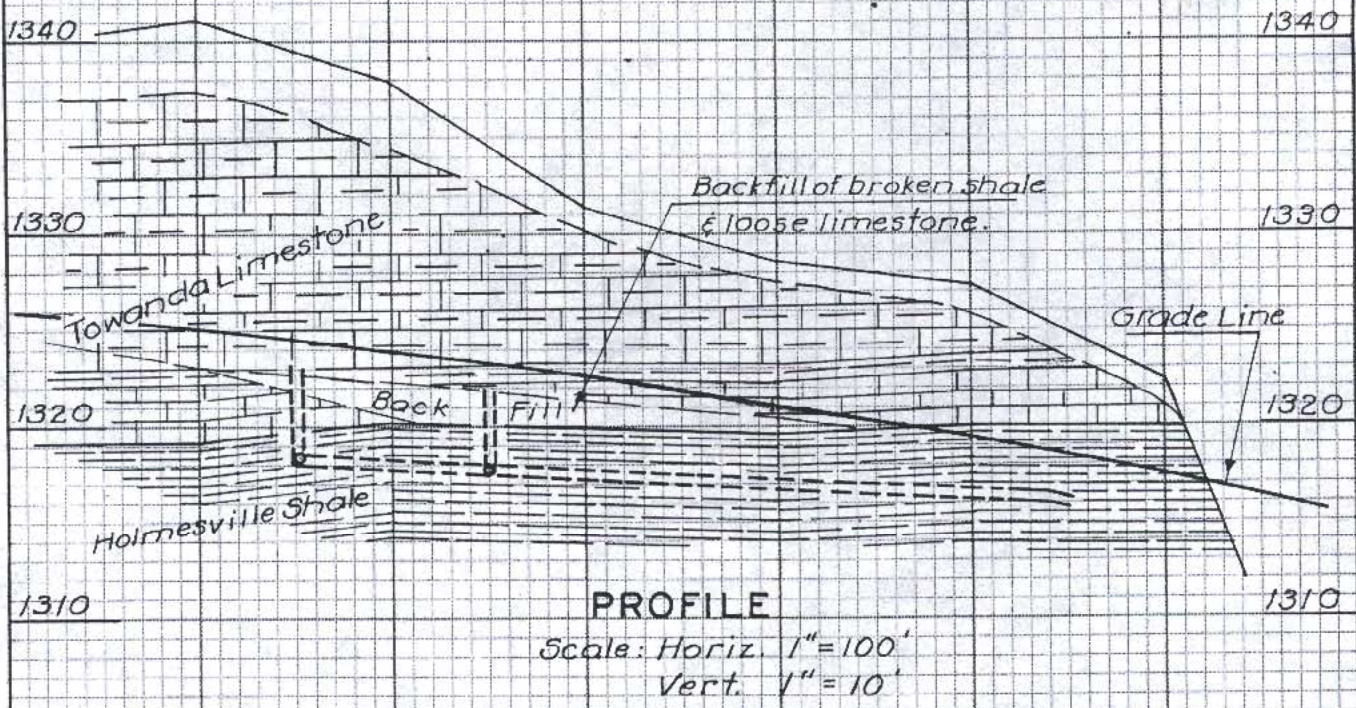
The small cut section from Station 272/50 to Station 275/50 has a rather small catchment area. There seems to be only a small possibility of seepage at the Holmesville shale and Fort Riley limestone contact, which is the zone that composes the subgrade material through this cut.

The cut section from Station 284/50 to Station 290/78 will have a subgrade in the Fort Riley limestone; although a small amount of seepage was indicated at Station 283/80, 20 feet right of centerline, the grade line seems of sufficient height above the base of the Fort Riley limestone, not to cause water trouble at that point. Irregular overbreakage of the various units of limestone may cause feeding of water from the ditches into the subgrade by way of these overbreak trenches unless particular care is taken to avoid this in construction. Should overbreakage of this type occur, underdrainage may be required on the surfacing contract.



