

State Highway Commission of Kansas

AUGUST 1964

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

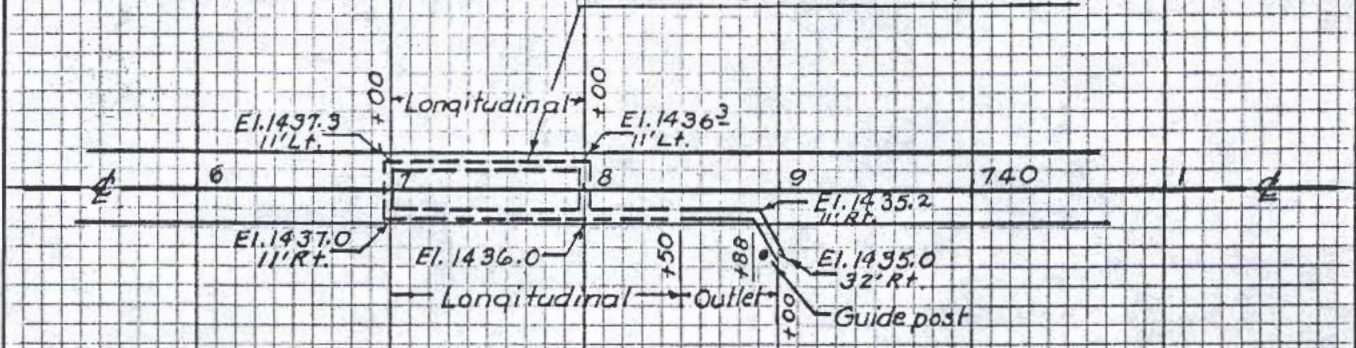
FROM: MR. VIRGIL A. BURGAT, CHIEF GEOLOGIST
By Wallace K. Taylor, Regional Geologist

SUBJECT: Supplementary Underdrain Report on Construction
Project 16-75 K-1165 (3) K-13, West Thru Olsburg
Pottawatomie County

At the request of the Resident Engineer, George Davis, the area between Station 736/00 and Station 739/00 was investigated after the cut section was open to see if underdrainage would be desirable. It was found that there was a groundwater movement at the base of the Rimrock zone of the Fort Riley Member. The enclosed underdrain layout will intercept this groundwater movement.

The mantle-limestone contact as shown on the Cross sections through this location was shown too low. A small amount of rock excavation was encountered. The groundwater movement had caused some of the underlying bedrock to become badly weathered and soft. A small amount of special subgrading appears to be in order at this location.

Sta. 737+00 to Sta. 739+00
 Construct underdrain
 6" Type B, F, H or L 294 Lin. Ft.
 6" Type A, G, K or M 67 Lin. Ft.
 Outlet Guide Post 1

