

Not Microfilmed

RO-4 1

Mar. 1918.



measurements taken on this line

$\Delta = 61^{\circ}00'$
 $R = 955.37$
 $T = 568.80$
 $L = 1016.61$

Note: The Contractor is to Survey old Road; remove old fence & rebuild same along line of New Location.

HENRY HOFHECKER

Plan
 Showing change in Location
 of
 Millcreek Road
 Through land of Henry Hofecker
 Upper Merion Twship
 Cambria Co Pa.

C. E. Brown
 Engineer
 Johnstown Pa.
 Scale 1" = 100'
 March 29th 1917

In re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

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In the Court of Quarter Sessions
of Cambria County, Pa.
No. March Sessions, 1918.

TO THE HONORABLE THE JUDGES OF SAID COURT:

The petition of the undersigned respectfully represents:

1. That the said County of Cambria has a population of less than eight hundred thousand inhabitants.
2. That the Township of Upper Yoder is a second class township of the said County of Cambria.
3. That the undersigned Webster Mosholder, Conrad L. Raab, and D. H. Weimer, are the supervisors of the said Township of Upper Yoder; and the other signers joining in this petition are owners of property in the said township.
4. That the township road known as the Millcreek Road, beginning at the easterly boundary of the said township with the Borough of Westmont, in the said County of Cambria, at the westerly terminus of the Southmont Line of the Johnstown Traction Company, and extending in a westerly direction, crossing the Ligonier Pike, to a point on the boundary line between the said County of Cambria and the County of Somerset in said State of Pennsylvania, all in the said township, is a main traveled or trunk road, and approximately five and one-half miles in length.
5. That a section of said main traveled or trunk township road, which section extends from the said boundary between Upper Yoder Township and Westmont Borough westwardly to the said Ligonier Pike, is approximately five and three-tenth miles in length, is in a dangerous condition and in need of reconstruction; and the revenue of said township is insufficient to pay the cost of reconstructing said section in a substantial manner.

WHEREFORE your petitioners respectfully pray the Court to appoint for county aid and three viewers from the County Board of Viewers, none of whom shall be a resident of the said township of Upper Yoder, whose duty it shall be to meet and view said road and make a report to the Court, as required by law.

Walter Moshelder
David L. Reab.

D. H. Weimer
Supervisors of Upper Yoder Township,
Cambria County, Penna.

Leah E. Thomas.

E. M. Mills

S. E. Peterson

Geo. S. Peterson

J. W. Ragle

H. W. Holtz

E. J. Cooper

Wm. M. York

John J. Harve

Charles W. Greer
Property owners of Upper Yoder Twp.,
Cambria County, Penna.

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF CAMBRIA

:
:
:

SS.

$\frac{1}{4}$ Personally appeared before me, a Notary Public in and for said State and County, WEBSTER MOSHOLDER, who being duly sworn according to law, deposes and says that he is one of the within named supervisors, that he was present when the persons whose names are attached to said petition affixed their signatures and that the statements contained in said petition are true and correct.

Webster Mosholder

Sworn and subscribed before me this
14th day of February, 1918.

Jennie A. Boyce

NOTARY PUBLIC
My Commission Expires April 4, 1921.

IN re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

§ In the Court of Quarter Sessions of
: Cambria County, Penna.
§ No. , March Sessions, 1918.

O R D E R

And now, *March 4* 1918, the within petition having been read

and considered and on due consideration the Court do hereby appoint
A M Shoemaker *Phil Campbell* *Adam Shyman*
and *Alan Shuman*
to meet and view the within named section of said Township Road and report to the
Court.

It is further ordered and directed that said viewers shall give notice of the time and place of meeting by publication at least once a week for three (3) consecutive weeks in at least one newspaper of general circulation published in the county and shall also give notice thereof by hand bills posted in at least ten conspicuous places along the line or in the vicinity of the road proposed to be constructed. The said viewers shall view the road and shall hear all parties interested and their witnesses and shall file within ten (10) days after such hearing their report with this Court, which report shall set forth the fact of the time and place of meeting, whether or not the road for which county aid is asked is a main traveled or trunk road between the points designated, the condition of the said road, the number of miles of unimproved roads and the number of miles of improved roads in said township, the length of the road sought to be reconstructed, the assessed value of the real estate in the said township, the millage rate of tax levied for road purposes, the total amount of road tax collected, the number of taxables in the said township, the approximate cost of reconstructing the said road, the total indebtedness of the said township for road purposes, together with their recommendation as to the necessity of reconstructing the said road with county aid and together with such other recommendations as they shall deem necessary for the information of the Court; and do all other things as required by law.

Walter Cross

Mar. 4 - 1918 Service accepted for the bond
Petrolamin case

In the Court of Quarter Sessions
of Cambria County, Penna.
No. / March Sessions 1918

In re Reconstruction of Section
of Millcreek Road in Upper
Yoder Township, County of
Cambria, Pennsylvania.

PETITION AND ORDER

Filed 4 March 1918

No admission

Exhibit No 21

LAW OFFICES OF
BARNHART & EVANS
JOHNSTOWN, PENNA.

In re. Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

§
:
§

In the Court of Quarter Ses-
sions of Cambria County, Pa.
No. , March Sessions, 1918.

B O N D

KNOW ALL MEN BY THESE PRESENTS that we, the supervisors of the said Township of Upper Yoder, are held and firmly bound unto the said County of Cambria in the sum of One Hundred (100) Dollars, lawful money of the United States to be paid to the said County of Cambria, to which payment well and truly to be made, we bind the said township, its successors and assigns, firmly by these presents. Sealed and dated the sixteenth day of February, One Thousand Nine Hundred and Eighteen.

WHEREAS the said supervisors together with certain property owners of the said Township of Upper Yoder have presented a petition to the above named Court, praying for county aid in the reconstruction of a section of the Millcreek Road in said township; and

WHEREAS the Court in pursuance of said petition has appointed viewers as provided by law; and

WHEREAS the Act of Assembly authorizing the said procedure, to wit: the Act of May 29, 1917, P. L. 318, provides among other things as follows:

"All costs, including Court costs and costs of advertising and notices, shall be paid out of the treasury of the proper county, in such cases where in the viewers' reports are approved by the Courts; otherwise to be paid by the petitioners."

NOW THEREFORE the condition of this obligation is such that if the above named supervisors, their successors or assigns, do well and truly pay or cause to be paid unto the said County of Cambria a sufficient sum to pay for the purpose of viewing the above mentioned road, if it shall so be ordered by the Court, when the same is concluded, then this obligation to be void, otherwise to remain in full force and virtue.

Webster Markholder (SEAL)

Leonard J. Reals (SEAL)

D. H. Weimer (SEAL)

Supervisors of Upper Yoder Township,
Cambria County, Penna.

In the Court of Quarter Sessions
of Cambria County, Penna.
No. / , March Sessions, 1918.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder
Township, County of Cambria, Pa.

BOND

March *4th*, 1918

The within Bond approved.

By the Court

Filed 4 March 1918

LAW OFFICES OF
BARNHART & EVANS
JOHNSTOWN, PENNA.

R E P O R T O F V I E W E R S .

To the Honorable, the Judges of the Court of Quarter Sessions of
Cambria County, Pennsylvania.

We, the undersigned members of the Board of Viewews of Cambria County, appointed by your honorable Court; upon the attached order; and therein directed: after having given notice as therein specified; to meet and view the road referred to in said order and to report to the Court as required by the Act of the General Assembly; respectfully report:-

That having given due notice of the view and of the time and place of meeting of the viewers, as directed: all of us met at 10:30 o'clock a. m. April 16th. 1918, at the Easterly termini of the piece of road to be viewed; near the end of the Southmont Trolley line; and having gone over and carefully viewed the premises we adjourned to meet at a future day then fixed, when and where all persons interested might appear and be heard; and having met at the Judges Chambers, Main Street, Johnstown, Pa. in accodr with the notice given at the time of the adjournment and having headr the testimony offered, we find.

That the piece of road for which county aid is asked is a portion of a main traveled or through road between Johnstown and Ligonier and also a portion of the connecting road between the William Penn Highway and the Lincoln Highway.

That the piece of road in question is not in a good state of repair and is in need of improvement or reconstruction and the revenue of the township of Upper Yoder alone is insufficient to pay the cost of reconstrucing of the said piece of road in a substantial manner & *therefore we recommend that the County aid in the improvement.*
There are approximately twenty miles of unimproved road and two miles of improved road in Upper Yoder township.

The assessed value of real estate in said township is \$3,069,770. and the millage rate for road purposes is six mills, and the total amount of taxes for road purposes collected in 1917 was \$12,300.00.

The number of taxables in said township of Upper Yoder is seven hundred eighty five.

The present total indebtedness of the township is ten thousand dollars.

The piece of road desired to be improved is approximately five and three tenth miles long and the petitioners suggest that the township will be able to bear one half the cost of reconstructing the same in a substantial manner: It is their desire to construct a permanent road with a twenty foot drive way and a one foot curb on either side and a dirt road approximately twelve feet wide on one side of the permanent road.

The approximate cost of reconstructing the piece of road in question was estimated at forty two thousand dollars a mile if the permanent road is constructed of concrete and from forty eight to fifty thousand dollars a mile if the permanent road is constructed of bricks laid in concrete.

As up to the time of the hearing the cuts and fills necessary to improve the grade in a proper manner before laying any sort of a permanent road had not been worked out by the engineer for the petitioners, it was very difficult to get any fair estimate of the cost of the contemplated improvement but in the opinion of the viewers if the work were done by the supervisors of the township of Upper Yoder working under the supervision of a good manager furnished by the county who thoroughly understood managing the grading and construction of the kind of permanent roads decided upon it could be done at a considerably less cost than the estimates above suggested.

Witness our hands this 4th, day of May, A. D. 1918.

Adam Shuman
Philip E. Gansfield
A. M. Shoemaker
Viewers.

Notice of View!

Notice is hereby given that the viewers appointed by the Court of _____ Quarter Sessions _____ of Cambria County, Pa., to view and determine as to the necessity and propriety of reconstructing a portion of the Mill Creek road in Upper Yoder Twp. said county and state, with county aid. Said piece of road to begin at the Easterly boundry of said twp. with Westmont Boro.; at the Westerly termini of the Southmont Trolley line; and extending Westward along said Mill Creek road to its junction with the Ligonier Pike - a distance of approximately five and three tenth miles.

_____ will meet _____ at the place of beginning, above mentioned, _____ in the Borough _____ of Westmont _____ aforesaid, on the 16th. day of _____ April _____ 1918, at 10:30 o'clock a. m. M., for the purpose of performing the duties of their appointment.

_____ A. M. Shoemaker

_____ Philip E. Caufield

_____ Adam Shuman,

Viewers.

Ebg., Pa. 3 / 27 / 1918.

Now, 1918, service of the within notice is hereby accepted
by the undersigned Supervisors of the township of Upper Yoder, Cambria
county, Pennsylvania.

Webster Marshholder

Edward S. Raab

J. L. Wemyer

Supervisors.

Notice of View!

Notice is hereby given that the viewers appointed by the Court of Quarter Sessions of Cambria County, Pa., to view and determine as to the necessity and propriety of reconstructing a portion of the Mill Creek road, in Upper Yoder Twp. said county and state, with county aid. Said piece of road to begin at the Easterly boundry of said twp. with Westmont Boro.; at the Westerly termini of the Southmont Trolley line; and extending Westward along said Mill Creek road to its juncture with the Ligonier Pike - a distance of approximately five and three tenth miles.

will meet at the place of beginning, above mentioned, in the Borough of Westmont of --- --- --- aforesaid, on the 16th. day of April, 1918, at 10:30 o'clock a. m. M., for the purpose of performing the duties of their appointment.

A. M. Shoemaker
Philip E. Caufield,
Adam Shuman,
Viewers.

Now, March 28th. 1918, service of the within notice is hereby accepted for the Commissioners of Cambria county, Pennsylvania.

James M. Linn
Asst. Clerk

Costs of View.

A. M. Shoemaker

Lifting Order —	\$ 20
6 1/2 Days —	3250
142 miles (three trips) —	710
	<hr/>
	4050

Adam Shuman

2 1/2 Days —	\$ 1250
94 miles —	470
	<hr/>
	1720

Philip E. Canfield

2 Days —	\$ 1000
14 miles —	70
	<hr/>
	1070

Commonwealth of Pennsylvania, }
County of Cambria. } SS.

At a Court of Quarter Sessions of the Peace of the County of Cambria held at Ebensburg, in the said County, on the Fourth day of March A. D. 1918, be-

fore the Honorable Judge of the said Court: Upon the petition of divers inhabitants of the Township of Upper Yoder, in the said County, setting forth that they labor under inconvenience for want of a Reconstruction of Section of road or highway; ~~to read from~~

That the County of Cambria has a population of less than eight hundred thousand inhabitants

That the township of Upper Yoder is a second class township of the said County of Cambria

That the undersigned Webster Mosholder, Conrad L. Raab, and D. H. Weimer are the supervisors of the said township of Upper Yoder; and that other signers joining in this petition are owners of property in the said township.

That the township road known as the Millcreek road, beginning at the easterly boundary of the said township with the Borough of Westmont in the said County of Cambria, at the westerly terminus of the Southmont Line of the Johnstown Traction Company, and extending in a westerly direction, crossing the Ligonier Pike, to a point on the boundary line between the said County of Cambria and the County of Somerset in said State of Pennsylvania, all in the said Township, is a main traveled or trunk road, and approximately five and one-half miles in length.

That a section of said main traveled or trunk township road which section extends from the said boundary between Upper Yoder Township and Westmont Borough westwardly to the said Ligonier Pike, is approximately five and three-tenths miles in length, is in a dangerous condition and in need of reconstruction; and the revenue of said township is insufficient to pay the cost of reconstructing said section in a substantial manner.

and therefore praying the Court to appoint proper persons to view and lay out the same according to law. The Court, upon due consideration had of the premises, do order and appoint

A. M. Shoemaker

surveyor, and

Philip Cauffield and Adam Shuman

viewers, to view the ground proposed for said road, and if they view the same, and shall agree that there is occasion for such road, they shall proceed to lay out the same, having respect to the shortest distance and the best ground for a road, and in such manner as shall do the least injury to private property, and also be as far as practicable, agreeable to the desires of the petitioners, and that they make a report of their proceedings to the next Court of Quarter Sessions to be held for said County, stating particularly whether they judge the same necessary for a public or private road, together with a plot or draft thereof, and the courses and distances, and references to the improvements through which it may pass.

By the Court.

Attest:

_____, Clerk.

MAY 8 1918 CERTIFIED

NO. 11, March SESSION, 1918

Order to view
Reconstruction of Section of
Millcreek Road in Upper Yoder
Township, County of Cambria,
State of Pennsylvania.

*and
Report.*

MAY 8 1918 CERTIFIED

Viewers:
A. M. Shoemaker, C. E.
Philip Cauffield
Adam Shuman,

Clerk 90 cts.

*Filed May 19 1918, in Court
Frank L. Cobb, Clerk*

NOTE. "It shall be the duty of all persons appointed in the several counties of this Commonwealth to view and review any public or private road or bridge, if they shall decide in favor of locating said road or bridge, to endeavor to procure from the person or persons over whose land such location may be made releases from all claims for damages that might arise from the opening of such road or the building of such bridge; and in every case where said viewers shall fail to procure such releases, and it shall appear to them that any damages will be sustained, it shall be their duty to assess the damages and make report thereof signed by a majority of their number, and return the same, together with all releases obtained, to the Court of Quarter Sessions, and the damages so assessed shall be conclusive, or may be subject to appeal, review or modification, as may be provided by existing laws in the different counties of this Commonwealth."

"The persons appointed as aforesaid shall view such ground, and if they shall agree that there is occasion for a road, they shall proceed to lay out the same, having respect to the shortest distance, and the best ground for a road, and in such manner as shall do the least injury to private property; and also be, as far as practicable, agreeable to the desire of the petitioners."

"The viewers, as aforesaid, shall make report at the next term of said Court, and in the said report shall state particularly: First, who of them were present at the view, second, whether they were severally sworn or affirmed; third, whether the road desired be necessary for a public or private road; they shall also annex and return to the Court a plot or draft thereof, stating the courses and distances, and noting briefly the improvements through which it may pass; and, whenever practicable, the viewers shall lay out the said roads at an elevation not exceeding five degrees (except at the crossing of ravines and streams), where, by moderate filling and bridging, the declination of the road may be preserved within that limit."

to meet and view the within named section of said Township road and report to the Court.

It is further ordered and directed that said viewers shall give notice of the time and place of meeting by publication at least once a week for three (3) consecutive weeks in at least one newspaper of general circulation published in the County and shall also give notice thereof by hand bills posted in at least ten conspicuous places along the line or in the vicinity of the road proposed to be constructed. The said viewers shall view the road and shall hear all parties interested and their witnesses and shall file within ten (10) days after such hearing their report with this Court, which report shall set forth the fact of the time and place of meeting, whether or not the road for which county aid is asked is a main traveled or trunk road between the points designated, the condition of the said road, the number of miles of unimproved road and the number of miles of improved road in said Township, the length of the road sought to be reconstructed, the assessed value of the real estate in the said township, the millage rate of tax levied for road purposes, the total amount of road tax collected, the number of taxables in the said township, the approximate cost of reconstructing the said road, the total indebtedness of the said township for road purposes together with their recommendation as to the necessity of reconstructing the said road with County aid and together with such other recommendations as they shall deem necessary for the information of the Court; and do all things as required by law.

By the Court.

Attest: *Frank C. Robb.*
Clerk

In re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

§
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§

In the Court of Quarter Sessions
of Cambria County, Penna.
No. March Term, 1918.

DECREE

Now, June 10, 1918, this cause coming on to be heard, after hearing and upon due examination and consideration of the facts set forth in the Report of Viewers and it appearing that ten days notice of hearing has been given the Commissioners of said County of Cambria and to the public by due publication as heretofore directed and the Commissioners being present in person and the Court being of opinion that the section of the Township Road known as the Millcreek Road in said Upper Yoder Township, to wit: The section which extends from the boundary between the said Upper Yoder Township and Westmont Borough in the said County of Cambria, westwardly to the Ligonier Pike in said township, is in a dangerous condition and in need of reconstruction and that the revenue of the said Township of Upper Yoder is insufficient to pay the cost of said reconstruction in a substantial manner; [it is hereby ordered and directed that the Commissioners of said Cambria County shall give assistance to the said Township of Upper Yoder in the said reconstruction in a sum not exceeding \$112,223.44, a sum not exceeding (20,000) Twenty Thousand Dollars to be paid by the county during the year 1918, a sum not exceeding \$46,111.72 to be paid during the year 1919, and a sum not exceeding \$46,111.72 to be paid during the year 1920;] the said Township of Upper Yoder agreeing to pay like sums during the said respective years; such reconstruction to proceed at the instance of the said Township Supervisors under the supervision of the said County Commissioners or an inspector appointed by them; and all the work and things necessary to be done in the said reconstruction to be done in accordance with plans and specifications heretofore submitted to the State Highway Department of the Commonwealth of Pennsylvania and approved by said department, which plans and specifications are hereto annexed, made part hereof and marked respectively Exhibits "A" and "B".

Francis J. O'Connell
Judge

No. / March Term, 1918.
In the Court of Quarter Sessions
of Cambria County, Penna

In re Reconstruction of Section of
Millcreek Road in Upper Yoder
Township, County of Cambria, Penna.

D E C R E E

Filed 24 July 1918

LAW OFFICES OF
BARNHART & EVANS
JOHNSTOWN, PENNA.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

§ In the Court of Quarter Ses-
: sions of Cambria Co., Penna.
§ No. March Term, 1918.

TO THE HONORABLE THE JUDGES OF SAID COURT:

The petition of the undersigned supervisors of the above named
Township respectfully represents:

That in pursuance to a petition presented to this Honorable Court
a decree was made on the tenth day of June, 1918, based on the engineer's
estimate of cost, amounting in the total to \$224,446.88. That by inadver-
tence the said estimate containing an item of 2505 thousand brick unloaded,
hauled and laid at sixteen (16) dollars, or a total of \$40,080.00, omitted
the cost of said brick. That the cost per thousand brick is now estimated
at Thirty-two (32) Dollars, so that the said item of \$40,080.00 should
read instead thereof, \$120,240.00.

WHEREFORE your petitioners respectfully pray that notice be given
to the Commissioners of said Cambria County of a hearing on this petition
and that a decree may be made accordingly, correcting the error above
mentioned.

Robert Marshall
Samuel L. Raab
D. H. Weiner
Supervisors of Upper Yoder
Twp., Cambria Co., Penna.

COMMONWEALTH OF PENNSYLVANIA :
:
COUNTY OF CAMBRIA :

Personally appeared before me, a Notary Public in and for said State and County, WEBSTER MOSHOLDER, who being duly sworn according to law, deposes and says that he is one of the supervisors of the Township of Upper Yoder, and that the statements and facts set forth in the foregoing petition are true and correct.

Webster Mosholder

Sworn and subscribed before me this 7th day of Sept., 1918.

Jennie A. Boyer

NOTARY PUBLIC
My Commission Expires April 4, 1921.

Now, September, 11, 1918, the within Petition having been read and considered it is ordered and directed that part of the former Decree, which read as follows, to wit: " It is hereby ordered and directed that the Commissioners of said Cambria County shall give assistance to the said Township of Upper Yoder in the said reconstruction in a sum not exceeding \$112,223.44, a sum not exceeding (\$20,000.00) Twenty Thousand Dollars to be paid by the County during the year 1918, a sum not exceeding \$46,111.72 to be paid during the year 1919, and a sum not exceeding \$46,111.72 to be paid during the year 1920," be amended to read as follows, to wit: " It is hereby ordered and directed that the Commissioners of said County of Cambria shall give assistance to the said Township of Upper Yoder in the said reconstruction in a sum not exceeding \$152,303.44, a sum not exceeding Twenty Thousand (\$20,000.00) Dollars to be paid by the County during the year 1918, a sum not exceeding \$66,151.72 to be paid during the year 1919, and a sum not exceeding \$66,151.72 to be paid during the year 1920."

By the Court
Francis J. Conroy

No. March Term, 1918
In the Court of Quarter Sessions
of Cambria County, Pa.

In re Reconstruction of Section
of Millcreek Road in Upper
Yoder Township, County of
Cambria, Pennsylvania.

PETITION

~~Now, Sept. 1918, the within
petition having been read and
considered, it is ordered and
directed that a hearing be had
on the said petition at
o'clock, M. the day of
September, 1918; due notice
thereof to be given to the Com-
missioners of said Cambria Co.~~

Filed 11 Sept. 1918

LAW OFFICES OF
BARNHART & EVANS
JOHNSTOWN, PENNA.

map

In re Change, or Alteration of
part of MILLCREEK ROAD in Upper
Yoder Township, Cambria County,
Pennsylvania

In the Court of Quarter Sessions
of
Cambria County, Penna.

TO THE HONORABLE JUDGES OF SAID COURT:

The petition of the undersigned respectfully represents:

That they are the Supervisors of the Township of Upper Yoder, County of Cambria and State of Pennsylvania. That they deem it advisable to construct, change, and alter that part of the Millcreek Road, a public road, in said Township of Upper Yoder, extending over and across the land of Henry Hofecker, from point shown on blue print hereto attached, made part hereof and marked "Exhibit A" and thereon indicated as Station 235 to Station 245 plus 16.6 and the said change following courses and distances as set forth on said blue print between the two stations, all of which is in full shown and designated on the said map or draft of such proposed change.

That the said property owner over whose land the said old part of road and said new part of new road extend has agreed with the petitioners as to any damages that might result by reason of said changes, as indicated by a Release of Damages which is hereto attached, made part hereof and marked "Exhibit B".

That the costs and expenses of said change and alteration to the said Township of Upper Yoder, including damages, shall be less than Three Hundred (300) Dollars.

WHEREFORE your petitioners pray the Court that the said proposed construction, change and alteration be approved.

Barnad E. Raab
D. H. Weiner
Robert M. Mohler
Supervisors

COMMONWEALTH OF PENNSYLVANIA :
 : SS.
COUNTY OF CAMBERIA :

Personally appeared before me, a Notary Public in and for said state and county, WEBSTER MOSHOLDER who being duly sworn according to law, deposes and says that he is one of the Supervisors of Upper Yoder Township within named, and that the matters and facts contained in the foregoing petition are true and correct.

Webster Mosholder

Sworn and subscribed before me
this 29th day of March, 1919

Jennie S. Bayer
NOTARY PUBLIC
My Commission Expires April 4, 1921.

EXHIBIT "B"

"EXHIBIT B"

In re change and alteration of part of MILLCREEK ROAD in Upper Yoder Township, Cambria County, Pennsylvania

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In the Court of Quarter Sessions of Cambria County, Penna.

R E L E A S E

WHEREAS the Court of Quarter Sessions of the County of Cambria and State of Pennsylvania, as shown by proceedings entered of record in the above Court, decreed the reconstruction of the said Millcreek Road, extending from the boundary line of said Township of Upper Yoder and Borough of Westmont in said county of Cambria westwardly to the Ligonier Pike in said Township; and

WHEREAS it is deemed advisable to change the course of a part of said road, as shown on blue print hereto attached, the new course being as shown on said blue print as extending from Station 235 to Station 245 plus 16.6, and following courses and distances as set forth on said blue print between the two stations;

NOW THEREFORE be it known that I, HENRY HOFECKER and ~~-----~~ ~~-----~~ of the said Township of Upper Yoder, the undersigned, being the property owners through whose lands the said new course extends; in consideration of the premises and the advantages to be derived by reason of said change and alteration, do hereby grant, bargain, sell and release to the said Township of Upper Yoder all our right, title and interest in and to the said new course as shown on said blue print, and extending sixteen and one-half (16 $\frac{1}{2}$) feet on either side of the center line, as thereon shown, together with necessary slopes and fills, and further do hereby release the said Township of Upper Yoder from all damages that have accrued or that may accrue for or on account of or by reason of the said change and alteration.

