AGENDA

Randolph Street Intercounty Drain Drainage Board
Wayne and Oakland Counties

March 18, 2025 – 10:00 a.m.
Northville City Hall
215 W. Main St.
Northville, MI, and Microsoft Teams

1. Call meeting to order

   Board Members:
   Brady Harrington, Chair, Michigan Department of Agriculture and Rural Development
   Elmeka Steele, Wayne County Drain Commissioner
   Jim Nash, Oakland County Water Resources Commissioner

2. Approval of the meeting agenda for March 18, 2025

3. Approval of Drainage District Board Meeting Minutes from November 25, 2024

4. Public Comment

5. Present Memorandum from David Wirth, P.E., Drain Maintenance Engineer, dated March 18, 2025, requesting the Board award an engineering services contract with NTH Consultants, Ltd., for a not to exceed amount of $51,773

6. Present Construction Estimate No. 1 for V.I.L. Construction Inc. for the Serenity Point and Riverbank Stabilization Project in the amount of $129,077.10 with a transfer to the Oakland County Treasurer in the amount of $14,341.90

7. Present trial balances

8. Other business

9. Adjourn

Agenda Item No. 3

Board Meeting Minutes from
November 25, 2024

Minutes of the Meeting
of the Intercounty Drainage Board for the
Randolph Street Drain

November 25, 2024

Minutes of the regular meeting of the Drainage Board of the Randolph Street Drain Drainage District held at Northville City Hall, 215 W. Main Street, Northville, Michigan on the 25th day of November 2024 at 10:00 a.m. Eastern Standard Time and via Microsoft Teams.

Present: Michael Gregg, Chairperson and Deputy for Dr. Tim Boring, Director of the Michigan Department of Agriculture and Rural Development; Anne Vaara for Jim Nash, Secretary and Oakland County Water Resources Commissioner; Elmeka Steele, Member and Wayne County Drain Commissioner.

Absent: None.

Also Present: Representing the office of the Oakland County Water Resources Commissioner: Steve Korth, Geoffrey Wilson and Stephanie Lajdziak. Representing the City of Northville: Brian Turnbull. Representing MDARD, Brady Harrington and Joseph Brezvai.

1. Call meeting to order.
Chairperson Gregg called the meeting to order at 10:10 a.m.

2. Agenda.
Motion by Vaara, supported by Steele, to approve the November 25, 2024, agenda as presented.

Adopted: YEAS – 3
NAYS – 0

3. Minutes.
Motion by Vaara, supported by Steele, to approve the minutes of the September 23, 2024, meeting.

Adopted: YEAS – 3
NAYS – 0

4. Public Comment.
Mayor Turnbull addressed the Board under public comment. He commended the Board on their work on the drain and advised the City of Northville is looking forward to future collaboration.

5. Center Street Sinkhole Report
Goeff Wilson presented a memorandum to the Board detailing the sinkhole located at Center Street. Mr. Wilson also briefed the Board on the investigation conducted by HRC to determine the location and maintenance options to rehab the storm drain.

Motion by Varra, supported by Steele, to authorize the following:

a) Staff to proceed with the immediate term recommendations outlined in the HRC report that is estimated to cost $50,000.

Adopted: YEAS – 3
NAYS – 0

b) Staff to solicit engineering proposals for the storm drain rehabilitation/replacement

Adopted: YEAS – 3
NAYS – 0

6. Serenity Point Project Assessment Recommendation
A Project Assessment Recommendation for the Serenity Point Drain Improvement Project in the amount of $419,862 was presented.

Motion by Steele, supported by Vaara, to approve the Project Assessment Recommendation in the amount of $419,862 as presented.

Adopted: YEAS – 3
NAYS – 0

7. Trial Balance.
Mr. Wilson presented the Trial Balance report dated November 20, 2024, indicating a cash balance of -$598.69.

Motion by Vaara, supported by Steele, to receive and file the updated Trial Balance as presented.

Adopted: YEAS – 3
NAYS – 0

8. Invoices – Maintenance Fund
A request for approval of payment of invoices and/or reimbursement of the Drain Revolving Fund from the Maintenance Fund in the amount of $10,450.64 (as attached) was presented.

Motion by Vaara, supported by Steele, to approve the payment of invoices and/or reimbursement of the Drain Revolving Fund in the amount of $10,450.64 as presented.

Adopted: YEAS – 3
NAYS – 0

9. Invoices – Construction Fund
A request for approval of payment of invoices and/or reimbursement of the Drain Revolving Fund from the Construction Fund in the amount of $89,243.13 (as attached) was presented.

Motion by Vaara, supported by Steele, to approve the payment of invoices and/or reimbursement of the Drain Revolving Fund in the amount of $89,243.13 as presented.

Adopted: YEAS – 3
NAYS – 0

10. Other Business.

Steve Korth provided further details on the Serenity Point Project Assessment that was approved under agenda item no. 6. He noted that there will be short term repairs in the future, along with a more permanent fix for the sinkhole. He also noted that there will be expenditures that are not currently on the project assessment, but the costs will be articulated to the respective communities once the costs are finalized. Discussion ensued as to possible grant opportunities and support from the City of Northville.

A brief update on the invasive species at Lexington Condominiums was given. It was advised that they were treated, and Geoff Wilson spoke with the condo board after the September meeting. Mr. Wilson was confident the Board was made aware of the proper care to take in the future. He also noted that there was no significant erosion at the site.

11. Adjourn.

Motion by Vaara, supported by Steele, to adjourn the November 25, 2024, meeting at 10:51 a.m.

Adopted: YEAS – 3
NAYS – 0

Anne Vaara for Jim Nash, Secretary
Randolph Street Intercounty Drain Drainage Board

STATE OF MICHIGAN)
)SS.
COUNTY OF OAKLAND)

I hereby certify that the foregoing is a true and complete copy of the minutes of the Randolph Street Intercounty Drain Drainage Board, at a meeting held on the 25th day of November 2024, and that the meeting was conducted and public notice was given in compliance with the Open Meetings Act being Act 267, Public Acts of Michigan, 1976, as may be amended from time to time and that the minutes were kept and will be or have been made available to the public as required by the Act.

IN WITNESS WHEREOF, I have hereunto affixed my official signature on this 25th day of November 2024.

Anne Vaara for Jim Nash, Secretary
Randolph Street Intercounty Drain Drainage Board

Agenda Item No. 4

Public Comment

Agenda Item No. 5

Center Street – South Pipe Rehabilitation Consultant Services Memorandum

OAKLAND COUNTY
WATER RESOURCES COMMISSIONER

MEMORANDUM

TO: **Brady Harrington, Chairperson of the Randolph Street Intercounty Drain Drainage Board**

FROM: **David Wirth, P.E. – Drain Maintenance Engineer**

SUBJECT: **Center Street – South Pipe Rehabilitation Consultant Services**

DATE: **March 18, 2025**

Engineering design services are required for an enclosed storm drain rehabilitation and/or replacement project on Center Street, over the Randolph Street Drain. Staff solicited proposals from four companies and received responses from both NTH Consultants, Ltd. and FK Engineering Associates. Both firms demonstrated strong qualifications and relevant experience with unique and challenging trenchless rehabilitation projects. Their estimated fees for services were also closely comparable.

