TRANSMITTAL



6901 East Fish Lake Road Suite 140 Maple Grove MN 55369

Ph 763.493.4522 Fax 763.493.5572

To: Anoka County Pul	blic Services	Date:	8-Jun-12
2100 3rd Ave, Suit	e 700	Project:	Proposal for the Outlet
Anoka MN 55303	5	v	Diversion of Anoka County Ditch 56
		Location:	East Bethel MN
Attn: Jon Olson, PE, Div	vision Manager	Project No.:	P12-6112-006
We are sending to you:	x Attached	Separately	By Messenger
Shop Drawings	Specifications		Contracts Report
Prints	Correspondence	•	
Number	Document		
Copies	Number Date		Description
1		Proposal for E	Engineering Services
		Outlet Relocat	tion - Anoka County Ditch 56
		Located in Eas	st Bethel MN
The above are:			
Shop drawings as	checked		
No exceptions tak	ten For your u	ise	For your information
Rejected	For your a	pproval	For your review
Revise and resubi	mit For your d	listribution	As you requested
Note markings	For your p	rocessing	X Proposal Requested
Damaylas			
Remarks: Please feeel free to call C	Chris Otterness for any questions	s at 763-493-4522. Thank	you.
cc: HEI File		By: Jeanmaire Mo	y, Administrative Assistant
		Tel: 763-493-4522	

PREPARED FOR:

Anoka County In conjunction with The Coon Lake Improvement Association



Proposal for Engineering Services Outlet Relocation - Anoka County Ditch 56 Located in East Bethel Minnesota

Coon Lake Improvement Association



SUBMITTED BY:

Houston Engineering, Inc. 6901 East Fish Lake Road, Suite 140 Maple Grove MN 55369

June 8, 2012

6901 East Fish Lake Road Suite 140 Maple Grove MN 55369



June 8, 2012

Jon Olson, P.E. Division Manager Anoka County Public Services 2100 3rd Avenue, Suite 700 Anoka, MN 55303-5024

Re: Proposal for the Outlet Diversion of Anoka County Ditch 56

Dear Mr. Olson:

Because work on public drainage systems is governed specifically by State statute (MS 103E), initiating a project to repair, realign, or impound these systems requires detailed and thorough Engineering Report that complies with the appropriate statutes. Missing a step in this process could result in exposure to legal challenges that may possibly scuttle your project. To minimize your risk, you need an engineering firm that not only has the technical savvy to demonstrate the benefits of project, but also has a wealth of experience in modifying and repairing public drainage systems under 103E, a firm like Houston Engineering.

Our clients across the State of Minnesota have long benefitted from our extensive experience in the repair of public drainage systems. Recent experience has included repair reports for the Rice Creek Watershed District on several Anoka County Ditches, and feasibility study for the South Washington Watershed District to restore flow to a stagnant backwater channel of the Mississippi River. This project experience, explained in further detail later in this proposal, enables us to anticipate project challenges before they occur, and reduces your risk throughout the life of your project.

As requested, we respectfully submit the following proposal for the Outlet Diversion of Anoka County Ditch 56. Please feel free to call me with any questions regarding this proposal at 763-493-4522 or e-mail at cotterness@houstoneng.com.

Sincerely,

HOUSTON ENGINEERING, INC.

Chris Otterness, P.E. Project Manager

Cc: HEI File

Mark R. Deutschman, P.E., PhD Vice President

Fargo P 701.237.5065 F 701.237.2101 Minot P 701.852.7931 F 701.858.5655

Bismarck P 701.323.0200 F 701.323.0300 Thief River Falls P 218.681.2951 F 218.681.2987



PROJECT APPROACH AND SCOPE OF SERVICES

The Scope of Services under this Agreement includes the proposed tasks specified in the *RFP for Outlet Diversion Anoka County Ditch 56* dated May 18, 2012 and detailed project approach as follows.

Phase 1: Engineering Report

The purpose of this phase is to prepare and present an Engineer's Report, meeting the requirements of MS 103E that will determine the benefits, costs, and impacts of diverting the primary flow of CD 56 into channel east of Thielen Boulevard on Coon Lake.

To determine the benefits and impacts of the proposed project, we will first create a SWMM hydrology/hydraulics model of the existing CD 56 drainage system, then modify this model to simulate the outlet diversion. These models can be then simulated for a single rainfall event to compare existing vs. proposed 100-year, 24-hour flood elevations and to size the outlet structure. Impacts to the public drainage system and adjacent properties will be determined through this analysis.

