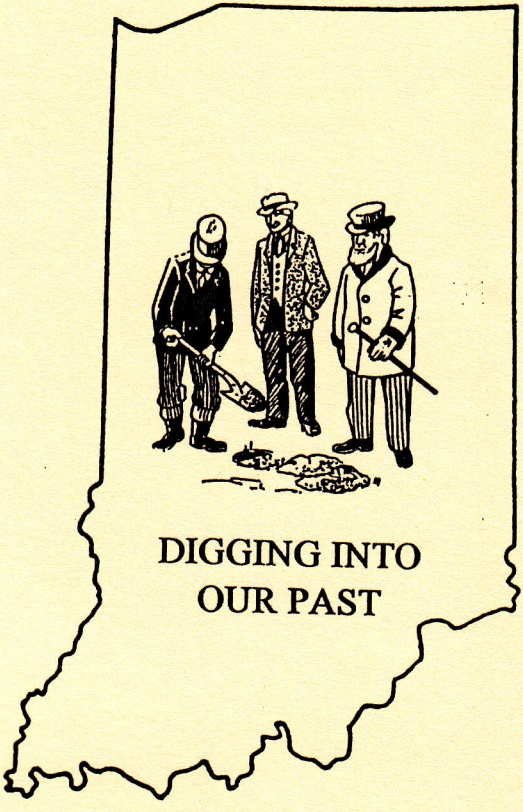
INDIANA CANALS



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INDIANA CANALS

The Journal of the Canal Society of Indiana
Volume 10, Number 1 Winter 1999

LAFAYETTE'S "RED" CANAL WAREHOUSE USED AS CIVIL WAR PRISON BARRACKS

by Wanda Lou Willis

THE FOLLOWING INFORMATION IS COMPILED FROM AN EIGHT PAGE MANUSCRIPT LOCATED IN THE LIBRARY OF CONGRESS' AMERICAN LIFE HISTORY SECTION COLLECTED AND TRANSCRIBED AS PART OF THE WPA FEDERAL WRITERS' PROJECT, 1936-1940.

Between 10,000 and 15,000 Rebel prisoners were taken at Fort Donelson. Of that number 6,000 were sent to Indianapolis. However, the city was unable to accommodate this large number. Lafayette, Richmond and Terre Haute agreed to accept some of the captives. Lafayette received 800, including a small number of "contrabands" (slaves

In this issue . . . .

brought into the Union lines).
The prisoners, members of the 32nd and 41st Tennessee regiments, arrived in Lafayette on February 23, 1862. Union soldiers guarded the men as they walked along the Wabash and Erie towpath from the South Street Station to the "Red" canal warehouse on the East bank of the canal. Many of them were young men; some were just boys. Few were in uniforms; most wore butternut jeans. Many had severe colds; 12 or 14 were seriously ill.

Two other buildings were put into service as hospital barracks: The Walsh Hall on South Street and Sample's porkhouse near the canal. Soon the majority of the prisoners were ill with "camp diarrhea," typhoid and pneumonia. The more serious of these were transferred to the city's 70 bed South Street Hospital.

A newspaper account, dated March 31, 1862, stated that 33 prisoners died while incarcerated at Lafayette. Twenty-eight were buried in Greenbush cemetery.

(At the time of the WPA Writer's Project the 'Red' canal warehouse, owned by W.K. Rochester, was still standing.)

THE DAM AT THE JUNCTION
OF THE
WHITEWATER
AND
CINCINNATI & WHITEWATER CANALS

The Canal Society of Indiana along with the Dearborn County Historical Society has applied for an Indiana State Format Marker to mark the junction of the Whitewater and Cincinnati & Whitewater Canals at West Harrison Indiana. When applying for the marker, the history of the two canals and the location of the canal structures in the area had to be documented. Chuck Whiting, CSI board member from Lawrenceburg and member of the marker committee, researched the location of the dam on

the Whitewater River that pooled the water for the canals. He found the following pieces of information at the Cincinnati library which give the location of the dam and deeding of the land to the Cincinnati & Whitewater Canal Company from John and Mary Ann Godley. This is new information for the CSI files.

REPORT TO THE OHIO BOARD OF PUBLIC WORKS

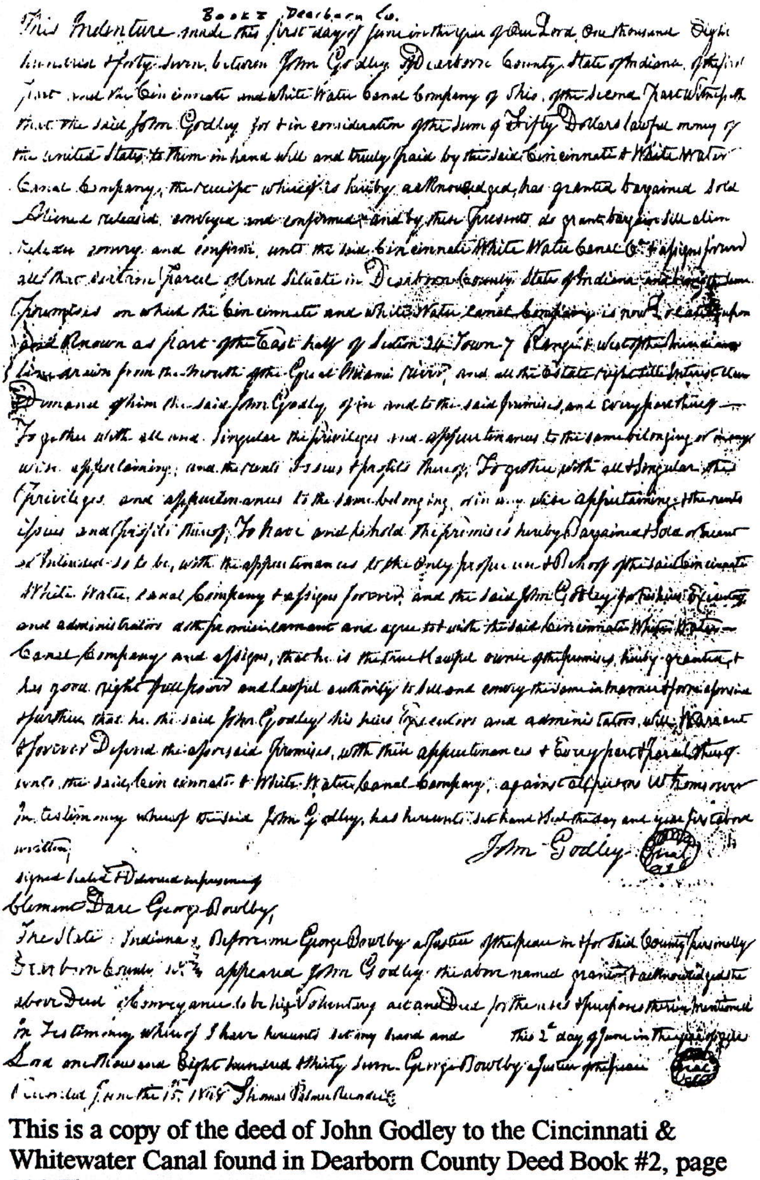
In his January 24th, 1837 Report to the Ohio Board of Public Works, Principal Engineer, Samuel Forrer, Esq. included the following report he had received from Darius Lapham, the surveyor and resident engineer. Lapham also is the man who recommended and designed the Cleves Tunnel connecting Cleves and North Bend, OH on the Cincinnati & Whitewater Canal. An article about the tunnel and a part of Lapham's report that appeared in the Erasmus Gest Papers were in the CSI Newsletter Vol. 10 No. 6 June 1996.