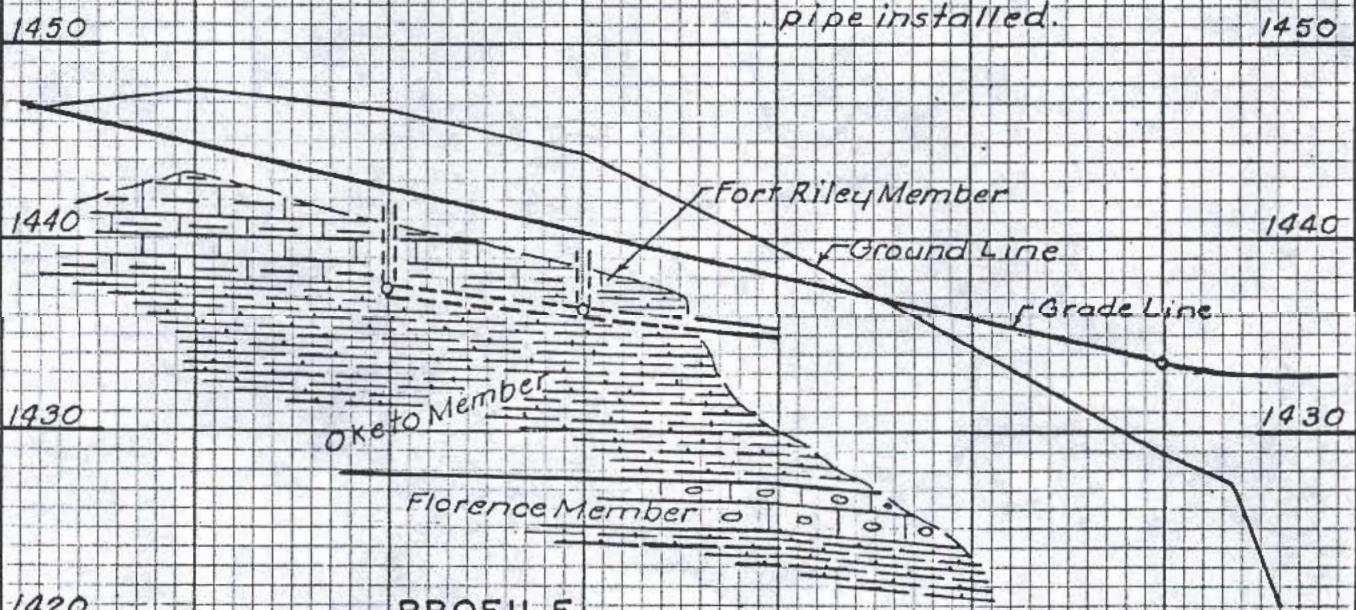


PLAN

Scale: 1" = 100'

Note: Backfill underdrain trenches over perforated pipe with underdrain aggregate up to the base course under roadway. Backfill outlet trenches with impervious material using standard compaction. Use impervious material under and around outlet pipe. (Do not use aggregate or sand to grade outlet pipe.)

Note: Outlet pipe has been increased by 20% for possible construction variations from plans. Contractor to be paid on actual pipe installed.



PROFILE

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

POTTAWATOMIE COUNTY
PROJ. 16-75-K1165 (3)

Construction 8-18-64

736 737 738 739 740 741

State Highway Commission of Kansas

July 7, 1964

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

FROM: MR. VIRGIL A. BURGAT, CHIEF GEOLOGIST
By Alex A. Kotoyantz and Don Ubel, Geologists
Wallace K. Taylor, Regional Geologist

SUBJECT: Revised Underdrain During Construction
Project No. 16-75 K-1165 (3) (Portion of Project Only)
Pottawatomie County K-13, West Thru Olsburg

Station 340/20 to Station 350/00

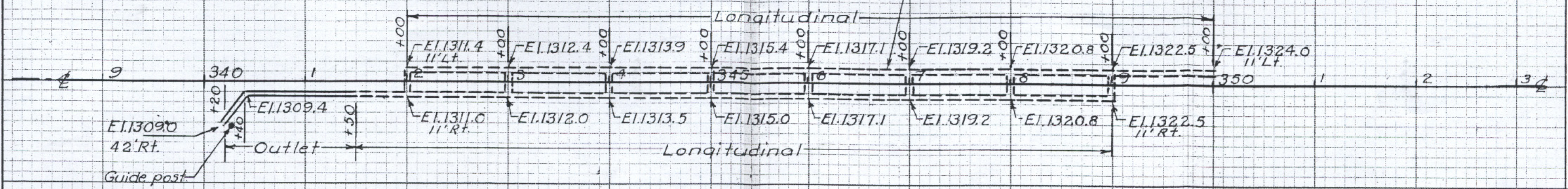
The Fort Riley Limestone is carrying a large quantity of groundwater at this location. The groundwater had caused deterioration of the shaly Fort Riley Limestone between Station 342/00 and Station 346/00. This deterioration created a soft unstable condition and subgrading was recommended. Throughout most of this location the special subgrading was at or below ditch level. The special subgraded area was backfilled with Fort Riley Limestone and Clay.

