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Record No. 7313

In the
Supreme Court of Appeals of Virginia
at Richmond

STATE HIGHWAY COMMISSIONER OF VIRGINIA

v.

RICHMOND, FREDERICKSBURG AND POTOMAC RAILROAD COMPANY

FROM THE CIRCUIT COURT OF HENRICO COUNTY

RULE 5:12—BRIEFS

§5. Number of Copies. Twenty-five copies of each brief shall be filed with the clerk of this Court and three copies shall be mailed or delivered by counsel to each other counsel as defined in Rule 1:13 on or before the day on which the brief is filed.

§6. Size and Type. Briefs shall be nine inches in length and six inches in width, so as to conform in dimensions to the printed record, and shall be printed in type not less in size, as to height and width, than the type in which the record is printed. The record number of the case and the names and addresses of counsel submitting the brief shall be printed on the front cover.

HOWARD G. TURNER, Clerk.

IN THE

Supreme Court of Appeals of Virginia

AT RICHMOND

Record No. 7313

VIRGINIA:

In the Supreme Court of Appeals held at the Supreme Court of Appeals Building in the City of Richmond on Tuesday the 14th day of October, 1969.

STATE HIGHWAY COMMISSIONER OF VIRGINIA — Plaintiff in error,

against

RICHMOND, FREDERICKSBURG AND POTOMAC RAILROAD COMPANY, — Defendant in error.

From the Circuit Court of Henrico County
John Wingo Knowles, Judge

Upon the petition of the State Highway Commissioner of Virginia a writ of error and *supersedeas* is awarded him to a judgment rendered by the Circuit Court of Henrico County on the 20th day of January, 1969, as amended on February 7, 1969, in a certain proceeding then therein depending, wherein Richmond, Fredericksburg and Potomac Railroad Company was plaintiff and the petitioner was defendant; no bond being required.

RECORD

page 1 }

* * * * *

MOTION FOR DECLARATORY JUDGMENT

Plaintiff, Richmond, Fredericksburg and Potomac Railroad Company, moves the Circuit Court of the City of Richmond, Virginia, for a declaratory judgment against the defendant based on the pleadings, affidavits, exhibits and the opinion, dated June 14, 1965, of the Supreme Court of Appeals of Virginia, attached hereto, as a part hereof and contained in the cause of *Richmond, Fredericksburg and Potomac Railroad Company* v. *Douglas B. Fugate, State Highway Commissioner, and S. A. Burnette, et al., etc.,* (Record #6073) 206 Va. 159, and for more particulars states as follows:

1. That plaintiff owns and operates a railroad from Richmond, Virginia, through a portion of Henrico County and to the south side of the Potomac River near Washington, D. C.

2. That the Virginia State Highway Department is a governmental agency created and empowered by the
page 2 } laws of the State of Virginia and that it acts by and through the State Highway Commissioner, which Commissioner, pursuant to the laws of the State of Virginia, is the executive head of the Virginia State Highway Department and possesses plenary powers for constructing, improving and maintaining the roads embraced in the State Highway System and the secondary system of State highways. The State Highway Commissioner and the State Highway Department shall be hereinafter collectively referred to as defendant.

3. That two streams called Horsepen Branch and Upham Brook unite just west of the plaintiff's railroad embankment near Dumbarton and Staples Mill Roads in Henrico County, Virginia, and the flow therefrom during periods of storm and normal weather has passed under and through the railroad by an arch type culvert. See plaintiff's Exhibit A attached hereto (General Vicinity Map). The said arch culvert has been in the past sufficient to handle this flow of water from these streams, without damage to the railroad, and within good engineering practice when the said streams were still in their original and natural conditions. Sections of the flood plane above the railroad for both Horsepen Branch and Upham Brook were in part swampy and the said streams were winding and lines with trees and dense brush. The Horsepen Branch dainage area consists of 1,225 acres.

Horsepen Branch joints Upham Brook near the railroad, which has, as it reaches the railroad, a total drainage area of 3,365 acres. Horsepen Branch and Upham Brook were cut into the ground by the flow of water and in their original conditions were small streams usually only six to eight feet wide, winding, of variable grade and covered with debris, trees, grass, and shrubs.

page 3 } 4. That the defendant at great public expense and for general public purposes, use and benefit *has* and *will* by artificial means increase the grade, clear, deepen, widen and in part relocate and divert Upham Brook and a portion of Horsepen Branch from their original courses west and upstream from the plaintiff's railroad. Upon completion of the artificial construction, which is now in progress, the portion of Horsepen Branch within the defendant's development which had an original length of two thousand fifty (2,050) feet, will be lengthened fifty (50) feet, and all two thousand one hundred (2,100) feet will be an artificial channel, with a 20-foot bottom. Of the original length of Upham Brook which was twenty-six thousand (26,000) feet, only ten thousand nine hundred forty (10,940) feet of the original channel will remain in its natural condition. New construction will total thirteen thousand eight hundred eighty-six (13,886) feet, all of which will be artificial channel and relocated. The defendant will shorten Upham Brook by one thousand one hundred seventy-four (1,174) feet, or four and one-half (4-1/2) per cent, and fifty-three (53) per cent of this stream will be artificial channel. (See plaintiff's Exhibit D attached hereto).

The defendant has also substantially progressed the construction of the Route 64 intersection of Staples Mill Road and has cleared the foliage off a very large area, has filled and graded, and otherwise substantially changed the area near the railroad culvert so as to aggravate and increase the drainage problems.

page 4 } 5. That the said construction by the defendant in and near Horsepen Branch and Upham Brook *has* and *will,* by artificial means, decrease the time of concentration and increase the volume and velocity of surface water to be cast in a concentrated manner upon the railroad. Therefore, the said increased surface water volume and velocity has directly caused damage to the plaintiff's property because the said culvert under the railroad accommodating the surface water from Horsepen Branch and Upham Brook *has now become* and will be inadequate to accommodate the said surface water volume and velocity and it is, and will be, necessary that the plaintiff install a total of three additional culverts under its railroad to accommodate the said

additional surface water volume and velocity. The cost of these three additional culverts will aggregate approximately $165,000. One such culvert, at this time, at the request of the defendant, has been installed for the protection of the proposed Interstate Highway #64. The cost of this culvert to the plaintiff was $55,271.

6. That the artificial construction in these streams by the defendant (and to some extent by the Henrico County authorities) will increase the volume and velocity of flow of water reaching the railroad culvert from these streams by decreasing the time of concentration of the said water approximately thirty (30) minutes. The water runoff reaching the railroad culvert from a twenty-five (25) year storm will be approximately 7,490 cubic feet per second (cfs) upon full development of the watersheds and after the com-
page 5 } pletion of the aforesaid artificial construction by the defendant.

Of this 7,490 cfs of storm surface water to be discharges from these streams, for which the plaintiff must design adequate culvert openings:

A. 6,130 cfs would normally be expected if the artificial changes were not constructed by Henrico County and the defendant, and this calculation includes:

1) the maximum storm water flow expected at the present time of 4,720 cfs;

2) 1,410 cfs which will result upon full development of the watersheds in the future;

B. 1,360 cfs is directly attributable to the artificial changes and construction in and near Horsepen Branch by Henrico County and in and near Upham Brook and Horsepen Branch in conjunction with the construction of Interstate Route #64 by the defendant. This increased storm surface water discharge from these streams is attributable:

1) 260 cfs increase due to the Henrico County artificial construction;

2) 1100 cfs increase due to the artificial construction by the defendant.

7. As a result of repeated requests by the defendant based on defendant's own hydraulic calculations and 50-year storm plans, and in order to avoid substantial added expense to the public in constructing Route 64, plaintiff has installed an additional culvert under its tracks at a cost of
page 6 } $55,271.

8. The defendant has condemned and filed Certificates of Condemnation or otherwise acquired land and rights for the construction of the artificial structures and drainage facilities in and near Upham Brook. Likewise, property immediately adjacent and west of the railroad cul-

vert and right of way has been condemned for channel relocation, drainage easements and the construction of Interchange #4.

9. There now exists between the plaintiff and defendant a *bona fide* dispute as to the legal right of the plaintiff to recover for the aforesaid damages to its property. For some months the plaintiff has been in correspondence with the defendant and has requested the defendant to institute condemnation proceedings or make payment to the plaintiff of the aforesaid damages, however, the defendant has refused to do so.

10. That on the 11th day of January 1965, the plaintiff filed a Petition for *Mandamus* in the Supreme Court of Appeals of Virginia seeking the writ to be issued and directed to the State Highway Commissioner of the State of Virginia and the members of the Board of Supervisors of Henrico County so as to have commissioners appointed to ascertain the compensation due the plaintiff for the aforesaid damages done to its property by the defendant and also for the damages inflicted on its property by the Henrico County authorities in the construction of artificial improvements west of the defendant's artificial construction in Horsepen Branch. The Supreme Court of Appeals of Virginia sustained a motion to dismiss the petition and held that the determination of the damages sustained by the
page 7 } plaintiff, including the necessity for additional culverts, by the acts of the defendant, should be resolved in a declaratory judgment proceeding in a lower court under Virginia Code Section 8-578, *et seq.*

11. That the defendant has invaded the plaintiff's legal rights and there exists a clear legal right in the plaintiff for relief and a clear legal duty on the part of the defendant to compensate the plaintiff for the aforesaid damages.

12. That there further exists between the plaintiff and defendant a justiciable controversy between these two adverse parties which involves substantial legal interests of the plaintiff.

WHEREFORE, the plaintiff prays for a declaratory judgment, in accordance with the opinion of the Supreme Court of Appeals of Virginia, attached hereto, and Virginia Code §§ 8-578 *ff*, cited therein, declaring:

1) That Plaintiff has been damaged by acts of Defendant;

2) What part of the aforesaid damage, including the necessity for additional culverts, has been caused by the acts of the Defendant;

3) That Plaintiff recover its costs, and reasonable attorneys' fees, in this action; and

4) That Plaintiff have such other relief as may be appropriate and necessary under the circumstances, and to satisfy the requirements of Code §§8-578 to 8-585.

Richmond, Fredericksburg and Potomac
Railroad Company

By U. B. Ellis
David S. Antrobius
Attorneys for Plaintiff

Filed in the Clerk's Office the 23d day of August, 1965.
Teste: #A-1884

Luther Libby, Jr., Clerk.

By E. M. Edwards, D. C.

* * * * *

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* * * * *

DEMURRER

To The Honorable Judges of the Circuit Court of the County of Henrico:

Now comes the defendant, Douglas B. Fugate, State Highway Commissioner, by counsel, and says that the Motion for Declaratory Judgment filed in this cause is insufficient in law and assigns as grounds therefor, the following:

That the Motion for Declaratory Judgment states no cause of action against the defendant inasmuch as the acts complained of are lawful and have caused no damage to any interest of the plaintiff which would be compensable at law.

Wherefore, the defendant respectfully prays that the Motion for Declaratory Judgment be dismissed.

Respectfully submitted,

Douglas B. Fugate,
State Highway Commissioner

By Counsel

Received & filed in office March 18, 1966.

Helen C. Loving, Clerk.

* * * * *

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* * * * *

INTERROGATORIES TO DOUGLAS B. FUGATE,
State Highway Commissioner

The plaintiff requests that the defendant answer under oath in accordance with Virginia Code Section 8-320, the following interrogatories:

1. List the names and addresses of the witnesses who the defendant will call on its behalf in this action.

2. Was the construction of the drainage improvements by the State Highway Department in Horsepen Branch and Upham Brook performed under authority from the State Highway Department? Also Route 64 itself.

3. Was that construction one or more State Highway Department projects?

4. Give a description of that construction and state:

a) The dates it was undertaken and completed;

b) The facts on which the State Highway Department relied or that influenced it to perform the said construction of the drainage improvements in Horsepen Branch

page 68 } and Upham Brook;

5. With reference to the said construction, state the names and addresses of the draftsmen, engineer, surveyor, geologist or other person, firm or company that participated in the determination of the need for, or in laying out the course of the streams, in calculating their grades, in determining the shape and capacity of the new channels and the number and placement of improvements therein and in designing the drainage pattern and flow off of Route 64 itself.

6. Has the State Highway Department ever paid for the construction of other drainage facilities through private property? If so, state the reasons therefor and details.

7. Did the State Highway Department acquire title to and/or drainage easements over property in connection with the aforesaid construction? If so, state:

a) The date acquired;

b) The name or other means of identification and address of the person or firm from whom the property and/or easement was acquired;

c) The description of the property and/or easement;

d) The cost of the property and/or easement.

8. Has any surface or stream water been diverted by the aforesaid construction into either Horsepen Branch or Upham Brook streams or watersheds? If so, give details and supporting calculations.

9. Did the State Highway Department ask any other landowner to construct drainage facilities or otherwise contribute to the said construction by the State Highway Department in and near Horsepen Branch and Upham Brook?

page 69 } 10. Was the culvert serving the Railroad Company to pass these streams under its right of way near Staples Mill Road adequate during the past? If not, give calculations to substantiate that position.

Richmond, Fredericksburg and Potomac
Railroad Company

By Urchie B. Ellis

David S. Antrobius
Attorneys for Plaintiff

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* * * * *

AFFIDAVIT

This day in the City of Richmond, David S. Antrobius personally appeared before me, E. A. Wallace, a Notary Public in and for the City aforesaid, in the State of Virginia, and under oath said that he is the attorney for the plaintiff in the above-entitled action; that there are, the plaintiff verily believes, in the possession of the defendant, certain books, documents, drawings, and other writings, to-wit:

1. All final plans and specifications for the construction of the improvements by the State Highway Department in and near Horsepen Branch and Upham Brook;

2. All drawings and specifications and volume data as to the dirt fill placed or to be placed west of the Railroad in the Staples Mill Road - Route 64 area;

3. All hydrology studies and hydrologic calculations made by or on behalf of the State Highway Department including all calculations made by Mr. Pond or other State

page 71 } Highway Department engineers concerning the need for, and effect of, the construction of the drainage facilities in Horsepen Branch and Upham Brook and of Route 64 itself, and the need for the additional culvert capacity requested by the State Highway Department through the Railroad right of way;

4. All official documents and papers pertaining to the authority and financing of the said construction including general fund appropriations and federal financing;

5. All official documents and papers relating to the condemnation of land and/or drainage easements in connection with the aforesaid construction;

6. All other plans, charts, hydraulic data, maps, and other information in the possession of the defendant concerning the construction and improvement of Horsepen Branch and Upham Brook by the defendant; and all in the possession of the said defendant; all of which documents contain material evidence for the plaintiff; and the plaintiff desires that a summons be issued in accordance with the provisions of Virginia Code Section 8-324 and following, requiring the defendant to produce said books, documents, drawings and other writings herein referred to.

David S. Antrobius
Attorney for the Richmond
Fredericksburg and Potomac Railroad Company

page 72 } Subscribed and sworn to before me this 23rd day of March, 1966.

In testimony whereof I have hereunto set my hand the day, month and year aforesaid.

E. A. Wallace, Notary Public

My commission expires August 16, 1968.

Filed March 24, 1966.

* * * * *

page 73 } *SUBPOENA DUCES TECUM*

The Commonwealth of Virginia
To The Sheriff of the County of Henrico, Greeting:

We command that you summon Douglas B. Fugate (or someone for him) State Highway Commissioner of Va., 1401 East Broad Street to appear before our Circuit Court of Henrico County, at the Clerk's Office thereof, 22nd and Main Streets, Richmond, Virginia, on the day of , 19 , at o'clock M. to produce before our said Court the certain writings described, to-wit:

Certain books, documents, drawings, and other writings,

(see affidavit attached)

on behalf of the Plaintiff, in a certain matter of controversy in our said court now depending and undetermined wherein Richmond, Fredericksburg and Potomac Railroad is Plaintiff and Douglas B. Fugate is defendant. And have then there this writ and make known how you have executed the same. WITNESS, HELEN C. LOVING, Clerk of our said Court, at the Courthouse, thereof, in the City and State aforesaid, the 24th day of March, 1966, and in the 190th year of the Commonwealth.

Helen C. Loving, Clerk

By: Helen C. Loving

David Antrobius, p. q.

Executed this 25th day of Mar., 1966 in the City of Richmond, Va. by delivering, a copy of the within Summons to Douglas B. Fugate in person.

W. J. Eacho, Sheriff
County of Henrico, Va.

By C. P. Wingfield
Deputy

Corrected Subpoena issued Returnable April 24, 1966 - 10 am.
Issued March 24, 1966.

page 74 } INTERROGATORY SUMMONS

COMMONWEALTH OF VIRGINIA:
To the Sheriff of Henrico County, Virginia, Greeting:

Whereas in a certain case at law now depending and undetermined in our Circuit Court of Henrico County, Virginia, wherein Richmond, Fredericksburg and Potomac Railroad Co., A Corp. is Plaintiff and Douglas B. Fugate is Defendant and whereas Richmond, Fredericksburg and Potomac filed in the Clerk's Office of our said court interrogatories to the said Defendant
Therefore we command that you summon the said County of Henrico Serve on: H. Ratcliffe Turner to answer the said interrogatories, delivered herewith upon oath, and make re-

turn thereof before our said Court, at the Courthouse thereof on the 24th day of April 1966, at 10 o'clock a. m., and that you have then and there this writ and make return how you have executed the same.
Witness, Helen C. Loving, Clerk of our said Court, at the Courthouse thereof in the County of Henrico, Virginia, the 24th day of March, 1966, and in the 190th year of the Commonwealth.

Helen C. Loving
Clerk.

Executed this 25 day of March, 1966 in the Co. of Henrico Va. by delivering, a copy of the within Summons to H. Ratcliffe Turner in person.

W. J. Eacho, Sheriff
County of Henrico, Va.

By M. G. Thomas
Deputy

3-28-66 - Summons in error New Summons issued
Issued March 24, 1966

page 75 } INTERROGATORY SUMMONS

COMMONWEALTH OF VIRGINIA:
To the Sheriff of Henrico County, Virginia, Greeting:

Whereas in a certain case at law now depending and undetermined in our Circuit Court of Henrico County, Virginia, wherein Richmond, Fredericksburg and Potomac Railroad Co. /a corp. is Plaintiff and Douglas B. Fugate is Defendant and whereas Richmond, Fredericksburg and Potomac filed in the Clerk's Office of our said court interrogatories to the said Defendant
Therefore we command that you summon the said Douglas B. Fugate, State Highway Commissioner to answer the said interrogatories, delivered herewith upon oath, and make return thereof before our said Court, at the Courthouse thereof on the 24th day of April 1966, at 10:00 o'clock a. m., and that you have then and there this writ and make return how you have executed the same.
Witness, Helen C. Loving, Clerk of our said Court, at the

Courthouse thereof in the County of Henrico, Virginia, the 28th day of March, 1966, and in the 190th year of the Commonwealth.

Helen C. Loving
Clerk.

Executed this 29th day of Mar., 1966 in the City of Richmond, Va. by delivering, a copy of the within Summons to Douglas B. Fugate in person.

W. J. Eacho, Sheriff
County of Henrico, Va.

By C. P. Wingfield
Deputy

Issued March 28, 1966.

page 76 } CORRECTED *SUBPOENA DUCES TECUM*

The Commonwealth of Virginia
To the Sheriff of the County of Henrico, Greeting:

WE COMMAND that you summon Douglas B. Fugate (or someone for him) State Highway Commissioner of Va. 1401 East Broad Street to appear before our Circuit Court of Henrico County, at the Clerk's Office thereof, 22nd and Main Streets, Richmond, Virginia, on the 24 day of April, 1966, at 10:00 o'clock A. M. to produce before our said Court the certain writings described, to-wit:

Certain books, documents, drawings, and other writings,

(see affidavit attached)

on behalf of the Plaintiff, in a certain matter of controversy in our said court now depending and undetermined wherein Richmond, Fredericksburg and Potomac Railroad is Plaintiff and Douglas B. Fugate is defendant. And have then there this writ and make known how you have executed the same. WITNESS, HELEN C. LOVING, Clerk of our said Court, at the Courthouse, thereof, in the City and State aforesaid, the 28 day of March, 1966, and in the 190th year of the Commonwealth.

Helen C. Loving, Clerk.
By: Helen C. Loving

Executed this 29th day of Mar., 1966 in the City of Richmond, Va. by delivering, a copy of the within Summons to Douglas B. Fugate in person.

W. J. Eacho, Sheriff
County of Henrico, Va.

By C. P. Wingfield
Deputy

Issued March 28, 1966

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* * * * *

MOTION TO QUASH

To The Honorable Judges of the Circuit Court of the County of Henrico:

Now comes the defendant, Douglas B. Fugate, State Highway Commissioner, by counsel, and moves this Honorable Court to quash the *subpoena duces tecum* issued on March 28, 1966, against the defendant in this cause requesting the production of certain books, documents, drawings and other writings as set forth in affidavit of counsel for plaintiff and attached to said *subpoena* on the grounds that such books, documents, drawings and other writings as requested therein are not *relevent* to the issues now before this Court and further that the *subpoenaing* of such information is premature.

Respectfully submitted,

Douglas B. Fugate,
State Highway Commissioner

By Counsel

Received and filed in office April 4, 1966.

Helen C. Loving, Clerk.

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MOTION TO QUASH

To the Honorable Judges of the Circuit Court of the County of Henrico:

Now comes the defendant, Douglas B. Fugate, State Highway Commissioner, by counsel, and moves this Honorable Court to quash the Interrogatories filed by the plaintiff in this cause on the grounds that the Interrogatories are not *relevent* to the issues now before this Court and further that such Interrogatories are prematurely filed.

Respectfully submitted,

Douglas B. Fugate,
State Highway Commissioner

By Counsel

Received & filed in office April 4, 1966.

Helen C. Loving, Clerk.

* * * * *

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ORDER

This matter came on to be heard on the motions by the defendant to quash the interrogatories propounded by the plaintiff in this cause and to quash the *subpoena duces tecum* issued on March 28, 1966, against the defendant in this cause on the grounds that the said interrogatories and the said *subpoena duces tecum* were prematurely filed and were not relevant to the issues now before this Court; and, after hearing argument of counsel and upon mature consideration, the Court is of the opinion that the said motions to quash should be dismissed.

Wherefore, the Court doth hereby order that the defendant's motions to quash the said interrogatories and *subpoena*

duces tecum be, and the same hereby are, dismissed, to which action the defendant doth object and except.

Notwithstanding the foregoing, and being of the opinion that certain requests, questions and other matters contained and set out in the plaintiff's interrogatories and the *subpoena duces tecum* are not relevant to the issues now before the Court, this Court doth hereby order the following

page 80 } amendments:

I.

Plaintiff's Affidavit for Subpoena Duces Tecum

a) Paragraph No. 1 shall be amended to:

"All final plans and specifications for the construction of the improvements by the State Highway Department in that area of the Horsepen Branch and Upham Brook watersheds west of the plaintiff's right of way, including volume data for the dirt fill placed or to be placed west and between Staples Mill Road and the plaintiff's right of way."

b) Paragraph No. 2 is deleted;
c) Paragraph No. 3 shall not be deleted or amended;
d) Paragraph No. 4 is deleted;
e) Paragraph No. 5 is deleted;
f) Paragraph No. 6 is amended to:

"All other plans, charts, hydraulic data, maps and other information in the possession of the defendant concerning the aforesaid construction and improvement of Horsepen Branch and Upham Brook by the defendant"; provided, however, that the Court reserves further consideration as to the relevancy of such material until after the defendant's engineer, Mr. Pond, or some other representative designated by the Virginia State Highway Commissioner, confers with such engineer as may be designated by the plaintiff in connection with the defendant's files.

II.

Plaintiff's Interrogatories

a) Paragraph No. 1 is deleted;

b) Paragraph No. 2 shall not be deleted or

page 81 } amended;

c) Paragraph No. 3 is amended to:

"Was the construction by the defendant in and near the Horsepen Branch and Upham Brook watershed areas west of the Railroad and beginning where the construction first varies the topography, one or more State Highway Department projects?"

d) Paragraph No. 4 is amended to:

"Gives the dates the aforesaid construction was undertaken and completed."

e) Paragraph No. 5 is amended to:

"Unless such information is shown on the aforesaid plans and specifications, state the names and addresses of the draftsman, engineer, surveyor, geologist, or other person, firm or company that participated in the determination of the need for or in laying out of the course of the streams in calculating their grades and determining the shape and capacity of the new channels and the number and placement of improvements therein, and in designing the drainage pattern and flow off Route 64 itself."

f) Paragraph No. 6 is deleted;
g) Paragraph No. 7 is amended to:

"Furnish a list, including Deed Book and page numbers, if known, of properties in the aforesaid Horsepen Branch and Upham Brook watershed area west of the plaintiff's right of way, as to which the defendant has acquired title and/or drainage easements in connection with the aforesaid construction."

h) Paragraph No. 8 is amended as follows:

"Has any surface water been diverted by the aforesaid construction into Horsepen Branch or Upham
page 82 } Brook streams or watersheds so as to affect the plaintiff's culverts or right of way in the aforesaid area now under consideration? If so, give details and supporting calculations."

i) Paragraph No. 9 shall not be deleted;
j) Paragraph No. 10 is hereby deleted.

Enter: 5/4/66

John Wingo Knowles
Judge

Seen and agreed to:

David S. Antrobius
Counsel for Plaintiff

Seen and objected to:

Kelly E. Miller
Counsel for Defendant

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* * * * *

ANSWER TO INTERROGATORIES

Now comes the defendant, Douglas B. Fugate, State Highway Commissioner, by counsel, pursuant to Order of this Court, and submits the following answers to the interrogatories propounded by the plaintiff in this cause, as amended by said Order:

1. (a) Yes.
(b) Yes.
2. Three (3) projects.
3. (a) Project No. 0064-043-001, C-504. Construction was undertaken on December 10, 1964, and is uncompleted.
(b) Project No. 0064-043-001, C-503. Construction was undertaken on February 22, 1965, and is uncompleted.
(c) Project No. 0064-043-001, C-502. Construction was undertaken on February 22, 1965, and is uncompleted.
4. Blackburn & Blauvelt
1506 Willow Lawn Drive
Richmond, Virginia
5. See attached Exhibit "A".

6. No.
7. No.

May 31, 1966 Receiver from Notary Public under seal and filed.

Helen C. Loving
Clerk Henrico Circuit Court

page 84 } EXHIBIT "A"

Parcel	*Landowner*	*Deed Book*	*Page*
026	Emma F. Jones	1113	493
029	Chester W. Krueger	1120	510
031	Malcolm E. Mason	1155	162
032	Henry T. Holloway, Jr.	1153	404
033	Henry T. Holloway, Jr.	1145	384
034	McCarthy Bros., Inc.	1133	78
034 Supp.	McCarthy Bros., Inc.	1164	34
035	Empie C. Long	1146	570
036	Harold W. Sell	1145	211
037	Carl F. Cousins	1142	229
038	Lillian B. Baskett	1134	103
039	Catholic Diocese of Richmond	1158	271
040	George P. Ewing	1188	461
041	Robert P. Kinney	1151	107
042	J. V. Millard Haulk	1136	227
043	Esther Stiles Bartley	1146	108
044	J. E. Jones	1164	576
045	E. H. Wicker	1135	408
046	E. H. Wicker	1135	408
047	Benj. T. Crump Co., Inc.	1155	165
048	Jennings Chafin	1129	641
049	Sallie H. Parsons	1131	183
050	Gordon W. Smith	1129	412
051	Floyd K. Lipford	1128	321
052	Ernest R. Sagraves	1129	302
057	H. A. Horn	1155	155
058	Audrey Allen Davis	1155	454
page 85 } 059	Chas. B. Seay, Sr.	1122	528
060	Linwood A. Hobgood	1157	107
061	Elizabeth Trice Walton	1170	315
062	Bernard Wittkamp	1133	75
063	Catholic Diocese of Richmond	1158	271
064	Va. Iron & Metal Co.	1156	101

066		R. F. & P. R.R. Co.	1256	672
068		D. C. Mathews	1150	438
070		D. C. Mathews	1150	438
072		Nancy G. Phelps	1155	73
073		Margaret G. Cross	1155	152
074		Margaret G. Cross	1155	152
075		Richmond Land Corp.	1172	539
076		Richmond Land Corp.	1172	539
077		R. F. & P. R.R. Co.	1256	672
079		Absalom Blackburn	1140	163
086		Westover Court Corp.	1161	39
087		George M. Kline	1164	579
202		Esther Stiles Bartley	1146	108
264		R. F. & P. R.R. Co.	1256	672
	265	R. F. & P. R.R. Co.	1256	672
page 86 }	002	Richmond Holding Corp.	626-C	84
	006	Better Housing & Supply Corp.	625-C	505
007		Better Housing & Supply Corp.	624-A	547
008		Richmond Holding Corp.	626-C	84
009		Mary A. Griffith	623-D	112
010		Mary A. Griffith	623-D	112
013		Walmsley Corporation	627-C	159
014		William T. Sirles	625-B	70
015		Gladys D. Walker	626-A	488
016		Better Housing & Supply Corp.	625-C	505
017		J. W. King	626-C	207
018		Walmsley Corporation	627-C	159
019		W. W. Saunders	626-A	408
020		Alexander Alexander	625-D	336
021		W. W. Saunders	626-A	408
022		Walmsley Corporation	627-C	159

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Respectfully submitted,

Douglas B. Fugate,
State Highway Commissioner

By Kelly E. Miller
Of Counsel

* * * * *

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* * * * *

ORDER

This matter came on to be heard on the demurrer filed by the defendant, State Highway Commissioner of Virginia. Briefs were filed on behalf of the parties and, after hearing argument of counsel, and upon mature consideration, the Court is of the opinion that the said demurrer should be overruled.

WHEREFORE, the Court doth order that the defendant's demurrer be, and the same hereby is, overruled, to which action the defendant does object and except.

Enter: 6/24/66 John Wingo Knowles
Judge

Seen and agreed to:

U. B. Ellis
David S. Antrobius
Counsel for Plaintiff

Seen and objected to:

Kelly E. Miller
Paul D. Stotts
Counsel for Defendant.

page 90 } TO WHOM IT MAY CONCERN:

The original reporter's transcript of the argument on the demurrer filed in *RF&P Railroad Company* v. *Douglas B. Fugate, State Highway Commissioner, in* the Circuit Court of Henrico County, Virginia, on June 21, 1966, should be amended as follows:

1. Page 45, line 14, first word "impendent" should read, "incumbent";
2. Page 47, line 7, should be inserted at the end thereof the word "admitted";
3. Page 48, line 1, the words "is admitted" should be inserted between the 11th and 12th words;
4. Page 55, line 10, fourth word written as "Court" should be "tort";
5. Page 58, lines 13 and 14, should continue as one sentence;

6. Page 60, line 6, fifth word "ford" should read "agency";
7. Page 60, line 8, the word "exercise" should be inserted between the fourth and fifth words;
8. Page 64, line 1, the second, third, fourth and fifth words "either one have a" should read "even under the".

David S. Antrobius

Subscribed and sworn to before me this 29th day of July, 1966.

E. A. Wallace
Notary Public.

My commission expires Aug. 16, 1968.

(SEAL)

Filed August 2, 1966.

* * * * *

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* * * * *

ANSWER

Now comes the defendant, Douglas B. Fugate, State Highway Commissioner, and in answer to the Motion for Declaratory Judgment filed against him in this proceeding does say as follows:

1. The allegations set forth in paragraph numbered 1 are admitted.
2. The allegations set forth in paragraph numbered 2 are admitted.
3. The allegations set forth in paragraph numbered 3 are neither admitted nor denied, but the defendant calls for strict proof thereof.
4. The allegations set forth in paragraph numbered 4 are neither admitted nor denied, but the defendant calls for strict proof thereof.
5. The allegations set forth in paragraph numbered 5 are neither admitted nor denied, but the defendant

page 93 } calls for strict proof thereof.

6. The allegations set forth in paragraph numbered 6 are neither admitted nor denied, but the defendant calls for strict proof thereof.

7. The allegations set forth in paragraph numbered 7 are neither admitted nor denied, but the defendant calls for strict proof thereof.

8. The allegations set forth in paragraph numbered 8 are neither admitted nor denied, and the defendant says further that these allegations are totally irrelevant and immaterial to this proceeding.

9. The allegations set forth in paragraph numbered 9 are admitted.

10. The allegations set forth in paragraph numbered 10 are admitted.

11. The allegations set forth in paragraph numbered 11 are denied.

12. The allegations set forth in paragraph numbered 12 are neither admitted nor denied, but the defendant calls for strict proof thereof.

The defendant further states that the plaintiff has suffered no damage which entitles it to the relief requested.

page 94 } WHEREFORE, the defendant having fully answered, prays to be hence dismissed with his reasonable costs.

Respectfully submitted,

Douglas B. Fugate
State Highway Commissioner of Virginia

By Counsel

Received & filed in Office August 5 1966

Helen C. Loving, Clerk

* * * * *

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* * * * *

AGREEMENT OF STIPULATIONS

Now come the plaintiff and defendant by counsel and agree to stipulate in this action:

1. The Highway Department construction plans for Interstate 64 and appurtenant drainage; that the plans furnished the plaintiff by the defendant are the final plans and that

the construction by the defendant is proceeding according to these plans;

2. That the three maps prepared by the firm of Austin Brockenbrough & Associates denoting the Upham Brook Watershed and Vicinity, Upham Brook Stream and fill in the ponding area near Staples Mill Road, respectively, are graphic descriptions of what they purport to represent and may be used by the plaintiff and the defendant in opening argument;

3. That the following letters are *bona fide* correspondence between the parties:

a) Letter dated December 7, 1962, from Mr. F. A. Davis, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

page 98 } b) Letter dated December 4, 1962, from Mr. F. A. Davis, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

c) Letter dated November 30, 1962, from Mr. L. B. Cann, Jr., RF&P Railroad Company, to Mr. F. A. Davis, State Highway Department;

d) Letter dated November 13, 1962, from Mr. F. A. Davis, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

e) Letter dated October 31, 1962, from Mr. D. B. LaPrade, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

f) Letter dated January 4, 1963, from Mr. F. A. Davis, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

g) Letter dated May 21, 1963, from Mr. F. A. Davis, State Highway Department, to Mr. L. B. Cann, Jr., RF&P Railroad Company;

4. That the Upham Brook surface water drainage planning for United States Interstate Route 64 is on a 50-year storm 20-year projected development basis;

5. That the construction of U. S. Interstate Route 64 in Upham Brook Stream and Watershed by the defendant is under lawful authority.

Received & filed in office November 10, 1966.

Margaret B. Baker, Dep. Clerk.

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* * * * *

ORDER CASE NO. 646

Pursuant to adjournment on November 14, 1966, came again the plaintiff and defendant by their duly authorized representatives and counsel and the jury heretofore empaneled and sworn.

At the conclusion of the plaintiff's evidence the defendant moved to strike the evidence for reasons assigned in the record, which motion was overruled and exception noted.

At the completion of the defendants evidence the jury was adjourned until November 16, 1966 at 11:30 o'clock a. m.

* * * * *

Entered November 15, 1966.

page 101 } INSTRUCTION NO. A

Where a party to litigation is in possession of vitally material facts and fails to testify to them, there arises a presumption that if he had testified thereto his testimony would not have supported his theory of the case.

Refused. J.W.K.

page 102 } INSTRUCTION NO. B

Where one party to a legal controversy has within his control evidence of matter in issue and does not produce it, there arises a presumption that its effect, if produced, would be against the party withholding it.

Refused JWK

page 103 } INSTRUCTION NO. C

A railroad company enjoys the same privileges in respect to its right of way as any other owner of land, no greater but no less.

Refused. JWK

page 104 } INSTRUCTION NO. D

The defendant, State Highway Commissioner, is not in the same legal position as a private upper landowner. The defendant is immune to a lawsuit based on negligence and is required by constitutional provision to award just compensation for property that is damaged for public use. The defendant also has the prerogative to acquire property by condemnation. No such distinctions are applicable to a private landowner.

Refused. JWK

page 105 } INSTRUCTION NO. E

The defendant cannot affect the flow of water in Upham Brook to the injury of the plaintiff even if a private landowner may have been able to do so and the plaintiff is entitled to recover for such injury under §58 of the Constitution of Virginia.

Refused. JWK

page 106 } INSTRUCTION NO. F

If the plaintiff is damaged by the need for additional culvert capacity because of the increased flow of surface water and the elimination of a portion of the ponding area by the construction by the defendant in Upham Brook stream and watershed and upstream of the plaintiff's property, it then is entitled to compensation under §§11 and 58 of the Constitution of Virginia and the Fifth and Fourteenth Amendments of the Constitution of the United States. §58 of the constitution of Virginia provides that the General Assembly "shall not enact any law whereby private property shall be taken or damaged for public uses without just compensation. . . ."

§58 of the Constitution of Virginia gives a remedy for every physical injury whereby private property is taken or damaged for public uses without just compensation. The term "public uses" mentioned in this section is defined to embrace all uses which are necessary for public purposes. The provisions of the Constitution requiring compensation to be made for property taken, injured or damaged for public uses are intended for the protection of private rights. They are remedial in character; they should therefore be liberally construed in favor of the individual whose property is affected.

Under §58 of the Constitution of Virginia just compensation must be awarded for private property that is taken or damaged for public use. There is no limitation on this constitutional provision and all damage of private property for public use is "compensable" under its terms.

Refused. JWK

page 107 } INSTRUCTION NO. G

Where surface water flows in a well-defined course, whether such course be a ditch, swale or drain in its natural condition, this natural flow may not be interfered with by artificial means to the injury of a neighboring owner.

The defendant has not right to collect surface water into an artificial channel or volume or precipitate it in greatly increased or unnatural quantities upon the plaintiff to the injury of the latter.

This is true although no more water is collected than would have naturally flowed upon the property in a different condition.

If you find that the construction by the defendant in the Upham Brook stream and watershed west of the plaintiff's right of way and culvert near Staples Mill and Dumbarton Roads, in Henrico County, Virginia, has and will by artificial means increase the volume and/or velocity of surface water to be cast upon the plaintiff's property and culvert then you must find that the said increased surface water volume and/or velocity has directly caused damage to the plaintiff and you must, under §58 of the Constitution of Virginia, ascertain and find for the plaintiff as to the amount of that damage.

Refused. JWK

page 108 } INSTRUCTION NO. H

A natural watercourse has such characteristics while in a state of nature and without artificial construction.

It is a stream that has been worn or cut into the soil by the frequent running of water, and without artificial and man-made aids or improvements which have diverted, accelerated or augmented the flow of water therein.

Refused. JWK

page 109 } INSTRUCTION NO. I

In determining the artificial condition of and conditions west and upstream from the plaintiff's right of way and culvert, the jury may consider all the evidence as to construction and structures, including roadways; culverts; change of grades; the paving, *deepending* and enlargement of the original stream bed; and the construction and relocation of new drainage ditches.

Refused. JWK

page 110 } INSTRUCTION NO. J

If you find from the evidence that the plaintiff's use of property adjacent to its right of way and arch culvert to pond water for the hydraulic water headcrest at its culvert during times of heavy rainfall was open and for a period of at least twenty years, then you must find that the plaintiff had acquired an easement by prescription, that is, a right to use that area for such ponding purposes. If you so find that the plaintiff does have such a prescriptive easement, then you must determine from the evidence the amount of damages, including the need for additional culvert capacity required because of the defendant's fill and construction in the ponding area adjacent to the plaintiff's culvert.

Refused. JWK

page 111 } INSTRUCTION NO. K

If you find that the defendant's construction west and upstream from the plaintiff's right of way and culvert near Staples Mill and Dumbarton Roads in Henrico County, Virginia, has and will cause damage to the plaintiff's property, then the measure of damage should be the additional culvert capacity or the related expense required to accommodate the increased water to be cast upon the plaintiff's property because of the aforesaid construction, including the filling of the ponding area adjacent to the plaintiff's culvert.

Refused. JWK

page 112 } INSTRUCTION NO. V

The Court instructs the jury that the meaning of a natural watercourse, or stream, as the term is applicable to the case under consideration, is a place where spring or surface water

has been accustomed to gather and flow along a well-defined channel, which by frequent running it has worn or cut into the soil, and that Horsepen Branch and Upham Brook are natural watercourses within the meaning of the above definition.

Refused. JWK

page 113 } INSTRUCTION NO. W

The Court instructs the jury that the plaintiff has no right to construct or maintain a culvert over a natural watercourse in such manner as to obstruct the flow of the stream and throw its waters back on another owner's property to the other property owner's injury, and that the culvert must be adequate to accommodate not only the natural and normal flow of this stream but such abnormal and excessive flow as may reasonably be anticipated in times of high water and flood.

Refused. JWK

page 114 } INSTRUCTION NO. X

The Court instructs the jury that the plaintiff's duty not to obstruct a natural watercourse in the construction of its facilities is not discharged by the original installation of a culvert, but is a continuing one to be exercised with due regard to changed conditions affecting the flow of water to be accommodated by the culvert.

Refused. JWK

page 115 } INSTRUCTION No. Y

The Court instructs the jury that the defendant, in connection with the construction of this project, has the right in the reasonable use of its land to drain surface water therefrom into the natural watercourse located on the defendant's property and in doing so could collect surface water thereon in artificial drains or ditches and precipitate it into the natural watercourse where such surface water would otherwise naturally flow.

The defendant may also in the construction of this project improve, change or divert the whole course of a stream within the limits of the defendant's own land provided he returns it to its original or natural channel before leaving his own premises and before it reaches the land of the lower owner.

The defendant may make the aforementioned improvements and changes in the flow of surface water and water in a natural watercourse even though in so doing it might increase and accelerate the flow of the water onto the land of the plaintiff.

Refused. JWK

page 116 } INSTRUCTION NO. Z

The Court instructs the jury that the plaintiff must prove by a preponderance of the evidence:

1. That actual damages have been suffered by the plaintiff.
2. That the construction of the project by the defendant has caused such damages, if any, in whole or in part.
3. What portion of such damages have actually been caused by the acts of the defendant.

In determining No. 1, the jury may not consider any possible damages which may arise in the future or speculate regarding damages.

In determining No. 3, the jury may not charge the defendant with any damages which may have been occasioned by the inadequacy of the plaintiff's culvert, the natural development within the watershed or improvements made within either Horsepen Branch or Upham Brook by Henrico County or other persons.

Refused. JWK

* * * * *

page 118 } INSTRUCTION NO. 1

The Court submits this case to you on special issues in the form of Interrogatories which you will answer as you find the facts to be from the evidence presented before you on this trial under the rulings of the Court in conformity with the Instructions herein given.

Your answers to said special issues or Interrogatories will constitute your verdict and such answers must be made by you without regard as to their legal effect or the judgment that may be based thereon by the Court.

JWK

page 119 } INSTRUCTION NO. 2

The Court instructs the jury that in considering your answers to each Interrogatory the burden of proof is on the plaintiff to prove by a preponderance of the evidence every material fact necessary to prove his case with respect to such issue.

JWK

page 120 } INSTRUCTION NO. 3

The Court instructs the jury that the answers to the Interrogatories must not be based upon surmise, conjecture or sympathy for either of the parties, but must be based solely upon the evidence and Instructions of the Court.

By a preponderance of evidence is meant that evidence which is most convincing and satisfactory to the minds of the jurors. In determining upon which side the preponderance of the evidence is, the jury may take into consideration the opportunities of the several witnesses for seeing and knowing the things to which they testify, their interest (if any), or want of interest (if any), in the result of this case, the probability or improbability of the truth of their several statements, in view of all the other evidence, and the facts and circumstances upon the trial; and from all the circumstances determine the weight or preponderance of the evidence. The jury are the sole judges of the weight of the evidence and credibility of the witnesses.

JWK

page 121 } INSTRUCTION NO. 4

In considering the weight to be given to the testimony of expert witnesses, whose opinions differ, you may consider the ability and character of the witnesses, their actions upon the witness stand, the weight and process of the reasoning by which they support their opinion, their possible bias in favor of the side for which they testify, their relative opportunities for study or observation of the matters about which they testify, and any other matters which serve to illuminate their statements.

JWK

page 122 } INSTRUCTION NO. 5

It is not necessary that material facts be proved by direct evidence; they may be proved by circumstantial evidence, that is, the jury may draw all reasonable and legitimate inferences and deductions from the evidence adduced before them.

JWK

page 123 } INSTRUCTION NO. 6

The Court instructs the jury that the term "actual damage" means that the plaintiff has been or will be caused to install additional culvert capacity by reason of a volume of surface water being cast upon its railway embankment in the area of its original arch culvert in excess of that which normally otherwise would have been cast thereon.

JWK

* * * * *

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INTERROGATORY NO. 1

Do you find from the evidence that the construction and improvements made by the defendant on this project, including any drainage improvements, were reasonable considering the use being made of the defendant's property and the manner in which such construction and improvements were accomplished?

Answer "Yes" or "No".

Answer .

Refused. JWK

page 126 }

INTERROGATORY NO. 4

Do you find from a preponderance of the evidence that the drainage facilities (culvert) as originally installed and maintained by the plaintiff is, and will be, adequate to accommodate waters flowing in Horsepen Branch and Upham Brook, including any normally forseeable flooding and any anticipated increase in volume or velocity resulting from normal development of the watershed, notwithstanding the construction and improvements on defendant's land?

Answer "Yes" or "No".

Answer .

Refused. JWK

INTERROGATORY NO. 5

Do you find from the evidence that the plaintiff's culvert has been adequate to accommodate the waters flowing in Horsepen Branch and Upham Brook so as to prevent flooding or ponding of water on other persons' lands, prior to the construction and improvements made by the defendant on this project?

Answer "Yes" or "No".

Answer .

Refused. JWK

INTERROGATORY NO. 6

Do you find from the evidence that the streams known as Horsepen Branch and Upham Brook are now in their natural condition and within their natural banks and channel when they pass onto the plaintiff's property?

page 127 } Answer "Yes" or "No".

Answer .

Refused. JWK

INTERROGATORY NO. 7

Do you find from the evidence that the defendant has diverted to Horsepen Branch or Upham Brook any water which would not have naturally flowed into such streams?

Answer "Yes" or "No."
Answer .

Refused. JWK

INTERROGATORY NO. 8

Do you find from the evidence that the defendant has caused to flow onto the lands of the plaintiff any water at any point other than where Horsepen Branch and Upham Brook flow onto the plaintiff?
Answer "Yes" or "No".
Answer .

Refused. JWK

* * * * *

page 128 } INTERROGATORIES TO THE JURY

I. Do you find from a preponderance of the evidence that the plaintiff has suffered any actual damage resulting in the necessity of installation of additional culverts by the plaintiff in this case?
Answer "Yes" or "No."
Answer: Yes.

II. If your answer to "I" is in the affirmative, how many 120″ diameter culverts in addition to the original arch culvert are necessitated as a result of such damage?
Answer "One" or "Two."
Answer: Two.

III. If your answer to "I" is in the affirmative, do you find from a preponderance of the evidence that such damage has been caused, in whole or in part, by the construction of the Interstate 64 project by the defendant west of the railroad embankment in the County of Henrico?
Answer "Yes" or "No."
Answer: Yes.

IV. If your answers to "I" and "III" are in the affirmative, what proportion of such damage, if any, has been caused by construction of the interstate 64 project by the defendant west of the railroad embankment in the County of Henrico?

Answer by giving a percentage.
Answer: 95%.