Owing to ill health in the latter part of summer and the consequent accumulation of duties on the Miami Canal, I was prevented from making the survey and estimate of the Canal to connect Cincinnati with the White Water Canal in the State of Indiana, required by a resolution of the last General Assembly of Ohio, until late in December; the weather being then so unfavorable that I could not give the route that careful examination, which would have been desirable, had the weather been more pleasant. I succeeded, however, with the aid of previous examinations, made in the summer, to obtain sufficient data, by which to make an estimate of the probable expense, and a map showing the route of the Canal, which I herewith submit for your examination and further disposition.

The survey was commenced on the 23rd of December last, at the point where the line between the State of Ohio and Indiana, crosses the White Water River, about three-fourths of a mile south of Harrison, immediately above the dam, in the pool of which, the White Water Canal of Indiana crosses that river. The north end of the dam as it is now located, is three chains below the state line, leaving sufficient room for the Branch Canal, to enter the pool of the dam within the State of Ohio, and from thence by making use of the guard bank along the north side of the river for a towing

path, boats can be towed up to the mouth of the White Water Canal, a distance of 18 chains. This mode of connection may be rendered comparatively safe, by the construction of a mole or embankment, from the abutment of the dam, in a direction a little diverging from the bank of the river, until it intersects the line of the State. A safer and more advantageous connection could be made by continuing the Canal independent of the river, up to the basin proposed to be made, near the entrance of the Indiana Canal into the river. Upon this plan of connection, there will be 18 chains (1/4 mile) of Canal to be made in the State of Indiana, which will require some legislative provision on the part of Indiana, to authorize the State of Ohio, or a Company, acting under a charter from the State, to make this portion of the Canal within her territory.

The valley on the east side of the White Water, below Harrison, consists of a series of benches of different heights, gradually declining towards the mouth, and alternately approaching and receding from the river, rendering it a difficult task to locate a canal upon it, of one continued level, at a reasonable expense, without making the route too circuitous. To avoid this difficulty it is proposed to locate the canal as excavation to station number 40, and to make a lock of four feet fall at this point, which will serve the double purpose of a guard and lift lock. The depth of cutting on these 40 stations may be so regulated as that the earth to be removed will be sufficient to raise the banks above the floods of the river. A considerable saving in expense is effected by making this fall as well as an improvement in the direction of the canal. There is also another important advantage in combining a lift with a guard lock, in the gates being always closed against a sudden rise of the river. (This report continues and includes mention of the tunnel later built at Cleves)



Book 2 Dearborn Co.

This Indenture made this first day of June in the year of our Lord One thousand Eight hundred & forty seven, between John Godley of Dearborn County State of Indiana of the first part and the Cincinnati and White Water Canal Company of Ohio of the second part Witnesseth that the said John Godley for & in consideration of the sum of Fifty Dollars lawful money of the United States to them in hand well and truly paid by the said Cincinnati & White Water Canal Company, the receipt whereof is hereby acknowledged, has granted bargained sold aliened released conveyed and confirmed and by these presents do grant bargain sell alien release convey and confirm unto the said Cincinnati White Water Canal Co. & assigns forever all that certain parcel of land situate in Dearborn County State of Indiana and being the premises on which the Cincinnati and White Water Canal Company is now located upon and known as part of the East half of Section 24 Town 7 Range 1 West of the Meridian line drawn from the mouth of the Great Miami River, and all the estate right title interest claim demand of him the said John Godley of in and to the said premises and every part thereof — Together with all and singular the privileges and appurtenances to the same belonging or in any wise appertaining; and the rents issues & profits thereof; Together with all & singular the privileges and appurtenances to the same belonging or in any wise appertaining & the rents issues and profits thereof; To have and to hold the premises hereby bargained sold or meant or intended so to be, with the appurtenances to the only proper use & behoof of the said Cincinnati White Water Canal Company & assigns forever, and the said John Godley for himself his Executors and administrators doth promise covenant and agree to & with the said Cincinnati White Water Canal Company and assigns, that he is the true & lawful owner of the premises hereby granted & has good right full power and lawful authority to sell and convey the same in manner & form aforesaid & further that he the said John Godley his heirs Executors and administrators will Warrant & forever Defend the aforesaid premises, with their appurtenances & every part & parcel thereof unto the said Cincinnati & White Water Canal Company, against all persons Whomsoever In testimony whereof the said John Godley has hereunto set hand & seal the day and year first above written

John Godley (Seal)

Signed sealed & delivered in presence
Clement Dare George Bowlby

The State of Indiana Dearborn County ss. Before me George Bowlby a Justice of the peace in & for said County personally appeared John Godley the above named grantor & acknowledged the above Deed of conveyance to be his Voluntary act and Deed for the uses & purposes therein mentioned In Testimony whereof I have hereunto set my hand and [illegible] this 2nd day of June in the year of our Lord one thousand Eight hundred & thirty seven. George Bowlby a Justice of the peace (Seal)

Recorded June the 15th 1848 Thomas Palmer Recorder

This is a copy of the deed of John Godley to the Cincinnati & Whitewater Canal found in Dearborn County Deed Book #2, page 220. The text is presented beginning on the following page.

SALE OF LAND TO THE CINCINNATI & WHITEWATER CANAL COMPANY BY JOHN AND MARY ANN GODLEY

The following pages from Dearborn County records show that the deeds were originally made on one date and later recorded into the book at a later date. (An explanation about this practice follows the three deeds.) In this book the seals of the individuals were shown as squiggly circles with the word seal written on the inside of them. This will be shown as SEAL on the following documents. Please take into consideration that these documents were hand written and often very difficult to read. Often the words were spelled incorrectly, punctuation used incorrectly, and words were capitalized. The spelling of the Whitewater Canal in all cases was White Water Canal.