Next, we can use the SWMM models to simulate the rainfall over a "typical" summer to determine the change in flows to the channel east of Thielen Boulevard. From these calculated inflows, residence times for the existing and proposed conditions will be determined to demonstrate the effectiveness of the outlet diversion, which can be constituted as a local benefit. The result from the SWMM model can also be used to calculate changes in sediment loading from CD 56 into Coon Lake, which can be constituted as a public benefit.

This analysis will form the basis of our Engineer's Report, which will not only discuss the costs, benefits, and impacts of the project as required under MS 103E.227, but also provide a preliminary design. The report will then be presented at a public hearing, and then followed with a memorandum detailing the responses from the hearing and providing a recommendation for implementation.

Deliverables:

- ✓ Engineer's Report, including preliminary cost estimate and concept designs;
- ✓ Notice of Public Hearing;
- ✓ Presentation of the report at a public hearing; and
- ✓ A memorandum summarizing the proceedings and recommending an implementation strategy
- Meetings with the Public Works Committee and the County Board





Phase 2: Final Design Services

This phase will consist of preparation of 75% complete and 95% complete plan sets and specifications for the outlet diversion. We will also subcontract a geotechnical firm to complete an investigation of soils at the proposed diversion. This phase will conclude with preparation of permit applications on behalf of the County. We are assuming that permit applications will consist of a Work in Waters/Wetlands Joint Notification permit and an MPCA Construction Stormwater permit.

Deliverables:

- ✓ Geotechnical report;
- √ 75% complete plans;
- √ 95% complete plans including a traffic control plan;
- ✓ Preliminary and final cost estimate;
- √ Project specifications;
- ✓ Design Meetings (3); and
- ✓ Permit applications

Phase 3: Construction Services

We will assist you with letting, managing, observing, and documenting the project. Construction observation will be provided during all critical phases of construction. We will employ the services of a material testing laboratory to verify the compaction densities in the roadway to be patched and to test the concrete for the curbing.

Deliverables:

- ✓ Bid addenda;
- ✓ Bid tabulation;
- ✓ Recommendation for award;
- ✓ One-time construction staking;
- ✓ Preconstruction meeting;
- ✓ Construction observation (assumes 32 hours of observation);
- ✓ Compaction testing on roadway patch;
- ✓ Concrete testing on curb replacement;
- ✓ Pay and work certifications; and
- ✓ Record drawings.





ADDITIONAL SERVICES

The approach described within the Scope of Services section provides the necessary component for the feasibility analysis and construction of the Outlet Diversion of Anoka County Ditch 56. However, services that are excluded from the attached budget may be provided to Anoka County at an additional cost. These services include:

- Additional meetings (the scope currently includes 7 meetings);
- · Analysis of additional project locations; and
- Wetland mitigation plan

We do not anticipate these services are needed at the present time. At the County's request, Houston Engineering will provide an Additional Services Request and Contract detailing revisions to the project scope and budget.

ASSUMPTIONS

The costs estimated below are based on the following assumptions:

- Anoka County will provide survey data of the site;
- Geotechnical examination will consist of two soil borings at the proposed storm sewer site;
- An Engineer's Report will be prepared with one project location, and will include one revision to the report;
- Project construction will consist of a storm sewer under Thielen Boulevard and an channel diversion structure in the existing CD 56 open channel;
- Permitting activities will consist solely of application preparation;
- Construction stakes will be only set once (all other staking to be provided by the Contractor;
 and
- 32 hours of construction observation will be required





SUMMARY OF COSTS AND SCHEDULE

The costs and estimated schedule for this project have been summarized for these tasks as listed below. A full breakdown of estimated costs can be viewed in the attached budget spreadsheet.

<u>Phase</u>		Cost	Est. Completion Date
Phase 1	Engineering Report	\$26,200	September 30, 2012
Phase 2	Final Design	\$28,200	January 31, 2013
Phase 3	Construction Services	\$11,800	July 1, 2013
	Expenses TOTAL	\$ 800 \$67,000	

<u>Note:</u> Estimated completion dates noted above are variable and depend on several factors, including the project start date (schedule above assumes a July 1 start), review turnaround times, timing and availability of stakeholders to meeting, and permitting response times.

