Report of the County Engineer

Ohio Revised Code, Section 6131.14

In the Matter of the Single
single or joint

County Ditch No. _____ *to be know as*

the Liberty - Reed Ditch

Petitioned for by:

Liberty Twp. Trustees

County Engineer's Office

Hancock County, Ohio

March 31, 2023

Proceddings to:

Construct, reconstruct, widen,repair, replace, enlarge and maintain existing open ditch and storm sewer.

To the Board of County Commissioners:

The undersigned County Engineer, in obedience to the order of your Board, made on the **16th** day of **June 2020**, proceeded in the above matter, and visited the site of the proposed location of said improvement, and made the necessary survey for the proposed improvement, as found by the County Commissioners; prepared plans, profiles, and specifications, and prepared maps showing the location of the affected watershed area to be assessed. I have also prepared a cost estimate for the proposed construction including the costs for providing engineering, legal notifications and publications, the costs for establishing a permanent maintenance account with the Auditor of said County, and the costs for miscellaneous and incidental expenses from said improvement. I have set proper alignment and grade stakes, marking the commencement and termination of the project, noting the intersection of the line of the improvement with apparent land boundaries of adjacent property owners, township and county lines, natural land marks, road crossings, or other lines or marks; collected and noted necessary levels off the lines of the improvement for contouring purposes to determine areas of the land subject to the drainage improvement and assessment, and to establish the extend of benefits to the land affected by the construction of the improvement.

I have established, at intervals of not less than one in each mile, in the most practical, permanent form, and in locations where destruction or disturbance is improbable, Bench Marks from which the original leveling survey of the improvement can be established. The relation of the assumed elevation used by me in my work upon this improvement, the established elevation of 766.09 feet above sea level as per the United States Geological Survey (USGS NAVD 88) whose description and elevation are as follows:

Mag nail set in front of 7478 Township Road 136, Findlay, OH. Field measurements used from global positioning determine the location to be: North = 509516.8000 East = 1630033.8430 Elev = 766.09' (NAVD 88)

I have prepared a schedule of the work proposed to be done, showing the amount of fall or grade, the amount of depth of cut, the nature and extent of excavation, the location of Bench Marks, and the location of special features which may affect the contractor in the course of his work.

I have prepared a schedule of landowners using tax map and tax duplicate information containing the names, addresses, descriptions, parcel identification numbers, acres owned and acres benefitted which to the best of my ability represent the amount of lands within the watershed being benefitted by the proposed improvement, from which I have prepared individual assessments to those parcels which, in my best judgment, represent the most fair cost to those properties according to the amount of benefit they receive as a result of the improvement.

(continued)

I have prepared the proper working specifications for the construction of the improvement, including all necessary materials and methods of construction acceptable by the County Engineer in the course of the work performed by the Contractor. I have also designated on the plans and profiles all construction easements or working right-of-ways of sufficient width for said contractor to be limited to in the course of his work, and all permanent easements or right-of-ways for use by the County Engineer in maintaining the improvement.

I have prepared estimates of the costs for excavating and the cost of materials and divided the construction of said improvement into such working sections as were deemed expedient.

A copy of the prepared plans, profiles and specifications, as well as watershed and property owner maps, and a copy of the group of the schedule of landowners sheets with proposed assessments for the improvement are hereto attached and made a part hereof.

My cost/ benefit analysis and estimate for the costs for construction for said improvement is attached. While I recognize that some assessments appear to be significant for the larger agricultural properties, the return on investment is calculated to be 11 years, which is a reasonable time frame.

As an example, the largest assessment is $76,163. Should the County Commissioner's choose to finance the project over a 15 year period, the payment would be $5,078 per year but the increased production would yeild an average of $19,514 per year.

I hereby do recommend to the Board of County Commissioners proceeding with the petiton ditch project as the benefits outweigh the costs.

Respectfully submitted to the Board of County Commissioners of Hancock County on this 31st day of March, 2023

Doug Cade
Hancock County Engineer

Liberty - Reed Single County Ditch
Hancock County, Ohio
Engineer's Construction Cost Estimate
March 2023

ITEM	DESCRIPTION	UNIT	QUANTITY TOTAL	UNIT PRICE	TOTAL
	General Site				
1	Clearing and Grubbing	LUMP	1	$ 200,000.00	$ 200,000.00
2	Ditch Cleanout, As Per Plan	FT	16300	$ 2.00	$ 32,600.00
3	Maintenance of Traffic	LUMP	1	$ 5,000.00	$ 5,000.00
4	Layout Staking	LUMP	1	$ 15,000.00	$ 15,000.00
5	Seeding and Mulching, Class 2	SY	145100	$ 1.00	$ 145,100.00
6	Rock Channel Protection, Type D	CY	10	$ 100.00	$ 1,000.00
7	Ditch Erosion Protection Mat, Type B	SY	54700	$ 2.50	$ 136,750.00
				Subtotal	**$ 535,450.00**
				5% Contingency	$ 26,772.50
				Public Notice & Legal	$ 911.68
				Engineering/Design Services	$ 56,621.52
				Interest (15 Year Loan at 6%)	$ 291,521.15
				Construction Inspection	$ 10,709.00
				Total Construction	$ 921,985.85
				5% Maintenance Account	$ 46,099.29
				Total	$ 968,085.14

NOTE: This engineer's cost does not include cost associated with removal/relocation of utilites.

COST VS. BENEFIT RATIO

Residential

THEORY FOR THE ANALYSIS USED: Past petitions filed with County Commissioners and Boards of Soil & Water Districts to solve surface and subsurface drainage impairments to residential and commercial developments, have shown that those developments were built when subdivision regulations did not exist and minimum stormwater design criteria were not mandated. Newer residential homes and commercial sites experiencing drainage problems are a result of developers who have intentionally circumvented local design standards by constructing multiple "mini" subdivisions in a concentrated area which may not be large enough to fall under local standards for proper stormwater design.