No. 1. March Sess. 1918.

In the Court of Quarter Sessions
of Cambria County, Penna.

In re change or alteration of
part of Millcreek Road in Upper
Yoder Township, Cambria County,
Pennsylvania.

PETITION, RELEASE
and MAP

Now, April 1, 1919, the within
petition having been read and
considered, the prayer of the
petitioners is granted and the
within map or draft is hereby
approved and it is further or-
dered, directed and decreed that
the said new location is hereby
approved and the same shall here-
upon be taken and deemed to be
a public road to all intents and
purposes and the old location
shall be taken and deemed to be
vacated.

By the Court

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN, PENNA.

Filed, 1 April 1919.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

{
:
}

In the Court of Quarter Sessions
of Cambria County, Pa.
No. March Term, 1918.

TO THE HONORABLE JUDGES OF SAID COURT:

The petition of the undersigned Supervisors of the above named
Township respectfully represents:

That by Order of the Court under date of September 11, 1918, it
was provided as follows:

"It is hereby ordered and directed that the Commissioners
of the said County of Cambria shall give assistance to the
said Township of Upper Yoder in said reconstruction in a
sum not exceeding \$152,303.44, a sum not exceeding \$20,000
to be paid by the county during the year 1918, a sum not
exceeding \$66,151.72 to be paid during the year 1919, and
a sum not exceeding \$66,151.72 to be paid during the year
1920."

That under date of April 1, 1919, the Court approved certain plans and
specifications heretofore submitted to and approved by the Highway Department
of the Commonwealth of Pennsylvania, amending and supplementing the plans and
specifications theretofore submitted and approved by the said Highway Department
and by the said Court. That based on said plans and specifications bids were
advertised for and duly received and the matter has proceeded so far that bids
have been received and accepted in accordance with said plans and specifica-
tions, totaling all together the sum of \$388,325.00. That in addition to the
amount which the county has been directed to pay for the year 1919, to wit:
\$66,151.72, it will be necessary for the county to pay the sum of \$20,929.53,
or all told, the sum of \$87,081.25; and in addition to the amount which the
county has been directed to pay for the year 1920, to wit: \$66,151.72, it will
be necessary for the county to pay the sum of \$20,929.53, or all told the
sum of \$87,081.25, making a total additional which the county will be required
to pay for the said two years of \$41,859.06.

WHEREFORE your petitioners respectfully pray the Court that the
aforesaid Order be amended accordingly.

Webster Mosholder
David L. Reed
D. H. Weaver
Supervisors of Upper Yoder Twp.
Cambria County, Pennsylvania.

COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF CAMBRIA :

Personally appeared before me, a Notary Public in and for said
state and county, WEBSTER MOSHOLDER, who being duly sworn according to law,
deposes and says that he is one of the Supervisors of the above named
Upper Yoder Township, and that the matters and facts contained in the foregoing
petition are true and correct.

Webster Mosholder

Sworn and subscribed before me
this 17th day of April, 1919

Jennie A. Boyer
NOTARY PUBLIC
My Commission Expires April 4, 1921.

DE C R E E

Now, April 22, 1919, the within petition having been presented and considered, it is ORDERED and DIRECTED that the aforesaid Decree be amended to read as follows:

"It is hereby ordered and directed that the Commissioners of said Cambria County shall give assistance to the Township of Upper Yoder in the said reconstruction in a sum not exceeding \$194,162.50, a sum not exceeding \$20,000 to be paid by the county during the year 1918, a sum not exceeding \$87,081.25 to be paid during the year 1919, and a sum not exceeding \$87,081.25 to be paid during the year 1920."

Pythe Court
Francis J. Connor

The counsel for petitioners, *W. H. B.*

Heffley, one of the County Commissioners appeared and joined in request for the entry of the above and foregoing order

Francis J. Connor
Judge

No. / March Term, 1918
in the Court of Quarter Sessions
of Cambria County, Pa.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penns-
sylvania.

P E T I T I O N

Filed 28 April 1919

Frank P. Barnhart

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN, PENNA.

April 22, 1919

I hereby accept service of the within, acknowledge receipt of copy of
same and agree that the same be presented forthwith.

In re Reconstruction of section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

In the Court of Quarter Sessions
of Cambria County, Penna.
No. March Term, 1918.

TO THE HONORABLE, THE JUDGES OF SAID COURT:

The petition of the undersigned supervisors of the above named
Township respectfully represents:

That in pursuance to a petition presented to this Honorable Court,
a decree was made on the tenth day of June, 1918, in part as follows:

"all the work and things necessary to be done in the said re-
construction to be done in accordance with plans and speci-
fications hereto submitted to the said Highway Department of
the Commonwealth of Pennsylvania and approved by said depart-
ment, which plans and specifications are hereto annexed, made
part hereof and marked respectively Exhibits 'A' and 'B'."

That it has been deemed advisable to make certain changes in the
said plans and specifications, which changes have been submitted to the
State Highway Department and approved by same, and are as shown in the amen-
ded plans and specifications hereto annexed, made part hereof and marked
respectively Exhibits "A" and "B".

WHEREFORE your petitioners respectfully pray that a decree may be
made accordingly, substituting the annexed plans and specifications in place
of the said plans and specifications approved by the Court under date of
June 10, 1918.







Supervisors of Upper Yoder Twp.
Cambria County, Pennsylvania

COMMONWEALTH OF PENNSYLVANIA :
 : SS.
COUNTY OF CAMBERIA :

Personally appeared before me, a Notary Public in and for said State and County, WEBSTER MOSHOLDER who being duly sworn according to law, deposes and says that he is one of the Supervisors of Upper Yoder Township, and that the matters and facts contained in the foregoing petition are true and correct.

Webster Mosholder

Sworn and subscribed before me
this 4th day of April, 1919.

Jessie S. Boyer
NOTARY PUBLIC
My Commission Expires April 4, 1921

No. / March Term, 1918
In the Court of Quarter Sessions
of Cambria County, Penna.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

PETITION

Now, April 1, 1919, the within pe-
tition having been read and con-
sidered, its is ordered, directed
and decreed that the prayer of the
petitioners be granted and that the
within plans and specifications be
substituted instead of the plans
and specifications approved by the
decree of the Court of June 10, 1918.

[Handwritten Signature]

Filed 28 April 1919

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN, PENNA.

April 1, 1919

I hereby accept service of the within petition, and acknowledge notice of
presentation of same forthwith.

Walter Jones
Atty. for Commissioners of Cambria
County, Pennsylvania.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

§
:
§

In the Court of Quarter Sessions
of Cambria County, Pa.
No. March Term, 1918.

TO THE HONORABLE JUDGES OF SAID COURT:

The petition of the undersigned Supervisors of the above named
Township respectfully represents:

That on the 22d day of April, 1919, the Court in the above
stated proceedings made the following Order:

"It is hereby ordered and directed that the Commissioners
of said Cambria County shall give assistance to the Township
of Upper Yoder in the said reconstruction in a sum not ex-
ceeding \$194,162.50, a sum not exceeding \$20,000 to be paid
by the county during the year 1918, a sum not exceeding
\$87,081.25 to be paid during the year 1919, and a sum not
exceeding \$87,081.25 to be paid during the year 1920."

That the aforesaid sums represent one-half of the contract price
of the reconstruction of the Millcreek Road in the said Township of Upper Yoder.

That the said Cambria County is now giving aid in the construc-
tion and reconstruction of roads in other townships of the county in the amounts
of two-thirds of the price of said construction and reconstruction, leaving the
said townships to pay only one-third of the said price.

That the burden of the cost of reconstruction of the said Mill-
creek Road is heavy for the said Township of Upper Yoder to bear and it is
only fair to the said Township of Upper Yoder that the county bear the same
proportion of the cost of the reconstruction of the said road as it bears in the
cost of the roads of other townships of the county, particularly in view of
the importance and the extent of said improvement.

WHEREFORE your petitioners pray the Court to Order and direct
that the County of Cambria pay instead of one-half of the cost of said road,
two-thirds of the cost of same.

Webster Mosholder
David L. Raab
D. H. Weiner
Supervisors of Upper Yoder Township,
Cambria County, Pennsylvania.

COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF CAMBRIA :

Personally appeared before me, a Notary Public in and for said County and State, WEBSTER MOSHOLDER, CONRAD L. RAAB and D. H. WEIMER, the petitioners within named, who being duly sworn according to law, depose and say that the matters and facts contained in the foregoing petition are true and correct.

Sworn and subscribed before me
this 11th day of June, 1919

Jessie A. Boyer
NOTARY PUBLIC
My Commission Expires April 4, 1921.

Webster Mosholder
Conrad L. Raab
D. H. Weimer

DECREE

In the Court of Quarter Sessions
of Cambria County, Penna.
No. / March Term, 1918.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

PETITION

Filed 12 June 1919

LAW OFFICE OF
FRANK P. BARNHART
JOHNSTOWN, PENNSA.

June 1919.

I hereby accept service of the within, acknowledge receipt of copy
of same and agree that the same be presented forthwith.

Atty. for Commissioners of Cambria County,
Pennsylvania

S P E C I F I C A T I O N S

OF LABOR AND MATERIALS TO BE USED IN THE CONSTRUCTION OF THE MILL CREEK ROAD, SITUATE IN THE TOWNSHIP OF UPPER YODER, COUNTY OF CAMBRIA AND STATE OF PENNSYLVANIA, ACCORDING TO THE PLANS AND SPECIFICATIONS PREPARED BY C. E. BROWN, ENGINEER, HANNAN BUILDING, JOHNSTOWN, PA.

(1)
DEFINITIONS

Wherever in these specifications, the contract, the proposal, the bond, or where shown or written on the drawings or on or in any other instrument of service the following terms or their proper pronouns, are used, the intent and meaning shall be interpreted as follows:-

TOWNSHIP-----Township of Upper Yoder, County of Cambria, Pennsylvania.

COMMISSIONERS-----Commissioners of Cambria County, State of Pennsylvania.

SUPERVISORS----Supervisors of Upper Yoder Township, County of Cambria and State of Pennsylvania.

ENGINEER-----The Engineer appointed by the Supervisors, or his representative, duly authorized by him and the Supervisors.

INSPECTOR-----An authorized representative of the Commissioners, assigned to make any or all necessary inspection of the work performed and the materials furnished by the Contractor or Contractors.

BIDDER-----Any individual, firm or corporation submitting a proposal for the work or materials contemplated, acting directly or through a duly authorized representative.

CONTRACTOR----Party of the contract, acting directly or through his agents or employees.

SURETY-----Two or more individuals or an incorporate body who or which is bound with and for the Contractor, who is primarily liable, and who or which engages to be responsible for the Contractor's payment of all debts pertaining to and for his acceptable performance of the work for which he has contracted.

PROPOSAL-----The approved prepared form on which the bidder is to or has submitted his, their or its proposal for the work contemplated.

DRAWINGS-----All drawings, reproductions of drawings or sketches pertaining to the construction of the Roadway and its appurtenances.

SPECIFICATIONS-----The directions, provisions and requirements contained herein, together with all written agreements made or to be made, pertaining to the method and manner of performing the work, or to the qualities and quantities of materials to be furnished under the contract.

CONTRACT-----The agreement covering the performance of the work, and the furnishing of material in the construction of the roadway, the Contract shall include the

"Proposal", "Plans", "Specifications," "Notice to Proceed," and "Contract Bond," also and all supplemental agreement which reasonably could be required to complete the construction of the roadway in a substantial and acceptable manner.

CONTRACT BOND, The approved form of security furnished by the Contractor and his Surety as a guaranty of good faith on the part of the Contractor to execute the work in accordance with the terms of the Contract.

NOTICE TO PROCEED, A notice to the Contractor of the date on or before which he is to begin the prosecution of the work contracted for.

HIGHWAY,-----The whole right-of-way which is reserved for and secured by the Supervisors for use in constructing the roadway and its appurtenances.

ROADWAY,-----That portion of the highway included between the gutter or side ditch lines, reserved for the accommodation of the traveling public, and its appertaining structures and slopes, and all ditches, channels, waterways, etc., necessary to its correct drainage.

It should be understood thoroughly by all concerned that all things contained herein, the "Instructions to Bidders," The "Award and Execution of Contract," the "General Provisions," the "Construction Details," also the "Proposal," the "Plans," the "Advertisement for Proposals," or "Notice to Contractors," the "Contract Bond," and the "Notice to Proceed," as well as any papers attached to or bound with any of the above, also any and all supplemental agreements made or to be made, are hereby made a part of these Specifications and Contract, and are to be considered one instrument. The intent is to make them explanatory one of the other. No papers attached to or bound with any of the above shall be detached therefrom as all are a necessary part thereof.

March 26, 1919
General form of Specifications
Approved.
Joseph W. Gullett,
San Diego Commission

INSTRUCTION TO BIDDERS.

(2)

Approximate Estimate of Quantities

The bidder's attention is called to the fact that the estimate of the quantities of work to be done and materials to be furnished under these specifications and accompanying drawings and as shown on the proposal form, is approximate and is given only as a basis, of calculation upon which the award of the contract is to be made. The supervisors do not assume any responsibility that the quantities are correct, nor shall the contractor plead misunderstanding or deception because of such estimate of quantities, location or any other conditions pertaining thereto. The supervisors reserve the right to increase or diminish any or all of the above mentioned quantities of work or of materials or to omit any of them as they deem necessary.

(3)

Familiarity with Proposed Work.

The bidder is required to examine carefully the site of and the proposals, plans, specifications and contract form for the work contemplated, and it will be assumed that he has judged for and satisfied himself as to the condition of the work to be performed and materials to be furnished, and as to the requirements of these specifications and contract.

(4)

Familiarity with Laws, etc.

The bidder is assumed to have made himself familiar with all Federal and State laws and Local by-laws, ordinances and regulations which in any manner affect those engaged or employed in the work, or the materials or equipment used in or upon the roadway, or in any way affect the conduct of the work, and no plea of misunderstanding will be considered on account of the ignorance thereof. If the Bidder or Contractor shall discover any provision in the plans, specifications or contract which is contrary to or inconsistent with any such law, by-law, ordinance or regulation, he shall forthwith report it to the Engineer in writing.

(5)

Contents of Proposal Forms

The Bidder will be furnished by the Engineer with proposal forms which will state the location and description of the roadway to be reconstructed and which will show the approximate estimate of the various quantities of work to be performed and materials to be furnished, the time in which the work must be completed, the amount of the "Proposal Guaranty" (which must accompany the proposal) and the date and time of the opening of proposals. All papers bound with or attached to the proposal forms are a necessary part thereof and must not be detached.

(6)

Instructions for Filling in Proposal Forms.

The Bidder must submit his proposal on the forms furnished by the Engineer. The blank spaces in the proposals must be filled in correctly, where indicated for each and every item for which a quantity is given, and the Bidder must state the prices (written in ink, both words and numerals) for which he proposes to do each item of the work contemplated.

(7)

Signatures on Proposals

The Bidder shall sign his proposal correctly. If the proposal is made by an individual, his name and post-office address must be shown. If made by a firm or partnership, the name and post-office address of each member of the firm or partnership must be shown. If made by a corporation, the person signing the proposal must show the name of the State under the laws of which the corporation was chartered and the name, titles and business addresses of the President, Secretary and Treasurer.

- (8) Irregular Proposals. Proposals will be rejected if they show any omissions, alteration of form, additions not called for, conditional or alternate bids, or irregularities of any kind.
- (9) Guaranty to Accompany Proposal. No proposal will be considered unless accompanied by a "proposal guaranty" of the character and amount indicated in the proposal form, made payable to the Supervisors of Upper Yoder Township, Cambria County, Pennsylvania.
- (10) Delivery of Proposals. Each proposal must be submitted in an envelope endorsed with the title of the work and the name of the bidder as shown in advertisement for bids.
- (11) Opening of Proposals. Proposals will be opened publicly and read on Saturday, April 12th, 1919, at 12 o'clock M. at the Office of Frank P. Barnhart, Esq., Swank Building, Johnstown, Pa., Bidders or their authorized agents are cordially invited to be present.
- (12) Disqualification of Bidders. More than one proposal from an individual, a firm or a partnership, a corporation or an association under the same or different names will not be considered. Reasonable ground for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. Any or all proposals will be rejected if there is reason for believing that collusion exists among the Bidders and all participants in such collusion will not be considered in future proposals for the same work. Proposals in which the prices obviously are unbalanced will be rejected. No contract will be awarded except to responsible bidders capable of performing the class of work contemplated. The bidder shall furnish a complete statement of his experience and of the amount of capital and equipment available for the proposed work, if so requested by the Engineer.

AWARD AND EXECUTION OF CONTRACT.

(13)
Right to
Reject
Proposals

The supervisors reserve the right to reject any or all proposals and to waive technicalities, as they may deem for the interests of the Township.

(14)
Award of
Contract

The contract will be awarded by the Supervisors at Johnstown, Pa., to the lowest responsible bidder, within five (5) days from the date of the opening of the proposals, reserving the right to reject any and all bids.

(15)
Return of
Proposal
Guaranty.

All proposal guaranties except the three lowest bidders will be returned within one day after the opening of the bids. The guaranties of the three lowest bidders will be retained until the contract is executed when all of them will be returned.

(16)
Contract
Bond
Required.

The successful Bidder, at the time of the execution of the contract, must deposit with the Supervisors a security in the sum equal to sixty (60) per centum of the amount of the contract award. The form of the bond shall be that attached hereto and made part hereof.

(17)
Execution
of
Contract

The individual, firm or corporation to whom or to which the contract has been awarded shall sign the necessary agreements entering into a contract with the Township, and return them to the office of the Engineer, at Johnstown, within ten (10) days. No proposal shall be considered binding upon the Township until the execution of the contract.

(18)
Failure to
Execute
Contract.

Failure to comply with any of the requirements of these specifications and contract, or failure to enter in a sum equal to sixty (60) per centum of the amount of the award or to execute within ten (10) days, as specified, shall be just cause for the annulment of the award, or of the contract if executed, and it is understood by the Bidder, in the event of the annulment of the award, or of the contract, that the amount of the guaranty deposited with the proposal shall be forfeited to the use of the Township, not as a penalty, but as liquidated damages.

(19)
Subletting
or Assign-
ing of Con-
tract.

The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of the contract or any portion thereof, or of the work provided for therein, or of his right, title or interest therein, to any person, firm or corporation without the written consent of the Supervisors.

(20)
Patent Fees
Royalties
and
Licenses

If the Contractor is required or desires to use any design, device, material, or process covered by letters patent or copyright he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Engineer; if no such agreement is made or filed as noted, the Contractor and the Surety shall indemnify and save harmless the Township from any and all claims for infringement by reason of the trademark or copyright in connection with the work agreed to be performed under the contract, and shall indemnify the Townships for any costs, expenses and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

GENERAL PROVISIONS

- (21) **Scope of Work**
The Contractor shall do all clearing and grubbing, make all excavations and embankments, do all shaping and surfacing, construct all drainage structures and other appertaining structures, as indicated in the proposal and on the plans, remove all obstructions from within the lines of the highway, and shall do such additional, extra and incidental work as may be considered necessary to complete the roadway to the finished lines, grades and cross-sections in a substantial and acceptable manner. He shall furnish, unless otherwise provided in the "Special Provisions" of the proposal and in the contract, all implements, machinery, equipment, tools, material and labor necessary to the prosecution of the work. In short, the Contractor shall construct the roadway in strict accordance with the plans, specifications and contract and when completed, shall leave it in a neat and finished condition.
- (22) **Permits and Licenses.**
The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices and incident to the due and lawful prosecution of the work.
- (23) **Plans, etc to be Followed.**
The approved plans, profiles and cross-sections on file in the office of the Engineer, will show the location, details and dimensions of the work contemplated, which shall be performed in strict accordance therewith and in accordance with the specifications, in all cases, will be determined by the Engineer and authorized in writing.
- (24) **Interpretation of Plans, etc.**
On all plans, drawings, etc., the figural dimensions shall govern in the case of discrepancy between the scales and figures. The Contractor shall take no advantage of any error or omission in the plans or of any discrepancy between the plans and specifications, and the Engineer shall make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the specifications and of the plans as construed by him, and his decision shall be final.
- (25) **Special Work Requirements.**
Should any construction or conditions which are not covered by the standard specifications be anticipated on any proposed work, "special provisions" for such work will be stated on or attached to the proposal form and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications the "special provisions" shall govern.
- (26) **Alteration of Plans or of Character of Work.**
The Engineer reserves the right, with approval of the Supervisors, to make such alterations in the plans or in the character of the work as may be considered necessary or desirable from time to time to complete fully and perfectly the construction of the roadway, provided such alterations do not change materially the original plans and specifications, and such alterations shall not be considered as a waiver of any condition of the contract nor to invalidate any of the provisions thereof. Should such alterations in the plans result in an increase or decrease of the quantity of work to be performed, the Contractor shall accept payment in full at the contract unit prices for the actual quantities of work done; or should such alterations in the character of the work be productive of increased cost or result in decreased cost to the Contractor, a fair and equitable sum therefor, to be agreed upon in writing by the Contractor and the Supervisor before such work is begun, shall be added to or deducted from the contract price, as the case may be. No allowance will be made for anticipated profits.

(27)
Additional
Work.

The Contractor shall perform such work, in additional quantities other than those designated in the approximate estimate, as may be deemed necessary to complete fully the roadway as planned and contemplated and shall receive for such additional work, payment in full, at the prices shown in the contract and in the same manner as if such work had been included in the original estimate of quantities.

(28)
Other Ad-
ditional
Work.

The Contractor shall perform any other additional work for which there is no quantity and price included, whenever, to complete fully the work contemplated, it is deemed necessary or desirable and such additional work shall be done in accordance with the specifications therefor, or in the best workmanlike manner as directed. This additional work will be paid for at a unit price or lump sum to be agreed upon previously in writing by the Contractor and the Supervisor, or where such a price or sum cannot be agreed upon by both parties, or where this method of payment is impracticable, the Supervisors may order the Contractor to do such work on a "Force Account" basis.

(29)
Force
Account
Work.

All additional work done on a "force account" basis will be paid for in the following manner:

(a) For all labor, teams, and foremen in direct charge of the specific operation, the Contractor shall receive the current local of wage, to be agreed upon in writing before starting such work, for each and every hour that said labor, teams, and foremen are actually engaged in such work to which shall be added an amount equal to fifteen per centum (15%) of the sum thereof.

(b) For all materials used, the Contractor shall receive the actual cost of such materials including freight charges, as shown by original receipted bills, to which cost shall be added a sum equal to fifteen per centum (15%) thereof.

(c) For any machine-power or equipment, including fuel and lubricants, which it may be deemed necessary or desirable to use, the Engineer shall allow the Contractor a reasonable rental price to be agreed upon in writing before such work is begun, for each and every hour that said tools or equipment are in use on such work and to which sum no percentage shall be added.

The compensation as herein provided shall be received by the Contractor as payment in full for extra work done on a "force account" basis, and shall include superintendence, use of tools and equipment for which no rental is allowed, and profit. The Contractor's representative and the Inspector shall compare records of extra work done on a "force account" basis at the end of each day. Copies of these records shall be made in duplicate, upon the Supervisors "force account forms" provided for this purpose, by the Inspector and signed by both the Inspector and the Contractor's representative, one copy being forwarded respectively to the Engineer and the Contractor. All claims for extra work done on a "force account" basis shall be submitted to the Engineer, by the Contractor, upon certified triplicate statements to which shall be attached original receipted bills covering the cost of the freight charges on all materials used in such work, and said statements shall be filed not later than the fifth (5th) day of the month following that in which the work was actually performed and shall include all labor charges, etc., and material charges insofar as they can be verified. Should the Contractor refuse or fail to prosecute the work as directed or to submit his claim as required, then the Supervisors may withhold payment of all current

estimates until the Contractor's refusal or failure is eliminated, or after giving the Contractor due notice, the Supervisors may make payment for said work on the basis of a reasonable estimate of the value of the work performed.

(30) **Unauthor-
ized Work.** Work done without lines and grades being given, work done beyond the lines and grades shown on the plans or as given, except as herein provided, or any extra work done without written authority will be considered as unauthorized and at the expense of the Contractor and will not be measured or paid for by the Township. Work so done may be ordered removed and replaced at the Contractor's expense.

(31) **Prosecution
of
Work.** The Contractor shall begin the work to be performed under the contract on such a date as the Engineer shall notify him to proceed. Commencement of work by the Contractor shall be deemed and taken as a waiver of this notice on his part. The place where the work is to be started either will be stated in the "Notice to Proceed" or will be designated on the ground. The work shall be prosecuted from as many different points in such part or parts and at such times as may be directed, and shall be conducted in such a manner and with sufficient materials, equipment and labor as is considered necessary to ensure its completion within the time set forth in the proposal. Should the prosecution of work for any reason be discontinued by the Contractor, with the consent of the Engineer, he shall notify the Engineer at least twenty-four hours before again resuming operations.

(32) **Limita-
tions of
Operations** At no time during the prosecution of the work shall more than four (4) blocks or squares, or in open country more than one-half (½) mile of roadway be under construction or obstructed to traffic without permission. The laying of the surface course or pavement shall follow the completion of the base course as closely as may be required by the Engineer.

