



**CITY OF NOVI CITY COUNCIL
MAY 20, 2024**

SUBJECT: Consideration of approval of final payment to Oakland County Water Resource Commissioner for the Novi Trunk Sewer project, in the amount of \$280,000.

SUBMITTING DEPARTMENT: Department of Public Works, Water & Sewer Division

EXPENDITURE REQUIRED	\$ 280,000.00
AMOUNT BUDGETED	\$ 280,000.00
APPROPRIATION REQUIRED	\$ 0
LINE ITEM NUMBER	592-536.00-976.136 Water & Sewer Fund

BACKGROUND INFORMATION:

The replacement and rehabilitation of a failing sanitary sewer in northwest portion of Novi was completed by the Oakland County Water Resources Commissioner (WRC) last year. The purpose of this project was to replace 330 linear feet of sagging sanitary sewer, which caused several sanitary sewer overflows (SSO) into the adjacent wetlands. Additionally, 2,382 linear feet of the concrete sewer main pipe was lined due to the deterioration observed during inspection.

This sanitary sewer, which was installed in 1998, crosses through a large wetland (attached map), which caused the failure. The design and replacement of the sagging/ settled portion included piles, which are driven into the ground to a point where they provide adequate pipe support, along with portions utilizing a steel casing to span areas of poor soils.

This project has been managed by WRC as they operate and maintain this section of the sewer system. Since the line is a Novi-owned asset, the project costs are the responsibility of the City, but there is no agreement required for execution.

The contract for this project was awarded to Pipeline Management in 2022. Due to the challenging conditions, multiple methods of construction were used which resulted in delays and additional project costs. The attached letter from WRC (Nichols, April 16, 2024) explains the unforeseen conditions encountered and the alternative

construction methods utilized. WRC has requested a change order in the amount of \$280,000, which staff believes is warranted for the additional effort and materials. The costs are based on the unit costs provided in Pipeline Management's original bid. In 2022, the City paid WRC the anticipated cost of the project in the amount of \$2,200,000, per the attached cost estimate (approved at the [January 10, 2022 City Council Meeting](#)). Substantial completion for this project was summer 2023.

RECOMMENDED ACTION: Approval of final payment to Oakland County Water Resource Commissioner for the Novi Trunk Sewer project, in the amount of \$280,000.

Novi Trunk Sewer Replacement Location Map

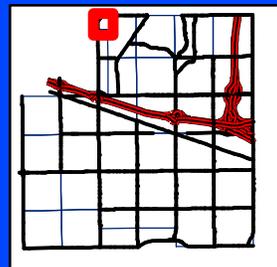


Sanitary sewer segment to be replaced

Map Author: Croy
Date: 12/22/2021
Project: Trunk Sewer Replacement
Version #: v1.0

Legend

 Sanitary Sewer to be Lined



City of Novi

Engineering Division
Department of Public Services
26300 Lee BeGole Drive
Novi, MI 48375
cityofnovi.org



1 inch = 350 feet



MAP INTERPRETATION NOTICE
Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.



April 16, 2024

Mr. Ben Croy, P.E.
City of Novi
26300 Lee BeGole Drive
Novi, MI 48375

Reference: **Novi Trunk Sewer Rehabilitation
Project Budget Amendment**

Dear Mr. Croy:

As you are aware, the Novi Trunk Sewer Rehabilitation project has been completed for some time and final compensation allocations have been agreed to with the contractor. The project consisted of approximately 2,400 feet of cured-in-place sewer lining, rehabilitating 11 manhole structures, and approximately 300 ft of sewer replacement due to a sag in the sewer. This sag was in the middle of the wetland/marsh area which made the project even more of a challenge to construct.

The original scope of construction of the sewer sag replacement was by means of open cut and placing the sewer on helical pier supports. The contractor was hoping to have some cold weather so the ground could freeze and make the excavation manageable. Unfortunately, the weather was not cooperative and other means and methods needed to be explored. Dewatering well points were installed but it did not lower the ground water nor remove the surface water enough in the area.

After discussions between the Engineer, Owner and Contractor regarding the ground water and surface water that was onsite within the wetland and due to the contractor's concerns with the risks using an open cut construction method, the contractor requested to construct the project with the bid items and prices as submitted under Bid Option #1 – Jack & Bore. These additional costs are noted below.