The original underdrain did not properly intercept the groundwater, therefore, it had to be modified. A lateral was added at Stations 346/00 and 348/00 to create a "stair step" type underdrain. The longitudinal section of this underdrain was continued between Station 345/00 and 346/60 to the left of centerline in order to intercept the moving groundwater in this location.

Between Stations 342/00 and Station 345/00, in the special subgrade area mentioned above, the left longitudinal was continued and two laterals were added to protect against induced surface water. The outlet has been moved back to Station 340/20 because of a constructed entranceway that centers on Station 340/00 to the right. The right ditch was special throughout this location enabling the special subgraded area to drain.

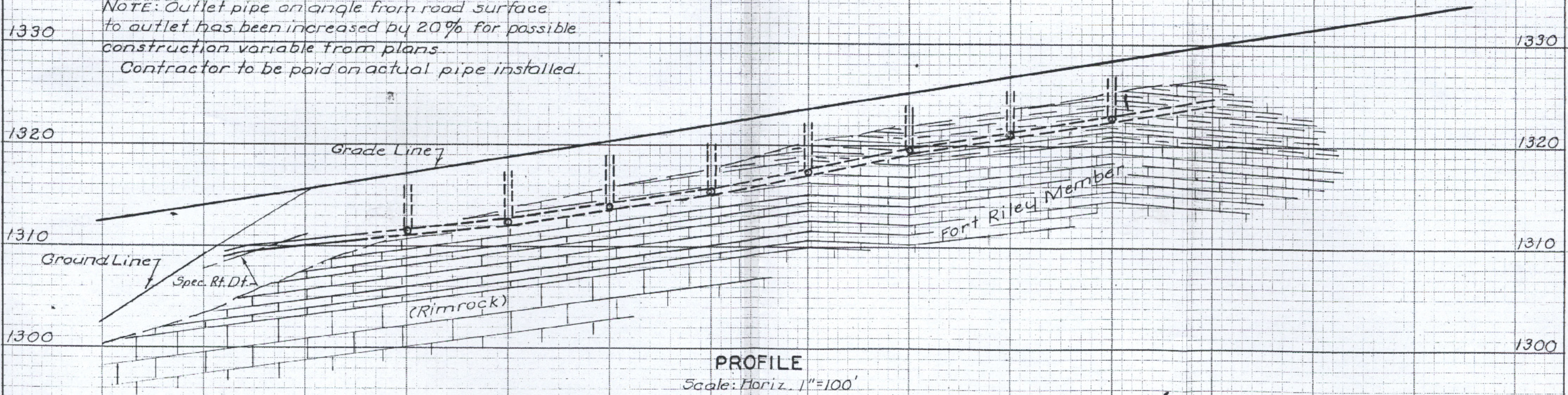
The changes in the original underdrain result in an overrun of 438 feet of perforated pipe and 9 feet of outlet pipe. The new underdrain is enclosed.

Sta. 340+20 to Sta. 350+00
 Construct underdrain
 6" Type B, F, H or L 1726 ft.
 6" Type A, G, K or M 154 ft.
 Outlet Guide post 1



PLAN
 Scale: 1"=100'

NOTE: Backfill underdrain trenches over perforated pipe with underdrain aggregate up to the base course under roadway.
 Outlet trenches to be backfilled with impervious material using standard compaction. Use impervious material under and around outlet pipe. (Do not use aggregate or sand to grade outlet pipe.)
 NOTE: Outlet pipe on angle from road surface to outlet has been increased by 20% for possible construction variable from plans.
 Contractor to be paid on actual pipe installed.



