

# LORAIN COUNTY ENGINEER

*KEN CARNEY, P.E., P.S.*

December 18, 2023

Lorain County Board of Commissioners  
226 Middle Avenue  
Elyria, Ohio 44035

Attn: Theresa Upton, Clerk [tupton@loraincounty.us](mailto:tupton@loraincounty.us), [ehawkins@loraincounty.us](mailto:ehawkins@loraincounty.us)

Re: Report of Alternates to **Roth Main Ditch & Lateral #1 Restoration**, Columbia Twp.

Board of Commissioners:

Pursuant to your order in Resolution 23-391 to investigate two additional drainage improvement alternates (i.e. "tile and basin") for comparison of various costs, the County Engineer reports:

These two alternates are estimated to cost an **additional \$1,753,025 for the tile**, and **\$5,891,350 for the basin**, respectively. These are in addition to the total base cost of the project as we originally recommended, which was estimated at \$998,500. The schematic map that follows on the next page indicates the locations of both alternates, as well as that of the original improvement. Detailed cost estimates are included at the end of this report.

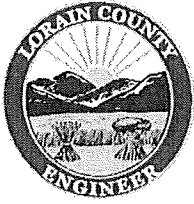
## **1. Tile Alternate**

Instead of improving the existing open ditch across the rear of three wooded parcels of land, the old Roth Tile may be removed and replaced with a larger plastic storm sewer pipe. The three properties are owned by Kevin Kennedy, David Kennedy, and the Kowalskis (the "3K" parcels). The length across the "3K" parcels is about ¼ mile.

For comparison purposes, the originally recommended open ditch improvement across only the "3K" parcels was estimated to cost only \$165,000.