Each proposal was compared by assessing their analysis of existing data, their proposed design approach, and their strategies for addressing potential solutions. To further evaluate each firm's proposal, virtual meetings were conducted to fully understand their design approach and methodologies.

While both NTH Consultants and FK Engineering are qualified and capable for this design project, NTH Consultants demonstrated a clearer understanding of the project and presented the most effective repair method in their proposal.

Requested Action: Award an engineering services contract to NTH Consultants, Ltd., for a not to exceed amount of $51,773.

PROPOSAL

Engineering Services - Drain Rehabilitation

Randolph Drain - Center Street

Mr. Geoff S. Wilson, P.E.
Chief Engineer
Office of the Oakland County Water Resources Commissioner
One Public Works Drive, Building 95 West
Waterford, MI 48328-1907

February 12, 2025
NTH Proposal No.OP252681

NTH Consultants, Ltd.
41780 Six Mile Rd.
Suite 200
Northville, MI 48168

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Mr. Geoff S. Wilson, P.E.
Chief Engineer
Office of the Oakland County Water Resources Commissioner
One Public Works Drive, Building 95 West
Waterford, MI 48328-1907

February 12, 2025
NTH Proposal No.OP252681

RE: Proposal for Engineering Services – Drain Rehabilitation
Randolph Drain – Center Street
Northville, Michigan

Dear Mr. Wilson:

In response to the Request for Proposal (RFP) provided by Mr. David Wirth, P.E., from your office, NTH Consultants, Ltd. is pleased to present this comprehensive proposal to provide rehabilitation design services for a portion of the enclosed Randolph Drain crossing Center Street in the City of Northville, Michigan. This proposal has been carefully developed based on the following key inputs:

- Recent discussions with yourself and Mr. Wirth, during which we gained insight into the project goals, constraints, and expectations.
- A thorough review of the RFP and associated documentation, enabling us to align our approach with the project requirements and desired outcomes.
- An initial site visit, which allowed us to observe existing conditions and assess potential challenges and opportunities.
- Our extensive experience in designing and implementing rehabilitation solutions for similar infrastructure projects has equipped us with the technical expertise and innovative strategies necessary to deliver successful outcomes.

NTH QUALIFICATIONS, EXPERIENCE, AND THE PROJECT TEAM

Since our founding in 1968, NTH Consultants, Ltd. has been dedicated to delivering exceptional engineering services to satisfied clients, including Oakland County, Wayne County, Macomb County, the Detroit Water and Sewerage Department (DWSD), the Great Lakes Water Authority (GLWA), and numerous other cities and municipalities. These organizations, which manage extensive water and wastewater systems and treatment facilities, have relied on NTH for a comprehensive range of engineering services. Our expertise spans troubleshooting and failure analyses, civil and geotechnical engineering design, rehabilitation engineering, construction observation and material testing, and engineering consultation and oversight services.

NTH's History with OCWRC

For more than 56 years, NTH Consultants, Ltd. has proudly served as a trusted partner to water and wastewater facility owners across Michigan, including a collaborative relationship spanning over 40 years with the Oakland County Water Resources Commissioner's Office (OCWRC).

Through this long-standing partnership, we have gained a thorough understanding of OCWRC's systems, technical standards, and construction requirements. This knowledge, coupled with our expertise, allows us to consistently deliver innovative, tailored engineering solutions that meet the unique needs of OCWRC and ensure the long-term functionality of their infrastructure.

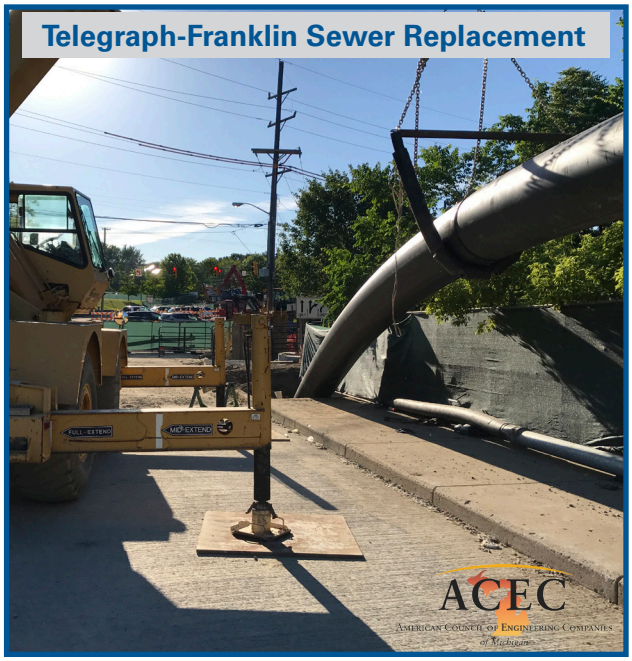
41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

This unwavering dedication to excellence has solidified NTH as a dependable and trusted partner, not just for OCWRC but for many other municipalities and agencies across Michigan. Our successful projects with OCWRC reflect our ability to address complex engineering challenges while maintaining high standards of quality, collaboration, and responsiveness. Some of the notable projects that exemplify our expertise, commitment, and value to OCWRC include:

- NTH's unique utility support system kept a critical high-pressure gas main safe during the Farmington Evergreen Interceptor collapse.
- NTH's novel approach to stabilizing the Rummel Drain going under a major freeway saved time and money and averted an otherwise certain collapse of the overlying roadway.
- A pioneering combination of trenchless construction methods for the Telegraph-Franklin sewer replacement mitigated risk and saved construction (and future maintenance) costs.
- The inventive use of a phased emergency repair program and alternative contracting methods ensured a successful outcome for the aeration tanks at the CRWRRF Pontiac Opdyke Road facility.
- NTH's original combination of deep sheeting, a modular shaft bracing system, and strategically placed dewatering wells stopped the spread of the Waterford Elizabeth Lake Road sinkhole, reduced the construction schedule, saved construction costs, and prevented substantial impacts to a major roadway intersection.
- NTH's bid proposal approach for the HRSDS rehabilitation project enhanced participation by pre-selecting multiple lining techniques per sewer reach while allowing the Project Owner to make final decisions. This approach fostered competition and enabled manufacturers and contractors to optimize cost-effectiveness based on their preferred methods.

Delivering Award-Winning Results

Through our dedication to responsiveness and innovation, we have consistently delivered successful outcomes on projects performed under as-needed contracts for the OCWRC, earning both local and national recognition. While these awards are a valued acknowledgment of our efforts, our greatest satisfaction comes from knowing these projects have positively impacted surrounding communities and improved the quality of life for the residents they serve.



- **The Rummell Drain Emergency Stabilization** project earned an Award of Merit from the American Council of Engineering Companies (Michigan).

- **The Pipeline Rehabilitation Over the Clinton River** project at the CRWRRF earned the Civil Engineering Project of the Year from the American Society of Civil Engineers and the Honorable Conceptor Award for Engineering from the American Council of Engineering Companies (Michigan).

- **The Telegraph-Franklin Sewer Replacement** project earned a National Recognition Award for Engineering from the American Council of Engineering Companies (National) and the Top Project Award from Water & Wastewater Digest.