G. W. Mackey
Foreman

1 of 2 pages
Filed November 16, 1966.

page 129 } Interrogatories to Jury Continued

V. If your answer to "II" is "One" (culvert), what necessitated the installation of the additional 120" diameter culvert?
Answer "Loss of ponding area" or "Increased volume of water" or "A combination of both.
% increased volume of water."
Answer:

G. W. Mackey
Foreman

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* * * * *

Pursuant to adjournment on November 15, 1966 came again the plaintiff and defendant by their duly authorized representatives and the jury heretofore empaneled and sworn.
Counsel for the defendant renewed his motion to strike the plaintiff's evidence which motion was overruled and exceptions noted.
The Interrogatories were read to the jury and the jury instructed as to the applicable law.
Whereupon the jury retired to consult of their verdict and after sometime returned into Court and found the following answers

INTERROGATORIES TO THE JURY

I. Do you find from a preponderance of the evidence that the plaintiff has suffered any actual damage resulting in the necessity of installation of additional culverts by the plaintiff in this case?
Answer "Yes" or "No"
Answer: Yes

II. If your answer to "I" is in the affirmative, how many 120″ diameter culverts in addition to the original arch culvert are necessitated as a result of such damage?
Answer "One" or "Two."
Answer: Two

page 131 } III. If your answer to "I" is in the affirmative, do you find from a preponderance of the evidence that such damage has been caused, in whole or in part, by the construction of the Interstate 64 project by the defendant west of the *railraod* embankment in the County of Henrico?
Answer "Yes" or "No."
Answer: Yes

IV. If your answers to "I" and "III" are in the affirmative, what proportion of such damage, if any, has been caused by construction of the Interstate 64 project by the defendant west of the railroad embankment in the County of Henrico?
Answer by giving a percentage.
Answer: 95%.

V. If your answer to "II" is "One" (culvert), what necessitated the installation of the additional 120″ diameter culvert?
Answer "Loss of ponding area" or "Increased" volume of water" or "A combination of both, % increased volume of water."
Answer:

/s/ G. W. Mackey, Foreman

Whereupon the Court gave counsel leave to file supplemental briefs on or before December 15, 1966, and the proceeding was continued.

Filed November 16, 1966

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* * * * *

MOTION AFTER VERDICT

Comes now the defendant, by counsel, and on all the pleadings, testimony, evidence, exhibits, rulings, notes of the trial judge and the verdict of the jury returned and filed herein

on November 16, 1966, and moves the Court to reduce and set aside that portion of the verdict, which relates to the answer to Interrogatory No. IV insofar as such answer exceeds the amount requested by plaintiff from the defendant in the Motion for Declaratory Judgment.

Respectfully submitted,

Douglas B. Fugate,
State Highway Commissioner of Virginia

By Paul D. Stotts
Of Counsel

Received & filed in Office Nov. 25, 1966.

Helen C. Loving, Clerk.

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MOTION TO REJECT

Now comes the plaintiff, Richmond, Fredericksburg and Potomac Railroad Company, by counsel, and says that the defendant's Motion After Verdict is insufficient in law and assigns as grounds therefor the following:

1. That the jury's answer to Interrogatory No. IV does not exceed any amount requested by the plaintiff from the defendant in the Motion for Declaratory Judgment;

2. That the plaintiff's prayer in its Motion for Declaratory Judgment seeks only a declaration that the plaintiff has been damaged by the acts of the defendant and asks for a determination as to what part of that damage, including the necessity for additional culverts, has been caused by the acts of the defendant;

3. That the plaintiff's Motion for Declaratory Judgment alleges that it will be necessary that the plaintiff install a total of three additional culverts under its rail-
page 135 } road to accommodate the additional surface water volume and velocity;

4. That no objection having been made by the defendant during the jury trial to the admissibility of the plaintiff's

evidence or to exclude the plaintiff's evidence, the objection has now been waived by the defendant;

5. That there can be no amendment of the jury's verdict after the jury has been discharged.

WHEREFORE, the plaintiff prays the Court to reject the defendant's Motion After Verdict.

Richmond, Fredericksburg and Potomac
Railroad Company

By Urchie B. Ellis

David S. Antrobius
Attorneys for Plaintiff

File: 12/9/66 JWK

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MOTION FOR LEAVE TO AMEND

Comes now the plaintiff, by counsel, and on all of the pleadings, testimony, evidence, exhibits, rulings, notes for the Trial Judge and the verdict of the jury returned and filed herein on November 16, 1966, and, in accordance with Virginia Code §§8-119, 8-217, Rules 2:12 and/or 3:13 of the Rules of the Supreme Court of Appeals of Virginia, hereby moves the Court to allow the plaintiff to amend those portions of its Motion for Declaratory Judgment, if any, which are inconsistent with and relate to Interrogatory No. IV.

Richmond, Fredericksburg and Potomac
Railroad Company

By Urchie B. Ellis

David S. Antrobius
Attorneys for Plaintiff

File: 12/9/66 JWK

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FINAL DECREE

This declaratory judgment proceeding came on to be heard upon the papers previously read and upon the proceedings previously had therein and a jury was impaneled and evidence taken on the issues joined; and after being duly instructed by the Court, issues of fact were submitted to the jury in the form of special interrogatories and the jury returned its answers to such interrogatories in their verdict filed on the 16th day of November, 1966. After return of the verdict, the defendant moved for judgment notwithstanding the findings of the jury and the matter was argued by counsel.

The Court, after mature consideration of the entire record and of the briefs of counsel, being of the opinion that the defendant is entitled to judgment, does ADJUDGE, ORDER AND DECREE as follows:

1. The acts of the defendant complained of in plaintiff's motion for judgment are not such acts as would entitle the plaintiff to compensation within the purview of page 138 } §58 of the Virginia Constitution. The defendant breached no legal duty owing to the plaintiff in making the improvements on its property for the purpose of constructing its highway project, and any damages suffered by the plaintiff as a result of the acts of the defendant are not compensable at law.

2. The plaintiff's drainage facilities involved in this proceeding, if required to be enlarged, must be enlarged at the plaintiff's expense inasmuch as the plaintiff has a continuing legal duty to enlarge its drainage facilities so as to adequately *accomodate* increased volumes of water flowing through such facilities in a natural water course, even though the need for such enlargement is brought about by the development of upstream properties.

IT IS FURTHER ADJUDGED, ORDERED AND DECREED that the defendant have its reasonable costs expended in this proceeding; and

Nothing further remaining to be done herein this cause is dismissed from the docket.

To all of which actions and rulings of this Court the plaintiff has duly objected and excepted.

Refused

JWK Judge

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* * * * *

JUDGMENT

WHEREAS, came the plaintiff and the defendant by their duly authorized representatives and counsel, and filed their motion for declaratory judgment and the defendant's grounds of defense designated "Answer" was heretofore filed and issue joined; and

WHEREAS, the plaintiff requested a jury be empaneled to determine matters of fact; and

WHEREAS, jurors were sworn to well and truly try the issue joined and a true verdict give according to the evidence and to answer any interrogatories to be submitted. A portion of the plaintiff's evidence being heard on November 14, 1966, the jury was adjourned to November 15, 1966, at 9:30 o'clock A. M.; and

WHEREAS, pursuant to adjournment as above set out, came again the plaintiff and defendant by their duly sworn representatives and counsel and the jury heretofore sworn and empaneled. At the conclusion of the plain-
page 140 } tiff's evidence the defendant motioned to strike the evidence for the reasons assigned in the record which motion was overruled and exceptions noted. At the completion of the defendant's evidence the jury was adjourned until November 16, 1966, at 11:30 o'clock A. M.; and

WHEREAS, pursuant to adjournment as last above set out, came again the plaintiff and the defendant by their duly authorized representatives and counsel and the jury heretofore empaneled and sworn. Counsel for the defendant renewed his motion to strike the plaintiff's evidence which motion was overruled and exceptions noted. The interrogatories were read to the jury and the jury instructed as to the applicable law. Whereupon, the jury retired to consult of their verdict and after sometime returned into Court and found the following answers:

I. Do you find from a preponderance of the evidence that the plaintiff has suffered any actual damage resulting in the necessity of installation of additional culverts by the plaintiff in this case?

Answer: Yes

II. If your answer to "I" is in the affirmative, how many 120" diameter culverts in addition to the original arch culvert are necessitated as a result of such damage?

Answer: Two.

III. If your answer to "I" is in the affirmative, do you find from a preponderance of the evidence that such damage has been caused in whole or in part, by the construc-
page 141 } tion of the Interstate 64 project by the defendant west of railroad embankment in the County of Henrico?

Answer: Yes.

IV. If your answers to "I" and "III" are in the affirmative, what proportion of such damage, if any, has been caused by construction of the Interstate 64 project by the defendant west of the railroad embankment in the County of Henrico?

Answer: 95%

And the jury was discharged; and

WHEREAS, this matter came again to be heard and submitted to the Court for its decision. Supplemental briefs were filed on behalf of the parties and the defendant moved the Court to reduce and set aside that portion of the verdict which relates to the answer to Interrogatory No. IV insofar as such answer exceeded the amount requested by the plaintiff. The plaintiff moved the Court to reject the defendant's motion for reduction of the jury's verdict; and

WHEREAS, after mature consideration, the Court is of the opinion that the plaintiff is entitled to compensation for the damage it has sustained because of the defendant's construction in and near Upham Brook west and
page 142 } upstream of the plaintiff's right of way.

It is, therefore, ADJUDGED and ORDERED:

1. That the motion after verdict by the defendant to reduce the said verdict is hereby overruled;

2. That the plaintiff has suffered actual damage resulting in the necessity for the installation of two additional 120-inch culverts to accommodate the increased water cast upon its right of way near Dumbarton and Staples Mill Roads in Henrico County, Virginia;

3. That the defendant's construction in and near Upham Brook west and upstream of the plaintiff's said property has created the necessity for 95% of the aforesaid two additional 120-inch diameter culverts;

4. That the plaintiff is entitled under Section 58 of the Constitution of Virginia to compensation for all damages that it has sustained because of the said construction by the defendant;

5. That the defendant shall forthwith satisfy the plaintiff or institute condemnation proceedings to pay for the damage sustained by the plaintiff because of the aforesaid construction by the defendant; and

6. That the plaintiff recover its costs, including expert witness fees and other trial expenses, as well as reasonable attorneys' fees in this action, and interest on the amount of money expended by the plaintiff for additional culvert capacity. The amount or amounts to be stipulated by counsel or to be subject to further order of this Court on motion of the plaintiff.

page 143 } Dated:

JUDGE

Seen and accepted:

David S. Antrobius
Counsel for Plaintiff

Counsel for Defendant

page 144 }

* * * * *

FINAL JUDGMENT ORDER

The Court, having considered the responses of the jury to the interrogatories submitted to it; the "motion after verdict" of the defendant, by which the defendant seeks to have the Court reduce and set aside "that portion of the verdict" which relates to the answer of the jury to Interrogatory No. IV, "insofar as such answer exceeds the amount requested by plaintiff from the defendant in the Motion for Declaratory Judgment"; the plaintiff's "motion to reject" and "motion for leave to amend," and the memoranda of counsel, doth find and declare that as a result of the actions of the defendant in and about the construction of the Interstate Route 64 project by the defendant west of the railroad embankment in question the plaintiff suffered actual damage resulting in the necessity of installation by the plaintiff of two 120 inch diameter culverts, and that such actions by the defendant were the cause of 95 percentum of the damage suffered by the plaintiff.

Upon consideration whereof, the Court doth conclude that the plaintiff is entitled to compensation from the defendant pursuant to Section 58 of the Constitution of Virginia for the actual damage so suffered, the Court being of the opinion that the plaintiff's duty to enlarge drainage facilities does not encompass this situation wherein the increased volumes of water are caused by more than normal development of the upstream properties, as was found by the jury.

page 145 } Therefore, it is ADJUDGED and ORDERED that the defendant shall either reimburse the plaintiff for 95% of the cost incurred in the installation of two 120 inch culverts as described in the evidence, or institute an eminent domain proceeding against the plaintiff to ensure its compensation for such damage. To all of which actions of the Court the defendant, by counsel, objects and excepts.

The prayer of the plaintiff for the award of costs, including attorney's fees, and for interest is denied, no statutory or other authority having been cited to contradict the general rules in such cases, this being a suit against the Commonwealth. To this action of the Court the plaintiff, by counsel, objects and excepts.

Enter: 1/20/69

John Wingo Knowles
Judge

page 146 }

* * * * *

AMENDMENT TO FINAL JUDGMENT ORDER

It being represented to the Court by counsel for the plaintiff that in the last paragraph of the Final Judgment Order entered in this proceeding on January 20, 1969, whereby the prayer of the plaintiff for the award of costs is denied, no specific mention was made of expert witness fees expended by the plaintiff, and the said attorneys having requested the Court to rule expressly upon this claimed item, it is ADJUDGED and ORDERED that the Final Judgment Order entered in this Proceeding on January 20, 1969, is hereby amended by inserting in the second line of the last paragraph thereof, following the words "attorney's fees," the words "expert witness fees" so that the first sentence of the said last paragraph shall read as follows:

"The prayer of the plaintiff for the award of costs, including attorney's fees, expert witness fees, and for interest is denied, no statutory or other authority having been cited to contradict the general rules in such cases, this being a suit against the Commonwealth."

And it being further represented to the Court by the attorneys for the defendant that the Court did not specifically overrule the defendant's "motion after verdict" filed with the Clerk on November 25, 1966, it is further ADJUDGED and ORDERED that the said Final Judgment Order
page 147 } of January 20, 1969, be amended by adding thereto in the fifth line of the first paragraph on page 2 of said Order after the words, ". . . compensation for such damage." the words "The defendant's motion after verdict is overruled."

In all other respects than the foregoing insertions, the Final Judgment Order entered in this proceeding on January 20, 1969, is continued in full force and effect.

Enter: 2/7/69

John Wingo Knowles
Judge

Endorsement by counsel waived by Messrs. Ellis and Miller February 7, 1969. JWK

page 148 }

* * * * *

To Whom It May Concern:

The original reporter's trial transcript filed in *RF&P Railroad Company* v. *Douglas B. Fugate, State Highway Commissioner,* in the Circuit Court of Henrico County, Virginia, should be amended as follows:

1. Page 26, line 4, "present" should read "presence of"; and
2. Page 179, line 10, "5,000,000" should read "35,000,000".

David S. Antrobius

Subscribed and sworn to before me this 26th day of February, 1969.

E. A. Wallace
Notary Public

My commission expires: August 6, 1972.

(SEAL)

Received & filed in Office Feb. 27, 1969

Helen C. Loving, Clerk.

Filed February 27, 1969

* * * * *

page 150 }

* * * * *

NOTICE OF APPEAL

Comes now the defendant, State Highway Commissioner of Virginia, and files this his Notice of Appeal and Assignments of Error, in accordance with Section 4, Rule 5:1 of the Rules of the Supreme Court of Appeals of Virginia, and gives notice that he intends to appeal from the Final Judgement Order entered on February 7, 1969, and as grounds for such appeal sets forth the following Assignments of Error.

ASSIGNMENTS OF ERROR

1. The trial court erred in refusing to sustain defendant's demurrer filed in the captioned cause.
2. The trial court erred in allowing the plaintiff to read into evidence before the jury certain interrogatories and answers thereto, such interrogatories and answers being irrelevant and prejudicial to the defendant.
3. The trial court erred in overruling the defendant's motion to strike the plaintiff's evidence.

4. The trial court erred in refusing to grant defendant's Instructions Nos. V, W, X, Y and Z.

5. The trial court erred in refusing to submit certain interrogatories to the jury which were tendered page 151 } by the defendant and designated as Interrogatories No. 14, 5, 6, 7 and 8.

6. The trial court erred in overruling the defendant's motion after verdict filed in the cause.

7. The trial court erred in the rendition and entry of the Final Judgement Order entered on January 20, 1969 as amended on February 7, 1969, inasmuch as said Order and judgement of the Court was contrary to the law and the evidence.

Respectfully submitted,

State Highway Commissioner of Virginia

By Kelly E. Miller
Of Counsel

Received & field in Office March 19, 1969

Teste Margaret B. Baker, Deputy Clerk

* * * * *

page 152 }

* * * * *

NOTICE OF ASSIGNMENTS OF CROSS-ERRORS

To: Helen C. Loving, Clerk, Circuit Court of Henrico County
P. O. Box 3-V
Richmond, Va. 23207

Comes now the plaintiff, Richmond, Fredericksburg and Potomac Railroad Company, by counsel, and pursuant to Section 4, Rule 5:1 of the Rules of the Supreme Court of Appeals of Virginia, and gives notice of the following assignments of cross-errors.

ASSIGNMENTS OF CROSS-ERRORS

1. The trial court erred in refusing to award the plaintiff costs, including reasonable attorneys' fees.

2. The trial court erred in refusing to award the plaintiff expert witness fees and costs.

3. The trial court erred in refusing to award the plaintiff interest on any sum later found to be due to the plaintiff for the money it has expended for additional culvert capacity.

page 153 } 4. The trial court erred in refusing to grant the plaintiff's Instructions Nos. A, B, C, D, E, F, G, H, I, J, and K.

5. The trial court erred in the rendition and entry of the final judgment order entered on January 20, 1969, as amended on February 7, 1969, insofar as said order of the court was contrary to the above.

Respectfully submitted,

Richmond, Fredericksburg and
Potomac Railroad Company

By David S. Antrobius
Of Counsel

Received & filed in Office March 31, 1969.

Helen C. Loving, Clerk.

* * * * *

page 1 }

* * * * *

Complete TRANSCRIPT of all the testimony and other incidents in the above, when heard on November 14, 15 and 16, 1966, before Honorable John Wingo Knowles, Judge, and a jury.

APPEARANCES:

David S. Antrobius, Esquire, and Urchie B. Ellis, Esquire,
Richmond, Virginia,
Counsel for the Plaintiff;

Paul D. Stotts, Esquire, and Kelly E. Miller, Esquire,
Richmond, Virginia,
Counsel for the Defendant.

* * * * *

page 3 }

November 14, 1966

NOTE: Court convenes at 10:00 o'clock A. M., *viz:*

The Court: Gentlemen of counsel, Mrs. Salstrom has been previously sworn to take down all matters in this court as court reporter. Is there any desire that she be sworn again?
All Counsel: No.

NOTE: At this point, the veniremen are called, sworn on their *voir dire* and interrogated by the Court, a jury is selected free of exception and sworn to try the case, whereupon Mr. Antrobius states, *viz:*

Mr. Antrobius: I would like to move that the witnesses be excluded.

NOTE: At this point the witnesses are sworn by the Clerk, whereupon the Court states, *viz:*

The Court: Mr. Antrobius, did I understand you to move that the witnesses be separated?
page 4 } Mr. Antrobius: Yes, sir.
Mr. Miller: If Your Honor please, we would request that Mr. Pond be allowed to stay as representative of the Highway Department.
The Court: Do you all have any objection?
Mr. Antrobius: Yes, sir, we do. We would like to exclude all witnesses.
The Court: Do you want to be heard on that?
Mr. Miller: Your Honor, we feel that we are entitled to have at least one representative in.
The Court: Do you want to be heard out of the presence of the jury?
Ladies and gentlemen, will you please all retire to the jury room.

NOTE: At this point the jury is leaving the courtroom, whereupon the Court states, *viz:*

JURY OUT

The Court: Before you all start arguing, I might say this: In cases wherein we have corporations involved it has always been the custom that each corporation is permitted to have

one representative sitting with counsel, whether that representative will testify or not.

page 5 } There is no reason why the Railroad Company, if they like, cannot have an engineer or what have you, and the same with the Highway Department. It is just generally done.

If it is seriously objected to, of course, I will consider it.

Mr. Antrobius: We will withdraw the objection. We would like to keep Mr. L. B. Cann in as representative of the Railroad.

Mr. Miller: We would like to keep in Mr. A. L. Pond.

The Court: All right. All the witnesses with the exception of Mr. Cann for the Railroad Company and Mr. Pond for the Highway Commissioner will be asked to retire from the courtroom at this time and remain outside in the waiting area until such time as you are called back into the courtroom. Now, you are admonished that during this period when you are, as we say separated or excluded from the courtroom, do not talk to anyone what you know about the case or let anybody talk to you about it, and if any incident such as that occurs, then you report this to the Sheriff or to the

page 6 } Court as soon as it does happen.

In addition, this case may take some time. I know you cannot sit out there all day long without ever leaving, and in the event any of you have to go anywhere, please don't stay any longer than you have to and please be sure to tell somebody out there where you are going.

When we take a recess for various things, we will inform you as to the time you are expected to be back, but until you are discharged from the case, you are required to in effect wait in attendance outside.

Is that clear to everyone?

NOTE: The witnesses are nodding, indicating an answer in the affirmative.

The Court: All right, if you all will retire we will go ahead with the case.

NOTE: At this point all the witnesses are leaving the courtroom with the exception of Mr. Pond and Mr. Cann, the jury is returned to the courtroom, whereupon the Court states to the jury, *viz:*

JURY PRESENT

page 7 } The Court: Ladies and gentlemen of the jury, just to bring you up to date, counsel have agreed

that one representative will be present in the courtroom for the plaintiff, or the Railroad Company, and also one for the respondent or defendant, Highway Commissioner.

Are you prepared to make opening statements to the jury at this time?

Mr. Antrobius: Yes, sir.

Your Honor, I have agreed with counsel for the defendant that the three maps that we have stipulated, could be used during the statement for the purpose of orientation, with your permission.

NOTE: At this point opening statements are made by counsel, following which the jury is taken for a view at 10:53 o'clock A. M. and returned at 2:30 o'clock P. M., whereupon the Court states, *viz:*

The Court: Let the record show that the jury, the Court and counsel have taken a view and I notice the same seven jurors in the jury box that were when we left here. Is there any motion that the jury be polled?

All Counsel: No.

page 8 } ROBERT KIRK, a witness, called on behalf of the plaintiff, having been duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Antrobius:

Q. Would you please state your name, age and occupation?

A. Robert Kirk, twenty-nine. I am a student and part-time employee for R. F. and P. Railroad.

Q. Did you at my request take some photographs of Upham Brook near Staples Mill Road?

A. Yes, I did.

Q. When did you take these photographs?

A. April of '65, October of '65 and October of '66.

Q. Do you have these photographs with you?

A. Yes, I do.

Q. Would you please refer to them and tell me from which direction the photographs were taken?

Mr. Miller: Could we see those photographs, Your Honor?

Mr. Antrobius: Yes, I intend to, as soon as I have them identified.

Robert Kirk

The Court: Well, let them see them now. Then you
page 9 } don't have to pass them back and forth.

NOTE: The above-mentioned photographs are shown to counsel for the defendant at this point.

Q. Do these photographs indicate a fair representation of the property at the time when you took these photographs?
A. Yes.

Mr. Antrobius: Your Honor, I would like to offer these in evidence.
The Court: First, I think it would be well to let him say when he took which, because otherwise the jury could get confused. I know I would, if I didn't know where it was and what it was and when it was.
Witness Kirk: I labeled these on the back. There are three sets, one taken each time. The first set was taken April 14, 1965.
The Court: How many pictures are in that set?
Witness Kirk: Three pictures in each set.
The Court: Are they of the same place?
Witness Kirk: Of the same location, yes, sir.
The Court: Do you gentlemen, who represent the defendant, identify that location? Is there any question in your mind about that?
Mr. Miller: Well, we have a question about where
page 10 } they were taken, the photograph itself.
The Court: Well, let the witness say where they were taken and then number them 1, 2, 3, as he starts identifying them.

Q. Would you please identify these photographs, the location they were taken and when they were taken, each set that you have taken.
A. The first set was taken on the southwest corner of the B. T. Crump property looking to the southwest, taken near the edge of the B. T. Crump property looking to the southwest.

The Court: Is that sufficient for you gentlemen?

NOTE: No response.

Q. Would you please go to the next set?

The Court: Oh, you have a legend on the back here, have you not?

Witness Kirk: Yes.

The Court: Is there any objection to the legend? Did you all see those?

Mr. Miller: That is all right.

Q. Would you please identify your next one as to location and the date it was taken?

A. The second set was taken at approximately the same place, just a little further up the stream.

page 11 } Q. What do you mean "a little further"?

A. Well, a little angled more to the south than southwest, but still southwest.

Mr. Stotts: The date?

Witness Kirk: The first one was taken April 14, 1965, the second one was taken October 23, 1965, and the third one was taken October 4, 1966.

Q. Now, would you go through the same procedure on the last set?

The Court: They will be 4, 5 and 6.

A. The next set I have was taken from the southwest corner of the B. T. Crump property facing north towards the Dumbarton intersection, Staples Mill Road and Dumbarton intersection showing the bridge.

Q. When were these taken?

A. These were taken April 14, 1965, October 23, 1965, and October 4, 1966.

The Court: They will be marked 7, 8, 9, respectively.

Q. The next set, please.

A. The next set was taken from the southwest corner of the B. T. Crump property facing directly across the stream towards Staples Mill Road, and two of them were taken October 23, 1965—I beg your pardon, one was taken October 23, 1965, one was taken October 4, 1966, and

page 12 } one was taken April 14, 1965.

Q. And the last set?

A. These were taken—they were mixed up. One of those belongs to this set. (Indicating)

Q. When was this taken?
A. April 14, 1965.

The Court: All right, these are marked 10, 11 and 12.

Q. The last set, please.
A. These were taken directly west at the intersection standing on the southwest corner of the B. T. Crump property, directly west at the intersection of Dickens Road and Staples Mill Road, showing the newly constructed culvert and the old bridge.
Q. Date?
A. October 23, 1965, April 14, 1965 and October 4, 1966.

The Court: They will be marked 13, 14 and 15.
Mr. Antrobius: Your Honor, I ask that they be put into evidence.
The Court: All right. Once I mark them, they are admitted.
Mr. Antrobius: All right. That is all the questions I have of Mr. Kirk.
Mr. Miller: No questions, Your Honor.
page 13 } The Court: Can Mr. Kirk be excused?
Mr. Antrobius: Yes, sir.
The Court: Thank you, Mr. Kirk. Remember the admonition not to talk to anybody about this case.

Witness stood aside.

page 14 } L. B. CANN, JR., a witness, called on behalf of the plaintiff, having been duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Antrobius:
Q. Would you please state your name, residence and occupation?
A. My name is Lawrence B. Cann, Jr. I live at 5507 Kingsbury Road in the City of Richmond. I am employed with the R. F. and P. Railroad as the Chief Engineer.
Q. Mr. Cann, how long have you been with the Railroad Company?
A. I have been with the Railroad Company nineteen years, having come in February of 1947.

L. B. Cann, Jr.

Q. In what capacities have you served?

A. I started out as a student engineer, worked up through the various positions until I was made Chief Engineer in December of 1957, the position which I hold now.

Q. Are you familiar with the allegations in this case?

A. Yes, sir, I am.

Q. Explain to the Court the status and business in which the plaintiff is engaged.

page 15 } A. The R. F. and P. is in the transportation business, transports freight from the City of Richmond to the Potomac Yards in Alexandria, passenger service between Richmond, Virginia and Washington, D. C. It is 110 miles long and operates through Henrico and over various counties north thereof.

Q. Mr. Cann, what stream passes through the Railroad Company's property near Dumbarton Road, Henrico County, Virginia?

A. Upham Brook.

Q. What is the direction?

A. Upham Brook's flow is from the west. The watershed is from the west, and it flows from west to east.

Q. Does it unite with any other stream?

A. It unites with Horsepen Branch approximately a thousand feet to the west of the Railroad right of way.

Q. Does it pass through the Railroad Company's property?

A. It passes through the Railroad Company's property just south of Dumbarton Road crossing.

Q. Prior to any of the construction in connection with Interstate 64, how was the water passed through the Railroad Company's property?

A. The water was passed through the Railroad Company's property through a brick arch culvert. It is 20 feet wide and

page 16 } 13 feet high. It was built in 1907, 136 feet long. It was extended 30 feet in 1950 for some additional tracks and it was extended again in 1965 by 50 additional feet.

Q. What are the dimensions of this culvert?

A. The dimensions are 20 feet wide and 13 feet high.

Q. Would you please tell the Court and jury the dimensions of the Railroad fill at that location?

A. The Railroad fill at this location is approximately 30 to 35 feet high, and approximately 190 feet in width.

Q. Do you know the number of tracks?

A. There are five tracks that are on top of this fill.

Q. How long has the road and fill been at this location?

L. B. Cann, Jr.

A. Well, it would be somewhat difficult to say. I would easily assume it has been there over a hundred years.

Q. What are the elevations of the fill above sea level at the location where the culvert passes Upham Brook?

A. The elevation of the tracks?

Q. Tracks.

A. The tracks' elevation is 190 feet above sea

page 17 } level.

Q. How about the fill?

A. The fill is 187.4.

Q. Are you familiar with the physical condition of Upham Brook upstream from the Railroad Company's property before any of the construction in connection with I-64?

A. Yes, I am.

Q. From your observation, would you please describe the condition of Upham Brook before construction on I-64?

A. Upham Brook, during the normal season was a very curvy stream, varying in width from 6, 8, 9-feet wide, varying in depth, and going through woods and open land, through marsh land and through restricted channels.

Q. When did the construction of Interstate 64, that is in relation to Upham Brook, begin?

A. The Interstate 64 actually began in December of 1964. The first was December 10th, contract to clear the right-of-way.

Q. Do you know the progress of this construction at this time?

A. General knowledge of the progress, it is approximately 60 to 65 per cent completed.

Q. What is Interstate 64?

A. Interstate 64 is an interstate road similar

page 18 } to Route 95. It is part of the National Interstate and Defense Highway System. It is a limited-access road for long travel.

Q. What benefit will the plaintiff receive from the construction of this highway?

A. I don't believe that we would receive any benefit from a personal standpoint. From a company standpoint, it would be more aiding our competitors, the trucking industry, commercial automobiles.

Q. Has the Railroad otherwise been involved with the defendant in the construction of Interstate 64, in a way that would be relevant to this particular issue involved in this case?

A. We have had a number of negotiations with the defendant relative to 64, one of which in March of 19—

Mr. Stotts: Your Honor, I believe he asked if it was relevant, but I don't believe other dealings with the Highway Department—although I don't know what he is going to say —I do not believe it is relevant what other dealings he has had.

The Court: I understood him with reference to '64.

Mr. Stotts: I was thinking if there had been other places that the Department may have negotiated with the Railroad.

The Court: That is just in this area we have
page 19 } been over.

Q. In this watershed, you will find—We will tie it down.

The Court: You should make certain stipulations.

A. I negotiated a contract for the Railroad Company in March of 1964, for the overpass that is just to the south of the culvert, and through our insistence, Paragraph 14, states that this agreement does in no way authorize any bad drainage conditions on the Railroad Company's property as a result of the construction.

Q. Does the surface water drainage from that overpass flow into this culvert?

A. The apex of the vertical curve across this bridge is approximately center of the Railroad property. Therefore, the water that is on the west of the structure in the approach would find its way through culverts into Upham Brook and then come through the arch.

Q. On what criteria are you saying this? What have you examined that indicates this drainage would come to the Railroad Company's culvert?

A. The plans and specifications which the Highway Department furnished.

Q. Do you have these plans and specifications?

A. Yes.

page 20 } Q. Could I have them?

NOTE: The above-mentioned plans and specifications are handed to Mr. Antrobius at this point.

Q. Will you please identify that?

A. These are the plans and profile for the State Highway to Henrico County, City of Richmond, for the I-64 Highway.

Q. Do you have the contract to which you have referred? Could you identify that contract?

A. I do. This is the contract. (Indicating)

Q. Please, identify it as to title, date and so on.

L. B. Cann, Jr.

A. Well, it is headed Route 64 and the project number. I don't believe you want me to go through all these numbers, but it is an overpass near Staples Mill Road in Henrico County.

Q. And who are the parties to this?

A. Dated March 30, 1964, and signed by Mr. Davis for the Highway Commissioner, Mr. S. Shumate, President of the R. F. and P.

Mr. Antrobius: Your Honor, I would like to offer these in evidence.

The Court: Any objection?

Mr. Stotts: No, sir.

The Court: The contract and the plans and
page 21 } specifications?

Mr. Antrobius: Yes, sir.

Q. Before we enter the plans, could you refer to the specific page noting the drainage of this overpass?

A. The drainage for this overpass would be on Page 5-A.

The Court: 5-A?

Witness Cann: Yes, sir.

The Court: Do you want to put the whole thing in or just Page 5-A?

Mr. Antrobius: We will put the whole thing in.

The Court: Any objection?

NOTE: No response.

The Court: The contract that has been just introduced will be marked *Plaintiff's Exhibit* 16, and the plans and specifications will be marked *Plaintiff's Exhibit* 17.

Q. Mr. Cann, do you know the amount of expenditures on that Interstate 64 in the Upham Brook watershed in connection with the drainage improvements?

A. Something in excess of $10,000,000.

Q. $10,000,000?

A. Federal funds.

Mr. Stotts: Objection, Your Honor.

page 22 } The Court: Objection sustained.

Ladies and gentlemen of the jury, the source of the funds has no bearing on this. This is between the Com-

missioner of Highways and the Railroad, and you just have to treat this as being exactly that, no other parties.

So, you disregard the remark of Mr. Cann.

Q. Mr. Cann, from your observation, what has been the nature of the amount in rapidity of flow to the Railroad culvert in the past from Upham Brook stream?

A. Normally, in the normal season of the year, the flow of Upham Brook has been rather small, wandering its way through the woods to our culvert. However, when there are heavy rains and heavy storms, there is naturally considerably more water coming to us, to our culvert.

Q. Has the water ponded at the culvert?

A. In extremely heavy storms the water has ponded on the west side of the Railroad embankment.

Q. Is the ponding good engineering practice?

A. Yes, that type of ponding is considered good engineering practice.

Q. Would you describe the nature of that ponding?

A. There is a large area to the west between the Railroad embankment, between the Railroad right of way and Staples Mill Road, and in these areas during the periods when there are extremely heavy storms, excess water coming there will impound against the embankment and cover this ponding area. It also holds back the water that would normally go downstream on to the Bryan Park.

page 23

Q. From your observation, how long has this ponding been going on?

A. This ponding has been going on since 1949 to my personal knowledge, during extreme conditions.

Q. Has the ponding been open? Has it been visible?

A. The ponding has been visible. You can go there in heavy rains and you can see the water that had come against the embankment. Many times, it would not get up as high as the top of the pipe, and on very rare occasions it may go one or two feet above the top of the pipe.

Q. What objections has the Railroad Company received from any adjoining property owner?

A. It never received any.

Q. What was the Company's attitude towards the ponding?

Mr. Miller: Objection, Your Honor. I don't think the Railroad's attitude is material.

The Court: You are asking what legal position, if any, did the Railroad take?

L. B. Cann, Jr.

Mr. Antrobius: To prove this under a claim of right.

The Court: How can he state a legal conclusion?

page 24 } He does not know anything about the law. He is an engineer.

Mr. Antrobius: He can state the Company's attitude.

The Court: What has the Company's attitude got to do with it? In other words, if the Company takes a legal position, then for someone who is qualified to state what legal position they took is one thing, but the Company's attitude is immaterial to this case, just as his attitude toward what happened in this area. I don't see how, not being in the Legal Department, not being a lawyer, he could possibly testify as to what the Company's attitude was. The President might have had one, the Station Agent might have had another.

Mr. Antrobius: As an officer of the corporation, I think he would be in the position to state this.

The Court: He is the Chief Engineer. What has he got to do with the Legal Department? He is not the President, Vice-President or a Director. Those people might be in a position to say what the attitude or policy of the Company was, but he is an engineer.

I think if you will rephrase your question or possibly use another witness, you can get to it, but I think it

page 25 } is improper to use Mr. Cann to give what I gather is bound to be a legal position that you are taking.

Mr. Antrobius: Let me rephrase my question.

Q. What has your attitude been as to this ponding?

Mr. Miller: Again, Your Honor, his attitude in this particular matter has nothing to do with this matter.

The Court: He already stated his attitude—good engineering practice. That is his attitude. That is the only one he is qualified to express as far as the merits of this case are concerned.

Q. What engineering purpose has this ponding served?

A. It served as storage area for the water and also as the holdback of water for downstream flow.

Q. Has the ponding ever caused damage to the Railroad Company?

A. No, it has never caused the Railroad Company any damage.

Q. Has it ever caused damage to the adjoining landowners?

Mr. Stotts: I don't believe he is qualified to answer that, Your Honor.

The Court: He can state if there was any visi-
page 26 } ble damage. He said he has been out there. He can state whatever he saw.

A. To my knowledge, it has created no damage to the adjacent property other than the present water on the property, which has been done for many years.

Q. Has the Railroad Company installed any additional culvert in the past other than the original stone arch?

A. Yes. The Railroad Company installed a 120-inch iron coat pipe, tunneled it through the embankment. It was begun in the early part of '64 and completed in March of 1964.

Q. What was the cost of this additional culvert?

A. This culvert or this pipe cost on a bid basis $55,271.00.

Q. Where is it located?

A. It is located just to the north of the original arch.

Q. Why was this culvert installed?

A. In the latter part of 1962, I received a letter from Mr. LaPrade, who was the Federal Aid Coordinator with the Department of Highways, who normally handled this type of request with the utilities and the railroads.

He asked that the Railroad Company give consideration to putting a 120-inch pipe through the fill, and that if we did not do so, it would penalize the Department of
page 27 } Highways both economically and functionally.

This letter was dated October 31, 1962. Unfortunately, Mr. LaPrade died about that time and I received on November 13th, approximately two weeks later, another letter from Mr. Davis, the Chief Engineer, outlining his request and why we should put this culvert through.

I received a tracer on December 4, 1962, and another letter on January 4, 1963. So I received three requests and one tracer letter.

Q. Are these the letters to which you have referred?

A. October 31, 1962; November 13, 1962; December 4, 1962 and there is another one, January 4th of '63.

Q. Would you please identify each letter that you received, state who you received it from and give the date of that letter.

A. October 31, 1962, directed to L. B. Cann, Jr., Chief Engineer, signed by Mr. D. B. LaPrade, Federal Aid Coordinator.

The second one is dated November 13, 1962, addressed to me, and was signed by Mr. F. A. Davis, Chief Engineer.

L. B. Cann, Jr.

The third letter is dated December 4, 1962, addressed to L. B. Cann, Jr., Chief Engineer, signed by Mr. F. A. Davis, Chief Engineer of the Highway Department.

page 28 } A letter dated December 7, 1962, addressed to L. B. Cann, Jr., Chief Engineer, signed by F. A. Davis, Chief Engineer for the Department of Highways.

Mr. Stotts: What was that date?

Witness Cann: December 7th, that last one.

Q. Did you as Chief Engineer of the Railroad Company have any further negotiations?

A. We had that correspondence. Each of those letters was answered either in writing or by telephone. I felt that the best solution would be to have a conference with those people that were close to the subject, and they met in my office on December 17, 1962. Mr. Phillips, Mr. Harwood, Mr. Pond, Mr. Ellis and myself and Mr. Hayes.

Q. What took place at that meeting?

The Court: Before you go into that, let me state for the record that the letters that have been submitted will be marked—October 31, 1962 from D. B. LaPrade to Mr. Cann, NO. 18; November 13, 1962, from F. A. Davis to Mr. Cann, NO. 19; December 4, 1962 from F. A. Davis to Mr. Cann, NO. 20; and December 7, 1962 to Mr. Cann from F. A. Davis, NO. 21.

A. As I mentioned, this conference was held in my room, and the purpose of it was to give each other's views so as to explore the situation and determine what action would be taken by either party; a very pleasant meeting.

page 29 } At that time, naturally Engineering asked what the alternatives were to putting this pipe in.

We were informed by the Department of Highways that if we did not put the pipe in, that their design for the Staples Mill Road intersection or clover leaf would have to be raised approximately 8 to 10 feet, which would require a great deal of more fill, and a round figure was thrown out of some $250,000 to $300,000, if we did not do it.

Q. When did the Railroad Company install the additional culvert?

A. With this information I went to my President and gave him the highlights of the conference and told him what was involved, and he instructed me that the Railroad would not penalize the Department of Highways and the taxpayers for

this amount of money; that we would go ahead and put the pipe in, provided we stipulate that it was done not prejudicial to our position as to why we did it. So, in March of 1964, the pipe was put in.

Q. Do you know the cost of the installation of one more additional culvert?

A. I don't know the exact cost because we put it on bids, but everyone knows that the costs of living and materials are up; and I would make an estimate of $60,000 to $65,000 today, to put the same culvert in.

page 30 } Mr. Antrobius: No further questions, Your Honor.

CROSS EXAMINATION

By Mr. Stotts:

Q. Mr. Cann, would you state again when this original arch culvert under the railroad was built?

A. In the year of 1907.

Q. Do I understand you to say that you feel that this culvert is still adequate today to handle the water of this watershed without considering the construction by the Highway Department of the Interstate Highway?

A. Yes.

Q. In other words, you are saying in fifty-nine years that had passed there had been no development in the watershed that would tend to make this culvert inadequate?

A. That is correct.

Q. Would you say that the watershed has or has not developed in that fifty-nine year period?

A. I would say it has developed.

Q. It has developed?

A. That is right.

Q. What would the effect of this development have on the water coming to Upham Brook and Horsepen Branch and to the Railroad?

page 31 } A. It would increase it.

Q. It would increase it?

A. That is right.

Q. Are you saying that the culvert that was placed there in 1907 was too much?

A. Yes.

Q. Now, you say this culvert is adequate but at the same time you said the water has been ponding to your knowledge since 1949. How do you justify these two statements?

L. B. Cann, Jr.

A. Justify which two statements?

Q. You made the statement that the culvert is adequate to handle the water and at the same time it has been ponding back from this culvert, and, as I believe you said, acting to hold back the water from downstream property?

A. Because ponding of water is an accepted engineering practice and it is done many places and also, as I say, acts as a retardant for downstream. I had conferences with the County people that told us that opening these culverts up may cause problems to the downstream property owners.

Q. What you are saying is, this culvert under the Railroad and the Railroad fill did hold back the water of these streams before the construction of 64?

A. That is true.

Q. Then it was not adequate to carry the water through it?

A. I don't agree with that statement that you
page 32 } are making.

Q. You say you had a right in good engineering practice to pond the water back?

A. Yes.

Q. Do you feel that you have a right to pond it back on other people's property?

A. Yes.

Q. You think you do?

A. Yes, sir, I do.

Q. In other words, what you are saying, if you would put in a culvert, and you were the Chief Engineer and had the final say, you'd put in the same railroad fill today? If the Interstate construction was not there, you would recommend the same size arch culvert that was put in there in 1907?

A. If there were the same circumstances that were in 1907, yes, sir, I would.

Q. I did not ask you that. I said would you today, if you were building this stretch of road, railroad, recommend that this 13 by 20 arch culvert would be sufficient to handle the water not considering the highway construction?

A. Well, it would not be that simple, Mr. Stotts. I would have a consultant engineering firm determine the watershed, the amount of water, and advise me what size culvert to put in.

page 33 } Q. I assume, Mr. Cann, that you have had these same consultants to tell you whether or not this present structure is adequate?

A. Prior to the time that I received the letter from the Department of Highways, I had no problems with this culvert. Upham Brook gave me no reason to be concerned.

Q. But whether you were concerned or not, the question is, you say that you consider the culvert under your railroad as adequate—

A. That is correct.

Q. —to pass the water that comes through there today, if you don't consider the construction by Interstate 64, is that correct?

A. I say under the engineering practices of ponding water at this location, that we have not had a problem, and that it is adequate under those conditions.

Q. It is adequate under those conditions today?

A. That is right.

Q. Then your answer to the question would have to be yes, that if you were designing the road today—

Mr. Antrobius: Your Honor, he is answering his own question.

Q. (Cont'd) Your answer would have to be that that culvert, if you were building the railroad today, you would put the same size culvert under the railroad?

page 34 } A. No, I would not, not under present-day conditions.

Q. You would not. Could you explain why you would not, if you were building it today but yet it is adequate out there as it is?

A. There is a difference between the two.

Q. That is what I am asking. What is the difference?

A. The difference is that the culvert was there, has been there since 1907. There has been a ponding area to the west of us. There has been no complaint from the property owners. We have no damage to the traveling public and, therefore, we are not looking for places to make expenditures.

Q. Then you are not really saying it is adequate today, you are saying that you have not had any complaint and that—

A. That makes my decision that it is adequate.

Q. Your decision is based on whether they complained about it?

A. No, my decision is my opinion. As the Chief Engineer of the company, I have to make these decisions. This helps, the fact that there is no complaint about it; there is no damage to the traveling public or to the Railroad Company property.

Q. This ponding has been going on, you say to

page 35 } your knowledge since 1949. Has there been any

increase in that ponding in the last fifteen, sixteen, seventeen years?

A. Any increase?

Q. Yes, sir.

A. Not so that you can notice it, and this ponding is not something that happens every week or two weeks, or month.

Q. It is not?

A. Occasionally.

Q. Fine, that is what I thought. In other words, it is not something that is open that everybody can see that you are ponding water back on those people upstream?

A. Everybody that goes out and looks can see it.

Q. How often though? On occasion, right?

A. It depends.

Q. You just said it did not happen all the time.

A. That is right.

Q. Then it is not where you can see it every day. If we went out there today, we could not see it?

A. That is right.

Q. Because we did not see it.

A. That is correct.

Q. This ponding, you say there has been no increase in the ponding between 1949 and 1966?

A. I said no appreciable increase.

page 36 } Q. What is the largest ponding or deepest depth you have had?

A. August 1959.

Q. How deep was that over the top of your culvert?

A. It was approximately 9 to 10 feet.

Q. Do you know how much depth of water there was on Staples Mill Road at that time?

A. I was busy on Railroad Company property, and I did not go over to Staples Mill Road to check. I did understand that the water was over Staples Mill Road, yes.

Q. But you don't know the depth?

A. No.

Q. Do you know how often it has gotten over Staples Mill Road?

A. To my knowledge, this was the first time it had been over there.

Q. In your opinion, what would cause it to back up and pond over the upstream property including the highway at that point?

A. It would be caused by the water getting to such elevation that the elevation was higher than the surface of Staples Mill Road.

Q. Would it have ponded back, had the railroad fill not been there, in your opinion?

A. In my opinion, it could be a combination of
page 37 } two. It could be that and also the capacity of the culvert under Staples Mill Road could have been under a certain size, and the water could have rolled over from the west of Staples Mill Road.

Q. Once it got over Staples Mill Road, what stopped it from going on to the Chickahominy River?

A. It went into the ponding area.

Q. What caused the ponding area?

A. What caused the ponding? More water than can go through the culvert at any particular time.

Q. Was the ponding area created by the railroad fill?

A. Yes.

Q. That is what I want to know. Thank you.

After the 1959 flood, did you enlarge that arch culvert?

A. The arch culvert? No, sir.

Q. You did not?

A. No.

Q. You did not take out part of the bottom and make it larger?

A. No. There was some repair work done in there. There is a sewer line in there. The erosion from it in there had caused ruts in there and there was put a bottom in there, but there was no appreciable depth or alteration to the culvert. It was repaired, but not altered.

page 38 } Q. Speaking of this ponding in what you call the ponding area, is part of this ponding area on Railroad property?

A. Yes.

Q. Would you refer to this? I believe you stipulated we could use these. (Indicating diagram) I believe you were talking about the area here. Is this the hatched area that you are speaking of as the ponding area?

A. Those drawings I am not familiar with.

Q. Would you look at these and familiarize yourself with them?

A. I would say the area beyond the R. F. and P. Railroad line is Railroad Company property and would be part of the ponding area.

Q. Would you show the jury and the Court where the ponding property line runs?

A. (Indicating on diagram)

Q. In other words, would you say this portion over here of the ponding is on Railroad property?

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A. Yes.

Q. This portion is on upstream property owners' including the highway?

A. That is right, yes. The highway is in the area.

page 39 ⟩ Q. You have had ponding over the highway, too, have you not?

A. In 1959, in August, there was water, to my understanding, there was water over Staples Mill Road.

Q. You are familiar with the watershed area, I believe, and the stream. You described that. Could you describe some of the development that has taken place in this watershed of your personal knowledge?

A. Well, there are houses, driveways, additional streets.

Q. Apartment projects?

A. Yes.

Q. Industry?

A. Some, but not too much. Some on Broad Street, but other than on Broad Street this is not industrial area.

Q. Are there at least some industrial parks in this watershed?

A. There is industrial development at Capehart Road.

Q. One of the areas that we went to view today?

A. That is correct.

Q. How about the B. T. Crump property, is that industry?

A. Yes, that is industrial, an industry.

page 40 ⟩ Q. I believe you testified that you are familiar with the stream and its condition before. Are you also familiar with the Upham Brook and Horsepen Branch as the Highway Department has proposed improvement and is at the present time undertaking to improve?