Page 220 of Deed Book 2 Dearborn County

This Indenture made this first day of June in the year of our Lord, one thousand eight hundred & forty seven, between John Godley of Dearborn County State of Indiana, of the first part, and the Cincinnati and White Water Canal Company of Ohio, of the second part witnesseth that the said John Godley for & in consideration of the sum of Fifty Dollars lawful money of the United States, to them in hand will and truly paid by the said

Cincinnati & White Water Canal Company, the receipt whereof is hereby acknowledged, has granted bargained sold aliened released, conveyed and confirmed, and by these presents do grant bargain sell alien release convey and confirm, unto the said Cincinnati White Water Canal Co. & assigns forever all that certain parcel of land situate in Dearborn County State of Indiana, and being the same premises on which the Cincinnati and White Water Canal Company is now located upon and known as part of the East half of Section 24 Town 7 Range 1 West of the Meridian line drawn from the mouth of the Great Miami river, and all the Estate right title interest to claim Demand of him the said John Godley of in and to the said promised, and every part thereof--Together with all and singular the privileges and appurtenances to the same belonging or any wise appertaining; & the rents issued and profits thereof; Together with all & Singular the privileges and appurtenances to the same belonging, or in

any wise appertaining: & the rents issue and profits thereof; To have and to hold the promises hereby Bargained & Sold or meant as Intended so to be, with the appurtenances to the only proper use & Behalf of the said Cincinnati White Water Canal Company and assigns forever, and the said John Godley his heirs Executors and administrators doth promise covenant and agree to & with the said Cincinnati White Water Canal Company and assigns, that he is the true & lawful owner of the premises hereby granted, & has good right of all power and lawful authority to sell and convey the same in manner & form aforesaid & further that he the said John Godley his heirs, Executors and administrators will Warrant & forever Defend the aforesaid premises, with their appurtenances & Every part & parcel thereof unto the said Cincinnati & White Water Canal Company, against all persons Whomsoever In testimony whereof the said John Godley has here unto set hand & seal the day and year first above written.

John Godley SEAL

Signed Sealed & Delivered in presence of

Clement Dare George Balboa,

The State: Indiana Dearborn County sct.: Before me George Balboa a Justice of the peace in aforesaid County personally appeared John Godley the above named grantor & acknowledged the above Deed of Conveyance to be his Voluntary act and Deed for the uses & purposes therein mentioned in Testimony whereof I have hereunto set my hand and this 2d day of June in the year of our Lord one thousand Eight hundred & thirty seven. George Balboa a Justice of the peace

Recorded June the 15, 1848 Thomas Palmer Recorder SEAL

Page 220-221 of Deed Book 2 Dearborn County

This Indenture; Witness to that John Godley

& Mary Ann his wife for & in consideration of one dollar, lawful money of the United States to them in hand well & truly paid by the Cincinnati & White Water Canal Company, the receipt whereof is hereby acknowledged, have granted bargained sold released conveyed and confirmed, and by these presents do grant sell alien release & confirm unto the said Canal Company and their assigns forever; as a right of way Sufficient ground lying between the State line between Indiana & Ohio, and the Junction of the Cincinnati & Whitewater Canal with the White Water Canal of Indiana below the first lock, North of the White Water river that may be necessary for the construction & free used of said Canal, the ground hereby released is part of Section No. 24, Township 7, Range 1 West in the State of Indiana and all the Estates rights, title, interest claim and Demand of the said John Godley & Mary Ann his wife of in & to the said premises and every part thereof, Together with all and singular the privileges to the same

belonging or in any wise appertaining, and the issues and rights thereof, To have and to hold said premises to & for the use of the Canal Company forever, yet upon condition that is said Canal should not be constructed or continued upon said land or Should from any cause be abandoned, or not used for such Canal that the right hereby granted Shall from thenceforth cease, and revert to the said grantors their heirs or assigns as property used a common highway would do, In Witness Whereof the said John Godley & Mary Ann his wife have hereunto set their hands & Seals this Eleventh day of February one thousand Eight hundred & thirty nine John Godley

Signed sealed & acknowledged in the presence of

Darius Lapham P_____(this appears to read Oul@abt)State of Indiana Dearborn County: Before me George Balboa a Justice of the peace aforesaid County personally

appeared John Godley & acknowledged the above instrument to be his Voluntary act & Deed for the use and purposes therein mentioned, in testimony whereof I have hereunto set my hand & Seal this 2d day of June in the year of our Lord one thousand eight hundred & thirty-seven

Recorded June the 15, 1848 Thomas Palmer Recorder George Balboa a Justice of the Peace SEAL

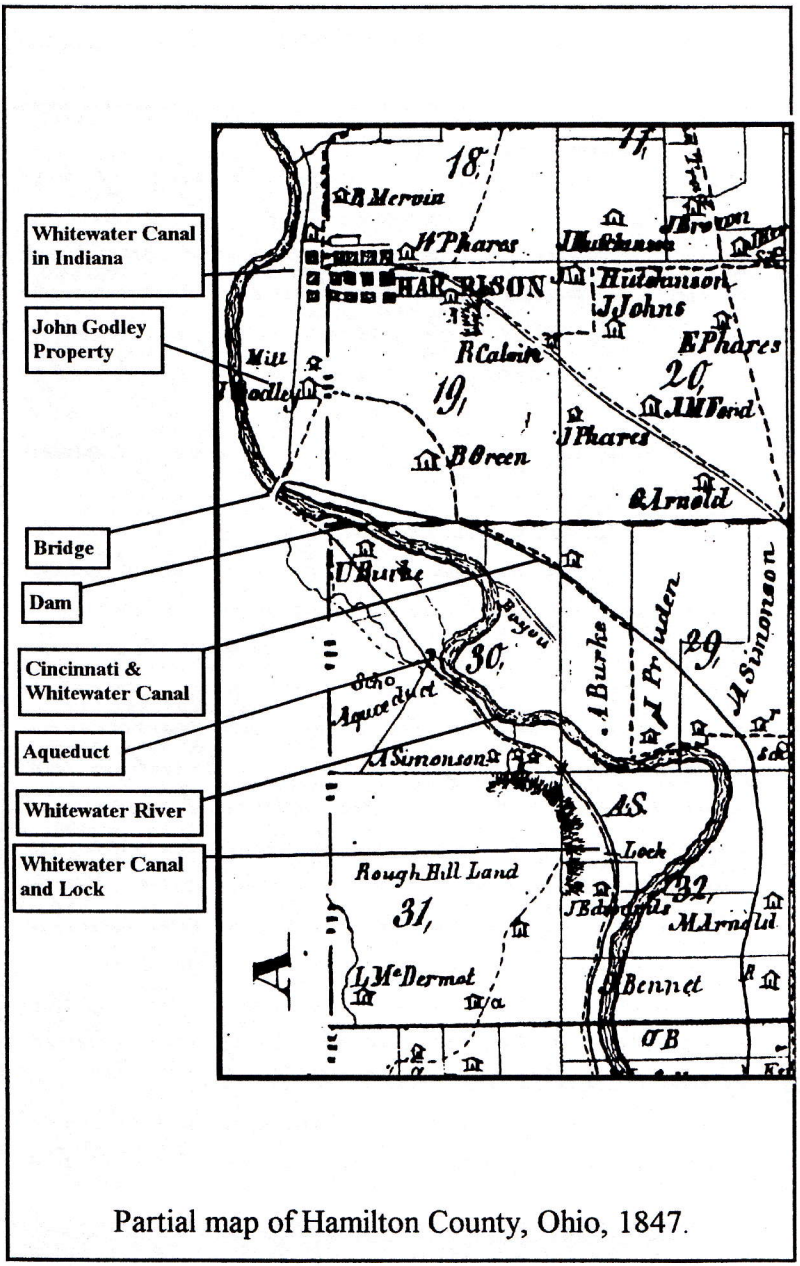
(See map on page 13)

Indianapolis Journal December 7, 1872

Matters About Town

Yesterday a pair of horses while crossing the bridge over the canal on Washington Street, fell into a crack with their forefeet, fortunately for the city, however, without injuring themselves.