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

The Team

NTH Consultants, Ltd. is proud to have built a strong, long-standing relationship with the Oakland County Water Resources Commissioner's Office (OCWRC), based on our commitment to excellence, reliability, and trust. Our key personnel including Saju Sachidanandan, P.E., Hosam (Sam) Yaldo, P.E., Larry Gilbert, P.E., Abdulnasser Almadhoun, P.E., Joel Schanne, P.E., and several other dedicated team members have consistently provided high-quality services to meet the unique needs of OCWRC for many years.

This team has developed a deep understanding of OCWRC's operational standards, project goals, and overall vision, which has allowed us to deliver tailored solutions that align with the Commissioner's priorities. Each member of this team brings a wealth of knowledge and expertise in their respective fields, as well as a collaborative spirit that has been integral to the success of previous projects.

To ensure continuity and maintain the same high level of service that OCWRC has come to expect, we are pleased to confirm that this core team will remain dedicated to serving OCWRC on this project. Their familiarity with your systems, processes, and expectations will enable us to deliver efficient, innovative, and cost-effective solutions with minimal learning curve, ensuring the project progresses smoothly and meets all established objectives.

PROJECT UNDERSTANDING

The portion of the Randolph Drain under consideration is an enclosed, shallow drain that generally runs in an east-west direction. It begins west of the Northville Cigar Lounge property, continues easterly beneath their paved parking lot, crosses under Center Street, and proceeds through an undeveloped property on the east side of Center Street before terminating at a headwall outfall into an open vegetated drain.

The enclosed portion of the drain is 281 feet in total length, comprising of six segments that vary in size, material, and condition. The HRC report dated August 30, 2024, included in the RFP, describes the segments and their assessed conditions as follows:

- **Segment 1:** 104 feet of 42-inch diameter Concrete Pipe (Class II or III) in **Good** condition.
- **Segment 2:** 53 feet of 54-inch diameter Non-Reinforced Concrete Pipe in **Serious to Critical** condition.
- **Segment 3:** 27 feet of 54-inch diameter Concrete Pipe (Class II or III) in **Good** condition.
- **Segment 4:** 8 feet of 60-inch diameter Concrete Pipe (Class II or III) in **Good** condition.
- **Segment 5:** 20 feet of Arched Brick Conduit with no structural base, measuring 4.5 feet in width and 4.5 feet to the crown, in **Poor to Serious** condition.
- **Segment 6:** 69 feet of three-sided Cast-in-Place Concrete with no structural base, measuring 4.5 feet by 4.5 feet, in **Poor** condition.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Moreover, a sinkhole reportedly developed during the summer of 2024 in the roadway pavement on the east side of NB Center Street. The sinkhole was located near the junction of Segments 4 and 5. Of the six segments, Segments 2, 5, and 6 are in **poor to serious** condition and require immediate attention. The Oakland County Water Resources Commissioner's (OCWRC) office desires to rehabilitate portion of the enclosed drain, specifically Segments 2 through 6. The following sections outline a comprehensive approach to addressing these critical needs.

PRELIMINARY EVALUATION OF EXISTING DATA & POTENTIAL REHABILITATION APPROACH

Subsurface soil conditions for the site are not available in the HRC report; however, based on our experience with similar projects and considering the age of the structure and the shallow depth, it is likely that open-cut construction techniques were utilized during the original construction of this drain. Consequently, and considering that a sinkhole has already developed over the drain, we assume that the soil surrounding the drain consists of mostly granular backfill material. Additionally, based on our preliminary site visits as part of preparing this proposal and our understanding of the existing utility crossings, it appears that the crown of the pipe is located approximately 2 to 5 feet below grade. However, critical information is currently unavailable, including the groundwater table near the drain, the exact dimensions of the distressed pipe sections such as the deflected shape of Segment 2, and the precise clearance between the bottom of the utility crossing and the invert of the drain in Segment 5. This information is crucial for determining the most suitable rehabilitation techniques.

Before evaluating potential rehabilitation solutions, we sought to identify the underlying causes of the reported distress observed in various sections of the drain. Below, we provide a preliminary discussion of the distressed sections:

Segment 2: This section consists of 53 feet of 54-inch diameter non-reinforced concrete pipe, which has been reported to be in serious-to-critical condition. Observations of the distress, including cracks and fractures in both longitudinal and circumferential directions, as well as pipe deflections and joint offsets noted in the report, indicate that the pipe has lost its structural integrity. The following factors may have contributed to the observed distress:

1. **Age and Original Design Limitations:** The pipe may have been under-designed at the time of its installation or not adequately designed to accommodate the current loading conditions. Over time, increases in surface loading or changes in environmental conditions could have exceeded the original design assumptions.

2. **Loss of Confinement:** The pipe may have lost soil confinement due to the migration of soil into the pipe through cracks or open joints. Soil conditions, such as gradation (soil fines) and water infiltration, could exacerbate this issue. Based on our evaluation history of similar unreinforced interceptor liner failures in the OMID and MID systems, the primary cause of such failures has often been attributed to open cracks or joints combined with a high groundwater table and surrounding soil consisting of silt or fine sand. These conditions can result in the piping of fines through the joints into the system, creating voids and reducing external support for the pipe. Over time, this process can lead to sinkholes and eventual pipe collapse.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Segment 5: This section consists of 20 feet of aged arched brick conduit over mortared stone walls with no structural base, and measuring approximately 4.5 feet in width and 4.5 feet in height. It has been reported to be in poor to serious condition. Visual evidence, including photos, reveals the loss of bricks and eroded mortar joints at various locations, which has led to soil migration and the formation of a sinkhole under the pavement on the east side of NB Center Street. The following factors may have contributed to the observed issues:

1. **Age and Original Design Limitations:** The brick drain may have been under-designed at the time of its installation or not adequately designed to accommodate the current vehicular loading conditions. Over time, increases in surface loading or changes in environmental conditions could have exceeded the original design assumptions.

2. **Loss of Confinement:** The conduit may have lost soil confinement due to the migration of soil into the drain through openings. The presence of a sinkhole is a clear indicator of soil loss in this area.

3. **Erosion and Scouring:** Given that the arched brick and mortared stone drain lacks a structural base, the flow velocity and associated erosion or scouring potential along the bottom of the drain may have facilitated the migration of soil into the drain where the wall meets the base. This could result in void formation around the drain and lack of support, further compromising its structural stability.

Segment 6: This section, located downstream of Segment 5, consists of approximately 69 feet of three-sided cast-in-place concrete with no structural base. The drain measures approximately 4.5 feet in width and 4.5 feet in height and has been reported to be in poor condition. Similar to Segment 5, the following factor may have contributed to its deteriorated condition:

1. **Age and Original Design Limitations:** Similar to other portions of the drain, this segment may have been under-designed at the time of its installation or not adequately designed to accommodate the current loading conditions. Over time, increases in surface loading or changes in environmental conditions could have exceeded the original design assumptions.

2. **Erosion and Scouring:** The absence of a structural base leaves the drain vulnerable to erosion and scouring effects caused by flow velocity. This could lead to the migration of soil into the pipe at the intersection of the walls and the base, resulting in void formation around the drain as well as an unbalanced support of the walls.

Given these observations, the rehabilitation design must carefully address the surrounding soil conditions and potential for voids to ensure that the proposed solutions mitigate existing damage without causing further issues to the drain as well as nearby utilities.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

POTENTIAL SOLUTIONS

There are several potential solutions for rehabilitating the deteriorated drain, and with each solution there are advantages and disadvantages. Below are potential construction techniques that NTH will explore during design of the drain rehabilitation.