A. Yes, I am familiar with what they are doing.

Q. And what is the Department doing to your knowledge with relation to this stream?

A. Well, in some areas they are digging an entirely new channel. In some instances they are widening the existing channel, and in some instances they are putting concrete in the old channel, and in some instances they are straightening what used to be a curvature type of stream through the woods.

Q. What area is this concrete being placed in the channel?

A. My observation is what we saw up at Mayland Drive up near the upper end.

Q. Approximately how far from the railroad?

A. Five miles, four miles.

Q. Do you know of any closer areas that they are placing concrete in the channel?

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A. I have not walked the entire area, no. I don't know of any other specific location.

Q. How did you testify the original condition of the channel was?

page 41 } A. The original channel was a small restricted area, 8 to 10 feet wide, curving back and forth through the woods. Now it has been widened out to 30 feet wide, in some instances to 36 feet wide. It is in a straight line. There is no retardation to the water.

Q. Mr. Cann, would you say that the widening of the channel in and of itself, if all other conditions were the same, would increase the velocity or speed of the water in this channel?

A. Very definitely.

Q. It definitely would?

A. Yes, sir, in my opinion.

Q. You have a channel, all conditions being the same, all we are going to change is widening the channel. You have a channel right here, the volume of water flowing in that channel you are widening is the same volume of water, the same conditions otherwise, and you say the velocity by the widening of the channel would be greater?

Mr. Antrobius: Your Honor, he is approaching this improperly with a piece of cardboard.

Q. If you widened a channel, would the mere widening if nothing else increase the speed of the water?

Mr. Antrobius: I think it is improper to use cardboard.

The Court: Use cardboard or hand, what is the difference?

page 42 } I am taking he is showing a square view or rounded view.

Mr. Antrobius: Let me ask him this now—if we are going to refer to this stream, then I do not think he can use it.

Mr. Stotts: Your Honor, I think it is certainly proper.

The Court: Go ahead and use your hand. We just waste time arguing about it.

Mr. Stotts: All right.

Q. Mr. Cann, then let me ask you one more time, you say if you have a channel, all other factors and conditions being the same, if you widened a 6-foot channel to a 12-foot channel, that you are going to increase the speed of the water in that channel?

A. In my opinion, yes, but let me qualify that. I am not a hydraulics engineer, I am a graduate civil engineer.

L. B. Cann, Jr.

Q. You don't know whether it would increase it or not, or would a hydraulics engineer be better qualified?

A. Yes.

Q. I assume the same situation would apply if I asked you about deepening of the channel, if all other factors be the same, if that would increase or decrease the velocity?

A. I would not classify myself as a witness to answer those questions.

page 43 } Q. Mr. Cann, I believe you stated the water had been ponding before against the Railroad right-of-way. What damage is the Railroad suffering now with the construction of Route 64 that it did not suffer before? I believe you testified the ponding before did not damage the Railroad.

A. We are not suffering any physical damage to the Railroad at present. We now suffer from the fact that we have had to put in an additional culvert through there, $55,250-some dollars.

Q. You say that the ponding would be there, and you would not suffer any additional damages from that, is that what you said? Had you not placed this additional culvert of 120-inch pipe in there, what damage would the Railroad suffer?

A. None.

Q. None?

A. None.

Q. Then today you have not suffered any except that you have gone out and made an expenditure and placed a pipe under your railroad?

A. That is correct.

Q. I believe you testified that there had been some correspondence between the Highway Department and the Railroad concerning this culvert, and the Highway Department requested the Railroad to enlarge this culvert, and I ask you to furnish the words that you said.

page 44 } A. The words in the correspondence are "economically and/or functionally."

Q. How would you interpret this language?

A. The way I would interpret it is that if we did not do it, that the Highway Department would be put to an excess expense if we did not. They also said that in the conference.

Q. Would that cover the economic part?

A. What do you mean the "economic part"?

Q. I believe you said economically or functionally?

A. Yes, that would be the economic part.

Q. What would the functional part be?

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A. I would think it had something to do with the design of the highway.

Q. In other words, would you assume that that meant if you did not enlarge your culvert, that the culvert the Highway Department had placed in there would not function to the fullest extent?

A. No, they would have to redesign their clover leaf to some other height or some other location, so it would function the way they had designed it.

Q. Would you think that the functioning of the highway culvert would depend—

A. Do I think what?

page 45 } Q. Do you think that the highway culverts, the functioning of them, would be dependent upon the railroad culvert?

A. No. Their culverts are designed on their own formulas.

Q. What I am saying is this: If the Highway were to put in culverts three times as large as they did, wouldn't it all still depend on what was done at the Railroad for the functioning and the passing of water past that point?

A. I don't think that would have anything to do with it, it coming through their culverts upstream.

Q. Would it back up?

A. Yes, it would pond.

Q. Then it would affect the course. If the railroad fill were not there it would go through?

A. In the ponding area, but not those three or four miles up the stream.

Q. In the railroad ponding area, what is going to happen to the stream? Where is it going?

A. In the pond. The openings are all open when it gets to that area.

Q. And it is going to increase the depth of the ponding area?

A. That is right.

Q. Then it will act as a dam until it gets to the height of the railroad, is that correct?

page 46 } A. That is correct.

Q. This letter that you made reference to, this letter of November 13th, would you mind reading that letter to the jury?

A. All right. It is dated November 13, 1962, addressed to me.

"Dear Mr. Cann: This is in reference to your letter of November 5, 1962, to Mr. D. B. LaPrade, Federal Aid Coor-

dinator, concerning the additional culvert capacity at Upham Brook and Horsepen Branch watershed.

In our designs for Route 64 we have attempted to keep all of the roadways above the elevation of high water in the 1959 flood at the Upham end of the culvert under your tracks. Our studies indicate that a rainfall of 50-year frequency and expected watershed development and improvement on which interstate designs are based will, however, result in a depth of water 8 feet greater unless additional capacity is provided under the railroad. We estimate that a 120-inch culvert supplementing the existing railroad culvert would be sufficient to carry the water in a 50-year frequency with the limits of back water held to the elevation reached during the 1959 flood.

We are making provisions for culverts of adequate size on all of the interstate system and where we are relining channels we are providing for a 50-year design. As

page 47 } you know, Henrico is already improving the channel of Horsepen Branch and we are cooperating by installing additional culverts under Route 250. All of the available capacity is limited by the size of the structure under the railroad. Our estimate on the cost of an additional culvert under the railroad such as we have described is about $50,000.

I am writing this to earnestly request you to give consideration to this additional culvert to avoid the possible damage to upstream property including the interstate route. It is most important that provisions be made for the adequate culvert for storm water at this point and we certainly hope that you will deem it appropriate to cooperate in the interest of economy and to reduce possible damage not only to highways, but also to the Railroad."

Q. Would it appear to you from that letter that the request of the Highway Department that you enlarge your culvert was made on the basis as not to cause any additional damage upstream both to the highway and other property owners?

A. Well, they certainly said to do it with the thought in mind of not creating damage to the property owners upstream.

Q. Mr. Cann, this agreement between the Railroad and the Highway Department which you made reference to, and the statements specifically about it not creating any bad drainage situation on the Railroad property, did this have

page 48 } reference to whether or not the Railroad should

be obligated to place this additional culvert under the railroad?

A. Did it have any relations to it?

Q. Did it have any reference to whether or not the Railroad should place that culvert or the Highway?

A. No.

Q. Then this agreement did not cover the situation, is that correct?

A. It covers any situation, any bad drainage condition.

Q. You are saying then it does cover the situation now before the Court?

A. It is a contributing factor to it.

Q. Is your understanding, this agreement was entered into with this culvert in mind, that the Department did not create—

A. Not specifically. Any bad drainage condition.

Q. Thank you, Mr. Cann. Just one or two more questions. I just wanted it clear that your testimony regarding the adequacy or inadequacy of this culvert and the need for additional capacity under the railroad and the conditions brought about, the hydraulics condition brought about by the construction of 64, are things really for a hydraulics engineer and not a civil engineer as yourself, is that your understanding?

page 49 } A. No, that is not entirely my understanding. That is not entirely correct.

Q. Then you feel you are qualified to state that this culvert is adequate without considering the highway construction?

A. Yes.

Q. Even if a hydraulics engineer would say it is not adequate?

A. I have no control over what a hydraulics engineer says.

Q. What I am pointing out, if you had a study by a hydraulics engineer and he came in and told you it is inadequate, would you rely on his study that it is inadequate or on your own observation and knowledge that it was adequate?

A. Well, it depends upon the condition. My job as the Chief Engineer is to advise and recommend expenditures that are needed at the time.

Up until the time that this Route 64 was begun and we began to get correspondence about it, I had no apprehension about the culvert capacity in Upham Brook.

Q. Mr. Cann, I understand what you are saying. I think we all run into the situation of economics and whether or not

to do certain things, but my question is this: From a strictly engineering standpoint, money is no question, who is going to pay is no question, just from an engineering
page 50 } standpoint, if a hydraulics engineer that you employed came in and told you that this culvert was inadequate and you thought it was adequate, whose decision would you rely on?

A. Mine.

Q. You would rely on yours?

A. I don't take all consultant engineers' advice.

Q. Even if you hire them?

A. Yes. I hire them and pay them money, but I don't necessarily take their advice.

Q. In other words, you are—

A. I am charged with the final decision.

Q. I understood when I asked you about the widening and deepening of it, you said a hydraulics engineer knows more about that.

A. That is correct, but the decision whether it goes in or not is my decision.

Q. Only one point I am trying to ask you. From an engineering standpoint, not your decision whether the Railroad will spend the money to put it in, but from an engineering standpoint, would you rely on the hydraulics engineer who is experienced in that and studies it every day, whether it is adequate, *in* your decision?

A. I would rely on the *culsultant,* the engineer.

Mr. Stotts: I have no further questions.

The Court: All right. At this point I think we will have a little recess.

page 51 } Mr. Antrobius: Your Honor, we have a few questions on redirect.

The Court: All right. (To jury) I want to admonish you once again, during this recess or similar recesses you are not to talk to anybody about the case or let anybody talk to you about it.

NOTE: At this point a 10-minute recess is had, whereupon the taking of testimony is resumed, *viz:*

REDIRECT EXAMINATION

By Mr. Antrobius:

Q. Mr. Cann, would you tell the Court how often the water is ponded at the railroad culvert?

A. It is very, very seldom when it ponds up to the top of the pipe itself. Maybe once a year.

Q. Every time the rainfall is heavy?

A. If it is extremely heavy, it will pond up to the top of the pipe and some above the pipe, but in normal rains, even heavy rains, we have no problem of the water being carried.

Q. Do you know the characteristics of the 1959 storm to which Mr. Stotts has referred to?

A. Well, I was out that night. It was a very unusual storm. There were two storms, one storm that came in from one direction and hovered over Richmond, and

page 52 } along around 10:00 o'clock there was a second storm that came in and hovered over Richmond, and the combination of the two was a drenching rain from early evening until 2:00 or 3:00 o'clock in the morning, very unusual in that there were two storms over Richmond at the same time.

Q. Was there an unusual amount of water coming to the culvert?

A. An unusual amount. It was more than I have ever seen or experienced.

Q. Let me ask you this final question, Mr. Cann. Is the upstream construction in Upham Brook creating additional water to the railroad culvert?

A. The highway being concrete has naturally a faster runoff. Instead of the water seeping into the ground a great deal of the water is carried to the ditches, and I would say that there is additional water brought to our culvert.

Q. More water in less time?

A. More water, due to the concrete, in less time, due to the fact that it has nothing to retard it as it comes down through the woods or debris. It is in an open straight channel.

Q. Mr. Cann, you referred to this contract of March 30, 1964. At the time this contract was entered into, did you and did the Railroad Company have knowledge of this drainage situation?

page 53 } A. Yes, sir.

Mr. Antrobius: No further questions.

RECROSS EXAMINATION

By Mr. Stotts:

Q. Mr. Cann, did I understand you to say that the highway construction will cause more water to come down on the railroad?

A. In my opinion, yes.
Q. In your opinion?
A. Yes.
Q. Is that based on any study that you made?
A. It is based on my knowledge of difference between concrete and dirt.
Q. I believe you said previously though that you were not a hydraulics engineer but a civil engineer?
A. It does not take a hydraulics engineer to know that fact.
Q. Does it take a hydraulics engineer to know whether or not the widening of an existing channel with all other factors being the same may decrease the velocity of the water?
A. I'd rather you ask another witness.
Q. I am asking you, does it take a hydraulics engineer to determine that? I believe you said you are qualipage 54 } fied to state that more water is coming down there by the highway construction, yet I asked you a specific question about the highway construction, whether the widening of an existing channel with all other factors being the same would increase it, and your answer is ask somebody else.
A. In my opinion it will bring the water down faster.
Q. Widening of the channel with the same amount of water will increase the speed?
A. In my opinion.
Q. If you are wrong about increasing the speed, then you could also be wrong about increasing the volume overall, is that correct?
A. Not necessarily.
Q. I said it could be.
A. It could be, but not necessarily.
Q. Well, no, I realize that but what I am saying, the same amount of study or engineering determination that has gone into one has gone into the other. If you are wrong on one, you could be wrong on the other?
A. Could be, yes.

Mr. Stotts: Thank you. No further questions.

Witness stood aside.

page 55 } AUSTIN BROCKENBROUGH, a witness, called by the plaintiff, having been duly sworn, testified as follows:

Austin Brockenbrough

DIRECT EXAMINATION

By Mr. Antrobius:

Q. Would you please tell the Court your name, residence and profession.

A. My name is Austin Brockenbrough. I live at 1810 Hanover Avenue, Richmond, Virginia, and I am a consulting engineer in the civil engineering field.

Q. What are your qualifications as a civil engineer, Mr. Brockenbrough?

A. I graduated from V.M.I. in 1921 with a degree of Bachelor of Science in Civil Engineering. I worked for the Highway Department for fifteen months and went to Cornell University and graduated with a degree of Civil Engineering, C. E.

Q. What other experience have you had in civil engineering?

A. I am a professional engineer, licensed in the State of Virginia, 1935. I have a license to practice engineering in North Carolina, South Carolina and West Virginia. I started work right after graduating from Cornell and worked with the City of Richmond on sewer design and sewer page 56 } work. I worked with them for three years as Designing Engineer of sewers, when I left and went into construction work. Following that, I was working in New York for large contractors, doing subway construction and channels, and then came back to Richmond.

In 1935, I was with the Public Works Administration. I was hired to make an investigation of the damage done by the storm in 1933, and then continued on with them until 1938 as Engineer Examiner. We examined plans from different municipalities, engineers, cities and anybody submitting projects for a school, sewers, waterworks, all types of works where a Federal Grant was given.

I then went to work for the Footing and Cement Association for two years. In 1940, I went with construction work at Camp Lee as Superintendent of Construction of Water and Sewer Systems, then at Richmond General Depot.

I then volunteered to go into the Navy and went in as a Lieutenant Commander. I was given a Sea-bee battalion and took it to the Pacific, and in 1945, I had a regiment of Seabees. I retired or resigned and left as Captain in the Navy.

Then I worked with the City of Richmond as Director of Public Utilities for two years, having charge of all of the water system, the filtration and distribution, the manufacture

of gas, and the distribution of gas. We also had a
page 57 } small hydroelectric plant.

I then went with a Liberia Company as Chief Engineer, and after staying in this country about six months, went to Liberia and stayed about a year with this company before things slowed up and then I was manager of Roberts Field in West Africa, Liberia, for one year.

In 1950 I returned to Richmond and entered the practice of consulting engineer with Warren Perrow as partner, and in that type of work we did sewer systems, water systems, what we call site work on large housing projects, which is developments of water systems, sewers, paving, drainage and all types of work involved in site work.

That partnership was dissolved, and in 1955 I formed the partnership of Austin Brockenbrough Associates, and I have been practicing since 1955 under that name. I am the senior partner. We have done a lot of work for the Fifth Naval District. We have done work for a great many architects in the City of Richmond, particularly on site work on schools and buildings. In doing site work, we have a lot of drainage work which we have to do with Henrico County and Chesterfield County. We have done railroad work. We have done all types of consulting engineering work. I have designed for the City of Richmond two large sewers, one in Brook Road and one in Hermitage Road. The one in Brook
Road ran from 60 to about 184 inches, and the
page 58 } storm sewer in Hermitage Road was up to 78
inches by 36 inches from the top, the upper end, to 78 inches at the lower end.

In general, we do a general civil engineering consulting business.

Q. Mr. Brockenbrough, are you often employed by the defendant to do highway work?

A. We do. I have a joint venture or a partnership with Watkins, and we are all doing interstate highway work in the State of Virginia, within probably about 25, 30 miles. We have finished a job on I-77 in Bland County.

Q. What do you mean by I-77?

A. That is Interstate 77. We are at the present time working on a section of I-64 over Afton Mountain. We are completing the plans on a by-pass around Clifton Forge on Interstate 64, and we have another section of I-77 or Interstate 77 in Carroll County. We have also done a by-pass around Winchester. We are also at the present time engaged with the Landscape Division in working out the water and sewer facilities for the rest areas.

Austin Brockenbrough

Q. Mr. Brockenbrough, are you a member of any zoning panels?

A. I'm a member of the City of Richmond Zoning Appeals Board and also a member of the Planning Commission, because as a member of the Zoning Appeals Board I am their representative on the Planning Commission for

page 59 } the City of Richmond.

Mr. Antrobius: Your Honor, I offer Mr. Brockenbrough as an expert.

The Court: You are offering him as an expert civil engineer?

Mr. Antrobius: Yes, sir.

The Court: Any specialty or just civil engineer?

Mr. Antrobius: Civil engineer I think would cover this field.

The Court: There is no question in the Court's mind, so he will be allowed to testify as an expert.

Q. Mr. Brockenbrough, are you personally familiar with the Upham Brook watershed and stream?

A. Yes. I have been familiar with the Upham Brook watershed since I was requested by you all to make an investigation of it. We have also investigated sections of it, for instance the Walton property. The appraisers of the property asked us to make a study of the Walton property because certain parts of that property were in the county's flood zone area.

Q. Where is that property located?

A. It is located just west of the railroad track and adjoins the culvert, the R. F. and P. culvert.

Q. Are you familiar with the Upham Brook watershed and stream before this construction?

page 60 } A. Yes. We made an investigation and have seen it before construction had started.

Q. Have you made a study of the surface water flow in this stream?

A. We have made a study of the surface water flow in the Upham Brook area before I-64 was started, and we have made a study since I-64 construction has been started.

Mr. Miller: Your Honor, he refers to "we have made a study". I would like a clarification of "we".

Witness Brockenbrough: I.

Mr. Miller: You have made a study?

Witness Brockenbrough: Yes.

Austin Brockenbrough

Q. Mr. Brockenbrough, what was the purpose of this study?

A. The purpose of this study was to determine the amount of water which was flowing from this watershed to the culvert before I-64 was constructed, and to determine the amount of water which would flow to I-64, the culvert at I-64, after the construction of the Interstate 64, any improvements and channel changes and the filling in by interchange of the ponding area at the Staples Mill Road section.

Q. How did you determine the peak stream runoff? Describe it.

A. We determined the peak runoff in the stream by figuring the length of drainage area, the amount of
page 61 } area in the drainage, and the time of concentration of the water when it would arrive at the point of the culvert.

Q. Did you use a formula?

A. We used the rational formula in this, which is "Q" equals to "A" times "C" times "I". "Q" represents the total quantity of water. "A" represents the total drainage area in acres. "C" represents the factor of runoffs. That is all of the water runoff. "C" would be one, but we know that all of it does not run off and so we have to figure out what is a factor that will run off. "I" is the intensity of rainfall in inches per hour, which will fall on this area at a given time.

Q. Mr. Brockenbrough, would you write this formula on the board to make it a little bit more explicit?

NOTE: The witness is writing the formula on the board at this point.

Q. Mr. Brockenbrough, so there is no question as to your writing, would you please read this?

A. "Q" is equal to the quantity of water in cubic feet by second. "C" is equal to the factor of runoff. "I" is the intensity of rainfall in inches per hour, and "A" equals the area in acres.

Q. Now explain the factor of runoff.

A. The factor of runoff, as I said, is the fall of the water that runs off of the watershed. That would be one,
page 62 } but we know that all will not run off because it has drafts and so forth, evaporation takes place, and so we don't figure that all of the water will get there, so that the amount of runoff can vary from two per cent to ninety per cent or twenty per cent to ninety per cent. Not two per cent, twenty per cent to ninety per cent.

Austin Brockenbrough

Q. Now, the intensity of rainfall, how is this determined?

A. The intensity of rainfall is determined in these cases by curves which are made up, which give how much rainfall will fall in a certain period of time. For instance, if the time of concentration is so much for it to run from one end of the watershed to the other, then we have a factor on the curve that says there will be so many inches of rainfall falling at that time.

Q. What do you mean by time of concentration?

A. Time of concentration means the time that it takes the water to run from the upper end of the drainage area to this culvert which is in question.

Q. Mr. Brockenbrough, what tests and studies did you make in regard to surface water hydrology in the Upham Brook stream?

A. We examined the ground before it, looked at the stream bed where it ran. There are certain parts still in existence that have not been bothered or had not been both-
page 63 } ered by the construction of Interstate 64, and we made a physical examination of this area. I made a physical examination of this area.

Q. How did you determine the state of the stream after the construction of Interstate 64?

A. After the Interstate 64, we have examined the plans of the Virginia Department of Highways and studied them to see what they have done to this drainage area. The Interstate 64 is constructed in a large part in this drainage area and right along the stream, and at some places it had to be removed. We also studied the facts of filling in the area which ponded at the culvert due to the water rising above the culvert and will rise under these conditions in which we are checking out this design, to see how much quantity of water there is.

Q. Mr. Brockenbrough, I have three exhibits which have been stipulated as graphically correct. Would you tell me if these were prepared under your direct supervision?

A. These were prepared under my direct supervision.

This first map shows a portion of the Upham Brook watershed which is above from the R. F. and P. track. In other words, it shows the area of drainage shed to this point by the R. F. and P. culvert here. (Indicating on map) This shows the location on the vicinity map in the City of Richmond, to show that it is in the western part and is
page 64 } not in the City of Richmond but in Henrico County.

Austin Brockenbrough

Q. Mr. Brockenbrough, here is a map entitled "Highway Construction in Flat Ponding Area of R. F. and P. Railroad Culverts." Did you prepare this?

A. This was prepared under my supervision.

Q. And Mr. Brockenbrough, here is a third map entitled "Improvements to Upham Brook and Horsepen Branch by Virginia Department of Highways." Was this prepared under your direction?

A. Under my direct supervision.

Mr. Antrobius: Your Honor, I would like to offer them as exhibits and ask that Mr. Brockenbrough will be allowed to use these during his testimony.

The Court: The vicinity map will be 22, the ponding map will be 23 and the improvement to Upham and Horsepen watershed will be 24.

Q. Mr. Brockenbrough, did you make a study of these maps?

A. I made a study of these maps.

Q. What are they?

A. These are the sections, the contract of I-64 and the drainage is in three contracts, and these three sets of plans are covering the construction that will be done by I-64 on the Upham Brook drainage area from the R. F. and P. track to the end of the drainage area. One section covers

page 65 } a portion below the R. F. and P. track, but part of it is still in this same contract.

Mr. Antrobius: Your Honor, we have stipulated this as being the final plans and that construction is proceeding according to these plans. I would like to enter these in evidence.

The Court: One set?

Mr. Antrobius: Three sets, Your Honor, and I would like to identify them, if I may.

The Court: Isn't each set numbered? Each one has a different project number and each one has a different sheet number.

Mr. Antrobius: Yes, sir.

The Court: So if we introduce all three as Plaintiff's No. 25, then you can identify them by project number.

Mr. Antrobius: Actually, these will not be put in use in testimony, but I would like to have them in the record.

The Court: That is all right with me. I don't see much sense of it, if you are not going to use them.

No objection?

Mr. Stotts: No objection.

The Court: They will be marked *Plaintiff's Exhibit No.* 25. You have got three separate rolls?

page 66 } Witness Brockenbrough: Three separate rolls and three separate contracts.

The Court: All right, 25-A, B and C.

Mr. Antrobius: Your Honor, we have some information on the front of them, if you care, for positive identification.

The Court: Well, this first sheet is 1 through 16-A. The easiest way to describe it, I guess would be C-504, C-501.

You have got the same project number all the way across, haven't you? So, 25-A will be the roll showing C-504 and C-501. 25-B will be the project number C-503, 1 through 13-C, and C-502 will be sheets 1 through 14-A, and that will be 25-C.

Q. Mr. Brockenbrough, would you please describe the construction that is being made by the defendant in Upham Brook watershed and stream? You may use these exhibits, if you would, please.

A. Starting at the railroad track, the Interstate I-64 is crossing over the railroad track, crossing and coming into an area where there is an interchange with Staples Mill Road.

Q. Mr. Brockenbrough, it might be more helpful if you stand and point to this as you go along.

A. Interstate 64 comes in across the railroad

page 67 } track, goes under a newly constructed or raised Staples Mill Road, and has interchanges coming off onto Staples Mill Road, going on Staples Mill Road to I-64 going south or going east. This road comes off of I-64 north, this one comes in and goes back so that you can cross. If you want to come off I-64 you can go south on Staples Mill Road. This one, you can go north on Staples Mill Road. You then come down on the eastbound lane. You have a take-off which comes in and will go so you can get off of 64 eastbound and go south on Staples Mill Road. You can either come up and go off of the interchange and come back onto I-64. You can come off of Staples Mill Road and go west on Staples Mill Road. There is a road that takes off, comes off of Staples Mill Road and will allow you to go on the westbound lane going in a westerly direction.

It then continues and crosses Horsepen Branch, continues up until it hits Dickens Road where there is a bridge, and also there is one lane that comes off as an interchange. It continues up this area beyond Dickens Road, and then it

crosses Bethlehem Road where it goes under Bethlehem, Bethlehem is reconstructed above it and then continues on where it goes under Broad Street Road where it interchanges again at Broad Street Road and goes more into the channel of Upham Brook, where in order to get across this area, the channel will have to be improved from this point up into the upper reaches.

page 68 } This continues on up to Skipwith Road and there the channel crosses under Skipwith Road and goes up the south bank of the road to a place where it is about 1600 feet from Mayland Drive; it comes into the main ditch of Upham Brook which extends up to approximately Broad Street, a little bit beyond it, for the end of the drainage area, which is approximately up in that area. Of course, also the upper reaches which come up this way, and streams coming in.

Q. Specifically, would you cover the channel improvements as to the width and length?

A. The channel improvements, starting at the upper end, there is a 6-foot paved bottom ditch which comes into the culvert. (Indicating) Here, Upham Brook goes under I-64, and extends along the south side or south of the eastbound lane and is a 30-foot bottom channel, artificial channel, and then just as it gets to Skipwith Road, it is reduced in bottom to 10 feet, but the height is increased because you can get high elevation. It then goes under I-64 in a three barrel 10 by 12 box culvert and continues in a 36-foot wide bottom ditch, all the way to 1300 feet below Broad Street Road. At Glenside Drive it has a four-barrel 9 by 12 box culvert and the same size, 9 by 12, four-barrel culvert under Broad Street, 9 by 12.

It then flows in its natural channel from this point to Bethlehem Road where a new box culvert and en-

page 69 } trance channel have been placed. The box culvert under Bethlehem Road is a four-barrel 10 by 10 box culvert. It then flows in its natural channel from there into Staples Mill Pond. From Staples Mill Pond it flows from over the dam into the new box culvert, which is a new trim three-barrel 10 by 18 box culvert, and flows down in a new channel until it joins Horsepen Branch, which comes down from the east, and then they flow in the natural stream toward the R. F. and P. culvert.

I can give you the length on that. I would have to refer to my notes or I have prepared a drawing which will summarize it.

Q. Would you please show us the drawing?

NOTE: At this point the above-mentioned drawing is shown to counsel for the defendant.

Mr. Stotts: No objection.

The Court: All right. Let me mark it. I take it you ask to introduce it?

Mr. Antrobius: Yes, sir, we do.

The Court: I will mark it *Plaintiff's Exhibit No.* 26.

Mr. Antrobius: Thank you, sir.

A. The summary of the improvement shows the original length of the channel, the improvements, the part of the channel, the number of feet of improvement and the
page 70 } length that the drainage ditch, I mean the Upham Brook, has been shortened by building these channels.

From R. F. and P. Railroad to Staples Mill Pond, the original length was 1960 feet, 1000 feet is in the new channel and it is 460 feet short.

Mr. Ellis: Just a minute, Mr. Brockenbrough, when you say 460 feet—

Witness Brockenbrough: It is shortened by that much.

Q. That much less channel?

A. That much less. From Staples Mill Road to Bethlehem Road is 6180 feet in the existing channel, and there is no short. Bethlehem Road is 480 feet, and that is from the channel through the culvert. There is a new channel, but no change in the length.

From Bethlehem Road to 1300 feet east of Broad Street, it stands 600 feet. That is in the original channel. There is no improvement and the length has not changed.

1300 feet east of Broad Street to Skipwith Road, 8800 feet, the new channel is 8656 and it has been shortened 194 feet.

From Skipwith Road, 1600 feet south of Mayland Drive, which is this point, (indicating on map) the original length was 4270, the new channel is 3750, and it is shortened 520 feet.

page 71 } From south of Mayland Drive to here, it is 3660 feet. There are no improvements and no shortening of the channel.

Of the total original length of 26,000 feet, it is 13,886 feet of new channel and it has been shortened 1174 feet. That represents about 53 per cent of the Upham Brook stream has been put in a new channel, constructed artificial channel, and has been shortened 1174 feet, which is about 4-1/2 per cent.

Austin Brockenbrough

Q. How about relocation, Mr. Brockenbrough?

A. Well, the stream in certain places has been relocated and in certain places it followed the stream. Up in this area, it pretty near followed it. Back down around when we get into these interchanges, it has to go around and is in a complete new stream away from where the construction was, because they could not construct it with the water running through that channel.

Q. Would you point out the new stream and the old stream in the other exhibit?

A. (Indicating on map) This is the old stream, coming on down, winding on down, it comes on and winds through this area, winds on down there and winds on right down to Staples Mill Road.

Q. Do you know the percentage of the stream that has been relocated?

page 72 } A. There has been 53 per cent or 13,886 feet, which represents about 53 per cent of the entire length of this stream bed.

Q. Mr. Brockenbrough, what did your study indicate as to the fill-in of the ponding area?

A. My study indicated that there was approximately 44 per cent of the ponding area filled in at Staples Mill Road between there and the railroad track in the area that would pond.

Q. Would you please show it on the ponding exhibit that you prepared?

A. (Indicating) In other words, the ponding area is the area in which the water would pond up behind this culvert and is outlined in red and blue, the red being the part that was filled in by the construction of I-64.

Q. Mr. Brockenbrough, what effect would this have on the water that has been ponding in this area previous to the construction of Interstate 64? What effect does the fill in the ponding area have?

A. It cuts down on the amount of water that can back up behind this culvert, and, therefore, will probably cause an additional requirement of additional culverts to take care of this water.

Q. Mr. Brockenbrough, you testified the percentage of runoff is one of the factors taken into consideration

page 73 } What did your study indicate as to runoff?

A. Our studies—I investigated this by going into the County and getting the zoning maps of the drainage area, and we prepared the plan showing this area. The whole

drainage area was zoned for commercial, industrial, multi-family houses or for single-family houses.

Q. Did you bring this exhibit with you?

A. I brought that exhibit with me.

Q. Could we see it?

NOTE: The exhibit is handed to Mr. Antrobius at this point.

Q. Mr. Brockenbrough, was this prepared under your direct supervision?

A. It was prepared under my direct supervision.

Q. Is it a graphical map?

A. It is a graphical map.

Q. Is the zoning indicated correctly?

A. The zoning is indicated correctly.

Mr. Antrobius: Your Honor, we would like to offer this in evidence.

The Court: I cannot consider that until after they look at it.

NOTE: At this point the map is handed to counsel for the defendant.

Mr. Stotts: No objection, Your Honor.

page 74 } The Court: There being no objection by counsel for the defendant, the Court will mark this No. 27. I will fill in the rest after Mr. Brockenbrough testifies.

NOTE: At this point the map is put on the board.

Q. Mr. Brockenbrough, would you please explain exactly what this map is to the Court and jury, please?

A. This map is colored to indicate the existing zoning in Henrico County for the drainage area at the present time.

Q. What do the various colors represent?

A. The light green represents single-family houses. That is all this area in here. The dark green represents multi-family residences, which are apartments. The red represents the commercial, which is the area shown in here, and the blue is industrial, industrial along this area, back in here off of Broad Street Road.

Q. Take your seat again, Mr. Brockenbrough. Mr. Brockenbrough, how did you use the present zoning in connection with your computations as to surface water runoff?

A. I figured according to the standards set up by Henrico County, which are of record, they call for a runoff on commercial property of 90 per cent. That would cover industrial, runoff 90 per cent, which is the factor "C" in the equation which we have been using.

Q. What do you mean, "runoff 90 per cent"?

page 75 } A. 90 per cent of the water that falls on that area will run off. That is due to the fact that in commercial areas and industrial areas you usually have paving all over it and have little chance of absorption, of the water going into the ground, in shopping centers and areas of that type.

The multifamily, the plan calls for 75 in there, and I have used that as the factor in reaching my conclusion of "C". That is due to the fact that you have a number of houses all built together, you have more area for roofs to run off and there will be more paving and parking areas, in the residential. I have used a five-tenths runoff for the residential area, due to the fact that they are houses that are built fairly close. It is not a tremendous area for each house. They are nice size lots, but not too big, and I feel that five-tenths is the correct runoff of these.

In summarizing and taking all of these factors into consideration, we come up with a runoff factor of "C" is equal to .58 or 58 per cent of the water will run off.

Q. Did you arrive at this figure by using the area and the zoning?

A. We used the area and the zoning. Now, it is a fact that zoning does not stand still. That I know, and from being on the Planning Commission, I know that everybody is trying to what we call upgrade zoning, and the basis of our

page 76 } figures are 0.58, but I believe that before the 20-year period is over, we will find that a great many of these areas will be upgraded from residential single-family into commercial and probably some industrial areas.

Q. So then your figure would be a conservative figure?

A. We figure that my figure of .58 is conservative. I think that eventually we probably will have a runoff of .65.

Q. Mr. Brockenbrough, what did your study indicate in regard to rate of rainfall?

A. The rate of rainfall was worked out on a time basis of taking the drainage area and before I-64, I estimated that the drainage area would have a runoff that would take two hours for the water to run from the farthest point to the R. F. and P. Railroad culvert.

Q. Is this in reference to the time of concentration?

A. This is the time of concentration.

Q. How does that affect the rate of rainfall?

A. That affects the rate of rainfall according to the curve that I used. As the time goes on, the rain becomes lesser. In other words, you figure a lesser amount of rainfall for a two-hour storm, two-hour time of concentration, than one that is shorter.

Q. What do you mean by curve?

page 77 } A. The curve that is prepared, that Henrico County has, which they have shown a curve that water will fall over a 5-year period, that is one storm in five years. We've got one for one storm once in ten years, once in twenty-five years and a storm that would happen once in fifty years. The City of Richmond designs their storm sewers and drainage ditches on a 5-year curve, Henrico requires a 10-year curve. The Virginia Highway Department on primary roads uses a 25-year curve, and on interstate the requirement is a 50-year curve, which is a higher degree of concentration of water than in the lower number of years.

Q. Then your time of concentration affects your rainfall curve?

A. It affects the rainfall curve.

Q. What did you find as the time of concentration?

A. We found that before I-64 was constructed, or I found, that the estimate of the time of concentration was two hours.

Q. What did you find as the time of concentration after the construction of Interstate 64?

A. Due to the changes in the channel and the other improvements, the time of concentration was one hour and .56, or 94 minutes.

Q. Would this mean that the water would be running faster?

page 78 } A. It would have to be running faster.

Q. Mr. Brockenbrough, what did your study indicate as to the Horsepen Branch-Upham Brook watershed area, as to the number of acres?

A. I don't know the acres right now. I've got it somewhere in the report.

Q. You can refer to your notes to refresh your recollection.

NOTE: The witness is looking in notes at this point.

Q. Let me rephrase this question to you, Mr. Brockenbrough. What did your study indicate as to the watershed area?

Austin Brockenbrough

A. The watershed area was 4600 acres.

Q. Did you also take into consideration culvert characteristics?

A. I did not take into consideration culvert characteristics except at the R. F. and P. Railroad track. We figured out, or I figured out, how much water could go through this culvert under different heads and the amount of water that could go through the additional 120-inch culvert under different heads.

Q. What did you arrive at as a suitable headwater elevation?

A. I arrived at the elevation of 175.2.

page 79 } Q. Why did you arrive at that elevation?

A. This was given by the Highway Department in their calculations as the head that they considered satisfactory. They based their figure on this, and I would say this was the elevation of it. Let's say, the storm of record which was in August of 1959, was a storm that placed the water at approximately this elevation.

Q. And specifically, what did your study indicate as to the ponding area adjacent to the Railroad's culvert?

A. Studies indicated that the ponding area would allow a good deal less head of water by ponding up water behind the culvert to this 175, which is ten feet above the top of the culvert.

Q. How does fill in a ponding area affect the headwater elevation?

A. Well, if you fill in the area, all of the gallons of water that you take out of it, that has been ponding, will force the water in the ponding area to rise to a higher elevation.

Q. You mean displacement of water?

A. Displacement of water.

Q. How does this affect culvert characteristics?

A. Well, it affects it because as you raise the water elevation, the more water will come through the culvert. But if you don't want it to go above a certain point, then

page 80 } you have to put in additional culverts.

Q. What effect, sir, by the ponding of this particular location—

A. The ponding, before I-64, eliminated culverts. I figured that it would require one extra culvert if they eliminated the ponding area.

Q. Was this ponding at this location before Interstate 64 within good engineering practices?

A. Yes, because I do not believe that the majority of people would design on a 50-year curve and that, if a storm hap-

pened once in every fifty years, due to economic reasons of not trying to overbuild and taking care of once in fifty years, you would rather take the sequence of the damage that could be done.

Q. Does this mean that this culvert was inadequate before Interstate 64?

A. In my opinion, this culvert was not inadequate before I-64.

Q. What effect had the ponding on other properties down the stream?

A. The ponding on the properties down the stream below in this area, there are two very critical areas that were flooded, Capistrano Gardens and another place there, in which the water came down and washed out these houses, and the County had to buy some houses or agree

page 81 } to buy some houses to move them out of this zoning area.

Water piling up behind this R. F. and P. track protected to a large extent these houses.

But now, more culverts will have to be placed through here to take care of this water, because there will be a larger amount of water going down and this area will be more susceptible to flooding.

Q. So the ponding actually protected downstream owners?

A. Yes.

Q. Is that ponding area flood plane zoned?

A. The ponding area is flood plane zoned like I described in the Walton property, where we had to tell the appraiser that that property was in a flood plane and could not be built on.

Q. Would you please explain the flood plane zoning?

A. Flood plane zoning is where the County has an ordinance which will allow, and I will read it to you if you like me to.

Q. No, explain it please.

A. In which the area is zoned for flood plane by the storm of record, or in accordance with the area or the elevations designed by the Corps of Engineers who make studies of all these areas and these streams to find out what it is, and the flood plane zoning means that the County will not

page 82 } let anybody, who owns property in there, build on it. They can only use it for purposes where it will not damage life and property. It can be used for parking and other things, but cannot be used to build on.

Q. Mr. Brockenbrough, based on your personal observations and your study and your tests and criteria contained

in your studies, and assuming a 50-year storm, a projected development basis of twenty years, do you have an opinion as to the peak stream discharge?

A. The peak stream discharge—I would like to refer to my notes.

Q. You can refresh your recollection from your notes.

NOTE: The witness is looking at notes at this point.

Q. Let me rephrase the question to be sure we have incorporated all the necessary elements here now. Based on your personal observations and results of the study that you made and criteria used in that study and assuming a 20-year projected development basis, 50-year storm, and without the Interstate 64 drainage improvements, do you have an opinion as to the amount of peak stream discharge?

A. Yes, sir.

Q. What is that?

page 83 } A. It would be 6140 cubic feet per second, approximately 6140 cubic feet per second, at elevation of 175.2.

Q. What culvert would be necessary to pass it?

A. The existing culvert.

Q. What do you mean by "existing culvert"?

A. The original culvert, which was the arch, and covers 214 square feet of area.

Q. Making the same assumptions and on the same basis, but assuming and including the defendant's drainage construction in connection with Interstate 64, now, under those assumptions, do you have an opinion as to the peak stream discharge?

A. Yes.

Q. What is that opinion?

A. The peak stream discharge would be 7470 cubic feet per second.

Q. And what culvert would be necessary to pass this?

A. That would require the existing arch and two 120-inch culverts.

Q. How much increase would that be, Mr. Brockenbrough?

A. I don't know exactly, I have not figured it out.

NOTE: The witness is now figuring.

A. (Cont'd) It is an increase of 1330 cubic feet per second, which represents about 22 per cent.

Q. You say cfs, cubic feet per second. Would you relate that into, say, gallons per hour?

A. Cubic feet per second, do you want the in-
page 84 } crease, or—?

Q. Just the increase in gallons per hour.

NOTE: At this point the witness is figuring.

A. Well, it is 7½ gallons in a cubic foot. That would amount to approximately 35,910,000 gallons per hour.

Q. And this is the increase?

A. Increase.

Q. Mr. Brockenbrough, have you prepared an exhibit that might more graphically illustrate your conclusions?

A. Yes.

Q. Do you have that with you?

A. Yes.

Q. Now, if you will identify this, then we will let the attorneys for the Highway Department take a look at it. Would you please identify it?

A. Yes. This is the summary of the storm-water flow in Upham Brook at the R. F. and P.

NOTE: The summary is shown to counsel for the defendant at this point.

Mr. Stotts: No objection, Your Honor.

The Court: 28.

Q. Mr. Brockenbrough, would you put it on the board and explain it for illustrative purposes?

A. My conclusions are that without the I-64 improvements,
that the 4600 acre drainage area and a runoff of
page 85 } .58, the time of concentration, two hours, allowable
water elevation of 175 under present zoning with a 20-year development period, that the arch would carry the water along as it exists. But with the improvements of I-64 of 4600 acres, 58 per cent runoff, the time of concentration of 1.56 hours, total elevation 175.2, the flow would be 7470 cubic feet per second, that we would need a culvert due to the reduction of the ponding area, of one arch of 120-inch pipe, but with the increased flow we would have to have an arch of two 120-inch pipes.

Q. You are relating one culvert to increased flow alone?

A. One to the increased flow and one to the reduction in the ponding area.

Q. Would you please use the top of your exhibit to explain that section of the graph?

Austin Brockenbrough

A. This was the original arch which is under the railroad track. There is now an existing, an additional existing, 10-foot culvert which has been pushed through the railroad track. The water elevation, the high water elevation, it is assumed we cannot go over 175.2 elevation, which is 10 feet above the top of the culvert right in there, which is 165.17. Now, with this one culvert in there, that would take care of the water provided that the area was not filled in, but as soon as we fill in and take a part of this ponding area, we will then have to take another culvert in there to take

page 86 } care of that amount of water which is coming down there in the 20-year development period for the existing zoning at .58.

It is my opinion that there probably will have to be a third culvert when this area develops with an increase of 6500 in the runoff, which is my opinion, which will be applicable in this area.

Q. So your opinion, based on present zoning at two culverts, is conservative?

A. That is right, and my third culvert is just an opinion on what will develop in the area later, and that is purely working on what I see is happening in the City of Richmond and Henrico County.

Q. Mr. Brockenbrough, you have said 20-years' projected development. How much development will that be?

A. Well, I would say the 20-year development would be full development of this area, and this drainage area.

Q. So you have taken into consideration fully developed watershed?

A. Fully developed watershed.

Q. Mr. Brockenbrough, have you also made a study of the improvements at Horsepen Branch by Henrico County and the defendant?

A. Yes. I have made an investigation of this,

page 87 } and it is my opinion that the water, which would come from Horsepen Branch, by the time of concentration and peak flow, from Upham Brook, will have passed on and, therefore, does not materially affect the calculations.

Q. Could you explain that a little more fully?

A. Well, the runoff, the Horsepen Branch runoff and these improvements that have been made by Henrico County and the Highway Department, again we had a flooding area back of Broad Street and the County has gone in and put in ditches, concrete-lined ditches, and has added culverts. Additional culverts have been placed under Broad Street Road,

and the channel has been improved for a considerable distance below Broad Street Road.

Now, this materially affects the amount of flow to begin with at the time of concentration for Horsepen Branch, but the time of concentration for Horsepen Branch is approximately 60 minutes, and the time of concentration for Upham Brook is 94 minutes, and, therefore, the peak amount of water would have run off and been dissipated before the effects of Upham Brook would reach this.

Q. Are you saying that the peak flow from Horsepen Branch would have come and gone?

A. Come and gone.

Q. Mr. Brockenbrough, based on your personal observations and the tests that you have made, do you
page 88 } have an opinion as to whether the original arch culvert was sufficient to handle the water coming to it before the Interstate 64 improvements, within good engineering practice?

A. Yes.

Q. What is that opinion?

A. The opinion is that it would take care of the water before I-64 was constructed, but, if the culvert was not placed, if an additional culvert was not placed in there after I-64 was constructed, that the water would have risen to approximately 180 feet or 4 feet higher, and would have spread out to a width in the ponding area of approximately 100 feet wide.

Q. Mr. Brockenbrough, there has already been a great deal said about the storm in 1959. Do you have an opinion as to the characteristics of that storm?

A. My opinion is that the August, 1959 storm, which was a storm of record, exceeded a 50-year storm. That is my opinion.

Q. This was a very unusual storm?

A. A very unusual storm, and I don't think it would be of a character that would probably happen again, but I believe that it was more water than would happen in what we would figure to be a 50-year storm.

Q. Mr. Brockenbrough, do you know the design for the defendant's culverts in Staples Mill Road?

page 89 } A. No, I do not.

Q. Based on your personal observations again and your tests, the results of these tests, and assuming a 50-year storm, 20-year projected development basis, and the defendant's construction in Upham Brook, do you have an opinion as to the amount or proportion of flow at that point,

where the defendant put the artificial improvements back in the stream?

A. Well, it would be the 7470 cubic feet per second.

Q. At this particular point, do you have an opinion as to whether this would overflow the stream?

A. This would overflow the stream, and if an additional culvert had not been placed, it would have raised the water approximately 4 feet higher and increased the ponding area by approximately 100 feet in width, I feel.

Q. Mr. Brockenbrough, how many gallons per hour did you say this increase amounted to?

A. 35,910,000 gallons.

Q. Mr. Brockenbrough, you have stated that you have performed work in the immediate area there for the Walton property. Why did you perform this work?

A. We were asked by the appraiser who was representing the owner, to give him a breakdown on the property, to see what the features were of it, so that he could make his appraisal.

This being in a flood plane zone, we immediately page 90 } checked with the County, and I prepared a map showing him where the zoning plane was, and advised him that he could not build below this. In other words, that this property did not have the value that the property up above the zoning area had.

Q. Why did he want this?

A. He wanted it because he was representing the owner probably in the condemnation against the Highway Department for this property.

Mr. Antrobius: No further questions.

The Court: At this point, ladies and gentlemen, how do you all feel about going on? I imagine Mr. Stotts and Mr. Miller have quite a few questions to ask Mr. Brockenbrough.

Mr. Stotts: That is correct.

The Court: Do you feel that you prefer to take a break now and come back tomorrow morning and go on with the cross examination, or do you want to go on late tonight? Generally, we are going to stop around 5:30 anyhow, but at that time we might be right in the middle of the examination.