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

POTTAWATOMIE COUNTY
 PROJ. 16-75-K-1165-(3)
 CONSTRUCTION 7-7-64

9 340 1 2 3 4 345 6 7 8 9 350 1 2 3

State Highway Commission of Kansas

MAY, 1964

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

FROM: MR. VIRGIL A. BURGAT, CHIEF GEOLOGIST
By Wallace K. Taylor, Regional Geologist

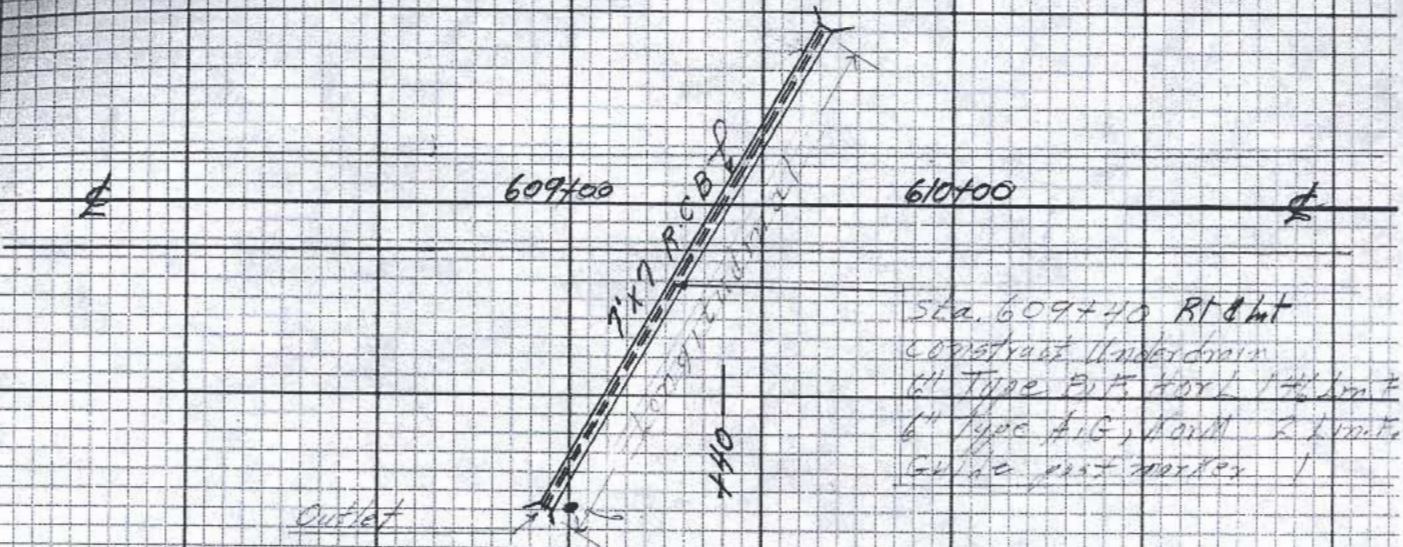
SUBJECT: Supplementary Report
Underdrains and Unstable Material
Project 16-75 K-1165 (3) K-13 West Thru Olsburg
Pottawatomie County
Part I

STATION 342/00 to STATION 345/50

Through this location a very soft, saturated, spongy residual clay was encountered in the subgrade. The thickness of this material varied from 0.0 to 3.0 feet and would average out close to 2.0 feet. It was suggested that this soft material be excavated and replaced with Fort Riley Limestone which could be acquired from the same cut section. It was also suggested that the right ditch be special in order that the removal area under the roadway would drain. Groundwater was flowing into this location at the time of the investigation. The underdrain for this location, as shown on the plans, will need to be adjusted in order that it will give adequate protection to the special subgraded area. This will be done at a later date when the cut section has been completely excavated.