(33) **Character
of
Workmen
and
Equipment** The Contractor shall employ such superintendents, foremen and workmen as are careful and competent, and the Engineer may demand the dismissal of any person or persons employed by the Contractor in, about or upon the work who shall misconduct himself or be incompetent or negligent in the due and proper performance of his or their duties or any of them, or neglects or refuses to comply with the directions given, and such person or persons shall not be employed again thereon without the written consent of the Engineer. Should the Contractor continue to employ or again employ such person or persons, the Supervisor may withhold all estimates which are or may become due, or the Engineer may suspend the work until such orders are complied with. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the work, in an acceptable manner and at a satisfactory rate of progress. Equipment used on any portion of the work shall be such that no injury to the roadway, adjacent property or other highways will result from its use.

(34) **Co-operation
of
Contractor
Required.** The Contractor will be supplied by the Engineer with two copies of the plans and of the specifications and he shall have available on the work at all times, during the prosecution of the work, one copy each of said plans and specifications. He shall give the work his constant attention to facilitate the progress thereof and shall co-operate with the Engineer in every way possible. He shall have at all times a competent and reliable English-speaking representative on the work, authorized to receive orders and to act for him.

(35)
Laws
to be
Observed.

The Contractor at all times shall observe and comply with all Federal and State laws and Local by-laws, ordinances and regulations in any manner affecting the conduct of the work, and all such orders or decrees as exist at present and those which may be enacted later, of bodies or tribunals having any jurisdiction or authority over the work, shall indemnify and save harmless the Township and all of its officers, agents and servants against any claim or liability arising from or based on the violation of any such law, by-law, ordinance, regulation, order or decree, whether by himself or his employees.

(36)
Sanitary
Provisions

The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the State Department of Health or of other bodies or tribunals having jurisdiction therewith. He shall commit no public nuisance.

(37)
Public Con-
venience
and
Safety.

The Contractor at all times shall conduct the work in such a manner as to ensure the least obstruction to traffic practicable. The Convenience of the general public and of the residents along and adjacent to the highway shall be provided for in an adequate and satisfactory manner. Materials stored upon the highway shall be placed so as to cause as little obstruction to the traveling public as is considered necessary. The Contractor shall provide and maintain in passable condition such temporary highways and bridges as may be necessary to accommodate the traffic diverted from the roadway under construction and shall provide and maintain in a safe condition temporary approaches to and crossings of intersecting highways. All footways, gutters, sewer inlets and portions of highways adjoining the roadway under construction shall not be obstructed more than is absolutely necessary.

(38)
Barricades
Danger
Warning
and
Detour sign

The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and safety of the public. Highways closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. The Contractor shall provide and maintain acceptable warning and detour signs at all closures and intersections, directing the traffic around the closed portion or portions of the highway, so that the temporary detour route or routes shall be indicated clearly. All Barricades and obstructions shall be illuminated at night and all lights shall be kept burning from sunset until sunrise.

(39)
Use of
Explosives

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care, so as not to endanger life or property and whenever directed the number and size of the charges shall be reduced. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly, "Dangerous-Explosives," and shall be in care of competent watchmen at all times.

(40)
Preservation
and
Restoration
of
Property,
Trees, Monu-
ments, etc.

The Contractor shall not enter upon private property for any purpose without obtaining permission and he shall be responsible for the preservation of all public and private property, trees, monuments, etc., along and adjacent to the roadway and shall use every precaution to pipes, conduits and other underground structures, and shall protect carefully from disturbance or damage all land, monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed. The Contractor shall not willfully nor maliciously injure or destroy trees or shrubs and he shall not remove or cut them without proper authority. He shall be

responsible for all damage or injury to property of any character during the prosecution of the work, resulting from any act, omission, neglect or misconduct in his manner or method of executing said work satisfactorily, or due to his non-execution of said work, or at any time due to defective work or materials, and said responsibility shall not be released until the roadway shall have been completed and accepted. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring, as may be directed, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property, or make good such damage or injury, the Engineer may, upon forty-eight (48) hours notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under his contract.

(41)
Responsibility for
Damage,
Claims, etc.

The Contractor shall indemnify and save harmless the Township and all of its officers, agents and employees from all suits, actions or claims of any character, name and description brought for, or on account of any injuries or damages received or sustained by any person, persons or property by or from the said Contractor or by or in consequence of any neglect in safeguarding the work, or through the use of unacceptable materials in constructing the roadway, or by or on account of any act or omission, neglect or misconduct of the said Contractor, or by or on account of any claims or amounts recovered for any infringement of patent, trade mark or copyright, or from claims or amounts arising or recovered under the "Workmen's Compensation Law" or any other law or by-law ordinance or decree, and so much of the money due the said Contractor under and by virtue of his contract, as shall be considered necessary by the Commissioner, may be retained for the use of the township, or in case no money is due, his Surety shall be held until such suit or suits action or actions, claim or claims, for injuries or damages, as aforesaid, shall have been settled and suitable evidence to that effect furnished to the Commissioner.

(42)
Contractor's
Responsibility for
Work.

Until acceptance of the roadway, it shall be under the charge and care of the Contractor, and he shall take every necessary precaution against injury or damage to the roadway or to any part thereof by the action of the elements or from any other cause whatsoever, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore and make good, at his own expense, all injuries or damages to any portion of the roadway occasioned by any of the above causes before its completion and acceptance.

(43)
Opening of
Section of
Highway to
Traffic.

Whenever, in the opinion of the Engineer, any roadway or portion thereof, is in acceptable condition for travel, it shall be opened to traffic, as may be directed, and such opening shall not be held to be in any way an acceptance of the roadway or any part of it or as a waiver of any of the provisions of these specifications and contract. Necessary repairs or renewals made on any section of the roadway, due to its being opened to travel under instructions from the Engineer, to defective materials, or work, natural causes, to ordinary wear and tear or otherwise, pending completion and acceptance of the roadway, shall be performed at the expense of the Contractor.

- (44) Restoration of Surfaces Opened by Permit
- Any individual, firm or corporation wishing to make an opening in the highway must secure a permit from and will be required to deposit security with the Township, in a suitable amount, to cover the cost of making the necessary repairs, and the Contractor shall not allow any person or persons to make an opening unless a duly authorized permit of the Township is presented. Until the acceptance of the work performed under these specifications and contract, the Contractor shall make all necessary repairs, within the time indicated in writing by the Engineer, and in an acceptable manner, at any point or points in the roadway where any opening had been made by authority of the Township. Such repair work will be paid for by the Township as "Extra Work," as indicated in these specifications, and said work shall be subject to the same conditions as the original work performed. Should the Contractor refuse or neglect to make the said repairs at such point or points within the time specified, then the Commissioner shall have the authority to cause such repairs to be made, in which case the Contractor shall not be relieved in any way from his responsibility for the work performed by him.
- (45) Tests of Samples of Materials.
- All tests of materials shall be made by the Engineer at a Laboratory selected by the Township or at such other place as may be necessary. The Contractor shall furnish every facility and assistance necessary for such tests and the Contractor shall pay for all the expenses involved in making such tests that the Engineer may deem necessary.
- (46) Quality of Materials
- The source of supply of each of the materials shall be approved by the Engineer, before the delivery is started. Representative preliminary samples of the character and quantity herein described shall be submitted by the Contractor when indicated or directed, for examination or test; and written approval of the quality of such samples shall be received by the Contractor, prior to obtaining materials from the respective sources of supply. Only materials conforming to the requirements of these specifications shall be used in the work. All materials proposed to be used may be inspected at any time during the progress of their preparation and use. All materials shall be approved before being incorporated in the work. Representative samples of all materials requiring laboratory tests shall be taken and such materials shall be used only after written approval has been received by the Township representative in charge of the work, and only so long as the quality of said materials remains equal to the requirements. If after trial, it is found that partially developed quarries, ledges, banks or other sources of supply which have been approved upon samples or otherwise, do not furnish a uniform product, or if, for any reason, the product from any source, at any time before commencing or during the prosecution of the work, proves unacceptable, the Contractor shall furnish approved material from other sources. After approval, any material which has become mixed with or coated by dirt or other foreign substances, during its delivery and handling shall not be used in the work.
- (47) Storage of Materials
- Materials shall be stored so as to ensure the preservation of their quality and fitness for the work. When considered necessary they shall be placed on wooded platforms, or other hard clean surface and not on the ground and shall be placed under cover when directed. Stored materials shall be located so as to facilitate prompt inspection. Wawns, grass plots, or other private property shall not be used for storage purposes without the written permission of the owner or lessee.

(48)
Use of
Materials
Found
on the
Highway

The Contractor, with the approval of the Engineer, may use in the construction of the roadway any stone, gravel or sand found in the "Excavation," and will be paid for the removal of such material at the contract price of "Excavation," but he shall replace with other suitable material, all of that portion of the material so removed and used as was contemplated for use in the embankments or otherwise. If it has been contemplated that any or all of the material so excavated and used was to have been wasted, that the Contractor will not be required to replace it. The Contractor shall not excavate or remove any material from within the highway location, which is not within the excavation as indicated by the slope and grade lines, without being authorized in writing.

(49)
Disposal
of
Structures
found
on the
Highway

All structures, except drainage pipes, found on the highway which are not to remain in place or which have not been designated for use in the construction, shall become the property of the Contractor and shall be disposed of by him unless specified otherwise in the "Special Provisions" of the proposal. Pipes which are not to be used shall be stored on the highway as directed.

(50)
Line, Grade
Measurement
Stakes.

The Engineer will furnish and set survey stakes at random distances from the center-line of the contemplated roadway and will furnish the Contractor with a grade sheet, showing the horizontal and vertical measurements from the said stakes to the center of the roadway as planned. The Contractor shall furnish free of charge, all marking and maintaining points and lines given, and shall furnish the Engineer such assistance as he may require in giving points and lines necessary to the prosecution of the work. The Contractor shall be held responsible for the preservation of all stakes and marks and if in the opinion of the Engineer, any of the survey stakes or marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost to the Engineer of replacing them shall be charged against him and shall be deducted from the payment for the work. Finished surfaces, in all cases, shall conform with the lines and grades given and as shown on the approved plans.

(51)
Crown of
Roadway
Surface.

The crown or rise of the finished surface of the roadway, from the curb or side-line to the center-line, shall be as shown on the typical cross-section of the plans, except at the intersecting highways, or wherever to ensure correct drainage or for other reasons changes may be directed. On curves or at other places where deemed necessary, the Contractor may be required to bank the roadway so that the finished surface shall slope from one side-line to the other.

(52)
Authority
and Duty
of
Inspectors

Sub-Inspectors, employed by the Commissioners and Township, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation and manufacture of materials to be used. A sub-Inspector may be stationed on the roadway to report to the Commissioners and Engineer as to the progress of the work and the manner in which it is being performed; also to report whenever it appears that the materials furnished and work performed by the Contractor fail to fulfill the requirements of the specifications and contract, and to call to the attention of the Contractor any such failure or other infringement, and such inspection, however shall not relieve the Contractor from any obligation to

perform all of the work strictly in accordance with the requirements of the specifications. In case of any dispute arising between the Contractor and the sub-Inspector as to materials furnished or the manner of performing the work, the sub-Inspector shall have the authority to reject materials or suspend the work until the question at issue can be referred to and decided by the Engineer and Commissioners. The sub-Inspector shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the sub-Inspector may give the Contractor shall in no wise be construed as binding the Engineer nor the Commissioners in any way, not releasing the Contractor from the fulfillment of the terms of the contract.

(53)
Engineer
to be
Referee.

To prevent misunderstanding and litigation, the Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of said work, and shall decide all questions which may arise as to the interpretation of any of plans relating to the work and of the specifications, and all questions as to the acceptable fulfillment of the contract on the part of the Contractor; and the Engineer shall determine the amount and quantity of the several kinds of work performed and materials furnished which are to be paid under the contract, and such decision and estimates shall be final and conclusive, and such estimate, in case of any question shall arise, shall be a condition precedent to the right of the Contractor to receive any money due under the contract. Any doubt as to the meaning of or any obscurity as to the wording of these specifications and contract will be explained by, and all directions and explaining requisite or necessary to complete, explain or make definite any of the provisions of the specifications or contract and to give them due effect, will be given by the Engineer, provided however, that this section and all other sections in these specifications shall be subject to and construed in the light of the Act of 1917, P.L. 318 under the provisions of which this road will be built, anything herein to the contrary notwithstanding.

(54)
Inspection
of
Materials
and
Work.

The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work performed is in accordance with the requirements and intent of the specifications and contract. If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After the examination the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, shall be paid for as "extra work", but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense. Any work done or materials used without suitable supervision or inspection by the Inspector or Engineer may be ordered removed and replaced at the Contractor's expense.

(55)
Defective
Materials
and
Work.

All materials not conforming to the requirements of these specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the highway, unless otherwise permitted. No material which has been rejected, the defects of which have been corrected or removed, shall be used until approval has been given. All work which has been rejected or condemned shall be remedied or if necessary removed and replaced in an acceptable manner by the Contractor at his own expense.

(56)
Failure to
Remove and
Renew
Defective
Materials
and
Work.

Should the Contractor fail to remove and renew any defective materials used or work performed previously, or to make any necessary repairs in an acceptable manner and in accordance with the requirements of these specifications, within the time indicated in writing, the Engineer shall have the authority to cause the unacceptable or defective materials or work to be removed and renewed or such repairs to be made at the Contractor's expense. Any expense incurred by the Township in making these removals or repairs or renewals, which the Contractor has failed or refused to make, shall be paid for out of the moneys due or which may become due the Contractor or may be charged against "Contract Bond" deposited; and continued failure or refusal on the part of the Contractor to make any or all necessary repairs promptly, fully and in an acceptable manner shall be sufficient cause for the Commissioner to declare the contract forfeited, in which case the Supervisors, at their option may purchase materials, tools and equipment and employ labor or may contract with any other individual, firm or corporation to perform the work. All costs and expenses incurred thereby shall be charged against the defaulting Contractor and the amount thereof deducted from any moneys due or which may become due him, or shall be charged against the "Contract Bond" deposited. Any work performed, as described in this paragraph, shall not relieve the Contractor in any way from his responsibility for the work performed by him.

(57)
Final
Cleaning up
of
Highway.

Upon completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the highway, footways, lawns and adjacent property, all surplus and discarded materials, rubbish and temporary structures in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work, and shall leave the highway in a neat and presentable condition throughout the entire length of the roadway under contract.

(58)
Temporary
Suspension
of
Work.

The Engineer shall have the authority to suspend the work wholly or in part, for such periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract. If it should become necessary to stop work for an indefinite period, the Contractor shall store all materials in such manner that they will not obstruct or impede the traveling public unnecessarily nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of drains etc., and erect temporary structures where necessary. The Contractor shall not suspend the work without authority.

(59)
Computation
of
Contract
Time for
Completion
of
Roadway.

The Contractor shall perform fully, entirely and in an acceptable manner the work contracted for within the time stated in the contract. In adjusting the contract time for the completion of the roadway, the length of time expressed in days and parts of days, during which the prosecution of the work has been delayed or suspended in consequence of the unsuitable condition of the weather or other unfavorable conditions, or by any act or omission of the Township and not by any fault of the Contractor, shall be allowed justment, all of which shall be determined by the Engineer, who shall certify hereto in writing and whose determination and certification shall be binding and conclusive upon both parties to the contract. Sundays and all legal holidays during which no work has been performed shall be excluded from said computation.

If the satisfactory execution and completion of the contract shall require work or material in greater amounts or quantities than those set forth in the contract, then the contract time shall be increased in the same proportion as the additional work bears to the original work contracted for. No allowance shall be made for delay or suspension of the prosecution of the work due to fault of the Contractor.

(60)
Failure to
Complete
Work
On Time.

For each working day that any work shall remain uncompleted after the time specified in the proposal and contract and allowed by the Engineer for the completion of the work provided for in these specifications and contract, the sum of Fifty Dollars (\$50) per Diem shall be deducted from the moneys due the Contractor, not as a penalty, but as liquidated damages.

(61)
Anulment
of
Contract.

If the Contractor fails to begin the work under contract within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall neglect or refuse to remove materials or perform anew such work as shall be rejected as defective and unsuitable, or shall discontinue the prosecution of the work, or if the Contractor shall become insolvent or be declared bankrupt, or comit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or from any other cause whatsoever shall not carry on the work in an acceptable manner, the Engineer shall give notice in writing to the Contractor and his Surety, of such delay, neglect or default, specifying the same, and if the Contractor, within a period of ten (10) days after such notice shall not proceed in accordance therewith, then the Township, with the approval and under the supervision of the said Commissioners or Inspector shall, upon written certificate from the Engineer of the fact of such delay, neglect or default and the Contractor's failure to comply with such notice have full power and authority without violating the contract, to take the prosecution of the v workout of the hands of said Contractor, to appropriate and use any or all materials and equipment on the ground as may be suitable and acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in its opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the Township and said Co Commissioners together with the costs of completing the work under contract, shall be deducted from any moneys due or which may become due said Contractor. In case these expenses so incurred by the Township ans said Commissioners shall be less than the sum which would have been payable under the contract, it it had been completed by said Contractor, then the said Contractor shall be entitled to receive the difference, and in case such expenses shall exceed the sum which would have been payable under the contract, then the Contractor and the Surety shall be liable and shall pay to the Township and said Commissioners the amount of said excess.

(62)
Partial
Payments

On or about the tenth (10th) day of each month the Engineer will make an estimate in writing, of the materials in place complete and the amount of work performed during the preceding month and the value thereof figured at the unit prices contracted. From the total of the amount so ascertained an amount equal to ten (10) per centum of the whole will be deducted and retained by the Supervisors until after the completion of the whole work in a satisfactory manner to the Engineer, the Supervisors and the Commissioners and in accordance with the contract, specifications and drawings.

(63)
Acceptance
and
Final
Payment

Whenever, in the opinion of the Engineer, the Contractor shall have completed the roadway in an acceptable manner in accordance with the terms of the contract, the Engineer shall make a final inspection, in company with the Commissioners Inspector, of the entire roadway and upon completion of all necessary repairs or renewals, they shall certify to the supervisors in writing as to said completion and shall further certify as to the entire amount of each class of work performed and as to the value thereof; and within ten (10) days after receipt by the supervisors of the said certificate, the Supervisors shall pay to the Contractor the remaining ten (10) per centum of the money due.

(64)
No Waiver
of
Legal Rights

The Supervisors, the Commissioners, or the Engineer shall not be precluded or estopped by any measurement, estimate or certificate, made or given by them, or by any agent or employee of the Township under any provision, or provisions, of the contract, at any time, either before or after the completion and acceptance of the roadway and payment thereof pursuant to any measure, estimate or certificate, from showing the true and correct amount and character of the work performed and materials furnished by the Contractor, or from showing, at any time, that any such measurement, estimate or certificate is untrue or incorrectly made in any particular, or that the work or materials, or any part thereof do not conform in fact to specifications and contract, and the Township shall have the right to reject the whole or any part of the aforesaid work or materials, should the said measurement, estimate, certificate or payment be found, to be known to be inconsistent with the terms of the Contract or otherwise improperly given, and the Township shall not be precluded and estopped, notwithstanding any such measurement, estimate, certificate and payment in accordance therewith, from demanding and recovering from the Contractor and his Surety such damages as it may sustain by reason of his failing to comply with the terms of the specifications and contract. Neither the acceptance of the Commissioners, the Supervisors, the Engineer or any agent or employee of the Township, nor any certificate by the Supervisors for payment of money, nor any payment for, nor acceptance of the whole or any part of the work by the Township, the Commissioners or Engineer, nor any extension of time, nor any possession taken by the Township or its employees, shall operate as a waiver of any portion of the contract or of any power herein reserved by the Township, or any right to damages herein provided, nor shall any waiver or any breach of the contract be held to be a waiver of any other or subsequent breach.

CONSTRUCTION DETAILS

EXCAVATION AND EMBANKMENT

(65)
Description.

Excavation and embankment shall consist of grading the roadway in conformity with the plane, true to the lines and grades given. This grading shall include all clearing and grubbing, removing structures, obstructions, etc., as indicated or directed, excavating, forming embankments, shaping and sloping, compacting and other work that may be necessary in bringing the roadway and its appurtenances to the required grade, alignment and cross-section, also the grading of all intersecting roadways, driveways and approaches. This work shall be done in accordance with these specifications.

(66)
Clearing
and
Grubbing

The ground shall be cleared of all dead trees, stumps, brush, weeds, roots and other objectional material within the limits of the highway, and all trees shall be removed from within the limits of the roadway and from slopes as directed. Before the grading is started. Timber of any value, which it may be necessary to cut, shall be piled neatly on the abutting property and shall become the property of the owners of the abutting property, if they so desire, otherwise the contractor shall dispose of it as directed by the Engineer. All branches of trees extending within the roadway limits shall be trimmed as directed and branches which hang within twelve (12) feet of the roadway surface, in all cases shall be removed, all of which shall be done carefully. All trees, stumps, etc., removed in the excavation shall be cut off, excavated and removed to a depth of not less than nine (9) inches below the sub-grade surface. Where an embankment is to be made not more than two and one-half (2½) feet in depth, said trees, stumps, roots, etc., shall be cut off flush with the existing ground surface. Where embankments exceeding two and one-half (2½) feet are to be made, said trees, stumps, roots, etc., shall be cut off to within six (6) inches of the ground surface. The Contractor shall burn or otherwise dispose of all such trees, stumps, brush, weeds, roots, etc., and all sod taken from the excavation, in a satisfactory manner, and shall remove all rubbish and refuse to such point or points beyond the limits of the roadway, as may be directed. All excavations made below the subgrade surface by the removal of trees, stumps, etc., shall be filled with suitable materials, which shall be compacted thoroughly so as to make the surface at these points conform to the surrounding sub-grade. All slopes of cuts, embankments, ditches and waterways and all culverts, whether old or new, shall be cleaned and cleared of obstructions in a satisfactory manner and shall be left in a neat and trim condition.

(67)
Removal
of
Structures
Obstructions
etc.

All fences, buildings, structures of any character not necessary to the construction of the roadway, or other encumbrances upon or within the limits of the roadway shall be removed carefully by the Contractor and the materials so removed shall be piled on the abutting property, neatly and in an acceptable manner, or otherwise disposed of as required.

(68)
Roadway
Excavation.

Roadway excavation shall include the removal and satisfactory disposal of all materials taken from within the limits of the work contracted for, necessary for construction and preparation of the road bed, embankment, sub-grade, shoulders, slopes, ditches, waterways, intersections, approaches, private entrances, etc., as indicated and directed. All suitable materials removed from the excavation shall be used as far as practicable in the formation of the embankment, sub-grade, shoulders, etc., and at such other places as directed. All breakage and slides shall be removed by the Contractor and disposed of as directed. Ditches and waterways shall be excavated to the depth and width shown on the plans, or as may be indicated and directed. No excavated material shall be wasted without permission and when such material is to be wasted, it shall be disposed of as directed. No payment will be made for any excavated material which is used for purposes other than those designated. During the construction of the roadway the roadbed shall be maintained in such a condition that it will be well drained at all times.

(69)
Embankments.

Embankments shall be formed of suitable material placed in successive layers of not more than eight (8) inches in depth for the full width of the cross-sections, each layer to be rolled thoroughly with a three (3) wheel power roller weighing not less than ten (10) tons. Stumps, trees, rubbish, sod, or any other unsuitable material or substance shall not be placed in the embankment. When embankments are to be made on a hillside, the slope of the original ground on which the embankment is to be placed shall be ploughed deeply or cut into steps before the filling is commenced. All such embankments so made shall be rolled thoroughly, as stated herein, or where the bottom of the fill is of insufficient width to permit the use of a roller, the material shall be tamped thoroughly and satisfactorily. Material containing sand in such proportion as to prevent it, when dry, from compacting readily when rolled, shall not be used except on written approval. The Contractor shall be responsible for the stability of all constructed embankments and shall replace any portions which, in the opinion of the Engineer, have become displaced due to careless or negligent work on the part of the Contractor, or to the damage resulting from natural causes, such as storms, cloudbursts, etc., and not attributable to the unavoidable movement of the natural ground upon which the embankment is made.

(70)
Disposal of
Surplus
Excavation
Material.

All excavated material not required in the embankments shall be used for widening the shoulders and other purposes if directed, or this material and all material not permitted in the embankment, shoulders, etc., shall be removed from within the limits of the roadway and deposited at such point or points as directed, or if no such point or points are designated the Contractor shall find suitable dumping places for all such surplus material. All surplus material shall be removed and disposed of before the sub-grade rolling has been completed and before any construction materials shall be placed upon the roadway.

(71)
Barrow
Excavation

When the amount of the embankment exceeds the amount of the excavation within the limits of the work contracted for, sufficient suitable material shall be obtained by the Contractor from barrow pits located beyond the limits of the work. This material shall be known as "Barrow" and shall be of satisfactory quality for the purpose for which it is required. Barrow shall include the furnishing, removal and satisfactory placing of the additional material necessary to complete the embankments, sub-grade, shoulders, etc. The Contractor shall notify the Engineer sufficiently in advance of the opening of any barrow pit, so that the cross-sectional elevations and measurements of the existing

ground surface may be taken. Any material removed or excavated from a barrow pit before such measurements have been taken shall not be paid for. The widening of cuts or other excavations within the limits of the highway will not be considered as "Barrow". The Engineer will decide in all cases whether to barrow or to widen the cuts or to take the material out of the roadway.

(72)
Formation
of
Sub-Grade.