1. Open-Cut Replacement

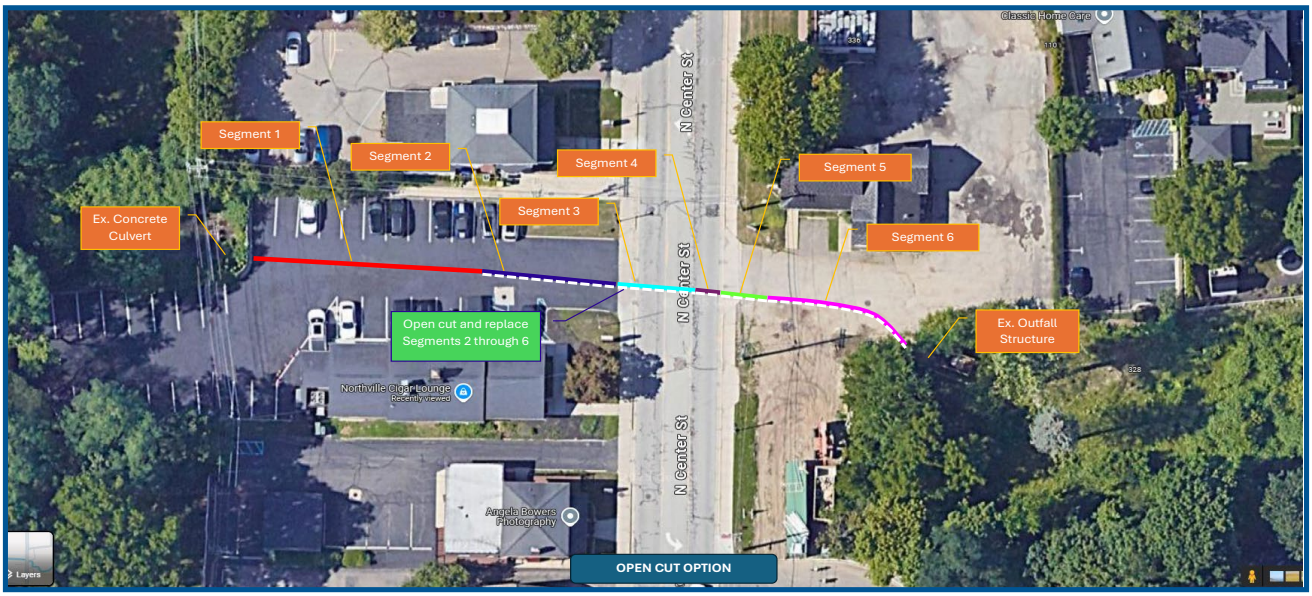
Replace Segments 2, 3, 4, 5, and 6 entirely using open-cut construction.

Pros:

- Restores full hydraulic capacity with no reduction in cross-sectional area.
- Maximizes service life by replacing aging infrastructure with new materials.
- Backfilling the new drain with engineered fill provides the opportunity to mitigate any existing voids and lose soils that may still exist around the drain.

Cons:

- Significant coordination required to manage utility conflicts.
- High disruption to local businesses, traffic, and nearby properties during construction.
- Requires replacement of disturbed roadways, parking lot, utilities, etc.
- Longer construction duration and higher costs compared to other methods.



41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

2. Sliplining Solutions

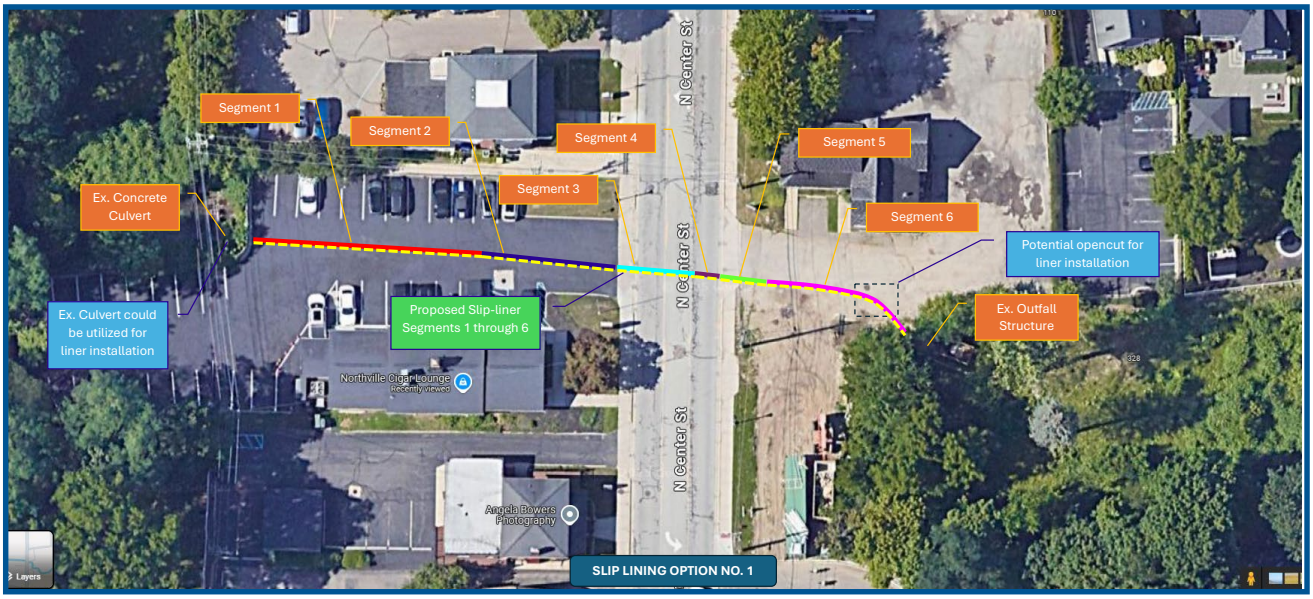
Option 1: Slipline Segments 1 through 6 by inserting a liner by utilizing the open channel at the upstream end of Segment 1 and a proposed open-cut pit near Segment 6.

Pros:

- Significantly extends the system's life span for the entire drain.
- Minimal disruption to existing utilities, businesses, and traffic.
- Minimal excavations for entry and exit pits at the ends of the drain to perform the sliplining.
- The installation of a slip liner (HDPE for example) from the easterly end (downstream) of the enclosed drain may require partial removal and replacement of the curved section of the drain as well as the existing east headwall. Replacement of this section may provide an opportunity for not only replacing the failed section of drain but also improving the current roughly vegetated condition of the open outfall section of drain. This option would improve the hydraulic characteristic of the drain, reducing future maintenance, and improving overall site conditions, thereby offering aesthetic benefits to the current new construction in the immediate vicinity of the drain.
- The existing reinforced concrete junction/bar screen chamber at the west (inlet) end of the drain may offer several advantages during slip lining construction, regardless of whether the proposed lining proceeds from either upstream or downstream orientations. This structure provides an opportunity for stable equipment positioning for pulling "upstream" and conversely could also provide a convenient location for positioning the insertion end of the lining for a more typical downstream "pull." In addition, significant work can be performed at this location with minimal disturbance and inconvenience to the adjacent business and residential interests, and with only minor final restoration requirements (potentially even low-cost enhancements).