STATION 609/40

During the excavation for the 7 x 7 x 146 foot R.C.B. at this location groundwater was encountered flowing up out of open channels in the Florence Limestone. This water is under a hydrostatic head and produces a fair quantity of water. In order to protect the fill section from this groundwater and to allow it to flow out without any restrictions; it is recommended that the saturated material that would lie between the R.C.B. and the Limestone be removed and replaced with underdrain aggregate. The average thickness of this aggregate will be approximately 1 foot. A perforated underdrain pipe should be placed in the aggregate beneath the box to the up station side. The strongest flow of groundwater is coming in from the up station side. The underdrain pipe should



Sta. 609+40 Right
 construct Underdrain
 6" Type B.P. for 1st 1/2' from E
 6" Type A.G. for 1st 1/2' from E
 (Leave rest rocky)

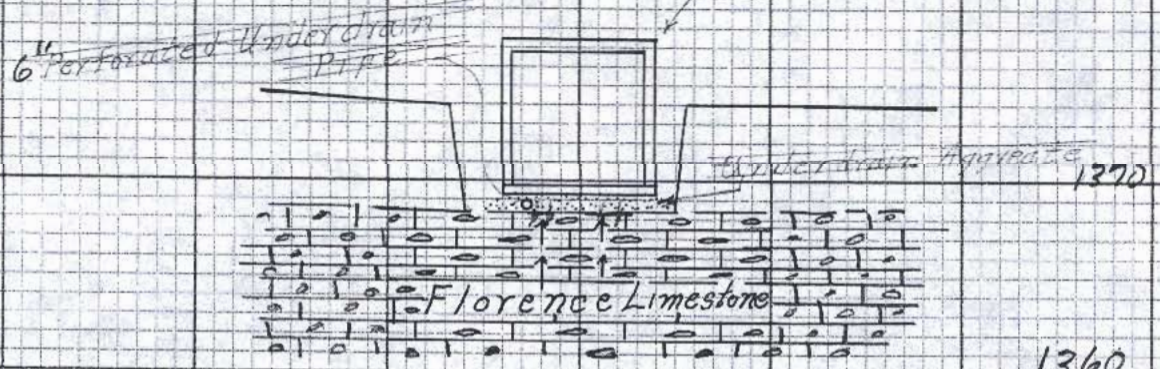
PLAN VIEW
 Scale: 1" = 50'

Note:
 Elevations of Underdrain pipe
 to be set by field Engineers
 to fit field conditions

1380

7' x 7' R.C.B.

1380



1370

1360

Centerline Profile
 Scale: 1" = 10'

+20

+30

+40

609+50

+60

Pottawatomie County
 Proj. 16-75-K-1165(3)

Part I

const. 5/12/68

State Highway Commission of Kansas

JANUARY 1963

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

FROM: MR. VIRGIL A. BURGAT, CHIEF GEOLOGIST

SUBJECT: Supplementary Geology Report
Underdrains and Groundwater
Project 16-75 K-1165 (3) K-13, West Thru Olsburg
Pottawatomie County

The grade line is now established for the above referenced project and the underdrains that were indicated in the Geology Report are now being submitted.

These underdrains are incorporated into an underdrain plan sheet and will be inserted in the grading plans for the project.

These underdrain installations are described in the following:

Station 340/00 to Station 350/00

This underdrain will protect the road surface from groundwater movement within the lower limy Holmesville Shale and at the top of the Fort Riley Limestone.