The bottom of the excavation and the top of the fill, when completed shall be known as the sub-grade and shall be true to the lines, grades and cross-sections given. After all drains have been laid and the sub-grade has been shaped correctly it shall be brought to a firm, unyielding surface by rolling the entire area with an approved three (3) wheel power roller, weighing not less than ten (10) tons. Any portion of the sub-grade which is not accessible to a roller shall be compacted thoroughly with hand tampers, weighing not less than fifty (50) pounds, the face of which shall not exceed one hundred (100) square inches in area. All soft and yielding material, and other portions of the sub-grade which will not compact readily when rolled or tamped, shall be removed, as directed, and all loose rock or boulders found in the earth excavation shall be removed or broken off to a depth of not less than six (6) inches below the surface of the sub-grade. All holes or depressions made by removal of material, as described above, shall be filled with suitable material, and the whole surface compacted uniformly. In excavation, the ground shall not be plowed or disturbed below the surface of the sub-grade, except as specified herein. If the surface of an old stone or gravel roadbed conforms approximately to the surface of the finished sub-grade, it shall be scarified to uniform depth below and for the full width of the sub-grade surface, sufficient to eliminate all depressions and irregularities and to permit of uniform re-shaping, when necessary, additional or other approved material being added to bring the sub-grade to the desired elevation and cross-section, and the whole shall be rolled until compacted thoroughly. If the existing surface is an old Telford or other large stone foundation which conforms approximately to the surface of the finished sub-grade, all projecting stones shall be napped off to conform with the surrounding surface and sufficient approved broken or crushed stone shall be added to bring it to the required elevation and cross-section. This material shall then be rolled and filled until compacted thoroughly.

(73)
Protection
of
Sub-Grade.

All ditches and drains shall be completed to drain the highway effectually before the placing of any construction material shall be permitted. In handling materials, tools, equipment, etc., the Contractor shall protect the sub-grade from damage by laying planks thereon when directed and shall take such other precautions as may be deemed necessary. In no case shall vehicles be allowed to travel in a single track and form ruts. If ruts of two (2) inches or more in depth are formed, all construction material shall be removed and the sub-grade reshaped and rolled. At all times the sub-grade surface shall be kept in such condition that it will drain readily and effectively. No foundation or surfacing material shall be deposited on the sub-grade until it has been checked and approved.

(74)
Shoulders.

The shoulders shall be constructed of suitable material and rolled with a three (3) wheel power roller, weighing not less than ten (10) tons, to the required cross-section shown on the plan. Material which contains weeds, sod or other unsuitable substances or material which will not compact readily when rolled, shall not be used in constructing the shoulders.

(75)
Method of
Determining
Excavation
Quantities

All excavation will be measured in its original position by the cross-section method to ascertain the amount of material removed, which cross-sections will include all breakage or slides not attributal to carelessness on the part of the Contractor, which have been removed and all masonry walls and stone fences. Clearing and grubbing, the removal of timber or metal fences, buildings and other obstructions will not be measured, but will be included in the price for "excavation".

(76)
Basis of
Payment

Payments for the foregoing work will be made as follows:

(a) Excavation. All "Roadway Excavation" including excavation of all intersecting roadways, driveways, approaches, ditches and waterways appertaining the construction of the roadway, and all other excavations except when specifically stated otherwise, will be paid for at the contract unit price per cubic yard for "Excavation", which price will include all clearing and grubbing, the removal, unless otherwise specified, of all structures and obstructions and all excavations within the limits of the highway, formation of embankments, disposal of surplus materials, preparation of sub-grade and shoulders and the furnishing of all equipment, tools, labor and work incidental thereto.

(b) Barrow. All barrow excavation, that is, all excavation taken from sources other than those within the limits of the work contracted for, will be paid for at the contract unit price per unit yard for "Barrow" completed in place, which price will include furnishing and placing the material and all equipment, tools, labor and work incidental thereto.

**COMBINATION CEMENT CONCRETE HEADER
AND BASE COURSE**

(77)
Description.

All of the Base Course, except otherwise noted, shall be a combination Header Curbing, style strictly in accordance with the Cross Section shown on the Plans: It shall be true to form and of required area. It shall consist of concrete, composed of one (1) part of Portland Cement and nine (9) parts of fine and coarse aggregates, constructed on the sub-grade. The base and the curbing shall be constructed as an integral part. The curbing shall be made of concrete, composed of one (1) part of Portland Cement and five (5) parts of fine and coarse aggregates. The curbing shall have a width of six (6) inches unless otherwise noted on the plans and have a depth equal to that of the pavement or more if so indicated at certain points. The curbing shall be true to form and on all curves shall be truly radial either horizontally or vertically in accordance with the plans.

(78)
Cement.

(Furnished by another SEE PORTLAND CEMENT)

All cement used in the work will be delivered free of cost to the Contractor at three (3) different points along the roadside to be selected by him. He will be furnished with sufficient cement to complete the work in its entirety with a small allowance for wastage in accordance with the plans and specifications. This whole amount of cement will be charged against him and he will be held strictly responsible for its safe keeping and he will be strictly checked on the usage of the same in the mixing of the concrete and wherever otherwise used, and if he wastes or permits the cement to become unfit for use, or if it is lost or stolen, he shall furnish enough other cement to finish the contract at his own proper cost and expense. The Contractor will build at least three (3) suitable weathertight buildings which will thoroughly protect the cement from the weather and all dampness. The cement will be delivered and stacked in these buildings by another and the Contractor must see that the cement is stored in such a manner as to permit easy access for suitable inspection and identification of each shipment.

The Contractor will work up the cement in the order in which it is received on the job; he will take care of all empty cement bags and will count the same in the presence of the Inspector; he will bundle the same with a Bundling machine and will be held responsible for their safe keeping until removed from the line of the road by order of the Engineer.

The Contractor will carefully keep note of the supply of cement and will notify the Engineer in writing in ample time for the Engineer to order a new supply, to the end that the work shall not be delayed for want of this material, as the Contractor will not be allowed any extension of time for such delays nor will be allowed, nor claim any damages for such delays should they occur.

Every facility shall be provided for careful sampling and inspecting the cement at the site of the work if so directed by the Engineer, and at least ten (10) days time shall be allowed from the time of sampling for the completion of the seven (7) day test, and at least thirty-one (31) days for the for the twenty-eight (28) day test.

The cement may be rejected if it fails to meet any of the requirements of these specifications.

After the cement has been placed, upon its arrival, at the roadside, the Contractor shall assume all costs for any subsequent removal of the same either to another storehouse, or to the mixing machines or elsewhere.

(79)
Fine
Aggregate.

The fine aggregate shall consist of sand, or a combination of sand and stone screenings, conforming to the following requirements:

(a) Sand. This sand shall consist of clean, hard, durable grains. When dry it shall pass a laboratory screen having circular openings, one quarter ($\frac{1}{4}$) of an inch in diameter and shall be graded from coarse to fine. It shall contain not more than five (5) per cent, by weight, of loam or other foreign substances. "Run-of-bank" sand shall not be used except upon approval of the Engineer.

1. Strength. Mortar composed of one (1) part, by weight, of Portland cement and three (3) parts, by weight of sand, mixed in accordance with the methods prescribed by the Engineer, and, shall have a tensile strength at the age of seven (7) and twenty-eight (28) days of not less than seventy-five (75) per cent of that developed by mortar of the same proportions, made of the same cement and standard Ottawa sand.

(b) Stone Screenings. These screenings shall consist of material resulting from the crushing of clean, tough, durable rock having a French coefficient of wear of not less than (10). For purposes of proportioning on the work, and in Laboratory tests for grading and strength, only that portion of the entire product which passes a laboratory screen having circular openings one-quarter ($\frac{1}{4}$) of an inch in diameter will be regarded as fine aggregate. This material shall be graded from coarse to fine, containing not more than thirty (30) per cent, by weight, of particles passing a standard No. 50 laboratory sieve, nor more than eighteen (18) per cent, by weight, passing a No. 100 sieve. It shall contain not more than three (3) per cent, by weight, of loam or other foreign substances.

(c) Combination of Sand and Stone Screenings. Combinations of sand and stone screenings, each measured separately and accurately by volume, may be used in approximately equal proportions as directed by the Engineer.

(80)
Coarse
Aggregate.

The coarse aggregate shall consist of crushed stone, or gravel graded uniformly from the maximum size to pieces one-quarter ($\frac{1}{4}$) of an inch in diameter, with not more than five (5) per cent, by weight, passing a laboratory screen having one-quarter ($\frac{1}{4}$) of an inch circular openings. The maximum size of the crushed stone or gravel shall be such as to pass through circular openings not less than one and one-half ($1\frac{1}{2}$) nor more than two and one-half ($2\frac{1}{2}$) inches in diameter.

(a) Crushed Stone. Crushed stone shall be obtained from clean, tough, durable rock, having a French coefficient of wear of not less than eight (8). This material shall be free from dust and an excess of flat and elongated pieces.

(b) Gravel. Gravel shall consist of clean, tough, durable stone of high resistance to abrasion, washed free of clay or coatings of any character. "Run-of-bank" gravel or gravel which contains disintegrated or soft stone, or an excess of flat pieces, shall not be used.

(81) Water. Water used for this work shall be clean, free from oil, acid, alkali or vegetable substances.

(82) Approval of Material Sources of Supply. Sources of supply for Portland cement and fine and coarse aggregates shall be approved by the Engineer before delivery of materials is started.

A representative sample of fine aggregate shall be forwarded to the Engineer at Johnstown, Pennsylvania. Samples of coarse aggregate shall be submitted when directed. Aggregate samples shall be accompanied by a statement giving the type of material, name of the producer, location of and railroad connections with the plant, and the diameter of openings in screens used in their preparation.

(a) Fine Aggregate Samples. A fine aggregate sample shall weigh approximately twenty (20) pounds.

(b) Coarse Aggregate Samples. The quality of the stone will be determined by tests made on a sample consisting of approximately twenty-five (25) pounds of pieces not less than one and one-half ($1\frac{1}{2}$) inches nor more than three (3) inches in diameter and of two small slabs preferably four (4) to six (6) inches in depth. Acceptability of the coarse aggregate in other respects will be determined by tests upon a sample of the crushed stone of the same sizes as intended for use in the work, having a weight of not less than twenty-five (25) nor more than fifty (50) pounds.

(83) Forms. Forms for this work shall be securely tied together and shall be of wood or metal of the depth of the concrete, straight, free from warp, true to radii of all curves and of sufficient strength, when staked, to resist the pressure of the concrete without springing. If of wood they shall be of two (2) inch surface plank, or if of metal, they shall be of approved section and shall have a flat surface on top of not less than one and three quarters ($1\frac{3}{4}$) inches.

The curbing for combination curbing and base shall be constructed with outside forms similar to those described above, and with inside forms of such design as will permit of their being fastened securely to the outside forms.

All forms shall be cleaned thoroughly and greased or soaped before concrete is placed against them. The forms shall be jointed neatly and tightly, and staked securely to line and grade at least two hundred (200) feet in advance of the point of placing concrete.

(84) Composition. When gravel or crushed stone is used as the coarse aggregate shehcanerated for the base course shall be composed of one (1) part of Portland cement and nine (9) parts of fine and coarse aggregate, each measured separately and accurately by volume.

The concrete shall approximate a 1:3:6 mix or 1:3:5 mix, depending upon the coarse aggregate used but the engineer may vary the relative proportions of fine and coarse aggregate.

The curbing for combination curbing and base and the header curbing across street intersections and the ends of the pavement, shall be composed of one (1) part of Portland cement, two (2) parts of fine aggregate and three (3) parts of coarse aggregate.

(85)
Consistency

Sufficient water shall be used, in mixing, to produce a concrete which will flatten out and quake when deposited in place, but not enough to cause it to flow or the mortar and coarse aggregate to separate. The water shall be measured and gauged accurately and shall be discharged automatically into the drum with the aggregates. The quantity of water shall be determined by the Engineer and not varied without his consent.

(86)
Mixing
Conditions

No concrete shall be mixed while the air temperature is at or lower than thirty-five (35) degrees F. and no materials containing frost shall be used. Bags of cement, or fine aggregate containing lumps or crusts of hardened material shall not be used. The concrete shall be mixed only in such quantities as are required for immediate use, and any which has developed initial set or has been mixed longer than thirty (30) minutes shall not be used.

(87)
Mixing
Concrete

Concrete shall be mixed thoroughly in a batch mixer of approved type for a period of not less than one (1) minute after all the materials are in the drum, during this period the drum shall make not less than fourteen (14) nor more than twenty (20) revolutions per minute. The entire contents shall be removed from the drum before materials are placed therein for the succeeding batch.

When permitted, hand mixing shall be done on a water-tight wood or metal surface of suitable size. The cement and fine aggregate shall be mixed without the addition of water until the mixture of uniform is produced. The coarse aggregate shall be spread to a depth of approximately eight (8) inches and wetted, the mixture of cement and fine aggregate spread over it, and the whole turned once, then water shall be added in sufficient quantity to produce the desired consistency and the whole mass turned not less than six (6) times. Hand mixed batches shall not exceed one-half ($\frac{1}{2}$) of a cubic yard.

(88)
Placing
Concrete

Concrete shall be placed only on a moist sub-grade. If the sub-grade is dry it shall be sprinkled with as much water as will be absorbed readily.

The concrete shall be deposited upon the sub-grade by means of a suitable discharging device which does not cause a segregation of the mortar and coarse aggregate and shall be spread to the full depth required by shoveling or other approved methods. Rakes shall not be used in handling concrete. The concrete shall be compacted thoroughly and made to conform to the required cross-section by means of approved templates. The sides of the base course shall be well spaded. The top surface on which a block pavement is to be laid shall be brought to a smooth finish.

When combination curbing and base is to be constructed the concrete for the curbing shall be placed immediately and in no case more than thirty (30) minutes after the base course concrete is placed. The concrete for the curbing shall be tamped and spaded and the top surface floated to a smooth, even surface. The outside edge of the surface of the curbing shall be rounded as shown on the plan.

At the end of any working period a bulk-head shall be placed at right angles to the center line and perpendicular to the surface, and the base course finished to it. When work is resumed the bulk-head shall be removed and the joint wetted before placing concrete against it.

Header curbing shall be constructed across street intersections and at the ends of the pavement where shown on the plans or directed.

(89)
Protection
of
Concrete.

During hot weather, newly laid concrete shall be kept damp by sprinkling with water for a period of not less than three (3) days following the placing of the concrete, as may be directed. During cold weather, when the air temperature may be expected to drop below forty (40) degrees F., a sufficient supply of fodder, straw, stable manure or other material suitable for covering shall be provided along the line of the work and any time when the air temperature may be expected to reach the freezing point during the day or night, the material specified herein shall be spread to a sufficient depth to prevent freezing until the concrete had cured thoroughly. All classes of traffic and hauling shall be excluded from the base course by the erection of suitable barricades as directed, until in the opinion of the Engineer, the concrete has hardened sufficiently to sustain it, and in no case until the last laid concrete is at least seven (7) days old.

(90)
Basis
of
Payment

This work will be paid for at the contract unit price per square yard for Combination Cement Concrete Header Curbing and Base Course, complete in place, which price will include all materials (except cement) forms, equipment, tools, labor and work incidental thereto.

PORTLAND CEMENT

(91)
Portland
Cement

The cement for the work will be furnished by another contractor who will deliver the cement to the supervisors, with freight prepaid on the Moxham siding, of the Johnstown & Stonycreek Railroad at Johnstown, Pennsylvania, deliveries to be made in carload lots, at such time as may be desired by the Engineer.

All cement used in this work shall be Portland cement, which shall be tested according to methods prescribed by and shall conform to the requirements of the report of a Joint Conference representing the United States Government, American Society of Civil Engineers and the American Society for Testing Materials, published in the "1916 Standards of the American Society for Testing Materials, page No. 429, etc., Serial Designation C 9-17," etc.

(a) Definition. Portland Cement is the product obtained by finely pulverizing clinker produced by calcining to incipient fusion an intimately and correctly proportioned mixture of argillaceous and calcareous materials, with no additions subsequent to calcination excepting water and calcined or uncalcined gypsum.

(b) Chemical Properties. The following limits for the chemical properties of the cement shall not be exceeded:

Properties	Percentage
Loss on ignition	4.00
Insoluble residue	0.85
Sulfuric anhydride (SO ₃)	2.00
Magnesia (MgO)	5.00

(c) Physical Properties. The physical properties of the cement shall meet the following requirements:

1. Specific Gravity. The specific gravity of cement shall be not less than three and ten one-hundredths (3.10). Should the test of cement as received fall below this requirement, a second test may be made upon an ignited sample. The specific gravity test will not be made unless specifically ordered.

2. Fineness. The residue on a standard No. 200 laboratory sieve shall not exceed twenty-two (22* per cent by weight.

3. Soundness. A pat of neat cement shall remain firm and hard, and show no signs of distortion, cracking, or disintegration, in the steam test for soundness.

4. Time of setting. The cement shall not develop initial set in less than forty-five (45) minutes when the Vicat needle is used, or sixty (60) minutes when the Gillmore needle is used. Final set shall be attained within ten (10) hours.

5. Tensile Strength. The average tensile strength in pounds per square inch of not less than three (3) standard mortar briquettes composed of one (1) part cement and three (3) parts standard sand, by weight, shall be equal to or be higher than the following:

Age of Test days:	Storage of Briquettes.	Tensile Strength, pounds per square inch.
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7	1 day in moist air, 6 days in water	200
28	1 day in moist air, 27 days in water	300

The average tensile strength of standard mortar at twenty-eight (28) days shall be higher than the strength at seven (7) days.

(d) Packing and Marking. The cement shall be delivered in suitable bags or barrels with the brand and name of the manufacturer clearly marked thereon, unless shipped in bulk. A bag shall contain ninety-four (94) pounds net and shall be considered to equal one (1) cubic foot. A barrel shall contain three hundred and seventy-six (376) pounds net.

(e) Storage. The cement shall be stored in such manner as to permit easy access for suitable inspection and identification of each shipment, and in a suitable weather-tight building which will protect the cement from damages. When permission is given to store in the open, a platform and ample water-proof covering shall be provided, as directed.

(f) Inspection. Every facility shall be provided for careful sampling and inspecting at either the mill or at the site of the work, as may be directed by the Engineer. At least ten (10) days from the time of sampling shall be allowed for the completion of the seven (7) day test, and when directed at least thirty-one (31) days shall be allowed for the completion of the twenty-eight (28) day test. The cement shall be tested in accordance with the methods referred to herein.

(g) Rejection. The cement may be rejected if it fails to meet any of the requirements of these specifications:

1. Fineness Test. Cement shall not be rejected on account of failure to meet the fineness requirement if upon retest, after drying at one hundred (100) degrees C. for one (1) hour, it meets this requirement.

2. Soundness Test. Cement failing to meet the test for soundness in steam may be accepted if it passes a retest, using a new sample at any time within twenty-eight (28) days thereafter.

3. Weight. Packages varying more than five (5) per cent from the specified weight may be rejected, and if the average weight of packages in any shipment, as shown by weighing fifty (50) packages taken at random, is less than that specified, the entire shipment may be rejected.

(92)
Basis of
Payment

The cement will be paid for at the unit price per barrel, freight prepaid to the point mentioned above, within thirty (30) days after receipt of each car less fifteen (15) per centum of the contract price due, credit being given for any empty sacks as may have been returned to the Contractor. The retained fifteen (15) per centum will be paid within thirty (30) days after the completion and acceptance of the entire work

VITRIFIED BRICK PAVEMENT.

(93)
Vitrified
Brick
Pavement

The brick will be delivered free of cost to the Contractor and piled at such places as he may designate along the roadway. The Contractor will give a receipt for the number of brick received, as he will be held responsible for the number delivered to him, which will be in slight advance over the actual number required to complete the work in all its parts. He will handle them carefully and keep them clean, as brick otherwise acceptable may be rejected if they become coated with dirt and in such case the cost of such rejected brick shall be charged to the Contractor, and the amount deducted from any money due to him by reason of his contract. The Contractor shall notify in writing the Engineer when he will be ready for the brick so that they may be ordered in time, as no allowance for extension of time, nor any claim for damages will be allowed for any delay caused by a delay on account of the failure of the brick to arrive on time.

The Contractor will assume all costs to which he may be put by reason of rehandling the brick in any manner for any reason whatsoever, or of getting them to the pavers or otherwise after they have been placed where he so directs them to be by the Township at the time of their arrival at the roadside.

(94)
Materials
for
Cement-
Sand Bed

The cement-sand bed shall be composed of one (1) part of Portland cement and four (4) parts of sand, meeting the following requirements: The cement will be furnished by another Contractor.

a. Portland Cement. Cement for this work shall conform to the requirements as heretobefore specified.

b. This sand shall consist of clean, hard, durable grains free from vegetable and other deleterious substances. When dry, it shall pass a laboratory screen having circular openings one-quarter ($\frac{1}{4}$) of an inch in diameter and shall be graded from coarse to fine. It shall contain not more than five (5) percent, by weight, of loam or other foreign substances.

(95)
Materials
for
Bituminous-
Mastic
Filler

This filler shall be composed of sand and a bituminous material combined so as to form a pliable, waterproof mixture which will adhere firmly to the paving brick and which, at extremes of climatic temperature, shall neither flow nor become brittle.

a. SAND. The sand shall consist of approved, clean, fine grains of such size as shall pass a standard No. 10 mesh sieve.

b. BITUMINOUS MATERIAL. The bituminous material shall meet either of the following specifications:

(1) Specifications "A", Coal Tar Pitch. The coal tar pitch to be used in the filler shall be free from water, shall contain not more than five-tenths (0.5) percent, by weight, of inorganic matter, and shall meet the following test requirements:

1. Specific Gravity. The specific gravity shall be not less than one and twenty-three one-hundredths (1.23) nor more than one and thirty-three one-hundredths (1.33) at sixty (60) degrees F.

2. Free Carbon. It shall contain not less than twenty (20) nor more than thirty-five (35) percent, by weight, of free carbon.

3. Melting Point. It shall have a melting point between one hundred and fifteen (115) and one hundred and thirty-five (135) degrees F., as may be directed, with a permissible variation of five (5) degrees F. from the designated figures. This determination shall be made by the cube method in water.

(2) Specification "B", Asphalt. The asphalt to be used in the filler shall be an asphaltic cement obtained by the distillation of asphaltic petroleum at a temperature not exceeding seven hundred (700) degrees F. It shall be homogeneous, free from water or decomposition products, and shall meet the following test requirements:

1. Penetration. The penetration at seventy-seven (77) degrees F. shall not be less than sixty (60) nor more than one hundred (100), (100 grams, 5 seconds No. 2N), as may be directed by the Engineer, and the penetration at one hundred (100) degrees F. shall not exceed three (3) times the penetration at seventy-seven (77) degrees F., the conditions of time and load being as above.

2. Solubility. The solubility in cold carbon tetrachloride shall be not less than ninety-eight and one-half (98½) percent.

3. Ductility. The ductility at seventy-seven (77) degrees F. shall not be less than forty (40) centimeters, the rate of elongation being five (5) centimeters per minute.

4. Volatility. The loss by volatilization shall not be more than three (3) percent, by weight. (A. S. T. M. Standards, 1916)

(96)
Water

Water used for this work shall be clean, free from oil, acid, alkali, or vegetable substances.

(97)
Approval
of
Material
Sources
of
Supply

Sources of supply for the brick, the sand for the cement-sand, and the bituminous material for the mastic filler shall be approved by the Engineer before delivery of the materials is started.

A representative sample, weighing approximately twenty (20) pounds of sand for grout and mastic fillers shall be submitted to the laboratory selected by the Supervisors. Samples of the other materials specified herein shall be submitted when directed.

(98)
Mixing
and
Placing
Cement-
Sand Bed

Upon the prepared base course, which shall be cleaned of all loose and foreign materials and dampened thoroughly, shall be spread a mixture of cement and sand to form the bed for the brick. The cement and sand shall be mixed, dry, to a uniform color, in an approved batch mixer or, if by hand, on a clean tight surface. It shall then be spread and shaped carefully by means of an approved trowel. The entire surface of the bed shall be rolled with a hand roller, which shall be not less than thirty-six (36) inches in diameter, twenty-four (24) inches in width, shall weigh not less than ten (10) pounds per inch width of tread and shall have a handle not less than twelve (12) feet in length. The bed shall be reshaped and rerolled until firm and true to the cross-section required, and shall have a uniform depth of three-quarters ($\frac{3}{4}$) of an inch upon completion. No more cement-sand bed shall be mixed or prepared than can be used within any continuous working period, and any bed upon which the brick are not laid and rolled, during any continuous working period, shall be removed and replaced with new materials when work is resumed. Cement-sand bed which is injured or displaced with new mat materials when work is resumed. Cement-sand bed which

is injured or displaced by a flow of water, rain, or any other cause, shall be replaced satisfactorily with new material. The workmen shall not walk upon the bed after it has been shaped by the templet.

(99)
Laying
Brick

All brick shall be laid carefully with the best face up, lugs in the same direction, from one side of the pavement to the other side, in parallel straight courses at right angles to the center line, except at intersections and on curves where they shall be laid as directed. The brick shall be laid with both ends and sides in contact, breaking joints not less than three (3) inches. The courses shall be straightened by striking lightly with a sledge on a four by four (4 x 4) inch timber three (3) feet long, placed against every fourth course, all thick brick being removed. At the ends of and where necessary between courses, closures shall be made by carefully placing brick cut accurately to give close joints. Cut or broken brick shall be used only at the ends of courses, placed with the cut end turned towards the adjacent whole brick, and shall be not less than three (3) inches in length. While laying brick, the pavers shall not walk or stand on the bed. The spaces between the brick shall be kept clean and open to the bottom until the filler is applied. After laying, the brick shall be inspected, culled and approved for rolling and if any section contains more than ten (10) percent of culls, the brick shall be removed and the bed replaced.

"Hillside" brick shall be laid as above specified with the grooves across the line of traffic and the square edge up grade.