Submitted by Wanda Willis



Partial map of Hamilton County, Ohio, 1847.

Page 401& 402 Deed Book 2 Dearborn County

Know all Men that I John Godley of the County of Dearborn and State of Indiana in consideration of the sum of Eight hundred dollars in hand to me paid by the Cincinnati and White Water Canal company, the receipt whereof is hereby acknowledged, do hereby Bargain sell and convey to the said Cincinnati and White Water Canal Company, and their successors in office and assigns forever the following Real Estate to wit "All that certain lot or parcel of land lying and being in the County aforesaid. It being a part of section number twenty four in Township number seven and range number one West of the Meridian line and described as follows to wit Beginning, at a point in the said meridian or state line where the natural surface of the ground meets the outer slope of the berm bank of the Cincinnati and White Water Canal as now located and constructed and running thence northwesterly, with the line of intersection of the natural surface of the ground with the said outer slope of berm Bank of the Canal to the White Water Valley Canal thence southerly, with the line of intersection of the Natural surface of the ground with the

outer slope of the said White Water Valley Canal to the Cincinnati and White Water Canal as formerly located and constructed to connect with the White Water Valley Canal below its outlet lock thence Easterly, with the line of intersection of the natural surface of the ground with the outer or North slope of the towing path Bank of the said former location of the canal to the said State line, thence North with the said State or meridian line to the place of Beginning; containing, all the land now occupied by the said Cincinnati and White Water Canal and its Bank from the said State line to the Junction of the said Canal with the said White Water Valley Canal together with all the land contained between the said present and former location of the Cincinnati and White Water Canal and between the said State line and the White Water Valley Canal estimated to contain in all four acres and seventy, nine hundredths of an acre. Together with all the privileges and appurtenances to the same belonging, To have and to hold said premises to the said Cincinnati and White Water Canal Company, their successors and assigns forever. The said John Godley, for himself his heirs Executors and Administrators do hereby

covenant with the said Cincinnati and White Water Canal Company, their successors and assigns that the title so conveyed is clear free and unencumbered and to Warrant and defend the same against all persons whatsoever. In witness whereof the said John Godley, together with Mary Ann Godley, his wife who hereby release all right of dower in the said premises hereunto set their hands and seals this twenty second day of May in the year Eighteen hundred and fifty, John Godley SEAL Mary A Godley SEAL

Signed sealed and delivered in

Presence of Sali Jane Ellis

George Balboa

State of Indiana Dearborn County Sct:

Be it remembered that on this twenty, second day of May in the year of our Lord one thousand eight hundred and fifty Before me the subscriber a Justice of the peace personally came John Godley, the Grantor in the above conveyance and acknowledged the signing,

and sealing, thereof to be his voluntary act and deed for the uses and purposed therein mentioned and the said Mary Ann Godley, wife of the said John Godley, being examined by me separate and apart from her said husband and the contents of said deed being by me made known, and explained to her as the statute directs declare that she voluntarily, sign seal and acknowledge the same and that she is still satisfied therewith as her act and deed for the uses and purposed therein mentioned In testimony whereof I have hereunto subscribed my name and affixed my seal on the day and year last aforesaid.

George Balboa a Justice of the Peace SEAL

Recorded May 30, 1850 Thos. Palmer Recorder

TOWPATH BANK

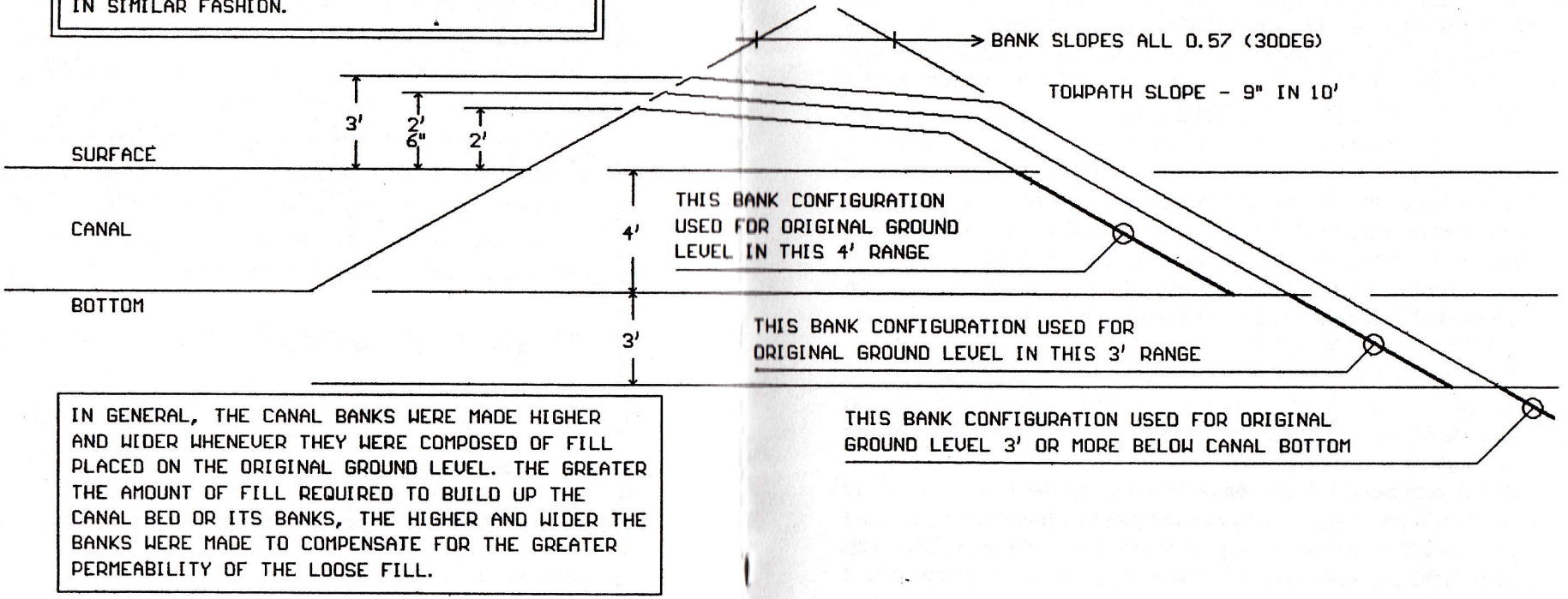


Diagram by Allen Vincent

This is the canal construction as described in "Explanation of the Rules and Specifications" which begins on page 28 of this edition of "Indiana Canals."

RECORDING DEEDS

Charles (Chuck) Huppert, CSI vice-president and an attorney in Indianapolis, was contacted by CSI headquarters to explain what an indenture is, how a deed is recorded, and the importance of a seal on a deed. His explanation follows.

Generally an "Indenture" is a deed between two or more parties. They were called indented because duplicates of every deed were written on one skin, which was then cut in half with a jagged edge so that when the duplicates were produced in court they were seen to belong to one another by fitting the jagged edges together. It is an old form of description which continues universally today.