Underdrain:

Sta. 261+50 to Sta. 265+20 Type B or F underdrain pipe 54'
 Sta. 265+20 to Sta. 265+50 Type A or G outlet pipe 40'



**UNDERDRAIN
AS
REVISED AND CONSTRUCTED
POTTAWATOMIE COUNTY
PROJ. 16-75-K-1019 (3)
Oct. 10, 1960**

1 2 3 4 265 6

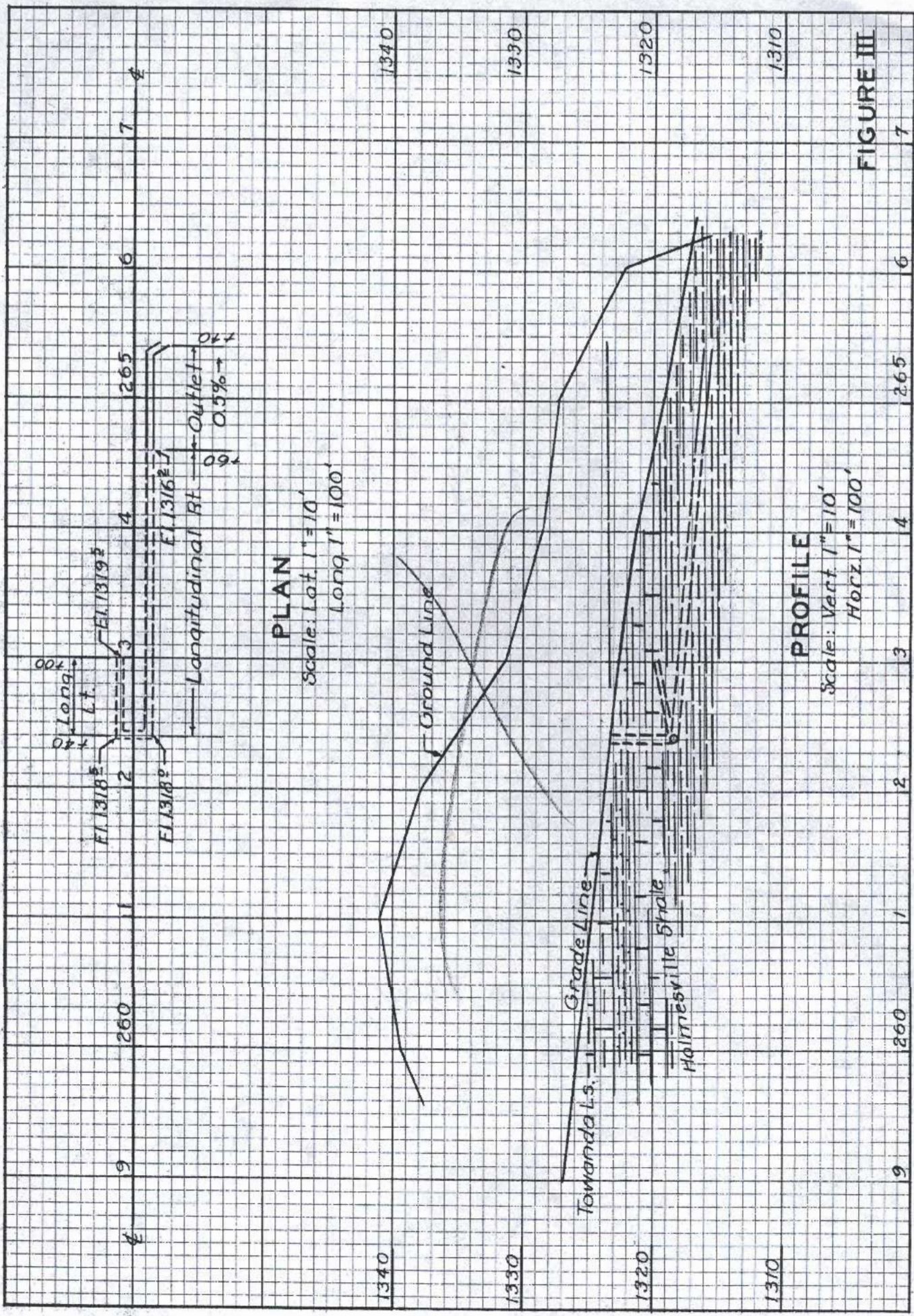


FIGURE III