Cons:

- Reduces the pipe's internal cross-sectional area, potentially impacting hydraulic capacity.
- Liner diameter will be less than 42 inches to accommodate Segment 1's existing pipe dimensions.
- Careful consideration is required during grouting of the annular space between the host pipe and slip liner to prevent liner flotation due to buoyancy. NTH has demonstrated experience with this important requirement.
- Re-stating of lateral connections (if any) and associated localized excavation is required.
- Surface grouting may also be necessary to mitigate any existing lose soils or voids.



41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

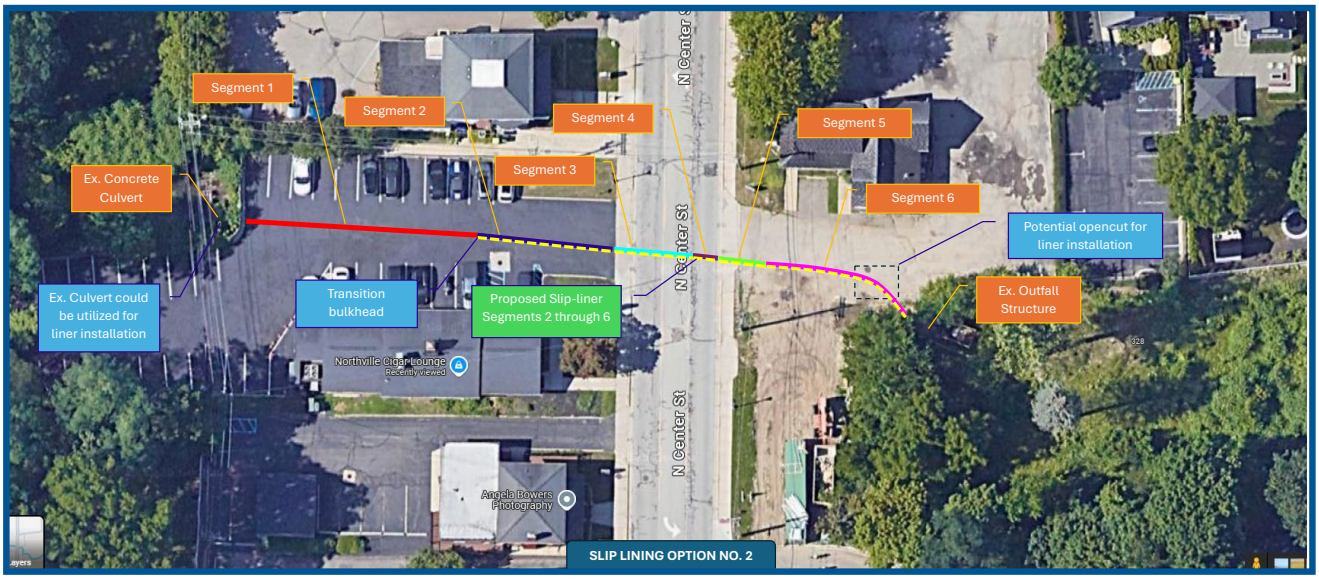
Option 2: Slipline Segments 2 through 6 by inserting a liner from a proposed open-cut pit near Segment 6 and pulling it upstream to the downstream end of Segment 1.

Pros:

- Provides extended service life and structural reinforcement.
- Minimal impacts on utilities, businesses, and traffic.
- Minimal excavations for entry and exit pits at the ends of the drain to perform the sliplining.
- As in Option 1, the installation of a slip liner (HDPE for example) from the easterly end (downstream) of the enclosed drain may require partial removal and replacement of the curved section of the drain as well as the existing east headwall. Refer to Option 1 discussion for additional details.
- As in Option 1, the existing reinforced concrete junction/bar screen chamber at the west (inlet) end of the drain may offer several advantages during slip lining construction, regardless of whether the proposed lining proceeds from either upstream or downstream orientations. Refer to Option 1 discussion for additional details.

Cons:

- Cross-sectional reduction may require hydraulic analysis to confirm capacity adequacy.
- Liner diameter is constrained by Segment 2's deflected shape and/or Segment 5's clearance below utility crossing. These considerations will need to be evaluated in detail.
- Careful consideration is required during grouting of the annular space between the host pipe and slip liner to prevent liner flotation due to buoyancy. As noted previously, NTH has significant experience with this critical requirement.
- Re-stating of lateral connections (if any) and associated localized excavation is required.
- Surface grouting may also be necessary to mitigate any existing lose soils or voids.



41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

3. Hybrid Approach

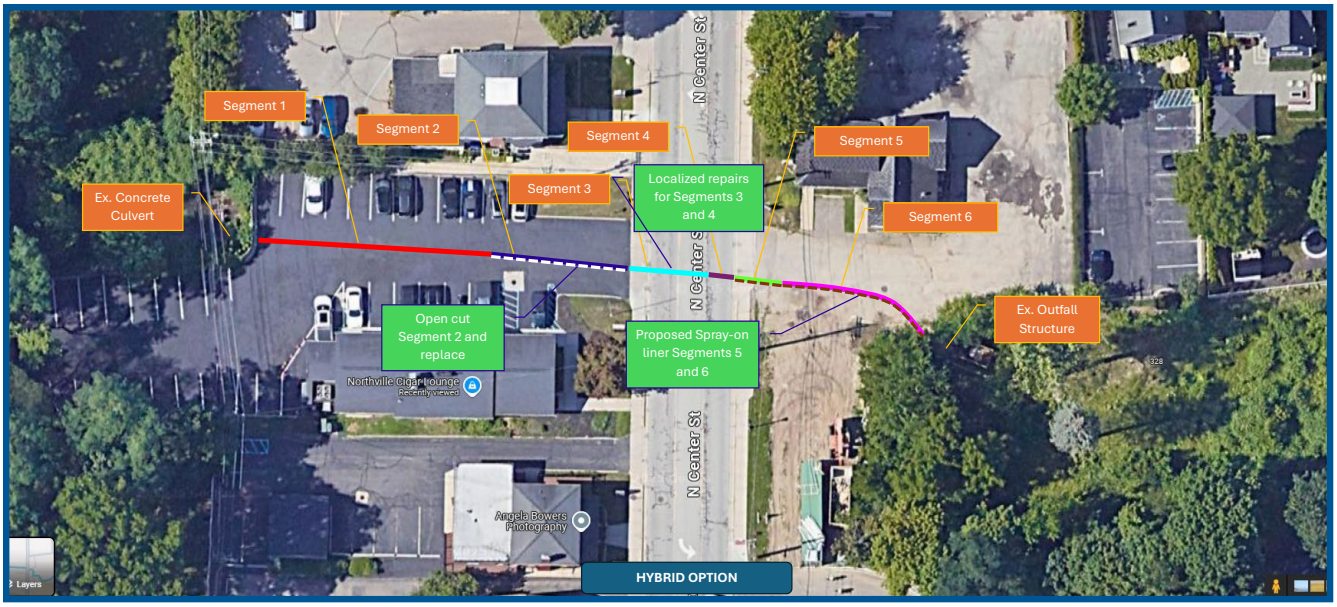
Spray-coat Segments 5 and 6 with a structural coating, stabilize the drain base and floor, perform localized repairs of Segment 3 and 4, and replace Segment 2 via open-cut construction. Given Segment 2's critical condition, spray coating would not provide sufficient structural reinforcement, and hence, not recommended.