The execution of a deed transfers some kind of title regardless of whether it is recorded with a governmental official or not. But, no notice is given the world of the ownership. Back in the 1800s, it was not unusual for a deed to be recorded much later than the date on which it was signed. Don't forget life moved slower then and county seats were sometimes a day or two travel, so the instrument didn't get recorded for a while. Deeds were recorded in Deed Books which were consecutively numbered. Each page of each book was a deed or portion of a deed. So the Book and Page got you to the deed. Now we do it by instrument number which gets you to a microfiche and more modernly, like in Marion County, to a digital image on a screen.

Recording the deed as late as a year after the execution is not uncommon. I've recorded deeds years after they are signed. For example, a deed may be held and not recorded until after the death

of an individual.

A seal can be anything which purports to be a seal. So the squiggles were very common back then. Of course, they said "seal" so that everyone knew that it was a seal. Seals used to be absolutely required. Today this is not so, except with regard to Notaries, certified court documents and other official proclamations.

The date of the signing or execution of the deed is the operative date, not the date it was finally recorded. In the case of the above deeds, that would be the date John Godley and his wife turned over the land to the Cincinnati & White Water Canal Company.

The first deed that was on page 220 of the book dated 1 Jun 1847 is a Quit Claim Deed. This means that Godley is selling his land to the Cincinnati & White Water Canal Co. of Ohio in fee simple, but Godley makes no warranty that he owns the land. Note that he is not a part to the sale. If he was married on June 1, this would have meant that his wife was not giving up her dower interest in the land (we have different laws today). Also it is interesting that the land is only the east ½ section 24, township 7 north, range 1 west whereas the two other deeds include the entire section. Note: that Dearborn County land descriptions are in the Gore (established in 1802). That is the only portion of Indiana where land descriptions are measured from the First Principal Meridian rather than from the Second Principal Meridian which runs north-south through Paoli, Orange County. The Gore is defined by a straight line from Ft. Recovery in Ohio (Mercer County) to the mouth of the Kentucky River on the Ohio. Then up the Ohio to the First Principal Meridian (which is the Indiana-Ohio state line) then north along the state line to where it intersects with the above described straight line from Ft. Recovery. It appears that this land is merely described by the existing canal that was already dug.

The next deed on pages 220-221 is not really a deed but rather an easement or right-of-way. The consideration for this was only $1.00. Godley's wife executed this. But note that if the canal is

never built or ceases being used, the land reverts back to them, their heirs and assigns. This includes all of Section 24, not just the east ½. It is dated 11 Feb 1839 about 20 months after the first deed in fee. Obviously the canal is still being constructed at this time. It covers the ground necessary to construct the Cincinnati & White Water Canal from the state line to its intersection with the White Water Canal. There is no other description of land other than a general one.

The last deed is a Warranty Deed in fee simple. The wife, Mary, signed which means she gave up her dower interest in case John Godley died. This deed covers all of Section 24 and the legal description is very specific. It is dated 22 May 1850. So, obviously the Cincinnati & White Water Canal is completed by this time. The line runs both along the berm bank and the towpath bank on the outside where the banks intersect with the natural surface. The distance is from the state line to the intersection of the White Water Canal. The land consists of 4.79 acres. This is the 1/4 mile or 18 chains mentioned in Lapham's report. Most of the maps I've seen show the Cincinnati & White Water intersecting with the White Water right at the State Line. Obviously this was not the case as can be seen on the 1847 Map of Harrison County, OH.

Also, if you read the legal description on the third deed carefully you will note that the line of the description where the two canals intersect (that is, transverse to the Cincinnati & White Water Canal and parallel with the White Water Canal) is a southerly line. So the White Water Canal at the point of intersection is running generally north and south.

RESEARCH PAPER SUBMITTED FOR MARKER

The **CSI Marker Committee**, chaired by **Wanda Willis**, CSI board member from Indianapolis, had to submit a significance statement and research paper when applying for an Indiana State Format Marker to be placed at the junction of the Whitewater and Cincinnati & Whitewater Canals at West Harrison, IN. This statement and the research paper (without footnotes) were as follows:

SIGNIFICANCE

At West Harrison, Indiana's Whitewater Canal and Ohio's Cincinnati and Whitewater Canal were joined and created a waterway linking the Whitewater River valley with the Ohio River. This connection established a major interstate transportation network which we want to mark. Very appropriately the town of Harrison is right on the state line and State Street splits the town into Indiana and Ohio sections.

RESEARCH PAPER

The Whitewater Canal was authorized by the Internal Improvement Bill of 1836. Thirty miles of the canal from Lawrenceburg to

Brookville was placed under contract on September 13, 1836. This was followed by a groundbreaking ceremony on the same day (September 13, 1836) at Brookville as the construction of the canal was commenced. An estimated 4,000 citizens attended the celebration. The canal was completed from Lawrenceburg to Brookville in June of 1839. That month the first canal boat passed through it arriving in Brookville. The canal was permanently opened in July 1839. At the state line in West Harrison, IN., Dam #1 was built across the Whitewater River to create a pool of water as a means for canal boats to cross the river. A road bridge was built across this pool. From here, the canal proceeded 7 miles into Ohio. This avoided the range of hill, immediately south of the town. Ohio granted the approval for this deviation into their state on February 24, 1834. The Whitewater Canal then turned westward and returned to Indiana to terminate in Lawrenceburg.

The deviation of the canal into Ohio was seen by a group of Cincinnati businessmen as an opportunity they couldn't resist. By tapping into the canal at the pool of the dam at Harrison on the farm of John Godley, Esquire, they could route products directly to their city via a 25 mile long canal. The Cincinnati & Whitewater Canal was incorporated by the Ohio General Assembly on April 1, 1837. Groundbreaking took place on March 31, 1838 on the farm of William Henry Harrison at North Bend, OH. By the end of 1840 the portion of the canal from Harrison to Dry Fork Creek in Ohio was finished but not watered. The opening of the Cincinnati and Whitewater Canal was delayed until the 1,782 foot long tunnel at Cleves, OH was completed. The Cincinnati and Whitewater Canal finally opened in November of 1843 and was watered its entire length by the slackwater pool created by the dam below Harrison. The first canal boat arrived in Cincinnati that same month. This was just four years after the Whitewater Canal had been completed from Brookville to Lawrenceburg. After the Cincinnati and Whitewater opened, much of the canal commerce from West Harrison to Lawrenceburg was drained off the Whitewater Canal and was diverted to Cincinnati. This, along with four major floods that washed out the main Whitewater Canal's structures, hastened its demise.

The Whitewater Canal went into receivership in 1855. The Cincinnati and Whitewater Canal was sold to the Cincinnati & Indiana Railroad Company in 1862.

RULES AND SPECIFICATIONS RELATING TO THE CONSTRUCTION OF THE WABASH & ERIE CANAL

Submitted by Stan Schmitt

This issue of Indiana Canals contains the fourth installment of one of several lists of rules and specifications used for canal construction in Indiana at various times. This list is printed as a pamphlet that was found in the Archives Division of the Indiana Commission on Public Records and was printed for prospective canal contractors of the Wabash and Erie Canal. Following it we offer an explanation as to what the rules and specifications meant and why they were important.