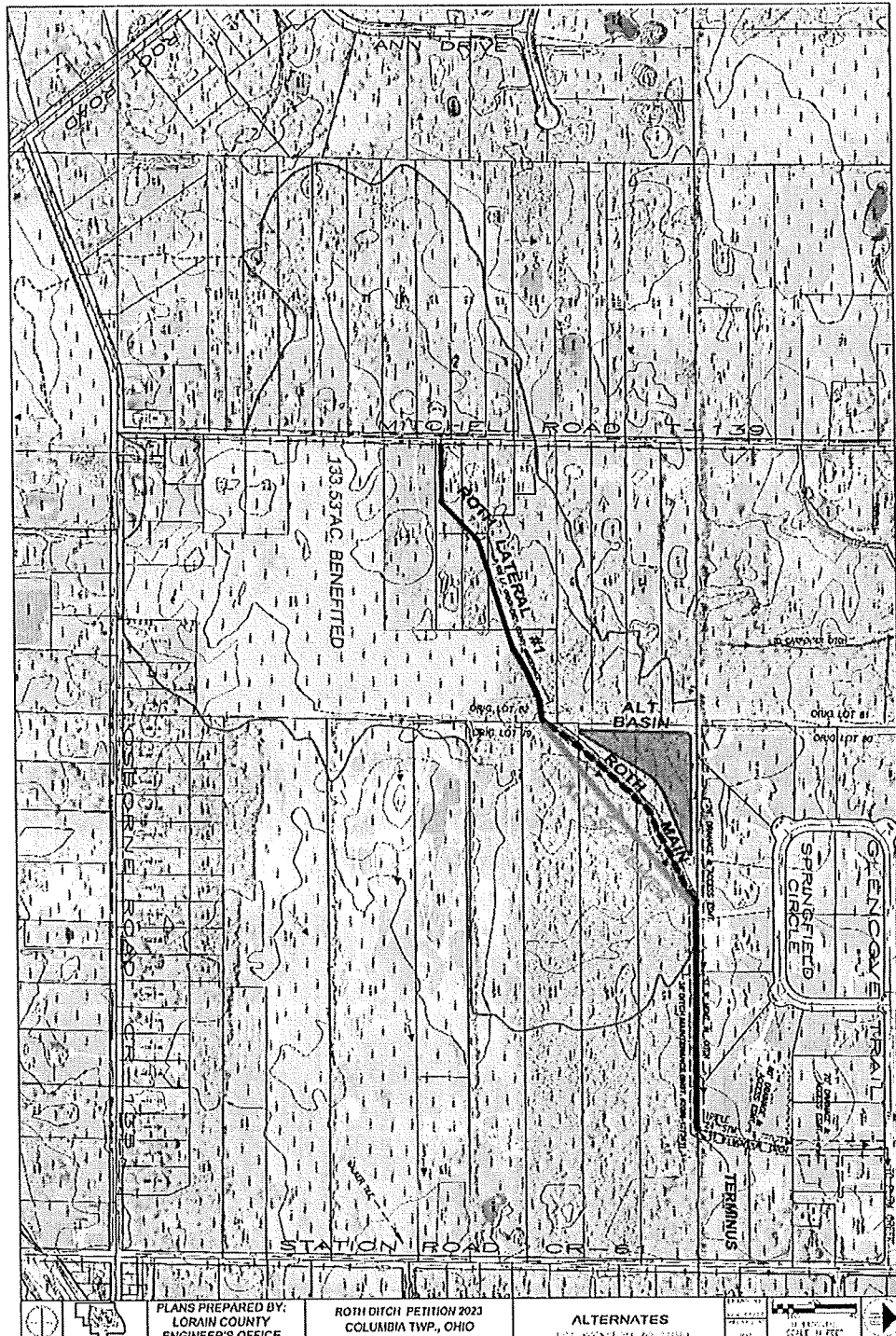
## **2. Basin Alternate**

Instead of either the Tile Alternate or the original open ditch improvement, a large "dry" storm water detention basin may be constructed in the rear ten acres of the "3K" parcels. Again, this alternate may be compared to the original partial ditch project cost of \$165,000.

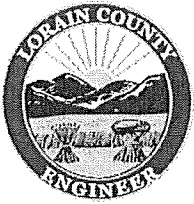


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K



**Figure 1.** Map indicates two alternates in light blue and red colors; Overall project limits shown in dark blue.

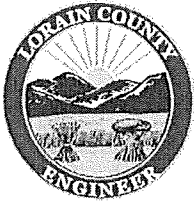


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### 3. List of Alternate Factors both Favorable and Unfavorable

