CNA
CONSULTING ENGINEERS

3433 Broadway St NE, Suite 130
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(612) 379-8805

October 19, 2023

Matt Dalrymple
Civil Engineer II
St. Paul Regional Water Services
1900 Rice Street
St. Paul, MN 55113

Subject: Proposal for Design of Tunnel/Shaft Repairs - Revised

Dear Mr. Dalrymple:

Per your request, we are submitting a revised proposal for designing the repairs to 5 tunnel segments and 2 shafts, labeled as 'Priority 1" in Table 9.1 and 9.2 from our August 2023 report, attached. We will also design closures for 4 tunnel access locations, 2 on St. Peter St. and 2 on Wabasha St., noted in our report.

To complete the repair work we recommend tunnel evaluation, repair design, and preparation of construction documents and construction observation be completed as described below.

SCOPE OF WORK

1. Evaluation of Tunnel/Shaft
   - Inspect/Evaluate tunnel and shaft conditions at 11 locations.
   - Evaluate design repair methods.
2. Recommend Repair Methods
   - Select a cost effective, feasible design for the tunnels and shafts with budgetary costs.
3. Discussion with Owner
   - Discuss design with Owner, 2 meetings.
4. Final Design
   - Prepare final design for the tunnels and shafts.
5. Contract Documents
   - Prepare plans and specifications for the Water department to obtain bids.
6. Construction Phase Services
   - Conduct bid evaluation for contractor selection.
   - Perform submittal review.
   - Review pay requests, revisions and submittal review during construction.
   - Provide project closeout and as-built drawings.
   - Part-time construction observation.

OWNER PROVIDED ITEMS

Access to tunnel, provide 1 person during investigation, provide front-end documents, existing plans, issue contract documents for bidding, accept bids, select contractor and pay contractor.

The cost for this work is shown on the attached sheet. The cost will be charged hourly, not-to-exceed $ 76,686 unless approved by you.

I look forward to working with you on this project. If this is acceptable, please issue us a contract.

Sincerely,

Brent K Nelson

Brent K. Nelson, P.E.

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Project Name **St Paul Water - tunnel/shaft repair**
REV
Date of Estimate **10/19/2023**

Project Scope **St Paul Water Tunnel Design**

Work Task	Project Manager	Project Engineer	EIT	Tech	Total
Project Administration	8				8
Inspection of 11 locations	12		12		24
Evaluate 11 locations	12		24		36
Meetings = 2	4		4		8
Final Design - 11 locations	12	56	88		156
Plans - 11 location details	12		88	120	220
Specifications	8		34		42
Construction Observations - 6 weeks - 1/3 time	18		90		108
Submittal review/RFI/Forms/As-builts	8		20	8	36
Total hours	94	56	360	128	638
Hourly rate	$229.00	$130.00	$110.00	$60.00	
Labor Cost	$21,526.00	$7,280.00	$39,600.00	$7,680.00	$76,086.00
Mileage/Parking					$600.00
Total engineering cost					**$76,686.00**

9. Budgetary Maintenance and Construction Costs

9.1 General

The tunnel and shaft tables list budgetary costs for repairing the urgent and poor rated areas first, then the fair shafts and 10,025 ft of fair tunnel segments. Tunnels and shafts not repaired should be monitored by a qualified person every 2 years to verify the conditions of the tunnels and shafts.

Budgetary cost estimates are for budgeting and planning purposes only. They are based only on concepts without any design and also use current construction costs. Budgetary costs are based on doing multiple repairs, not a single item and will vary depending on time of year repaired and construction forces available. Original construction plans are not available for most tunnels. Detailed measurements will be needed, and investigation during design may also alter final repair design and construction costs.

Table 9.1: Tunnel Segment Budgetary Construction Cost Summary

Scope

Priority	Tunnel	Length	Structural Condition	Action Level	Construction Cost *	Contingency 25%	Admin, Design, Observ 17%	Total*
1	Kellogg	11	Urgent	3	$ 30,000	$ 7,500	$ 5,100	$ 43,000
1	Wabasha	2	Urgent	3	$ 10,000	$ 2,500	$ 1,700	$ 14,000
1	Cedar	13	Urgent	3	$ 30,000	$ 7,500	$ 5,100	$ 43,000
1	6th (2)	3	Urgent	3	$ 20,000	$ 5,000	$ 3,400	$ 28,000
2	Kellogg	245	Poor	1&2	$ 98,000	$ 24,500	$ 16,660	$ 139,000
3	Wabasha	242	Poor	1&2	$ 96,800	$ 24,200	$ 16,456	$ 137,000
4	Washington	249	Poor	1&2	$ 99,600	$ 24,900	$ 16,932	$ 141,000
5	5th	223	Poor	1&2	$ 89,200	$ 22,300	$ 15,164	$ 127,000
6	6th	180	Poor	1&2	$ 72,000	$ 18,000	$ 12,240	$ 102,000
7	4th	81	Poor	1&2	$ 32,400	$ 8,100	$ 5,508	$ 46,000
8	St Peter	52	Poor	1&2	$ 20,800	$ 5,200	$ 3,536	$ 30,000
9	Cedar	4	Poor	1&2	$ 1,600	$ 400	$ 272	$ 2,000
10	Open Access	9 (EA)	Poor	1&2	$ 90,000	$ 22,500	$ 15,300	$ 128,000
12	Tunnel System	9,999 ft	Fair	1&2	$ 1,800,000	$ 450,000	$ 306,000	$ 2,556,000
								$ 3,536,000

Table 9.2: Shaft Budgetary Construction Cost Summary

Scope

Priority	Tunnel	No. Shafts	Structural Condition	Action Level	Construction Cost *	Contingency 25%	Admin, Design, Observ 17%	Total*
1	Kellogg	1	Poor	3	$ 90,000	$ 22,500	$ 15,300	$ 128,000
1	Wabasha	1	Poor	3	$ 90,000	$ 22,500	$ 15,300	$ 128,000
11	Kellogg	5	Fair	1&2	$ 150,000	$ 37,500	$ 25,500	$ 213,000
11	4th	6	Fair	1&2	$ 180,000	$ 45,000	$ 30,600	$ 256,000
11	5th	5	Fair	1&2	$ 150,000	$ 37,500	$ 25,500	$ 213,000
11	6th	2	Fair	1&2	$ 60,000	$ 15,000	$ 10,200	$ 85,000
11	8th	2	Fair	1&2	$ 60,000	$ 15,000	$ 10,200	$ 85,000
11	Washington	7	Fair	1&2	$ 210,000	$ 52,500	$ 35,700	$ 298,000
11	St Peter	6	Fair	1&2	$ 180,000	$ 45,000	$ 30,600	$ 256,000
11	Wabasha	5	Fair	1&2	$ 150,000	$ 37,500	$ 25,500	$ 213,000
11	Cedar	2	Fair	1&2	$ 60,000	$ 15,000	$ 10,200	$ 85,000
								$ 1,960,000

* Costs are for budgetary purposes only.

Tunnel segment plus shaft budgetary construction repair costs total $ 5.5M.