: On the other hand, residential homes and commercial sites that do not experience damage to stormwater, do not call their County Engineer or SWCD personnel complaining of impaired drainage, tend to live in recently developed subdivisions and industrial parks that have fallen under subdivision design standards. Those developers were made to employ the proper design engineers and install the needed stormwater collection systems, detention facilities and outfall sewers to their proper outlet. Those persons and businesses have had provided to them, the optimum drainage that all property owners should expect.

: The following cost/benefit analysis uses the theory that today's developers are mandated to provide optimum drainage for their improvements, what their respective costs are and what cost they in turn added to the selling price of each developed lot. Homeowners have in theory paid a ditch assessment when they purchased their parcel of ground in that development. Not to the County Commissioners through a petition – but back to the developer who added their stormwater development costs incurred back into their sale price for each developed lot.

RECENTLY DEVELOPED SUBDIVISIONS

Best Liberty Addition 1st Addition Subdivision Section 22 Liberty Township, Hancock County
Years Developed: 2021 Developer: Best Construction Number of Lots: 23
Stormwater Components: Detention Pond, 6" through 24" diameter collection sewers

$ 3,613 per lot for construction of stormwater collection system, detention pond and outfall sewer
$ 542 per lot for surveying, engineering design, plan preparation, construction stakeout and inspection
$ 4,155 - Cost for Storm Water Improvements

Woods at Hillcrest 9th Addition Section 35, Allen Township, Hancock County
Year Developed: 2021 Developer: Country Club Acres, Inc. Number of Lots: 20
Stormwater Components: 6"- 24" diameter sewers, Very short outfall sewer needed
$ 6,313 per lot for construction of stormwater collection system, detention pond and outfall sewer
$ 947 per lot for surveying, engineering design, plan preparation, staking and inspection
$ 7,260 – Cost for Stormwater improvements

$ 4,155 - Stormwater cost per developed lot for Best Liberty Addition 1st Addition
$ 7,260 - Stormwater cost per developed lot for Woods at Hillcrest 9th Addition
$ 11,415

$11,415 / 2 = $ 5,708 Average cost per lot for optimum stormwater drainage

Final Conclusion for Cost/Benefit Analysis for a Residential Home:
A residential home in Hancock County, in the 100% benefit area of a proposed improvement, in order to obtain optimum drainage, should be expected to pay up to $5,708 to obtain that benefit for that home.

Assumptions Not Considered:

A. Long term costs for financing (6% for 6 years)
B. Future Maintenance Fees (< 1%/year)
C. Potential elimination of stormwater damage
   1. Periodic replacement of carpet, drywall, furnace, drywall, sump pumps standby batteries, etc.
   2. Damage (health risks) to the home related to mold
D. Cost by developer for loss of lot sales resulting from the ground dedicated for detention pond development. Land may need to be purchased when a petition needs a detention pond for an older subdivision (could add as much as $1,000/home cost within the subdivision)

Note: This analysis was for a single-family home located within a 100% benefit range, where the proposed improvement will provide the most impact and stormwater relief for that parcel. For those homes in a more remote area of the watershed, multiply the maximum benefit expected by the remoteness factors normally used in an assessment determination for an entire watershed. For commercial sites, factors can be added to relate those sites to an equivalent number of single-family homes or documented stormwater costs incurred in the development of industrial parks.

The Westgate Acres Subdivision was created in 1961 and the Westgate Acres Lot 1 was further subdivided in 1972.

It is now a requirement in the Hancock Subdivision Regulations for any new subdivision to petition their drainage system prior to approval of the final plat.

Currently, any drainage structures that are outside of road right of way is the responsibility of the homeowner to maintain. For example, if a 30" pipe collapses in somebody's back yard, they are responsible to fix that. If the drainage is petitioned, Soil and Water would notified of any issues and setup a contractor to perform the work.

It has been noticed that some structures such as catch basins in people's back yards are not being maintained and are filled with debris. By petitioning the drainage, it will put this on a more regularly schedule maintenance program.

Agricultural

The following statistics for crop yield as a result from drainage improvements were obtained from 25 years of filed studies at the Ohio Agricultural Research and Development Center Northwest Agricultural Research Station in Hoytville. These studies were performed between 1984 and 2009 and showed that subsurface drainage significantly improved corn and soybean yields on poorly drained soils.

Corn Production increase = 24% to 39% = Avg. improvement of 32% (55 Bu/AC)
Soybean Production increase = 12% to 45% = Avg. improvement of 29% (16 Bu/AC)

This is based on the average yield in Hancock County of 203 bushels per acre of corn and 60 bushels per acre for soybeans. Crop prices used were the average crop price in Ohio on 3/1/2023 when this report was prepared. Corn = $6.20/bushel and Soybeans = $14.04/bushel.

The following analysis was for farmland adjacent to the project that received 100% benefit from the drainage improvements, where the improvements will provide the most impact and increased crop production. This only included the acres that would drain into this watershed.

Corn Yearly Benefit: 55 Bu/AC increase * 310 AC * $6.20/Bu = $105,710/YR
Soybean Yearly Benefit: 16 Bu/AC increase * 310 AC * $14.04/Bu= $69,638/YR

With a project cost of $917,276 it would take 9 years for corn and 13 years for soybeans to make a full return. Rotating crops as a Hancock County standard, it would take 11 years to make a full return on investment.

Roadway

The project will help alleviate flooding on the roadways that have been seen on Driftwood Drive, Westland Drive and occasionally on TR 94 & TR 95.