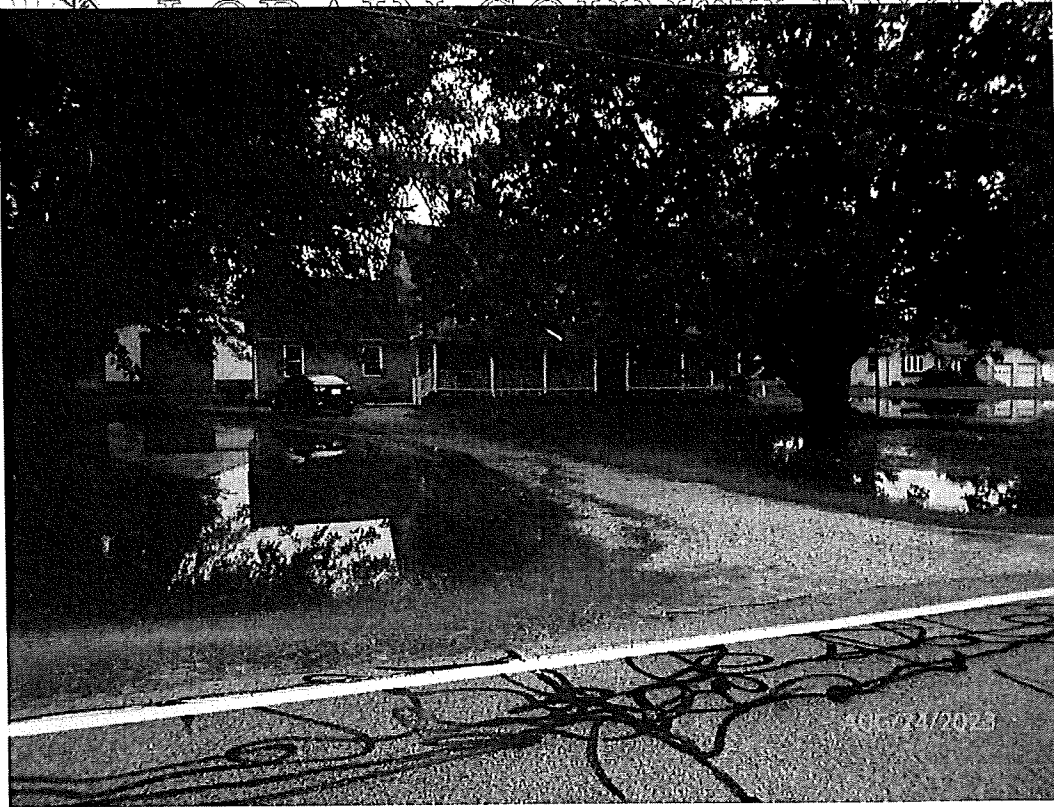
- A. Either of the two alternates are feasible, and would individually answer the prayer of the petition, but at much different costs.
- B. Either alternate would modify only the portion of the project route across the "3K" parcels. However, the beginning of the project at Mitchell Road, and its downstream terminus would not change from your prior finding as memorialized in Resolution 23-391. Also, the 133 acres of tributary land area that would benefit would not change.
- C. The existing ditch across the three "3K" parcels of land represents a major bottleneck that significantly contributes to the overall drainage problem. It will be necessary to lower the elevation of the hydraulic flow line of any improvement across the "3K" parcels to solve this problem. This will require excavation in some form for any improvement.
- D. The flow line may be lowered across the "3K" parcels in one of three ways: by installing the alternate storm sewer, by constructing the alternate detention basin, or by excavating the open ditch as originally recommended.
- E. Neither alternate could include filling the existing ditch across the "3K" parcels—it will simply remain in its present state, with an alternate constructed on one side or the other. This is because of the cost-prohibitive and extensive environmental permits that would be required from the Ohio EPA and US Army Corps of Engineers. That is, neither alternate would qualify as ditch "maintenance" or ditch cleaning.
- F. The scope of the Tile Alternate would include both removing the old clay tile (which no longer functions), and constructing a new larger size plastic storm sewer along a similar alignment.
- G. Today, both the old tile and the existing ditch across the "3K" parcels are privately owned. Either alternate, or the originally recommended open ditch improvement, would become a public improvement, and would run in a new easement.
- H. The previously designated properties will be encumbered by new easements for construction access, and for ongoing maintenance. Existing access off Glencove Trail and elsewhere will be upgraded within existing County easements.



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- I. The scope of the both alternates would include gates and signage to discourage trespassing.
- J. No additional impervious surface area will result from construction of either alternate.
- K. The County Engineer estimates all damages at \$0.
- L. In the County Engineer's opinion:
  - a. The benefits of the Tile Alternate will not exceed its costs.
  - b. The benefits of the Basin Alternate will not exceed its costs.
  - c. The benefits of the original ditch improvement will exceed its costs.
- M. Further analysis of wetlands and environmental constraints may substantially impact the costs estimated in this report. Although the National Wetlands Inventory Map does not indicate significant conflicts, further environmental investigation may be necessary. Additional costs may include the need for consultants, US Army Corps of Engineers or Ohio EPA permits, costs associated with additional construction requirements, mitigation costs, etc.
- N. This report supplements the County Engineer's preliminary report dated May 22, 2023, and is based upon the completion of topographic surveying, meetings with land owners, and additional engineering investigations at the site, all subsequent to the first hearing in May 2023.
- O. Recent photographs that depict current conditions appear on the following pages:



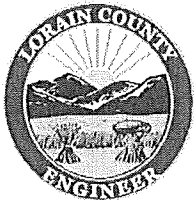
↑ West side of Mitchell Rd.