A Juror: I prefer to quit now.

The Court: All right. Then, ladies and gentlemen, it would seem that one of your members has something else he has got to do. For that reason, I think it is a good stop- page 91 } ping place.

Everybody will start off fresh in the morning.

Do any of you have any reason why you cannot get here at 9:30 in the morning instead of 10:00 o'clock? Speak up if you have.

A Juror: I have to take my child to school, but I guess I can make it.

The Court: All right, we will then take a recess until 9:30 in the morning, and I will admonish you, ladies and gentlemen, not only what I admonished you before with reference to not talking to anybody about the case or not letting anybody talk to you about the case, but in addition to that I want to reiterate the admonition with reference to the newspaper, radio and television, and further I want to ask you to stay as far away from the so-called Upham Brook watershed as you possibly can in your travel to and from the courthouse. If there is any way in the world you can avoid going toward or near any of these places that we have seen today, I would suggest don't go anywhere near them, and I don't think any of you, if I recall correctly, have to go right near that place, because everybody either has to see it together or nobody see it.

So, if you remember those various admonitions, we will recess at this time and resume at 9:30.

page 92 } NOTE: At this point Court adjourns until tomorrow morning, November 15, 1966, at 9:30 o'clock A. M.

page 93 }

November 15, 1966
9:30 o'clock

NOTE: Court convenes at 9:30 A. M. with the same appearances of counsel as on November 14, 1966. The jury is polled, whereupon the Clerk states, *viz:*

The Clerk: All jurors present.

The Court: I believe when we went into adjournment last night, the attorneys for the plaintiff had completed their direct examination of Mr. Brockenbrough and the attorneys for the defendant were to commence this morning with cross examination.

Austin Brockenbrough

CROSS EXAMINATION

By Mr. Stotts:

Q. Mr. Brockenbrough, I believe you stated yesterday that you do work for the Highway Department as a consultant?

A. Yes, sir.

Q. Has your firm of Brockenbrough and Associates done any interstate work of this magnitude or this type?

A. Brockenbrough and Associates has not.

Q. Who has done this work?

A. Brockenbrough and Watkins.

Q. Where does the firm of Brockenbrough and
page 94 } Watkins have offices?

A. Richmond, Virginia and Lexington.

Q. The interstate work that you indicated yesterday, was that being done in Richmond, or—?

A. In the Lexington office.

Q. Then it is not being done under your direct supervision?

A. That is right.

Q. Is Mr. Watkins in that office?

A. Mr. Watkins.

Q. In the Lexington office?

A. J. Steven Watkins, yes.

Q. It is done under his control out there?

A. Yes.

Q. I believe in talking about the adequacy of the railroad culvert, did I understand you to say that you considered the railroad culvert to be adequate today taking into consideration the development of the watershed area as it is and all of the factors that contribute to that, without the Interstate 64 Highway, that you consider this railroad culvert to be adequate to pass the water of the two water courses, Upham Brook and Horsepen Branch?

A. Yes, assuming the elevation of 175 or a lower elevation. If we figure at the present time, I frankly have not figured
that out, or how much water would come right at
page 95 } the present time.

Q. But I mean, you say you feel it is adequate to pass the water through that culvert?

A. Yes, with the ponding area.

Q. With a ponding area?

A. Yes.

Q. In other words, you do not feel it is adequate to carry all the water through there, there must be some ponding?

A. That is right.

Q. Is it good engineering practice to pond water behind a culvert?

A. Yes, I would say it would be good.

Q. Under all conditions?

A. Not under all conditions, no.

Q. Would it be good engineering practice to pond water back from a culvert on other people's property?

A. That is the fact in this case.

Q. That is right, it is a fact it is being ponded back on other people's property?

A. That is right.

Q. I am asking from an engineering standpoint, you as an engineer, would you design a culvert through a fill so that you would take into consideration ponding back on somebody else's property?

page 96 } A. Personally if I had to do it at the present time, it depends on what the developments were and the conditions. I do not believe that it should be done.

Q. You do not believe that you should design a culvert to pond water back on someone else's property, is that correct?

A. That is right.

Q. Then I take it from that, that if you were employed by the Railroad today to design the facilities under the R. F. and P. Railroad at this point, if they were just putting in the railroad today, that you would not recommend a culvert of the size of the arch culvert under the railroad, is that correct?

A. Well, I would under the conditions when it was built. At the present time, I believe that I would have to call for a larger culvert.

Q. Is this due to the fact—

A. Not considering any ponding.

Q. In other words, would you say it is due to the fact that the Railroad property stops right here and that all of this ponding would have to be on someone else's property?

A. Yes.

Q. Therefore you would design a culvert adequate to stop this ponding, is that correct?

page 97 } A. Well, yes, unless we could work out some arrangements to reduce the flooding.

Q. In other words, if you have a right to flood on these people's property, you would do otherwise, but you would not consider it good engineering design to flood on these people's property?

A. I would say that with a culvert of the size you have in there at the present time, and practically any culvert unless

you made it very low and very wide like a bridge, you would have to pond water in there, because at elevation 165 you are going to stop water coming through there.

Q. Yes, sir, but my point in this particular question is that in good engineering practice you would attempt to design a culvert which would keep the ponding within the property of the person you are working for, unless you could work out some other arrangement?

A. That is right. It does not make any difference if that storm arose, you would have some flooding in that area. You are bound to have some flooding in the area if you raise the water and you don't own anything than the property outlined.

Q. I realize you might in some instances have some flooding there, but I am saying that on occasion this floods back here, (indicating on map) and not just the 1959 flood but other floods, and I am saying with that information,

page 98 } you would not design it or you would attempt to get away from that design?

A. In thinking about it, I do not believe that you can design a culvert at that point with private property back of you. You would have to flood it.

Q. Could you design a bridge?

A. You would have to design a bridge, but even then, unless it was a very wide bridge, you probably would have to flood it.

Q. Are you saying that you could not pass that water in the ordinary storms, and we will say twenty-five years, without ponding, that you could not design to pass that water?

A. I don't see how you can pond up to your culvert.

Q. I believe you said if you put a bridge in there, it would?

A. Probably, if you put a great big, wide bridge in there, but the valley at this point is barren now and, therefore, you would have to pond.

Q. I believe you said you would attempt in good engineering to keep it from flooding?

A. Keep it low as much as you could, yes, sir.

Q. I believe you made a statement, too, that you consider this culvert may be adequate because people don't

page 99 } design for 50-year floods generally?

A. That is correct, sir.

Q. Are you saying then that you don't anticipate or you don't design to that standard generally?

A. Generally you do not design to that standard for the simple reason that in going to a 50-year storm, the economics of the cost, for instance in a culvert or a storm sewer, the

cost of going so high is so much by increasing the size that you can take care of any damages that would occur, which would be more economical, I guess.

Q. Then the fact that the Highway Department designed their facilities for a 50-year storm, you don't really worry about this, do you?

A. Worry about what?

Q. About the water that might come through on these facilities on a 50-year storm, because you say you do not really consider that itself, not economically consider that. In other words, what I am saying, what difference does it make if the Highway Department designs on a 50-year storm basis and will provide for greater water, that is water based on a 50-year storm in our engineering judgment. You would not consider this?

A. I did not say I would not consider it. I said it is not economically practical to do it.

page 100 } Q. Is it unreasonable for the Highway Department to design theirs for a 50-year storm?

A. The Highway Department can set the criteria they want.

Q. Is it unreasonable?

A. Well, not if they say it is not unreasonable. That is what they want under the interstate system. They don't design for a 50-year storm under their other programs.

Q. Did we have what some people consider at least two 50-year storms in the month of August, 1959?

A. No, I do not think so.

Q. You do not consider them storms of that magnitude? Greater or less?

A. I would consider the August, 1959 storm greater than a 50-year storm.

Q. Did we have one or two in that month?

A. We had, I think, two in the month of August, but one of them was the peak storm.

Q. Which one?

A. August 6th or 7th.

Q. The one you consider greater than a 50-year storm?

A. Yes.

Q. The other one you consider less than a 50-year storm?

A. I don't know, I have not examined that storm.

page 101 } Q. You have not examined that storm?

A. No.

Q. In view of the floods that have occurred, and you are familiar I think with the watersheds and the floods that occurred in this watershed area and the probable

development that you testified, you said you thought that would happen here. Wouldn't it be good engineering to design for a 50-year storm in order to minimize the possibility of blocking water and damaging upstream property owners?

A. I would say not.

Q. Even the fact that you may have deep water at people's homes that would be backed up from the storm—

Mr. Ellis: Your Honor, I object to this. I don't think there has been any evidence that water has been backed up in people's homes. Mr. Stotts is attempting through this cross examination to shift this case to one against the Railroad, and I think that we need to remind him that the Railroad is the plaintiff.

The Court: You have heard of a counterpunch?

Mr. Ellis: Yes, sir.

The Court: I think he is perfectly entitled to it. As I understand it, one of the questions involved here is the reasonableness of the construction and as I recall, that was raised in the pleadings.

page 102 } How could you ever get into reasonableness as far as this witness is concerned, unless you ask him whether he thought what had been done by the Department of Highways is reasonable.

Mr. Ellis: Reasonableness of the Highway Department's construction, Your Honor, is not in my mind a relevant factor in a case where a private property owner is claiming damages from a public project.

The Court: Where did you get that idea? I thought it always had to be a question whether it was reasonable in the public interest and any number of things. Not that you can say *res ipso loquitur,* the thing speaks for itself.

Mr. Ellis: My concept, sir, is when the Highway Department builds a major project such as this and comes in and takes or damages a property owner's property in the course of the construction, that even if the Highway Department's project is completely sound, completely desired by the community, competently engineered, is good in every respect, and we don't quarrel with Route 64. It is a fine highway. So is Route 95. All we are saying here, I think Mr. Stotts is misdirecting the emphasis, and this is the core of my objection on the relevancy.

page 103 } All we are saying here is that we are another property owner whose property was damaged or taken as a result of this big public project, and we want to be compensated to the extent of the damages.

Now, I don't think it really matters in the case of condemnation of a person's home as to whether they had a good home or bad home; you just pay them the value of the damages.

In our case, if we had a good culvert or bad culvert, if they have aggravated our condition and created a problem that necessitates us putting in an additional culvert over and above what we otherwise need to put in, then we feel that we are entitled to be compensated.

The Court: Aren't you forgetting the principle? Contributory negligence and mitigating damages.

Mr. Ellis: Well, sir, this is not a tort case. We are not allowed to sue them in tort.

The Court: Well, damages.

Mr. Ellis: The way the system normally works, when they are required to condemn our property—and we have begged and pleaded with them for nearly four years.

The Court: I think we understand that.

Mr. Ellis: I think his questions are irrelevant and exceed the bounds of cross examination.

page 104 } The Court: I disagree with you. I think we have to get before this jury the facts, and his questions are not irrelevant even in the sense that they might be tending toward the credibility so to speak of Mr. Brockenbrough's testimony as an expert. He can very well come in with other experts on his side who have different ideas. We are dealing with the opinions of experts, and as long as it stays within the bounds of the questions of facts which this jury will be called upon to determine, I do not see how you can consider it irrelevant for all the purposes, or immaterial. It might be inadmissible for one purpose but not for another.

I overrule your objection. Let the exception be noted in the record.

Q. Mr. Brockenbrough, would you like for me to restate the question?

A. Please.

Q. In view of the floods that have occurred in the probable development of the watershed that you mentioned yesterday that would take place, would it in your opinion be good engineering practice to design for a 50-year storm in order to minimize damage to upstream property from the backing up of water from these culverts such as damage to people's homes or flooding of their property?

page 105 } A. I personally feel that to design for a 50-year storm is going beyond where it would be practical to do it. I think that would be too strong.

Q. Would you say it is not good engineering practice?
A. I cannot say it would not be good engineering practice.
Q. In your opinion, did the R. F. and P. Railroad's fill at this point act as a dam in the 1959 flood?
A. Yes.
Q. It did?
A. Yes.
Q. The culvert was not adequate to carry the water?
A. It was not adequate to carry the water.
Q. Considering the ponding area and the sketch we have over here on the board, the one that is in front there now, I believe you stated yesterday that you were familiar with Henrico County's ordinance about flood plane zoning for it?
A. That is right, sir.
Q. Do you have that with you today?
A. Yes.
Q. You are familiar with this portion of the flood plane's ordinance?
A. Yes.
page 106 } Q. Would you read to the jury in reference to this land, that flood plane ordinance? Would you read it starting with this sentence—
A. Don't you want me to read all of it?
Q. If you desire, yes, sir, you might read the whole thing.
A. This is Chapter 4 of the Code of the County of Henrico, Virginia, amended by adding thereto a section as follows: Section 4-21.1.

"No building or structure shall be constructed upon land which is subject to inundation as determined by Figure 1 of the 'Design Standards and Specifications for Roads, Streets, Drainage Water and Improvements in Henrico County,' the maximum elevation reached by flood water of record of the flood level as determined by the United States Army Corps of Engineers, whichever is greater. Such plans are necessary to show that the land is not subject to inundation must be furnished by the applicant and accompany the application for permit. Such land may be removed from the area of land subject to inundation by the construction of a channel of adequate capacity to pass the volume of water computed from said Figure 1, the flood of record or the United States Army Corps of Engineers determination, whichever is applicable. The county drainage engineer shall review all applications to insure compliance with the pro-
page 107 } visions of this Section."

Q. Thank you, sir. Before we go into that—

Mr. Ellis: Excuse me, Mr. Stotts, would you like to have this in exhibit? We are perfectly willing to put it in.

Witness Brockenbrough: That is not the ordinance but that is the zoning law in this area, zoning area.

Mr. Stotts: No, I think the ordinance is all we want.

The Court: Let me mark that *Defendant's Exhibit A.*

Mr. Ellis: You can give it our number, sir, if that keeps the continuity.

The Court: It keeps just as much continuity to give it a defense exhibit number.

Q. Now, Mr. Brockenbrough, just before we discuss this ordinance a little bit, let me ask you one or two questions. Do you have any ponding from a culvert if it is adequate to carry off all the water that comes to that culvert?

A. Well, if you've got a culvert that is capable of carrying it and it is in a flood drainage area and you have water coming up to the top of the culvert, you are flooding certain land beyond the top of that culvert.

Q. Doesn't that mean that the culvert is not
page 108 } carrying all the water coming to it?

A. Well, it means that, because some of it is flooding, but even if you designed it to carry all the water that is coming to it, if it spreads out, it would normally spread out if it got to the top of it.

Q. I understand that, but what I am saying is this: If you could design and did design, leaving out economics and anything else, a culvert that would carry all the storm water, there would be no ponding by the fact of carrying all the storm water?

A. That is correct.

Q. Therefore, ponding is related to some extent to the adequacy of the culvert, is that correct?

A. It is, if you go above the top of the culvert with the water. But if you have a flat area, which we have in this area, and you get water up to the top of the culvert, you have flooded certain areas back of you by getting up to the top of that culvert.

Q. That is very true, but I am saying that ponding is related to the adequacy of the culvert though, wouldn't you say?

A. No.

Q. It has no relationship?

A. Well, it has this relation: If you go up higher you get more ponding, if you go up above the culvert.

Austin Brockenbrough

page 109 } Q. Going back to the County Zoning Ordinance that we were speaking of, does this County Ordinance say that you can remove land from the flood zone?

A. Yes, it does.

Q. Under what conditions, do you recall, or do you want to read that again?

NOTE: The above-mentioned Zoning Ordinance is handed to the witness at this point.

A. "Such land may be removed from the area of land subject to inundation by the construction of a channel of adequate capacity to pass the volume of water computed from the said Figure 1."

Q. Then a landowner could raise his land above this flood plane in Henrico County, couldn't he?

A. Yes.

Q. Isn't this exactly what the Highway Department has done in this area?

A. No, sir.

Q. They have not?

Mr. Ellis: Your Honor, may I renew my objection again?

The Court: Well, I think that is a technical question or a practical question that the jury can see as well as the expert.

Mr. Stotts: I think he said that a landowner page 110 } can raise his land under this County Ordinance.

The Court: All right. I heard him say the ordinance says that you can remove land from the flood zone by constructing an adequate channel.

Mr. Stotts: That is right.

The Court: And you are asking whether you could raise the land above the flood plane?

Mr. Ellis: No, sir, his question was—and this is the gist of my objection—could a private property owner raise the land.

Now, we are not dealing here with a private property owner, we are dealing with a public entity, and this is the core of my objection. This question is misleading the jury as to the concept of this case.

The Court: Who owns the land on which this culvert fill is located in this area?

Mr. Ellis: The Highway Department, I assume, owns all the land that Route 64 is located on.

The Court: Are you saying there is a difference between a public landowner in the sense that the State owns a land

and a private landowner, insofar as the provision of the County Ordinance is concerned?

Mr. Ellis: Insofar as provisions of the County Ordinance are concerned, I am not sure there is any difference. The State probably has to comply with the same re-
page 111 } quirements as a private property owner, but this does not take the State off the hook in our theory of the case.

We feel that when the State comes in and does a perfectly legitimate, proper and well designed—

The Court: I understand your theory of the case. That is what we are here for. They have got a different theory. The question you are objecting to is a question which would support their theory, on the grounds that yours is the theory. But has that yet been determined?

Mr. Ellis: No, sir, but I do not want the jury misled into anything that this relieves the Highway Department of any responsibility.

The Court: Now, if you want to argue the case, you will get a chance after the jury is instructed. But as far as arguing your case in general is concerned, I don't think this is the time and place for it.

I take it your objection here is to the effect that it is a different effect from the County Ordinance within the provisions of the County Ordinance as regards private landowners, as regards a so-called public landowner, and I don't see where there was any difference.

I think whoever is the owner of the land, if this is the criteria on which this ordinance is based, it does
page 112 } not make any difference who it is.

I understood you more or less agreed that the Highway Department would have to comply with what every county ordinance provides just as well as a private man. I don't see how we can have a controversy.

Like I say, they have a theory of the case which they are entitled to present, and you have one, too. I don't see how this follows the theory of the Highway Department, which I take it is opposite the theory you have. I don't see how anybody is misled.

They are instructed as to the law to apply, but you cannot get the facts unless you get them both ways.

Your objection is overruled and exception is noted.

Q. Mr. Brockenbrough, in this area right here, (indicating) assuming the Interstate Highway were not here, one landowner owned this land, and he came to you and asked you

could you design a subdivision for him on his land, would you as an engineer advise him that you could not because of this flood plane and that he could not develop that?

A. I would say that he could not develop in that flood plane area.

Q. Could not develop at all?

page 113 } A. No, not unless he went to the expense of putting in a storm sewer which would adequately take the water. For instance, the only way it could be done is if you, as the owner of these culverts right here coming under Horsepen and under Upham Brook, if you would channel those all the way through.

Q. Through the railroad?

A. The Railroad property. All through the railroad, and came in here and channeled this one to join this one somewhere. (Indicating on diagram) In other words, that would have to be adequate to take the water before he could cover up and use all the property.

Q. As I understand you, you say that you would advise him, as an engineer, that unless he was willing to go to the expense of putting a new culvert under the railroad—

A. No, not under the railroad. It would not be up to him to put it under the railroad.

Q. It would not be up to him?

A. No.

The Court: Let the record show Mr. Brockenbrough is pointing to Plaintiff's Exhibit No. 23.

Mr. Ellis: Excuse me now, on that latter point, sir, even though he is your witness, I am going to have to take an exception to that and point out if that is accepted by Mr. Stotts as a conclusion of law, that that is the sort of issue we are litigating here.

page 114 } The Court: As I understand it, that was Mr. Brockenbrough's opinion.

Mr. Ellis: Yes, but Mr. Stotts was asking him a question as to a conclusion of law.

The Court: The jury is going to determine what the facts are. This goes on every day in these type of cases. The lawyer might except to one thing, but he is not the person to determine the facts or the law.

Q. I believe you said then, from an engineering standpoint, to develop this land you would advise him to provide adequate channels and facilities through his property?

A. That is right.

Q. I believe you testified yesterday that 44 per cent of the ponding area had been filled in by this construction as shown in red on Plaintiff's Exhibit No. 23, is that correct?

A. Yes, sir, that is approximately correct.

Q. This is the red hatched area?

A. This is the red hatched area, but the red hatched area is the area at about 175. Of course, the fill from the roads that go down further into that would cover additional property.

Q. Yes, but what I am asking, on Plaintiff's Exhibit 23 you are speaking of the red area.

A. That is right, that is the general area that page 115 } is filled in.

Q. Was Staples Mill Road in this same general location before this Interstate was constructed?

A. Approximately in that same general location.

Q. What portion of this red area was within the existing Staples Mill Road?

A. Staples Mill Road was within that area.

Q. In other words, part of this 44 per cent of the ponding area that is filled in by the construction was part of the Staples Mill Road which was the property of the Highway Department?

A. That is right, sir.

Q. Do you consider it good engineering practice to consider a culvert adequate with a ponding area over a primary highway?

A. Well, the thing is that the normal storms that you have, that have been there, the Highway Department designed the culvert originally in there under the storms that have flooded it.

Q. My only question is, do you consider it good engineering practice to design a culvert, taking into consideration a flood plane and that flood plane to include a primary highway?

A. Yes, I think it would be all right.

Q. Even though this may endanger traffic on page 116 } the highway?

A. Well, that is a question of whether we have a horrible storm, or terrible storm like in '59, which is a very unusual storm. And more than that, there is a question whether you want to spend the money to let the road flood or whether you want to raise the road.

Q. Who wants to raise it?

A. The Highway Department.

Q. Aren't you saying in effect that it is a question if the

Highway Department has inadequate culverts under its own property? In other words, would you say in designing this culvert for the Railroad that you would take into consideration this ponding area and consider as part of the ponding area in good engineering practice to include flooding of Staples Mill Road?

A. Well, I would think to design a culvert like that would be good engineering practice. The culvert was in there.

Q. But you would consider it good engineering practice to do this?

A. Yes.

Q. I believe you testified it would take one additional 10-foot culvert to take care of the ponding area that had been eliminated?

A. That is right.

page 117 } Q. Including that eliminated by the raising of the highway?

A. Right, sir.

Q. In your determination of this 44 per cent that has been eliminated here, did you give any consideration to any other ponding area that may have been created within this watershed?

A. No.

Q. In your opinion, would the widened channel at this point, on Plaintiff's Exhibit No. 24, the widened channel somewhere in the vicinity of just east of Broad Street up to Skipwith Road, that 36-foot wide channel, would you consider that that would act to store or pond any of the water that fell on its watershed?

A. Very little, sir. It would also bring it down more rapidly to this point and cause more water.

Q. Would it somewhat depend on whether this channel was fairly level grade?

A. Level grade, it will fill up the channel, but it is flowing at a more rapid rate of speed than it would if no channel was there.

Q. But it would act to some extent as storage?

A. No, I wouldn't say that.

Q. In other words, you would not say that this would act in any way as any storage?

page 118 } A. No.

Q. No storage at all?

A. No.

Q. I believe you testified that you were familiar with the Highway plans?

A. Yes.

Q. Do you consider that these highway construction plans and the drainage in connection therewith to be within the limits of good engineering in your opinion?

A. Yes.

Q. Is the drainage therein designed according to good engineering standards?

A. Yes, according to the 50-year storm requirement that the Highway Department uses under this.

Q. I understand. I believe you testified that 53 per cent of the original channel was now in some artificial condition?

A. That is correct.

Q. And also that it had been shortened by roughly 4½ per cent?

A. Right.

Q. Looking at Plaintiff's Exhibit No. 24, let's start right up here first. I believe this is the headwater, is that correct, on the left of this chart?

A. That is right.

page 119 } Q. Coming down until we get down to this point near the Interstate. I believe there is no improvement, is there?

A. No improvements.

Q. Then we come along with a paved bottom and cross the highway. Now, looking at this, would you design this drainage for this highway leaving that channel in its original condition?

A. I would not.

Q. You would not. In other words, are you saying that in order to put the highway at this point, you would have to relocate the channel?

A. That is correct.

Q. Is this because of the fact that if you didn't, you would have to provide culverts under the highway at every point?

A. Well, it is meandering up the street completely across the highway, so you would have to rebuild it.

Q. If you leave it in the original condition, wouldn't you have to provide some culvert parallel to the highway?

A. Yes, either parallel or follow the line, but that would not be economical or feasible.

Q. In other words, good engineering dictates that you do it in this manner?

A. That is right.

page 120 } Q. That brings that channel on down to Skipwith Road. Now, at this point it leaves the highway. Do you feel it is necessary to enlarge that channel at

that point from Skipwith Road until the point just east of the interchange with Glenside Drive—excuse me, just west?

A. My personal opinion is that you could have left it there, but you probably would have flooded the highway if you had not done it.

Q. If we had not put in that channel, it would have flooded the highway?

A. And, therefore, you would have to put it in that channel to keep from flooding the highway, or either you would have to raise the highway so high. It is more economical to build the channel than it is to raise the grade.

Q. There again, in this part of the improvement by the Highway Department, it was necessary in order to build the highway in this manner, is that correct?

A. That is right.

A. When we get to the point of Glenside Drive to just east of Broad Street, here again we have a relocated channel. Is this good engineering practice?

A. That is good engineering practice.

Q. For the same reason that it was from Skipwith Road up here?

page 121 } A. That is correct.

Q. That you had to meander through the road, is this correct?

A. That is right.

Q. Fine. Then you come to the natural water channel where nothing has been done, then you get down to Bethlehem Road. Was this relocation here within good engineering practice?

A. That was within good engineering practice. The existing culvert was not sufficient in size to carry the water through and, therefore, a new culvert had to be constructed.

Q. I assume you are speaking about—

A. The Bethlehem Road.

Q. Where it says "existing trim 10 by 6 box culvert"?

A. That is right.

Q. Then the stream is left in its natural condition from there on through Staples Mill Pond. Could you leave the channel as it was, when it crosses Staples Mill Road, where it meandered around and came to this point? In good engineering practice, could you have left it in that condition?

A. No, you could not.

Q. Then it was necessary to make that relocation?

A. Yes, because you have to increase the size of the culvert in there, and you would have to make it larger

page 122 } and put the road over it.

Q. In other words, the road had to go part of

the stream for the same reason as up in Broad Street and up here further? (Indicating on diagram)

A. Right.

Q. Would the same condition apply to this part of Horsepen Branch?

A. Yes, sir.

Q. Would you say from your testimony then, that all of the improvements made by the Highway Department here were within good engineering practice and reasonable in the development of this highway?

A. They were within good engineering practice and reasonable.

Q. Now, we discussed the widening and the deepening of this channel at points. Let me ask you, Mr. Brockenbrough, if all other factors were the same, volume of water and all other conditions were the same, would the mere widening of the channel, say from 6 feet to 12 feet, increase the speed or velocity?

A. From 6 feet to 12 feet?

Q. Widening it from 6 to 12, or from 6 to 18?

A. Do you mean the artificial channel or do you mean you have a natural channel?

Q. I am saying first, sir, if you were to take all

page 123 } other conditions being the same—

Mr. Ellis: Your Honor, may I object to this hypothesis. You cannot take a meandering—

The Court: If you have got a natural channel and you widen it?

Mr. Ellis: Right, you cannot take a meandering stream that has trees and shrubs, and grass and weeds in it, and widen it from 6 feet to 12 feet and make up the banks and clean it out, and have exactly the same condition. So his hypothesis is in error.

Mr. Stotts: We've got two points here, if you will look at the Motion for Judgment. They say that the Highway Department has done more than one thing.

They have said you widened the channel, you deepened the channel, and you removed the underbrush and the obstructions. Now, as I see it, Mr. Ellis' objection is going to the removal of the underbrush. Now, I am talking strictly about widening and only that portion.

We will discuss the fact of the obstructions that are in the natural water course and will not be there in this other channel at this time.

In other words, they have alleged different things. They

have alleged we removed the obstructions, we widened it and deepened it.

The Court: I gathered that you asked the simple question, hydraulics or what have you, if you have a perfectly natural unobstructed channel and you are widening it from 6 feet to 12 feet, what is the effect?

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Mr. Stotts: That is right. Then we can ask about the obstructions that would have a different effect.

The Court: You would be entitled to what I call a mechanical question.

Mr. Stotts: Maybe I did not express it correctly, but that is the very thing I was speaking of. Strictly, nothing else but the condition of widening the channel alone.

A. Do you mean if you take the artificial channel that you have constructed through this area where it is painted in red, and you widened it from 6 feet to 12 feet, what would be the results?

Q. In the velocity.

A. It would slow the velocity down a very small amount.

Q. But it would slow the velocity?

A. Yes.

Q. Then the mere widening of a channel in and of itself does not increase the velocity?

A. Wait a minute. Repeat that please.

Q. The mere widening of a channel in and of itself does not increase the velocity?

page 125

A. No.

Q. There are other factors?

A. There are other factors. If you are saying widening by coming in and widening and putting an artificial channel in here, into an area where you just have a very little, one or two-foot deep stream, about two or three feet wide and then it overflows into a plane area and will go 200 or 300 feet, raise three or four feet in height, definitely you have increased the runoff and the speed that it will come down there, and you have shortened the channel which also will require less time to get there. If you have trees in a drainage area and brush in the drainage area, it directly affects the amount of runoff of flow that would come through there.

Q. Yes. I think you are saying that there are other factors to be considered?

A. Very many other factors, that is right.

Q. Right, I will have to agree with this. However, you spoke of the natural conditions, the obstructions in the origi-

nal channel. Have you given any consideration to the part of the highway plans where there will be vegetation and growth on this channel?

A. Yes.

Q. Would that have any retarding effect?

page 126 } A. That would have some retarding effect, but it would be grass and probably a good deal smoother. If you did not put concrete down there, it would not be as smooth, but it would materially make an artificial channel which would run the water off faster than it would if you just had a natural stream there and running all overland with no defined channel.

Q. What would you say was the condition of this stream before, size and all?

A. I would say the size of the stream, in looking at it, it was two or three feet wide. In some places, it was maybe three or four, and a couple of feet deep, and then it would overflow its bank.

Q. Did it overflow its bank very often to your knowledge?

A. Not to my knowledge, but it was perfectly apparent that it had to overflow its bank.

Q. What was apparent?

A. Because the stream was not big enough to carry the quantity of water that would come down there.

Q. When the water came down there in such a volume that it got out of its banks, did the water then follow the meandering course of the stream?

A. Yes, plus the area where it would seek its own level.

Q. Would it follow the meandering course of the

page 127 } stream or contour of the land adjacent?

A. The contour adjacent.

Q. If it was fairly flat, the water would keep straight?

A. With all the trees and brush and anything else in there.

Q. But it would not follow this meandering course necessarily?

A. Not necessarily.

Q. This would definitely be true if you got into a flat area?

A. That is right.

Q. Mr. Brockenbrough, looking at this chart, Plaintiff's Exhibit No. 24 again, you will note that west of Skipwith Road you have a channel in here that starts out at 30 feet, drops down to 20 feet, drops down to 10 feet as it gets to Skipwith Road. Are you familiar with this?

A. Yes, I thought it was 20 feet all the way down.

Q. I believe you sketched 20, 30, 10?

A. That is right.

Austin Brockenbrough

Q. In your engineering judgment, what would be the reason for decreasing a channel?

A. For the simple reason that you were getting enough depth. You could get enough depth so that you could make the channel deeper and you have more water in the deepness than where you would be getting it in width.

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Q. Would this depend on a difference in grade?

A. Difference in grade, because you would probably grade it off lower and come down in order to get under Skipwith Road.

Q. Would this be similar as going downhill in an automobile?

A. That is correct.

Q. Then why, when you cross under Skipwith Road would this channel all of a sudden become 36 feet wide?

A. Because you needed that much room to carry the quantity of water for the depth you could put in there.

Q. Would this depend on the fact that the grade had probably flattened out?

A. Probably. I don't remember.

Q. Would this indicate on Skipwith where it becomes 36 feet wide on the other side—

A. You would have to work back from Broad Street Road, back to Skipwith Road, and it depended on without building up sides how deep you could get that channel. So, if you could not get the channel in depth enough to carry the water, you would have to increase the width so that you would have an area in that channel sufficient to carry that water.

Q. In other words, if you could not get enough drop between Skipwith Road and Broad Street to carry the water off, you would have to provide for width there?

page 129

A. Well, you can get enough drop in there.

Q. Wouldn't the drop you are going to get depend on the elevation back here at the railroad culvert?

A. Well, not necessarily, because you are not fixing the channel back there. It comes from Bethlehem Road.

Q. Right.

A. To this line of the culvert.

Q. Is this a similar condition though to bringing an automobile downhill and then leveling off and you are going to slow down?

A. Yes, you slow down.

Q. In other words, the water is going to slow down when it gets to that point?

A. Slow down to some extent, yes.

Q. To enough extent that it takes a 36-foot wide channel for a 10-foot channel on the other side of the road?

A. You have not got the depth over there, so you have to make it a wider channel to take care of where you have got 10 feet and a certain depth. You have got to have that area in quantity plus where you pick it up in Skipwith Road. You have another stream coming in there with additional water.

Q. This right here, (indicating on diagram)
page 130 } you considered this though, haven't you?

A. That is right. All of Upham Brook is just one of the branches, but as you go down the stream you pick up additional water.

Q. Could you say in your opinion whether this 36-foot wide channel would be wider than the channel that the water would take coming down there other than when it got out of the banks of the original Upham Brook?

A. What was that again, sir?

Q. If the water was coming down there, I believe you told us at times it was apparent it would have to get out of the banks?

A. In the original conditions.

Q. Can you say from your knowledge whether this channel that the Highway Department has put in there, is wider than the channel that the water would take itself when it got out of the banks?

A. I would say that it would be narrower than what was the original channel, because it was such an undefined stream that it would have to spread out over a large area.

Q. In other words, at times of high water, when it got out of the channel, you had a wider channel before the Highway Department put it in, in its natural condition?

A. That is correct.

page 131 } Q. I believe you made a study of this area for the Railroad, is that correct?

A. That is correct.

Q. Did you yourself make it?

A. Yes.

Q. You were testifying from some notes yesterday. Do you have those notes with you?

A. Yes, sir.

Q. May I see them one second?

Mr. Stotts: Your Honor, I would like a conference for one minute with counsel.

The Court: I suppose we will take a recess and everybody can go out and relax.

Ladies and gentlemen of the jury, you all remember all the admonitions you got yesterday. So, during this recess, please don't talk to anyone about the case and don't let anyone talk to you about it.

We will recess until twenty-five minutes to 11:00.

NOTE: At this point a short recess is had, whereupon the hearing is resumed without the presence of the jury, *viz:*

JURY OUT

page 132 } Mr. Stotts: Your Honor, we had quite a bit of discussion before about the study being made, and I believe under the interrogatories and the *subpoenas duces tecum* we presented a study that we had made, and you recall opposing counsel said they did not have a study but they would furnish us with a study.

We have been furnished with a copy of the studies. Mr. Brockenbrough's notes that he is testifying from, are not the notes of the study according to what we were given.

The Court: Are they Mr. Brockenbrough's notes?

Mr. Stotts: Yes, sir. Is that correct?

Mr. Antrobius: Yes, sir, but he does not have to testify from the notes of the study.

The Court: We are dealing with the question where we had to discover from one side and the other. In other words, it was mutual. We understood what you were going to do is each side would give the other side its study so we don't have to go over it.

From what Mr. Stotts is saying, as I understand it, that you all, in accordance with that agreement or with that Order of the Court, call it what you will, furnished him with a study. He expected this study to be the same
page 133 } study as the testimony of the witness, but the witness has not testified to that.

Mr. Stotts: I might say that some of the conclusions that the witness has given are on this study, but the specific thing we would like to ask the witness about this study—

The Court: Haven't you got enough to ask him?

Mr. Stotts: I think we may have, but another point, there is some question whether Mr. Brockenbrough actually made this study himself or someone else, and Mr. Brockenbrough testified yesterday that this was his study, and he testified again this morning.

The Court: He testified he made a study before and he made a study after. He did not say anything about that. (Indicating)

Mr. Stotts: What I am saying is this: That is the reason I wanted to see the notes that he is testifying to, if that is his study.

The Court: Why don't you hand him what you have got and ask him if that is the study he made?

Mr. Ellis: This is the final data, isn't it?

Mr. Antrobius: That is right.

Mr. Stotts: This is Mr. Brockenbrough's study.

page 134 } Can we have that understanding?

Mr. Antrobius: It was prepared by him or under his supervision, by his firm whom we employed.

The Court: When you employ an engineering firm you don't necessarily figure that the head man is going to do it.

Mr. Stotts: That is right, but we just want to make sure—I did not want to object at that time, but I just want to clarify that this is the same study.

Mr. Ellis: You looked at Mr. Brockenbrough's notes there, but obviously you did not want him to bring it out.

Mr. Stotts: I have specific questions I want to ask him about this. I wanted counsel to have an opportunity to say that this was the study, so that Mr. Brockenbrough didn't say no, this is something else.

The Court: They gave you in accordance with the direction of the Court the last copy. That is the one that everybody understood they would rely on.

Now, if Mr. Brockenbrough says something that is contrary to what you have got in there, you will be entitled to ask him why, but, knowing Mr. Brockenbrough, he is

page 135 } not going to make up anything. I don't give a dog-gone who pays him or who doesn't pay him. He says let the chips fall where they may.

Does that answer it?

Mr. Stotts: Yes, sir.

NOTE: At this point the jury returns to the courtroom, whereupon the hearing is resumed in the presence of the jury, *viz:*

JURY PRESENT

By Mr. Stotts: (Cont'd)

Austin Brockenbrough

Q. Mr. Brockenbrough, speaking of this study that you made, referring to your notes, I believe you stated that the time of concentration was a critical factor in your study, is that correct?

A. That is correct.

Q. Would you explain again briefly what this time of concentration means?

A. The time of concentration means the time it takes for the water to flow from the upper limits of the watershed to the point in question, which is the culvert, the

page 136 } R. F. and P. culvert.

Q. In other words, looking at this same Plaintiff's Exhibit No. 24, that would be the time it took a drop of water from this point to make the full round?

A. That is right.

Q. And you testified, I believe, that before any of these improvements by the defendant, the Highway Department here, were made, at that time the concentration was what?

A. 120 minutes, or two hours.

Q. And the difference afterwards was?

A. Was one hour and a half or 1.56 hours, approximately.

Q. How did you arrive at this two hours before?

A. The two hours was arrived at—we checked it by going through a nomograph and checking it out. We used the four feet per second as an average. It came out 120 minutes, and studying the Corps of Engineers' report, this checked out at 120 minutes for the storm of August 1959, and I would like to refer to my notes, if possible.

Q. Yes, sir, please do.

A. We checked on the Corps of Engineers' report. It was two hours. I estimated that it was two hours. In the report from the Bureau of Public Roads, Page 66, the estimated time, and that is by the nomograph I had, was 135 minutes, which was 2.25 hours.

page 137 } Q. Where was this nomograph? Where was this taken from?

A. The one I had I understand was the Highway Department nomograph.

NOTE: At this point the witness is handing Mr. Stotts some paper writing which thereupon is handed back to the witness.

Q. And this is taken from the—?

A. Bureau of Public Roads.

Austin Brockenbrough

Q. Design of Roadside Drainage Channels, publication dated April 1962.

A. We checked it by going to the Interior Department. We got a design of small dams from the Soil Conservation Service nomograph in that book. The time of concentration checked out to be two hours. We then gave it another formula of public practice, the California Highway Departments'. The time of concentration came out 2.23 hours. We used as a safe one two hours.

Q. Can you identify this? Does this come from the Soil Conservation nomograph book?

A. I don't know, I did not bring the book with me.

Q. Would you look at this book and examine it close enough to determine for yourself whether or not that particular chart is the one that is taken from the Soil Conservation Service?

page 138 } A. Yes.

NOTE: The witness is looking at the above-mentioned book at this point.

Q. Is this the same chart?

A. Yes.

Mr. Ellis: Your Honor, may we ask the purpose of this? If Mr. Stotts wants to put in something of this type with his own witness, I think that is the proper way to do it.

Mr. Stotts: If Your Honor please, I think Mr. Brockenbrough said he used this in the time of concentration.

The Court: Does it make any difference if it is his witness or your witness? What is the purpose of you visibly reproducing what he stated?

Mr. Stotts: We were talking about the time of concentration before the improvements and the time of concentration after the improvements, and Mr. Brockenbrough testified that he used this as one of the methods of the time of concentration before.

The Court: You are cross examining him on his method of determination?

Mr. Stotts: Yes, sir.

The Court: All right. That will be all right.

Mr. Stotts: We would like to offer this.

page 139 } The Court: I gather your objection is merely to the way he is putting it in?

Mr. Ellis: I have no objection further. I thought he was

trying to put in one of this own exhibits through our witness.

The Court: That will be *Defendant's Exhibit B.*

Q. Now, I believe you stated that you checked your two hours for the time of concentration against the Bureau of Public Roads, Soil Conservation Service and the Corps of Army Engineers' report?

A. Report of the Corps of Army Engineers.

Q. Did all of these reports use the same method for determining time of concentration?

A. No.

Q. They did not?

A. Not that I know of.

Q. Is this nomograph—

A. Nomograph.

Q. Is this nomograph that was in the Soil Conservation Service similar to the one you referred to just now in the Bureau of Public Roads?

A. No, I don't think it is. It does not check out the same exactly, because the Bureau of Public Roads came out with 2.25 hours.

Q. Do you have the source of the Bureau of
page 140 } Public Roads' reference?

A. I had this one right here. That is it. (Indicating)

Q. Would you refer to that in the notes on the left-hand corner and tell us on what study this was based.

A. It was based on the study by Z. P. Kirpich, Civil Engineering, Volume 10, No. 6, June 10 '40, Page 362.

Q. Do you have a copy of the Army Engineers' report with you?

A. Yes.

Q. If I may help you, do you have the volume that has A-4.1? Do you recognize that type of data? Does the "A" refer to appendix maybe?

A. I believe it does. "A" is appendix. I believe it is in the appendix.

Q. Now, would you refer to the appendix, Page A-4.1?

A. Right.

Q. A-4.1. What are you reading from? What is this?

A. Reports. It is a detailed project report, Upham Brook, Virginia Appendix, U. S. Corps of Army Engineers, Norfolk District, Corps of Engineers, Norfolk, Virginia.

Q. What date, sir?

A. Dated 20 June, 1962.

Q. Back to this page, A-4.1. Does that refer to the Soil Conservation Service report?

page 141 } A. A section in this says SCS, Soil Conservation Service I imagine. Section 3.16 Engineering Handbook Section 4, Hydraulics Angles Supplement A, February 1957, by the Soil Conservation Service, by the Department of Agriculture.

Q. So that refers back to this report that you just spoke of as being the Soil Conservation report, is that correct?

A. That is correct.

Q. Now, referring to the Soil Conservation report again that we mentioned just now, is that page from this report that you were just looking at?

A. This is evidently a page from it, yes.

Q. All right. Is this next one which is designated 3.15-5 also a page from the same report?

A. Well, I suppose so. I don't know.

Q. Would you look at it a second to determine this?

A. Yes.

Q. Now, would you tell me what that is speaking of at this point? Is it speaking of the time of concentration?

A. Yes, it is speaking of the time of concentration.

Q. Does it have a reference to where this method that they use is derived from?

page 142 } A. Reference from Z. P. Kirpich's Time of Concentration of Small Agricultural Watershed, Civil Engineering, June 1940.

Q. Then the Soil Conservation Service uses the same reference as the Bureau of Public Roads for determining this time of concentration by these nomographs, is that correct?

A. I think that the Bureau of Public Roads' is not exactly the same.

Q. Would you refer to that reference again?

NOTE: The witness is looking at the above-mentioned reference at this point.

A. That is correct, yes.

Q. They are the same?

A. Yes.

Q. Therefore, the Army Engineering report, the Soil Conservation report and the Bureau of Public Roads' report all go back to the study of Z. P. Kirpich?

A. That is right.

Austin Brockenbrough

Q. That was all one method then of checking the time of concentration?

A. That is right.

Q. Now, I believe you said one other method you used was a California Highway Department culvert practice?

A. Yes.

Q. Is that derived also from Kirpich, do you
page 143 } know?

A. I don't know.

Q. Could you tell us briefly what that formula is based on? Is that formula based on the length of the water course, the difference in elevation as a constant factor?

A. That is correct.

Q. Is Z. P. Kirpich's study based on the same thing?

A. I imagine it is.

Q. Then, basically they are all the same?

A. They should be all the same.

Q. Then for your method, you used really one method to check this two hours?

A. Yes, sir.

Q. Did you use the same method to determine the time of concentration after I-64?

A. No, sir.

Q. Why not?

A. Because we figured that by the change, by putting in the channel, by shortening the channel distances, that we had a different problem, and we, therefore, came back and to the best of our ability we analyzed the amount of what we thought would flow in certain reaches of the channel.

Q. If you are going to do a valid comparison between time of concentration before and time of concentra-
page 144 } tion after, wouldn't it be better to use the same method for comparison purposes?

A. It probably might be, but we assumed after checking this out and checking with all of these methods, we thought our time beforehand was correct.

Q. Can you take this same nomograph that you used and determine the time of concentration after, based on the length and the difference in elevation?

A. We could, but I don't think it would entirely be correct.

Q. Could you do it for us though?

A. Well, I could use that, yes.

Q. Would it be better to use your small one?

A. I think it would probably be. Let me use the big one. I would rather use that.

Q. All right.

A. Do you have a ruler?

NOTE: The Sheriff is handing the witness a ruler at this point.

Q. While we are waiting for that, I think we can probably go on, but still relating to the same thing, using this Bureau of Public Roads' report that you used to check your time of concentration before—

NOTE: At this point the Sheriff is handing the witness a different ruler.

page 145 } Q. What length are you using it after?
A. 25,000.

Q. After?

A. Afterwards, I reduced it in length 1100 feet. It comes out approximately two hours according to this.

Q. It comes out approximately two hours for the time of concentration after, if you use the same method derived in Kirpich's study. So, therefore, using Kirpich's study, your time before and after, of concentration would be approximately the same?

A. Approximately the same according to that.

Q. Should you use Kirpich's formula at all in this area?

A. Well, to be frank with you we found out after I had worked it out, and we checked it and found out the Corps of Engineers had used it on its last general study. We considered it a very good check and accurate enough to use.

Q. Do you know whether the Corps of Army Engineers made any refinements in this?

A. No, sir, I do not.

Q. Looking in the same Bureau of Public Roads' report in talking about the time of concentration, would you read Section 2.4-2?

A. Time of concentration. "The time of con-
page 146 } centration defined in Section 2.4 varies with the
size and shape of the drainage area, the land slope, the type of surface, the intensity of rainfall, whether flow is overland or channelized, and many other factors. Extreme precaution is not warranted in attempting—"

Q. Excuse me, was that extreme precision?

A. "Extreme precision is not warranted in determining time of concentration for the design of drainage channels on rural highways. Time of concentration can be obtained

from Figure 5 which is based on the study of Kirpich, 22, Page 309-318 of six watersheds which varied in size from 1.25 to 112 acres. The watersheds were all located on a single farm in Tennessee. Research is badly needed on the time of concentration of other types of watersheds. The values of Tc from Figure 5 are based on meager data, and should only be used when better information is not available. A minimum time of concentration of 5 minutes is recommended for finding the intensity used for estimating the design discharge."

Q. I take it from this, that Kirpich's formula for time of concentration applies to small watersheds of 1.25 to 112 acres?

A. The nomographs though go up to a length of 25 to a good deal larger area than that.

Q. But the Bureau of Public Roads says it should be used for small watersheds?

page 147 } A. Yes.

Q. Does it also say that Kirpich's study was based on small watersheds all located on a rural farm in Tennessee?

A. Yes.

Q. Are those similar conditions to what we had in this watershed?

A. No, sir.

Q. What is the size of watershed in question?

A. 4600 acres of land.

Q. Does the error increase with the increase in watershed? In other words, is it more accurate on a small watershed than it is on a large watershed?