Throughout the project, there were field conditions that occurred that required change orders to be issued. Change order Nos. 1 through 3 pertain to the sewer lining operations and change order Nos 4 and 5 pertain to the sewer replacement operations. The following table provides a breakdown of these costs and associated descriptions.



Item	Amount	Description
Change Order #1	\$ 35,000.00	Pump & haul coordination to assist with CCTV and CIPP operation (1)
Change Order #2	\$ 9,500.00	Cost for cutting hanging gaskets (2)
Change Order #2	\$ 9,250.00	Grouting joint and material (3)
Change Order #2	\$ 23,545.68	Liner size & thickness increase (4)
Change Order #2	\$ 12,350.00	Additional grouting of the end liners (5)
Change Order #3	\$ 7,000.00	Additional vector trucks for pump & haul operations with CIPP operation (6)
Change Order #4	\$ 46,350.00	Helical pier support (7)
Change Order #4	\$ 135,100.00	Price difference from open cut construction to jack & bore construction (8)
Change Order #5	\$ 50,000.00	Additional jack & bore and sanitary sewer construction (9)
Change Order #5	\$ 35,160.00	Contractor downtime cost associated with rain events (10)
Change Order #5	\$ 111,349.24	Cost associated due to change of conditions for unforeseen soil conditions (11)
TOTAL	\$ 474,604.92	

- (1) During the time of design, flow within the force main was to be diverted using valves and plugs on the system to allow the contractor to clean and line the sewer. Upon further investigation after bid, it was discovered that this would not be obtainable due to configurations within the system. Thus, the contractor was unable to use the system to divert the flow. Consequently, pump and haul operations were needed.
- (2) There were several areas within the sewers where hanging gaskets needed to be removed prior to the lining operations.
- (3) During CCTV of the sewer segment, it identified a gushing joint that needed to be grouted prior to the lining operations.
- (4) The increase in liner size and thickness size was due to the severe hydrogen sulfide deterioration of the pipe.
- (5) Due to the irregular shape of the pipes observed during CCTV, additional measures were necessary to seal out potential leaks.
- (6) See No.1 above.
- (7) Recommendation from geotechnical consultants to install helical piers at points along each section of pipe as needed to provide additional casing support.
- (8) Unit price difference between open cut operations and jack & bore operations.
- (9) Reconciling contract quantity of jack & bore and sewer construction length.
- (10) Contractor downtime due to rain events that prevented dewatering operations from discharging into the sanitary sewer, thus limiting construction operations from occurring.
- (11) Additional costs associated with extra mats and trench boxes to install the sewer were necessary via open cut operations.

The original project cost submitted to your office was \$2,102,000 prior to switching means and methods of construction operations. This included contractor pricing for open cut operations, consulting engineers for design and construction administration, geotechnical engineers, easements, and Water Resources Commissioner services. A breakdown is provided showing the overall project cost associated with the changes and modifications that took place during this project. Also attached is a spreadsheet that compares the two different bid options as well as the actual final quantities for the project.

Item	Amount
Original Contract Amount	\$ 1,554,605.00
Change Order Total	\$ 474,604.92
Engineering Consultants / Geotechnical Services	\$ 169,550.00
Easements	\$ 27,178.00
Water Resources Commissioner Services	<u>\$ 254,062.08</u>
TOTAL	\$ 2,480,000.00
City of Novi contribution to date	\$ 2,200,000.00
<i>Additional Amount Requested</i>	\$ 280,000.00

Based on the above-referenced information, we are requesting an additional \$280,000 from the City of Novi for these services. Once the money has been collected, our office will proceed with the final payment to the contractor and closure of the project.

We appreciate the time and cooperation that you and your staff have provided throughout this project. If you have any questions or require additional information, please feel free to contact me at (248) 841-3006.