&

East side of Mitchell Rd. ↓



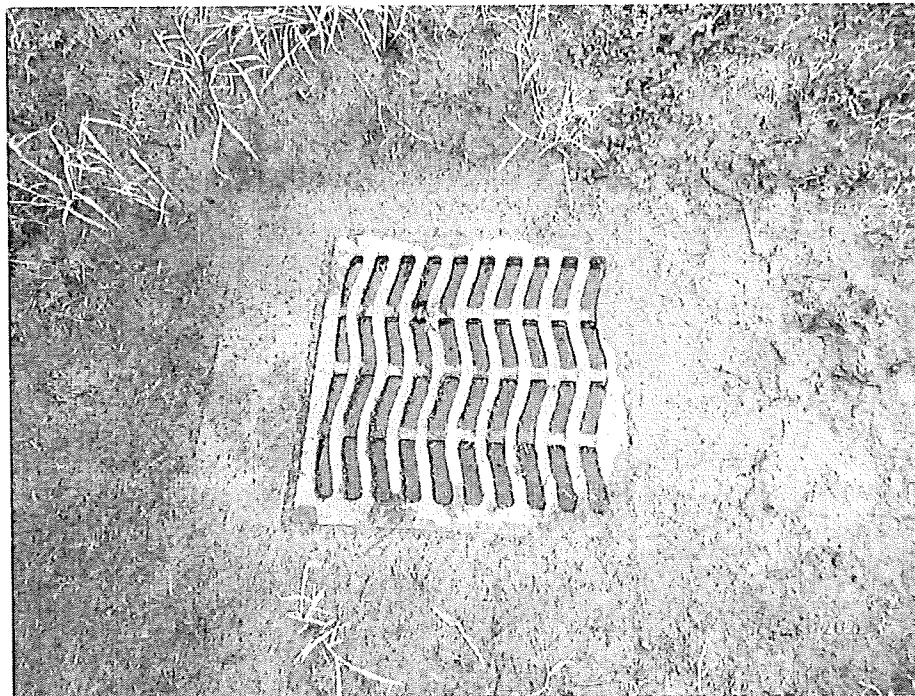


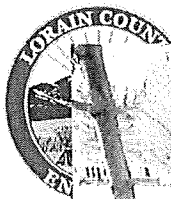


# ROADWAY CATCH BASIN ENGINEER



↑ East road side of Mitchell Rd. (catch basin is full of water up to its grate) ↓



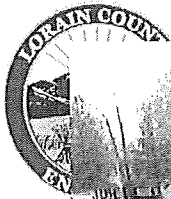


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↑ Excavation by owner to repair tile next to house at #10955 Mitchell Rd. ↓

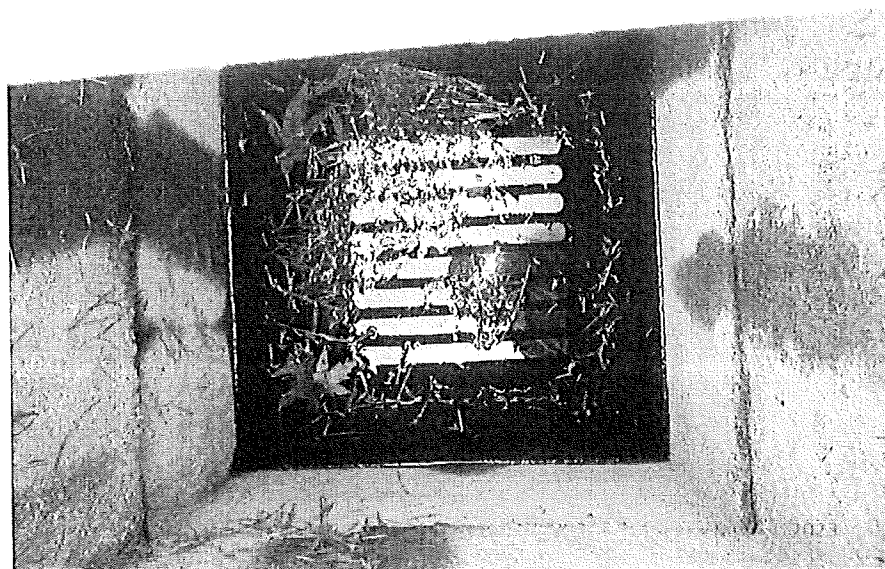




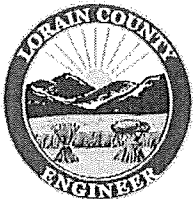
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↑ Catch basin in rear yard of #10955 Mitchell Rd. with standing water; Inlet & outlet pipes are fully submerged, and are not visible in the photo below↓