A. I would assume so.

Q. Then we can find a greater error in any study on a watershed of 4600 to 4700 acres, such as we have here, compared to a small farm in Tennessee?

A. Yes.

Mr. Ellis: Before you put that down, would you give the reference?

Mr. Brockenbrough: 6-16.

Q. Is this the page just preceding it?

A. Preceding 6-17.

Q. Of the nomograph?

A. That is right.

Mr. Ellis: And is that the one from which you

page 148 } have just read?

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Mr. Brockenbrough: Yes.

Q. I believe these same references are also in your notes, aren't they, of the study you made on this, reference to the Bureau of Public Roads?

A. Yes. In my study they call for 617.

Q. How did you determine your after-time of concentration? You said you did by a different method?

A. We did by a different method.

Q. Do you have your reference there in your notes?

A. No, I do not.

Q. You don't?

A. I sat down and estimated what we thought would work out. We came back with the distances and the flow, for instance on the beginning we took an overland flow to get into the point of concentration.

Q. Let's stop one minute. Speaking of overland flow, you are talking about the water that is going to come to Upham Brook and Horsepen Branch, is that correct?

A. Yes.

Q. Does any of the construction by the Highway Department increase this flow or cut down the time it comes to the channel?

A. Not in the beginning. It is 15 minutes.

Q. It is 15 minutes. Before and after it is 15
page 149 } minutes for overland flow, is that correct?

A. That is right.

Q. I believe you stated that you got different times for different sections?

A. That is correct.

Q. Is that basically based on Plaintiff's Exhibit No. 24 again?

A. That is right, sir.

Q. The first reference you have is what, 3660 B?

A. Which is from the top of the watershed.

Q. Is that from this point going north to the top of the watershed?

A. Yes.

Q. And then you have next what?

A. Then I have a thousand feet coming down from right there. (Indicating)

Q. Coming through here?

A. Right there, yes, through the culvert. And I allowed that at 6 feet per second.

Q. Excuse me. Look at your notes again.

A. The first one is 6 feet.

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Q. Maybe it would help you if you'd refer to this. (Indicating)

A. Then it came a thousand feet and I estimated that it would come at 8½ cubic feet per second. That
page 150 } gave me a time of 2 minutes. Next, 2750 feet at 9½ feet per second.

Q. Does that bring you down to—

A. It brings me down to Skipwith Road. And 8656 feet all right down there at 6½ feet. 600 feet at 3. That is back in the normal channel.

Then, 480 feet at 6½ through the culverts in that area, 6180 feet at 3 feet per second, and 1000 feet in there at 12 per second.

Q. Does that 1000 feet take you all the way from the dam to the railroad culvert?

A. Yes.

Q. It does?

A. No, it takes you down to where the culvert is, where the thing ends. The culvert is right there, yes.

Q. Would you take this scale and measure from Staples Mill Pond down to the railroad culvert. I believe you will find the scale an inch to 500 feet. This is on Plaintiff's Exhibit No. 24.

A. 1600 feet.

Q. 1600 feet. Well, then actually, according to your exhibit here, it is a total of 24,826 and it should have been 25,000. So it is 800 feet more approximately? Approximately 800 feet more?

A. That is right.

Q. And how many feet did you say this channel
page 151 } had been shortened by the highway construction?

A. It had been shortened 1174 feet.

Q. Minus 800?

A. No, the 800 was all the way through.

Q. I believe you just now brought me all the way down to this point and said no, it was not a thousand feet?

A. I will have to add up that total again and check it and see.

NOTE: The witness is now figuring from Plaintiff's Exhibit 24.

A. (Cont'd) 24,826 feet of the new channel, approximately 25,000. This lacks approximately 500 feet which we did not consider.

Q. I don't understand your math here, sir. All you did was take your 1174 off of that. I understood you just now to say, and this is what I would like to be clarified, is it a thousand feet that you consider from the dam?

A. Yes, it is a thousand feet on down, the flow, which puts us down into here. 600 feet more. (Indicating)

Q. You should have added 600 feet more?

A. Right.

Q. So that this would change your time of 94 minutes for time of concentration after, under this method?

A. That is correct.

page 152 } Q. Did you also state that you had figured a thousand feet at 8.5 cubic feet per second to be two minutes?

A. Yes.

Q. And did you also say that a thousand feet at 12 feet per second was two minutes?

A. That was rounding it up a little bit.

Q. Which one, or both of them?

A. The thousand feet at 12.

Q. In other words, a thousand feet at 12, and a thousand feet at 8.5 obviously are not going to take the same time?

A. Not quite the same time, but you are talking about minutes and you were dropping it down below that. That would average it out.

Q. Minutes can be important, sir. If you are talking about that we decreased the time of concentration by 30 minutes, every minute counts.

A. Yes, sir.

Q. Speaking of the same study, why wasn't this method of time of concentration used for it before? Could it have been used?

A. It could have been used, yes, sir.

Q. Wouldn't it have been a more accurate comparison for it before and after?

A. Yes.

page 153 } Q. Is it possible that it would have—

A. After we checked it out with three or four different sources, we considered that was satisfactory.

Q. Three or four sources all of the same method, I believe?

A. Possibly, yes, except I don't know about the California Highway. They have different sources. As I say, the California concentration came out 2.23 hours, which was practically a quarter of an hour or 2 hours and 15 minutes, and the Bureau of Public Roads came out with 2.25, and I don't understand why, but we've got 2 hours checked by the

Corps of Engineers, 2 hours by the Soil Conservation, and we used 2 feet per second, and that came out to 2 hours.

Q. In the checking of your own, you had a variance of 26 minutes though. That is more than that?

A. We used the conservative figure of 2 hours rather than 2.25.

Q. Is it possible that if you used the same method for the time of concentration before as you did after, that you had gotten a figure of 2 hours?

A. It is possible. Do you mean if we analyzed each section?

Q. Yes, sir.

A. We might. We might, but I don't think so.

page 154 } Q. Is this the only accurate way to find out what has happened down there at that R. F. and P. culvert?

A. That is one accurate way to find out before.

Q. Is the most accurate way to cross section the channel and find out what happened?

A. That would be one of the most accurate ways, yes.

Q. Aren't we really interested in what is happening at the R. F. and P. culvert and not upstream?

A. That is right, we are interested in how much water is coming down to the R. F. and P. culvert.

Q. Right. And it does not matter what is done upstream unless it directly affects what happens at the culvert?

A. That is correct, sir. Now, however, in checking over the figures which the Highway Department gave us for the time of concentration, the figure that was used on that was 104 minutes, and we had 94 minutes. And at the beginning of the overland flow, whoever worked up those figures, assumed 26 minutes while we assumed 15. So that we ended up with a 10-minute difference on the beginning of the flow at the concentration point, and we would have ended up with exactly the same amount of time that your own figures show from what you gave us.

page 155 } Now, we did this before we had any of your figures, because all of your figures were based on this; and, therefore, we felt that we had a very good check on our figures for the final time of concentration.

Q. You mean a very good check based on what the Highway Department's figures came out to be?

A. That is right.

Q. Do you consider the Highway Department's figures being a good check?

A. I consider it being a very good check.

Q. I believe you put a formula on the board?

A. That is right.

Q. Is the rational method applicable to a large watershed such as we have here?

A. We think it is, yes, sir.

Q. Referring to the same Bureau of Public Roads' report and talking about the rational formulas, would you read from Page 6-15. I believe we already had made reference to 6-17 and 6-16, and now we are talking about 6-15, starting with the first full paragraph.

A. "Actual runoff is far more complicated than the rational formula indicates. Rainfall intensity is seldom the same over an area of applicable size or for any substantial length of time during the same storm. If a uniform intensity of rainfall of duration equal to the time of concentration

page 156 } were to occur on all parts of the drainage area, the rate of runoff would vary in different parts of the area because of differences in the characteristics of land surface and nonuniformity of antecedent conditions.

The temporary storage of storm water en route toward defined channels and within the channels *themselvers* accounts for a considerable reduction in the peak rate of flow except on small areas. The error in the runoff estimate increases as the size of the drainage area increases.

For these reasons, the rational method should not be used to determine the rate of runoff from drainage areas larger than 5 miles. For the design of highway drainage structures, the use of the rational method should be restricted to drainage areas less than 200 acres."

Q. Do you agree with that?

A. Not necessarily.

Q. How large in acres is 5 square miles?

A. That is—Well, the area that we are talking about is 7.2 miles.

Q. In other words, half again as large?

A. Half again as large.

Q. Do you agree or disagree with the statement that the error in runoff estimate increases as the size of the drainage area increases?

page 157 } A. That might be so to a small extent. I don't know.

Q. I assume from your earlier testimony that you would disagree with this portion of the statement where it says, "The temporary storage of storm water en route toward

defined channels and within the channels themselves accounts for a considerable reduction in the peak rate of flow except on very small areas."

Would you disagree with that statement?

A. I won't disagree with that entirely, but I think it is stretching it a little bit, when you have a stream running, water in there and you call that storage. That is not to me storage area.

Q. Would the writer of this be referring to such as the channel that you—

A. I don't believe that it would, no, sir.

Q. You don't?

A. No, sir.

Q. What do you think he would mean, in your judgment?

A. I think he would mean if you came down there to certain points of this and you've got a flat area where your channel was not defined, and you spread out over a large area, then you would have a storage of water in there.

Q. I believe, sir, it states, "Temporary storage of storm water en route toward defined channels and
page 158 } within the channels themselves." Now, I believe he is making a distinction there, don't you?

A. Well, yes, I think he is.

Q. I believe you also stated in your study here that you used certain zoning factors by the County?

A. That is correct.

Q. Did you use the high factors?

A. Did I use the high factors?

Q. Yes, sir.

A. On the residential areas we used a higher factor than we did in certain points.

Q. You used a higher factor than the County had on their own ordinance, is that correct, or their own zoning?

A. No, we used .5 runoff. It says you can go down to .4.

Q. Do they also say you can go down to .31 for some of this?

A. I don't know. Zoning had R-0, which I don't know what it means. I gather it means a residence without anything on it.

The Court: They call that R-O.

A. R-O, .31. R-1, .35. R-2, .36. R-3 is .40. R-5 is .57.

Q. Now, the first one up there, R-4, are these single-family dwellings?

page 159 } A. Yes.

Q. For single-family dwellings the County uses .31 .36, is that correct?

A. That is correct.

Q. What factors did you use?

A. We used .5.

Q. In other words, when the County uses .31 to .36, your study used a higher factor than any of these, is that correct?

A. Yes, because in my judgment that is what it should be.

Q. In other words, you are saying the County is wrong?

A. I think the County is a little bit light.

Q. I believe you used their figures on most of it?

A. We used it on most of it. We used it on business.

Q. R-5 is multiple-family dwelling, is that correct?

A. That is right.

Q. Do you know that the County always requires a .57 runoff factor for multifamily dwellings?

A. No, sir, I do not.

Q. Do you know if they approve it with less than that?

A. I don't know.

page 160 } Q. Can you actually tell from your study, Mr. Brockenbrough, what the actual situation is at the railroad culvert?

A. I don't understand your question, sir.

Q. Well, my only point is this: You have based the study on what happened at various points along this stream. Can you actually state conclusively from that study what is happening at this point, and I am referring to Plaintiff's Exhibit No. 24, at the railroad culvert entrance? In other words, the only thing I am saying is, can you definitely say that all these improvements here, that you can tell from your study that these improvements have definitely increased the water at this point and have damaged the railroad?

A. In my opinion, yes, they have increased the flow of water to that point, due to the time of concentration, and due to the other factors we are considering. Yes.

Q. But the time of concentration, there is some question about using different methods on that?

A. The time of concentration—of course, when you have a shorter time of concentration with the curves that we use, and I assume that the Highway Department has got to have similar curves, they may not be right on the nose as the ones we use from Henrico County, but the time of concentration, the less time that you have the more rain that you will have over a given period of time.

page 161 } For instance, in 2 hours you will have one rain, and at one hour and a half or 1.56 hours

you will have another increase. That, of course, is all rational again. A lot of it is assumption.

In the drainage work, there is a tremendous amount of assumption, as you know. You have to assume these things to be able to come up with a rational idea or come up with an idea of just approximately what it is.

Q. Certainly not a definite sign?

A. It is not a definite sign, no, because when you say take the cross sections, that would be a more logical method through existing conditions, yes, but then you've got to apply a factor to that which in your judgment or a different hydraulic study means using a different factor.

For instance, we are using a runoff factor of .57 and come up with an average for present zoning of .68, which to us indicated that your study came off with a runoff factor of .57. We feel you are a little bit light in that instead of one culvert you have got to have two.

Q. All of this improvement here, would you have to consider factors of culverts, how they would work at these various points?

A. We don't consider that we would have to do that. We are considering only the end results down at the railroad.

page 162 } Frankly, in your studies, I imagine in order to design each culvert you have got to analyze the backwater from that and see what the results would be, because you've got to put your road into certain elevation and you don't want the water flooding you. You've got to get the water underneath your culvert.

Q. By the same token that we would have to use to determine our culvert and the backwater as you said, wouldn't the backwater from each one of these culverts up here determine when the water was going to reach the railroad?

A. Well, but we came out with approximately the same time.

Q. My question is, would it though depend on the backwater, each one of these culverts?

A. Probably to some extent, but not as far as we were concerned we didn't consider that.

Q. If the Highway Department were to build a culvert similar to the R. F. and P. culvert on Broad Street, then would you have to consider it? What I am saying is, a culvert of the same size which would then pond water back in that area, then, would you have to consider it down here?

A. Would we have to consider it?

Q. Yes, sir, would you have to consider it to determine what was going to happen at this point?

A. I don't think that we would on that, no, sir.

Q. You mean it does not make any difference
page 163 } if you are ponding water back in here? (Indicating)

A. You are ponding back, but you are making your culvert large enough.

Q. I am saying if we were putting in a smaller culvert and ponding water back further—

A. Then it would be a question—it would be a difference of time.

Q. Have you considered the existing culvert on the Bethlehem Road, which will be left in place?

A. I did not know you were going to leave it in place.

Q. Would it have effect by leaving that culvert in place?

A. If you left the existing culvert?

Q. Leaving the existing culvert.

A. Well, leaving the existing culvert, I don't know whether you are channeling away from your fill. I don't understand it.

Q. Have you looked at the Highway plans?

A. I have not looked at the Highway plans to study just what is happening to the old culvert.

Q. If the old culvert is left in place and the channel comes through the new culvert, and then through the old culvert, would you have to consider the effect of the existing culvert on the downstream flow?

page 164 } A. I don't consider it to much extent, because I think it would overflow it, what water is coming now.

Q. But it would have an effect?

A. It probably would have some very small effect.

Q. Would this improvement in Horsepen Branch, and I am sure you are familiar with what was done by Henrico County—

A. And the Highway Department.

Q. All right. Let me say improvement by Henrico County and the Highway Department in Horsepen Branch, would you say that that would have any effect on the water coming to the railroad culvert?

A. Well, due to the fact that the water, the time of concentration on that watershed is 60 seconds, I mean 60 minutes, which is one hour, and you go back to your curve and come back, the water that would flow there would be something like 3.2 minutes, I mean over 3 inches per hour, which is higher than you would have for the whole Upham Brook watershed. Then the water, that would be considered the peak water at Horsepen Branch, would have passed before you get to the Upham Brook water.

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Now, yes, there would be some water coming down at Horsepen Branch, but it would be the normal water that would come to the Upham Brook back at the same rainfall. You would have to reduce your rainfall at Horsepen
page 165 } Branch and refigure your curve down there.
So, it does not materially affect it.

Now, there is water coming down Horsepen Branch, yes, but you've also got water coming down these other branches.

Q. I believe we only have two branches feeding at that point though?

A. At that point, yes.

Q. You are saying then that Horsepen Branch water could get here and pass through the culvert before the peak from this would get here? (Indicating)

A. Yes, the peak from Horsepen would pass.

Q. Would it depend on which way the rain was going?

A. Yes. If you had a rain over that branch and not over the other area, which you can do, but I question then whether you would have any problem.

If you had a rain over Horsepen Branch and no rain on the Upham Brook, then you would have no problem because you would only have water from Horsepen Branch.

Q. Would you have a problem if the rain were going from the City of Richmond west, hitting Horsepen Branch, dumping water there and then moving on to the watershed of Upham Brook—

A. No, because by the time—

Q. May I finish the question?

page 166 } But that the water is still raining in Horsepen Branch when it gets to Upham Brook and we have a *continous* flow of water at the same time over both watersheds, but the watershed or the rainfall started on Horsepen Branch first?

A. Well, in that case, the peak of the water has passed off.

Q. How would the peak of the water pass off in Horsepen Branch if it is still raining?

A. Because if you are using the same amount of water which is shown on the curve, you are reducing the water, and, therefore, you are just getting the normal runoff that would happen in any of the Upham Brook watersheds.

Q. You are saying even though this rain may continue for a couple of days?

A. If it does continue—

Q. If it continues for a couple of days, the water has still passed no matter how hard the rainfall?

A. The peak has passed.

Q. I am saying the peak, regardless of the amount of rain.

A. That is right.

Q. As I understand it, you are saying that the additional culvert needed here in this area is due to the highway construction and not any improvements made by the County in the Horsepen Branch?

page 167 } A. That is correct.

Q. Are you familiar with the allegations of the Railroad in this law suit?

A. Yes, sir.

Q. You are?

A. I was when it was put in.

Q. Were you familiar with the action brought by the Railroad in the Supreme Court against Henrico County and the Highway Department?

A. I was not in on that, no. I was in on the report that was made, but we have revised our report since then and I personally don't feel that there is any water coming down on Horsepen that could be made a part of this suit.

Q. Then you would disagree with this allegation by the Railroad Company that the artificial construction in these streams, referring to Horsepen Branch and Upham Brook, by the defendant and to some extent by Henrico authorities, will increase the volume or velocity of flow reaching the railroad culvert from these streams by decreasing the time of concentration of said water approximately 30 minutes? Would you say that statement is not correct?

A. That statement, coming back from Horsepen Branch, is not correct, because we feel that that water has passed off before the water from Upham Brook has

page 168 } arrived at the culvert.

Q. Did I understand you to say you changed your opinion about this also?

A. I changed my opinion about this, yes.

Q. Then at one time you signed an affidavit stating that you thought the Henrico County improvements and Highway Department improvements caused this decrease in time by 30 minutes?

A. Yes, sir. When we first started working on this case we allocated a portion of the increased flow toward the new culvert, saying it was caused by the improvements at Horsepen Branch. But, after studying this thing thoroughly, I am thoroughly convinced and personally convinced that the water would have run off of Horsepen Branch, and, therefore, it would only be the normal water coming down and not due to these improvements be affecting this area.

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Q. Is this the affidavit you referred to? (Indicating)
A. Yes, sir.
Q. Do you know right offhand when you signed that affidavit?
A. No, sir, I do not.
Q. Is this the same affidavit?
A. Yes, sir.
Q. What date is on this by the Notary?
A. Fourth day of January, 1965.
Q. What does it state that it is made a part
page 169 } of, action of the Railroad against whom?
A. Douglas B. Fugate.
Q. And?
A. Bernard Dunn, Mr. Shadwell, Barksdale, members of the Board of Directors, Stewards of the Board of Directors of Henrico County.
Q. In other words, as I understand your testimony now, Mr. Brockenbrough, that at one time you felt that the construction by Henrico County in Horsepen Branch and the construction by the Highway Department in this drainage area, both caused a decrease of 30 minutes at the time, but now you consider only the Highway construction caused this 30-minute decrease?
A. I am only considering the Upham Brook Branch.
Q. Then you are saying we can disregard Horsepen Branch?
A. Yes, sir.
Q. Well, if we took Horsepen Branch and that water out of there, wouldn't the water flow better in this other culvert?
A. You cannot take the water out of Horsepen Branch. Horsepen Branch is a part of the watershed which flows to the culvert, and the two meet just before the culvert, but it is my opinion that the effect of the concentration of the water
from Horsepen Branch has passed by the time
page 170 } the concentration of water of the longer drainage area from Upham Brook is there, and, therefore, the effect would only be the normal rainfall on the watershed and not the improvements or the time of concentration, because the time of concentration was cut, but that is passed off before the Upham Brook watershed has reached this point.
Q. Then you are saying for practical purposes, if Horsepen Branch went through the embankment in a different culvert—
A. No, the same culvert.

Q. Did you make a study for the Railroad regarding Horsepen improvements by Henrico County?

A. We did, yes, sir.

Q. And you advised them that the County's improvements would not contribute?

A. I did not say it would not contribute, I said it would not contribute on a peak load; that the peak had passed, and that it was only the normal watershed in the Upham Brook.

Q. What I am saying, if you were called as a witness in a case between the R. F. and P. and the County, you would say that the County had not damaged the Railroad by their improvements in Horsepen Branch in channeling the water in there?

A. That is correct.

page 171 } Q. Just one other point I would like to cover, and that is the number of culverts and how you arrived at the necessity for it. One I think you said is needed—

A. To take care of ponding.

Q. Therefore, if you would not have any ponding there you would need the culvert today without the construction of Interstate 64?

A. If there were no ponding.

Q. If you were to eliminate the ponding, under present-day conditions without the highway, you would need an additional culvert?

A. At a 50-year storm we would need one culvert.

Q. How many culverts do you say you need then because of the construction of the highway?

A. I say we need two culverts, two additional culverts.

Q. One for ponding and one because of these improvements?

A. That is right.

Q. What is the increase in the flow of water here?

A. Do you mean before and after?

Q. Yes, sir.

A. From 6140 cubic feet per second to 7470.

Q. 1330 cubic feet increase?

page 172 } A. Yes.

Q. And to carry that flow, you need how many culverts?

A. We need two culverts. I mean we need the arch and two culverts.

Q. The arch and two culverts. How many square feet are in the arch?

A. 214.

Q. How many square feet are in each of these culverts?
A. I'll have to check. Approximately 77.44 square feet.
Q. 77.44?
A. Yes, each one.
Q. Then the two of them would be—
A. 157.
Q. Roughly 157 square feet?
A. Yes, sir.
Q. Now, you say that the arch culvert has—
A. 156 or 157 approximately.
Q. You say the arch culvert of 214 square feet will pass the 6140 cubic feet per second, but the increase of 1330 is taking an additional 156 square feet?
A. Yes, sir.
Q. Could you double it?
page 173 } A. The answer to it is that it will not go up to the exact time of head in figuring. On a hundred we get to 174 feet instead of 175 feet.
Q. In other words, you are going to lower it and you are going to improve conditions?
A. That is right.
Q. Do you think that the Highway Department's construction here caused this and it is required because of the Highway construction to lower and improve the water conditions?
A. Well, the lowering of the water conditions by putting in a culvert, it probably could be a little smaller. The second culvert could probably be a little bit smaller.
Q. You probably don't need two culverts then, do you?
A. Oh, yes, we do, in our estimate of the quantity of runoff.

The Court: Ladies and gentlemen, we will take a short recess. Remember the same admonitions. We will reassemble a quarter to 12:00.

NOTE: At this point a short recess is had, whereupon the hearing is resumed, *viz:*

page 174 } REDIRECT EXAMINATION

By Mr. Antrobius:
Q. Mr. Brockenbrough, you have testified that you used computations of the defendant's engineers to check against some of your own figures. Did you also check your own figures against their residential runoff figure?
A. Yes, we have checked against theirs and they average around .5 all the way through.

Q. What did you use for the figure?

A. We used .5.

Q. Would you please tell the Court and the jury why you did not use the same nomograph in comparing time of concentration before and after this construction?

A. Because we figured that due to the channel changes the water would run off more rapidly and, therefore, there would be a difference in time of concentration.

Q. Now, there has been a lot of talk about whether or not merely widening a channel would increase or slow down the flow in that channel. Let me ask you this hypothetical question: Assuming a small natural stream, which in time of heavy rainfall overflows into the adjoining topographic contours flowing downstream, further assuming an enlargement of that natural stream and concentrating the water in that artificial and enlarged stream, what effect would that have?

page 175 } A. It would in my opinion increase very rapidly the runoff, because the water, the entire water, that flows out in its banks and reaches into the natural stream, the natural ground with the brush and trees that was in this area would slow down the water considerably.

Q. Mr. Brockenbrough, in your original calculation at the time the suit was brought against Henrico County and the defendant, were your calculations at that time based on a 50-year storm?

A. Based on a 50-year storm.

Q. You testified earlier to the effect that the ponding at this culvert was within good engineering practice. What engineering purpose does ponding serve?

A. Well, ponding serves to hold water back. Otherwise, on this culvert, to go to elevation 175, which is the acceptable elevation by the Highway Department as the top elevation, you are bound to have ponding unless you eliminate the entire ponding area, because you are rising 10 feet over the top of the culvert and, therefore, water has to back off.

I had frankly an example of it. I thought about it this morning, and when I got in the bathtub, I turned, opened the bottom drain in the bathtub and turned the water on very rapidly, and the water would fill up and reach a point and would begin to fill up in the bathtub just like a ponding area, and then, when I slowly would cut off the water to a point

page 176 } where it would stop, and then it would slowly drain out. So, the bathtub was kind of a ponding area.

Q. Does the ponding also increase the performance of it?

Austin Brockenbrough

A. Not necessarily. The only thing is, with ponding of a head over the culvert, it very definitely increases the amount of water that can go through the culvert.

Q. Would the ponding in this case damage anyone else's home upstream?

A. Not that I know of.

Q. Of your own knowledge, do you know whether the defendant ponds at some of the culverts?

A. I do not know. I do not.

Q. From an engineering standpoint, would it make any difference to the upstream improvements of the defendant as to whether or not the Railroad Company had a right to pond from an engineering standpoint?

A. Well, the only thing is that if they have a right to pond depends on what ponding height would be. If you ponded, they have set an elevation of 175. If we can pond to 180, it would increase the cost of the highway construction because they would have to raise their roads and bridges and everything to get above that elevation. So, that the elevation of 175 is what they have designed as their design figure that they would like to design the roads. Otherwise

page 177 } they allowed for 10 feet over the culvert itself, which automatically creates ponding.

Q. Assuming that the Railroad has or does not have a right to pond to 175, would this make any difference from an engineering standpoint?

A. Well, yes. If the Railroad did not have a right to pond to 175, you will have to figure out just how many additional culverts would be needed to hold the water, and what elevation was set that you could design to or would have to raise the elevation to it.

Q. Assuming that the Railroad has a right to pond at that culvert, is it your opinion that this would be adequate to carry the storms, say 50-year storm, before the I-64 improvements?

A. Yes, I do.

Q. How long would these 50-year storms actually last?

A. Now, I couldn't tell you. A 50-year storm is one that is estimated to happen once in every 50 years or twice in a hundred years, but, of course, the things that happen that nobody can tell, you might have two 50-year storms in a 50-year period. That is what we estimate by, and under certain conditions you might even get more than that or it might be less. You might not get a 50-year storm in a hundred years. It just depends on natural conditions.

page 178 } Q. Have there been other storms or heavy rainfalls since the 1959 storm?

A. There was a rainstorm in 1963, which brought water up to the top of the culvert, and we had you all take curves on that just to check our curves to see if they were right to show what the inflow and the outflow was. That did not, as I understand it, reach any higher than approximately the top of the culvert.

Q. Did this water back over Staples Mill Road?

A. No, sir, it did not.

Q. Would you again tell me in gallons per hour the amount of increase computed in your study?

A. 1330 cubic feet of increased flow, that amounts to about 35,910,000 gallons.

Mr. Ellis: Per what?

Mr. Brockenbrough: Per hour.

Q. You testified that the Highway Department's drainage improvements were constructed in a reasonable manner. From an engineering standpoint, is it your opinion that this is a reasonable amount of water to impose on a lower landowner, or do you think that it is unreasonable?

Mr. Stotts: Your Honor, is he still qualifying that as his opinion as an expert as to the reasonable amount of water?

The Court: Yes, from an engineering stand-
page 179 } point, so it would have to be.

Mr. Stotts: I don't see how he can really qualify that as an engineering opinion, reasonable discharge.

Mr. Antrobius: I think that consideration of downstream owners certainly is a factor that these engineers consider.

The Court: Reasonable, that is the only thing I think is involved.

Q. Do you think that this increase of 5,000,000 gallons per hour is a reasonable or unreasonable amount of water to impose on a lower landowner?

A. That is a hard question to answer, but I feel that these improvements have caused that much additional water to come to the culvert.

Mr. Ellis: I had several questions, please, Your Honor.

The Court: Mr. Ellis, the way we work it here, one lawyer takes him on direct and one on cross, and those two stay with him on redirect and recross.

I mean if counsel for the Highway Department have no objection, I have none, but—

Mr. Stotts: Just follow the ground rule.

By Mr. Antrobius: (Cont'd)

Q. Mr. Brockenbrough, are you familiar with
page 180 } the drainage manual published by the Virginia Department of Highways, dated July 1, 1963?

A. Yes.

Q. Would you please read Section 201.01 from this manual.

A. "Watershed Characteristics - Aerial photographs, topographic maps and land surveys are used either separately or in combination to determine the following factors which influence runoff. Size and shape, average slope, land usage, vegetal cover, stream pattern, pondage or storage."

Q. Would you please read Section 201.01.

A. "Methods - There is no single method for determining peak runoff which is applicable to all watersheds, consequently the designer should be familiar with the general sources and use the one most applicable. In most instances, the application of two or more methods should be employed to estimate a rational design discharge."

Q. Would this indicate to you that there is no single one method at least as far as the Highway Department is concerned?

A. That is what it says.

Q. When was this culvert installed, Mr. Brockenbrough?

A. The original?

Q. Yes, sir, the original culvert.

page 181 } A. I don't know.

Q. It has been testified to in this case that it was installed in 1907. At that time, at the time that this culvert was actually installed, would you consider it was adequate? You have already testified that it is adequate.

A. From the existing conditions at that time, which I am not familiar with, I don't know, but the culvert has certainly taken care of the water up to the present time, until the storm of 1959. It had never raised that high, and, therefore, I would say the culvert when it was designed was adequate and very conservatively designed.

Q. Has anyone been designing on a 50-year storm frequency basis until recent years?

A. The only person that I know of that does it, is the work done for the interstate highway.

Q. What other design criteria is used by, say, Henrico County and the City of Richmond?

A. The City of Richmond uses a 5-year curve, which I frankly think is too small, and in Henrico County they use a 10-year curve.

Q. Assuming a culvert is installed based on a 50-year storm frequency and a storm occurs that is greater than the 50-year storm frequency, would you say that culvert is inadequate?

A. Well, I would say it was inadequate to han-
page 182 } dle the water over the 50-year storm, but I think when you design it for a 50-year storm, you go back again to the question of economics and figure out if there is any damage done and if you have to take care of the damage or anything else that would be required.

Q. So, in your opinion economics has some bearing on it?

A. It does.

Q. Would you please again restate the design standards used by the Highway Department at interstate projects, by the County or City?

The Court: I did not hear that.

Q. Would you please again restate the design criteria used by the State Highway Department for their interstate system, the design criteria used by Henrico County and the City of Richmond?

A. Well, the Highway Department on Interstate work states that the criteria shall be a 50-year storm. The Henrico County on their drainage work says that you should use a 10-year storm, and the City of Richmond uses a 5-year storm.

Q. What design criteria is used by the Highway Department in their secondary work?

A. 25-year storm.

Q. How about their primary routes, not Inter-
page 183 } state 64?

A. About 5 or 10. I don't do any of their work.

Mr. Stotts: Your Honor, he is leading his witness very definitely now.

The Court: We have been over it. I don't think it is rebuttal, it is more repetition.

Austin Brockenbrough

RECROSS EXAMINATION

By Mr. Stotts:

Q. I believe Mr. Antrobius had you read from the highway manual that you used different methods to determine your flow of water. When you are making a comparison of a before condition and after condition, isn't the most accurate way to do it by using the same method before and after?

A. Yes.

Q. I believe also you testified on redirect that in a natural stream where you widened the channel you changed the natural stream's retarding effect by the undergrowth and so forth?

A. That is correct.

Q. Does this same retarding effect still exist in the Upham branch below Bethlehem Road?

A. Yes.

Q. Also you testified again about the adequacy of this culvert under the railroad. Assuming the Rail-
page 184 } road has no right to pond, would this culvert be adequate for less than a 50-year flood?

A. I have not quite figured it out, but I do not believe that it would be unless there was ponding.

Q. Ponding over Staples Mill Road, how often does this happen to your knowledge?

A. Going over Staples Mill Road?

Q. Yes, sir.

A. I don't know but this one occasion in '59, the storm of '59. I understand that there have been other times that it has been over Staples Mill Road.

Q. Then the area of the highway should not really be considered as a ponding area?

A. Of Staples Mill Road?

Q. Of Staples Mill Road.

A. No.

Q. Say a 50-year storm—we went into a lot of this about a 50-year design. A 50-year design is not unreasonable?

A. Well, no design is unreasonable, if anybody wants to pay for it. You can go to a hundred-year storm if you are perfectly willing to pay for what it would require. 50-year is not unreasonable, 25-year is certainly not unreasonable, and, of course, in the County 10 years is not unreason-
page 185 } able.

Q. Consequently, each landowner, corporation, State, County or otherwise has to make this determination for themselves?

A. They make that determination.

Mr. Stotts: Thank you, sir. No further questions.
The Court: Can Mr. Brockenbrough be excused? Will you all need him again?
Mr. Antrobius: No, sir.
The Court: He can be excused certainly to recall if one of you wants him.
Thank you, Mr. Brockenbrough, you are excused.

Witness stood aside.

page 186 } PERLEY A. RICE, a witness, called by the plaintiff, having been duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Antrobius:
Q. Would you please state your name, age and occupation?
A. My name is P-e-r-l-e-y A. Rice. I am 74, and I am retired from the R. F. and P. Railroad, and doing a little executive work in engineering and a little legal work.
Q. Mr. Rice, would you please cover your employment with the Railroad Company as to your positions?
A. I came with the R. F. and P. Railroad in 1924 in the Engineering Department. I worked for the Railroad in the Engineering Department until 1958, and then in the Traffic Department until 1962, when I retired.
While in the Engineering Department, I handled for the Railroad real estate, industrial development, including the surveys for land and taking care of the land, and I also did some engineering work because on the Railroad, the R. F. and P., why, in those days we had to do everything in the engineering field.
Q. Have you in the past been familiar with
page 187 } the Upham Brook stream and watershed?
A. Yes.
Q. How far back do you recollect as to the Upham Brook stream and watershed?
A. Well, almost from the time I came with the Railroad, which was in 1924, probably around '26, '27, '28, along in there.
Q. Mr. Rice, from your personal observation, could you please describe the Upham Brook stream as to the amount and rapidity of water in that stream over the years?

Perley A. Rice

A. Well, the stream, it was almost impossible to see the stream from the railroad between the railroad and Staples Mill Road, because the land was so covered with brush and underbrush, and the stream, in normal times, was very small and flowed very slowly, but in times of flood, why, it would be swollen and fill in that underbrush area and back up against the railroad culvert and pond in that area.

Q. Are you also familiar with the culvert that was installed under the railroad in 1907 carrying the stream through the Railroad's property?

A. Yes.

Q. Do you know the size of this culvert?

A. I think it was a half circular 20-foot diameter—10-foot diameter culvert. Can I look in my notes?

Q. Yes, you can look in your notes to refresh

page 188 } your recollection.

A. (Looking in notes) It had a cross section of about 214, somewhere between 214 and 237 square foot area.

Q. You testified that water during times of heavy rainfall would pond at this culvert?

A. At times, yes, at heavy rainfall.

Q. How far back do you recollect as to the ponding?

A. Well, generally, as far back as Staples Mill Road.

Q. How far back in number of years, Mr. Rice?

A. Oh, probably as far back as 1930 anyway.

Q. Would you please describe the nature of that ponding?

A. Well, the water, the rains would come and the water would rise and depending on how fast the rainfall came, the water would rise up and finally come up and I have seen it, one time at least, over the top of the culvert there, but as it gradually came through that area, it was quite slow in rising. What I mean is there was not any stream running fast through there usually.

Q. How often would the ponding occur?

A. Well, I cannot say as to that. All I can say as to that, it would occur, if we had a heavy rain there would be some ponding, and if it was really heavy it would

page 189 } pond up to the culvert area and sometimes up to the top of the culvert. Sometimes even above the culvert.

Q. Was this ponding visible to adjacent property owners?

A. Oh, yes.

Q. Did the Railroad Company ever receive any complaints as to this ponding?

A. To my knowledge they did not, and I believe if there

had been any complaint I would have been advised about it, certainly between 1930 and 1960.

Q. Did this ponding serve any purpose as to downstream landowners?

A. Oh, of course. As the water rose in the ponding area, the embankment and the culvert kept the water from going downstream beyond the railroad, below the railroad, as fast as it might have otherwise.

Mr. Antrobius: No further questions, sir.

CROSS EXAMINATION

By Mr. Miller:

Q. Mr. Rice, when did you retire from the Railroad?

A. 1962, May.

Q. May 1962. And I believe you testified that the culvert was installed in 1907, is that right, the existing arch culvert?

page 190 } Mr. Antrobius: I testified to that.

A. I did not testify to that. I know that it has been there since 19—oh, several years from the records, and also it was there when I came to work with the Railroad.

Q. You have been asked as to the ponding. In your opinion, what causes this ponding referred to?

A. What causes the ponding?

Mr. Antrobius: Your Honor, I am going to have to object to any conclusions or opinions, since he is not an expert.

Mr. Miller: Your Honor, he has been asked as to the ponding and I am merely asking—

The Court: He said the ponding kept back the water by means of the railroad's embankment before.

Mr. Antrobius: I think he has asked for an opinion. I asked him to testify to the facts.

The Court: Well, you asked him what kept it back. If that is not an opinion, I don't know what it is.

Mr. Miller: I am asking Mr. Rice in his opinion what caused the ponding referred to in answer to your question that you put to him.

Mr. Antrobius: All right, I will withdraw my objection.

A. It was caused by the railroad embankment.
page 191 } Otherwise, if the railroad had not been there, the water would have gone down the stream and ponded somewhere else or washed out somewhere else.

Perley A. Rice

Q. So this embankment really served as a dam in effect to hold back this water?

A. Yes.

Q. The ponding referred to, you said as I recall, as far back as 1930 you recall some form of ponding?

A. Yes, I know some form of ponding existed.

Q. Has that ponding been constant all 36 years or has it been changed by the increase in watershed area? Is it a constant thing? Does it always go back to the same limits?

A. That I could not say.

Q. You did say that the stream in its normal condition was not clearly visible because of overbrush, underbrush in this fill area, ponding area?

A. That is true.

Q. Is this developed property adjacent?

A. No.

Q. It is not developed property?

A. No.

Q. No homes in that area?

A. No.

Q. No one lived in that area?

page 192 } A. No, not in the ponding area.

Q. Not in the ponding area?

A. No.

Q. I would like to ask you now, how often did it pond to your recollection?

A. Well, I remember the big one in 1959 I believe, when it got up above the culvert and up almost through the top of the railroad embankment, and I remember other times when it ponded, but it was not as severe as that one.

So I cannot tell exactly when those rains occurred. Of course, that is a matter of record and could be ascertained.

Q. Would you say that it ponded frequently?

A. The only thing I could say is that it ponded whenever there were heavy rains.

Q. In other words, the ponding that occurred would depend on the amount of rainfall, it would not be a constant thing, would it? It depended on how much rain fell? It would pond at a certain distance depending on the rain. It might go further if you had a harder rain the next time, is that correct?

A. Yes, that is correct.

Q. In the 1959 flood you referred to, I believe it ponded over Staples Mill Road, is that correct?

page 193 } A. Yes, it did go over Staples Mill Road some, to some extent.

Q. But that is the only time, or are you aware of any other time that it ponded over Staples Mill Road to some extent?

A. No, none that I can definitely pinpoint. It may have, but I used Staples Mill Road considerably myself principally going out to play golf during those years, and I don't remember any time that the flood tore the road up, although there were times when it may have been running over the road from the dam just above the road where the Staples Mill Pond was.

Q. Very well. The frequency of flooding then, I think we have established depends on a great number of rainfalls you have, the heavy rainfall dictates the extent of the ponding, is that correct?

A. I should think so, yes.

Q. And you would not characterize the ponding as frequent?

A. Well, I don't know exactly what you would call frequent.

Q. Does it pond one time a year, two or three times a year, one time every two years?

A. Oh, there may be some ponding one or two times a year, not severe.

page 194 } Q. There might be a year when there is no ponding, is that correct?

A. That could be, yes.

Q. You have stated in answer to my question, and I think to Mr. Antrobius' question, that ponding is caused by the embankment and the culvert?

A. Yes.

Q. The inadequacy of the culvert—

Mr. Antrobius: Objection.

The Court: Objection sustained. Mr. Rice has not made any study if it was or was not adequate. I don't think he is qualified.

Q. Would the size of the culvert have anything to do with the ponding?

A. Well, of course, if there was no embankment there, there would be no ponding.

Q. That is right, precisely.

A. So, if you had enough there of size—

Q. If you had no embankment you would have no ponding at all?

A. Yes.

Q. Would you say that you have stated that the ponding

is visible, and certainly you can only say it is visible when it ponds?

A. Well, I wouldn't say that because there was
page 195 } a stream running through there most of the time.

Q. The ponding I am referring to.

A. Oh, yes.

Q. You also stated that the ponding could occur maybe once or twice a year, it could occur maybe no time in a given year?

A. That is true.

Q. You are speaking from your recollection, you were an Engineer with the Railroad?

A. That is right.

Q. You have stated that it was not developed there with no residences in the ponding area?

A. Say that again.

Q. There were no residences there with no homeowners in the ponding area, it was not developed land?

A. Well, in the ponding area—of course, this ponding area was right between the old Chalifeaux Estate and the old Cary Estate. While they had homes up on the higher land, there was none in this area here.

Q. So whether or not it was visible would depend on whether a person who happened to own land there was there at the right time, when this ponding occurred?

A. Well, I think the owners and the Railroad Company—I know the Railroad Company kept an eye on this stream to see that it did not get too high, and I am sure
page 196 } that owners of the adjacent property would know how much was ponding there.

Q. They would have to be there though to see it, and it is not developed you stated?

A. That is right, it is not developed, no.

Q. Now, to clarify it for the jury and for the Court, the ponding which you have testified to since 1930, then, has been erratic, infrequent. You may have it once a year, twice a year, but could you say you may have a two-year gap with no ponding?

Mr. Antrobius: I am asking that "erratic" be stricken. He has not testified to that.

The Court: The distance, that is what he meant.

Mr. Miller: At any given time, it might be different from one time to the other.

Q. I am asking you, Mr. Rice, if there may have been a

period of one or two years when you had no ponding at all to your knowledge?

A. I cannot say whether there were lapses of two years between heavy enough rainfalls to make it pond or not. Now, I am not familiar enough with the rainfall records of the past years to be able to tell you that.

Q. So, each year that you worked for the Railroad until your retirement, since 1930 which you have testified to, you were not aware that there was ponding at any
page 197 } given year in that period in each year of that period, 36 years—not quite 36, because you retired in '62?

A. I know that it ponded during the time that I was with the Railroad from time to time, but when those occurred I cannot tell you because I have not made any study to find out when the rainfall was.

Q. So you really don't know how often it did pond?

The Court: Mr. Miller, he is answering to the best of his ability. I think he told you everything he remembers. He said he cannot tell you.

Q. Mr. Rice, with respect to this ponding area, do you know to the best of your knowledge as to whether the Railroad itself, the R. F. and P., has filled in any of this ponding area?

A. I don't think the Railroad has filled in very much of this ponding area for this stream.

Q. But it may have done some?

A. There may be a little bit, but I don't know of any major job that filled in a great deal of this area in the Upham Brook ponding.

Q. You referred to the culvert. You are an engineer as I understand it and an attorney?

A. Yes, I am a registered professional engineer in the State of Virginia.

Q. In your opinion, the culvert in the fill, which
page 198 } you have stated did contribute to the ponding, in your opinion, as an engineer, was that culvert adequate to accommodate the water?

Mr. Antrobius: Objection.

The Court: Have you ever made a study of it, Mr. Rice, as to the adequacy of the culvert?

Witness Rice: No. That would require, Your Honor, a

study made of the whole area, the whole area, and I have never made a study.

The Court: Have you ever made such a study?

Witness Rice: No, I have never made such a study of the whole Upham Brook or Horsepen area.

The Court: I don't see how Mr. Rice would be required to answer that question. I mean, any engineer can come in here and tell you the basic principle, but if he has not examined it—After all, that is the ultimate question that the jury may have to answer.

Mr. Miller: The basis. In the Motion for Judgment they have attached as a part of their pleading the exhibits they have filed with the Supreme Court of Appeals. Mr. Rice has made an affidavit.

Q. Did you not make an affidavit?

A. That is right.

The Court: You can ask him about that, but as far as reaching an ultimate determination of the pos-
page 199 } sible condition here, he has not qualified as such.
You can ask about the affidavit, that is something else.

Q. In this affidavit, did you not make a statement at the time that the culvert under the railway had been adequate or sufficient to accommodate adequately as stated the flow of surface water from Horsepen Branch and Upham Brook within good reasonable engineering practice? Do you recall making such a statement?

A. Yes, I made that statement, and that was just a general statement without a study having been made of it.

Q. Did you not say in this affidavit you had studied the plans of construction and improvements that have been made and are supposed to be constructed in the watershed area by the defendant, Highway Department, and also by Henrico County, and that this study included calculations, statements, statistics, illustrations and conclusions? Do you have a copy of that affidavit with you? Mr. Rice, I hand you here a signed copy. Is this your signature?

A. Yes, sir.

Q. I am referring at this time to your statements in this affidavit at Page 2.

A. Which statement?

Q. You say, "That I have studied the plans and that this study contains calculations and that in my

page 200 } opinion the said existing and proposed construction of Henrico County and the Highway Department has and will collect and drain surface water in these culverts." So you have studied the plans?

A. I have studied the plans.

Q. At the time you made this affidavit?

A. That were prepared by the Highway Department, yes.

Q. And do you not up here say that the said culvert has been sufficient to accommodate the flow of surface water?

A. Yes. That was from my experience with the culvert, my knowledge of it over the years.

Mr. Ellis: Your Honor, we will be glad to have that affidavit as an exhibit if they care to offer it. I think it is a part of the record in this case anyhow. We filed it with the complaint in this case.

The Court: But the jury never sees that. They don't get those things unless they are made exhibits as such.

If they want to put it in, they can put it in or you all can put it in.

Q. You really don't know in your position whether the culvert was adequate or inadequate? You are not in a position to say?

page 201 } A. I have not made a complete study of the whole Upham Brook and Horsepen Branch drainage area sufficiently for me to state definitely that the culvert was or was not adequate.

Q. Mr. Rice, I have one further question. Have you been out to the R. F. and P. culvert in the adjacent area of the fill, the ponding area, recently?

A. No, not since the construction. I've been up and back on Staples Mill Road, and I know the construction generally that is going on, but I have not looked at it particularly since the construction started.

Mr. Miller: So you really could not say anything about the construction.

I have no further questions.

REDIRECT EXAMINATION

By Mr. Antrobius:

Q. Mr. Rice, you testified the ponding occurred in times of heavy rainfall.

Perley A. Rice

A. That is right.

Q. Do you know of any reason why the ponding would have not occurred since 1930 during times of heavy rainfall?

A. No, I do not.

page 202 } Q. Now specifically, you said your observation goes back to 1930 and this continues up to what time?

A. Well, up until certainly 1962, because I was back and forth with the Railroad during those last years in which I was not in the Engineering Department, and we would always watch the right-of-way when we'd ride the train, and I don't remember anything more from what I have stated.

Q. You testified that there were no homes in the ponding area, is this correct?

A. Not within the ponding area to my knowledge.

Q. But there were businesses of the local owners' property in the ponding area nearby, is this correct?

A. That is correct.

Q. Where were they located and who were they?

A. Well, Mr. Walton. The Walton Lumber Company's business was located partially in the ponding area. That was part of the old T. A. Cary Estate.