Sincerely,



George P. Nichols, P.E.
Assistant Chief Engineer

cc: Joel Brown, P.E., WRC
Brian Coburn, P.E., WRC

Oakland County Water Resources Commissioner
 Novi Trunk Sewer Rehabilitation
 Pipeline Management Co., Inc. Revised Construction Method

ITEM	ITEM DESCRIPTION	UNIT	QTY	Unit Price	Contract Amount
Awarded Contract: Open Cut Excavation on Helical Piles					
1	Bonds, Insurance and Initial Setup Expense (5% Max)	LS	1	\$70,000.00	\$70,000.00
2	Preconstruction Audio-Video Documentation	LS	1	\$5,000.00	\$5,000.00
3	Traffic Maintenance and Control	LS	1	\$5,000.00	\$5,000.00
4	Soil Erosion and Sedimentation Control	LS	1	\$10,000.00	\$10,000.00
5	Site Preparation	LS	1	\$75,000.00	\$75,000.00
6	Dewatering	LS	1	\$30,000.00	\$30,000.00
7	Bypass Pumping	LS	1	\$110,000.00	\$110,000.00
8	Abandon Existing 18-inch Sanitary Sewer	LF	295	\$60.00	\$17,700.00
9	Abandon Existing Sanitary Manhole	EA	2	\$4,000.00	\$8,000.00
10	Sanitary Manhole, 48-inch Dia.	EA	3	\$12,500.00	\$37,500.00
11	Helical Pier Manhole Support	EA	3	\$50,000.00	\$150,000.00
12	Sanitary Sewer, 18-inch PVC, SDR 26, Tr. Det. B Special	LF	330	\$1,000.00	\$330,000.00
13	Helical Pier Pipe Support	EA	66	\$5,150.00	\$339,900.00
14	Sewer cleaning of 18-inch Sewer	LF	2,623	\$8.00	\$20,984.00
15	Manhole Rehabilitation	EA	11	\$4,500.00	\$49,500.00
16	Thermal Cured-in-Place Lining of 18-inch Sewer	LF	2,388	\$105.00	\$250,740.00
17	CCTV Sewer Video Recording	LF	5,281	\$1.00	\$5,281.00
18	Site Restoration	LS	1	\$40,000.00	\$40,000.00
ORIGINAL CONTRACT AMOUNT					\$1,554,605.00
ORIGINAL CONTRACT AMOUNT					\$1,554,605.00

ITEM	ITEM DESCRIPTION	UNIT	QTY	Unit Price	Contract Amount
Pipeline Bid for Jack and Bore Option					
1	Bonds, Insurance and Initial Setup Expense (5% Max)	LS	1	\$70,000.00	\$70,000.00
2	Preconstruction Audio-Video Documentation	LS	1	\$5,000.00	\$5,000.00
3	Traffic Maintenance and Control	LS	1	\$5,000.00	\$5,000.00
4	Soil Erosion and Sedimentation Control	LS	1	\$10,000.00	\$10,000.00
5	Site Preparation	LS	1	\$75,000.00	\$75,000.00
6	Dewatering	LS	1	\$30,000.00	\$30,000.00
7	Bypass Pumping	LS	1	\$110,000.00	\$110,000.00
8	Abandon Existing 18-inch Sanitary Sewer	LF	295	\$60.00	\$17,700.00
9	Abandon Existing Sanitary Manhole	EA	2	\$4,000.00	\$8,000.00
10	Sanitary Manhole, 48-inch Dia.	EA	3	\$12,500.00	\$37,500.00
11	Helical Pier Manhole Support	EA	3	\$50,000.00	\$150,000.00
12	Jack and Bore 42-inch, Including 18-inch Sanitary Sewer	LF	310	\$2,500.00	\$775,000.00
13	Sanitary Sewer, 18-inch PVC, SDR 26, Tr. Det. B Special	LF	20	\$1,500.00	\$30,000.00
14	Sewer Cleaning of 18-inch Sewer	LF	2,623	\$8.00	\$20,984.00
15	Manhole Rehabilitation	EA	11	\$4,500.00	\$49,500.00
16	Thermal Cured-in-Place Lining of 18-inch Sewer	LF	2,388	\$105.00	\$250,740.00
17	CCTV Sewer Video Recording	LF	5,281	\$1.00	\$5,281.00
18	Site Restoration	LS	1	\$40,000.00	\$40,000.00
ORIGINAL BID AMOUNT					\$1,689,705.00
ORIGINAL BID AMOUNT					\$1,689,705.00