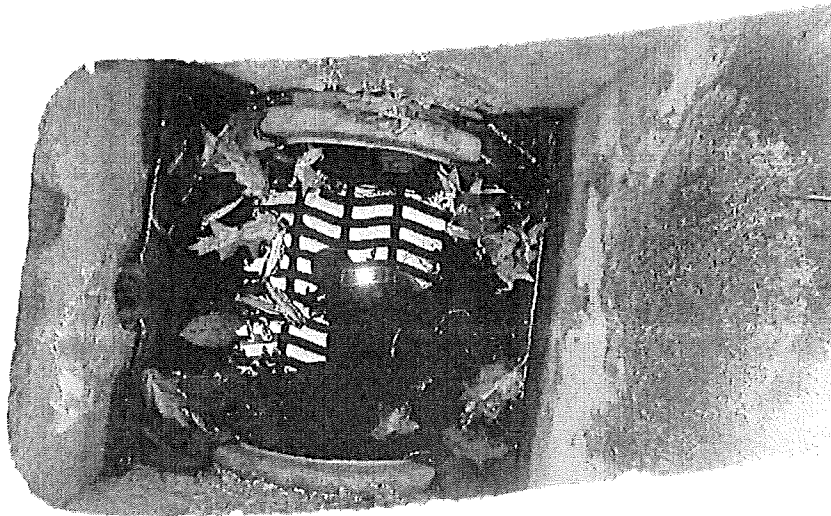




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Standing water in County catch basin in rear yard of #10893 Mitchell Rd. ↓



DEC/ 7/2023



County storm sewer is completely submerged at red arrow at Roth Farm



↑ Stagnant standing water in County ditch at Roth-Kowalski boundary



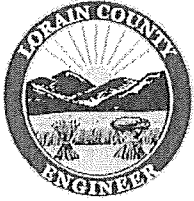
Large woody debris, sediment-laden & standing water across "3K" land ↑



↑ More debris, sediment & standing water in ditch across "3K" land ↓







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↑ Outfall ditch now under County maintenance in easement

↓ Eastern terminus of same outfall ditch at subdivision off Springfield Circle



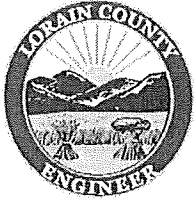
Lorain County Engineer's Opinion of Project Cost, Dec. 14, 2023  
 Alternate Roth Tile 36" CPP replacement ADDITIONAL COST, Columbia Twp.