SIGNATURES:

Authorization to proceed with this <u>Outlet Diversion of Anoka County Ditch 56</u> shall be effective upon the signatures of authorized representatives of Anoka County and Houston Engineering, Inc.

SCOPE OF SERVICES CONCURRENCE

Anoka County	Houston Engineering, Inc.
Ву:	By: Mark R. Delistina
Name:	Name: Mark R. Deutschman, Ph.D.
Title:	Title: Vice President
Date:	Date: <u>June 8, 2012</u>





PROJECT TEAM



Chris Otterness, PE Role: Project Manager

Chris Otterness works as a Project Manager for variety of water resources and construction projects, particularly with public drainage systems managed by counties and watershed districts. His effectiveness as a project manager is derived from his ability to communicate effectively with a wide-ranging spectrum of individuals and organizations, including County Boards, contractors, other engineers, and most importantly the general public. Chris recently designed a realignment of the Anoka/Washington Judicial Ditch 4 public drainage system for the combined purposes of drainage, wetland enhancement, and water quality improvements. Chris has a wide variety of experience leading construction projects, including public drainage system repairs, landfill expansions, housing developments, urban street construction, culvert replacements and Best Management Practice installations.



Mark Deutschman, PhD, PE Role: Principal-In-Charge

Mark Deutschman is a Vice President with more than 25 years of experience in public drainage system repair, water quality, watershed management, and surface water quality modeling. Mark has a unique ability to lead large, diverse stakeholder groups to resolve complex drainage, water resource, and water quality related problems. As a civil engineer Mark has been responsible for managing and implementing a range of projects including the planning, designing and construction of flood damage reduction projects, drainage system improvement projects, stormwater system assessments and master plans.



Mike Lawrence, PE Role: Realignment Effectiveness

Mike Lawrence is a licensed civil engineer specializing in water resources engineering. Mike has experience in all phases of a water resource project, including feasibility analysis, grant acquisition, plan preparation, bid letting, contract management, and construction observation. Mike's role in this project will be to analyzed and quantify the effectiveness of routing additional drainage area into the stagnant channel area. He recently performed a similar study for the South Washington Watershed District on the Grey Cloud Slough, a backwater of the Mississippi River. Mike's analysis conclusively determined that reconnecting the upstream end of the slough to the river will decrease the residence time enough to substantially reduce the growth of algal blooms in the slough.



Nancy Stowe, PE Role: Hydrologic Modeling

Nancy Stowe has extensive experience in providing water resources engineering services, including the completion of hydrologic, hydraulic, and water quality studies to find solutions to the vast array of water resource issues encountered in today's landscape. Nancy's primary value to this project is her experience in modeling open channel County Ditch systems for both hydrology and water quality. Most recently, Nancy developed a SWMM hydrology/hydraulics model of the Anoka County Ditch 10-22-32 public drainage system in Lino Lakes and a P8 water quality model of the Anoka/Washington Judicial Ditch 3 system in Hugo and Centerville.



REPRESENTATIVE PROJECTS

RICE CREEK WATERSHED DISTRICT ACD-15 / JD-4 REPAIR REPORT AND CONSTRUCTION DOCUMENTS

Client: Rice Creek Watershed District (RCWD)

Contact: Mr. Phil Belfiori, Administrator (763-398-3070)

Services rendered: Drainage System Repair, Funding by Water Management District, Wetlands Analysis, Stakeholder Involvement



JD 4 within the Houle WMA

The RCWD manages many public drainage systems serving agricultural lands, including Anoka County Ditch 15 (ACD 15) and Anoka-Washington Judicial Ditch 4 (JD 4). The RCWD retained Houston Engineering, Inc. (HEI) to prepare this Repair Report, meeting the requirements of MS 103E, evaluating conceptual repair alternatives addressing the District's goals for the system, including agricultural drainage capacity, water quality and quantity, ecological preservation, and cost. Six alternatives were hydrologically modeled for current and future land uses, and then evaluated through a cost/benefit analysis. HEI recommended a multi-faceted solution to the Board of Managers, comprised of ditch repair, open channel realignment to avoid high value/sensitive wetland, wetland restoration, and regular ditch maintenance. HEI subsequently assisted the District in permitting, developed a funding mechanism for the project, and created construction plans and specifications.