(100)
Rolling
Brick

Before rolling, the surface of the brick shall be swept free of spalls. The pavement shall then be rolled with a tandem roller, weighting not less than three (3) nor more than five (5) tons, commencing at the sides and proceeding slowly back and forth, parallel to the sides, until the center of the pavement is reached; then passing to the opposite side, the rolling shall be repeated in the same manner until the center is again reached, after which the speed may be increased, and the rolling continued until the brick are bedded firmly. The rolling shall be then done, from one side of the pavement to the other side, at an angle of forty-five (45) degrees, repeating this operation in the opposite direction. All brick which are broken or injured during rolling shall be removed and replaced with perfect ones which likewise shall be brought to true surface. When a cement-sand bed is used, the surface shall be rolled as soon as possible after laying, so as to complete it before the bed begins to set. The brick adjacent to curbing and other areas inaccessible to the roller shall be tamped to grade by the use of a hand tamper, applied upon a two (2) inch board. If the bed is forced up between the brick more than one-half ($\frac{1}{2}$) of an inch, the brick shall be removed and the bed reshaped.

After final rolling the pavement shall be tested with a ten (10) foot straight edge, laid parallel with the side of the pavement, and any depressions exceeding one-quarter ($\frac{1}{4}$) of an inch shall be corrected, and if necessary, the entire surrounding surface again rolled.

(101)
Mixing
and
Applying
Bituminous-
Mastic
Filler

After the brick have been rolled thoroughly, inspected and approved, the spaces between them shall be filled with the mixture of sand and bitumen. Before being mixed the sand shall be heated to a temperature of not less than three hundred (300) nor more than four hundred (400) degrees F. and shall be between these limits when mixed with the bitumen. The bitumen shall be heated in kettles equipped with an approved thermometer which will register its temperature. The bituminous material shall be mixed with as much hot, dry sand as the bitumen will carry, but in no case shall the volume of the sand exceed the volume of the bituminous materials. This hot mixture shall be flushed on the surface of the brick and pushed into the spaces between them with suitable tools, flushing or repouring being continued until the joints are filled permanently, flush with the top of the brick. As little of the material as possible shall be left on the surface.

When tar is used in the mixture it shall be at the temperature of not less than two hundred and fifty (250) degrees F. and at no time shall be heated to more than three hundred and twenty-five (325) degrees F.

When asphalt is used it shall be heated to a temperature of two hundred and seventy-five (275) degrees F.

In applying the filler, care shall be observed that the pavers are closely followed by the filler gang, and in no case shall the paving be left over night, or work stopped, unless all joints are filled completely. In case rain stops the filler gang before its work is completed, the joints shall be protected by tarpaulins or other approved means. Filler shall not be poured into joints unless they are dry.

(102)
Protec-
tion.

After the surface has been inspected and approved and sufficient time for setting has elapsed so that the covering material shall not injure the grout filler in any way, the surface shall be covered with one-half ($\frac{1}{2}$) inch or more of approved clean sand or other acceptable material to prevent too rapid drying of the filler, and this covering shall be sprinkled three (3) times each day for four (4) days that the air temperature reaches seventy-five (75) degrees F. or above. Traffic shall not be permitted on the pavement for a period of at least ten (10) days after the grouting, or as long as may be directed. Before opening the road to traffic the covering shall be removed from the finished pavement satisfactorily.

When bituminous-mastic filler is used, immediately after the spaces between the brick have been filled and while the filler is still soft and pliable, the pavement shall be covered with a thin layer of approved, clean sand, which shall be heated if directed. Traffic shall not be permitted on the pavement until the filler has cooled to the air temperature. This covering shall remain on the pavement for such time as may be directed, after which it shall be removed in a satisfactory manner.

(103)
Basis
of
Payment

This work will be paid for at the contract unit price per square yard for "Vitrified Brick Pavement" in place, which price will include laying all brick, filler, bed, except cement, and protection materials, all equipment, tools, labor and work incidental thereto.

(104)

VITRIFIED BRICK

All brick will be furnished by another contractor who will deliver them, freight prepaid, to the Supervisors, on the Moxham Siding of the Johnstown & Stonycreek Railway at Johnstown, Penna., deliveries to be made in car load at such times as may be desired by the Supervisors. This Contractor will be held responsible for all costs incurred on account of the failure of any bricks to meet the requirements of the specifications when tested at the unloading point or after the brick are taken to the roadway or after they are in position in the roadbed, he shall pay all expense for removing such rejected brick and so much money as may be incurred in the removal may be deducted from any money due or to become due him by virtue of his contract.

The Contractor furnishing the brick will assume and pay for all laboratory costs and traveling expenses of the Engineer or Inspectors incurred in making inspection or test of the brick.

(105)
Brick

"Hillside" brick shall be used, on grades of five (5) percent or more, where shown on the plans. Vitrified brick shall meet the following requirements:

a. **QUALITY.** These brick shall be repressed or wirecut lug brick, thoroughly annealed, tough, durable, non-absorbitive and evenly burned. When broken they shall show a dense stone-like body, free from lime, air pockets, cracks or marked laminations. Kilnmarks shall not exceed one-eighth ($1/8$) of an inch in depth and the wearing surface shall show only slight kilnmarks. Only one kind of brick shall be used on a continuous section of roadway.

b. **SIZE.** Standard brick shall be approximately two and three-quarter ($2\frac{3}{4}$) to three (3) inches in width, three (3) inches in depth and eight (8) to nine (9) inches in length. They shall be uniform in size, and shall not vary in width, depth or length to exceed one-eighth ($1/8$) of an inch on any section of pavement. If the edges of the brick are rounded, the radius shall not exceed three sixteenths ($3/16$) of an inch. Only brick with lugs or projections raised on one side, not less than one-eighth ($1/8$) nor more than one-quarter ($1/4$) of an inch shall be used. The ends of the brick shall have either a semi-circular groove, with a radius of not less than one-eighth ($1/8$) nor more than one-quarter ($1/4$) of an inch, or a bulge of at least one-sixteenth ($1/16$) of an inch. The name of the brick or manufacturer, if formed on the brick shall be made by means of recessed letters.

c. **RESISTANCE TO ABRASION.** All brick shall show a satisfactory resistance to abrasion, as determined by the standard rattler test, the test to be conducted as described in the standard method of the "American Society for Testing Materials." C. 7-15

d. **SAMPLING AND TESTING.** Where a standard rattler has been installed and is kept in an approved condition, and acceptable facilities for testing and furnished by the manufacturer, samples will be taken and tested at the plant by the Inspector while cars are being loaded, provided daily shipments are sufficient to warrant it. Under all other conditions samples will be taken

from the cars upon arrival at their destination. The Brick Manufacturer shall notify the Engineer in charge of the work of the shipment of each car. A sample consisting of twelve (12) bricks will be taken therefrom by the Engineer and forwarded to the Laboratory for testing. Written notice of the acceptance or rejection of each carload will be forwarded to the Brick Manufacturer. No brick shall be delivered on or adjacent to the work until written acceptance has been received. The Brick Manufacturer shall assume and pay all damage that may accrue on account of delay in unloading due to loss of time caused by inspection.

e. UNIFORMITY. All brick shipped to a single contract shall be of uniform quality and resistance to abrasion as determined by the standard rattler test, to which end the Contractor shall furnish from the manufacturer of the brick which he proposes to use, just prior to beginning shipments, a written statement of the average loss percentage by abrasion of the brick to be furnished. In case the Contractor shall fail to designate, or erroneously designates, the average loss by abrasion of the brick which he proposes to furnish for a given contract, it shall be determined by averaging the percentages of loss on the first three (3) acceptable cars which are received on the work; if inspection is carried on at the manufacturer's plant it shall be determined by averaging the results of tests on the first three (3) acceptable racks, piles or kilns. Results of tests of the first three (3) acceptable carloads, racks, piles or kilns shall fall within the limits of variation specified in this paragraph.

1. Samples taken at Destination. If the Contractor proposes to use brick having an average loss by abrasion between the limits of sixteen (16.0) and seventeen and nine-tenths (17.9) percent, a variation between individual carloads or other lots of not more than four (4.0) percent in either direction from the designated average loss will be permitted; if the proposed average loss is from eighteen (18.0) to less than twenty (20.0) percent, a variation from the designated average loss of not more than three and five-tenths (3.5) percent in either direction will be permitted; if the proposed average loss is from twenty (20.0) percent to less than twenty two (22.0) percent, a variation from the designated average of not more than three (3.0) percent, in either direction will be permitted, except that no lot shall show a percentage of loss in excess of twenty-four (24.0) percent, a variation between nineteen and five-tenths (19.5) and twenty-four (24.0) percent of individual carloads or lots will be permitted.

2. Samples Taken at the Plant. When samples are taken directly from kilns at the manufacturer's plant during the process of loading cars, in general three (3) complete sets of brick will be taken to represent approximately three (3) degrees of burning, all of the brick in a given set to be as nearly as possible of the same characteristics and of the same degree of burning. Within a single kiln the difference in the percentage loss by abrasion of the lowest and highest testing sets of brick shall not exceed eight (8) percent when the average of all brick tested from the kiln is less than twenty (20.0) percent. The average abrasion loss on a kiln will be the average of the results representing the three (3) degrees of burning in that kiln, and the variation between individual kilns, racks, or piles shall conform to the specified variations in this paragraph.

When test samples are taken directly from the kiln not more than fifteen thousand (15,000) bricks shall be represented by a single set of ten (10) brick, and when taken from a carload, or from a rack or pile at the plant, not more than ten thousand (10,000) bricks shall be represented by a single set of ten (10) brick.

f. BASIS OF ACCEPTANCE. All carloads, kilns, or other lots of brick showing an average loss by abrasion of twenty-four (24) percent or less and conforming to the specified allowable limits of variation shall be accepted on the first test. In case, however, a given lot of brick shall show on the first test a percentage loss by abrasion in excess of twenty-four (24) percent or a percentage which falls without the designated limits of variation for the given work, a second or re-test may be made when directed, provided previous successive tests of the brick have not failed to meet the requirements of the specifications; and the average of the results of the two tests and the variation between them, shall constitute the basis of acceptance.

g. HANDLING. The brick at all times shall be handles carefully, piled neatly and kept clean. Brick otherwise acceptable may be rejected if they become coated with dirt.

h. VISUAL INSPECTION. All brick shall be subjected to careful inspection before and after laying and rolling, and rejections will be made on the following conditions:

All brick which are broken through, or chipped in such manner that neither the wearing surface remains substantially intact or in such manner that the lower or bearing surface is reduced in area by more than one-sixth ($1/6$).

All brick which are cracked to a depth greater than one-quarter ($1/4$) of an inch on any surface, or which are cracked on the wearing surface.

All brick which are so off-size or so mishapen, bent, twisted or kiln-marked that they will not form a uniform surface or align correctly with other brick.

All brick which obviously are too soft and too poorly vitrified to endure street wear.

(106)
Basis
of
Payment

The brick will be paid for at the contract unit price per M. for Vitrified Brick, freight prepaid to the point designated above within thirty (30) days after receipt of each car, less fifteen (15) per centum of the contract price. The fifteen (15) per centum retained less any costs due to removal of rejected brick, including the cost of such brick themselves, will be paid within thirty (30) days after the completion and acceptance of the entire road.

PIPE CULVERTS

and

CAST IRON. REINFORCED CEMENT CONCRETE

(107)

Description

These culverts shall consist of sections of cast iron, reinforced cement concrete, pipe, of the diameter shown on the plans laid on a firm bed true to line and grade in accordance with these specifications.

All cast iron and reinforced cement concrete pipe will be furnished free of cost to the Contractor along side the Roadway at such points as may be designated by him or by the Supervisors. He will give to the Engineer a receipt for all this material when it is delivered and he will be held responsible for its safe keeping, thereafter until the work is accepted.

(108)

Cement
Mortar

The mortar for cementing the joints in the pipe shall be composed of one (1) part of Portland Cement, and two (2) parts of approved, clean sand, mixed with sufficient water to form a plastic mortar. The cement will be furnished by another Contractor.

(109)

Forming
Bed for
Pipe.

Where the pipe is to be laid below the ground line, a trench shall be excavated to the required depth, and the bottom of the trench shall be shaped to conform to the bottom of the pipe and shall afford a uniformly firm bed throughout its entire length, and recesses shall be excavated to receive the hubs. Where rock is encountered the trench shall be excavated four (4) inches below the bottom of the pipe and this excess depth shall be refilled with suitable material, which shall be tamped thoroughly. Any soft or yielding material shall be removed and replaced with other suitable material, which shall be tamped thoroughly in place.

Where pipe is not laid in a trench, a uniformly firm bed shall be made as herein specified for the bottom of the trench.

(110)

Laying
Pipe

The pipe shall be laid carefully, hubs up-grade, spigot ends fully entered into the adjacent hub, and true to lines and grades given. All cast iron, reinforced cement concrete and vitrified clay pipe shall be laid with cemented joints. Before succeeding sections of pipe are laid, the lower portion of the hub of the preceding pipe shall be plastered on the inside with cement mortar of sufficient thickness to bring the inner surfaces of the abutting pipes flush and even. After the pipe is laid, the remainder of the joint shall be filled with similar material, and sufficient additional material shall be used to form a bead around the joint. The inside of the joint shall be wiped and finished smooth. After initial set, the cement on the outside shall be protected from the air and sun with an earth covering.

Any pipe which is not in true alignment or which shows any settlement after laying shall be taken up and relaid without extra compensation.

(111)

Refilling
around
Pipe

Where indicated or directed, the filling around pipe shall be made in layers with approved material, free from rock and each layer shall be tamped thoroughly around and over the pipe.

(112)

Basis of
Payment

This work will be paid for at the contract unit price lineal foot for the Cast Iron Pipe or the Reinforced Cement Concrete pipe laid in place, which price will include paying, (except furnishing the cement) furnishing all equipment, tools, labor and work incidental thereto, also all excavation and refilling

and the disposal of surplus material.

CAST IRON AND REINFORCED CEMENT CONCRETE
PIPE FOR CULVERTS

(113)

All cast iron and reinforced cement concrete pipe will be furnished by another contractor, who will deliver them, freight prepaid to the Supervisors on the Moxham Siding on the Johnstown & Stonycreek Railroad, Johnstown, Penna., deliveries to be made in carload at such times as may be desired, by the Engineer.

These culverts shall consist of sections of cast iron, reinforced cement concrete, pipe, of the diameter shown on the plans laid on a firm bed true to line and grade in accordance with these specifications.

(114)
Cast Iron
Pipe

The pipe shall be made of cast iron of good quality and of such character as to make the metal strong, tough and even grain, but soft enough to admit of satisfactory drilling and cutting. The metal shall be made without any mixture of cinder iron or other inferior metal and shall be remelted in a cupola or air furnace. The pipe shall be hub and spigot style, smooth, free from scales, lumps, blisters and other defects impairing its strength and durability.

It shall be manufactured in lengths of not less than three (3) feet, the inner and outer surfaces shall be true, whole, concentric cylinders, and it may be either cast iron culvert pipe or cast iron water pipe. If cast iron water pipe is furnished, it shall be class "A", but may be of light weight and second quality, and shall conform to standard specifications. If cast iron culvert pipe is furnished, the minimum thickness of pipe and the weight per linear foot shall be as follows:

Normal Inside Dia.	Thickness.	Wt. per Ft.
Inches	Inches	Lbs.
12	7/16	50
14	"	60
16	1/2	80
18	"	90
20	"	120
24	9/16	160

No pipe will be accepted, the weight of which shall be over five (5) percent less than the standard weight. Each section of cast iron pipe shall be coated inside and outside with coal-tar pitch varnish to which sufficient linseed oil has been added to make a smooth coat, tough and tenacious when cold, with no tendency to scale off.

(115)
Reinforced
Cement
Concrete
Pipe

Reinforced cement concrete pipe shall be of the hub and spigot or other approved style. The ends shall be at least as strong as the body of the pipe, and all pipe shall be cured properly and aged at least two (2) weeks before being used. Each section of pipe shall be straight and of true circular form. It shall have a uniform thickness throughout and shall be free from pocks and scaly spots and spalled edges. Pipes having defective spots patched or plastered over will not be accepted.

a. **Manufacture.** The materials and methods used in the manufacture of this pipe shall be approved, and specifications covering them shall be submitted by the Contractor before purchasing pipe.

b. Strength. The pipe when tested without lateral support (the contact points at support and application of load not to exceed a width of three (3) inches measured on the circumference) shall show a load supporting capacity per linear foot at least equal to that expressed by the formula

$$W = 1000 \times D,$$

in which "W" equals the breaking strength per linear foot of pipe and "D" the diameter of the pipe expressed in feet.

This test shall be made on a section of pipe from which the hub has been removed.

(116)
Basis of
Payment

Payment for pipe will be made at the contract unit price per lin. ft., freight prepaid to the point named above, within thirty (30) days after receipt of each carload lot in good condition, less ten (10) percentum of the contract price. The ten (10) percentum retained will be paid within thirty (30) days after the completion and acceptance of the entire roadway.

(117)
Description

UNDERDRAINS

This underdrain shall consist of a trench eight (8) or twelve (12) inches wide at the bottom with flaring sides, filled with large stones to a depth of twelve (12) or fifteen (15) inches, so as to produce voids through which water will drain. It shall be constructed in accordance with the plans and in conformity with these specifications.

(118)
Materials

The bottom course shall consist of approved, sound, hard, durable, rough slabs of stone from eight (8) to ten (10) inches in depth, from one (1) to three (3) inches in width, and of a length greater than the depth. The top course shall consist of sound, hard durable slabs of stone from one (1) to three (3) inches in thickness. If insufficient local stone of the above quality is available for top course stone, there may be substituted wholly or in part, approved, clean, hard, durable crushed or napped rock, crushed slag, or gravel of such size as will pass through a two and one-half ($2\frac{1}{2}$) inch circular opening and be retained on a three quarter ($\frac{3}{4}$) of an inch opening.

(119)
Construction
Methods.

Where indicated or directed, the Contractor shall excavate a trench eight (8) to twelve (12) inches wide at the bottom and of the required depth, with sides battered outward one (1) inch in ten (10) inches. The bottom of the trench shall be finished to the grade given, shall be smooth and firm and tamped if necessary.

The bottom course stone shall be set carefully by hand, longitudinally with the trench, in vertical position, side by side, so as to give maximum voids. The vertical joints between the ends of bottom course stone shall be staggered, and the bottom course in place shall be from eight (8) to ten (10) inches in depth.

The top course stone shall be placed over the bottom course to fill the trench to a total depth of fifteen (15) inches. The slabs shall be laid flat over the bottom course stone, to cover it as completely as practicable, and up to the fifteen (15) inch line, with joints close and staggered and necessary voids filled carefully with stone, slag or gravel; or the crushed or napped stone or slag, or gravel may be used to fill this upper part of the trench when the slabs are not available. The remainder of the trench above the fifteen (15) inch line shall be filled with suitable earth, which shall be compacted thoroughly by tamping in four (4) inch layers. Suitable outlets shall be provided and protected with headwalls or small dry stone box openings.

(120)
Basis
of
Payment

This work will be paid for at the contract unit price per linear foot for eight (8) inch and twelve (12) inch "Stone Underdrain" complete in place, which price will include all materials, equipment, tools, labor and work incidental thereto, also the excavation, from the bottom of the trench to the top of the stone fill, and the disposal of surplus material.

If it is necessary to place the bottom of the drain more than fifteen (15) inches deep, all additional necessary excavation will be paid for at the contract unit price per cubic yard for "Excavation", which price will include refilling and tamping over the drain.

Where stone box outlets are used they will be paid for as "Stone Underdrain."

G U T T E R S

PLAIN AND GROUTED RUBBLE GUTTER

(121)
Description

This gutter shall consist of stones, six (6) to eight (8) inches in depth, and a broken stone foundation, approximately four (4) inches in depth, constructed on a prepared sub-grade in accordance with the dimensions indicated on the plans and in conformity with these specifications.

(122)
Foundation
Material

The material for the foundation shall consist of approved, clean, sound, durable crushed rock, crushed slag or gravel of such size that, when dry, it shall pass through a revolving screen having circular openings three-quarters ($3/4$) of an inch in diameter, well graded from coarse to fine, containing not more than ten (10) percent of clay, loam or other foreign substances.

(123)
Gutter Stone

The gutter stone shall consist of approved, sound, durable rubble stone, shall be not less than six (6) nor more than eight (8) inches in depth and shall have an approximately flat top surface of a width of not less than two (2) inches and a length not less than the depth. All gutter stones shall be inspected thoroughly before and after laying and all rejected material shall be removed immediately from the work.

(124)
Gravel
Filler

The material for filling the spaces between gutter stones shall consist of approved, clean, gravel, coarse sand or stone screenings of such size, that, when dry, will pass through a laboratory screen having circular openings not more than one-half ($1/2$) nor less than one-quarter ($1/4$) of an inch in diameter, well graded from the maximum size down. An exceedingly fine material will not be accepted.

(125)
Grout Filler

The cement grout for filling the spaces between gutter stones shall be composed one (1) part cement and one and one-half ($1\frac{1}{2}$) part sand and shall be mixed as directed, the cement to be furnished by another contractor.

(126)
LAYING
GUTTER

The sub-grade shall be formed at the required depth below and parallel with the finished surface of the gutter. All soft and yielding or other unsuitable material shall be removed and the sub-grade shall be compacted thoroughly and finished to a smooth, firm surface.

The approved foundation material shall be spread on the sub-grade to form a bed approximately four (4) inches in depth.

The gutter stone shall be bedded in the foundation perpendicular to the finished surface, with the flat surface up, in straight rows, with the longest dimensions at right angles to the center line of the gutter and in close contact. They shall break joints satisfactorily and no interstices exceeding one inch in width (1) shall exist.

(127)
Filling
Gutter

The stones shall be rammed thoroughly until the surface is firm and conforms to the finished grade and cross-sections.

When the gravel filler is to be used, while being rammed, the approved gravel, sand or screenings, shall be swept into the spaces between the stones until they are filled. Any gutter having an irregular or uneven surface shall be taken up and reset satisfactorily. After ramming one (1) inch of the approved paving gravel, sand or screenings shall be spread evenly over the surface.

When grout filler is to be used while being rammed, the spaces shall be filled with the approved gravel, sand or screenings to within four (4) inches of the top and any irregularities in the gutter shall be corrected after which, the cement grout shall be poured and broomed into the spaces between and over the stones, this operation being continued until the grout remains flush with the tops of the stones.

(128)
Basis of
Payment

This work will be paid for at the contract unit price per square yard for "Plain Rubble Gutter" or "Grouted Rubble Gutter," as the case may be, complete in place, which price will include all materials equipment, tools, labor and work incidental thereto, except that the cement will be furnished free of cost to the Contractor.

The excavation for gutters will be paid for at the contract unit price per cubic yard for "Excavation", which price will include refilling and disposal of surplus material.

Guard Rail or Fencing
Wooden Railing

(129)
Description

Wooden railing shall consist of wood RAILS supported by wood posts erected where indicated or directed in accordance with these specifications.

(130)
Wood Posts

All wood posts used for this railing shall be made of seasoned, straight, sound chestnut, locust, or red cedar, at no place less than six inches in diameter or six inches (6) square, but both round or square posts shall not be used on one contract. They shall be not less than seven (7) feet in length and the bottom shall be sawed off square, the bark removed and all knots hewn flush with the surface, and the surface shaved smooth.

a. Treatment of Posts.

The lower portion of all posts shall be coated with creosote oil before being set, which oil shall meet the requirements for "preservatives," as are specified in Paragraph for "Wood Block Pavement." The creosote shall be applied by means of a brush, in a full free coating, covering the bottom end and extending up the sides for a distance of four and one-half (4½) feet. The post shall not be treated until thoroughly dry.

(131)
Wood Rails

The wood rails shall be made of well seasoned, straight, sound, yellow pine, or other approved wood, free from loose or unsound knots, or other defects, and shall be surfaced on all sides. The top rails shall be eight (8) inches wide by two (2) inches thick and the side rail shall be six (6) inches by two (2) inches, and both rails shall be in lengths of sixteen (16) feet or in multiples of eight (8) feet.

(132)
Paint

The Material for painting the fence after erection shall be composed of from sixty-five (65) to seventy (70) percent, by weight, of pigment in paste form and from thirty-five (35) to thirty (30) percent of vehicle; or sixty (60) to sixty-five (65) percent, by weight, of dry pigment.

a. Pigment

The pigment shall be composed of not less than sixty-five (65) percent of pure white lead and not less than twenty (20) percent of pure zinc white, all finely ground. Not more than fifteen (15) percent of inerts shall be permitted.

b. Vehicle.

The vehicle shall be composed of not less than ninety (90) percent of pure raw linseed oil and sufficient quality Japan or other approved drier to cause the applied paint to dry in approximately three (3) days, but in no case shall the drier exceed ten (10) percent.

(133)
Construction
Methods.

The guard rail or fencing shall be constructed in accordance with the standard plan. The posts shall be set plumb in straight lines, spaced eight (8) feet apart on centers, three and one-half (3½) feet above the ground and to lines and grades given. The top and side rails shall break joints and be fastened securely to each post as shown on the plans. All joints of the fence shall be painted before being fastened together and after erection the entire fence shall be painted with two coats of the specified materials, which shall be brushed in thoroughly.

(134)
Basis
of
Payment

This work will be paid for at the contract unit price per linear foot for "Wooden Railing" complete in place, which price will include all materials, equipment, tools, labor and work incidental thereto, also all excavation, refilling and disposal of surplus material.

R I P R A P

(135)
DESCRIPTION

Riprap shall be composed of approved stone laid on slopes or shoulders to protect them from slipping or washing, at places indicated on the plans or where directed, in accordance with these specifications.

(136)
STONE

This stone shall be sound "one-man stone" free from structural defects, and of approved quality, not less than one-third (1/3) of a cubic foot in volume, and not less than three (3) inches thick. The width of no stone shall be less than two and one-half (2½) times its thickness, and the depth shall be as shown on the plans.