Pros:

- Reduces impacts to utilities along Center Street.
- Maintains hydraulic capacity in Segments 5 and 6 by avoiding significant cross-sectional reduction.
- Re-stating of lateral connections (if any) in the spray-coated section isn't required.

Cons:

- Disruption to businesses due to Segment 2's open-cut replacement.
- Surface preparation is key to the long-term performance of the liner.
- Spray-coated sections may require more frequent maintenance and have a shorter life span compared to sliplining or full replacement.
- Additional efforts will be required to stabilize the base and floor of Segments 5 and 6 of the drain.
- Surface grouting may also be necessary to mitigate any existing lose soils or voids.



Each solution presents trade-offs in terms of hydraulic capacity, life span, and impact on the surrounding area. A detailed hydraulic analysis and site-specific investigations are necessary to finalize the design. Consideration should also be given to the project's budget, schedule constraints, and stakeholder priorities when selecting the most appropriate rehabilitation approach.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Existing Sinkhole Repair and Addressing Potential Voids around the Drain

The sinkhole in Segment 5 is indicative of underlying issues, such as voids around the drain conduit caused by soil erosion or loss of support material. To restore stability and ensure long-term performance, the sinkhole repair process will include:

Void Backfilling and Pavement Restoration: Use granular fill material to backfill the void. The granular fill will be placed in controlled lifts and compacted to achieve optimum density, ensuring stability and resistance to settlement. Another option is to utilize a cementitious grout or flowable fill to fill the void. This technique will provide uniform support, does not require compaction, and minimize the potential for further erosion or settlement. After plugging the hole in the drain, the grout would be pumped into the void under controlled pressure and monitoring to avoid additional structural distress to the pavement and nearby utilities. After filling the void, the surface pavement will be restored to its original condition.

Potential Voids Around Segment 2: Given the serious critical condition of Segment 2, the presence of voids or loosened soils around the pipe is a concern, as they can lead to pavement settlement or further pipe distress if left unaddressed. To mitigate these risks, additional steps should be considered when using sliplining construction methods to rehabilitate the drain. To stabilize the ground around the drain, a cementitious grouting technique could be employed to fill any gaps that may exist between the pipe and the surrounding soil. Filling voids with cementitious grout will not only stabilize the pipe but also reduce the risk of future pavement settlement by providing continuous support around the pipe.

A THOUGHT!

Regardless of the selected method for the Randolph Drain Rehabilitation, a limited amount of site restoration will be required at both the inlet and outlet ends of the drain. This requirement presents an ideal opportunity at a modest cost to establish a simple native plant "Rain Garden" improvement at both locations. In addition to improving the water quality conditions in the drain, the aesthetic enhancement to both sites would benefit both residential and commercial development at these locations and serve to support the established WRC philosophy of being attentive to land and water stewardship.

By implementing these targeted repairs and preventative measures, we can effectively restore the affected areas of the drain while safeguarding against future issues. This approach ensures a durable solution that meets both structural and operational requirements.

OUR SCOPE OF SERVICES

Based on our thorough review of the available project documents and requirements outlined in the RFP, we have developed a comprehensive scope of work to gather additional information and ensure the successful rehabilitation design of the Randolph Drain. The scope of services is structured into four key phases:

I. Preliminary Design,
II. Final Design,
III. Bid Assistance, and
IV. Construction Assistance.

Each phase includes detailed tasks and deliverables, as outlined below:

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

I. Preliminary Design

The preliminary design phase aims to gather critical data, assess existing conditions, and evaluate viable rehabilitation options. Key tasks include:

Site Reconnaissance: NTH will perform an initial site reconnaissance to explore the existing site conditions such as access, roadway crossings, residential and commercial developments, and the general site terrain. As part of this task, we will obtain photographs of various areas that represent the general site conditions.

Geotechnical Data Collection: To allow for developing options for the rehabilitation and address the subsurface conditions around the drain, soil and groundwater information is necessary. However, as described earlier, we assume that the drain was constructed using open cut technique, and as such, the soil surrounding the drain may consist mostly of granular material. Also, we anticipate that the existing groundwater table is close to the level of water within the nearby drain. As such, we are not proposing any geotechnical investigations as part of this proposal.

CCTV Inspection and Interior Measurements: If the Oakland County Water Resources Commissioner's office (WRC) has existing drain inspection data, we will utilize it. Otherwise, we will conduct a CCTV or man entry inspection to document interior pipe conditions and dimensions.

Topographical Survey: Depending on the final rehabilitation option selected, we may need to do a limited topographic survey of the area that needs to be restored to grade as part of site restoration. The limited survey of the key features may include current grades along the drain alignment, underground utilities (Miss Dig info.), and surface features within and near the drain alignment. This will also include a survey of the inverts at the upstream and downstream ends of the drain. If the existing survey data is provided by WRC, we will not perform the survey. Also, if desirable by WRC, this task can be deferred during design and included with the contactor's scope of work. We recommend that WRC include an allowance in the contract for this task.

Utility Verification: Submit a MISS DIG design ticket to identify existing utilities near or crossing the drain and confirm their locations. If a survey is conducted, the survey crew will pick up these utilities and include them in the basemap.

Hydraulic Analysis: Evaluate the maximum allowable reduction in the drain's cross-sectional area to ensure the selected rehabilitation technique meets hydraulic capacity requirements. This task will only be performed if necessary and if existing hydraulic data is not available. Please note that we have not included efforts for a hydraulic evaluation, assuming that the proposed Opencut solution, Sliplining Option 2, and the Hybrid approach will maintain a minimum diameter of 42 inches. However, if Sliplining Option 1 is selected or if installing a 42-inch pipe below the utility crossing in Segment 5 is not feasible, we would subcontract the hydraulic evaluation and request a budget adjustment accordingly.

Easements: We assume the existing easement information will be provided by OCWRC to include in the base map.

Rehabilitation Options Evaluation: Assess feasible rehabilitation methods based on gathered data, considering technical, environmental, and cost factors.

Permit Discussions: Initiate preliminary discussions with permitting agencies (City of Northville, OCWRC, and possibly EGLE) to identify potential regulatory requirements for the project.

Preliminary Cost Estimate: Develop an Engineer's opinion of probable construction costs for the proposed rehabilitation options.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Workshop: Conduct a workshop with WRC to review the rehabilitation options considered, evaluate our findings, and present our recommendations.

II. Final Design

The final design phase focuses on preparing comprehensive design documents and securing necessary permits. Tasks include:

60% Design Submission: Prepare and submit rehabilitation design drawings and specifications to WRC for initial review. We assume that the standard front-end specifications will be provided by WRC, while as needed technical specifications will be prepared by NTH as notes in the drawings and/or as spec book.

Design Workshop: Conduct a workshop with WRC to review the 60% design documents and discuss key elements.

Incorporate Review Comments: Address WRC's feedback and refine the design documents as needed.

Permit Applications: Initiate permit applications and conduct one meeting with relevant agencies, such as ROW and EGLE, to facilitate approvals.

100% Design Submission: Prepare and submit the final design package, including rehabilitation drawings and specifications, to WRC for review.