Draining -- In all cases of deep cutting, no part of the surplus of earth or spoil bank shall be deposited within fifteen feet of the cutting stakes on the towing path side, nor within ten feet on the opposite side of the canal, unless it be directed by the acting commissioner or superintending engineer for the purpose of raising the bank of the canal above the natural surface of the earth in order to throw the water back from the canal. Spoil banks shall in all cases be so formed that the water which falls thereon shall drain back from the canal as much as possible, and not run down onto the towing path or berm bank opposite thereto. In forming spoil banks which are raised higher than the immediate banks of the canal, gaps, or spaces ten feet wide at

bottom shall be left in said banks as frequently as one in every two chains, in order to facilitate the draining of the water from the towing path and berm banks. Drains shall also be made in order to turn the water off from said banks as frequently as one in every two chains where the height of the natural earth and the comparative height of the banks will admit of their being drained in this manner. And where this method cannot be adopted, ways or drains paved with stone, and puddled, shall be constructed as frequently as the acting commissioner or superintending engineer shall deem necessary, in order to permit the drainage water to flow into the canal without cutting the banks or carrying earth into the canal. Both the towing path and berm banks, and the side ditches immediately in their rear shall have a uniform descent of at least six inches to the chain toward the ditches or paved ways, which shall be made at the lowest points of said banks or ditches, so that the water will in no instance stand on either bank or in the ditches, but will readily drain off.

"Locks shall be eighty-seven feet long in the chamber between the upper and lower gates..."

Locks - Dimensions -- Locks shall be eighty-seven feet long in the chamber between the upper and lower gates, and fifteen feet in the clear. The thickness of the walls shall be equal to not less than one third of their height.

The Foundation shall be laid at such level or elevation as said commissioner or engineer may prescribe, but in all cases as low as the bottom of canal below the lock. When a good even foundation of solid, compact and durable rock cannot, in the opinion of the commissioner or engineer having charge of the work, be procured at the proper elevation, the foundation shall be composed of good, sound, hard and durable timber, hewed square, and not less than one foot in thickness which shall be laid horizontally cross wise of the lock pit, level and even, not less than one nor more than two feet beyond

the outward base of the walls. This timber shall rest on a bed of good gravel puddle of such depth as the said commissioner or engineer may deem necessary and shall direct, into which it shall be driven or sunk at least one inch, and the spaces between the timbers shall be perfectly filled with good puddle composed of gravel and such other suitable materials as said commissioner or engineer may designate, which shall be thoroughly rammed and packed, beginning at the bottom of each space. Two or more rows of sheet piling to be composed of good, sound, straight and square edged white oak plank, set close together and battened if necessary, extending to such depths as said commissioner or engineer may deem necessary, and shall designate, shall be set into the ground across the foundation, in a ditch to be cut for that purpose, which shall be thoroughly filled with good puddle well rammed. A floor to be composed of good sound three inch plank, free from shakes, well jointed so as to form tight joints, shall be laid over the whole foundation of timber above described and thoroughly spiked down to the timber underneath. The whole space between the walls of the lock extending from the breast at least ten feet below the lower mitre sill, shall also be covered with a tight well laid floor to be composed of good, sound and firm white oak plank, two inches in thickness, free from shakes, rots and unsound knots, jointed both at the side and ends, which shall be thoroughly spiked down with spikes of the proper size, and not less than ten inches in length. At least five spikes in every ten square feet shall be used in laying this floor. The face of the rock walls shall be laid in courses or range work, composed of cut stone; the stone forming each course to be of equal thickness, through the whole course. No face stone shall be less than eight inches in thickness. Every face stone shall be at least fourteen inches in breadth throughout its whole length, and in no instance shall be of less breadth than thickness. No face stone shall be more than half an inch thicker at the face than at the back, and shall be as nearly of

"A floor to be composed of good sound three inch plank

uniform thickness throughout as may be. The joints or edges of face stone shall be straight and square both on the beds and at the ends, making close joints at the ends from the face back eight inches at least. Headers not less than two feet broad and four feet six inches in length, and as large throughout the whole length as at the face, shall be prepared and laid into each course except the bottom course of the face wall, not more than ten feet apart, measuring from center to center, in any place, and so arranged that the headers in each successive course will be placed over the space between headers in the course beneath.

(to be continued)

EXPLANATION OF THE

RULES AND SPECIFICATIONS

By Carolyn and Bob Schmidt

In the Fall 1998 issue of Indiana Canals Vol. 9 No. 4, embankment and excavation of the canal banks was explained. In this issue drainage on and around the banks is one of the specifications explained. To help visualize how these banks were constructed so that they would drain properly, Allen Vincent, CSI board member from Fort Wayne, has drawn a diagram that can be found on the pages 18 and 19 of this issue and referred to when reading this explanation. It shows three different specifications used when the banks of the canal were built: 1) how the canal was constructed below ground level as in the case of a deep cut, 2) at ground level, and 3) above ground level . CSI has not found any such diagrams in the Indiana State Archives or in any other references pertaining to Indiana's canals, although some diagrams do exist for canals constructed in other states. We only know of a few hand drawn sketches and hand copied rules and specifications one man drew in his day journal that is in the Indiana State Archives. Therefore, it is possible that ***you, the reader, have more visual information of these***

construction methods than Indiana's canal engineers or contractors had at the time the canal was built! *We need more research by canal sleuths to unearth any old maps, diagrams of structures, etc.*

DRAINAGE

Although a canal needs flowing water to function, it is a regulated flow, which means that it is extremely important to control the inflow and outflow of the water in the canal.

To prevent ground water runoff from entering the canal, contractors were given guidelines to follow when constructing the canal. As the canal was dug Irish workers with two wheeled carts pulled by mules carried the earth to build the towpath and berm. A good description of how this was done was written in a scrapbook by John T. Campbell, who worked on the Wabash and Erie Canal when he was still a boy. A portion of his scrapbook was published in the Indianapolis Star of July 26, 1907.

"All the dirt was moved in carts and wheelbarrows. Each teamster led two horses, one at a time, from the shovel pit to the dump, or tow path, where a dump boss directed to 'haw gee and back.' That was the command whether the turn to be made was haw or gee. The boss would throw his weight on the back end of the cartbed when it would tip down and shoot the dirt out backward and down the embankment, or on the level ground, or in a hole or sink according to the progress of the embankment. Then drives (sic) would lead the horse and cart back to the shovel pit and turn and back the cart to the pit and lead the other horse and cart to the bank. While one horse was being led to the bank or towpath, six to eight shovelers would be filling the other cart."

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Any excess dirt was carried to the spoil bank and deposited. Spoil banks were always abundant where a deep cut was required. A deep cut is when the canal bed is

dug well below the natural surface of the surrounding terrain. This generates an abundance of excess dirt and extra banks called spoil banks were formed. These banks were to be constructed more than 15 ft. beyond the cutting stakes on the towpath side and more than 10 ft. beyond the cutting stakes on the berm side. These stakes were placed by the engineers to define the cut of the canal. Every two chains (66 ft x 2 =132 ft) drains were to be allowed through the spoil banks to divert drainage water away from the canal. These drains were to be ten feet wide. They prevented stagnant pools of water from standing along the side of the canal and also were a means of quickly getting rid of excess water during a freshet, a heavy rain.