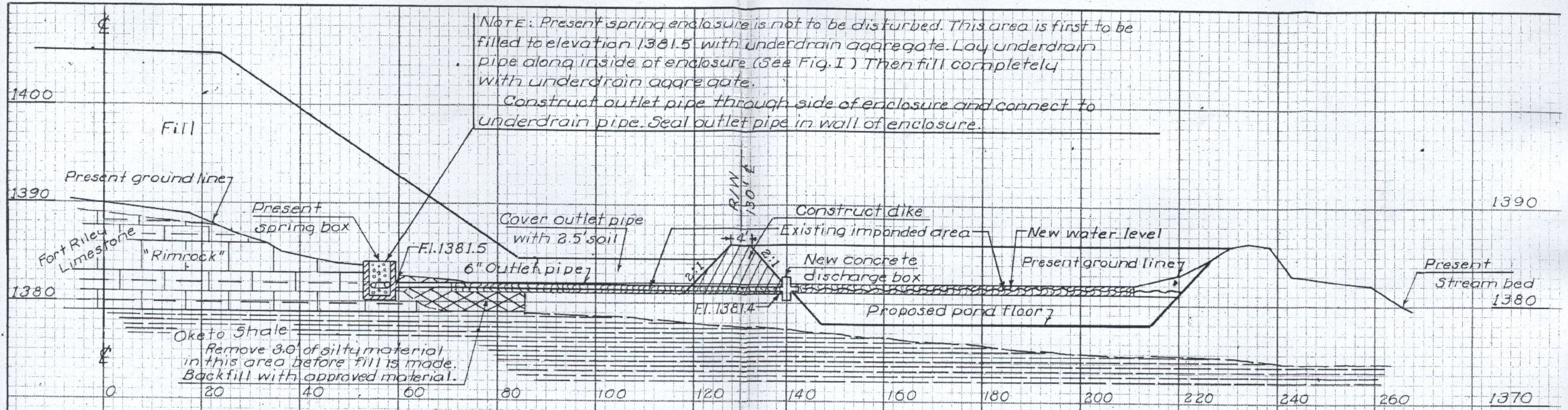
The installation requires 1288 feet of perforated and 145 feet of non-perforated underdrain.

Station 560/23 to Station 564/50

This underdrain will protect the road surface from groundwater movement at the base of the Towanda Limestone and within the Holmesville Shale Member. The installation will require 604 feet of perforated and 140 feet of non-perforated underdrain section.

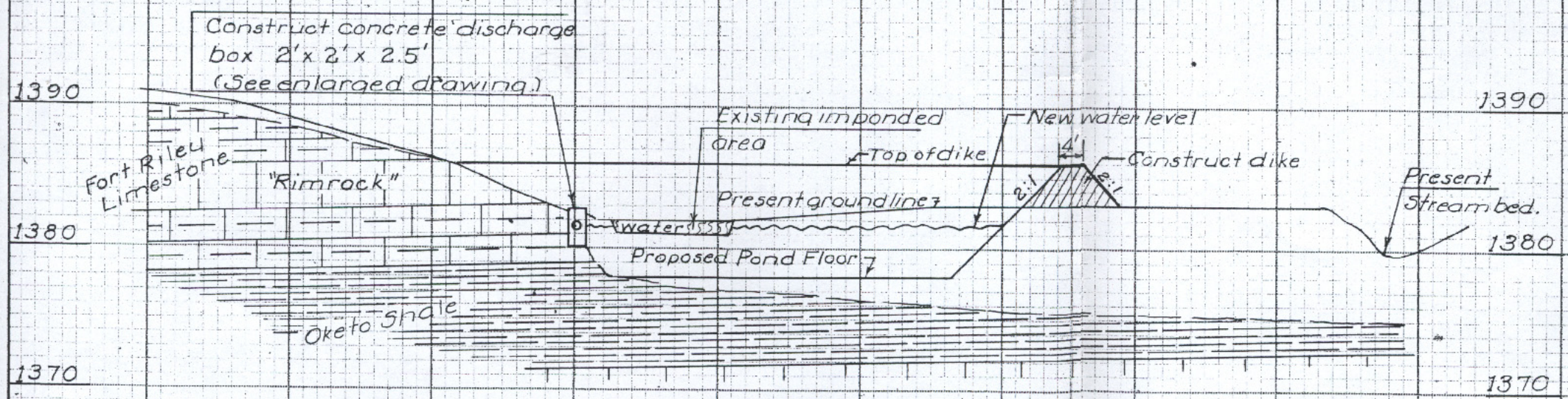
The final plan and position of these underdrains should be determined after the grading operations are completed and the cuts open for inspection.