Final Refinements: Incorporate WRC's final comments and issue a complete, ready-to-bid design package.

Updated Cost Estimate: Develop and issue a detailed Engineer's opinion of probable construction costs based on the final design.

III. Bid Assistance

This phase ensures a smooth bidding process by addressing bidder inquiries and assisting WRC with contractor selection. Tasks include:

Pre-Bid Meeting: Attend one pre-bid meeting to discuss the project with prospective bidders and prepare a meeting summary.

Bidder Inquiries: Respond to bidder questions through WRC to clarify design details and requirements.

Addenda Preparation: Issue one addendum, if needed, to address design changes or clarifications.

Bid Review and Evaluation: Review and tabulate submitted bids for comparison.

Award Recommendation: Prepare a detailed memorandum recommending the selected contractor, accompanied by the bid tabulation.

IV. Construction Assistance

The construction assistance phase provides support during the execution of the project to ensure compliance with design intent. Tasks include:

RFI Responses: Review and respond to up to 5 Requests for Information (RFIs) from the contractor.

Shop Drawing Reviews: Review and provide comments on up to three shop drawings submitted by the contractor.

41780 Six Mile Rd.; Suite 200; Northville, MI 48168
Phone 248-553-6300 • Fax 248-324-5179

Construction Site Visits: Conduct a minimum of two site visits to monitor construction progress and verify compliance with design specifications.

Change Order Reviews: Review and respond to up to two (2) change order requests from the contractor.

Pay Application Reviews: Review up to one (1) contractor pay applications to confirm accuracy and completeness.

During the course of the design project, NTH will provide internal project management services to enable the design effort to be completed efficiently and within the required schedule. This will include detailed work planning and coordination among internal team members and our subconsultants/subcontractors. Moreover, NTH will track the project budget, conduct as-needed meetings with the Owner to review work plan and schedule progress, identify and track issues that require resolution, and prepare monthly progress reports and invoices.

By following this detailed scope of work, we aim to deliver a robust and efficient rehabilitation design for the Drain, thereby meeting WRC's requirements and ensuring the long-term performance of the infrastructure.

DESIGN SCHEDULE

To provide a schedule for the various tasks, NTH assumes that the OCWRC team is preparing to issue the project bid package by June 2025. As such, NTH anticipates starting our services immediately following receipt of your authorization to proceed and plan to complete the design within 3 to 4 months from your authorization. If OCWRC deems necessary, we could expedite the design process to meet your schedule.

PROFESSIONAL FEES, TERMS, AND CONDITIONS

We propose to perform the above scope of services on a time and materials basis in accordance with our existing As-Needed Engineering Services Contract with the OCWRC identified as Contract No. 009174 (old # 006469). Our estimated fees for the above services is **$51,773.** A detailed breakdown of these estimated fees by task is provided in the attached workplan.

We are confident that NTH's extensive experience, combined with our technical expertise and client-focused approach, positions us uniquely to deliver exceptional results for this important project. We look forward to the opportunity to collaborate with your team and to contribute to the long-term functionality and sustainability of the Randolph Drain system.

Should you have any questions or require additional information regarding this proposal, please do not hesitate to contact us. We appreciate the opportunity to assist with this critical project and look forward to your feedback.

Sincerely,

NTH Consultants, Ltd.

Signed by:
Saju Sachidanandan
04261F17B85445C...
Saju Sachidanandan, P.E.
Sr. Vice President

DocuSigned by:
HOSAM YALDO
496D466AAB55469...
Hosam Yaldo, P.E.
Sr. Principal Engineer

SS/HSY/MLK

Agenda Item No. 6

Construction Estimate

Form DC-113

CONSTRUCTION ESTIMATE

Jim Nash, Oakland County Water Resources Commissioner
Randolph Street Drain Intercounty Drainage District
Randolph Street Drain - Serenity Point and Riverbank Stabilization Project
City of Northville
Wayne County, Michigan

Construction Estimate No. 1 — January 21, 2025 to February 28, 2025

Department No. :	CCN6010101	Account No. :	SC730373
Fund No. :	FND84906	Program No. :	PRG149015
Project No. :	PRJ-17641	Activity :	FAC
Purchase Order No. :	TBD	Vendor No. :	16085
Contractor :	V.I.L. Construction, Inc. 6670 Sims Road Sterling Heights, MI 48313	Contract No. :	TBD
		Date of Contract :	January 21, 2025
		Completion Date :	June 30, 2025

Original Contract Amount:		$	730,955.00
Previous Change Order Numbers (none):		$	-
Change Orders This Estimate Numbers (none):		$	-
Total Net Change Orders:		$	-
Adjusted Contract Amount:		$	730,955.00
Subtotal To Date: (Sheet 4 of 4, Column 8)		$	143,419.00
Less Deductions to Date: (Sheet 4 of 4 Column 8)		$	-
Gross Estimate: (Work in Place)	19.62%	$	143,419.00
Less Amount Reserved: (10% of Gross Estimate)		$	14,341.90
Total Amount Allowed To Date:		$	129,077.10
Less Previous Estimates:		$	-
Net Payment Request To Be Paid To Contractor:		$	129,077.10 ✓
Reserve Payment to Contractor		$	-
Balance of Contract To	$587,536.00 ✓	Accounting Auditor:	KS 3/12/25
Less Previous Transfers To Reserve:		$	-
Amount of Current Transfer:		$	14,341.90 ✓

Prepared by: Geoff Wilson — Date: 3/12/2025
Geoff Wilson, P.E. - Chief Engineer (WRC)

Recommended by: John V. Balint — Date: 3/13/2025
John Balint, P.E. - Consulting Engineer (HRC)

Approved by: _____ — Date: _____
Gary Nigro, P.E. - Manager (WRC)

Approved by Board on: _____

JIM NASH
OAKLAND COUNTY WATER RESOURCES COMMISSIONER

CONSTRUCTION ESTIMATE

Jim Nash, Oakland County Water Resources Commissioner
Randolph Street Drain Intercounty Drainage District
Randolph Street Drain - Serenity Point and Riverbank Stabilization Project
City of Northville
Wayne County, Michigan