| <u>Item</u>                | <u>Description</u>   | <u>Quantity</u>           | <u>Unit</u> | <u>Price</u>         | <u>Amount</u>      |
|----------------------------|--|---------------------------|-------------|----------------------|--------------------|
| 103                        | Bid & contract performance bond additional amount                | 1                         | Lump        | \$35,000.00          | \$35,000           |
| 623                        | Construction layout stakes incl. stake all easements             | 1                         | Lump        | \$20,000.00          | \$20,000           |
| 624                        | Mobilization   | 1                         | Lump        | \$35,000.00          | \$35,000           |
| 832                        | Temporary erosion & sediment control                             | 1                         | Lump        | \$10,000.00          | \$10,000           |
| 201                        | Tree clearing, grubbing & grinding stumps                        | 4                         | Acre        | \$5,000.00           | \$20,000           |
| 202                        | Removal: old clay pipe (20"-22"), regrade & compact backfill     | 1200                      | LF          | \$75.00              | \$90,000           |
| 203                        | Excavation including haul-away                                   | 10000                     | CY          | \$30.00              | \$300,000          |
| 203                        | Embankment   | 1000                      | CY          | \$20.00              | \$20,000           |
| 209                        | Ditch cleanout incl. haul away                                   | 100                       | LF          | \$25.00              | \$2,500            |
| 304                        | Stabilized limestone aggregate driveways with geotextile         | 500                       | CY          | \$200.00             | \$100,000          |
| 452                        | New concrete access apron & sidewalk off Glencove Trail          | 1                         | Lump        | \$10,000.00          | \$10,000           |
| 601                        | ODOT Type C limestone protection with filter fabric incl. excav. | 100                       | CY          | \$175.00             | \$17,500           |
| 601                        | ODOT Type D limestone protection with filter fabric incl. excav. | 50                        | CY          | \$150.00             | \$7,500            |
| 602                        | CB 2-4 with compacted bedding                                    | 4                         | Each        | \$4,500.00           | \$18,000           |
| 602                        | Full headwall for 36" CPP  | 2                         | Each        | \$7,500.00           | \$15,000           |
| 602                        | Concrete masonry bulkhead  | 2                         | Each        | \$250.00             | \$500              |
| 611                        | 36" CPP (N-12 or equal) with geotextile anchor                   | 1250                      | LF          | \$400.00             | \$500,000          |
| 611                        | Connect 4"-12" drain pipes to new 36" CPP incl. mfg. fittings    | 1                         | LS          | \$25,000.00          | \$25,000           |
| 611                        | Repair/shorten/extend 4"-12" drain outlets incl. mfg. fittings   | 1                         | LS          | \$5,000.00           | \$5,000            |
| 630                        | Sign & support per plan  | 2                         | EA          | \$500.00             | \$1,000            |
| 659                        | Seeding and mulching Class 1                                     | 7,500                     | SY          | \$5.00               | \$37,500           |
| 659                        | Seeding and mulching Class 2                                     | 4                         | Acre        | \$10,000.00          | \$40,000           |
| 659                        | Topsoil 4" compacted depth furnished & placed                    | 833                       | CY          | \$50.00              | \$41,650           |
| 659                        | Commercial fertilizer 10-20-10                                   | 1,350                     | lbs.        | \$2.50               | \$3,375            |
| 660                        | Sodding reinforced on 2:1 slope                                  | 200                       | SY          | \$30.00              | \$6,000            |
| 671                        | Swale erosion control Type B straw mat & polypropylene netting   | 5,000                     | SY          | \$7.50               | \$37,500           |
| Spec.                      | Additional timber mat allowance                                  | 1,500                     | LF          | \$100.00             | \$150,000          |
| Spec.                      | Rural gate and appurtenances for access driveway                 | 4                         | EA          | \$7,500.00           | \$30,000           |
| Spec.                      | Construction contingency as directed                             | 1                         | LS          | \$250,000.00         | \$250,000          |
| -                          | CREDIT for non-performed 1,100 LF ditch restoration/constr.      |                           |             |                      | (\$165,000)        |
| <b>CONSTRUCTION TOTAL</b>  |  |                           |             |                      | <b>\$1,663,025</b> |
| <b>Soft costs:</b>         |  |                           |             |                      |                    |
|                            | Legal cost estimate  | 1                         | Lump        | \$10,000.00          | \$10,000           |
|                            | Wetlands assessment subconsultant                                | 1                         | Lump        | \$5,000.00           | \$5,000            |
|                            | Topographic survey & mapping by subconsultant                    | 1                         | Lump        | \$20,000.00          | \$20,000           |
|                            | Misc. administrative costs by Storm Water District               | 1                         | Lump        | \$5,000.00           | \$5,000            |
|                            | Engineering & Inspection by County Engineer                      | 1                         | Lump        | \$50,000.00          | \$50,000           |
|                            | Easement acquisition cost estimate                               | 1                         | Lump        | \$0.00               | \$0                |
|                            | Damages estimated  | 1                         | Lump        | \$0.00               | \$0                |
|                            | One year additional maintenance cost                             | 1                         | Lump        | \$0.00               | \$0                |
| Alternate length = 1,250LF |  | Alternate unit cost \$/LF | \$1,402     | <b>PROJECT TOTAL</b> | <b>\$1,753,025</b> |