(137)
CONSTRUCTION
METHODS

Slopes, where riprap is used, shall be no steeper than the angle of repose unless otherwise indicated or directed. The stone shall be bedded, one against the other, with the ends in contact. The spaces between the larger stone shall be filled with spalls of suitable size, and all spalls shall be rammed thoroughly into place. The finished surface of the riprap shall present an even, tight surface true to the lines, grades and sections given.

(138)
BASIS OF
PAYMENT

This work will be paid for at the contract unit price per cubic yard for "Riprap" complete in place, which price will include all necessary excavation, materials, equipment, tools, labor and work incidental thereto.

UNLOADING MATERIALS FROM THE RAILROAD CARS ON
THE MOXHAM SIDING
of the
JOHNSTOWN & STONYCREEK RAILROAD
JOHNSTOWN, PENNSYLVANIA
-----000000-----

(143)

Unloading
and
Hauling Ma-
terial

The Contractor unloading and hauling the material will be required to carefully unload all of the various materials from railroad cars and haul same to the points selected by the Contractor doing the work, along the roadway and there unload and stack the same in such manner as directed by the Engineer. The said Contractor unloading and hauling the material will handle all this material carefully, as he will be held responsible for any of it that may be broken, damaged, lost or stolen while in transit from the cars to delivery to the said Contractor doing the work. He will receive at the delivery of each wagon or motor load a receipt from the said Contractor, doing the work, for material so delivered.

He will unload promptly all cars as they are received and he will be liable for all demurrages that may accrue. The material to be unloaded and transported will consist of the following items: 3500 M. 3-inch brick at a price per thousand; 12,000 barrels of cement at a price per barrel; 2,000 lineal feet of 24-inch concrete pipe at a price per pipe foot; 2,000 lineal feet of 30-inch concrete pipe at a price per pipe foot; 700 feet of 12-inch cast iron pipe, 900 feet of 15-inch cast iron pipe, 100 feet of 18-inch cast iron pipe, 100 feet of 20-inch cast iron pipe, 200 feet of 24-inch cast iron pipe, all at a pipe foot price for each.

(144)

Basis of
Payments

Payments to be made on or about the tenth day of each month for 80% of the amount due for materials unloaded, hauled and delivered during the previous calendar month, the remaining 20% shall be paid within thirty days (30) after the final acceptance and completion of the entire work.

DRAINAGE STRUCTURES.

CONCRETE AND MASONRY, CULVERTS, END WALLS, RETAINING WALLS, CATCH BASINS, DROP INLETS, MANHOLES, ETC.

(139)
DESCRIPTION

Culverts, end walls for pipe culverts and drains, retaining walls, and other similar structures shall consist of cement concrete, and reinforcement if required, or of masonry constructed in accordance with the designs and dimensions shown on the plans and in conformity with these specifications.

Catch basins, drop inlets and manholes shall consist of cement concrete, and reinforcement if required, or brick masonry and the necessary metal frames and covers or gratings, all constructed as shown on the plans and in accordance with these specifications.

(140)
Materials

The concrete, reinforcement and masonry materials shall meet the requirements contained herein for class of concrete or kind of masonry to be used.

Castings for frames, covers, gratings, etc., shall be composed of best quality, tough, gray iron, free from cold shuts, blow holes and other imperfections. The castings shall be sound, true to form and thickness, clean and neatly finished, and shall be coated with coal-tar pitch varnish.

Inlet and outlet pipes shall be of the same size and kind as the connecting pipe shown on the plans.

(141)

Construction Methods.

These structures shall be constructed in accordance with the specifications contained herein for the kinds of work being done and conforming to the lines, grades, measurements and designs shown on the plans.

Castings for catch basins, drop inlets and manholes shall be set in full mortar beds, or otherwise secured as shown on the plans.

Inlet and outlet pipes shall extend through the wall for a sufficient distance beyond the outside surface to

allow for connections, and the concrete or masonry shall be constructed around them neatly, so as to prevent leakage along their outer surface. The pipes shall be cut flush with the inside of the wall.

(142)
Basis of
Payment

These structures will be paid for as follows:

- a. Concrete end walls, retaining walls and other similar structures will be paid for at the contract unit prices for the class of work performed.
- b. Catch basins, drop inlets and manholes will be paid for at the contract price each for "Catch Basins," "Drop Inlets," or "Manholes," as the case may be, complete in place, which price will include all materials, forms, equipment, tools, labor and work incidental thereto, also all excavation, the refilling around the structure and disposal of surplus material, the required frames and covers, or gratings, and other fittings.

The inlet and outlet pipes will be measured with the adjoining pipe and paid for at the contract price per linear foot.

ARTICLES OF AGREEMENT

THIS AGREEMENT, made this _____ day of April, 1919, by and between the Township of Upper Yoder, County of Cambria and State of Pennsylvania, by the Board of Township Supervisors, hereinafter called "Township," as party of the first part and _____ of _____, a corporation incorporated under the laws of _____, its successors and assigns, party of the second part, hereinafter called the "Contractor."

or

THIS AGREEMENT, made this _____ day of April, 1919, by and between the Township of Upper Yoder, County of Cambria and State of Pennsylvania, by the Board of Township Supervisors, hereinafter called "Township," as party of the first part, and _____ of _____, trading and doing business under the firm name of _____, his, her, or their heirs, executors, administrators or assigns, party of the second part, hereinafter called "Contractor."

or

THIS AGREEMENT, made this _____ day of April, 1919, by and between the Township of Upper Yoder, County of Cambria and State of Pennsylvania, by the Board of Township Supervisors, hereinafter called "Township," as party of the first part, and _____ of _____, his, her, or their heirs, executors, administrators and assigns, party of the second part, hereinafter called the "Contractor."

WHEREAS the Highway commonly known and called "Millcreek Road", extending from the westerly boundary line of Westmont Borough at Luzerne Street, in a westerly direction to the Ligonier Pike, a distance of approximately 28,500 feet, was and is in dangerous condition and practically unfit for travel and a petition signed by the required number of citizens was duly presented to the Court of Quarter Sessions of Cambria County, Pennsylvania, on the day of , 1918, and Viewers appointed by the said Court and at that time a View was held and presented to the Court on the day of 1918, and upon consideration of the finding of the Viewers, the Court made an Order, directing the Commissioners of Cambria County to appropriate a certain amount of money to the Township to aid in the reconstruction and repairs of the said road under the Act of 1917, P. L. 318. Acting under the instructions, the Supervisors had plans, specifications and this Contract prepared, all of which were submitted to the State Highway Department and duly approved under date of the day of

NOW THEREFORE THIS AGREEMENT WITNESSETH that the Contractor for and in consideration of the payment or payments herein specified and agreed to by the Township, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor as shown on schedule required in the improvement of the above mentioned road in accordance with the plans and specifications prepared by C. E. Brown, Engineer, Hannan Building, Johnstown, Pennsylvania, all of which are identified by the signatures of the Supervisors; the plans mentioned consisting of one drawing numbered IX, which will be supplemented from time to time by drawings more in detail, at the unit prices bid by the said Contractor for the respective estimated quantities, aggregating approximately

the sum of _____ and such other items as
are mentioned in _____ original proposal, which
Proposal and prices named, together with the foregoing speci-
fications and plans are made a part of this contract and
accepted as such.

The Contractor further covenants and agrees that all of
said work and labor shall be done and performed in the best
and most workmanlike manner and that all and every said mater-
ials and labor shall be in strict and entire conformity, in
every respect, with the said specifications and plans and
shall be subject to the inspection and approval of the Engineer,
Commissioners or Inspector and if in any case any of said
material or labor shall be rejected by either of the above
mentioned Engineer, Commissioners or Inspector, as defective
or unsuitable, then the said materials shall be removed and
replaced by other approved materials and the said labor shall
be done anew to the satisfaction of the said Engineer, Commis-
sioners or Inspector, at the cost and expense of the Contractor.

The Contractor further covenants and agrees that all and
every of the said materials shall be furnished and delivered
and all and every of said labor shall be done and performed in
every respect to the satisfaction and approval of the Engineer
the Commissioners or Inspector, aforesaid, on or before the
the expiration of _____ working days after written has
been given by the Engineer to begin work. It is expressly
understood and agreed that in case of failure on the part of
the Contractor for any reason except with the written consent
of the Supervisors, to complete the furnishing and delivery
of the said materials and the doing and performance of said
work within the aforesaid () working days,
the Township has the right to deduct from any moneys due or
which may become due the Contractor, or if no moneys shall be
due, the party of the first part, the Township, shall have the

right to recover the amount of Fifty (50) dollars per day for each and every day elapsing between the time stipulated for the completion and the actual date of completion, in accordance with the terms hereof; said deduction to be made or said sum to be recovered, not as a penalty, but as liquidated damages. Provided, however, that, upon receipt of written notice from the Contractor of the existence of causes over which he, said Contractor, has no control and which must delay the completion of the work, the Supervisors may, at their discretion, extend the period hereinbefore specified for the completion of said work, and in such case the Contractor shall become liable for said liquidated damages for delays commencing from the date on which said extended period shall expire.

It is distinctly understood and agreed that the Contractor for furnishing and delivery of materials alone shall be strictly held to all of the foregoing clauses in connection with liquidated damages in so far as the delay or non-delivery of any of material shall delay the progress of the work.

In case any question or dispute arises between the parties hereto respecting any matter pertaining to this contract or any part thereof, the said questions or disputes shall be referred to the said Board of Township Supervisors, whose decision shall be final, binding and conclusive upon all parties; Provided that any matters that under the Act of May 29, 1917, P. L. 318, come under the control of the said Commissioners, or their Inspector, that in any such case the decision of the Commissioners or their Inspector shall be final and binding.

The Contractor shall accept, in so far as the work covered by this contract is concerned, the provision of the Workmen's Compensation Act of 1915, and any supplements or amendments thereto, and shall insure his liability thereunder, or file with the State Highway Department a certificate of exemption from insurance from the Bureau of Workmen's Compensation of the Department of Labor and Industry.

It is also agreed and understood that the acceptance of the final payment by the contractor shall be considered as a release in full of all claims against the Township, arising out of or by reason of the work done or materials furnished under this contract.

The Bond, given by the Contractor, in a sum equal to sixty (60) percentum of the contract price of the work to be done, to secure a proper compliance with the terms and provisions of this contract, is hereto attached and made a part hereof.

It is also understood and agreed that the times hereinbefore mentioned for the completion of this work be subject to delays caused by wars, strikes, acts of God, or for other reason which are clearly beyond the control of the Contractor.

The Contractor hereby further agrees to receive the prices set forth in the following schedule for furnishing all the materials and labor which may be required in the prosecution and completion of the work to be done or materials furnished under this contract or agreement, and in all respects to complete the said contract to the satisfaction of the Supervisors and Commissioners, or their Inspector.

SCHEDULE OF PRICES.

Schedule of prices as quoted on the "Proposal Form"

(Note. This schedule of prices is NOT to be used by bidder in making proposals. Separate blanks of itemized "Proposal Forms" will be furnished each individual Bidder for making proposals.

ITEMIZED PROPOSAL.

Approximate Quantities.	Items	Unit Bid Prices	Dollars	Cents
Item 1	Cubic Yards of "Excavation" without classification taken from within the limits of the work contracted for; including all clearing, grubbing, and incidental work, the cutting of timber, formation of embankments, fills and disposal of all surplus materials, at.....	.....	.....	.....
Item 2	Cubic Yards of "Borrow" in place, rolled and graded as per plans and specifications, including furnishing and placing of material, formation of embankments, all clearing, grading and incidental work thereto, at .....	.....	.....	.....
Item 3	Sq. Yds. of Combination Cement and Concrete Header Curbing and Base Course, consisting of Base Course with Curbing, as per section shown on the plans, complete in place, the necessary cement to be furnished by another Contractor, at .....	.....	.....	.....
Item 4	Sq. Yds. vitrified brick pavement on a $\frac{3}{4}$ inch cement sand bed with a bituminous mastic filler; complete in place; brick and cement furnished by another Contractor, at..... (Note. This Item includes sq. yds. of Hillside Vitrified Brick Pavement.)	.....	.....	.....
Item 5	Linear feet of 12-inch Cast Iron pipe laid in place, including excavation and re-filling, pipe furnished by another Contractor, at.....	.....	.....	.....
	per Lin. Foot.			

- Item 6 Linear feet of 15-inch
Cast Iron Pipe laid in
place, including excava-
tion and re-filling, pipe
furnished by another
Contractor, at
per Lin. Ft.

- Item 7 Linear feet of 18-inch
Cast Iron Pipe laid in
place, including excava-
tion and re-filling, pipe
furnished by another
Contractor, at
per Lin. Ft.

- Item 8 Linear feet of 20-inch
Cast Iron Pipe laid in
place, including excava-
tion and re-filling, pipe
furnished by another
Contractor, at
per Lin. Ft.

- Item 9 Linear feet of 24-inch
Cast Iron Pipe laid in
place, including excava-
tion and re-filling, pipe
furnished by another
Contractor, at
per Lin. Ft.

- Item 10 Linear feet of 24-inch
re-inforced Concrete
Pipe, laid in place,
including excavation and
re-filling, pipe furnished
by another Contractor, at
per Lin. Ft.

- Item 11 Linear feet of 30-inch
re-inforced Concrete
Pipe, laid in place, including
excavation and re-fill-
ing, pipe furnished
by another Contractor, at
per Lin. Ft.

- Item 12 Sq. Yds. of Grouted Rubble
Gutter, as per plan, com-
plete in place, including
foundation and filler, except
that the cement is to
be furnished by
another Contractor,
at
per Sq. Yd.

- 0 5
- Item 13 Linear feet of wooden Railing as per plan complete in place, including painting, excavation for posts and re-filling. at..... per Lin. Ft.
- Item 14 Cu. Yd. of Riprap, complete in place including all necessary excavation, at per Cu. Yd.
- Item 15 Bbls of Portland Cement furnished, freight prepaid to the Moxham Siding of the Johnstown & Stonycreek Railroad, Johnstown, Pa., at per Bbl.
- Item 16 M. 3-inch vitrified block brick, freight prepaid to Moxham Siding of the Johnstown & Stonycreek Railroad, Johnstown, Pa., at, per M.
 This Contractor is to give the dimensions of the brick proposed to be furnished and the number required to make up one square yard of paving.
- Item 17 Linear feet of 12-inch Cast Iron Pipe, furnished, freight prepaid on Moxham Siding of the Johnstown & Stonycreek Railroad, Johnstown, Pa., at, per Lin. Ft.
- Item 18 Linear feet of 15-inch Cast Iron Pipe, furnished, freight prepaid on Moxham Siding of the Johnstown & Stonycreek Railroad, Johnstown, Pa., at, per Lin. Ft.
- Item. 19..... Linear feet of 18-inch Cast Iron Pipe, furnished, freight prepaid on Moxham Siding of the Johnstown & Stonycreek Railroad, Johnstown, Pa. at,.....

- Item 20Linear feet of 20-inch
cast iron pipe, furnished,
freight prepaid on Moxham
Siding of the Johnstown &
Stonycreek Railroad,
Johnstown, Pa., At.....
Per Lin. Ft.
- Item 21 Linear feet of 24-inch
cast iron pipe, furnished,
freight prepaid on Moxham
Siding of the Johnstown &
Stonycreek Railroad,
Johnstown, Pa., at.....
per Lin. Ft.
- Item 22 Linear feet of 24-inch
Re-inforced Cement
Concrete Pipe, furnished,
freight prepaid on Moxham
Siding of the Johnstown &
Stonycreek Railroad,
Johnstown, Pa., at.....
per Lin. Ft.
- Item 23 Linear feet of 30-inch
Re-inforced Cement
Concrete Pipe, furnished,
freight prepaid on Moxham
Siding of the Johnstown &
Stonycreek Railroad,
Johnstown, Pa., at.....
per Lin. Ft.
- Item 24 Linear feet of Stone
Culvert 2' x 3'
complete in place
at.....
per Lin. Ft.
- Item 25 Linear feet of Stone
Culvert 1' x 2'
complete in place
at.....
per Lin. Ft.
- Item 26 Linear feet of French
Drain including all
excavation and back
filling, complete in place at
- Item 27 Catch Basins, as per plans
complete in place
including all excava-
tion, refilling, frames
and covers, or gratings
and other fittings
at
each.

- D
- D
- Item 28Bbls.Portland Cement,
to unload,haul and
stack at the roadside.
at,
per Bbl.
 - Item 29 M. 3 -inch Vitrified brick
to unload,haul and stack
at the Roadside
at..
per M.
 - Item 30 Linear feet of cast
iron pipe 12-inch dia.
to unload and haul
at.....
per Lin. Ft.
 - Item 31 Linear feet of 15-inch
cast iron pipe.to
unload and haul
at.....
per Lin. Ft.
 - Item. 32 Linear feet of 18-inch
cast iron pipe,to
unload and haul
at.....
per Lin. Ft.
 - Item.33 Linear feet of 20-inch
cast iron pipe,to
unload and haul
at
per Lin. Ft.
 - Item 34 Linear feet of 24-inch
cast iron pipe,to
unload and haul,
at
per Lin. Ft.
 - Item 35 Linear feet of 24-inch
Cement Concrete Pipe,
to unload and haul.
at
per Lin. Ft.
 - Item 36 Linear feet of 30-inch
Cement Concrete Pipe,
too unload and haul,
at

Aggregate amount at unit prices \$.....

This Contract is made and executed in the State of Pennsylvania, by the execution thereof by the Township.

And it is further distinctly agreed that the said Contractor shall not assign this contract, nor any part thereof, nor any right to any moneys to be paid him hereunder, nor shall any part of the work to be done, or materials furnished under said contract be sublet, without the consent in writing of the Board of Township Supervisors.

(Incorporated firms sign below.)

IN WITNESS WHEREOF the Members of the Board of Township Supervisors by authority in them vested, have hereunto subscribed their names on behalf of the Township of Upper Yoder and the said _____ has hereunto attached its corporate seal, duly attested by the signatures of its duly authorized officers, the day and year first above written.

TOWNSHIP SUPERVISORS OF UPPER YODER TOWNSHIP.

By _____

Attest:

Contractor

Attest:

By _____

President

Secretary

Individual contractors or partnership firms sign below

IN WITNESS WHEREOF; The Members of the Board of Township Supervisors, by authority in them vested, have hereunto subscribed their names on behalf of the Township of Upper Yoder and the said have.... hereunto set.... hand and seal the day and year first above written.

BOARD OF TOWNSHIP SUPERVISORS OF
UPPER YODER TOWNSHIP

By _____

Attest:

Secretary

Contractor (SEAL)

(SEAL)

(SEAL)

(SEAL)

Witnesses:

Approved:

Superintendent of Highways

BOND

KNOW ALL MEN BY THESE PRESENTS, That we _____

hereinafter called the "Principal", and _____

a corporation incorporated under the laws of the State of Pennsylvania, hereinafter called the "Surety", are held and firmly bound unto the Township of Upper Yoder, in the County of Cambria and State of Pennsylvania, in the full and just sum of _____

(\$ _____)

lawful money of the United States of America, to be paid to the said Township of Upper Yoder, or its successors and assigns, to which payment well and truly to be made and done, we bind ourselves, our successors and assigns, jointly and severally, firmly by these presents. SEALED With

our respective seals and dated this _____ day of _____, 1919.

WHEREAS the above bounden "Principal" has entered into a contract with the said Township of Upper Yoder, by and through its Board of Township Supervisors, bearing even date herewith, for doing certain work or furnishing certain materials, all of which is designated by a unit price written on the Schedule of Prices contained in the contract attached hereto, required in the construction of a section of highway in Upper Yoder Township, Cambria County, Pennsylvania, being about 28,500 feet in length, for approximately the sum of _____

(\$ _____), the said road being situated as follows: Beginning at the easterly boundary of the said Township with the Borough of Westmont in the said Cambria County, and extending in a westerly direction to the Ligonier Pike in said Township, and

WHEREAS, it was one of the conditions of the award of the said Board of Township Supervisors, acting for and on behalf of the said Township of Upper Yoder pursuant to which said contract was entered into, that these presents should be executed.

NOW THEREFORE, The condition of this obligation is such that if the above bounden "Principal" as Contractor shall in all respects comply with the terms of the contract and the conditions of said contract, and his or its obligations thereunder including the specifications therein referred to and made part thereof and such alterations as may be made in the said specifications as therein provided for, and shall well and truly, and in a manner satisfactory to the said Board or Commissioners of Cambria County, or an Inspector appointed by them, complete the work contracted for, and shall save harmless the Township of Upper Yoder from any expense incurred through the failure of said Contractor to complete the work as specified, or for any damages growing out of the carelessness of said Contractor or his or its servant, or for any liability for payment of wages due or materials furnished said Contractor; and shall well and truly pay to all and every person furnishing material or performing labor in and about the construction of said highway, all and every sum or sums of money due him, them or any of them, for all such labor and materials for which the Contractor is liable.

And shall also save and keep harmless the said Township of Upper Yoder and County of Cambria against and from all losses to them, from any cause whatsoever, including patent infringements, in the matter of constructing said section of highway, or furnishing materials therefor; then this obligation to be void or otherwise to be and remain in full force and virtue.

Contractor (SEAL)

WITNESSES:

(SEAL)

(SEAL)

(SEAL)

(SEAL)

(SEAL)

Surety Company

Attest:

Secretary

BY _____
President

No 1 March Term 1918

MILLCREEK ROAD,
Upper Yoder Township.
Cambria County, Pa.

C. E. Brown, Engr.,
Hannan Building.

Johnstown, Pa.

Filed 21 May 1919

In re Change or Alteration of
part of MILLCREEK ROAD in Upper
Yoder Township, Cambria County,
Pennsylvania

In the Court of Quarter Sessions
of
Cambria County, Penna.

TO THE HONORABLE JUDGES OF SAID COURT:

The petition of the undersigned respectfully represents:

That they are the Supervisors of the Township of Upper Yoder, County of Cambria and State of Pennsylvania. That they deem it advisable to construct, change, and alter that part of the Millcreek Road, a public road, in said Township of Upper Yoder, extending over and across the lands of Adam Keafer and Martin Keafer, from point shown on blue print hereto attached, made part hereof and marked "Exhibit A" and thereon indicated as Station 302 to Station 350 plus 50.65 and the said change following approximately courses and distances as set forth on said blue print between the two stations, all of which is in full shown and designated on the said map or draft of such proposed change.

That the said property owners over whose land the said old part of road and said new part of new road extend have agreed with the petitioners as to any damages that might result by reason of said changes, as indicated by a Release of Damages which is hereto attached, made part hereof and marked "Exhibit B".

That the costs and expenses of said change and alteration to the said Township of Upper Yoder, including damages, shall be less than Three Hundred (300) Dollars.

WHEREFORE your petitioners pray the Court that the said proposed construction, change and alteration be approved.

Samuel L. Roub.
D. H. Weaver
Walter M. ...
Supervisors

COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF CAMBRIA :

Personally appeared before me, a Notary Public in and for said State and County, WEBSTER MOSHOLDER who being duly sworn according to law deposes and says that he is one of the Supervisors of Upper Yoder Township, and that the matters and facts set forth in the foregoing petition are true and correct.

Webster Mosholder

Sworn and subscribed before me
this 29th day of March, 1919.

Jessie S. Boyer
NOTARY PUBLIC
Commission Expires April 4, 1921.

EXHIBIT "B"

In re change or alteration of
part of MILLCREEK ROAD in Upper
Yoder Township, Cambria County,
Pennsylvania

!
:
:
:

In the Court of Quarter Sessions
of
Cambria County, Pa.

R E L E A S E

WHEREAS the Court of Quarter Sessions of the County of Cambria and State of Pennsylvania, as shown by proceedings entered of record in the above Court, decreed the reconstruction of the said Millcreek Road, extending from the boundary line of said Township of Upper Yoder and Borough of Westmont in said County of Cambria westwardly to the Ligonier Pike in said Township; and

WHEREAS it is deemed advisable to change the course of a part of said road, as shown on blue print hereto attached, the new course being as shown on said blue print as extending from Station 302 to Station 350 plus 50.65, and following approximately courses and distances as set forth on said blue print between the two stations;

NOT THEREFORE be it known that we, ADAM KEAFER and MARY KEAFER, his wife; and MARTIN KEAFER and MARY KEAFER, his wife, all of the said Township of Upper Yoder, the undersigned, being the property owners through whose lands the said new course extends; in consideration of the premises and the advantages to be derived by reason of said change and alteration, do hereby grant, bargain, sell and release to the said Township of Upper Yoder all our right, title and interest in and to the said new course as approximately shown on said blue print, and extending sixteen and one-half ($16\frac{1}{2}$) feet on either side of the center line, as thereon shown, together with necessary slopes and fills, and further do hereby release the said Township of Upper Yoder from all damages that have accrued or that may accrue to us or either of us for or on account of or by reason of the said change and alteration.

No 1. March Sess 1918.

In the Court of Quarter Sessions
of Cambria County, Penna.

In re change or alteration of
part of MILLCREEK ROAD in Upper
Yoder Township, Cambria County,
Pennsylvania.

PETITION, RELEASE
AND MAP

Now April 1, 1919, the within
petition having been read and
considered, the prayer of the pe-
titioners is granted and the
within map or draft is hereby ap-
proved and it is further ordered,
directed and decreed that the
said new location is hereby ap-
proved and the same shall hereupon
be taken and deemed to be a pub-
lic road to all intents and pur-
poses and the old location shall
be taken and deemed to be vacated.

By the Court

Filed 1 April 1919.