Q. Where was his business located, Mr. Rice?

A. Well, his business was located down along the railroad, up almost to the railroad right-of-way, and he stored lumber in that area.

Q. Within view of the ponding area?

A. Oh, yes.

Q. Were there any other businesses in that area that owned property in the ponding area?

page 203 } A. Well, the Virginia Iron and Metal Company had a piece of property that they had gotten from Mr. Walton or his predecessor, adjacent to the ponding area, but it was a small parcel and it did not fall exactly within the ponding area.

Now, the property that belonged to the Chalifeaux Estate, that ran out to Dumbarton Road bounded by Staples Mill Road and the railroad, and approximately the center line of Upham Brook.

Q. How about the Crump property?

A. Well, that is the property I am speaking of. The lower end of that was later bought by Jones and Crump, which is now the Crump Manufacturing Company. The lower end of that was a large ponding area in there between Staples Mill Road and the railroad.

Q. And the Railroad to your knowledge never received any complaints from these adjoining properties?

A. No.

Q. Did Mr. Walton operate a business at his location, and was his property actually in the flood plane?

A. Yes. He operated a business there and part of his property was in the flood plane. He had a lumber yard and a lumber mill there, and he did general work there and stored his lumber there in that area.

Q. Is he still operating this business?

page 204 } A. I believe he is operating it, or, was not too long ago. Although, Mr. Walton has been deceased some years.

Mr. Antrobius: No further questions.

RECROSS EXAMINATION

By Mr. Miller:

Q. Mr. Rice, you referred now to the Walton property, the Crump property, specifically among one or two others as being partially in the flood ponding area. To your knowledge, was the water ever ponding on that property?

A. Oh, it must have, because it went all the way back to Staples Mill Road and their property. The property line between those two properties was approximately center line of Upham Brook, and down by the railroad it ponded wide distances from the center line. It was pretty low from there.

Q. Do you know how often it did pond on these properties?

A. Well, as I stated before, I cannot state definitely how many times it ponded in that area, but it ponded every time we had a heavy rain.

Mr. Miller: I have no further questions.

Mr. Antrobius: The witness can be excused, Your Honor.

Mr. Stotts: Yes, sir.

The Court: Thank you for coming in, Mr. Rice. You are excused.

page 205 } Witness stood aside.

The Court: At this time, ladies and gentlemen, it seems incumbent to eat something.

During this luncheon recess just like on any others, I admonish you against talking or letting anybody talk to you

about this case, or reading anything about it or listening to it on the radio, or look at it on television, and in addition to that, I reiterate the admonitions I made last night. During your luncheon recess, don't go in this area which we have discussed. We will ask you all to get back, if you can, by 1:30. It is now 20 minutes to 1:00.

NOTE: At this point recess for lunch is had, whereupon the taking of testimony is resumed, *viz:*

Mr. Ellis: We would like to recall Mr. Brockenbrough for a couple of questions on direct, if we may.
Mr. Stotts: No objection, Your Honor.

page 206 } AUSTIN BROCKENBROUGH, a witness, called by the plaintiff, having been duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Ellis:
Q. Mr. Brockenbrough, on your cross examination by Mr. Stotts—

Mr. Stotts: Your Honor, did I understand Mr. Ellis to say that they were calling him back still the same witness? Then I think Mr. Antrobius should be examining this witness.
Mr. Antrobius: That is quite all right. I'll take him.

DIRECT EXAMINATION

By Mr. Antrobius:
Q. In cross examination there was some question asked as to the correctness of your chart. Would you please elaborate and tell us whether or not this chart is correct?
A. The chart is correct, and we were talking about the figures that I had. We had left 500 feet off those figures, and figuring that would add to our time about 2 to 2½ seconds, which would make it about 96 seconds instead
page 207 } of 94.
Q. And the stream has been shortened by the figure that you have there?
A. Yes. The thing that was left off was getting back in that 500 feet of channel remaining in that condition.
Q. Is this the figure noted at the bottom of the chart?
A. Yes, 500 feet remains in the original condition, and that is the 500 feet that was left off my calculation.

Q. What calculation?
A. The calculation in figuring out the time of concentration after I-64.
Q. Not the calculations on the board?
A. Not the calculations on the board.

CROSS EXAMINATION

By Mr. Stotts:
Q. Did you say it added about 2 seconds?
A. Two minutes. I said 96 minutes instead of 94.
Q. I thought you said seconds, that is why I wanted to clarify that. That is the portion—
A. Of natural drainage, yes.

Witness stood aside.

page 208 } GEORGE E. LANGLEY, a witness, called by the plaintiff, first being duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Antrobius:
Q. Would you state to the Court and jury your name, residence and profession?
A. My name is George E. Langley. I am partner in the firm of Langley, McDonald and Overman. I reside at 4145 Hermitage Point, Virginia Beach, Virginia.
Q. What are your qualifications as a professional engineer, Mr. Langley?
A. I was born and reared in Norfolk and attended school in Norfolk. I also attended the Norfolk Division of the College of William and Mary, V.P.I., and was graduated from North Carolina State College in 1943, with a degree of Bachelor of Aeronautical Engineering, and in 1947 with a degree of Bachelor in Civil Engineering.
I served a little over three years in the Navy during World War II, and after the second degree of college, I went into construction for one year.
After that, I went to work for the City Planning Commission of Norfolk, and was there for two and a half years.
page 209 } At that time, I was Land Planner and Assistant Planning Engineer for Norfolk, and my work pertained to land use studies, zoning, preliminary

subdivision layouts and master of highway plans for the City of Norfolk.

After that, I went with the firm of Moore and Sturgeon, Engineers, in 1951, and I was a project engineer with Mr. Sturgeon, and my work involved site planning for schools, subdivisions, buildings, plans, marinas, water-front construction, surveys of all types including hydrographic surveys, and the design and supervision of water-front structures, marinas, air fields, railroads, sewage treatment plants and industrial projects.

In 1956, Mr. T. J. McDonald and myself, formed the firm of Langley and McDonald, and the firm's name now is Langley, McDonald and Overman, having taken in another partner a few years ago, and our work is the direct responsibility for surveys, design and supervision of site plans, highways, railroads, water-front structures, marinas, dredging projects and foundation work.

At the present time, our firm consists of three partners and twenty-one employees.

Q. How many years drainage experience do you have, Mr. Langley?

A. I have worked in the design of drainage since I went with Mr. Sturgeon in 1951.

Mr. Antrobius: Your Honor, I am offering Mr. page 210 } Langley as an expert civil engineer.

The Court: Any question, gentlemen?

Mr. Stotts: No, sir, Your Honor.

The Court: All right, then Mr. Langley will be received as an expert in the field of engineering.

Q. Mr. Langley, did you at my request make a study of the surface water drainage in Upham Brook and Horsepen Branch?

A. I did, sir.

Mr. Stotts: Your Honor, is this going into a formal study or is he going to develop what type of study he is speaking of?

The Court: You've got to give him a chance to find out.

Mr. Stotts: I was going to ask if he is going to lay the groundwork.

Mr. Antrobius: I was going to ask him first about the study.

Q. Have you prepared a formal study on this?

A. No, sir.

George E. Langley

Q. When did you reach your conclusions?

A. Conclusions were reached last Saturday night.

Q. Did you have the benefit of Mr. Brockenbrough's ground analysis?

A. Yes, sir, I did.

page 211 } Q. Mr. Langley, are you familiar with this watershed and stream?

A. Yes, sir. I have ridden around the stream or watershed in various places and examined it from the automobile and on foot.

Q. Have you examined the final plans of the defendant, the Highway Department of Virginia, of the construction in the Upham Brook stream?

A. Yes, sir, I have.

Q. Can you denote with certainty the condition of Upham Brook before any of this construction?

A. The highway plans, of course, show the location of the stream that existed prior to any construction, and in areas where they have not been disturbed by construction we can see the condition of the stream or ditch as the case may be.

Q. What was the purpose of this study, Mr. Langley?

A. To ascertain whether or not additional quantity of water was being directed into the area of the R. F. and P. Railroad embankment.

Q. Mr. Langley, did you use the rational formula?

A. I did, sir.

Q. What did you conclude as to topography before and after the construction in connection with Interstate 64?

page 212 } A. From observation of areas that have not been disturbed by the construction in the stream bed location, it would appear that the stream bed was somewhat choked with willows and brush and branches, and the ditch is overgrown in many places. It is irregular and, of course, there was one swampy area which was overgrown considerably.

The condition after the improvement shows that there are many culverts that have been constructed. There are a considerable number of paved ditches, and there are excavated canals, waterways, that have been constructed.

Q. Mr. Langley, at the bottom of the board is Plaintiff's Exhibit 24. Does that represent a graphic description of that construction in that stream bed to the best of your knowledge?

A. Yes, sir.

Q. Mr. Langley, what did your study indicate as to the

fill in the ponding area immediately adjacent to the Railroad Company's culvert?

A. It indicates that the construction of a partial clover leaf has occupied quite a bit of what was void space, that accommodated the water that came to that particular area. I am speaking of the grade separation at Staples Mill Road.

Q. Mr. Langley, what did your study show as to the runoff characteristics in this watershed and stream?

page 213 } A. We examined the area. We also looked at the zoning map. We computed the various types of areas that due to their zoning and based upon what we consider an ultimate development, that is with the zoning as presently set forth being developed in that manner, that the runoff of that particular area was agreed with Mr. Brockenbrough that it should be .58.

Q. Was this reached on the merits of your own study?

A. Yes, sir. We did these completely independent from Mr. Brockenbrough's study.

Q. What did you use for references?

A. We used the zoning maps of the County of Henrico.

Q. Did you also use the zoning runoff guide lines published by Henrico County?

A. No, sir, we used guide lines that we have used in our own work. I have not seen any guide lines by Henrico County insofar as zoning or rainfall runoff is concerned.

Q. Mr. Langley, what did your study indicate with regard to greater rainfall?

A. Is that before or after? Oh, the rate of rainfall? We did use the curves published by the County of Henrico for the rate of rainfall in the County for the times of concentration that we computed before and after the

page 214 } construction of I-64.

Q. What do you mean by "time of concentration"?

A. The time of concentration is a figure that we arrive at in designing a culvert or a conduit of any sort whereby it is the time that it takes for a drop of water, a theoretical drop of water, to fall at the uppermost part of the watershed. This drop of water is then timed theoretically to arrive at the point in question through its various means. That would be through ditches or other land or whatever it may be, and this becomes a vital part of the rainfall intensity, the time of concentration.

Q. And what did you develop as to the time of concentration before and after the construction of the drainage improvements and all other considerations?

A. Our figures indicate that the time of concentration before I-64 is 139 minutes. The time of concentration after I-64 came out to be 94.1 minutes.

Q. What will this denote?

A. The time of concentration is used in entering the Henrico Rainfall Intensity Charts to arrive at the rainfall intensity. This becomes an important part, a vital part of the rational formula in the computation of quantity of water.

Q. What would a decrease, or the increase that you arrived at in time of concentration denote?

page 215 } A. The decrease of time of concentration for the same period of storm as the former time of concentration gives a higher rainfall intensity, and since this is directly proportional to the quantity, it provides or will offer at the point in question a larger volume of water.

Q. Do you mean larger volume or increased speed?

A. Well, the time of concentration indicates the speed, but the formula, the end result of this particular formula, gives you the amount of water per second that arrives at any point in question.

Q. In making your calculations, did you take into consideration any particular culvert characteristics at this location?

A. Yes, sir, I did.

Q. And what did you find as to the culvert?

A. The culvert is a modified concrete and brick arch-type culvert, which has an arch top and a flat bottom. Also, there was another culvert there at the time when I first saw it, which is a corrugated metal pipe.

Q. Did you assume a head water elevation in your calculations?

A. Yes, sir. We had to assume head water elevation in order to arrive at the capacity of the culverts.

Q. What head water elevation did you assume?

A. The head water elevation is dependent

page 216 } upon—Let me rephrase that. The capacity of the culvert increases as the head water elevation increases. At this point, we perhaps did our calculations a little bit differently from what Mr. Brockenbrough had done his. We plotted a mass-volume curve, that is we assumed that the embankment at the railroad was a dam, and that all of this water impounded against the dam. Then, as the water rose, the water began to go out through the culverts. By an approved and accepted method we arrived at the amount of discharge that would be going out under the railroad

being dependent upon the amount of water that had come to the railroad, at any time during the period of the time of concentration.

Q. Why did you assume this particular head water elevation?

A. We did not assume any particular head water elevation. We have used as a criteria an elevation of 175.2, which is a flood plane elevation, and our calculations have centered right around that particular elevation.

Q. Water would be ponding at this elevation?

A. Water ponds below and above that elevation, depending upon what or how many culverts were under the railroad.

Q. Would the water be ponding within good engineering practices in this location?

A. That depends on how many culverts. For

page 217 } example, after the construction of I-64—

Q. No, let me interrupt you. Please, don't go into any conclusions yet until I ask the question regarding your opinion as to the number of culverts.

The particular question I did ask, water ponding at the elevation of 175.2 at this location, in your opinion would this be good engineering practice?

A. I don't believe that I could answer that categorically, because there are other factors involved. I do know that the water ponded about that elevation, and in this particular case prevented damage downstream.

Q. Mr. Langley, now based on your personal observations and the study that you have made, and the assumptions and results incorporated in this study, assuming a 20-year projected development basis and a 50-year storm, but without the Interstate 64 drainage improvements, in other words, would you have an opinion as to the amount of surface water discharge in Upham Brook under these conditions?

A. Yes, sir, but I would like to change one of the qualifications that you have given me. You have stated a 20-year development. I am not that familiar with the development in the numbers of houses that have gone up in the past 5 or 7 or 10 years. I would prefer to use the complete development in accordance with the present zoning which, whether it be

10 years or 20 years, I am not in position to say.

page 218 } Q. Assuming then, full development and the other assumptions that I incorporated in my question, what would be your opinion then without the Interstate 64 improvements?

A. We calculated that the quantity, the maximum quantity

of water that would arrive at the railroad embankment, would be 5,736 cubic feet per second.

Q. Do you have an opinion on the culvert capacity necessary to carry this amount of surface water?

A. Yes, sir.

Q. What is that opinion?

A. The present culvert, the culvert that existed prior to this storm, was sufficient to carry that amount of water up to our calculated elevation of 173.0.

Q. Mr. Langley, based on your study and your personal observations, the 50-year storm and fully developed watershed, do you have an opinion as to the surface water flow in Upham Brook, assuming further that the Interstate 64 drainage improvement has been incorporated in the stream itself?

A. Yes, sir. We calculated that under the same conditions after the construction of I-64, that the quantity of water arriving at the same point would be 7,470 cubic feet per second.

Q. How much increase is this?

A. That is a 30 per cent increase.

page 219 } Q. How much increase in cubic feet per second?

A. 1734 cubic feet per second.

Q. Could you relate that into gallons per hour?

A. That would be equivalent to 46,200,000 gallons of water per hour, which is the amount, by coincidence approximately the amount of water consumption of the City of Norfolk on a hot day, for 24 hours.

Q. This is the increase only?

A. Yes, sir, this is only the increase.

Q. Mr. Langley, what culvert capacity would be necessary with the I-64 improvements, to accommodate this water?

A. Our calculations indicate, in order to keep the elevation of the water behind the embankment at a level not to exceed the flood plane, would require the present concrete culvert, the present corrugated metal pipe and another pipe, corrugated metal pipe of the same diameter and placed at the same elevation as the present pipe.

Q. Do you know the size of the present pipe?

A. 120-inch.

Q. Mr. Langley, have you also made a study as to the improvements in Horsepen Branch by the defendant and Henrico County?

A. We have made a study of the improvements of Horsepen Branch.

page 220 } Q. Do you have an opinion as to whether these improvements will affect the flow in the adjoining streams as it reaches the railroad culvert?

A. Since Horsepen Branch is a shorter length of creek, the time of concentration for a drop of water to run from the ridge down to the point of the intersection of Upham Brook, the time of concentration is much less than that of Upham Brook.

This indicates that the maximum discharge of Horsepen Branch occurs before the maximum discharge of Upham Brook, and the peak has fallen off of Horsepen Branch such that by the time that the maximum concentration of volume of water by Upham Brook has been reached, the volume of flow from Horsepen has been considerably reduced.

Q. So, what effect would the flow increase in Horsepen Branch have at that point?

A. It would have the effect of contributing to the conditions or the water that impounds at the embankment, by the point that the maximum discharge has been reached, and then it falls off which means that the effect of Horsepen Branch is not serious at all or not a vital factor in this quantity of water.

Q. Do you have an opinion as to the adequacy of the original arch without the Interstate 64 improvements?

page 221 } A. Yes, sir. The original arch was sufficient to take care of the conditions that would not exceed the flood plane as it is now set.

Q. Based on your engineering experience and asking you this question from an engineering point of view, is this increase of 45,000,000 gallons of water per hour a reasonable or an unreasonable increase?

A. I think that any time that you have a watershed and you suddenly increase the runoff or the amount of water that comes to a point in question by 30 per cent, that is not reasonable in my opinion and I think it is excessive.

CROSS EXAMINATION

By Mr. Stotts:

Q. Mr. Langley, when were you requested to make this study?

A. About three weeks ago.

Q. In October of 1966?

A. Yes, sir.

Q. And you say you completed it when?

A. Saturday night.

George E. Langley

Q. To make this study, did you say that you relied on data that had been compiled by Mr. Austin Brockenbrough and Associates?

A. No, sir, I did not rely on it. I had his report at my disposal, and Mr. Brockenbrough's office did furnish

page 222 } me with maps and other data of that nature.

Q. And you did consult with Mr. Brockenbrough's firm and employees thereof in determining this?

A. I did, sir. Yes, sir.

Q. Then your report really has been made in conjunction with Mr. Brockenbrough's, is that correct?

A. No, sir, not in conjunction with it, because Mr. Brockenbrough's conclusions and mine do not agree a hundred per cent.

Q. Did you make any independent field investigation regarding this matter?

A. I surveyed the field by automobile and by foot.

Q. You have been up the stream?

A. In places, yes, sir.

Q. Are you familiar with Bethlehem Road?

A. I went to Bethlehem Road.

Q. What did you find the conditions to be at Bethlehem Road?

A. The stream, downstream, the ditch downstream from Bethlehem Road is unimproved at that particular point.

Q. Has the existing culvert been removed?

A. I don't believe so.

Q. Is it the same size or is it smaller than the new culvert, and is it upstream or downstream from Bethlehem Road?

A. The existing culvert?

page 223 } Q. The existing culvert.

A. The existing culvert is downstream.

Q. What is the condition of the stream between the two culverts?

A. I don't recall that, sir.

Q. I believe you testified that there is extensive paving in this construction. Where is this paving that you spoke of?

A. This paving, if I may point out on the map?

Q. Yes, sir, please do.

A. The paving occurs up in this area. (Indicating on map)

Q. What exhibit are you using now? Is it Plaintiff's Exhibit No. 24?

A. Number 24, yes, sir.

Q. And you are pointing to the left-hand side in the vicinity of what? Near the head of the water?

George E. Langley

A. Where the present ditch comes to the I-64.

Q. The start of the construction, is that correct?

A. Yes. Now, let's see—this is an earthen ditch and goes into a culvert, and then after the culvert it goes back into an earthen ditch and follows along until it hits Broad Street where it goes into a culvert and rerouted channel.

page 224

Q. Did you find any paved channel other than the portion you just pointed out at the upper end of this construction?

A. On a quick examination of my notes, no, sir.

Q. Then this is what you refer to as extensive paving of the ditch?

A. Well, extensive improvements of the ditch.

Q. Well, I understood you to say there was extensive paving?

A. Culvert and ditch, they afford the same thing.

Q. In other words, you say paving of the bottom of the ditch does not increase the runoff or velocity?

A. No, I did not say so.

Q. Then it is not the same?

A. The paving of a ditch does increase the velocity of water in that ditch.

Q. This 36-foot, earthen-bottom ditch, would the water flow faster if it were paved?

A. Yes, sir, I think it would.

Q. Now, you say you were familiar with this stream in its natural condition. Did you walk up this stream before any construction by Interstate 64?

A. No, sir.

Q. So it is only from observation of the general area, is that correct?

page 225

A. That is what I stated.

Q. Do you know the original condition of the stream—excuse me, let me point out on this exhibit. Between Skipwith Road and just east of Broad Street where the extensive construction is, do you know the original condition of that stream?

A. Only by examining the highway plans and the cross sections and profiles.

Q. Do the highway plans and profiles show you the condition of that stream?

A. Insofar as growth of trees, brush, no, sir, it does not.

Q. It does not. Then, the only thing that you know in considering in your study is what the condition of this area was in October, 1966, for your study?

George E. Langley

A. No, sir. My study was based on observation and examination of the parts of the stream that had not been affected by the construction.

Q. When did you make this observation?

A. About three weeks ago.

Q. In October, 1966?

A. That is correct.

Q. So that is what I said. Your conclusions and your study are based on what you found to be the situation in October, 1966?

page 226 } A. Yes, sir.

Q. You spoke of the arch culvert under the railroad as being adequate to handle the water before I-64 with a certain ponding to a certain elevation?

A. Yes, sir.

Q. Do you say that is good engineering or not?

A. It depends upon the criteria that was involved in that consideration.

Q. Would you consider this good engineering if this culvert were to pond water through this blue-hatched area on Exhibit 23?

A. That depends also upon the criteria involved in that ponding, sir.

Q. Would you consider it good engineering practice if I were to tell you that the majority of this ponding area was on someone else's property?

A. I would say that that would present a good question.

Q. Would you, if you were requested by the R. F. and P. Railroad to design a culvert to go under that railroad, if they were placing it there today without the I-64 construction, would you recommend one arch culvert such as the Railroad has in there, with this ponding back on adjacent property?

A. No, sir, I would not.

Q. You do not consider it good engineering

page 227 } practice then?

A. I would not do it.

Q. Are you familiar with the rainfall and the magnitude of floods in the Upham Brook and Horsepen Branch watershed?

A. Only from the rainfall intensity curves as provided by the Henrico County.

Q. Are you familiar with what some people call the 50-year flood in 1959?

A. I heard quite a bit about it.

Q. Do you think it would be reasonable or unreasonable to design for such floods?

A. The interstate highway designs for such.

Q. Is that reasonable or unreasonable?

A. I think it is reasonable for highways. For that, yes, sir.

Q. I believe you already stated that you consider that the railroad embankment acted as a dam in the 1959 flood?

A. Yes, sir.

Q. And at other times to the elevation of the ponding that goes on?

A. Yes, sir.

Q. Are you familiar with the ponding there?

A. I have never seen the ponding.

Q. You have never seen the ponding?

page 228 } A. No, sir.

Q. I believe you said it would not be good engineering to pond it back on someone's property. Would you consider it good engineering to pond it back over a primary highway?

A. No, sir.

Q. Would you have any ponding if a culvert were adequate to carry all of the storm water coming to it?

A. No, sir.

Q. Then there is a relationship between adequacy of culvert and ponding?

A. Definitely.

Q. I believe you stated that you saw the large construction that has been done, the 36-foot, earthen-bottom channel that was made in the highway. Would you consider this as a ponding area of a sort?

A. That depends on the elevation of it, sir.

Q. You made a field study. Do you know what the elevation is there?

A. Offhand I don't, but I am satisfied that it is above Staples Mill Lake, and the top of Staples Mill Lake is 178 I believe at the dam. So, consequently, it is above that and would not serve the ponding area.

Q. Are you familiar with this sketch? (Indicating)

A. Yes, sir, I have seen it.

page 229 } Q. Did you note on this sketch where it starts up here, where we have a 30-foot bottom channel, then a 20-foot bottom channel, then a 10-foot bottom channel?

A. Yes, sir, you have terrible erosion there.

Q. How would you explain that? Why would they decrease

it coming down the stream? Wouldn't you normally increase it to have more water?

A. You have terrible erosion there, which indicates velocity is rather high.

Q. Why would you get a high velocity? Would it be of a grade, a downgrade here as I call it? Maybe you put it in the proper engineering term.

A. Yes, sir, and the improvement of the channel itself.

Q. Yes, but if the channel were on a flat level, water would not go anywhere, would it?

A. Well, you would not have a channel then.

Q. Right. Okay. So it is similar to coming downgrade.

Now, as you crossed Skipwith Road, did you notice that all of a sudden it becomes a 36-foot channel?

A. Yes, sir.

Q. Why, in your opinion?

A. I don't know why it was designed that way.

page 230 } Q. Well, as an engineer and you studied this, would you have any opinion as to why this would happen?

A. To take the runoff.

Q. To take the runoff. Would it have anything to do with a decrease in the grade where it would be leveling off here and the water would not run off as fast as it did down at that point?

A. At that particular section, that could be true.

Q. In other words, the velocity would be slowing up here and, therefore, it would take a wider channel to handle the water?

A. More water.

Q. More water?

A. Yes.

Q. You mean there would be more water on the east side of Skipwith than there was on the west side, so that you need a 36-foot channel to take what did go into a 10-foot channel?

A. More than likely, yes, sir.

Q. Just the width of Skipwith Road would give you that much water?

A. Because all the channels can flood.

Q. Yes, but isn't it likely that the flat grade here was the result of the design for the wide channel?

A. No, sir. I imagine the flat grade was the result of the topography of the land.

page 231 } Q. Excuse me, I mean the flat grade. The topography of the land being flat, yes, but was the

reason for the necessity to widen the channel to 36 feet to contain the water at this point?

A. Possibly, yes, sir. I did not review the highway design at all.

Q. You did not?

A. No, sir.

Q. You did review the cross section and so forth though and the profiles?

A. To determine what is referred to as a factor.

Q. In other words, you reviewed the highway plans?

A. Yes.

Q. Starting up here, if you as an engineer were designing this, would you have designed this channel to come down and cross like this was done?

A. I would have to study this a great deal more.

Q. Let me ask you one thing. You have studied it enough to know what was done?

A. Yes, sir.

Q. Would you have left the channel in the original condition, provided culverts wherever the channel and the road conflicted?

A. That would not be economical.

page 232 } Q. Would it be good engineering?

A. No, sir, I don't think it would.

Q. Therefore, in good engineering you would have to relocate the channel where it conflicted with the road, is that correct?

A. That is correct.

Q. Have you examined the plans close enough to know that that is what the highway did in all the areas they relocated the channel?

A. I have not compared that directly with the plans.

Q. You have been over the project though?

A. I have.

Q. And did you find any places where the Highway Department improved the stream when it did not affect the highway?

A. Yes, sir, I would presume right by Capehart Road. It did not directly affect the highway, but perhaps the runoff was such that it would require improvement.

Q. Do you know whether or not the failure to provide this channel would flood the highway?

A. No, sir, I don't.

Q. Then you don't know whether this was necessitated by the highway construction or not?

A. No, sir, I don't.

George E. Langley

page 233 } Q. Can you say from your study that all that was done by the Highway Department here was unreasonable or not necessary in part of the interstate construction?

A. No, sir, I think it was a reasonable thing to compact the water that was coming to the site selected to build the highway.

Q. Thank you, sir. In good engineering practice, would you select a site conflicting with a stream in preference to selecting a site conflicting with homes?

A. That gets into economics.

Q. Well, I am saying from an engineering standpoint, would you as an engineer design a location of a highway to go through homes or to go through a creek?

A. It gets back right directly to economics. If it costs more to accommodate the stream as compared with homes or home as the case may be, then it is a matter of dollars and cents.

Q. Would you also design the channel so as to protect adjacent property to the highway from flooding?

A. I would attempt to, yes, sir.

Q. Time of concentration, this is a critical factor in determining what is going to happen at this railroad culvert, is that true?

A. Yes, sir.

Q. How did you determine your time of concen-
page 234 } tration before I-64?

A. We measured the length of the stream, examined the conditions of the ditch that had existed and had not been disturbed, considered the slopes of the ground and selected a Manning's formula to determine the velocity, and converted that into time.

Q. You used this for the portions of the stream which you could, but by your own admission you did not make your study until after the condition of the stream had changed, is this correct?

A. That is correct.

Q. Then, is this a valid before-time of concentration after conditions had changed?

A. The conditions had not changed in the areas which we examined.

Q. If I told you that there had been 53 per cent of this Upham Brook watercourse affected by this construction, would you say that your time of concentration before 64 would be affected?

A. I would say that is the best we had to go on.

George E. Langley

Q. That is the best you had to go on because you could not determine it before, is that correct?

A. We determined and observed what had not been disturbed.

page 235 } Q. I understand that, sir, but what I am saying is to determine the before-time of concentration, do you not have to be out there before?

A. It is most desirable.

Q. How did you determine your after-time of concentration?

A. By taking the various sections of culverts and ditches and determining the velocity, and converting that to time.

Q. And you feel you have used the same method? You feel your before and after-time of concentration is valid?

A. Yes, sir, I do.

Q. You think it correctly reflects the before and after situation as far as this rainfall and runoff?

A. I do, sir.

Q. Have you considered that the ponding or back water affect it from the highway?

A. That would be saying that the Highway Department is underdesigning its culvert. I don't think they would.

Q. You stated at the railroad certain ponding could take place and from an economic standpoint possibly should. Couldn't the Highway Department do the same?

A. I don't think the Highway Department would.

Q. You think the Highway Department designs to pass all water coming to it?

A. Definitely so, yes.

page 236 } Q. Did I understand you to say that you applied the rational method here?

A. Yes, sir.

Q. What is the size of this watershed?

A. Some 4,600 acres.

Q. Are you familiar with this publication of the United States Department of Commerce, Bureau of Public Roads, on design of common roadside drainage?

A. No, sir, I am not.

Q. And you never considered this?

A. No, sir.

Q. You would consider this as having no effect on the drainage?

A. I am sure it has a great deal of effect.

Q. In your designing of highways, have you ever used this? (Indicating)

A. No, sir.

Q. Did you ever design any for the City of Virginia Beach and Norfolk?

A. Virginia Beach.

Q. Were any of these federal-aid projects?

A. Yes, sir.

Q. And you did not consider this?

A. No, sir, we did not use that.

Q. You did not?

page 237 } A. No, sir.

Q. Would you say that this would not be applicable?

A. No, I would not say that.

Q. You are saying, as a hydraulics engineer you are not familiar with this publication relating to highway construction?

A. That is correct.

Q. Have you ever done any work for the Highway Department?

A. No, sir.

Q. Does the error increase with the increase of the size of a watershed and I mean error, error in the computation of all of your factors? Can you get the same degree of accuracy with a 4,600-acre watershed than with a 100-acre watershed?

A. In the rational formula I don't think so.

Q. Would you say that the rational formula should not be used for large watersheds of this magnitude?

A. I would say the rational formula is used where you have nothing better to go on such as stream gauging or a stream that actually flows.

Q. Could you go out here and actually take cross sections of the stream and make other studies and have a more accurate determination of what is happening or will happen at the railroad culvert?

page 238 } A. I don't believe so, sir, because the sections of the stream are pretty well determined by the construction of I-64.

Q. But you say this formula, the rational formula, would give you the best method to determine this and you don't think there is a more accurate method to determine it?

A. Yes, stream gauging.

Q. There is a more accurate method?

A. If there were stream gauging going on, which is not in that area.

Q. Then I believe you said the rational method should not be used unless no other method is available. Why did you not use another method? Because of time?

George E. Langley

A. That is one reason, and the rational formula is perfectly satisfactory for my uses.

Q. For your uses?

A. Yes, sir, it is good engineering practice.

Q. I believe you said though it should not be used if another method is available?

A. If you have stream gauging.

Q. And with a large watershed?

A. If you have stream gauging.

Q. I said with a large watershed?

A. The larger the watershed the less desirable it is to use the rational formula.

page 239 } Q. I heard a lot about water here. Did you say 46,000,000 gallons, what the City of Norfolk uses one day, would be the increase by I-64 per hour?

A. That is correct.

Q. What is this? Is this the peak period?

A. Yes, sir.

Q. How long does the peak period last? Will it last an hour?

A. No, sir.

Q. A few seconds?

A. Yes.

Q. Could you break this 46,000,000 gallons down to a few seconds?

A. 1,734.

Q. That sounds a little better. Now, I believe you stated it would be a 30 per cent increase?

A. Yes, sir.

Q. And you thought that this 30 per cent increase in the flow would take two additional pipes, is that correct?

A. Yes, sir.

Q. What would be the square footage of these pipes? They are 10-foot pipes, I believe?

A. Do you want me to calculate it? About 80 square feet each.

page 240 } Q. So it means two additional ones would give you 160 feet more opening?

A. Two additional ones, over and above the arch.

Q. What is the square footage of the arch?

A. 214 square feet.

Q. 214 square feet of opening will take care of the water coming there without 64, but for a 30 per cent increase you need an additional 160 feet, is that correct?

A. Yes, sir.

Q. How do you base the difference of a 30 per cent increase that you get that greater increase in your square foot of opening?

A. The study has been confined to culverts of a 10-foot diameter size.

Q. In other words, you did not consider smaller culverts?

A. No, sir, it is a railroad embankment and, of course, in order to put a culvert under this railroad requires a system that you cannot put a small culvert under there economically.

Q. Do you realize, sir, that the Railroad is here asking the ladies and gentlemen of the jury to determine whether or not the Highway Department is responsible for these additional culverts?

A. I do, sir.

page 241 } Q. And you say that two additional culverts are necessary because of the highway construction, but yet you sit there and say it is necessary because it is not economically feasible to put less under the railroad, is that correct?

A. Of a far smaller size.

Q. Are you saying then that if the highway were not there but the normal development of the watershed calls for an increase, that you have to put a 10-foot culvert under there?

A. Would you repeat that, please, sir?

A. Would you say if the highway construction were not there but just normal development required additional culvert capacity under the railroad, that you would say a 10-foot culvert would have to go under there?

A. No, sir, I am saying that normal development would not require an additional culvert.

Q. I am saying under the condition that normal development did require it, would you say that a 10-foot culvert had to go under there?

A. I would not be specific in the diameter, except it would have to be a large culvert.

Q. I understood you to say that the reason you consider two 10-foot culverts here is because your study was confined to 10-foot culverts?

A. That is right.

page 242 } Q. If it is not practical or feasible to put less under there, then you would do that if any increase would be necessary?

A. Yes, sir, because the ultimate development can result in change of zoning which, of course, immediately increases the runoff.

George E. Langley

Q. Then the runoff can be affected by the development in the watershed?

A. Yes, sir.

Q. Is there any development in this watershed?

A. Sure.

Q. Did you see any?

A. Yes, sir.

Q. What kind of development?

A. Commercial, industrial, residential, multi-family, single family.

Q. Are those developed right against this watershed or against this stream?

A. In some places they are.

Q. Any development in relation to this stream close to the railroad?

A. No, sir, not those that I saw. There is some commercial development close to the railroad or industrial.

Q. You did not see any multifamily dwellings close to the railroad?

page 243 } A. I am not sure about the lower side.

Q. Did you examine this watercourse in the vicinity of what is known as Staples Mill Pond?

A. Yes, sir, I looked at that.

Q. Did you see any development there?

A. There is some development going on.

Q. There are quite a few apartments in here, aren't there?

A. That, I cannot answer. I don't remember, sir.

Q. You don't remember seeing any apartment development in here?

A. No, sir.

Q. You came up this channel?

A. I did not walk up this channel.

Q. How did you determine that channel?

A. I observed from Bethlehem Road.

Q. You observed from Bethlehem Road. Do you know what the condition of this channel is at the end of—it is not marked here. I believe it is Old Compton Road?

A. No, sir.

Q. Do you know of any apartment development in that area?

A. No, sir.

Q. Do I understand that in making your deter-

page 244 } mination, and I believe you said from observing the natural condition of the stream, that the only observation you made of this portion of Upham Brook

was from Bethlehem Road as you could see down the stream?

A. Yes, sir.

Q. Then you don't know what the condition of this stream is from there down to Staples Mill Road, is that correct?

A. That is right.

Q. What is the condition of the stream from the railroad culvert up to the beginning of the highway construction?

A. Pretty swampy.

Q. Pretty swampy. Is it in its natural condition?

A. Yes, sir.

Q. Can you actually tell from your study, Mr. Langley, what is the actual condition at the railroad culvert?

A. Today?

Q. Today, with the I-64 construction.

A. Under a 50-year storm?

Q. Under a 50-year storm.

Mr. Antrobius: Would you please qualify the upstream development?

Mr. Stotts: If the witness does not understand the question, I will be glad to go into that.

page 245 } A. My calculations indicate that the discharge of the stream at the culvert would be 7,470 cubic feet per second.

Q. Your calculation, but I am saying based on those calculations, that is what you assume. It is going to be based on the information that you received from Mr. Brockenbrough and your casual observation of this watercourse, is that correct?

A. This is what I calculated would be the result of the flow at the railroad.

Q. Have you given any consideration to the fact that the existing culvert under Bethlehem Road is smaller than the other culverts that are being placed as a part of this project?

A. I imagine that would be very true and good engineering design because of the increased runoff due to the improvements of I-64.

Q. I said that the existing culvert is smaller than the new culverts?

A. Yes, sir.

Q. Would this have a retarding effect on the flow from the upstream before it reaches the railroad?

A. I have not calculated the quantity of water that would arrive at that culvert.

George E. Langley

Q. You have not?

page 246 } A. No, sir.

Q. Then you have not considered the effect of this culvert as it may retard the flow of the water downstream?

A. And if it may?

Q. And if it may.

A. No, sir, I have not.

Q. Then it may affect your figures there as to what is going to happen at the railroad culvert, is this correct?

A. It is possible.

Q. Is it also possible that the condition of the stream where you did not observe it, is going to also affect the flow of water as it comes to the railroad?

A. Yes, sir, it could even worsen it.

Q. It could worsen it?

A. Or help it.

Q. You don't know, do you?

A. No, sir.

Q. Then, therefore, your conclusions are based on partial information?

A. On my observation.

Q. But you did not observe that part of the stream, is that correct?

A. No, sir.

page 247 } Q. I understood you to say that you are familiar with the development in Horsepen Branch. Are you familiar with Henrico County's development there?

A. Yes, sir.

Q. Did I understand you to say that after considering the improvements made by Henrico County and the Highway Department in Horsepen Branch, that you do not feel that this has any effect at the railroad culvert?

A. That is not what I said, sir.

Q. Would you tell me what you said?

A. I said that the peak discharge of Horsepen Branch would occur prior to the peak discharge of Upham Brook.

Q. The peak discharge, in other words the peak from Horsepen Branch will pass through the culvert before the peak from Upham Brook gets there, is that what you are saying?

A. That is right, and I also said that there is contribution from Horsepen Branch, but not a peak contribution.

Q. Then you do think that the Horsepen Branch does contribute to this?

A. Yes, sir, it does.

Q. It definitely contributes?
A. Yes, sir.
Q. Is it possible that the peak from Horsepen
page 248 } Branch and the peak from Upham Brook will hit there at the same time?
A. No, sir.
Q. It is not possible?
A. No, sir.
Q. What would happen if the pattern of rainfall were such that it landed on Upham Brook first and then moved in on Horsepen Branch, giving Upham Brook a head start toward the railroad culvert?
A. We don't design storm drainage on that kind of a basis.
Q. Could it happen?
A. I am sure it could.
Q. Then they could reach there at the same time, at which time Horsepen Branch and Upham Brook peak would reach the culvert at the same time?
A. That is rather remote, yes, sir.
Q. You say you are familiar with the August, 1959 flood. Didn't we have a rain storm that hovered over Horsepen Branch for some time?
A. I am familiar only with the extent that it flooded.
Q. You are not familiar with the rainfall then?
A. Where it rained the hardest, no, sir.
Q. Then you are not familiar with the ponding
page 249 } or flooding at the time either?
A. I heard about it, that is all.

Mr. Stotts: No further questions.

REDIRECT EXAMINATION

By Mr. Antrobius:
Q. Did you say that the possibility of both streams reaching their peak at the culvert at the same time is remote?
A. It is entirely remote.
Q. Speculative?
A. Highly speculative.
Q. Mr. Langley, you testified that you did not see the improved artificial section of the stream before I-64 construction. Now, you did examine the plans, the Highway Department's plans which indicated the location, is this correct?
A. Yes, sir.
Q. And were these plans prepared prior to October, '66?
A. Yes, sir.

George E. Langley

Q. Now, as to the enlargement of the channel downstream from Skipwith Road, can this possibly be due at least partially to increased water coming in from a tributary there?

page 250 } A. Yes, sir. All areas upstream have to be considered when designing any channel improvements at any location.

Q. Did you use the same method for determining time of concentration before I-64 and after I-64?

A. I did, sir.

Q. You made a statement on cross examination, when Mr. Stotts was talking about this 46,000,000 gallons of water and broke it down into seconds, you said 1,734—

A. Cubic feet per second.

Q. That is cubic feet per second?

A. That is correct.

Q. How many gallons is that, would you say?

A. That is 13,000 gallons in round figures.

Q. Per second?

A. Per second.

Q. You testified that 50-year design basis for interstate is reasonable. What design criteria do other public bodies use?

A. They vary. We have used 2 years, 5 years, 10 years, 25 years, depending on the municipality and where they want it.

Q. Do you know of any other use for a 50-year design criteria other than on the interstate system?

page 251 } A. Offhand without thinking about it, no, sir, I do not.

Q. Now, Mr. Langley, you have been talking here about two additional culverts. You testified there has been a 30 per cent increase and this would require the two additional culverts to handle the increase in water. Now, why do you need additional culverts?

A. To prevent the water from rising too high, from rising above the flood plane.

Q. If these two culverts would not be necessitated by reason of increase of flow, what effect would the fill in the ponding area have?

A. The modified clover leaf on Staples Mill Road has eliminated a great deal of the ponding area and as a consequence, the ponding area has been lessened, necessitating more culverts under the railroad.

Q. Proportionately for the amount of water, is this correct?

A. Yes, sir. We have a larger amount of water coming to it and a smaller storage area. It is a twofold *porposition.*

Mr. Antrobius: No further questions.

RECROSS EXAMINATION

By Mr. Stotts:

Q. I believe you testified, Mr. Langley, the rail-
page 252 } road culvert was adequate in your opinion?

A. Before I-64.

Q. Before I-64?

A. Yes, sir.

Q. What design standard did you use, what year?

A. 50.

Q. Did you use 50?

A. Yes, sir.

Q. I thought you said you did not know anybody else who used 50 except the Highway Department?

A. This was considered a 50-year storm, and this was the criteria to be used.

Q. But you say then a 50-year storm, you used that criteria yourself to determine the adequacy of the railroad culvert before I-64?

A. Yes, sir.

Q. And for a 50-year storm it would back water up in all this flood plane area we were speaking of?

A. Yes, sir, to my calculation elevation 173.

Q. What determines the flood plane elevation, Mr. Langley?

A. I don't know who set the flood plane elevation.

Q. Do you think it was controlled by the culvert that is now under the railroad?

A. It possibly was.

page 253 } Q. With a larger culvert, would you have a smaller flood plane?

A. I don't know, because I don't know the criteria for the setting of the flood plane in that particular area.

Q. Are you familiar with the Henrico County flood plane ordinance?

A. No, sir, I am not.

Q. So you don't know anything about the flood plane area so far as that topography in there is concerned?

A. No, sir.

Mr. Stotts: No further questions, Your Honor.

George E. Langley

Witness stood aside.

Mr. Antrobius: The plaintiff rests his case, Your Honor.
Mr. Ellis: Wait.
Mr. Antrobius: Your Honor, if you would dismiss the jury, we would like to make an offer of proof at this time and then close the case.
The Court: Are you through with Mr. Langley?
Mr. Antrobius: Yes, sir.
page 254 } The Court: Can Mr. Langley be excused?
Mr. Stotts: Yes, Your Honor.
The Court: At this point the Court will take a recess during which time the Court and counsel will meet.
Ladies and gentlemen of the jury, you all will be excused for this recess only, not for good. The same admonitions you have been given before with reference to not talking with anybody or not letting anybody talk to you about this case, the same about the radio and television.

NOTE: At this point the Court and counsel retire to chambers, *viz:*

IN CHAMBERS

Mr. Ellis: We want to make an offer of proof or vouch the record, whatever might be the proper terminology here, under the question of federal aid which I understand the Judge has ruled should not be introduced directly in this case. There have been two or three references to it now.

IN CHAMBERS

Mr. Stotts: What reference has there been made to federal aid?
page 255 } Mr. Ellis: Well, you made one.
The Court: You asked Mr. Langley—
Mr. Stotts: No, I asked him did he work on federal-aid highways.
The Court: He is talking about any of these highways.
Mr. Stotts: He said he was not familiar with the Bureau of Public Roads' document, and I wanted to know if he had worked on any highways that came under that.
But as far as this case is concerned and this project, there has been no reference except by your witness that any federal money is involved, and the Court, as I understand it, has previously ruled that it would not be admissible.

The Court: What I say is, I don't see how, when you bring a suit against the Commonwealth of Virginia, that you be justified to bring in any prejudice against the government of the United States of America, and as far as I am concerned, the one who is doing the thing, the one who holds title to it, is not the United States government but the State of Virginia, and the federal money, that is a gift in
page 256 } effect as I see it, but I cannot understand how, when the sole purpose of bringing it in and it is perfectly obvious to everyone, and that is to try to work on the jury, it is not Virginia's money you are giving away, it is federal money.

That is the same kind of thing we had here, an eminent domain case, which turned out the day we heard it was the birthday of the condemnee, and so his attorney, he asked him the question what day instead of how old he was. He asked him what day he was born. So, he said it and nobody registered, and they got along to the argument and he said gentlemen of the commission, in closing, I want to remind you all that today is Mr. So and So's birthday, and we would love to receive a present.

Well, the other lawyers got up and objected and raised the devil, and he got up in rebuttal for the Highway Department and said well, everybody loves Mr. So and So and all, but all I can ask you, please don't give him the State's money for a birthday present.

Mr. Ellis: This is the reason we feel we want to vouch the record, and I, at this moment, extend an apology to Mr. Stotts who feels offended, because our witness—
page 257 } Mr. Stotts: I would like to know one thing. Is it my understanding that you all admonished your witness not to mention federal aid?

Mr. Ellis: Correct. Also, not to use the word United States in describing the highway system, and he said that it was known as the National System of Interstate and Defense Highways, which is the proper title.

The Court: Let's say this, I know good and well that they told him. I also know, and so do all of you, that every one of these people even at the view they took yesterday, saw the big signs up there, and every one of the signs ends up 90 per cent federal funds and so many per cent State funds.

I mean there is no question about it, everybody noticed it. By the same token, even when certain lawyers appear down here as attorneys for the defendant in automobile cases, everybody knows including the jury they represent an insurance company and further, everybody on the jury knows everybody in Virginia has either got the insurance with a

company to whom he directly pays a premium or
page 258 } is in on the uninsured motorists, but still the
Supreme Court says you cannot mention it and the reason of this is the same as here.

Mr. Miller: It has no probative value. If we determine that we have to pay, where the money comes from—

The Court: If I understand it correctly, when you go beyond the taking proposition from the Congress and from the General Assembly to pay it, do they have any flash funds?

Mr. Stotts: I think the Highway Department will pay it, but I don't think you can offer any proof that federal funds would be used in this culvert, because that is certainly a question to be determined by the Bureau of Public Roads, what they will reimburse them for and what they will not reimburse them for, and no conclusion is to be reached in this case that the federal government is paying 90 per cent for a culvert under any railroad.

Mr. Ellis: There have been several things raised here. I think we are entitled to show it to the jury, but if not, we certainly are entitled to show it to the Judge for his conclusion of legal issue.

page 259 } I cannot testify to this, but it is my recollection of one of the conferences that we both attended, that we were advised that if it was ultimately determined that this expense was properly chargeable to the project, that the Bureau of Public Roads would pay it, and the sole reason that it has not been charged is because the Virginia Attorney General's office has ruled that this is not an expense, but that is a separate question.