Lorain County Engineer's Opinion of Project Cost, Dec. 13, 2023  
 Alternate Roth Dry Detention Basin ADDITIONAL COST, Columbia Twp.

| Item   | Description  | Quantity | Unit | Price        | Amount                           |
|--|--|----------|------|--------------|----------------------------------|
| 103  | Bid & contract performance bond additional amount                | 1        | Lump | \$100,000.00 | \$100,000                        |
| 623  | Construction layout stakes incl. stake all easements             | 1        | Lump | \$50,000.00  | \$50,000                         |
| 624  | Mobilization   | 1        | Lump | \$100,000.00 | \$100,000                        |
| 832  | Temporary erosion & sediment control                             | 1        | Lump | \$50,000.00  | \$50,000                         |
| 201  | Tree clearing, grubbing & grinding perimeter access stumps       | 10       | Acre | \$5,000.00   | \$50,000                         |
| 202  | Removals: none   | 1        | Lump | \$0.00       | \$0                              |
| 203  | Excavation including haul-away                                   | 100000   | CY   | \$30.00      | \$3,000,000                      |
| 203  | Embankment   | 1000     | CY   | \$20.00      | \$20,000                         |
| 209  | Ditch cleanout incl. haul away                                   | 100      | LF   | \$25.00      | \$2,500                          |
| 304  | Stabilized limestone aggregate driveways at inlet & outlet       | 250      | CY   | \$200.00     | \$50,000                         |
| 411  | Stabilized limestone aggregate driveways at access turns         | 100      | CY   | \$200.00     | \$20,000                         |
| 452  | New concrete access apron off Glencove Trail for maintenance     | 1        | Lump | \$7,500.00   | \$7,500                          |
| 601  | ODOT Type C limestone protection with filter fabric incl. excav. | 500      | CY   | \$175.00     | \$87,500                         |
| 601  | ODOT Type D limestone protection with filter fabric incl. excav. | 500      | CY   | \$150.00     | \$75,000                         |
| 602  | Outlet control structure with trash rack                         | 1        | Each | \$10,000.00  | \$10,000                         |
| 602  | Manhole 72" diameter   | 2        | Each | \$4,500.00   | \$9,000                          |
| 602  | Full headwall for 48" CPP  | 2        | Each | \$10,000.00  | \$20,000                         |
| 602  | Skewed full headwall for 48" CPP                                 | 1        | Each | \$10,000.00  | \$10,000                         |
| 602  | Half-height headwall for 36" CPP                                 | 2        | Each | \$2,500.00   | \$5,000                          |
| 602  | Half-height headwall for 24" CPP                                 | 1        | Each | \$1,750.00   | \$1,750                          |
| 602  | Half-height headwall for 12" CPP                                 | 1        | Each | \$1,000.00   | \$1,000                          |
| 602  | Concrete collar to connect 24" CPP                               | 1        | Each | \$250.00     | \$250                            |
| 611  | 48" CPP HDPE (N-12 or equal)                                     | 350      | LF   | \$500.00     | \$175,000                        |
| 611  | 36" CPP HDPE (N-12 or equal)                                     | 100      | LF   | \$350.00     | \$35,000                         |
| 611  | 24" CPP HDPE (N-12 or equal)                                     | 20       | LF   | \$150.00     | \$3,000                          |
| 611  | 12" CPP HDPE (N-12 or equal)                                     | 20       | LF   | \$75.00      | \$1,500                          |
| 611  | Repair/shorten/extend 4"-12" drain outlets incl. fittings        | 1        | LS   | \$2,500.00   | \$2,500                          |
| 630  | Sign & support per plan  | 2        | EA   | \$500.00     | \$1,000                          |
| 659  | Seeding and mulching Class 2                                     | 10       | Acre | \$10,000.00  | \$100,000                        |
| 659  | Topsoil 4" compacted depth furnished & placed                    | 5,500    | CY   | \$50.00      | \$275,000                        |
| 659  | Commercial fertilizer 10-20-10                                   | 9,000    | lbs. | \$2.50       | \$22,500                         |
| 660  | Sodding reinforced on 2:1 slope                                  | 1,000    | SY   | \$30.00      | \$30,000                         |
| 671  | Ditch/slope erosion Type B straw mat & polypropylene netting     | 50,000   | SY   | \$7.50       | \$375,000                        |
| Spec.  | Additional timber mat allowance                                  | 2,750    | LF   | \$100.00     | \$275,000                        |
| Spec.  | Rural gate and appurtenances for access driveway                 | 4        | EA   | \$7,500.00   | \$30,000                         |
| Spec.  | Construction contingency as directed                             | 1        | LS   | \$750,000.00 | \$750,000                        |
| -  | CREDIT for 1,100 LF ditch restoration/construction non-performed |          |      |              | (\$165,000)                      |
| <b>CONSTRUCTION TOTAL</b>  |  |          |      |              | <b>\$5,580,000</b>               |
| <b>Soft costs:</b>   |  |          |      |              |                                  |
|  | Land purchase cost estimate                                      | 10       | Acre | \$10,000.00  | \$100,000                        |
|  | Legal cost estimate  | 1        | Lump | \$10,000.00  | \$10,000                         |
|  | Wetlands assessment subconsultant                                | 1        | Lump | \$5,000.00   | \$5,000                          |
|  | Wetlands permit/mitigation allowance                             | 1        | Lump | \$50,000.00  | \$50,000                         |
|  | Topographic survey & mapping by subconsultant                    | 1        | Lump | \$16,350.00  | \$16,350                         |
|  | Geotechnical investigation by subconsultant                      | 1        | Lump | \$25,000.00  | \$25,000                         |
|  | Misc. administrative costs by Storm Water District               | 1        | Lump | \$5,000.00   | \$5,000                          |
|  | Engineering & Inspection by County Engineer                      | 1        | Lump | \$50,000.00  | \$50,000                         |
|  | Easement acquisition cost estimate                               | 1        | Lump | \$0.00       | \$0                              |
|  | Damages estimated  | 1        | Lump | \$0.00       | \$0                              |
|  | One year of maintenance cost                                     | 1        | Lump | \$50,000.00  | \$50,000                         |
| Alternate detention volume = 9 acre-feet; Alternate unit cost \$/ac.-ft. = \$654,594 |  |          |      |              | <b>PROJECT TOTAL \$5,891,350</b> |