NOTE: Present spring enclosure is not to be disturbed. This area is first to be filled to elevation 1381.5 with underdrain aggregate. Lay underdrain pipe along inside of enclosure (See Fig. I) Then fill completely with underdrain aggregate.
 Construct outlet pipe through side of enclosure and connect to underdrain pipe. Seal outlet pipe in wall of enclosure.

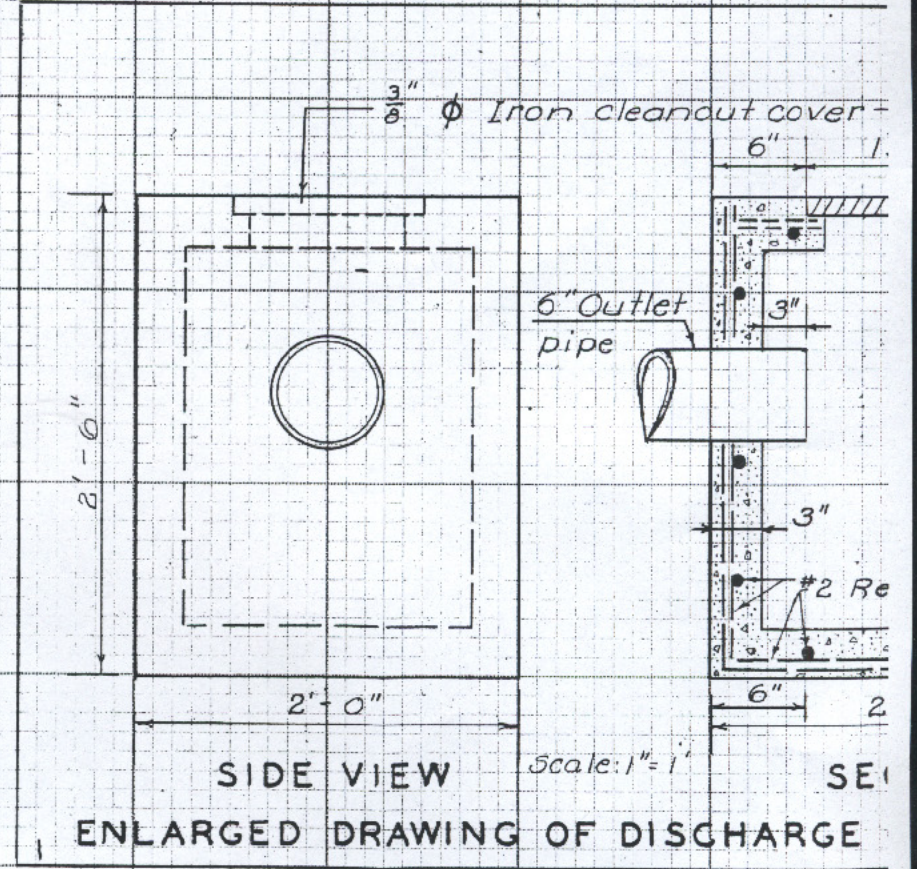


SECTION B-B'
 STA. 584 + 76
 Scale: Horz. 1"=20'
 Vert. 1"=10'

NOTE: Outlet pipe and concrete discharge box may be relocated in field during construction. All limestone and broken limestone surfaces exposed by excavation should be backfilled with impervious soil or clay to prevent seepage from pond.