If drainage could not be established away from the canal, paving stones that were puddled in-between were to be used to divert water into the canal. The stones prevented the rushing water from eroding the bank and reduced the inflow of silt into the canal channel.

The spoil banks were to slope to the rear at a uniform descent of 6 inches to the chain (66 ft) with the drains constructed at the lowest points. This was a very gentle slope. These banks were not seeded, sodded or covered with stone as the steep banks along our roads of today are treated. They were left to the natural elements and erosion. In a season or so the natural growth would again return to provide protection from erosion.

As seen from the specifications, the engineers did not want standing stagnant water on either the banks or in the ditches. Standing water could cause the towing animals to slip and be injured. It could soften the banks and lead to erosion or bank deterioration. Stagnant water bred disease.

LOCKS

Locks were the means used to raise or lower boats from one level of the canal to another to overcome major changes of elevation.

Only a gentle change in elevation within each level of the canal could be allowed or the water would flow too rapidly and cause erosion and make towing the boats against the current more difficult. The normal drop within a level was 1-2 inches per mile. The water lift (elevation change) within the lock varied from 3-10 feet depending on the natural elevation of the land

the canal traversed.

The locks were 90' long from gate post to gate post but 87' from gate to gate. This variation was caused because the mitre sill angled the gates into the lock chamber on the downstream side of the lock taking up three feet. The locks were 15.ft wide. These dimensions limited a boat's size.

LOCK FOUNDATIONS

The description given in the Rules and Specifications was for a finished stone lock.

Other types of locks that were used on Indiana's canals were the composite lock (combination or combined lock) of rough rubble stone lined with planking, the timber crib lock and the timber frame lock. In this article the specifications for foundation and planking are compared with what was found when the Gronauer Lock, a timber lock located on the Wabash & Erie Canal in New Haven, IN, was dismantled in 1992. Craig Leonard, Historic Preservationist from Bluffton, IN and CSI Advisory Council member who was in charge of its removal, provided the information on the Gronauer.

Before any lock could be built, an excavation called a lock pit had to be dug. This pit for a standard 15 ft. x 90 ft. lock was approximately 35 feet wide and two feet below the bottom of the canal. It was filled with gravel up to the foundation timbers and often puddled unless the lock rested on solid bed rock. Puddle was made of gravel and clay that was mixed with water and rammed with iron bars until all the air pockets were driven out of it. In the case of a huge area like the lock pit, the puddle was often stamped down by oxen to remove the air. This made it impervious to water leakage.

The foundation of both stone and timber locks was of hewn timber unless a solid bedrock foundation could be found at the proper elevation. The timbers were 1 foot thick hewed square and extended 1-2 feet beyond the outside of the cribs or the stones in the case of a stone lock. In the Gronauer Lock the timbers were 9 inches thick, 12-18 inches wide, and extended beyond the cribs by 1-2 feet. They

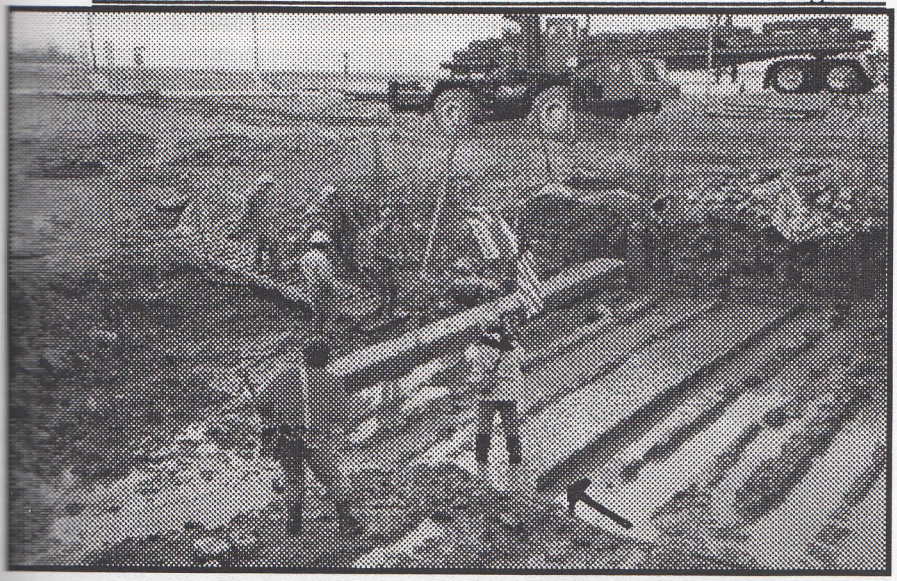
were of yellow poplar. They had a gap of 6-8 inches between them. The timbers were placed on gravel and puddle was rammed between them.

Flowing water could undercut a lock and render it useless. Therefore the engineers wanted sheet piling of white oak driven vertically across the ends of the lock foundation to prevent water from going beneath the timbers. To accomplish this a ditch that was several feet deep had to be dug across the lock. Then these two to three inch planks, which were routed on the edges for a tongue and groove fitting, were placed vertically into the ditch and puddled well on both sides. Some engineers even battened these planks with other planks. Some locks had more than one row of sheet piling. Finally these planks were cut flush with the top surface of the foundation timbers and often spiked onto the front edge of one of the timbers.

The sheet piling found in the Gronauer Lock was placed at either end of the lock at the base of the mire sills. It was 2 -2 ½ inches thick, 2 feet wide, 3 feet long (extending approximately 2 ½ feet deep since some of it was as high as the top of the timbers) and was made of oak. Each piece was placed flush against the next, but it was not tongue and grooved nor was it battened. It was placed across the entire foundation all the way to the back of the cribs. It was not spiked to the foundation timbers. (See photo, page 33)

Three inch thick planks were to be spiked down on top of this foundation. The planks had to be of good quality, free of shakes or splits that might leak. They had joints so that they would fit tightly. The stone in the case of a stone lock rested on these planks along the sides of the lock. The lock chamber itself from the breast wall or upstream end of the lock all the way past the downstream mire sill for at least another ten feet was planked.

The planking used in the Gronauer Lock was 2 inches thick and made of oak. It ran the full length of the lock chamber from in front of the gates up to the beginning of the fan tail. It was not jointed nor did it cover the entire foundation. This planking was found under the rock filled cribs at either end of the lock but not under the soil filled cribs in its center. The engineers simply laid down a one inch thick plank the length of the lock chamber for both the inner and outer walls of the cribs using it much like a footprint for the lock. On top of this they placed another two inch plank before constructing the cribs. The outer wall of the cribs was