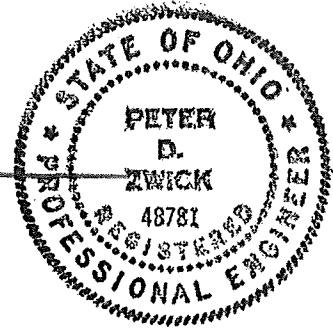


# LORAIN COUNTY ENGINEER

*KEN CARNEY, P.E., P.S.*

Peter Zwick PE PS  
Chief Deputy Engineer

*Peter Zwick*



cc: Ken Carney PE PS, Lorain County Engineer [kcarney@loraincountyengineer.com](mailto:kcarney@loraincountyengineer.com)  
Don Romancak Lorain County SWMD Coordinator [romancakd@loraincounty.us](mailto:romancakd@loraincounty.us)

K:\STORM WATER IMPROVEMENTS geo-referenced\Columbia Twp\Roth Lateral #1 (Petitioned 2023) 10955 Mitchell Rd\Engineering\Final Report

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email: [kcarney@loraincountyengineer.com](mailto:kcarney@loraincountyengineer.com)

## Theresa Upton

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**From:** Yvonne Shaw  
**Sent:** Monday, December 18, 2023 2:12 PM  
**To:** Theresa Upton  
**Cc:** Ken Carney; Don Romancak; Peter Zwick  
**Subject:** Roth Main Ditch & Lateral  
**Attachments:** Roth Main Ditch & Lateral.pdf

Thank you,

Yvonne Shaw  
Lorain County Engineer's  
247 Hadaway Street  
Elyria, OH 44035  
440-329-5586