The Court: Maybe I can straighten out the latter part. The whole point of it is, as I see it, Mr. Stotts advances well, there is no guarantee that it would be paid, but common sense tells you in all probability he will and he admits that.

Mr. Stotts: No, sir, not under these circumstances.

The Court: From my experience, unless it turns out that the Department of Highways has in effect horribly goofed or deliberately gone contrary to the regulations of policies, they always come in; they help pay off.

Mr. Stotts: Your Honor, I have some different experience through the Highway Department that 90-10
page 260 } projects don't mean 90-10.
Probably if we examine the records, in more cases than not it is less than 90-10 projects. There are many non-participating items.

The Court: But they are spelled out.

Mr. Stotts: No, they are not definitely spelled out. What happens, it is the Highway Department obviously that con-

tracts between the Commonwealth, and the Commonwealth has to pay the contract, and then the Bureau views it and determines whether or not they are reimbursed.

The Court: I am saying, if it follows the general policies laid down by the Bureau and what has been done conforms within federal limits let's say, then, unless somebody has either deliberately or through misfeasance or nonfeasance goofed the thing, they will okay it. That is what happens. We are going to pay our part.

Mr. Stotts: Well, as I say, they may or may not in this case if it were to turn out—

The Court: Well, the question Mr. Ellis raises, he has a right to tell the jury that there is federal participation in this project, and I say that that is the same as
page 261 } telling the jury there is an insurance company standing behind the defendant.

Mr. Ellis: May I give you my arguments and vouch the record?

Basically, we feel prejudiced by not having the facts fully and accurately presented. We feel that we are prejudiced if a Henrico County jury thinks that the money is being paid by Henrico or the State of Virginia, when it is not. So, it cuts two ways.

Now the second point, we don't feel that this is like insurance, for several reasons.

First of all, it is public information. As you know, there are large signs out there. It has been in the newspapers. It is recited in the recorded deeds whereby property was taken and acquired out there. It is recited and is noted on all the plans the Highway Department has ever supplied us, up in the upper corner of the thing. It is referred to in every federal-aided contract we have ever had with the Highway Department. It is specifically referred to in the United States Code and sets up the program for constructing the Interstate Highway System, and sets up the formula as I read the Code, 90 per cent plus, not 90 per cent minus.
page 262 } It is an established arrangement where there are special tax funds from automobiles, gasoline and other taxes, which are generated and held in Washington for this purpose, and it is specifically referred to and openly acknowledged in the Virginia Code under Section 33-36.1 and Section 33-38 and subsequent divisions, the United States Code Division at 2030.

So, the analogy in my opinion should not be to insurance where there are some different legal policy concepts, but it should be to corporate responsibility.

If one of our employees driving an automobile runs over

someone on the street, you can sue the R. F. and P. Railroad, but this is a deep pocket notion just as fully as the argument you advanced against our showing federal aid.

So, I think it is two ways, and on the question whether this is admissible I would like to cite a United States Supreme Court decision on an analogous issue of some years ago, which sent the case back to the State court in connection with the construction of an overpass over a railroad with a statement to the effect that the State court erred page 263 } in failing to give consideration to the fact that it was a federal aid highway. They had excluded the material, and they had some other policy considerations that it was sent back on, but that case, *Nashville Chattanooga* v. *Walters,* 294 U. S. 405, 79 Law Edition 949, 55 Supreme Court 486, 1935, and head note 3 in the Supreme Court Reporter, which is the one I happened to see, contains the particular reference.

I will be glad to give you a typed memorandum on this, if you like.

The Court: It is a little late for that. I told you all some months ago, whenever you brought it up the first time, that in my opinion it was not admissible. This is the first time I heard of any Federal court's decision on the thing.

Mr. Ellis: Maybe we should have just hit it a little harder.

The Court: But I still cannot get it through my head where, when a jury is sworn to give a verdict as to x dollars, if x dollars are due, that it makes any dog-gone difference when you've got what you know is a solvent defendant, whether that defendant is going to get any money page 264 } from the Ford Foundation, from the United States government, from the Virginia Museum of Fine Arts Trust Fund or William and Mary College or anything else.

It seems to me the only purpose to introduce proof of federal participation over and above what people are in one sense charged with knowing, by virtue of these statutes which you recited, which every citizen in Virginia is charged with knowledge of. The only reason to do it would be to accent it, which in turn would be an indication that the sole reason for doing it would be to play on the prejudice, if any, or the bias, if any, of the jurors.

It would seem to me that anything else would be countered to put the thing in the middle of a vacuum and shoot rocks at which couldn't get through the vacuum.

I don't see how anything could be accomplished with a possible play on the jury's likes, dislikes or prejudice or otherwise.

Now, if you had joined the United States government as a party, you would not have the trouble and, of course, you could very well have joined them, couldn't you?

page 265 } They participate in the funds. They own 90 per cent.

Mr. Ellis: Your Honor, we considered that possibility and that is a separate point, but to answer this comment, we felt that under the statutes the State has the authority or the power to acquire the land and do the construction subject to the regulations of the Bureau of Public Roads. There is some variance. I don't know the degree of it, but to go ahead, the things we want to show, some of which have come in the record but not all, are that this Interstate Route 64 is a part of a United States originated program, 41,000 miles of transcontinental highways.

It is a big long-range plan that will not be completed for some five or ten more years probably.

The Court: Longer than that, if they keep going the way they are.

Mr. Ellis: The cumulative funds that have been already allocated by Congress are 48.6 billion dollars.

The Court: I thought they ran out of money.

Mr. Ellis: They are, but that is how much they have allocated. It is a limited-access highway like Route

page 266 } 95. It is for the general public's benefit, with no benefit to the Railroad—it is known as the National System of Interstate and Defense Highways—it will be of great benefit to our competitors, the trucking industry, just as Route 95 is today. It will be of no benefit to the Railroad.

The Federal Code 23 U.S.C.A. Section 101 and subsequent provisions and certain related laws apply to it and contribute that the Virginia Code Section 33-36.1 and subsequent revisions apply to it in Virginia, and that there was a federal-aid highway act of 1966, Public Law 89-574, that recently added 5.2 billion dollars of additional funds for future construction to keep the thing going; that the provision of the 23 U.S.C.A. Section 120.c (c) is to the effect that the federal government puts up 90 per cent and in some situations more.

If there happened to be special situations there is a provision in 23 U.S.C.A. for the Special Highway Trust Fund. 23 U.S.C.A. Sections 106 and 109 through 114 specifically provide that the regulations of the Bureau of Public Roads control many of the details of the construction and contracting acquisition of property and other things of

page 267 } that type.

Now, we would like to vouch the record speci-

fically with some photographs of the four signs. This seems to be the best way to document it.

You saw them and other people have seen them. We had them taken with the idea that we would be able to put them in for this purpose to vouch the record, but this is public information that I think federal regulations require to be posted at the site so the public will be informed.

I think the federal government wants people to know, not to conceal it. It is not like an insurance company, and if we may have these four pictures—

Mr. Stotts: Your Honor, State Farm and I think Allstate, maybe some other insurance company, give you some bumper stickers to put on the car, but I think they still come into court and holler just as loud. You don't bring insurance in.

The Court: I have expressed my opinion of it. To me, it can add no purpose in this particular proceeding to tell the jury well, we are not going to take all this out of the money you pay the State, but we are also taking it out of the 7¢ a gallon you pay the federal government. It is

page 268 } 6 of one and half a dozen of the other.

Mr. Stotts: I assume Mr. Antrobius and Mr. Ellis would certainly object if in argument Mr. Miller and I told the jury, remember, these are your tax dollars you are dealing with here, and any payment that has to be made to the Railroad is coming out of your taxes.

The Court: Well, I will put it on here, Plaintiff's Exhibits —I guess I will call them *AA, BB* and *CC,* and mark them refused.

All right. Do you have everything in there you want to say?

Mr. Ellis: No, Your Honor, I have a few more things I want to say, if I may, to support our offer of proof, and we think facilitates the appraisal of it, and that is that our case will be based largely on arguments of damage to property for public purposes without due process of law, and this brings us across not only the Virginia Constitution but the Federal Constitution, because there are federal funds available.

In addition to the straight due process arguments, that is an unreasonable exercise of police power to con-

page 269 } struct a highway system of this magnitude with this much money being spent and ask one property owner to foot one part of the bill directly, when no one else is being asked to do so.

We believe that federal regulations apply to this and that under both the federal regulations and the State policy which applies to railroads under the circumstances, we think we

are in the case of a new road with restricted access of this type. The normal policy is that we would not contribute anything.

There are two controlling United States Bureau of Public Roads' policy and procedure memoranda that the railroads have to deal with frequently, one of them is 21-10, P.B.M. 21-10, which states the policy as to what railroads pay for and what they don't, and another one is P.B.M. 30-3, which states what railroads are compensated for, things that they do in connection with projects, and there is in addition, a Virginia official State policy on highway railroad construction matters which expressly provides in this particular case that, as we think in this case, wherever there is a railroad and a new road is constructed like Route 64, that the railroad is not instructed to assume any expense.

page 270 } Now, it can be argued that this culvert is not directly related to the overpass because it is a distance away, 150 yards, something of that type, but this is a new highway which crosses the railroad, and we are being asked to pick up what we think is a part of the expense.

I qualify my statements by saying I am relying upon our consulting engineers. If it turns out that we have not been damaged at all, then we are not entitled to a nickel, but if we have been damaged by the highway, then I think we are entitled to something by the federal law, the federal policies and the State policies that govern this.

The Court: As I see it at this moment all you have got as far as damages and liquidation—for instance, you have got $55,000 and what is it? $270-some dollars, one culvert, and another $55,000 to $65,000 for another, and you are not asking any damages over and above the actual cost of installation of the culvert?

Mr. Ellis: Correct.

The Court: And then it would seem to me that as far as the damages themselves are concerned, you would

page 271 } not have any problem about whether the jury knew about the federal policy or the state policy, that they should not share in the construction or anything else, but you are offering whatever state policy there may be that the Railroad Company should not share in any expense when there is an overhead put over the railroad.

Mr. Ellis: Yes, sir. I think that is relevant to the question of unreasonable exercise of police power and a constitutional taking, and we would like to refer to those.

I don't think that is a jury question, that is a legal matter.

The Court: Well, that is the first time I heard about that, and it would seem to me that if the construction of the cul-

vert was necessitated by virtue of the running of an overpass or highway over in the first instance—in other words, if it had to go right underneath there that you never would have any question in the construction of these new roads; that whoever was building the road would make it part of the plan, if it was necessary to put a culvert in because of the footings or foundation or whatever you have in
page 272 } the overpass, but it looks to me like you have got a real good distance from this culvert down to where your overhead crossing is.

Where your problem and your claim of damage is by virtue of building up the surface of the ground down in that valley, I guess you call it valley, in order to meet the overpass, that by blocking off a portion of the so-called ponding area, that that is what necessitates the culvert.

So, you have got to use a graph change from one to the other.

Mr. Stotts: I know the overpass goes down into the valley.

Mr. Ellis: It goes down—

Mr. Stotts: Staples Mill is going over it. It is going to come over the railroad and going under Staples Mill.

The Court: If the highway is going underneath there, still you have got some fill back there alongside the railroad.

Mr. Stotts: Oh, yes, because you go from over the railroad to under—

The Court: Isn't that part of it in that fill
page 273 } area, part of the ponding area?

Mr. Stotts: Offhand, I don't think the overpass itself is.

Mr. Ellis: But the drainage from the clover leaf and from the overpass itself. Now, Mr. Cann did not testify about this, but there was a limit to what he could do.

The drainage from the middle of the overpass up somewhere over the railroad starts flowing to the west, and everything on the west side goes through the same culvert, and this is because that is the low place; that is the only place.

The Court: Because the elevations are lower on the east side of the embankment than on the west side?

Mr. Ellis: Yes.

The Court: It has got to be. Upham Brook wouldn't be there if it weren't at least up to the crest of that ridge line.

Mr. Stotts: Further up, I think between Jordan's Branch, further up.

Mr. Ellis: Well, the photographs and the references to the several sections of the United States Code and
page 274 } the Virginia Code, and to several regulations, are what we would like to vouch the record with, and I assume they will be glad to supply the items.

Mr. Stotts: I assume you are offering to vouch the record of law and facts?

Mr. Ellis: I don't think that is pertinent to the jury, these latter things.

The Court: You can hold those in until you get around to see what the jury does.

As I understand it, the function of this jury is to answer the interrogatory, which is supposed to resolve for the Court any questions as to declaratory judgment. The jury doesn't give a declaratory judgment itself. It is more like an issue out of chancery.

In a chancery cause where you have the jury find facts for the Court and report back to the Court, then it is up to the Court to apply the law to those facts other than the law that they used to instruct the jury what they may consider in determining the facts. Unless that is too complicated—but that is the way I understand it.

It would seem to me that the question of unconstitutional taking, which may be involved in this, would be
page 275 } better reserved or resolved at the end of whatever the jury has to do.

You were not intending or you did not want to ask that the jury be told that there were these various statutes and that other than those dealing with the federal funds—

Mr. Ellis: That is right. I do not ask that the jury be informed of those particular statutes, issues of law, but our instructions to the jury and our interpretation.

The Court: These pictures, would you want to offer those in evidence, too?

Mr. Ellis: That is the large sign right next to Staples Mill Road, and I assume that covers the project running all the way from Route 95 to the vicinity of Dickens Road.

Mr. Stotts: I believe it goes the other way. I believe it is the project that ties in at Bryan Park with the toll road.

The Court: Only within the city limits of Richmond.

Mr. Ellis: Some of these things, we had some information on the bids because for some reason we were on
page 276 } the mailing list, and the Highway Department sends us certified copies of the bids and the contract. So we knew about that one a little bit, and we knew about the second one for the same reason.

Mr. Stotts: Probably where it affects the Railroad.

The Court: You are saying two things in this case, not only that the removal or filling of the void, of the ponding area, is causing you damage, but what they have done way up the stream.

Now, how do you divorce what they have done way up the stream and its effect on the culvert capacity with what effect

the overpass itself may have on the culvert? You are relating the reason why you should not be required to pay anything, because the statute says you have got no duty to pay anything where somebody builds a new road and passes over the highways.

Now, you are running to 3½ or 4 miles up the creek, saying you are being damaged by that, too.

Now, how in the world do you ever figure out which did what damage? You say this is admissible, the statutory provision will be admissible solely by the damage that is caused by the overpass and not by the damage that is

page 277 } caused up the stream.

Mr. Ellis: No, sir, the overpass is a statement of public policy in connection with these projects, and because of the culvert being a hundred yards or 200 yards, or what, and not directly under the overpass, and it has not been considered by the engineers as being a part of their contract responsibility, we have to litigate the question. But otherwise, the policy under both State and federal regulations for this Interstate Highway System is that the Railroad pay nothing.

The Court: I understand that.

Mr. Ellis: And I think this is true of all other property owners.

The Court: But their whole case is predicated, as I see it, on the position what they have done is nothing more or less than development improvement that is normally to be expected in view of the general policy of the United States government to run these interstate highways, and of the state to just by virtue of the fact it happened to hit by your railroad—I might be over simplifying.

Now, the federal government adopted these fed-

page 278 } eral statutes, the State government adopted these State statutes.

If an east-west road were running through Richmond and south of the Potomac Yards, you would be put in a position of reasonably having to expect that, but this would be normal development.

I mean, there is another side to it, which to me lifts it out of the one-way street.

A man who wants to own a piece of property out in the West End or Henrico County—now, he feels pretty safe for the time being, but what is going to happen with this circumferential highway? He may have 64 going one way through his property. So he goes and builds something and he is going to be stuck with 95.

Mr. Stotts: This is with any change of conditions.

The Court: It would seem to me, the so-called progress, if it is in the form of a high-speed railroad or a high-speed highway, is something you have got to look out for and the individual gets stuck for whether he is a private individual or a public individual.

page 279 } Mr. Ellis: No, sir, this latter point I disagree with, because we are the only private property owner that I have heard of in this entire area that is requested to pay one cent to the benefit of the construction of Route 64.

The Court: Weren't there some semantics in the letter that was introduced, a direct demand that you contribute to the payment?

Mr. Ellis: I don't know, but this is a benefit to the highway. This is a part of the highway drainage plan and they have paid the expense of every place but through our railroad embankment and, of course, our theory is that under the State Constitution, if we have a public project damaging us, we are entitled to recovery.

The Court: I understand, but it may be part of the State's attitude with reference to this, to the effect that they are stockholders in R. F. and P. and they can call their own shots. Aren't they the largest?

Mr. Ellis: Yes, the largest individual.

Mr. Stotts: But that is a small share overall now.

page 280 } Mr. Ellis: I think about 18 per cent.

The Court: If they want to put some directors on, I think they don't do it by virtue of stock.

Mr. Ellis: The State has one.

The Court: And then again, if I remember that chart correctly, it says something no parallel line within 100 feet of either side. That went through a number of years ago and, of course, the rest of that comes in on an angle where it probably would have gone up to Glen Allen.

Mr. Stotts: Or to Orange and back.

The Court: As far as the equities are concerned, I am not too worried about it. As far as the fight between the railroad and the truckers from what I have seen in all recent magazines, the railroad finally got off their back and started building equipment which would compete with the truckers. Then, somewhere I read—I might be wrong—that they are carrying just as many automobiles, railroad cars, new-car carriers and that.

So, I mean you cannot get me crying about it, either one of you.

Well, it seems to me the point as far as the highway, your highway taxes at work, common sense tells us

page 281 } that the jurors know it, and common sense further tells us to allow any emphasis on it would be solely for the purpose of attempting to shift them out of what you might call an insolent attitude with the relation of the State Highway Department to being mad with the federal government, which everybody is most of the time anyway, and I don't see how we can get over that hump.

I used the analogy of the insurance, because it seemed to me the basic reason for the rule is the same.

So I will exclude, as I said before, the evidence that you want to offer with reference to the Highway funds. If you want to bring back this question which you brought up with reference to the federal policy and State policy, nobody else pays for it, then that damage you can bring in at a later time, but for the time being I overrule you and we note your exception to the exclusion of the Court from evidence these four photographs which have been offered, and the exclusion of the Court from your being allowed to produce any direct testimony with reference to participation between the federal government and the State government in the pay-
page 282 } ing for these improvements, and also with reference to your last point on the poster.

That is the plaintiff's case, is that it?

Mr. Ellis: Yes, sir.

The Court: Do you want to go back and start on the defendant's case?

Mr. Miller: We move at this point, Your Honor, to strike the plaintiff's evidence on the grounds that they failed to establish a *prima facie* case.

They have failed to show that the improvements made by the defendant in this case were unreasonable, which we submit is an essential element of their case, and under the ruling case law both in Virginia and in the outside jurisdictions, which we submitted in the demurrer, show that where the upper riparian owner, which we submit we are in this case, makes improvements on his land, as long as these improvements are reasonable and are not done maliciously or wantonly to cause harm to the lower riparian owner, then they are privileged to do so.

The testimony that was elicited from the plaintiff's witnesses on direct testimony—Mr. Cann stated that
page 283 } it was reasonable.

Mr. Brockenbrough emphasized that it was not only reasonable but it was necessary. He said it could not be done any other way. He said to do it otherwise would have been completely uneconomical.

The Court: You are speaking about the actual plan of construction?

Mr. Miller: The construction and improvements that were done by the Commonwealth.

The Court: Then you are saying the necessities for the improvement are a matter of public policy, and the necessities for the improvement to go through this area was a matter of public policy. They are both reasonable?

Mr. Miller: He made the statement.

The Court: If I understood Mr. Brockenbrough correctly, Mr. Langley and Mr. Cann, as far as the engineering part, they felt that it was reasonable engineering practices, but none of them professed to express themselves on the question whether construction of the highway in this area was reasonable; that in that part is reasonableness of construction.

page 284 } Mr. Stotts: I think the determination of the question of where to construct the highway is a determination to be made by the Highway Commissioner and not subject to judicial review.

Now, whether or not the actual construction may be reasonable may be another factor.

The Court: But I did not understand any one of those witnesses to say what Mr. Miller said.

Mr. Miller: Mr. Brockenbrough said, as I recall, when he was asked by Mr. Stotts on cross examination as to whether the manner in which it was constructed, the improvements from the plans, whether that was reasonable, he said it was reasonable.

He further said that it was necessary; that in order to construct it they would have to avoid this conflict with the stream.

The Court: The only reason he gave on it was that you had to draw a line somewhere. Every one of them stressed the practicalities of the situation, and they said if the Highway Department had not gone on and done it this way, then they would have to elevate the roadway and that would have cost them more money.

page 285 } Doesn't that leave something for the jury to determine as to whether the Highway Department's being practical in the opinion of the plaintiff's witness was reasonable or whether it was not?

Mr. Miller: We submit that they don't have the question, Your Honor, because we submit that was a *prima facie* part of their case, an essential element which they failed to prove.

The Court: Can't the jury differ on the testimony that their people gave?

Mr. Stotts: If there is conflicting testimony, but—

The Court: The semantics on it of the language, did anybody come out and flatly say in our opinion this was entirely reasonable under all the circumstances?

Mr. Stotts: We think that Mr. Brockenbrough certainly said that; not only reasonable, but it was necessary to do it this way.

Mr. Ellis: Your Honor—

The Court: As far as I am concerned, this depends on what you heard, and I did not get the impression from him that he was expressing himself on anything except the manner of construction.

page 286 } Mr. Antrobius: Nobody questions the manner of construction.

The Court: They are not arguing that.

Mr. Antrobius: Even the cases that you cited said that the reasonableness that they are talking about is the reasonableness of the imposition that they are making on the lower landowner.

Mr. Ellis: Do you mean to say that because the highway is reasonable, you can take or damage somebody's property without compensation under Virginia law?

Mr. Stotts: In relation to a natural watercourse, the Virginia law says you can make improvements, reasonable improvements, to your property and in doing so, you can change a watercourse, you can improve it, you can divert it on your property, as long as you distribute it in the natural watercourse before it leaves there, and as long as you do it in a reasonable manner on your land, the lower owner has no—

Mr. Ellis: You are not developing private land. This is not your land, this is the public land for public uses, and Section 58 of the Virginia Constitution was precisely and flatly amended in 1902, and the square case, could not

page 287 } be any squarer, was *Swift and Company* v. *Newport News,* 105 Virginia, 108.

The Court: My opinion on the thing is that it would be up to the jury, as I see it, to determine whether this thing is reasonable.

I think they put in enough. The same idea would be if the State decided they would build one of the Giza pyramids on a plot of land that was owned by the State. What is the difference? Is that reasonable or is it unreasonable?

You say it is unreasonable because you don't need any pyramids over here.

They say it is not reasonable because we don't need a highway through there in those dimensions.

Mr. Stotts: Nobody said that.

The Court: That is the position the Railroad takes. If it was not, chances are probably it wouldn't be here.

Mr. Ellis: No, sir, we feel we are entitled to be compensated whether the highway is reasonable or not.

Mr. Stotts: This is getting to the law of it. As I understand it, you are taking the position that the
page 288 } Highway Department does not stand in the same shoes as an upper landowner.

Mr. Antrobius: No, and even if you do, you are still responsible under the law.

Every case that you cited, and you just cited the rule of law, not one case allows you to injure someone else. They either qualify in that respect or they cannot overflow the ditch.

Mr. Stotts: Have you considered any Virginia cases that say under the Constitution as adopted in 1902, where the damage clause is in there, that you don't compensate for every damage? Have you found a Virginia case in that nature?

Mr. Ellis: They say all damage is compensable.

Mr. Miller: I have a case, Your Honor, in 108 Va. 259. It is *Lambert* v. *City of Norfolk.* The year of the case I do not have right here.

It was shortly after the adoption of the damage provision, and I would read if you would permit me to, because I think it is material.

Page 267. "The words 'injured or damaged', found as they are in the eminent domain clause relating to the taking or appropriation of property for public use, as well as the history of the origin and cause of this provision
page 289 } and a consideration of the mischief intended to be remedied, show that it was not the intention of the constitutional amendment to create a right and to give a remedy in all cases of consequential damage which may result from the exercise of legislative power in making public improvements, or even from the appropriation of private property, or for injuries to private property for public use. A city, for example, under legislative authority might condemn land for the purpose of establishing a hospital thereon or a prison, which, if established, would have the consequential effect to injure or depreciate the market or actual value of the property in the neighborhood. Such injuries, however, would not in our judgment, be within the constitutional amendment."

This case supports our position in the field.

The Court: Suppose that the Highway Department had taken an easement of right-of-way across the railroad and they came in on the eminent domain statute, and they would be required to reimburse the Railroad for the value of that

easement of right-of-way, and at the same time there is a concomitant of element to the damage of residue.

What they are saying is, this is in effect like
page 290 } damages to the residue.

Admittedly, you did not take any of our land, but you constructed so close to our land that the effect of this construction is to cause us to put one or two new culverts through our railroad.

What is the difference? Aren't there cases that say that even though you don't actually touch the land, if by virtue of your improvement or construction or excavation you cause measurable damage, that that man who is not directly involved in the take as such, can be considered to have had constructively taken from him a certain value?

Mr. Stotts: I think this is the purpose of the damaging provision in the Constitution. However, I think using that case to point out that what Mr. Ellis and Mr. Antrobius said, that whatever we do, meaning the Highway Department or the Commonwealth, whatever we do we owe under the Constitution to pay them for damages.

We say that that case, that Virginia case, is contrary to the position that they are taking.

The Court: It is incumbent upon them to show that you
did something and as a result of having done
page 291 } it, they were damaged or they will be damaged.

If it is remote, if it is a depreciation in market value such as it was in that case, that is something else again, but if it has a direct effect on the water, it is just if they were inside the 300-foot right-of-way.

Mr. Miller: It has got to be a compensable damage, Your Honor; that we are not by virtue of that provision of damages of private property for public use put in position any worse than a private landowner. They submit that we are.

The Court: If this water was thrown on Mr. Walton, on the so-called Walton Estate, and if you came in and created by virtue of your construction a flood plane in this territory, where there had been no flood plane before, wouldn't you have damaged him?

Mr. Miller: If we created a flood plane?

The Court: Yes, by virtue of your construction of your ramps.

Mr. Stotts: I think we could damage an adjoining property owner by dumping water on him, yes.

The Court: That is all they say you do.

Mr. Ellis: Swift and Company against New-
page 292 } port News is so squarely with this case.

This case they have read may have some other distinctions, but they are so remote, not direct damages of

dumping water on you. There have been damages because the railroad went by and threw cinders on them.

The Court: And set them on fire.

Mr. Ellis: No, just threw cinders on them and made it less desirable for them to live there.

We have a direct damage, and in this Swift and Company case the facts were even analogous.

The Court: I cannot see that they have not put enough in to go to the jury on the question whether there has been direct damage. I don't think you can say that they have not shown damage. If they have not shown damage, why would the 13 by 20-foot culvert be inadequate to hold the water?

Mr. Stotts: Mr. Cann certainly said there was no damage.

The Court: Why are they in court?

I understood the witnesses to say it is sound engineering practice to do what they did, but that the result of what they did, in their opinion, would be the throwing of
page 293 } more water at higher velocity, because of construction above it, and it ended up anywhere between 14,000 gallons a minute and 30-some or 40-some million an hour.

I don't pursue this any more, Mr. Miller.

Mr. Miller: I was merely arguing that they have failed to show that our work was unreasonable, which I say under the Carter case and under others established that we have a privilege to do this as well as any other upper-riparian owner, as long as it is done in a reasonable manner.

If they have failed to establish that it was done in an unreasonable manner, we have the benefit of the case law in this jurisdiction, as well as any other and we say the majority of the jurisdictions support our view and the evidence should be struck because they have failed to do this, and even on their direct testimony it was admitted that it was reasonable construction, and the reasonable improvement or construction I think is an essential element of their case.

The Court: You are dealing with the method of construction, I am dealing with the end results of the
page 294 } whole construction.

Mr. Miller: I would say at this point, in *Riverside Cotton Mills* v. *Lanier,* the Court quoted *McCormick* v. *Horane.*

"The right of the owner of lands through which a water course runs, is not limited to the drainage and discharge of surface water in the same precise manner as when the land was in a state of nature, unchanged by the cultivation or improvements, but that the owner of such land might change or control the natural flow of the surface water thereon by

improvement which reaches the stream, and if he does this in a reasonable use of his own premises he exercises only a legal right."

There has been no testimony from any of the plaintiff's witnesses at this point that would be contrary except that we have done it in a reasonable use of our own premises.

The Court: I am not going to argue it any further. Reasonableness falls on the end result, not on the manner you used to get to it in the sense that it would seem that all of these things are fine as far as engineering is concerned. Nevertheless, if Mr. Walton was still there and he had a low piece of ground and you caused it to be completely flooded, Mr. Walton would have a right to recover.

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You cannot flood another man's land. So it is no use to argue any further. What is the difference between that kind? You all admit that is true. What is the difference between that and the Railroad?

Suppose they went along and built a dam along the west line of the right-of-way, 110 feet high, said by golly, interstate highway or no interstate highway, no water is coming through here.

Would that be unreasonable because they built the dam?

They say by the same token it is unreasonable for you to take their ponding area for one, build a series of either dams or channels and throw that much more water on them.

Mr. Miller: Well, that is another point. We feel that if there is any damage in the sense that it is inadequate, it is because of their own inadequate facilities, and they have failed to establish any right to pond.

The Court: Well, there had been no argument one way or the other about any right to pond.

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Mr. Ellis: For 50 years, Your Honor.

The Court: Of course, the right to pond, I used that word advisedly, "ponding". There has been no challenge of it.

Mr. Ellis: The changes of circumstances here—the only thing that has caused the Railroad any expense whatsoever. Now, assuming for the sake of argument that our culvert is grossly inadequate—let's assume for the sake of argument that it was poorly designed when it was put in 50 years ago, nevertheless, the only change of circumstances here has been a multimillion dollar project.

The Court: That is not the only change. I cannot go along with that.

Mr. Ellis: Yes, sir, that is all we are complaining about.

The Court: That is all you are complaining about, but that is not it. The whole county has changed.

Mr. Ellis: That is part of my assumption of inadequacy I am making for the sake of this argument, that takes into consideration these other things.

The Court: What you are arguing about is the difference between the growth that has gone on and is ex-
page 297 } pected to go on, and the fact that is one portion where this water comes from. The other portion is taking away your ponding, and their improvement of the area bringing the water down, an increased volume of water. No witness has said this is caused solely by the construction. There are buildings built there. That is where part of that water is coming from.

Mr. Ellis: That is different water.

The Court: No, it is the same water.

Mr. Ellis: This is another element that we are not trying to charge the Highway Department with. We are not trying to charge them with the water that other people dump on us.

The Court: Isn't it true—and I have not heard any of these engineers mentioning it—when land is in its natural state, some of the surface water is absorbed in the ground and never actually runs any further. Some goes down to the subterranean stream and never comes up on the surface.

Nobody ever mentioned that, but I learned that when I was a little kid in school; that if you skim the ground off, you in-
crease the amount of water which eventually ends
page 298 } up in the creek from rainfall, whereas if the ground stayed in its natural state, a portion of that water would sink down into the ground, be absorbed to nourish the plants and so forth.

Mr. Ellis: That is what they were talking about when they said the increased runoff.

The Court: I understand that, but the increased runoff is something they tried to take care by using a generalization rather than using specific explanation for the jury. But that is the way they did it. That is not my duty.

Are those your two grounds?

Mr. Miller: Yes, Your Honor.

The Court: I overrule your motion and note your exception for the record at this point.

The way it stays now, we will go forward with the case and see what it looks like when we get to the end of it.

NOTE: At this point the Court and counsel return to the courtroom, whereupon the hearing is resumed before the jury, *viz:*

page 299 } JURY PRESENT

ARTHUR L. POND, JR., a witness, called by the defendant, having been duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Stotts:

Q. Would you state your name, age, address?

A. My name is Arthur L. Pond, Jr. 4617 Wythe Avenue, Richmond, Virginia.

Q. What is your occupation?

A. My occupation is Assistant Location and Design Engineer in charge of hydraulics with the Department of Highways.

Q. How long have you been with them?

A. I have been with the Highway Department for 30 years. The past 16 years I have specialized in the field of drainage and hydraulics.

I am a graduate engineer—

Mr. Antrobius: Your Honor, in the interest of saving time, we are willing to stipulate that Mr. Pond is—

Mr. Stotts: Your Honor, we would like the same privilege. Let Mr. Pond tell his qualifications like the other experts.

page 300 } A. (Cont'd) I am a graduate engineer of Virginia Polytechnic Institute. I am a certified professional engineer in civil engineering, and I have served on the Surface Drainage Committee of the Highway Research Board at the National Academy of Science.

Q. Mr. Pond, are you familiar with the Horsepen Branch-Upham Brook watershed area?

A. In general, yes.

Q. Are you familar with the railroad culvert that carries these two streams under the R. F. and P. Railroad?

A. In general, yes.

Q. Are you familiar with the construction now being undertaken by the Highway Department known as I-64 in this area?

A. Yes.

Q. From your knowledge of this area and all, would you tell the Court and the jury whether in your opinion the culvert under the railroad at the present time, the arch culvert, not the second pipe but the arch culvert, is adequate to take

care of the watershed as it now exists without the construction of Interstate 64?

A. Prior to any construction by Interstate 64, it was observed that the R. F. and P. culvert in order to pass heavy storms, it necessitated considerable ponding as

page 301 } has been indicated.

When you use a culvert in such a manner as to necessitate excessive ponding, then in my opinion that culvert is not adequate.

Q. Is it a factor to be determined in determining the ponding, whether or not the ponding is to occur on your property or someone else's property?

A. Yes, that is definitely a factor.

Q. Do you sometimes in highway design pond behind culverts?

A. Well, some ponding may occur behind culverts, but if it is excessive ponding, the Highway Department is constantly enlarging culverts in order to preclude or minimize the ponding on upstream property.

Q. Are you familiar with the development in the watershed of Horsepen Branch and Upham Brook?

A. Yes, I am familiar with the general development within the watershed, the degree of development that is taking place within the watershed.

Q. Have you studied any aerial photographs taken by the Highway Department?

A. Aerial photographs are one of the tools that we use in most of our drainage design work in order to evaluate what is taking place within the watershed and the land use that is being made, or the use that is being made

page 302 } of the land within the watershed.

Q. Mr. Pond, would you look at this and could you identify this?

A. That is what we call a composite, which is made up of individual photographs, aerial photographs, which are taken, and we keep a complete file on it, aerial photographs file, with our state coverage, and this was made up from those aerial photographs to this composite, and the outline of watershed was placed on it as well as the general location of the I-64.

Q. Would you tell the Court and jury what area this covers and when this was made?

A. Well, according to the description on here it was February, 1965, and this is west of 33 to the Richmond-Petersburg Turnpike. Of course, there is an additional area in

here, but the area in question is the one that is outlined on the photograph.

Q. What is Route 33?

A. Route 33 is one of our primary routes.

Q. Is this Staples Mill Road? (Indicating)

A. That is Staples Mill Road.

Mr. Stotts: Your Honor, I would like to offer this as *Defendant's Exhibit C.*

Q. Looking at this aerial photograph, Mr. Pond, would you first tell us what the yellow line represents?

page 303 } A. The yellow line represents the outline of the watershed which contributes to Upham Brook and/or another way of saying it, it is the drainage. In other words, within the confine of the yellow line is the area that contributes to the Upham Brook.

Q. Is this also Horsepen Branch?

A. And Horsepen Branch.

Q. What is the red and white line that runs through this?

A. That is an approximation of the alignment of I-64.

Q. This area we see in here, what does this represent? (Indicating)

A. Well, as you might notice, it represents the streets and, of course, if you could examine it more closely, I think up in here it is a little clearer, you can see the streets and the houses and other structures which are within that watershed.

Q. Could you point out the undeveloped area generally?

A. At the time this photograph was made, this area in here was really undeveloped. (Indicating) This area in here was really undeveloped. (Indicating) Here, and here.

Q. Mr. Pond, this development that we see here within this watershed, in your opinion, has this increased

page 304 } the water being brought to the R. F. and P. culvert?

A. Well, if we are speaking of the time since the culvert was installed, it definitely contributes to the increase as development increases, because when you build houses, driveways and streets, they all are a more impervious area and, therefore, there is less filtration in the ground and less retention by the vegetation and naturally, you are going to get more water which will find its way to the stream than prior to the construction within a watershed.

Q. Over this same period of time and with the same development, would you get an increase in the ponding behind

the R. F. and P. culvert, over the period of time since the installation of the original culvert?

A. Well, you might say as more development takes place, there is more water to flow into the stream, and consequently there is more water to pass through the culvert. And as more water passes through the culvert it raises the elevation at the entrance in order to put it through the culvert, then naturally it follows that the higher the water has to go to get through the culvert, the larger the area of ponding which will take place.

Q. The development of Interstate Route 64 through this area, do you know the approximate acreage of this development, the highway development?

A. No, I don't know the exact acreage of it.

page 305 } Q. Do you have an estimate?

A. I could only approximate it. Something like 200 acres, I believe.

Q. About 200 acres. Is this 200 acres concrete pavement?

A. No, it is not all concrete pavement. The right-of-way itself, the acreage within the right-of-way, is not all covered with concrete. You have varying lanes of concrete at various sections, but then you have your slopes and beyond the slopes have the fill. There is also some really undisturbed area within the right-of-way, and also the contouring of the embankment itself, it is always treated with seeding for establishment of vegetation, which leaves quite a good percentage of it in vegetated area.

Q. What would be the condition of this area you are speaking of in the future with the highway there? Would it remain in a vegetated state?

A. A large percentage of it would remain in the vegetated state, yes.

Q. Could there be any development of industrial or commercial or residential property within this area to increase the runoff?

A. No, because it is a limited access type of highway, and it is fenced in and remains the property of the Commonwealth.

page 306 } Q. Are you familiar with the plans for Route 64 through this area?

A. I have a general knowledge of it.

Q. With specific reference to the drainage facilities, in your opinion, are the facilities that are being built by the Highway Department, reasonable?

A. Yes, in my opinion they are reasonable.

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Q. Do you feel that these facilities that are being built are within good engineering design?

A. Yes.

Q. Are you familiar specifically with Plaintiff's Exhibit 24 as it shows a wide 36-foot bottom channel between Skipwith Road and just east of Broad Street?

A. Yes.

Q. Could you tell the Court and the jury something about the effect of this channel, first with relationship to ponding of water?

A. Well, the channel itself being between four and five miles in length, and of varying depth and varying width, acts as a container during flood time, let's say when the banks are really full and it is a large flood, there is considerable water in that between four and five mile channel.

Q. Are you speaking of the entire channel?

A. I am speaking of the entire channel, and that water in itself constitutes storage which has some effect in
page 307 } reducing the peak discharge. In other words, it is a factor in actually determining what the peak discharge would be at the lower end of the watercourse or at the culvert at the railroad.

Q. Are you familiar with the publication of the United States Department of Commerce Design of Roadside Drainage and Channels?

A. Yes.

Q. Do you agree with the statement on Page 6-15 of this publication, and I will ask you to read that first.

A. "The temporary storage of storm water en route toward defined channels and within the channels themselves accounts for a considerable reduction in the peak rate of flow except on very small areas.

The error in the runoff estimate increases as the size of drainage area increases. For these reasons, the rational method should not be used to determine the rate of runoff from drainage areas larger than 5 square miles."

Q. Do you agree with that statement?

A. I agree with that statement. There are varying opinions as to whether you should actually go that high with the rational formula.

Q. What do you mean, the 5 square miles?

A. I mean 5 square miles, yes. The opinion varies on that as to whether you should even use it on one of 5
page 308 } square miles. It should be less than that.
That is because the factors involved leave out

many of the factors which must be considered in the larger watersheds, for example, the storage in that long channel and the storage which takes place as a result of other obstructions which may fall within that channel in such a length as that channel.

Q. Mr. Pond, have you made a study of the effect of this construction on the railroad culvert?

A. No, sir.

Q. What would it take to make an accurate study to determine the actual water being brought to the railroad culvert? How could you determine this?

A. Well, when you say an accurate determination, I think that we should say a more accurate determination of the watercourse, and that becomes very involved because there are many factors, many factors which complicate the determining of what the actual peak of discharge is at a point on a watershed of this type.

There are many factors that enter into it such as what has been done in the way of storm sewers within the developed area and the storage within the channel, and the retarding effect of the vegetation, the changes from season to season within the channel, and in order to do that, you would have to develop a very intricate type of study which page 309 } would show the hydrograph. When I say hydrograph, that is the movement of the storm, the storm pattern and the storm water as it moves from point to point along that stream and finally gives a result that determines the flow of the channel.

Q. Would you have to consider the condition of the channel for the full 5-mile length?

A. The channel will have to be considered. I cannot consider it as a segment in itself. You have to consider the channel as a whole unit and, therefore, you have to develop the pattern of flow within that channel for the entire length of the channel which necessitates extensive field work in developing not only the relative shape of the cross sections of that channel which are varying, both the new channel and the old channel.

Q. When you speak of cross sections there, are you speaking of the banks and the depth of the channel at the various points?

A. That is right, the configuration in other words, of the ground as you go perpendicular to the channel which contains the water. You have to develop not only the relationship of the varying shapes of that channel as it proceeds from

one point to another, but you also have to develop the retardance factors that occur within this channel from point to point, and not only within the channel from point to point but the retardance factors vary across any one
page 310 } cross section of that cross channel, all of those factors. If you are going to get the most intricate study and the most valid comparison, you would have to take all of those factors into consideration both before and after, in order to arrive at the most practical or the most accurate determination that the hydrology would permit us to do today.

Q. Can you say based on your knowledge of this area and the developing being done, whether there will be an increase in the water brought to the railroad culvert by the construction of Route 64?

A. Well, I cannot say that, because I have not made a study of it.

All I can say is that a detailed study may or may not indicate some slight increase. However, in the development of some watersheds it is highly possible and does take place at times when actually other factors have an off-setting effect on the construction that is being performed.

Mr. Stotts: No further questions of Mr. Pond.

Mr. Antrobius: Your Honor, could we have a 5-minute recess, please?

The Court: All right. Do you want to take a recess right now?

Mr. Antrobius: Yes, sir.

The Court: I figure on stopping a little after 5:00.

Ladies and gentlemen, the same admonitions
page 311 } as before.

NOTE: At this point a short recess is had, whereupon the taking of testimony is resumed, *viz:*

CROSS EXAMINATION

By Mr. Antrobius:

Q. Mr. Pond, you stated that you did not have an opinion as to whether or not the flow has been increased in Upham Brook. You had not made a study?

A. I had not made a study.

Q. Let me ask you a hypothetical question. Assuming the natural watercourse is improved by widening from 3 to 6

feet to 10 to 36 feet, limiting retarding growth, straightening, making the grade uniform, what effect would this have on the flow in that stream?

A. Well, the effect on the flow in the stream is not quite that simple, it is a little more complicated than that, because if you widen an artificial watercourse, even though you denuded a part of the vegetation, shortly that vegetation is going to be re-established on the new watercourse.

So, therefore, you have got to take into consideration the establishment of the new vegetation on the water-
page 312 } course.

Q. Are these changes things that you were taking into consideration as affecting runoff?

A. Now, that is for runoff. This is not for channel flow.

Q. Mr. Pond, this is from the Highway Department Drainage Manual. (Indicating) Would you read Section 201.03 down to this area? (Indicating)

A. Section 201.03. "Watershed characteristics. Aerial photographs, topographical maps and land surveys are used either separately or in combination to determine the following factors which influence runoff: Size and shape, average slope, land uses, vegetal cover, stream pattern, pondage or storage."

Now, that is for unoff. This is not for channel flow.

Q. I asked you if these things influenced runoff and you told me no. Mr. Pond, is concrete more impervious than natural ground?

A. Yes, concrete is more impervious than natural ground.

Q. So in ground, a lot of water would soak into the ground?

A. Up to a point, at which time it becomes impervious.

Q. But much more than concrete?

page 313 } A. Right, in the initial falling of rain, but let's not overlook the fact that the ground also absorbs so much, and after that it can absorb no more.

Q. Is concrete involved in the construction of the highway and a portion of the bottom of this ditch?

A. In a small portion of the bottom of the ditch on the upper extremity of the watercourse, and also concrete is used for the paving of the travel lanes within the right-of-way. A portion of the right-of-way has concrete.

Q. So, more water would be running off than would have been soaking in, in its natural condition?

A. Just as you build a house or any other improved conditions, yes.

Q. So these improvements have increased water in the watershed in the stream?

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A. Just as any other developments do, yes.

Q. Mr. Pond, you referred to a very heavy storm on your direct testimony. What was the frequency of that storm?

A. That is the subject of some conjecture on the part of various individuals, and I do not know that you can establish that with any great degree of accuracy, but approximately 50 years.

Q. Do you know how many times the ponding

page 314 } at the railroad culvert has backed up over Staples Mill Road in the last 50 years?

A. Only once to my knowledge, which I observed.

Q. What was your opinion as to that particular storm, the frequency?

A. My opinion was it would not have inundated Route 33, a primary highway, hadn't the Railroad—

Q. No, your opinion as to the frequency of the storm—of that storm?

A. I have not investigated the frequency of the storm. I said there are many opinions on what it was.

Q. What storm design were the culverts under Route 33, Staples Mill Road?

A. At the time Route 33, Staples Mill Road, was built, I have no idea because that is not involved.

Q. Mr. Pond, you have presented into evidence this aerial photograph and talked about development and the original culvert of the Railroad Company. Now, at the time this photograph was taken, was the original culvert the only culvert located near Dumbarton and Staples Mill Road?

A. Frankly, I am not too clear on the sequence of events. You may have had an additional at the time.

Q. At the time this photograph was taken of the highway construction, had it already been—

A. In a very small manner possibly. I tell you

page 315 } the truth, I am not too familiar with the sequence of events there.

Q. Can you tell from looking at the aerial photograph?

A. There is some clearing down here in this area which may have been part of this clearing, but as I said again, I am not too familiar with the sequence of events there.

Q. Mr. Pond, you were talking about re-establishment of the vegetative growth. It would take many years, would it not?

A. No, because basically we seed and mulch our disturbed areas both slopes and channel, which puts a relatively fast growth of grass on these slopes and in the channel, and also

the wild growth will also take place at varying degrees of speed.

Q. How much vegetation is in Upham Brook in the improved area right now?

A. At the moment I don't think there is any.

Q. Does the State Highway Department allow trees to grow in interstate highway drainage and grading of channels?

A. At the present time the main thing is to put these channels in efficient operating conditions. Whether some sparse growth of trees is permitted to grow on banks, that may or may not occur.

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Q. Now, we took a view of the Upham Brook stream the other day, and from my personal observation I noticed many trees and large shrubs growing right in the stream. Would you anticipate growing this type of vegetation in the improved channel?

A. We would maintain the channel in an efficient operating condition. We would maintain vegetation on that channel which is a retarding factor, but we would have to omit growth of large trees.

Q. So there won't be as much retardation?

A. There may not be as much retardation from vegetation, but other factors will have to be considered such as storage in that new channel.

Q. Isn't it true that water would also store in a natural stream?

A. Yes, but that is what I am saying, you have to take the same criteria before and after to evaluate all the factors in order to determine, which you are attempting to do, whether or not there has been any increase in velocity and if so, to what extent.

Q. So in this case we have possible storage in the natural channel as well as an artificial channel, but trees and heavy brush growing in the original channel and only grass growing in the improved channel, is this correct?

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A. That is correct.

Q. And very likely there will not be as much retardation in the improved channel, is this correct?

A. There may not be as much retardation from the vegetation, but there are other factors to be considered retardation.

Q. Can you name me one place in the improved channel where the flow has been decreased?

A. I have not made a study of the channel.

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Q. Now, Mr. Pond, from Skipwith to Broad Street, could you describe that improvement, tell me where it was made and on whose land it was made?