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN PENNA.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

§
:
§

In the Court of Quarter Sessions of
Cambria County, Penna.
No. , March Sessions, 1918.

NOTICE OF HEARING

Now *May 7*, 1918, the viewers heretofore appointed
in the above stated proceeding having filed their report, it is ordered and
directed that the Court will at *2* o'clock, *P* M., on the *10*
day of *June*, 1918, at Ebensburg, Penna., examine the said report
and hear any objections thereto; and it is further ordered and directed that
ten (10) days notice of the same be given to the Commissioners of said Cambria
County by counsel for the petitioners in said proceeding and that the following
notice be published in the Johnstown Tribune, Johnstown, Penna. ten days prior
to date of hearing, as aforesaid:

IN THE COURT OF QUARTER SESSIONS OF CAMBRIA COUNTY, PENNSYLVANIA

No. March Sessions, 1918.

In re Reconstruction of Section of Millcreek Road in Upper Yoder
Township, Cambria County, Pennsylvania.

Notice is hereby given that at *2* o'clock, *P* M., on the *10*
day of *June*, 1918, at Ebensburg, Pennsylvania, the above
named Court will examine the report of viewers in said proceeding as heretofore
filed and hear objections thereto, if any. All persons interested may appear
at the time and place above mentioned and be heard.

BY THE COURT.

By the Court

In the Court of Quarter Sessions
of Cambria County, Penna.
No. / , March Sessions, 1918.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder
Township, County of Cambria, Pa.

NOTICE OF
HEARING

Filed 7 May 1918

LAW OFFICES OF
BARNHART & EVANS
JOHNSTOWN, PENNA.

ARTICLE OF AGREEMENT

Made and concluded this 31st day of May, 1919, between the Supervisors of the Township of Upper Yoder, County of Cambria and State of Pennsylvania, of the first part

-- and --

THE GALION IRON WORKS, a corporation organized under the laws of the State of Ohio, and having its principal office in the City of _____ County of _____ and State of Ohio, of the second part.

WHEREAS the party of the first part entered into a contract with the party of the second part under date of the _____ day of April, 1919, to do certain work in the reconstruction of the Millcreek Road in the said Township of Upper Yoder, subject to the ratification and approval by the electors of said Township of Upper Yoder of a Bond Issue in the sum of One Hundred Seventy-five Thousand (175,000) Dollars; and

WHEREAS on the 31st day of May, 1919, the electors of said Township of Upper Yoder did vote favorably upon and approve the said Bond Issue;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and the consideration of One (1) Dollar, the receipt whereof is hereby acknowledged, it is agreed to as follows:

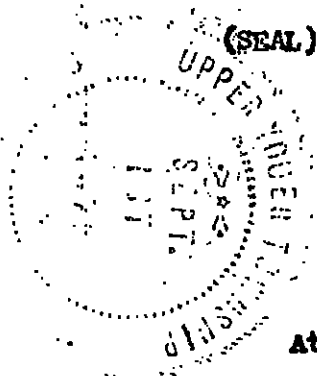
That the aforesaid contract entered into between the parties hereto shall now and hereupon become binding and in full force and effect as more particularly set forth in the aforesaid contract between the parties hereto.

IN WITNESS WHEREOF the said Township of Upper Yoder has caused this agreement to be signed by the respective Supervisors and attested by their Secretary and the seal of the said Township hereunto affixed; and IN WITNESS WHEREOF the said GALION IRON WORKS has caused this agreement to be signed by its president, attested by its secretary and its corporate seal hereunto affixed, in duplicate, the day and year first above written.

Attest:

Barad J. Raab
Secy.

Webster Washburn
Barad J. Raab
D. H. Kimer
Supervisors



THE GALION IRON WORKS & MFG. COMPANY

M. Faber
SECY & TREAS.

THE GALION IRON WORKS & MFG. COMPANY

By J. P. Boyd
President

Attest:

J. M. Faber
Secy.

(SEAL)

ARTICLE OF AGREEMENT

Between
SUPERVISORS OF UPPER YODER
TOWNSHIP
and
GALION IRON WORKS

Exhibit No 1

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN, PENNA.

Return

ARTICLE OF AGREEMENT

Made and concluded this 31st day of May, 1919, between the Supervisors of the Township of Upper Yoder, County of Cambria and State of Pennsylvania, of the first part

--- and ---

THE VIPOND CONSTRUCTION COMPANY, a corporation organized under the laws of the Commonwealth of Pennsylvania, and having its principal office in the city of Altoona, County of Blair and State of Pennsylvania, of the second part.

WHEREAS the party of the first part entered into a contract with the party of the second part under date of the day of April, 1919, to do certain work in the reconstruction of the Millcreek Road in the said Township of Upper Yoder, subject to the ratification and approval by the electors of said Township of Upper Yoder of a Bond Issue in the sum of One Hundred Seventy-five Thousand (175,000) Dollars; and

WHEREAS on the 31st day of May, 1919, the electors of said Township of Upper Yoder did vote favorably upon and approve the said Bond Issue;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and the consideration of One (1) Dollar, the receipt whereof is hereby acknowledged, it is agreed to as follows:

That the aforesaid contract entered into between the parties hereto shall now and hereupon become binding and in full force and effect as more particularly set forth in the aforesaid contract between the parties hereto.

IN WITNESS WHEREOF the said Township of Upper Yoder has caused this agreement to be signed by the respective Supervisors and attested by their secretary and the seal of the said Township hereunto affixed; and IN WITNESS WHEREOF the said VIPOND CONSTRUCTION COMPANY has caused this agreement to be signed by its president, attested by its secretary and its corporate seal hereunto affixed, in duplicate, the day and year first above written.

Attest:
Samuel L. Raab
Secy.

Webster Marshall
Samuel L. Raab
D.A. Miner
Supervisors

(SEAL)

G. E. Cornelius

VIPOND CONSTRUCTION COMPANY
By:
J. S. Wiford
P. R. Clark
Burman S. Duncan

ARTICLE OF AGREEMENT

Between

SUPERVISORS OF UPPER YODER TOWNSHIP,
CAMBRIA COUNTY, PENNA.

and

THE VIPOND CONSTRUCTION COMPANY

Exhibit No 12

LAW OFFICES OF
FRANK P. BARNHART
JOHNSTOWN, PENNA.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder Town-
ship, County of Cambria, Penna.

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:
:
1

In the Court of Quarter Sessions
of Cambria County, Penna.
No. March Term, 1918.

PROOF OF PUBLICATION

COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF CAMBRIA :

Personally appeared before me, a Notary Public in and for said
State and County, *J. Nicholas Terry*, who being duly sworn
according to law, deposes and says that he is *Asst. Bus. Mgr.*
of the Johnstown Tribune and that the attached Notice was published in said
Johnstown Tribune on the eleventh day of May, 1918.

J. Nicholas Terry

Sworn and subscribed before me this
day of May, 1918.

P. R. Walters
Notary Public

My commission expires with the close of
the next session of the Senate.

NOTICE—In the Court of Quarter Ses-
sions of Cambria County, Pennsylvan-
ia. No. March Sessions, 1918. In
re construction of section of Millcreek
road in Upper Yoder Township, Cambria
County, Pennsylvania.
Notice is hereby given, that at 2 o'clock
p. m. on the 10th day of June, 1918, at
Ebensburg, Pennsylvania, the above named
Court will examine the report of Viewers
in said proceeding as heretofore filed and
hear objections thereto, if any. All per-
sons interested may appear at the time
and place above mentioned and be heard.
BY THE COURT.

No. 1 March Term, 1918.
In the Court of Quarter Sessions
of Cambria County, Penna.

In re Reconstruction of Section
of Millcreek Road in Upper Yoder
Township, County of Cambria,
Penna.

PROOF OF PUBLICATION

Filed 18 May 1918

Barnhart & Evans

NOTICE

IN THE COURT OF QUARTER SESSIONS OF CAMBRIA COUNTY, PENNSYLVANIA

No. March Sessions, 1918.

In re Reconstruction of Section of Millcreek Road in Upper Yoder
Township, Cambria County, Pennsylvania.

Notice is hereby given that at 2 o'clock, P. M. on the tenth day of June, 1918, at Ebensburg, Pennsylvania, the above named Court will examine the report of viewers in said proceeding as heretofore filed and hear objections thereto, if any. All persons interested may appear at the time and place above mentioned and be heard.

BY THE COURT.

May 11th, 1918:

Service accepted.

James W. Luce
Clerk

No. 1 March Sessions, 1918.
In the Court of Quarter Sessions
of Cambria County, Penna.

In re Reconstruction of Section of
Millcreek Road in Upper Yoder
Township, Cambria County, Penna.

N O T I C E

*Filed 14 May 1918
H. H. H.*

Barnhart & Evans

*approved 6/14/18
Joseph W. Hunter*

~~---~~INSTRUCTIONS TO BIDDERS~~---~~

1st Deputy Commissioner

(1)
EXAMINATION
OF
GROUND.

Bidders are requested to carefully examine the ground along the line of the proposed work, and the submission of the bid will be deemed as acknowledgment that this has been done, and the plans and specifications and form of contract are fully understood.

(2)
PLANS.

Plans, specifications and form of proposal can be obtained at the office of the Township Engineer, upon payment of a deposit of Five (\$5.00) Dollars. This deposit will be returned if a bid is submitted.

(3)
PROPOSALS.

Sealed Proposals for the work, endorsed with the title of the work and the name of the bidder will be received at the time and place as stated in the Legal Notice, at which time the bids will be publicly opened and read.

The bids will then be submitted to the Township Engineer for examination and computation, and within a reasonable time of the receipt of his report, as to the relative rates and merits of the different bids, the Township of Upper Yoder, through its proper authorities will award the contract to the lowest and most responsible bidder.

Bidders must furnish satisfactory evidence of their ability to do the class of work required.

They must state at the proper place on the proposal the length of time they have been engaged at contracting, and the places where they have done and carried to a successful conclusion, contracts involving work of the kind upon which they are bidding.

(4)
CERTIFIED
CHECK.

X

Each bidder shall present with his proposal a certified check, payable to the order of the Road Supervisors, the amount of said check being at least (5%) per cent. of the contract price. Should any proposal be rejected, such check will be returned to the bidder, and should any proposal be accepted, such check will be returned upon the proper execution and securing of the contract.

(5)
B O N D.

X

The successful bidder or bidders are required to execute and deliver to the Township of Upper Yoder, a bond in the amount of twenty-five (25) per cent. of the contract price, with two freeholders of Cambria County as sureties thereon, each of whom shall certify that he is, or they are, worth over all encumbrances, the full amount of the proposed bond; or a bond of a security trust company, authorized by law to become surety upon contracts, and authorized by law to transact business within the Commonwealth of Pennsylvania, which bond shall be for the faithful performance of the obligations, terms and conditions provided and contained in the contract, and such bond before such contract shall be binding upon the Township shall first be approved by the Supervisors of the Township of Upper Yoder, with the further conditions that the Township of Upper Yoder shall be indemnified against all loss, cost and damages which may arise from non-fulfillment of the contract in any manner whatsoever, or for, or by reason of, any failure of any kind whatsoever upon the part of the contractor to perform fully and faithfully all the terms and conditions therein named and contained.

(6)
CONTRACT-
WHEN TO BE
SIGNED.

When a proposal is accepted, and within ten (10) days thereafter, the bidder whose proposal is accepted will be required to enter into a contract in the form hereto attach-

ed, and in case of failure or neglect to do so, he or they will be considered as having abandoned it, and as being in default to the said Township, and thereupon the Road Supervisors may re-advertise said work to be let as before and so on, until the contract be accepted and agreement executed.

(7)
PRICE BID.

The price bid shall cover the grading, furnishing all materials entering into the construction of the work and all necessary labor, plants, tools and appliances required to perform the work in strict accordance with the plans and specifications.

(8)
APPROXIMATE
ESTIMATE.

The quantities given on the plans are approximate only and the Contractor shall not be entitled to any claim for loss of profits, or for damages, should the quantity done prove greater or less than is estimated thereon.

(9)
TIME TO
COMPLETE.

Each bidder must state on the proposal the time in which he agrees to complete the work.

(12)
RIGHT TO RE-
JECT BIDS.

The Township of Upper Yoder reserves the right to reject any or all bids.

---P-R-O-P-O-S-A-L---

_____, 191 .

TO THE SUPERVISORS OF THE TOWNSHIP OF UPPER YODER,

CAMBRIA COUNTY, PA.

Gentlemen:-

The undersigned propose to grade, pave, curb, etc., as called for in your advertisement and furnish at own expense, all transportation, plant, tools, labor, materials, and all else requisite to complete the work in the best possible manner, and according to the plans and specifications; to do any and all work that may be necessary to connect the work done with the adjoining work in a proper and workmanlike manner, and in accordance with the plans on file in the office of the Township Engineer and upon the terms of the Specification and Form of Contract herewith attached, at the following prices:

In _____ From _____ To _____

In _____ From _____ To _____

In _____ From _____ To _____

Excavation at _____ (_____) per cu. yd.

Vitrified Brick Pavement with Concrete Base, including curb and Expansion joints and Cement grout filler at _____

_____ (_____) per sq. yd.

_____ will agree to complete the work within _____ calendar days.

X
The Engineer's estimate of the cost of field supervision of the work is _____ Dollars (\$ _____) per calendar day.

K
It is hereby agreed that the Township in determining the lowest bidder will take into consideration the cost to it of the field supervision of the work, based upon the foregoing statement of time agreed upon for the completion of the work.

It is understood and agreed that should the work not be completed within the time above specified, the cost of field supervision shall be borne by the Contractor for each and every calendar day in excess of the period specified.

It is understood and agreed that the amount so charged is not of the nature of a penalty, but is liquidated damages to be paid in full and subject to no deductions.

It is further understood and agreed that the quantities given by the Engineer are approximate only, and that the Contractor shall not be entitled to any claim for loss of profits or damages, should the quantity done prove greater or less than he has estimated.

_____ also certify that Mr. _____, a representative of the undersigned, has been over the site of the proposed work and has carefully examined the same, and that he has taken into account the difficulties of construction in making out the prices named above.

Enclosed please find _____ check for _____ (\$ _____) Dollars as a guarantee of good faith, and which shall be returned if _____ unsuccessful in _____ bid.

For information as to _____ former experience, _____
_____ wish to make the following statement:

Either individually or as a firm _____ have been
in the contracting business for _____ years.
_____ have constructed approximately _____
miles of streets.

As to _____ successful performances on contracts
_____ have undertaken. _____ can refer
you to: NAME: _____ Address: _____

Witness _____ hand this _____ day of _____
_____, 191 .

Signature of Bidder:

Business Address: _____

The full names and residences of all the persons and parties interested in the foregoing bid are as follows:

Approved G.H.H.

Joseph W. Hunter
1st Deputy Commissioner

---SPECIFICATIONS---

GENERAL STATEMENT.

(1)
DEFINI-
TION.

Wherever the term "Township" is used in these specifications, it shall mean the Township of Upper Yoder, acting through its Supervisors or their properly authorized agents.

Wherever the term "Engineer" is used it shall refer to the Township Engineer, appointed by said Township, or its properly authorized agents.

Wherever the term "Contractor" is ^{used} it shall refer to the party of the second part, entering into contract with the Township for the performance of this work.

-2-
DECIS-
IONS.

All the work performed under this contract shall be done to the satisfaction of the Township which shall in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and materials, and shall decide all questions which may arise as to the fulfillment of this contract, on the part of the contractor, and the Township's determination and decision shall be final and conclusive.

(3)
MATERIAL,
LABOR,
ETC"

The Contractor shall furnish at his own expense all transportation, plant, tools, labor, materials, and all else requisite to complete the work in the best possible manner, and according to the plans and specifications.

The Contractor shall have on the work at all times, a foreman, superintendent, or other competent representative, to whom orders and instructions may be given, and such orders shall have the same force and effect as if given directly to the Contractor.

(4)
INSPECTION.

All material furnished and work done shall be inspected by the Township, and if not in accordance with these specifications

they shall be immediately removed, and other materials and work furnished in accordance therewith.

If on failure to comply with these specifications, the Contractor refuses to remove the material and work, as above ordered, then the Township shall have the right and authority to stop the Contractor and his work at once, and supply men and materials at the cost and expense of the Contractor, and such expense shall be deducted from any money then due the Contractor from the Township.

(5)
TIME.

The successful bidder must sign the contract for the work to be done by him within ten (10) days after he is notified of the acceptance of his bid.

He shall proceed with the work within ten (10) days thereafter, prosecuting it with diligence and completing it at the fixed time for the completion of this contract.

If he fails to prosecute the work diligently, and the Township is convinced that the work will not be completed at the specified time, then the Township shall have the right and authority to stop the Contractor and his men at once, and to supply men and material and prosecute the work at the expense of the Contractor, such expense to be deducted from any money due, or to become due the Contractor from the Township.

(6)
RESPONS-
IBILITY.

The Contractor shall be held responsible for the entire work until completed and accepted by the Township, and until he is formally released from his obligations: he shall not assign or sub-let the contract without the permission of the Township (so expressed by resolution), but must keep it in his own name and under his own control, until completed and accepted; and in case of his absence from the work, must have a qualified and duly authorized person to represent him.

(7)
DELAYS.

(7)
DELAYS.

No charge shall be made by the Contractor for any delays or hindrances from any cause during the progress of the work embraced in his contract. If the delay is caused by any act or neglect of the Township, then he shall be entitled to an extension of time allowed for the completion of the work, sufficient to compensate for the delay, provided the Contractor shall give the Township immediate notice in writing.

(8)
CLEARING
UP.

Before the work shall be considered as complete, all rubbish and unused material, due to or connected with the construction, must be removed and the premises left in a condition satisfactory to the Township. All sidewalks must be cleaned up. Crosswalks, sidewalks, fences and other public or private property disturbed or damaged as a direct result of the work must be restored to the former condition in so far as shall be practical, and final payment will be withheld until such work is finished.

(9)
EXTRA
WORK.

No extra work will be paid for or allowed unless the same shall be done under written instructions from the Engineer; said written instructions to contain the agreed price and amount of such extra work, and have endorsed thereon that said extra work has been authorized by the Township.

(10)
LAWS.

All Township laws, ordinances or regulations, limiting or controlling the action or operation of those engaged upon the work, or affecting the material applied to them, must be respected, and the Contractor shall keep himself fully informed of such laws and ordinances. The Contractor shall preserve the Township harmless from all claims for labor and material. He shall take all precaution for preventing injuries to persons or public property on or about the work; shall bear all losses resulting to him from failure to properly protect the work from floods, weather conditions, etc., and he shall assume the defense of and indemnify and save harmless the Township from all claims relating to damage of property or personal injury, should any occur during

the progress of the work.

Where blasting is necessary, it shall be done by men of proven experience in such work.

Dynamite and other explosives shall be stored and handled as required by the Township ordinances.

(11)
SANITA-
TION.

Necessary sanitary conveniences for the use of the men on the work, properly secluded from public observation, shall be constructed and maintained in sanitary condition by the Contractor, at such points as shall be approved by the Township and their use shall be strictly enforced.

(12)
DISAGREE-
MENT.

Should any disagreement or differences arise as to the true meaning and intent of the plans and specifications, on any point, the decision of the Engineer shall be final and conclusive.

(13)
ABANDON-
MENT.

If the Contractor shall abandon the work under his contract, or at any time the Township shall be convinced that the work or any part thereof is unnecessarily delayed, or that the Contractor is wilfully violating any of the conditions of the contract, then at the option of the Township the contract may be declared null and void, the security may be forfeited and the material delivered at, and built into the work, shall be the property of the Township.

The Township may then, at its option, proceed to complete the work, either by day work or by contract, and any and all damages and increased costs of the work to the Township shall be deducted from any funds retained by the Township and from any sum realized from the value of the material reverting to the Township.

(14).
MEASURE-
MENTS.

No extra or customary measurements of any kind, unless specially noted, will be allowed in measuring the work under these specifications: but the length, area, solid contents or number

only, shall be considered as the basis of payment. The measurements of the Engineer, shall be final and conclusive.

(15)
PAYMENTS

If the Contractor proceeds satisfactorily with the work under this contract, estimates of the work shall be made monthly, and upon the approval of the Township eighty-five (85) per cent. of the total cost at contract rates, less the amounts already paid, shall be paid the Contractor.

X In making such estimates, the Engineer shall not take into consideration any materials on hand which have not been placed in the improvement.

After the work has been completed and accepted, ninety-five (95) per cent. of the value, at contract rates, of the amount of the work shown by the Engineer's certificate of the total cost, less the amounts already paid on monthly estimates shall be paid the Contractor within ten (10) days after the acceptance of said work, and the remaining five (5) per cent. shall be retained as a guarantee to correct any defects which may appear from the use of defective material, or improper workmanship in the construction, which may become apparent during the period of nine (9) months after the date of acceptance by the Township.

The Contractor agrees to make such repairs within the period when and as directed by the Township by written notice served upon him and if, after having received such notice, the Contractor fails to make such repairs within ten (10) days from the receipt of such written notice, the Township may thereupon cause said repairs to be made and charge the expense thereof to the Contractor or his surety.

(16)
BOND

A bond satisfactory to the Township shall be furnished by the Contractor in the amount not less than twenty-five (25) per cent. of the contract price.

(17)
SECURITY

Each bid for the work must be accompanied by a certified check on a bank doing a regular business in the city of Johnstown as a guarantee that the bidder will, if so desired, enter into a contract with the Township to do the work according to the plans and specifications. The amount of said check shall be at least five (5) per cent. of the amount bid, the check to be returned to the bidder if bid is not accepted.

---CONSTRUCTION---

GENERAL.

All Item Nos. referred to on plans shall refer to items under the title of Construction, and said plans shall at all times be considered as forming a part of these specifications.

(1)
GRADING

The grading shall include all materials in the Road and shall conform to the lines and grades given by the Engineer.

All material not required by the Township shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

After the Road has been brought to the proper sub-grade, as indicated on the stakes set by the Engineer, and in accordance with the cross-section given on the plan, the same shall be thoroughly rolled with a roller weighing not less than ten (10) tons, and all places not accessible to the roller shall be thoroughly rammed.

All soft spots in the sub-grade shall be cut out and refilled with good, clean gravel.

The proper cross-section and grade shall be preserved while the rolling is being done, so that when the rolling has been completed to the satisfaction of the Engineer, the sub-grade shall have a firm, unyielding surface, parallel with and a given distance below, the finished cross-section and grade of the pavement.

(2)
DRAINS
AND
DRAIN-
AGE.

P i p e C u l v e r t s .

DESCRIPTION.

These culverts shall consist of sections of cast iron, corrugated metal, reinforced concrete, or vitrified clay pipe, of the diameter shown on the plans, laid on a firm bed true to line and grade in accordance with these specifications.

CAST IRON PIPE.

This pipe shall be made of cast iron of good quality and of such quality and of such character as to make the metal strong, tough and of even grain, but soft enough to admit of satisfactory drilling and cutting. The metal shall be made without any admixture of cinder iron or other inferior metal and shall be remelted in a cupola or air furnace. The pipe shall be hub and spigot style, smooth, free from scales, lumps, blisters and other defects impairing its strength or durability. It shall be manufactured in lengths of not less than three (3) feet, the inner and outer surfaces shall be true, whole, concentric cylinders, and it may be either cast iron water pipe or cast iron culvert pipe.

If cast iron culvert pipe is furnished, the minimum thicknesses of pipe and the weights per linear foot shall be as follows:

Normal Inside Diameter. Inches.	Thickness. Inches.	Weight per Foot. Pounds.
12	7/16	50
14	7/16	60
16	1/2	80
18	1/2	90
20	1/2	120
24	9/16	160
30	11/16	220
36	13/16	300

No pipe will be accepted, the weight of which shall be over five (5) per cent. less than the standard weight.

Each section of cast iron pipe shall be coated inside and

outside with coal-tar pitch varnish to which sufficient linseed oil has been added to make a smooth coat, tough and tenacious when cold, with no tendency to scale off.

CORRUGATED METAL PIPE.

All corrugated metal pipe shall be of first quality, of true circular form and shall be of such lengths as are indicated on the plans. The pipe shall be true and straight throughout its entire length and free from all imperfections. It shall have tightly riveted lap joints, and the rivets shall be of a quality at least equal to the metal used in the body of the pipe. This pipe shall be manufactured to meet the following requirements:

a. Composition of Material. All corrugated metal pipe shall be manufactured from either a pure iron or a copper bearing steel. If iron is used the metal must contain not less than ninety-nine and seventy one-hundredths (99.70) per cent. (determined by difference) pure iron, allowing thirty-one-hundredth (.30) per cent. for all impurities or foreign elements. If steel is used, ninety one-hundredths (.90) per cent. will be allowed for impurities. The impurities mentioned include carbon, phosphorus, sulphur, silicon, manganese, copper and oxygen; however, copper bearing steel shall contain from eighteen one-hundredths (.18) to thirty one-hundredths (.30) per cent. of copper. The metal shall have a tensile strength of not less than 40,000 pounds per square inch. All sheets shall be free from blisters, seams, slag or foreign materials.

b. Galvanizing. All materials entering into the manufacture of the pipe shall be coated with not less than two (2) ounces of spelter per square foot of exposed surface. The spelter shall be pure zinc and shall be applied in such a manner as to form a continuous, impervious coating of uniform thickness, free from imperfections of any kind and shall show no signs of cracking or blistering.

c. Corrugations. The corrugations shall be not more than three (3) inches in width and not less than one-half ($\frac{1}{2}$) of an inch in depth.

d. Gauges of Metal. Corrugated metal culverts shall be made of sheets of the following thicknesses (United States Standard Gauge Measure):

Diameter.

Pipe from 12" to 20" shall not be lighter than 16.
Pipe from 24" to 30" shall not be lighter than 15.
Pipe from 36" to 42" shall not be lighter than 14.
Pipe from 48" to 60" shall not be lighter than 12.