SECTION A-A'
 RIGHT 140' C
 Scale: Horz. 1"=20'
 Vert. 1"=10'
 585

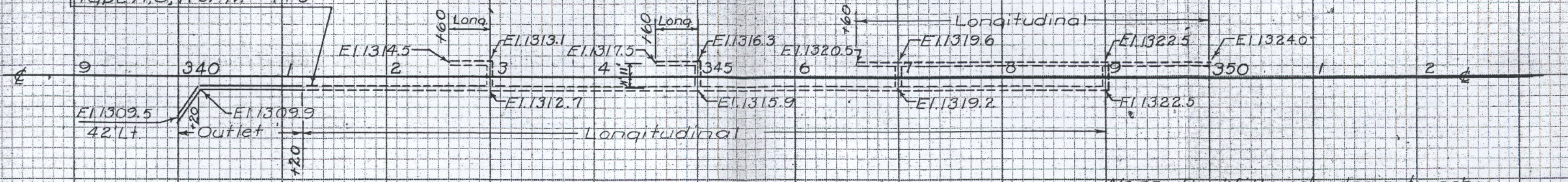


SIDE VIEW Scale: 1"=1'
 ENLARGED DRAWING OF DISCHARGE

POTTAWATOMIE COUNTY
 PROJ. 16-75-K-1165 (3)
 FIGURE II

SPRING AND POND AT
 LT. STA. 584 + 76

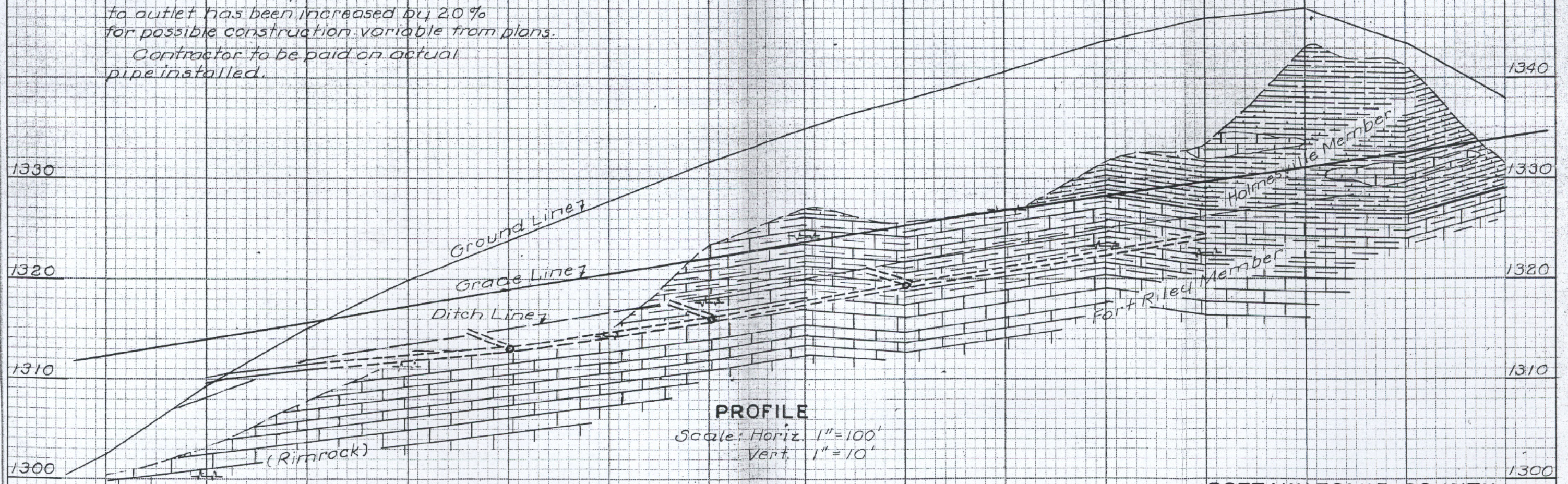
Underdrain:
 Sta. 340+00 to Sta. 350+00
 Type B, F, H or L 12.88'
 Type A, G, K or M 14.5'



PLAN
 Scale: 1"=100'

NOTE: Backfill underdrain trenches over perforated pipe with underdrain aggregate up to the base course under roadway.

NOTE:
 Outlet pipe on angle from road surface to outlet has been increased by 20% for possible construction variable from plans.
 Contractor to be paid on actual pipe installed.



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

POTTAWATOMIE COUNTY
 PROJ. 16-75-K-1165 (3)



9 340 1 2 3 4 345 6 7 8 9 350 1 2