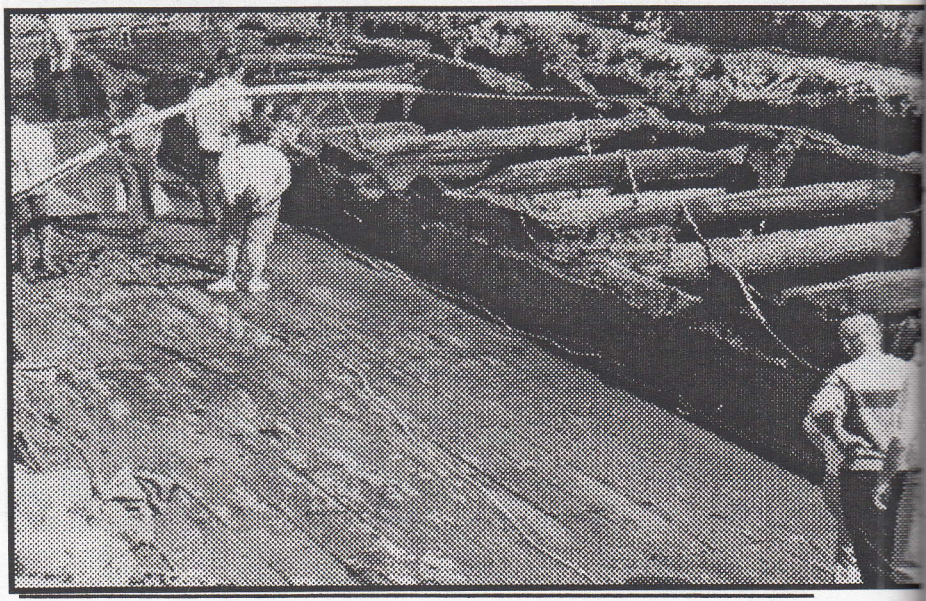


This picture shows the removal of the last timber from the Gronauer Lock. It also shows the sheet piling near the west or upstream end of the lock that kept water from undermining the lock. It is the straight row sticking up in the water. The other rows are of the puddle that remained after the timbers were removed.
Photo by Bob Schmidt

then built with hewed logs alternating courses with two inch planks until the top of the lock was reached. The inner wall, that which was next to the lock chamber, was built with logs that were hewed flat on the top and bottom laid right on top of one another.

This second layer of planking which will be referred to as flooring was specified be two inches thick; be free of shakes, knots, and rots; and to have joints both along its sides and at its ends. This was to prevent the wood from curling up and a boat being snagged on it and to prevent leaking. The spikes used were at least ten inches long. To make sure the planking was soundly attached, the specifications required five spikes in every ten square feet of floor. (See photo, page 34)

In the Gronauer Lock, the one inch thick oak flooring was only laid inside the lock chamber and



This picture shows the floor planking in the lock chamber of the Gronauer Lock #2 of the Wabash and Erie Canal in New Haven, IN. Notice it is laid running the length of the lock. The lower portion of the south side lock cribs are visible as well. Photo by Allen Vincent

overlapped the joints of the first layer of planking. It was 12 feet long and did not have tongue and groove joints on its sides or at its ends. It was staggered by three feet from the previous planking

layer to make it watertight. The spikes used were approximately 10 inches long.

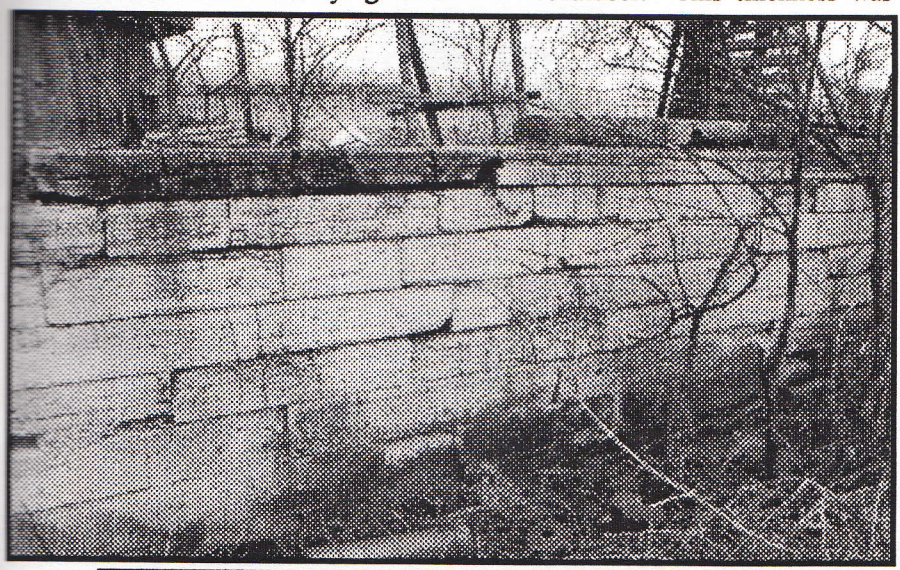
The fantail at the downstream end of the Gronauer Lock was constructed by placing 9 inch x 12 inch poplar timbers side by side and placing thicker ones across the lock at intervals of several feet to make baffles to slow down the water flow. These timbers were of varying lengths since the fantail was triangular in shape.

STONE LOCK WALLS

The stone was required to be uniform in thickness throughout the entire course or layer.

This insured that the wall was equally sound on the entire layer and fit tightly to assure a watertight compartment. The stone walls were usually made up of a finished stone face wall and a secondary wall behind it that were tied together using header stones. The face stones ran parallel with the length of the lock. The header stones were placed at right angles to the face stones and lay on top of both the face and secondary wall stones on the course below thus tying them together. This created a pattern in the stone work.

The Face Stones, often called stretchers, all had to be of eight inches of equal thickness. They were also to be fourteen inches in breadth. Sometimes it was difficult to get the stones to the precise size. These stones were never to be of less breadth than the 8 inches of thickness. The length of these stones was not prescribed. If a stone was thicker on one side of its length than the other, the thickest side was placed next to the lock chamber. This thickness was



The Curley Hayes Lock at Lagro, IN, shows the pattern created by the face stones (stretchers) and header stones. Photo by Joe Clark

never to vary more than one half inch from one side to the other. All of the sides and corners of the face stones had to have straight and square sides (beds) and ends so that the joints would fit tightly together for at least eight inches back from the lockchamber to prevent leakage.

The Header Stones were to be placed in every course at intervals of not more than ten feet except on the bottom course. This was measured from the center of one header to the center of the next header. These headers, which strengthen the wall and kept it from shifting, were to be staggered between courses so that on the successive course the header was placed over the space between the previous headers on the course below. Note this pattern on the next stone lock you visit. (see photo insert) The engineers wanted these stones to all have the same dimensions as close as possible. The prescribed width was two feet broad and length was four feet six inches. They needed to be eight inches thick like the face stones in the course.

NOTE: Sharp-eyed readers probably noticed that Darius Lapham's notation of "18 chains, (1/4 mile)," on page 4, was an approximation in regards to its being 1/4 mile. In reality a quarter mile is equal to 20 chains (66 ft x 20 = 1320 ft). Besides the chain, which is 66 feet, other units of measurement that may be of use to modern day canawlers are: 1 rod = 16.5 feet; 1 acre = 160 square rods; 640 acres = 1 square mile, also known as a section. Happy canawlin'!

Editor

CANAL SOCIETY OF INDIANA

Organized on May 22, 1982 as a not-for-profit corporation, the Canal Society of Indiana was established to bring together those who share a common interest in Indiana's historic canals. The Society helps focus attention on these early interstate waterways through a variety of programs. Its aim is to provide interpretation of the era, to preserve canal bed and structural remains, and to support restoration of historic canal related sites.

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