Reinforced Concrete Pipe. Reinforced concrete pipe shall be of the hub and spigot or other approved style. The ends shall be at least as strong as the body of the pipe, and all pipe shall be cured properly and aged at least two (2) weeks before being used. Each section of pipe shall be straight and of true circular form. It shall have a uniform thickness throughout and shall be free from porous and scaly spots and spalled edges. Pipes having defective spots patched or plastered over will not be accepted.

a. Manufacture. The materials and methods used in the manufacture of this pipe shall be approved, and specifications covering them shall be submitted by the Contractor before purchasing pipe.

b. Strength. The pipe when tested without lateral support (the contact points at support and application of load not to exceed a width of three (3) inches measured on the circumference) shall show a load supporting capacity per linear foot at least equal to that expressed by the formula.

$$W = 1000 X D,$$

in which "W" equals the breaking strength per linear foot of pipe and "D" the diameter of the pipe expressed in feet.

The test shall be made on a section of pipe from which the hub has been removed.

Vitrified Clay Pipe. Vitrified clay pipe shall be of the hub and spigot style, of first quality, sound, thoroughly and perfectly burned, without warps, cracks or other imperfections, and shall be fully and smoothly salt-glazed over the entire inner and outer surfaces, except that the inside of the hub and the outside of the spigot may be unglazed for two-thirds ($2/3$) of the depth of the hub. On all other portions of the pipe, the glazing shall completely cover and form an integral part of the pipe body. If glazed, the inside of the hub and the outside of the spigot shall be scored in three (3) parallel lines extending completely around the circumferences. This pipe shall be manufactured at a suitable temperature to secure a tough, vitreous material which, when broken, shall show a dense and solid body, without detrimental cracks or laminations. It shall be of such toughness that it may be cut with a chisel and hammer, and when struck with a hammer shall give a metallic ring. The minimum length of sections, thickness, and the depth of hub shall be as follows:

Size. Inches.	Minimum Length. Feet.	Thickness. Inches.	Depth of Hub. Inches.
12	2	1	3
15	2	$1\frac{1}{4}$	3
18	2	$1\frac{1}{2}$	$3\frac{1}{4}$
20	2	$1-\frac{2}{3}$	$3\frac{1}{2}$
22	2	$1-\frac{5}{8}$	$3-\frac{3}{4}$
24	2	2	4
27	$2\frac{1}{2}$	$2\frac{1}{4}$	4
30	$2\frac{1}{2}$	$2\frac{1}{2}$	4
33	$2\frac{1}{2}$	$2-\frac{5}{8}$	5
36	$2\frac{1}{2}$	$2-\frac{3}{4}$	5
42	$2\frac{1}{2}$	$3\frac{1}{2}$	5

Cement Mortar: The mortar for cementing the joints in the pipe shall be composed of one (1) part of Portland cement, and two (2) parts of approved, clean sand, mixed with sufficient water to form a plastic mortar.

Forming Bed for Pipe. Where the pipe is to be laid below the ground line, a trench shall be excavated to the required depth, and the bottom of the trench shall be shaped to conform to the bottom of the pipe and shall afford a uniformly firm bed throughout its entire length, and recesses shall be excavated to receive the hubs. Where rock is encountered the trench shall be excavated four (4) inches below the bottom of the pipe and this excess depth shall be refilled with suitable material, which shall be tamped thoroughly. Any soft or yielding material shall be removed and replaced with other suitable material, which shall be tamped thoroughly in place.

Where pipe is not laid in a trench, a uniformly firm bed shall be made as herein specified for the bottom of the trench.

Laying Pipe. The pipe shall be laid carefully, hubs up-grade, spigot ends fully entered into the adjacent hub, and true to lines and grades given. All cast iron, reinforced concrete and vitrified clay pipe shall be laid with cemented joints. Before succeeding sections of pipe are laid, the lower portion of the hub of the preceding pipe shall be plastered on the inside with cement mortar of sufficient thickness to bring the inner surfaces of the abutting pipes flush and even. After the pipe is laid, the remainder of the joint shall be filled with similar material, and sufficient additional material shall be used to form a bead around the joint. The inside of the joint shall be wiped and finished smooth. After initial set, the cement on the outside shall be protected from the air and sun with an earth covering.

When corrugated metal pipe sections are joined on the work, the ends shall be butted together and the sections joined with a band, made of the same material as the pipe, of sufficient width to lap at least one (1) full corrugation on either side of the joint, which band shall be bolted firmly in place. The bolts shall be of the same material as that used in the manufacture

of the pipe and shall be painted with red lead or other approved material.

Any pipe which is not in true alignment or which shows any settlement after laying shall be taken up and relaid without extra compensation.

Refilling Around Pipe. The filling around the pipe shall be made in layers with approved material free from rock and each layer shall be tamped thoroughly around and over the pipe.

Relaying Pipe. Where indicated or directed old pipe culverts shall be removed and relaid, extended or renewed in the same manner as specified for new pipe culverts.

---STONE UNDERDRAIN---

Description. This underdrain shall consist of a trench, twelve (12) inches wide at the bottom with flaring sides, filled with large stones to a depth of fifteen (15) inches so as to produce voids through which water will drain. It shall be constructed in accordance with the plans and in conformity with these specifications.

Materials. The bottom course shall consist of approved, sound, hard, durable, rough slabs of stone from eight (8) to ten (10) inches in depth, from one (1) to three (3) inches in width, and of a length greater than the depth. The top course shall consist of sound, hard, durable slabs of stone from one (1) to three (3) inches in thickness. If insufficient local stone of the above quality is available for top course stone, there may be substituted wholly or in part, approved, clean, hard durable crushed or napped rock, crushed slag, or gravel of such size as will pass through a two and one-half ($2\frac{1}{2}$) inch circular opening and be retained on a three-quarters ($\frac{3}{4}$) of an inch opening.

Construction Methods. Where indicated or directed, the Contractor shall excavate a trench twelve (12) inches wide at the bottom and of the required depth, with sides battered outward one (1) inch in ten (10) inches. The bottom of the trench shall be finished to the grade given, shall be smooth and firm, and tamped if necessary.

The bottom course stone shall be set carefully by hand, longitudinally with the trench, in vertical position, side by side, so as to give maximum voids. The vertical joints between ends of bottom course stone shall be staggered, and the bottom course in place shall be from eight (8) to ten (10) inches in depth.

The top course stones shall be placed over the bottom course to fill the trench to a total depth of fifteen (15) inches. The slabs shall be laid flat over the bottom course stone, to cover it as completely as practicable, and up to the fifteen (15) inch line, with joints close and staggered and necessary voids filled carefully with stone, slag or gravel; or the crushed or napped stone or slag, or gravel may be used to fill this upper part of the trench when the slabs are not available. The remainder of the trench above the fifteen (15) inch line shall be filled with suitable earth, which shall be compacted thoroughly by tamping in four (4) inch layers. Suitable outlets shall be provided and protected with headwalls or small dry stone box openings.

(5)
CEMENT.

All cement used in this work shall be an established brand of Portland cement and shall meet all the requirements of the Standard Specifications of Portland cement of the Am. Soc. for Testing Materials.

The cement shall be delivered in suitable packages with the brand and name of the manufacturer plainly marked thereon. Should the Contractor so elect, he may secure cement from previously tested lots, in stock of a reputable supply dealer, provided the packages are properly labeled for identification. The use of cement which has not been tested or which has failed to pass the

above tests is prohibited.

(4)
STONE
AND
SAND.

The stone for use in concrete shall be crushed or broken from material equal in hardness and durability to native sandstone. It shall be free from seamy or scaly pieces, shale, loam or dirt.

The sizes shall be well graded from a minimum diameter of one-quarter ($\frac{1}{4}$) inch to a maximum varying according to the class of concrete to be used and specified.

The sand shall be clean and sharp, free from loam, dirt and foreign matter.

(9)
CONCRETE.

(1). MIXING:

The mixing of all concrete shall be done in a manner satisfactorily to the Engineer and subject at all stages to his approval.

If a mechanical mixer be used, it shall be of the "batch" type, with a suitable device for controlling and measuring the amount of water used.

If the concrete be mixed by hand, such work shall be done on clean, tight platforms or in boxes.

First, the cement and sand shall be mixed dry to a uniform color, then water shall be added and the resulting mortar thoroughly mixed. Wetted stone shall then be added to the mortar and the whole mass thoroughly mixed.

After the materials are thoroughly mixed, the work shall proceed rapidly, until the whole of the concrete is placed.

(2)- PLACING:

The concrete shall be deposited in layers of required thickness, and so as to secure monolithic and homogeneous work. One layer shall quickly follow another. Where one day's work adjoins that of another, the concrete shall be thoroughly cleaned and sprinkled before the next section of concrete is applied.

(3)- FURNACE SLAG:-

When furnace slag is used in concrete, it shall be well

seasoned, granulated, firm constructed gray furnace slag, free from dirt, loam or other foreign material, and shall weigh at least seventeen hundred (1700) pounds per cu. yard.

(4)- FREEZING WEATHER.

Within the range of temperature from twenty (20) degrees (F) to thirty-two (32) degrees (F), concrete may be mixed and placed, provided the materials be satisfactorily heated and the concrete kept warm and protected in a manner acceptable to the Engineer. When the temperature falls below twenty (20) degrees (F) concreting will not be permitted under any condition.

(5) RETEMPERING:

Remixing with additional water, mortar or concrete, any concrete that has partially hardened shall not be permitted.

(10)
CONCRETE
BASE.

After the sub-foundation has been prepared in accordance with Item No. 1 in these Specifications and to the satisfaction of the Engineer, a concrete foundation of five (5) inches thick shall be laid thereon.

The concrete shall be composed of one (1) part Portland cement, three (3) parts clean, sharp sand and six (6) parts broken stone or furnace slag.

The broken stone shall be of graded sizes so that the largest dimensions of any stone shall not exceed two and one-half ($2\frac{1}{2}$) inches, and the smallest dimension of any stone shall not be less than one-quarter ($\frac{1}{4}$) inch and must be free from dirt or other foreign matter.

After the concrete base is laid it shall be properly protected from extremely hot or freezing weather until firmly set.

The surface shall be kept moist in warm weather by sprinkling or proper intervals for not less than two (2) days after laying.

No movement of material, traffic or travel of any kind shall be allowed upon the concrete for a period of thirty-six (36)

hours after it is laid and then only upon plank placed upon the concrete for that purpose.

The grading and sub-foundation shall be completed at least fifty (50) feet in advance of the laying of the concrete.

(11)
CUSHION
COURSE.

Upon the concrete base, which must be thoroughly cleaned, shall be spread a layer of sand, one (1) inch in thickness, after the same has been thoroughly and firmly compacted by rolling. The sand shall be clean, coarse and dry, free from all gravel exceeding one-quarter ($\frac{1}{4}$) inch in size.

The cushion must be carefully shaped to a true cross-section parallel with the finished roadway, by means of a template covering at least one-half ($\frac{1}{2}$) of the width of the roadway, and so made as to be easily drawn over the curb and guide rail. The template shall have a steel faced edge and shall be built in substantial accordance with the plans accompanying these specifications.

The guide timbers shall be one and one-half ($1\frac{1}{2}$) inches by four (4) inches by sixteen (16) feet, dressed on both sides, laid to a true surface in the center of the road, and next to the curb if the curb cannot be used.

Before shaping the cushion a one-half ($\frac{1}{2}$) inch strip shall be laid on the curb and guide timbers, and the template drawn over the same, after which the one-half-inch strip shall be removed, the cushion slightly moistened and rolled over its entire surface with a hand roller. The roller shall not be less than thirty-six (36) inches in diameter, twenty-four (24) inches in width and shall weigh not less than ten (10) pounds per inch in width.

After rolling the template shall be drawn over the curb and guide timbers to complete the cushion.

The cushion shall be prepared at least fifty (50) feet ahead of the brick laying.

(12)
THE
BRICK

The brick shall be strictly No. 1 pavers of the size commercially known as "vitrified block."

"Hillside" block shall be used on grades of five (5) per cent. or more where shown on the plans.

The standard size of the brick shall be three and one-half ($3\frac{1}{2}$) inches in width, four (4) inches in depth, and eight and one half ($8\frac{1}{2}$) inches in length. They shall not vary from these dimensions more than one-eighth ($1/8$) of an inch in width and depth and not more than one-half ($\frac{1}{2}$) of an inch in length. If the edges of the brick are rounded the radius shall not exceed three-sixteenths ($3/16$) of an inch.

When broken, the brick shall show a dense, stone-like body, free from lime, air pockets, cracks, or marked laminations.

They must not be fire flashed, smoked or treated in any manner tending to give a uniform color outside. Kiln marks must not exceed three -sixteenths ($3/16$) of an inch and one edge at least shall show but slight kiln marks.

All bricks so distorted in burning as to lay unevenly shall not be accepted.

Only brick with raised lugs on one side, not to exceed one-quarter ($\frac{1}{4}$) of an inch in height shall be used.

(1)- INSPECTION:

All brick shall be subject to thorough inspection before and after laying and rolling and all rejected material shall be immediately removed from the work.

(2)- DELIVERY:

The brick shall be hauled, carefully unloaded by hand, and neatly piled on the walks or outside of the curbs before the grading is finished, and in laying be carried from these to the work.

They must be piled in such a manner as to provide sufficient passage-way on the walks and free access to and from each property, and not within three (3) feet of any fire hydrant.

(3)- COLOR:

The brick may be either buff or chocolate color, but whatever color is used it must be uniform in shade for any one street.

(4)- TESTS:

The brick shall be tested before being used in the pavement and at such times as the Engineer may require during the progress of the work.

The brick for tests shall be furnished by the Contractor, properly boxed and labeled, and delivered to the testing laboratory.

For each test, ten (10) brick shall be selected by the Engineer from the line of the work, and they shall conform to the requirements hereinafter specified.

The following statement shall accompany each sample for test:

Name of firm furnishing sample, _____
Name of firm manufacturing sample, _____
Street or job which sample represents, _____
Brands or marks on the brick _____
Quantity furnished _____
Length _____, Breadth _____ Thickness _____

The Contractor shall notify the Engineer of the location and car number of each carload of brick received, so that samples, if deemed necessary, may be taken and tested by the Township, and no brick shall be delivered on, or adjacent to, any improvement on which brick are to be used until a written statement has been received from the Engineer, or his authorized representative, that

they have been superficially inspected or have passed the required tests.

Decision relative to each carload will be made within twenty-four (24) hours of notice.

Permission to deliver brick on the line of the work shall not be considered a final acceptance in any respect.

METHOD:

The tests shall be made in accordance with the method adopted by the National Brick Manufacture Association and adopted by the American Society of Municipal Improvements.

ABRASION:

The Abrasion test shall be made in a standard rattler.

The brick shall not lose more than twenty-two (22) per cent. of its original dry weight. The average loss of ten (10) brick tested at any one time shall not exceed twenty (20) per cent.

The rattler shall be rotated at a rate of not less than twenty-nine and one-half ($29\frac{1}{2}$), nor more than thirty and one-half ($30\frac{1}{2}$) revolutions per minute and eighteen hundred (1800) revolutions shall constitute the standard test.

ABSORPTION:

The absorption of water by any one brick shall not exceed three and one-half ($3\frac{1}{2}$) per cent. The average absorption of bricks tested shall not exceed three (3) per cent. of their dry weight. The test shall be made with either abraded or broken brick, which shall be dried for six (6) hours in a hot oven and then soaked in water for six (6) hours. At least three (3) brick must be tested.

CRUSHING STRENGTH:-

Average resistance to crushing for all brick tested shall be not less than 8500 pounds for square inch. No brick shall be allowed in the work having a crushing strength of less than 7500

pounds per square inch.

ADDITIONAL TESTS:-

X
In addition to the above specified tests, such other tests as the Engineer may consider necessary shall be made.

The expenses of all tests shall be borne by the Contractor.

(13)
BRICK
LAYING

After the sand cushion has been placed in accordance with these specifications and to the satisfaction of the Engineer, the brick shall be laid therein in straight lines, on edge, and at right angles to the curb. They shall be laid with the best edge up. At the intersections they shall be laid as directed by the Engineer.

The brick shall be laid with the lug sides all in the same direction.

Brick must be placed close together, both ends and sides, breaking joints at least three (3) inches. At every fourth course the brick shall be driven together to secure tight joints and straight courses, and all thick brick shall be removed.

Broken, chipped or warped brick, not suitable to lay as a whole, may be used for batting.

Brick may be laid from curb to curb, or car track to curb.

No bats or broken brick shall be used except at curbs or at street-car tracks. Batting for closures shall immediately follow, the laying.

X
In delivering the brick to the work, no wheeling in barrows shall be allowed on the brick surface, but they shall be delivered on a carrier to the brick layer.

STREET-CAR TRACKS:-

X
Along street-car tracks the brick shall not be laid within one-quarter ($\frac{1}{4}$) of an inch of the rail, and when rolled shall be one-quarter ($\frac{1}{4}$) inch below the top of the rail.

The space between the web of the rail and the brick shall be filled with cement mortar, consisting of two (2) parts sand and

one (1) part Portland cement. The mortar shall be in proper condition and the edge constructed to a straight line before the bricks are laid.

EXPANSION JOINT FOR CEMENT GROUT FILLER:

Expansion joints shall be placed parallel with and at each curb line, and transverse joints shall be placed as directed by the Engineer or shown on the plans.

The joints shall be one-half ($\frac{1}{2}$) inch in width for roadways less than twenty (20) feet wide, three-quarters ($\frac{3}{4}$) of an inch in width for roadways from twenty (20) feet to twenty-four (24) feet wide, one (1) inch in width for roadways from twenty-four (24) feet to thirty (30) feet wide and one and one-half ($1\frac{1}{2}$) inches in width for roadways over thirty (30) feet wide.

The joints shall be made by placing together on edge, parallel with the curb, two wedge-shaped strips six (6) inches in width and dressed on two faces.

The strip next to the curb shall be one (1) inch wide on top, beveled to a thickness of one-half ($\frac{1}{2}$) inch at the bottom, and the strip next to the brick shall be of the same dimensions and placed in a reverse position. The strips shall be furnished by the Contractor.

The bricks shall be laid lightly against said strips.

Soon after the pavement has been grouted and the cement filler has set and the pavement is in all respects satisfactory to the Engineer, the strips shall be removed, the joints thoroughly cleaned out, and immediately completely filled with the bituminous filler.

The filler must have a melting point varying not more than five (5) degrees from one hundred and thirty-five (135) degrees (F) and must not be brittle at zero (0) degree (F); it shall remain ductile, shall be absolutely proof against water and street liquids, shall firmly adhere to the brick and stone, be pliable rather than rigid, thus providing for expansion and contraction

and traffic conditions.

Extra care shall be used at the gutters in filling in all joints in both paving, curbing and around catch basins, manholes, etc., to effectually prevent leakage of water into the sub-foundation. All joints shall be immediately filled to the top and re-filled such number of times thereafter as may be directed by the Engineer before adding the dressing.

A premoulded expansion strip made of material unaffected by the action of water or street liquids may be used for expansion joints if it meets the requirements of the joint filler herein specified.

ROLLING:-

After the brick in the pavement have been passed for rolling and the surface swept clean, the pavement shall be rolled with a roller not weighing less than three (3) nor more than five (5) tons, in the following manner:

The brick next to the curb shall be tamped with a hard wood tamper, to the proper grade.

The rolling shall then commence near the curb at a very slow pace, and continue back and forth, toward the center of the street, until the center of the street is reached; then, passing to the opposite curb, it shall be repeated in the same manner, to the center of the street.

After the first passing of the roller the pace may be quickened and the rolling continued until the brick pavement has a smooth surface.

The pavement shall then be rolled transversely at an angle of forty-five (45) degrees from curb to curb, repeating the rolling in the opposite forty-five (45) degree direction.

Before and after this transverse rolling has taken place, all broken or injured brick must be taken up and replaced with perfect ones. The substitute brick must be brought to the true

surface by tamping.

After final rolling the pavement shall be tested with a ten (10) foot straight edge, laid parallel with the curb, and any depression exceeding one-quarter ($\frac{1}{4}$) of an inch must be taken out. If necessary, the pavement shall be rolled again.

CEMENT GROUT FILLER:-

The filler shall be composed of one (1) part Portland cement and one (1) part clean, sharp sand.

The cements shall meet the requirements of Item No. 7 in these specifications.

The sand shall be clean and sharp, fairly well graded from that passing a 20-standard sieve to that retained on a 100-standard sieve.

Sand shall be measured in a box having the same cubical contents as one sack of cement.

Before any grouting is done, a sufficient amount of cement and an equal amount of sand to complete the work prepared for the grouting at that time, but not to exceed one-half day's run shall be thoroughly mixed dry until the mass assumes a uniform color.

From this an amount not exceeding two (2) cubic feet shall be taken and placed in the grouting-box and enough clean water added to obtain a grout that will penetrate to the bottom of the brick.

From the time the water is applied until all is removed and floated into the joints of the pavement, the mixture must be kept in constant motion. Before the grout is applied the brick shall be thoroughly wet by being gently sprayed.

The water shall be added to this dry mixture in a box about four (4) feet, eight (8) inches long, thirty (30) inches wide, and fourteen (14) inches deep resting on legs of different

lengths so that the mixture will rapidly flow to the lower corner of the box, the bottom of which shall be about three (3) inches above the pavement. One box shall be used for each fourteen (14) feet in width of roadway, and at least two (2) boxes shall be used in all cases.

The grout shall be removed from the box with scoop shovels and applied to the brick in front of the sweepers, who shall rapidly sweep it lengthwise of the brick into the unfilled joints, until the joints are filled to within not more than one-half ($\frac{1}{2}$) inch of the top of the brick.

After the grout has had a chance to settle into the joints and before the initial set develops the balance of every joint shall be filled with a thicker grout, and if necessary, refilled, until the joints remain full to the top.

After this application has had time to settle, and before the initial set takes place, the pavement shall be finished to a smooth surface with a squeegee or wooden scraper having a rubber edge, which shall be worked over the brick at an angle with the brick.

When completed, and the cement has received its initial set, the pavement shall be covered with a one-half ($\frac{1}{2}$) inch layer of sand, which shall be frequently sprinkled in warm weather.

No travel shall be permitted on the pavement for a period of at least seven (7) days after grouting, or longer, as the Engineer may require an account of weather conditions.

Ample barricades and watchmen shall be provided by the Contractor for the proper protection of the grouting.

---C-O-N-T-R-A-C-T---

N.B. (The bidder is warned not to fill in any of the following blanks. After the contract is awarded the blanks will be filled in under the direction of the President of Council).

---THIS AGREEMENT---

Made and concluded this _____ day of _____, A.D. 1918, by and between the TOWNSHIP OF UPPER YODER, a municipal corporation, duly organized and existing under and by virtue of the laws of the State of Pennsylvania, party of the first part, and _____, Contractor, of _____, party of the second part,

WITNESSETH:- That the said party of the second part has agreed, and by these presents doth agree to and with the party of the first part for the consideration hereinafter mentioned and contained and under penalty expressed in the bond bearing even date herewith and hereto attached, to furnish at ___ own proper cost and expense, all the necessary material, labor, tools, implements, appliances and machinery to grade, make excavations and embankments, construct the required foundations and drainage, to curb, and finish and complete the vitrified brick pavement in

_____ From _____ To _____
_____ From _____ To _____
_____ From _____ To _____
_____ From _____ To _____

Said road being a public highway of said Township. The same to be done in strict accordance with the plans and specifications hereto attached and which shall together form a part of this Agreement, and for the prices mentioned in the proposal hereto attached.

In WITNESS Whereof, the parties hereto have duly executed these presents the day and year first above written.

THE TOWNSHIP OF UPPER YODER,

by _____ (SEAL)
President of Supervisors.

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

Contractor.

Approved: _____

} Supervisors.

ATTEST:--

Secretary.

Witness for Township:

Witness for Contractor:

---B-O-N-D---

KNOW ALL MEN BY THESE PRESENTS,

That _____
of _____
as principal, and _____

as sureties, are firmly bound unto the TOWNSHIP OF UPPER YODER,
Pa., in the sum of _____
(\$ _____) Dollars, lawful money of the United States of America,
well and truly to be paid to the Township of Upper Yoder, its
successors or assigns, to which payment we hereby bind ourselves,
our heirs, executors and administrators, jointly and severally,
by these presents.

Signed and dated this _____ day of _____
_____, A.D. 1918,

The condition of the above obligation is such that whereas
the said _____

_____ has, on the _____ day of _____, 1918, entered
into a contract to grade and construct a vitrified brick pavement
in the road designated in said contract and in the manner
set forth in said contract and in the specifications herewith attached
and the plans therefor on file in the office of the Township Engineer
for the Township of Upper Yoder.

NOW, THEREFORE, if the said _____

shall honorably and faithfully discharge, perform and fulfill, all and singular, the obligations of said contract, and shall save and hold harmless the Township of Upper Yoder, from all liens, charges and costs, and damages of every kind and nature whatsoever, then the above obligation shall be void, otherwise, it shall be of full virtue and force in law.

In WITNESS Whereof, we have hereunto set our hands this _____ day of _____, A.D. 1918.

Signed and Acknowledged
in presence of:

_____) SEAL)
_____) SEAL)
_____) (SEAL)
_____) (SEAL)

Approved as to Form:

Township Solicitor.

No. *Ch Term 1918.*

-SPECIFICATIONS AND CONTRACT-

-f o r-

**PAVING OF A ROAD IN THE TOWN-
SHIP OF UPPER YODER, CAMBRIA
COUNTY, PENNSYLVANIA.**

Filed 24 July 1918.