Const. Est. No. 1		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Contract Item	Bid Quantity	Unit	Unit Price	Quantity This Payment	Total Quantity Previous Estimate	Total Quantity To-Date	Total Amount To-Date	Total Amount This Payment
1	Audio-Video Route	1	Lsum	$ 3,500.00	1	0	1	$ 3,500.00	$ 3,500.00
2	Permit Allowance	5,000	Dlr	$ 1.00		0	0	$ -	$ -
3	Mobilization (Max 5%)	1	Lsum	$ 35,000.00	0.50	0	0.50	$ 17,500.00	$ 17,500.00
4	Clearing	1	Lsum	$ 9,000.00	1	0	1	$ 9,000.00	$ 9,000.00
5	Tree, Rem, 6 inch to 18 inch	18	Ea	$ 450.00	18	0	18	$ 8,100.00	$ 8,100.00
6	Tree, Rem, 19 inch to 36 inch	5	Ea	$ 1,600.00	5	0	5	$ 8,000.00	$ 8,000.00
7	Stump, Rem, 6 inch to 18 inch (As Needed)	3	Ea	$ 175.00		0	0	$ -	$ -
8	Stump, Rem, 19 inch to 36 inch (As Needed)	3	Ea	$ 400.00	3	0	3	$ 1,200.00	$ 1,200.00
9	Sidewalk, Rem	40	Syd	$ 10.00		0	0	$ -	$ -
10	Fence, Rem	45	Ft	$ 10.00		0	0	$ -	$ -
11	Site Grading	1	Lsum	$ 145,000.00		0	0	$ -	$ -
12	Excavation, Rock	1	Cyd	$ 295.00	1	0	1	$ 295.00	$ 295.00
13	Excavation, Fdn	9	Cyd	$ 150.00	9	0	9	$ 1,350.00	$ 1,350.00
14	Backfill, Structure, CIP	55	Cyd	$ 75.00		0	0	$ -	$ -
15	Erosion Control, Silt Fence	135	Ft	$ 3.00		0	0	$ -	$ -
16	Erosion Control, Inlet Protection, Fabric Drop	2	Ea	$ 150.00		0	0	$ -	$ -
17	Erosion Control, Turbidity Curtain, Shallow	120	Ft	$ 10.00	120	0	120	$ 1,200.00	$ 1,200.00
18	Culvert Extension	24	Ft	$ 2,450.00		0	0	$ -	$ -

CONSTRUCTION ESTIMATE

Const. Est. No. 1		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Contract Item	**Bid Quantity**	**Unit**	**Unit Price**	**Quantity This Payment**	**Total Quantity Previous Estimate**	**Total Quantity To-Date**	**Total Amount To-Date**	**Total Amount This Payment**
19	Pipe Extension	1	Ea	$ 7,500.00		0	0	$ -	$ -
20	Dewatering	1	Lsum	$ 97,500.00	0.25	0	0.25	$ 24,375.00	$ 24,375.00
21	HMA Surface, Rem	75	Syd	$ 10.00		0	0	$ -	$ -
22	Conc, Bedding	13	Cyd	$ 450.00	13	0	13	$ 5,850.00	$ 5,850.00
23	Void Grouting	30	Cyd	$ 1.00		0	0	$ -	$ -
24	Sidewalk, Conc, 6 inch, Modified	360	Sft	$ 20.00		0	0	$ -	$ -
25	Fence, Protective	415	Ft	$ 5.00		0	0	$ -	$ -
26	Fence, Chain Link, 72 inch, Vinyl Coated	45	Ft	$ 145.00		0	0	$ -	$ -
27	Traffic Control and Maintenance	1	Lsum	$ 125,000.00	0.50	0	0.50	$ 62,500.00	$ 62,500.00
28	Natural Stone, 4 inch to 10 inch	120	Cyd	$ 125.00		0	0	$ -	$ -
29	Natural Stone, 12 inch to 18 inch	240	Cyd	$ 150.00		0	0	$ -	$ -
30	Existing Natural Stone, Salv and Place	25	Cyd	$ 75.00	7.32	0	7.32	$ 549.00	$ 549.00
31	Site Restoration	1	Lsum	$ 12,500.00		0	0	$ -	$ -
32	Ledge Stone Anchor Walls	575	Sft	$ 195.00		0	0	$ -	$ -
33	Bank Stabilization, Stone Toe	75	Ft	$ 245.00		0	0	$ -	$ -

Change Orders:

						0	0	$ -	$ -

Stored Material:

						0	0	$ -	$ -

Form DC-113

CONSTRUCTION ESTIMATE

Const. Est. No. 1		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Contract Item	**Bid Quantity**	**Unit**	**Unit Price**	**Quantity This Payment**	**Total Quantity Previous Estimate**	**Total Quantity To-Date**	**Total Amount To-Date**	**Total Amount This Payment**
	Deductions:								
						0	0	$ -	$ -

Total Amount to Date	$	143,419.00
Total Amount This Estimate	$	143,419.00
Change Orders to Date	$	-
Change Orders This Estimate	$	-
Stored Materials to Date	$	-
Stored Materials This Estimate	$	-
Subtotal to Date	$	143,419.00
Subtotal This Estimate	$	143,419.00
Deductions to Date	$	-
Deductions This Estimate	$	-
Payment This Estimate	$	143,419.00
Less Transfer to Reserve	$	14,341.90
Net Payment	$	129,077.10

Agenda Item No. 7

Trial Balance

Trial Balance

Organization Oakland County
Periods FY2025 : Mar
Ledger Actuals
Accounting Worktag FND82906 Randolph St Drain Ch21
Book Operating
Company Currency USD
Translation Currency USD
Run 03/13/2025 05:06 PM

Consolidation Data

Ledger Account	Beginning Balance	Debit Amount	Credit Amount	Ending Balance
100100:Cash - Operating	(19,148.52)	27.76	2,384.99	(21,505.75)
101500:Undeposited Cash	0.00	0.00	0.00	0.00
104100:Accrued Interest on Investment	0.00	0.00	0.00	0.00
126105:Due from Municipalities-AR Con	285.11	0.00	0.00	285.11
201210:Vouchers Payable AP Cont	(27.76)	27.76	0.00	0.00
207100:Due to Municipalities	(5,905.32)	0.00	0.00	(5,905.32)
211100:Due to Primary Government	(10,450.64)	0.00	0.00	(10,450.64)
228100:Deposits Liability	(111.11)	0.00	0.00	(111.11)
230852:Accounts Payable	0.00	0.00	0.00	0.00
381350:FB Restricted Programs	17,130.65	0.00	0.00	17,130.65
450100:Cash Sweep	0.00	27.76	27.76	0.00
630000:Charges for Services	(850.00)	0.00	0.00	(850.00)
655000:Investment Income	31.89	50.38	0.00	82.27
730000:Contractual Services	(322.24)	0.00	0.00	(322.24)
770000:Internal Support Expenditures	19,367.94	2,279.09	0.00	21,647.03
Total	0.00	2,412.75	2,412.75	0.00

Trial Balance

Organization Oakland County
Periods FY2025 : Mar
Ledger Actuals
Accounting Worktag FND84906 Randolph St Drain Const
Book Operating
Company Currency USD
Translation Currency USD
Run 03/13/2025 05:08 PM

Consolidation Data

Ledger Account	Beginning Balance	Debit Amount	Credit Amount	Ending Balance
100100:Cash - Operating	323,248.12	376.59	3.44	323,621.27
101500:Undeposited Cash	0.00	0.00	0.00	0.00
126105:Due from Municipalities-AR Con	1,376.06	0.00	0.00	1,376.06
132905:Due from Comp-Road AR Ctrl	4,361.53	0.00	0.00	4,361.53
201210:Vouchers Payable AP Cont	0.00	0.00	0.00	0.00
211100:Due to Primary Government	0.00	0.00	0.00	0.00
230852:Accounts Payable	0.00	0.00	0.00	0.00
382100:FB Committed for Capital Proj	154,090.00	0.00	0.00	154,090.00
450100:Cash Sweep	0.00	0.00	0.00	0.00
605000:Special Assessments	(419,862.00)	0.00	0.00	(419,862.00)
655000:Investment Income	571.10	3.44	376.59	197.95
730000:Contractual Services	(63,784.81)	0.00	0.00	(63,784.81)
Total	0.00	380.03	380.03	0.00

Agenda Item No. 8

Other Business

Agenda Item No. 9

Adjourn