A. No, sir, I could not because I did not make a study.

Q. You described the improvements as continuing on 200 acres in the watershed area, is this correct?

A. That was my approximation. I have not measured that either.

Q. Does this 200 acres include improvements in the stream bed itself?

A. Well, of course, that 200 acres is a very rough approximation, but it includes all right-of-way that we have acquired there.

Q. Wouldn't you say that the stream bed is the critical part of the water as the drainage?

page 318 } A. Let's see, just exactly what do you mean by that question?

Q. What I am getting at, Mr. Pond, is that your 200-acre improvement has more effect on drainage being located right in the stream bed itself than it would out on the edge of the watershed, is this true?

A. Not necessarily, it depends on the pattern of the flow, too, of the stream.

Q. I am talking about this one. (Indicating)

A. Yes. What you are saying is, I think, that being as the roadway is so closely related to the channel, that the water from the roadway is going to get into the channel faster than if the road were somewhere else.

Q. No, I am talking about the channel itself. If you dug a channel somewhere out along the edge of the watershed area, this would not have as much effect as a channel out right in Upham Brook stream itself,would it?

A. Of course, that is a hypothetical case. You would not have that Upham Brook on the edge of your watershed.

Q. But the stream bed is the critical portion of the watershed?

A. Well, the water system is the critical portion of your flow pattern.

Q. Mr. Pond, you mentioned you reseed on the shoulders with seedgrass, is that correct?

page 319 } A. That is right.

Q. But doesn't this still increase the flow of water to a greater degree than it would have been in its natural state?

A. Not necessarily. May I give an illustration?

Suppose that the condition of the watershed prior to construction of a roadway should happen to be agricultural land whereby you were using straight row cropping. That gives you a much faster runoff than you would have after you have contoured it and put an embankment there and put grass on the slopes.

I am using this as an illustration because there are some cases where actually after construction and proper landscaping you can actually retard after it.

Q. Were easements required at the stream bed upstream?

A. I have no knowledge. That is a right-of-way problem in which I am not involved.

Q. In your answer to my hypothetical question, suppose and assume this, that the land was not being ponded, that it had such characteristics here, trees and heavy brush. Then would you change your answer?

A. Well, obviously, if you have a very choked watercourse and you clear it, you can improve the flow characteristics, but what I am saying is that you have to take page 320 } everything into consideration not just your hypothetical cases, but your actual conditions of the watershed before and after.

Q. But this would indicate an increased flow speaking hypothetically?

A. Yes, speaking hypothetically if you cleared the watercourse.

Q. Does the Highway Department normally acquire easements?

Mr. Miller: Objection, Your Honor. It is immaterial whether we normally acquire easements or not.

The Court: How is it immaterial?

Mr. Miller: He is asking if we normally acquire easements, and I say what we normally do is not material at this point.

The Court: Ask him with reference to this particular case, not what they normally do.

Q. In this particular case, were upstream easements acquired?

A. As I say, that is a right-of-way proposition and I cannot answer that.

Q. Would you please read Section 701.08 from the Highway Department Drainage Manual?

A. "When easements are obtained, care must be exercised to confine the flow to the easement and to provide

page 321 } proper termination to avoid alleged concentration by a property owner below the one from whom the easement is obtained."

Q. Do you from your own personal knowledge know whether the defendant asked any landowner to contribute in any way to help facilitate the drainage?

Mr. Stotts: I object to that question.
The Court: Do you know, Mr. Pond?
Witness Pond. Would you restate your question?

Q. Do you know whether the State Highway Department asked any other landowner to contribute to accommodate the drainage facilities in connection with Interstate 64?

A. No, I do not.

Q. Mr. Pond, is it sometimes good engineering practice to pond water for a hydraulic head at the culvert?

A. Well, providing you make adequate provision for the ponding area, but it is not good engineering practice to construct culverts which will pond on upstream property. That is not part of your own right-of-way.

Q. Does the Highway Department pond at any of its culverts?

A. Oh, we have thousands and thousands of culverts, and I am sure there must—I couldn't answer that. I am not that familiar with all the thousands of culverts we have.

I can tell you this: We quite often have to en-
page 322 } large them as a result of that condition, which we do.

Q. So you probably frequently pond then on other people's property?

A. I wouldn't say frequently, but I'd say when we do and become aware of it, it has always been our practice to enlarge them to minimize or eliminate that.

Q. Would you say that it was good engineering practice to open the stream up and move the problems downstream?

A. I think that in a situation such as that, you have to consider the overall problem. It is certainly good practice to improve any drainage.

Q. On what design basis does the Highway Department design its culverts?

A. That varies, depending on the system. For the interstate it is for a 50-year frequency.

Q. Mr. Pond, you testified that this construction was reasonable?

A. That is right.

Q. Were you referring to the construction itself, the manner of the construction, location?

A. In my opinion, I was referring primarily to the question at hand, which is the drainage.

Q. But you said you did not know anything about whether there was an increase or not; that you never
page 323 } made a study. So, how can you testify that it was reasonable?

A. I said it was an opinion. I have made no study.

Q. But you have an opinion?

A. That is my opinion.

Q. Do you know whether the water has been increased or not? You previously testified you didn't.

A. No, I don't.

Q. Would you please read the underlined section from the Highway Department's Drainage Manual, Section 601.05?

A. Well, I would like to read more than just that, because the title of this chapter is Drainage Division of Subdivisions, and we are not dealing with a subdivision.

Q. Would you read it, please?

A. This, ladies and gentlemen, has to do with subdivisions. When you are developing small subdivisions—and we quite often have to, in cooperation with the counties, we have to tell them what our opinion is of the developer's plans for the subdivision and so, 601.05—"Where open channels"—and these are the channels within a subdivision.

"Where open channels are used in lieu of closed storm sewer systems, the minimum requirements shall provide for a 10-year recurrence frequency storm without exceeding the banks of the channel. The collection of water from the termination of artificially constructed channels shall
page 324 } be accomplished in such a manner as to avoid damage to adjacent properties."

Now, this is when we develop actually channels. This has nothing to do with a natural watercourse. Here, we are speaking of a natural watercourse and here, we are speaking of channels which have been constructed, which did not heretofore exist as a watercourse.

Q. Mr. Pond, what is the design frequency for the interstate system?

A. 50.

Q. If you designed a culvert for a 50-year storm, assuming

a storm of greater frequency would occur and cause flooding, would you say that culvert was inadequate?

A. I would say it was inadequate to handle greater than a 50-year storm.

Q. Would you say that it was inadequately designed?

A. No, because the design criteria there in the interest of economics, 50 years, was considered. It is nationally considered as design criteria for the interstate system.

Q. Did you tell me that you were familiar with the drainage plans, the Highway Department's plans?

A. No, I didn't say that. I said only in general.

page 325 } Q. Maybe you can answer this question: At one time, did your plans indicate that the drainage improvements would continue all the way to the railroad right-of-way?

Mr. Stotts: Your Honor, I think at the request of the plaintiff we stipulated these are the plans that are introduced as the plans of what the Highway Department is doing. Therefore, what the Highway Department may have thought about doing before should not enter into this I would think, based on that stipulation.

The Court: The witness may think that what they did before is more reasonable than what they ended up doing. These specifications, it was agreed were the plans the Highway Department followed?

Mr. Stotts: That is correct, sir.

The Court: I don't see why it would not be material.

Q. Do you recall plans indicating construction all the way down to the railroad culvert?

A. I cannot say that I recall that definitely, no. There have been many changes in them as they went on, and I cannot possibly keep up with them myself.

Q. So you would not know why the plans were changed?

A. No.

page 326 } Q. You are not familiar, are you, with any zoning?

A. No.

Q. Do you know the amount of storage at the railroad culvert, assuming only the original culvert before and after the interstate system?

A. No, I do not.

Q. Mr. Pond, you stated that the improvements were reasonable. Assuming that these improvements increased the

flow in this stream to 45,000,000 gallons per hour; that you were a lower landowner; would you still say that this increase was reasonable?

A. Well, ladies and gentlemen, this factor of the number of gallons per hour is a strictly hypothetical situation, because it was arrived at by taking the differential and assuming that the peak discharge lasted for an hour.

That peak discharge is the highest discharge that you get during a storm. The storm pattern rises up to a peak and then falls off, and what they are talking about is the peak.

Now that peak does not last one hour. So, you don't have that quantity of water flowing into there for a period of an hour.

Q. Would you answer the question, please?

A. If, your hypothetical question, you wish me to answer it—I would say that that was a large volume of water to be going in there, but inasmuch as I have not made

page 327 } a study of it and have not tried to evaluate such a hypothetical case, I cannot answer the question for you.

Mr. Antrobius: All right.

Mr. Stotts: No further questions, Your Honor.

The Court: All right. Thank you, Mr. Pond.

Witness stood aside.

Mr. Stotts: We have no further witnesses, Your Honor.

That is the defendant's case.

The Court: Will there be any rebuttal on behalf of the plaintiff?

Mr. Antrobius: No rebuttal.

The Court: Ladies and gentlemen, I think the Court might very well let you go home for tonight and give you some time tomorrow before you have to come back.

Let's see, both parties have rested their case in chief, and I am going to make an estimate which I hope will be close, but it would seem to me that if you all get back here tomorrow at 11:30, we would try to be in shape to give you whatever there is that you will get from the Court.

page 328 } During this overnight recess, I want to admonish you once again with reference to not talking to anybody about this case and not letting anybody talk to you. I further want to reiterate the admonition with reference to the radio and television and newspaper, which you

are not to read or look or listen to any of it that happens to mention the case. Further, that you are not to go anywhere near the points of this area which have been described in the testimony. If you have to go by one, keep your eyes on the road. Don't be looking all around, but I don't think any of you have to go through there.

So, we will adjourn as far as the jury is concerned until 11:30 tomorrow morning.

NOTE: At this point the jury is leaving for the day, whereupon court is resumed out of the presence of the jury, *viz:*

JURY ABSENT

The Court: All right, gentlemen.

Mr. Ellis: Can we take up one small thing?

The Court: I am talking about motions, in-
page 329 } structions and what have you.

Mr. Ellis: Well, I had in mind the interrogatory. We had one that was admitted that we would like to have in the record, that the State's witness could not answer.

The Court: Which interrogatory are you talking about? Are you talking about the ones that go to the jury?

Mr. Ellis: I am talking about the ones we submitted to them.

The Court: Well, you all have rested. You said there was no rebuttal. I don't see how you can put it back in now.

As far as the jury is concerned, everybody said we are through, and I don't see how you can come back in now and reopen that.

Mr. Ellis: Well—

The Court: As long as there is no objection to it—

Mr. Stotts: We object.

Mr. Ellis: I am assuming they object, Your Honor, but the only way we could prove it was through their witness. They
had seven people listed as witnesses; they put
page 330 } on one. He could not answer when he was asked
the question.

Now, they have not called the witness that we had some reason to expect they would call. I don't know the Virginia procedure well enough—

The Court: Well, there are several ways that that can be handled. I will say this, I told you all in chambers that if there was any witness on the other side that had information that you wanted, you could call him as an adverse witness, because for the purpose of this case I would treat each

employee as an adverse witness to the party for whom he did not work.

It would seem that was the time. I have never understood that it was the burden of the defendant to provide information for the plaintiff, nor was it the burden of the plaintiff to provide information for the defendant. Under our discovery proceedings, we allow this to be done by requiring one party to provide information for the other, but we don't require to produce witnesses. We have not gone that far yet, or to make them advise as to which people they have available or to testify.

page 331 } Now, if they for one reason or another don't want to put them on, it is not incumbent on the Court to order them to put them on. I don't see how anybody could go to that point of view.

If that was so, you could say well, I have six witnesses, and if he did not put on but three, the Court would have to put on the other three.

Mr. Ellis: That was not my purpose. I had assumed that under the Virginia procedure if they don't provide the witness to answer the question that is entirely within their knowledge, that their answer to an interrogatory would be admissible.

The Court: Well, it would be at the proper place and at the proper time. In other words, it could very well have been before you all rested your case, that you came in and said now, here are these interrogatories and they admitted that. We want the jury to know that this is an admission that has been made by them.

There has got to be a cutoff point somewhere. That is the problem.

Mr. Ellis: Your Honor, we had no knowledge of what witnesses they were going to bring. When we rested,

page 332 } we rested our direct case, and it was a surprise to us that Mr. Pond was their only witness.

The Court: I asked you if you had any rebuttal, and the reason I asked was primarily that if you wanted any of their witnesses they could have had them down here in the morning, but I cannot try your case for you.

This is one of those things where they say well, everybody rested. The jury has been told to go home, come back after we get through.

As much as I would be in sympathy with either side, I don't think I can go ahead and, in effect, take back what somebody already said.

You can talk it over with them to see if they agree to come back on it.

Mr. Miller: We won't agree to that, Your Honor.

Mr. Ellis: That is the attitude we have had throughout this, sir, just to get a day in court.

The Court: Well, if you all keep up with that attitude, I might change my mind.

page 333 } NOTE: At this point court adjourns for the day, to resume the hearing the next morning, November 16, 1966 at 9:00 o'clock A. M.

page 334 } November 16, 1966

NOTE: Court convenes at 9:00 o'clock A. M. with the same appearances of counsel as on November 14 and 15, 1966, whereupon the Court and counsel convene to chambers, *viz:*

IN CHAMBERS

The Court: As I understood you all yesterday afternoon when we got through with the evidence there, there was a question raised by Mr. Ellis with reference to some interrogatories?

Mr. Ellis: Yes, sir.

The Court: What was that question again?

Mr. Ellis: Well, basically, there was considerable effort made to submit interrogatories and you finally issued an order asking that five or six or so be answered, and we stated them and they were answered, and we desire to have two of them put in evidence.

We anticipated that they would put on witnesses that would answer the questions, and that would be the proper way to do it; however, they did not.

page 335 } We would now like to read those interrogatories and the answers to the jury, or have the Judge do so, whatever is appropriate.

The Court: I will tell you this, the Judge never does it.

Mr. Ellis: All right. Well, I apologize for my shortcoming. I am not experienced in Virginia jury trials, and I just did not know where I did not do it right, but I went back and looked at the Code, Section 8-322.

Under that and 194 Virginia 872, it seems counsel can read the interrogatories to the jury and that both parties have that right. One side reads what it wants to, and the other what it chooses to.

The Court: The one that asks for the interrogatory is the only one that can read it, and if they ask for interrogatories, then they can read into what part they want to. Whoever asks

for the interrogatory and gets an admission is the one who reads it.

Mr. Ellis: In reading 194 Virginia 872, I was under the impression that they were entitled to it also.

We would like to read the answers to Number
page 336 } 5 and 7.

The Court: What bothers me is why you did not do it when I asked whether there was any rebuttal.

Mr. Ellis: I am sorry, I guess I just did not hear you ask if there was rebuttal, because I had that in my notes and I thought perhaps you felt we should do this on direct.

My interpretation of both discovery and interrogatories and their position as well, is that you should put that evidence in through witnesses if they are produced, but if they are not produced and it is not rebutted in some way, you can put that in.

The Court: Technically, under our procedure you have interrogatories and they are admitted and you put them in, in your case in chief. You cannot sit back and wait to see if the other side is going to put on witnesses, because there is nothing to prevent the defendant in this case to say we have no evidence.

Mr. Ellis: That is correct.

The Court: And if they are part of the proof of your case, they should come in your case in chief, because rebuttal is supposed to mean just that, and that is the rebuttal of what
the defendant has put in and not supplementa-
page 337 } tion of what you had to have put in, in the first
instance.

Now, as I understand the rule, I asked you all and Mr. Antrobius said no, sir, we have no rebuttal, and I took that as being you are all through; that you are resting.

At the same time, I do not recall you ever actually saying you rested.

Mr. Ellis: Well, when we had our conference in here earlier in the day, I asked Mr. Stotts which witnesses he was going to put on, because we have some questions we wanted to ask and we did not want to ask everyone, only one knew the answers relating to these interrogatories, because their list of witnesses originally indicated that some of these people would not be able to answer it, and I felt that would be the proper way to put the information in rather than just reading the interrogatories.

The Court: It would seem to me the proper place to put it in would be in your case in chief.

Now, I looked through both of these files we have got here and I have not seen a single return of service of subpoena
on any single witness.

page 338 } So, then going back to our so-called adverse type of procedure in Virginia, normally the way it is done is counsel checks and checks before the trial as to whether they have any returns of service or any request for subpoena, because sometimes the returns don't come back and then, if it looks like one party or the other has not summoned a witness who has been pointed out by virtue of discovery to have knowledge that might be pertinent to one case or the other, in our procedure you summon him; whoever needs him summons him regardless of who it is. That is one aspect of it.

Another aspect is, if you find out the names and addresses and find out through interrogatories or otherwise that one of these witnesses may know information you need, then you take his deposition for discovery. Once you have that deposition, then you can tell whether you will need him regardless.

In other words, there are about three or four or five procedural things that can be done and generally are done when you run up to a situation like this, and the reason for it is simply because as I say, the defendant can give you the names of fifty witnesses that they may call or page 339 } that they intend to call and then, strategically or attackedly, they may decide we will forget it. We stand or fall on the motion to strike or on a law point. Then you are left higher than a kite.

What interrogatory in particular did you want to read to the jury?

Mr. Ellis: The response to Number 5 and to Number 7.

The Court: Number 5 says "See attached Exhibit A."

Mr. Ellis: Correct.

The Court: Are you going to read all that?

Mr. Ellis: No, sir, I think that can be an exhibit.

Mr. Stotts: Is that about the right-of-way? I can tell you right now none of our witnesses that were summoned know a thing about that list—Excuse me, I used the wrong word. None of the witnesses that we gave you the name that can be used, work in the right-of-way division and had any information regarding the list of those names.

Mr. Ellis: Your Honor, as I interpret interpage 340 } rogatories—this may have been my error, but I felt that if they did not have witnesses that refuted that—I think this is the Virginia law, that once sworn answers to interrogatories are submitted, then the only way they can be refuted is through two witnesses that rebut them, and they did not produce two witnesses to rebut them.

The Court: No, if they put in answers to interrogatories, they are supposed to be true answers, and the way it works,

you are supposed to read the interrogatory question to the jury and read the interrogatory answer to the jury, and they are in effect almost foreclosed from putting on anybody to contradict something they already answered under oath.

The old Bill of Discovery is the basis for it and in that, we find that this was a way that was utilized. That was part of discovery, to have admissions of undisputed facts and to save the necessity of bringing the people in by calling them as adverse witnesses.

7 was the one where they inquired as to the title of drainage easements in connection with the aforesaid construction.

page 341 } As I recall, that was boiled down to whether they required it of other property owners other than Number 5.

Mr. Ellis: Well now, there was some confusion in numbering, due to the fact that you issued an order that—

The Court: Well, you all drew it and endorsed it.

Mr. Ellis: But Number 5, in which the answer is "See attached Exhibit A", is the question that pertains to the list of property owners, which you ordered to be furnished, a list including deed book and page numbers, if known, of properties in the aforesaid Horsepen Branch and Upham Brook area as to which the defendant has acquired title and/or drainage easements in connection with the aforesaid construction. That was the gist of your order.

Then, we would also like the question and answer, which is the last interrogatory which you identified as "I" in your order, and which is answered as Number 7.

And that one is, "Did the State Highway Department ask

page 342 } any other landowners to provide drainage facilities or otherwise contribute to the construction of I-64 in Horsepen and Upham Brook", and they answered "no".

The Court: Are you talking about the order of May 4, 1966?

Oh, I see.

Mr. Ellis: Then you have to go back to our original request and read Number 9 and the answer of the interrogatory was used in Number 7 to respond to that, which generates the confusion.

The Court: Well, in effect, it looks to me like as far as the actual rules are concerned, I look at it two ways.

One way is that as far as anybody was concerned, so far as the record will show, you said there was no rebuttal; that you rested your case when I adjourned to go over motions and other things.

Another way I can look at it, you did not say "I rest", and so it would be to give you an opportunity to go ahead

and read these interrogatories in, but how do you all react to it?

Mr. Stotts: We would object, Your Honor, because at the time this motion came up we argued at that time

page 343 } we felt this material was irrelevant, immaterial and had nothing to do with this procedure, and on that basis alone we object, but we object to reopening the case now anyway.

The Court: They never closed it. In other words, as far as that part goes—

Mr. Stotts: This is semantics, I believe, as far as putting on testimony.

The Court: What I am talking about, it seems to me that you have got a situation here—I don't know if it was inadvertence or not—which should have been done and was not done. That is number 1.

Number 2, there is, as I see it, a duty on the Court to see to it that everything gets before the jury which the Court deems material and relevant to get to the truth of the matter, and not in effect say okay.

Of course, the Supreme Court of Appeals does this right often, says if a man objects and he does not except, he does not take advantage of it, but that is because of their necessity for sticking by the rules, and I don't think they have any discretion in it. They made the rule, they have to

page 344 } stick to it, but it seems to me that the trial court would have a discretion to exercise.

As far as those two interrogatories are concerned, I feel that simple justice dictates that they should be permitted to read the question and then give the answer.

Now, if it is error, it is harmless error. Everybody knows you have to exercise discretion all through the case.

Number 2, as far as getting easements of right-of-way for changing that creek channel, common sense would say you have to do that, too.

Mr. Miller: Your Honor, doesn't this come along similar to what we discussed yesterday about federal funds? What possible benefit does this serve to enable these jurors to arrive at a conclusion? It can only have a prejudice effect.

The Court: Well, he is entitled to make the point, I think, that nobody else has been called on to do anything or to give up any rights without compensation.

His whole point is that the Railroad is being asked to do something without compensation, and remem-

page 345 } ber the Section 56-366.1, where it deals with construction of an overpass of an existing road where the statute says they shall participate.

As I understand it, this is a different situation. Here is a brand-new road, and Title 56 does not apply to it.

Mr. Miller: Why would it help the jury? I think it would be prejudicial to us. He wants to show that he had been mistreated.

The Court: Doesn't it ever occur to you that you might have mistreated him? Those are the things that you all completely forget.

It seems to me that the jury would be entitled to know the factual situation, and not only so far as how the overpass and how the roads were built, but as to what the effect of it was. In other words, if you paid Joe Brown for an easement of channel, that means that you are not doing all the channel on your own property, you are going out on somebody else's property and bringing the channel through.

So far as they know right now, that channel that is newly constructed, under the loop that follows the highway bank, outside the right-of-way, these people might have
page 346 } given it to them on the one hand, or you might have paid them voluntarily for it on the other.

To that extent, I think that is relevant to the issue you have got here. I may be wrong on the thing, but it seems to me that simple justice would dictate that they would be entitled to put that in.

I don't consider this in any way to the highway signs or the fact that federal money is involved. This is a fact. It is pertinent to let them know what the situation is.

Mr. Miller: I feel that it would only serve the purpose of—

The Court: Well, I will let the highway signs and stuff in, if that is the way you are.

Mr. Miller: Well, they both have the same effect so far as we are concerned, and have no probative value.

The Court: I think it does. I think it sets the situation up for the jury, and that is in all fairness to them regardless of whether they failed to do what they should have done at the time they should have done it. We just let them go on and read these two questions and two answers.

page 347 } Mr. Ellis: May I answer to their comments?

The Court: You don't have to answer, I ruled on it. There is no sense in taking any more time on it.

As I say, that is a situation where you are dealing with a different point than who pays the money. The question was asked by them of Mr. Pond, do you know whether anybody else was called upon to participate in the improvements. He said no, he did not know.

Mr. Miller: And he did not, because he does not work in right-of-way.

The Court: That is true, a man in hydraulic engineering does not know what goes on in right-of-way. They give him a flat drawing and he does not give a dog-gone who owns it.

So, I let them read the interrogatories, but I don't see any point in reading all of these other things, and I don't think that the names as such are material. I think it is better, the answer to which they submitted in reply a list of how ever many landowners there are. You just count the list up.

page 348 } Mr. Ellis: It is in exhibit form. It is already in your record. I will take my copy and make it an exhibit.

The Court: Well, you can go on and do it.

Mr. Ellis: It is in response to the question they asked.

The Court: And on Number 7, they answered no?

Mr. Ellis: That is correct. We would like to read the two questions.

The Court: All right. Well, you can do that when we get back in there before the jury, prior to the time that I start reading Instructions.

Mr. Stotts: Note our objection and exception to the ruling of the Court.

Now, we would like to renew our motion to strike on the same basis that we made it at the end of the plaintiff's case.

I don't think we need to argue the law to you again.

The Court: Basically, I am disagreeing with you on your motion to strike, although reasonableness did appear in 207.

Mr. Stotts: Did you say 207?

page 349 } The Court: Yes. The Railroad built the trestle and it was a new one, replacing an old one, and all the debris came out and ponded back behind there. The landowner came in there and said you owe me money, but he brought it in tort instead of eminent domain, and they held as long as he properly constructed the trestle, he had a right to construct it; that there was not shown by the landowner any negligence in the construction, and that just more or less concreted me in my idea, if that is a good word.

The reason was, dealing with the manner of construction, the question whether something is reasonable, even though it was reasonably expected to be done.

My example of building a pyramid right there would, of course, completely change the course of the stream and hit the railroad in two places instead of one. Would that be reasonable or would it be compensable?

Mr. Stotts: I think the Virginia case though shows when they are talking about reasonable, they are talking about if you go out and just fill the land and don't provide for the water to go through that this would not be rea-

page 350 } sonable, but if you are going out in that same area to build a building, you would not be required to pipe the water through the basement of your building.

The Court: Suppose you go out in that area and decide to elevate your land 25 feet.

Mr. Stotts: Under Virginia law, Common Enemy Modified Rule, if this is within reasonable use of your land, you could do so, even though it ponds the water on the adjacent landowner or backs it up on him.

The Court: I bet you, if they did something like that, you would not get that interpretation.

Mr. Stotts: Some of the Virginia cases are just of that nature, where they have filled in land and backed up, some improved property is already there, and the courts held that they could do that in reasonable exercise. Of course, then you've got to consider surface water, and also this water whether it be surface or percolating water, whatever it may be, once it reaches the stream, because it is in a natural watercourse.

The Court: Your principal case here is the
page 351 } natural watercourse. You don't really have anything much to do except when you get into the realm of the damage.

In other words, as I see it, if by virtue of development by others the runoff had been accelerated, you would not be liable for that portion of acceleration or accelerated runoff that was not caused by you.

Suppose right now you have got a stream out there, channel. Well, right now somebody goes out there and hardtops 25 acres. I don't see how you could be liable.

Mr. Stotts: Well, our position is further that under the law you can make improvements in the natural watercourse. So, this is basically our position.

Mr. Ellis: Your Honor, our position is that the Highway Department cannot come in and build the best project in the world completely reasonable, certified, guaranteed, warranted, revolutionary, and damage the property of a private property owner or take property even without compensation, and our case is that they have damaged us and this
page 352 } has been unrefuted and unrebutted by any expert testimony, and we are just like every other citizen out there and every other citizen to the best of our knowledge has been compensated or at least the Highway Department has the matter in litigation if they have not resolved it. He has been paid for his damages.

The Court: Well, we have been through that and I have not argued it. That is your position.

Mr. Ellis: On the other hand, water that comes from other sources if, let's assume that in this case we have an interrogatory from the jury that we have been damaged to the extent of two culverts, in ten years from now we need a third one.

The Court: Well, you are just reiterating.

Mr. Ellis: But there is a difference between what a private property owner can do on his property for private purposes and what the State can do on property for public purposes, and this difference is in Section 58 and Section 6 and Section 11 of the Virginia Constitution, insofar as this case is concerned.

The Court: As I said to Mr. Stotts, if they went out there and elevated 20 feet, that it would happen that

page 353 } way. I think that even private property owners under reasonableness cannot do something that would not have been reasonably expected.

Mr. Ellis: That is correct. There are plenty of cases on that, but we say here the reasonableness on construction is not a factor, it is simply a question of damage or no damage.

The Court: Well, it is a factor so far as whether they reasonably followed sound engineering practice.

Mr. Ellis: We don't dispute that.

Mr. Stotts: Your Honor, could we handle that as we go through the Instructions? I think we are going to argue the same thing there again.

The Court: Well, I did not start it.

First thing, I overrule the motion to strike and you will note your exception for the record, counsel for the defendant.

As I see it, the first question we have to resolve is the question of interrogatories to be submitted to the jury. Now, if you read their motion for declaratory judgment, they want to know or they ask the Court to determine four

page 354 } things or three things, really—two things really. One, whether the plaintiff had been damaged and two, what part of the damage was caused by the actions of the defendant.

That is all they ask for the Court to determine, as I understand it. Is there anything else that you ask, I mean, as far as the costs are concerned or other relief?

I mean, that is just what normally would follow if you get a judgment in your favor.

Mr. Antrobius: Your Honor, we submitted three interrogatories, basically asking for the same thing but spelling it out.

The Court: I am talking about the pleadings now. I am not talking about the interrogatories.

In other words, you asked the Court to determine by jury or by some finding whether you have been damaged. Second,

what part of the damage was caused by the action of the defendant Highway Department, right?

Mr. Antrobius: Yes, sir.

The Court: Where then is the necessity for any additional interrogatory other than those two?

page 355 } Mr. Ellis: Well, from our standpoint, we thought the Court would want to ask interrogatories that—

The Court: Let's get this straight. The Court does not want to ask anything. The Court sits here as an umpire, and the Court has submitted to it suggestions by the parties. Then, the Court determines which, if any, should be given.

NOTE: At this point the interrogatories and the instructions to the jury are prepared, which the reporter records but does not incorporate herein in the interest of brevity, whereupon the exceptions are dictated by counsel.

Here Begin the Objections and Exceptions to the Instructions.

Mr. Ellis: The plaintiff objects and excepts to the refusal to receive the following Instructions:

Instruction No. A and *Instruction No. B.*

Our objection to the failure to use these Instructions is because we feel that the defendant did not come forward with expert witnesses and other information that could have been used to rebut our testimony, and we feel that

page 356 } there is presumption from that that their testimony would have agreed with our expert witnesses.

Instruction Number C was not used by the Court and we object and except to its refusal and likewise as to *Instruction Number D,* which was refused, because they state the different legal statutes of a private property owner, the Railroad, as distinguished from the State Highway Commissioner which is a public entity, and is in this case engaged in a public activity. We think the relationships and rights of the parties are different.

We except to the failure to use *Instructions Number E, F, G, H, I, J, K.*

We except to the refusal to use *Instructions E* through *K,* because they relate to the legal arguments and contentions of the parties, and we think express the law pertinent to a determination of this case, and the necessary background for the jury in reaching a conclusion.

The plaintiff accordingly notes an exception to the refusal of the Court to use *Instructions A* through *K.*

page 357 } Mr. Stotts: The defendant objects and excepts to the refusal by the Court to grant *Instructions Number V, W, X, Y, Z, on the basis that these Instructions* relate to the law applicable to the case in question and should have been granted in order to properly instruct the jury in arriving at their verdict.

Here End the Objections and Exceptions to the Instructions.

Mr. Stotts: The defendant further objects and excepts to the refusal of the Court to grant interrogatories submitted by the defendant and designated as Interrogatories Number 1, 4, 5, 6, 7 and 8, on the same basis, that these questions are factual determinations which the jury should have been requested to answer in order to guide the Court in applying the law.

NOTE: At this point the Court and counsel return to the courtroom and are before the jury. The jury is polled by the Clerk and all jurors acknowledged their presence.

page 358 } The Court: At this time, ladies and gentlemen, there will be read to you by counsel for the plaintiff what we call an interrogatory and the answer thereto, which was called for and required by the Court and by some mischance were not read to you along with the other evidence that you heard ending yesterday.

Mr. Ellis, do you want to read them?

Mr. Ellis: Yes, sir.

Two interrogatories were submitted to the defendant which we would like to read to you and give you the benefit of their answers. The first was as follows:

"Furnish a list including deed book and page numbers, if known, of properties in the aforesaid Horsepen Branch and Upham Brook watershed area west of the plaintiff's right-of-way, as to which the defendant has acquired title and/or drainage easements in connection with the aforesaid construction."

As a result of that request, the defendant filed with us and with the Court an Exhibit A, which is two and a half pages tabulating the property owners by name and book and page number. I would like to offer this as plaintiff's exhibit.

The Court: All right. *Plaintiff's Exhibit No.*
page 359 } 29.

Mr. Stotts: Over our objection.

Mr. Ellis: Another interrogatory was submitted to the defendant which reads as follows:

"Did the State Highway Department ask any other landowners to construct drainage facilities or otherwise contribute to the said construction by the State Highway Department in and near Upham Brook and Horsepen Branch."

The answer to that interrogatory was "no".

The Court: Ladies and gentlemen of the jury, you are to consider the interrogatories and answers thereto with the other evidence which you have already heard in this case.

At this time, in accordance with the usual custom or, in one sense not the usual custom, the Court will read to you the interrogatories which are to be propounded to you. These are the questions that you are to answer, about which you were warned when you began the case.

After I read the interrogatories, I will read you the instructions which will advise you as to the law which you will utilize in reaching your decisions on each of the interrogatories.

The first interrogatory. "Do you find from a
page 360 } preponderance of the evidence that the plaintiff has suffered any actual damage resulting in the necessity of installation of additional culverts by the plaintiff in this case?"

As indicated on the paper you will get, you are to answer either yes or no.

2. "If your answer to 1 is in the affirmative, how many 120-inch diameter culverts in addition to the original arch culvert are needed as a result of such damage?"

You answer there either one or two.

3. "If your answer to 1 is in the affirmative, do you find from a preponderance of the evidence that such damage has been caused in whole or in part by the construction of the Interstate 64 project by the defendant, west of the railroad embankment, in the County of Henrico?"

You are to answer that yes or no.

4. "If your answers to 1 and 3 are in the affirmative, what proportion of such damage, if any, has been caused by construction of the Interstate 64 project by the defendant, west of the railroad embankment, in the County of Henrico?"

You all answer by giving a percentage.

5. "If your answer to 2 is one, what necessi-
page 361 } tated the installation of the additional 120-inch diameter culvert?"

You are to answer, loss of ponding area, or increased

volume of water, or a combination of both, and you will put in a percentage increased volume of water.

Now, those are the interrogatories which you are to answer.

NOTE: At this point the Instructions are read by the Court to the jury, following which the case is argued by counsel, whereupon the jury retires to the jury room at 2:45 P. M. and returns to the courtroom at 3:55 P. M. to ask a question, *viz:*

The Court: Ladies and gentlemen, I understand from the Sheriff you have a question you want to ask.

Mr. Mackey: (Foreman of the jury) Yes, sir. Your Honor, on Interrogatory Number 4, the question is what percentage of damage has been caused by construction of Interstate 64, if the answers to 1 and 3 are in the affirmative.

The jury is unable at this point to establish a percentage. We don't feel that the testimony has assisted in establishing a percentage of damage, and so our question is
page 362 } whether or not the jury can bring in a verdict without a specific percentage of damage.

The Court: Well, of course, we would not have asked you the question if we had not thought that it would be possible for you all to reach some agreement on the basis of what you have before you. I would suggest at this point that you go back and see if you cannot resolve that question and then, if you are in disagreement on it, you still report back to the Court.

Mr. Mackey: All right.

The Court: I think that is the best solution at the moment.

Mr. Mackey: All right.

NOTE: The jury goes back to the jury room at 3:58 P. M.

JURY OUT

The Court: What are you suggesting if they come back and say they cannot establish any percentage? Does that constitute in you gentlemen's opinion a hung jury?

Mr. Stotts: Yes, sir, it is.

page 363 } Mr. Ellis: I am not sure it is, Your Honor, because the question that the Supreme Court directed to us is the damages, if any, and if they find that there are some, the mere fact that they don't find a precise amount, and I can visualize their problem, then we still have a claim and the declaratory judgment proceeding can proceed to the end of your concluding whether we have been damaged so that we ultimately should get a *mandamus* and a condem-

nation proceeding to precisely determine the damages as we previously discussed.

Mr. Antrobius: The basic issue, Your Honor, in the Supreme Court's opinion, was the amount of damage including the necessity for additional culverts. So, if they cannot reach something by the way of additional culverts, I don't even think we have to have percentage.

The Court: My reaction to it is, before they get to that, that was Number 4, was it ont?

Mr. Antrobius: Yes, sir.

The Court: They would have to determine 1, whether there was any actual damage.

2. Whether this damage necessitated one or two
page 364 } culverts.

3. Whether any portion of this damage was caused by the operation of the project, and they came and said they could not tell what percentage. It would seem to me that that would knock out everything else. That your answers to your other questions would, as you all say, give you a determination of fact that in some measure, the construction of the project had caused you damage.

By the same token, when you get that determination of fact, is that sufficient for the Court to declare that as a matter of right, assuming the other legal points are not even over, the Railroad has a right to compensation. I say yes, it does; that any amount of damage caused by the Highway Department, assuming you get over these other points, is sufficient for the purpose of an eminent domain proceeding.

Now, doesn't that make sense, Mr. Stotts and Mr. Miller?

Mr. Stotts: Yes, sir.

The Court: I cannot throw it out on the basis of that. That is the reason I sent them back the way I did, so we can talk.

page 365 } I doubt that they will resolve it by the same token that I feel that there was evidence in there upon which they could predicate a finding.

What I am talking about is the question of peaks and difference of time of the peaks. The only element that I see is missing is the volume out of Horsepen Branch. I don't recall that we had any specific testimony by anybody on the volume out of Horsepen.

Mr. Antrobius: I think Mr. Brockenbrough, Your Honor, testified that at the time of peak discharge in Upham Brook, there was no more water coming out of Horsepen Branch than there would have been prior to the improvements at Horsepen Branch.

The Court: Is that what he testified?

Mr. Antrobius: I believe that is what he said.

Mr. Stotts: He said the peak had passed.

The Court: What I got out of it, the Horsepen Branch peak appears and disappears before the Upham Brook peak gets there. By the time the Upham Brook peak gets there, it is that peak which causes the ponding level to rise, which ponding level necessarily must have been caused both

page 366 } by Upham and Horsepen, and you've got a gradual curve rising up to the peak in both cases.

I doubt if anybody in the world could ever resolve it. It is a hydraulic problem without your rainfall charts so to speak, to get where, when.

Maybe the jury is exactly right that even with that we cannot tell what percentage.

Mr. Ellis: They obviously feel that something less than a hundred, or somebody does, or else taking it in the other extreme, they must feel that is more than zero and our concept is if the Highway Department has damaged us—

The Court: Any damage?

Mr. Ellis: Yes, any damage at all.

The Court: That is what we are trying to find out, and if we can find out how much—

Mr. Ellis: Yes, that would help.

The Court: I think the best would be if they come out and say we still cannot agree, I will say go on to the next one, the fifth.

Mr. Stotts: Where did you put that in, Your Honor?

The Court: I put a combination of both, and

page 367 } then percentage of volume of water, if any.

NOTE: The jury returns to the courtroom at 4:29 P. M., viz:

The Court: Now, ladies and gentlemen, have you agreed upon your answers to the various interrogatories submitted?

Mr. Mackey: Yes, sir.

The Court: May I have them, please?

Mr. Mackey: Yes, sir.

NOTE: The answers are now handed to the Court.

The Court: I will read the answers to the interrogatories.

Interrogatory Number 1. "Do you find from a preponderance of the evidence that the plaintiff has suffered any actual damage resulting in the necessity of the installation of additional culverts by the plaintiff in this case?" Answer, "Yes".

"If the answer to 1 is in the affirmative, how many 120-inch diameter culverts in addition to the original arch culvert are needed as a result of such damage?" Answer, "Two".

page 368 } "If the answer to Number 1 is in the affirmative, do you find from a preponderance of the evidence that such damage has been caused in whole or in part by the construction of the Interstate 64 project by the defendant, west of the railroad embankment, in the County of Henrico?" Answer, "Yes".

4. "If your answers to 1 and 3 are in the affirmative, what proportion of such damage, if any, has been caused by construction of the Interstate 64 project by the defendant, west of the railroad embankment, in the County of Henrico?" Answer, "95 per cent".

The first page is signed G. W. Mackey, Foreman.

Second page, Inquiry 5. Since the answer to Inquiry Number 2 was two culverts, it was not necessary for the jury to answer Interrogatory Number 5 and all they have done is drawn a line right through behind it.

I take it that was your intention?

Mr. Mackey: Yes, sir.

The Court: And that page is likewise signed G. W. Mackey, Foreman.

page 369 } Now, ladies and gentlemen, on behalf of the Commonwealth, the County and the Court want to thank you for your services.

NOTE: At this point the jury is discharged, whereupon the hearing is resumed out of the presence of the jury, *viz:*

JURY DISCHARGED

The Court: Now, I take it from the answers to the interrogatories, 1, that the jury has resolved the basic question involved as to the establishment of damage by the highway of the railroad.

2. That in their opinion the damage necessitated the installation of two culverts.

3. That this damage was caused in part by the construction of Interstate 64.

4. That 95 per cent of it was caused by the Interstate 64.

Is that the way you all interpret it?

Mr. Antrobius: Yes, sir.

The Court: How do we resolve the balance of the case?

I take it what I think, and you all then can tell me, it would seem to me with these answers here as to the questions of fact

involved in the case, that it now puts us in a
page 370 } position of being able to take these facts as being
the full facts under inquiry, and being in the
position to argue in part. Is that your understanding?

It is the position of the plaintiff in the law that they are to be treated as any private property owner who has been subjected to any damage by the public project of any political subdivision or by the State or Commonwealth, which has the power of eminent domain, and that under Section 58 of the Constitution as a matter of law they are entitled to be reimbursed for the necessary expense involved in the situation.

Now, it would seem to me that so far as the plaintiff's case is concerned, you've got all the answers that you need.

I don't know, I mean from their standpoint, you have got a finding of one, that 95 per cent of the damage which entailed the necessity for two culverts had been caused by the construction of Interstate Highway 64, and that therefore, it would be to take one approach, 95 per cent of the cost of installation of the two culverts should be paid according to
this jury by the Highway Department to the
page 371 } Railroad Corporation.

Looking at it from the other standpoint, which is the Highway Department's position as I understand it, their position is, 1, that they had a right to do what they did and that their construction was reasonable.

2. That at the same time the Railroad should not be permitted to rely upon 1, the ponding which had taken place, which was part of this case, and 2, that the Railroad had a continuing duty in any event to reasonably anticipate, or to anticipate reasonable development and to continue to keep its culvert in such shape as to be in a position to handle whatever water, surface water, should come down through that watershed through these two streams and carry it off.

Mr. Stotts: That is right.

The Court: Without causing any damage to the upstream landowner, although there is really no showing of damage to the upstream landowners in this case. In other words, I think you restrict your case to the fact that they had a continuing duty to keep their—

page 372 } Mr. Stotts: Water flowing.

The Court: —culverts of such size as to handle any and all water that came through there in the normal course of events, including all of the development and improvements that could have been reasonably expected upstream. Is that correct?

Mr. Stotts: That is right.

The Court: It falls right in line with the 129 Virginia case.

That is the one that dealt with my view of what reasonable means. That is whether it was reasonable to have been expected. Am I correct in my assumptions?

Mr. Ellis: You are expressing your view, sir? I cannot quarrel with your expression of your view.

The Court: Well, I put my view the way I see it. What I am trying to get is, what is the next step so far as you all's position? Do you want an opportunity to sit down and bring out what you think is pertinent to your particular case, or do you feel that you have already done it?

Now, they are my points. Do you want an opportunity to argue the law side of it with these facts having been found, which we did not know in the beginning?

page 373 } Mr. Ellis: Your Honor, both sides briefed this in some length in connection with the demurrer and we both briefed it somewhat in connection with our instructions with much discussion this morning. Would it be appropriate for you to look at those and then hear us in argument some day next week?

The Court: That is what I am getting at. Do you want an opportunity to argue further or do you want to let it stand the way it is?

Mr. Stotts: Your Honor, we would like to submit it on the briefs here with one condition. If either side has any additional cases that they would like to be considered along with the ones that have been filed, that maybe a week or, without having oral argument. I think we have gone through oral argument pretty thoroughly on both sides.

The Court: Both of you put in briefs dealing with the question of the demurrer.

Mr. Stotts: Yes, sir.

Mr. Ellis: Yes, sir.

The Court: That in general took care of the Highway Department's position to a point, right?

page 374 } You said they had no right at action at law.

Mr. Stotts: That is correct.

The Court: By the same token, it may seem to me that we may have had a development or two that may have developed from these things here.

Mr. Stotts: That was my point in talking about the supplemental letter or brief. In other words, we are not particularly asking for another oral argument, though we are not opposed to another oral argument. We are saying we are willing to submit another brief of what may have developed at this point.

Mr. Ellis: That is satisfactory with us. I believe we put in about all the law we knew between the briefs and what we

said this morning, and what we had tendered to our instructions.

Mr. Stotts: The only thing we were bringing out, if we on reflection feel that we should cover some other point that we may not have covered fully in there, that we may take care of it.

The Court: That will give you both an opportunity to go through with what we have been through with the findings on the demurrer and with the findings here, and, if
page 375 } you want oral argument, I have no objection to it. It is all right with me to just take it on the briefs.

Mr. Ellis: Would it be of any assistance to the Court if we followed that procedure and then you had the time that you need to, from your memory with what we said before, and then we'd just come in and answer whatever questions you ask.

The Court: That will be fine.

Mr. Ellis: If either side feels that you have misconstrued after you have reviewed what we already filed, we could have a shot at it.

The Court: How much time do you think you need for these supplemental statements?

Mr. Antrobius: How about two weeks?

Mr. Stotts: Your Honor, we would like a little more time because of pending Supreme Court cases.

The Court: Do you mean you all have to argue before the Supreme Court?

Mr. Stotts: Every once in a while.

Mr. Antrobius: We are agreeable.

Mr. Stotts: Do you object to thirty days?

Mr. Ellis: Name the day.

page 376 } Mr. Stotts: The 15th of December.

The Court: Let me see what day of the week this is. Yes, that is a Thursday. Suppose we say that by the 15th of December you all will submit to the Court whatever you want in the way of supplemental briefs. Then, when they are received, I will be glad to look over and examine them and then call or write to you all and say I think this point might be discussed a little further or that point, and you all come in on a date that is convenient to all three groups and you can talk about that.

What I want you to do in effect is submit a schedule for declaratory judgment order each way. You see? And then, whichever way conforms with the law the Court finds, it will be entered.

Is that understood? We are all set now? By December 15th, the supplemental briefs will be submitted at which time the

Court will find a date to permit argument, if the same is felt necessary by the parties or deemed necessary by the Court.

HEARING CONCLUDED.

page 377 } CERTIFICATE OF COURT REPORTER

I, Ingeborg H. Salstrom, hereby certify that I, having been duly sworn, was the court reporter in the Circuit Court of Henrico County, Virginia, on November 14, 15 and 16, 1966, at the time of the hearing herein.

I further certify that the foregoing transcript is a true and accurate record of the testimony and other incidents of the hearing herein.

Given under my hand this 16th day of December, 1968.

Ingeborg H. Salstrom - Court Reporter

page 378 } CERTIFICATE OF COUNSEL

Final judgment in the foregoing matter having been rendered on the 20th day of Jan., 1969, counsel for the plaintiff and counsel for the defendant hereby affix their signatures to the foregoing transcript of testimony and other incidents of trial to the end that the same may become part of the record on appeal.

Given under our hands this 26th day of Feb., 1969.

By: David S. Antrobius
Counsel for the Plaintiff

Note: Affidavit of errors filed on 2-26-69.

By: Urchie B. Ellis
Counsel for the Plaintiff

By: Paul D. Stotts
Counsel for the Defendant

By: Kelly E. Miller
Counsel for the Defendant

page 379 } CERTIFICATE OF TRIAL JUDGE

Date tendered March 13, 1969
Date signed March 19, 1969

John Wingo Knowles, Judge

CERITFICATE OF CLERK

Date received March 19, 1969

Margaret B. Baker, Deputy Clerk

* * * * *

A Copy—Teste:

Howard G. Turner, Clerk.

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