ITEM	ITEM DESCRIPTION	UNIT	QTY	Unit Price	Contract Amount
ACTUAL					
1	Bonds, Insurance and Initial Setup Expense (5% Max)	LS	1	\$70,000.00	\$70,000.00
2	Preconstruction Audio-Video Documentation	LS	1	\$5,000.00	\$5,000.00
3	Traffic Maintenance and Control	LS	1	\$5,000.00	\$5,000.00
4	Soil Erosion and Sedimentation Control	LS	1	\$10,000.00	\$10,000.00
5	Site Preparation	LS	1	\$75,000.00	\$75,000.00
6	Dewatering	LS	1	\$30,000.00	\$30,000.00
7	Bypass Pumping	LS	1	\$110,000.00	\$110,000.00
8	Abandon Existing 18-inch Sanitary Sewer	LF	295	\$60.00	\$17,700.00
9	Abandon Existing Sanitary Manhole	EA	2	\$4,000.00	\$8,000.00
10	Sanitary Manhole, 48-inch Dia.	EA	3	\$12,500.00	\$37,500.00
11	Helical Pier Manhole Support	EA	3	\$50,000.00	\$150,000.00
12	Jack and Bore 42-inch, Including 18-inch Sanitary Sewer	LF	324	\$2,500.00	\$810,000.00
13.a	Sanitary Sewer, 18-inch PVC, SDR 26, Tr. Det. B Special	LF	30	\$1,500.00	\$45,000.00
13.b	Helical Pier Pipe Support (pre-purchased and paid for)	EA	9	\$5,150.00	\$46,350.00
14	Sewer cleaning of 18-inch Sewer	LF	2,623	\$8.00	\$20,984.00
15	Manhole Rehabilitation	EA	11	\$4,500.00	\$49,500.00
16	Thermal Cured-in-Place Lining of 18-inch Sewer	LF	2,388	\$105.00	\$250,740.00
17	CCTV Sewer Video Recording	LF	5,281	\$1.00	\$5,281.00
18	Site Restoration	LS	1	\$40,000.00	\$40,000.00
REVISED TOTAL					\$1,786,055.00
CO1	Change Order #1				\$35,000.00
CO2	Change Order #2				\$54,645.68
CO3	Change Order #3				\$7,000.00
CO4	Change Order #4 (*)				Already accounted in items 12, 13a & 13b
CO5	Change Order #5 (**)				\$146,509.24
REVISED TOTAL WITH CHANGE ORDERS					\$2,029,209.92

* additional helical pier support and price difference from open cut construction to jack & bore construction is already included in Items 12, 13a and 13b
 ** additional jack & bore and sanitary sewer construction is already included in Items 12 and 13a

**Novi Trunk Sewer Rehabilitation
City of Novi
Estimate of Probable Project Cost
December 21, 2021**

1) CONTRACTED SERVICES - CONSTRUCTION	
Pipeline Management (bid price - open cut method)	\$ 1,554,605
Subtotal - Contracted Services - Construction	\$ 1,554,605
2) CONTRACTED SERVICES - PROJECT DEVELOPMENT	
Fishbeck servies	
Design Phase	\$ 99,800
Design Support	\$ 19,950
Construction Administration Services	\$ 20,000
FK Engineering servies	
Geotechnical Investigation	\$ 11,500
Design Support	\$ 3,000
Additional Design Services	\$ 3,500
Construction Observation/Administration	\$ 26,000
Owen Tree Service	<u>\$ 3,750</u>
Subtotal - Contracted Services - Project Development	\$ 187,500
3) EASEMENTS	
Booth Property	\$ 1,500.00
Occidental Development	\$ 3,158.41
Occidental Development	\$ 2,595.20
Occidental Development	\$ 6,734.22
Pointe Park Condo	<u>\$ 2,452.00</u>
Subtotal - Easements	\$ 16,440
4) COUNTY SERVICES	
Engineering (ENG)	\$ 94,000
Right-of-Way (ROW)	\$ 75,000
Inspection (INS)	\$ 43,000
Survey (SUR)	<u>\$ 1,000</u>
Subtotal - County Services	\$ 213,000
5) SUBTOTAL	\$ 1,971,545
6) CONTINGENCIES	\$ 155,461
7) TOTAL	\$ 2,127,005

ESTIMATE OF PROJECT COST	\$ 2,200,000
---------------------------------	---------------------

Prepared by: George P. Nichols
George P. Nichols, P.E. - Civil Engineer III

Date: 12/22/21

Approved by: Brian Coburn
Brian Coburn, P.E. - Chief Engineer

Date: 12/22/2021