Client Benefits:

- The repair report is sensitive to a wide variety of needs, including agricultural, ecological, and financial interests.
- Board of Managers was able to compare, contrast, and ultimately select a preferred alternative to repair their public drainage system, which serves as a decision-making tool for them to use for future ditch repair proceedings.
- The presentation at the public hearing utilized layperson's terminology and phrasing to convey the concepts of the repair to a diverse audience with a wide range of interests and knowledge of the subject matter.

GREY CLOUD SLOUGH MEANDER RESTORATION

Client: South Washington Watershed District (SWWD)
Contact: Mr. Matt Moore, Administrator (651-714-3729)
Services rendered: Water Quality Project Feasibility Study

Grey Cloud Slough is a meander, or "side channel", of the Mississippi River. The inlet to the meander is located near Mississippi River Mile 827.6. The meander became hydrologically altered compared to the historical condition following the construction of Grey Cloud Island Drive, which resulted in reduced flow through the meander. Culverts replaced the original bridge, and during an emergency road raise in 1965 flow through the meander was completely stopped. This resulted in the stagnation of water and a decline in water quality as evidenced by an increase in the number and severity of algal blooms, the degradation of fish habitat, the reduction of diversity in the fish community, and an increase in the number of invasive species. The restoration of the Grey Cloud Slough was identified as a priority



Grey Cloud Slough

project by the South Washington Watershed District in addition to several state and federal agencies. South Washington Watershed District retained Houston Engineering (HEI) to prepare a feasibility study to restore flow in to the Slough. Several alternatives were analyzed for a variety of design criteria including fish passage, geomorphic stability, water quality, and recreational navigability. A HEC-RAS model for the Mississippi River and the Grey Cloud Slough was created and used for the analyses. The feasibility study was then used as a tool to by stakeholders to select the preferred alternative and decide upon allocations for funding construction

Client Benefits:

- A detailed report and cost estimates for various alternatives aided the decision making process between stakeholders.
- A thorough analysis of alternatives for numerous criteria will help the project move forward through various agencies.

REPRESENTATIVE PROJECTS

ANOKA COUNTY DITCH 31 AND 46 REPAIR REPORTS

Client: Rice Creek Watershed District (RCWD)

Contact: Mr. Phil Belfiori, Administrator (763-398-3070)

Services rendered: 103E Public Drainage System Repair, Wetland impact Analysis



Anoka County Ditch 31 in Columbus, Minnesota

The RCWD has developed an integrated resource management approach to addressing the need to repair their public drainage systems, while considering the consequences to resources resulting from repair. This approach, known as a Resource Management Plan (RMP), balances competing issues related to providing agricultural drainage, accommodates the need for additional conveyance as land develops, and considers adverse and/or beneficial consequences to natural resources and water quality. RCWD retained Houston Engineering, Inc. (HEI) to prepare repair reports meeting the requirements of MS 103E for two Anoka County Ditch systems as part of the Columbus RMP. Four alternatives were modeled and analyzed for each public drainage system. The Engineer's Recommended Alternatives included realignment of portions of the public drainage system and a legal modification to the outlet of ACD 31 into Howard Lake.

Client Benefits:

- Costs, benefits, and impacts were clearly defined not only to meet the requirements of MS 103E but also to lay a groundwork for future permitting and cost allocation processes.
- The Engineer's Recommended Alternatives utilized a selective approach to repair of the public drainage system to minimize impacts while maximizing the drainage benefit to agricultural lands.
- SWMM modeling of the public drainage systems not only enables a quantification of wetland impacts through season-long simulations but also provides a base model for future water quality modeling.

CHISAGO COUNTY DITCH 9 REPAIR PROJECT

Client: Chisago County

Contact: Mr. Joe Triplett, County Engineer (651-257-1300)

Services rendered: Public Drainage System Repair, Erosion Repair

Chisago County Ditch 9 was established in 1905 and constructed in 1906. Due to major gully erosion and sediment transport, the channel profile is about 20 feet lower than the original ditch in certain locations, and in others, the channel has been filled with sediment to an elevation about 14 feet higher than the original ditch profile. large gully developed where Ditch 9 passes over Chippewa Hill (see photo). Chisago County retained Houston Engineering to investigate County Ditch 9 within Section 11 of Sunrise Township. Houston conducted a field review of the ditch and determined the progression of gully erosion and sediment deposition. Alternatives were evaluated, and the selected alternative involved restoring the channel to the condition to which it was constructed downstream from the gully. This alternative included clearing and excavation, adopting a new grade line for a reach of the ditch, and provisions to install two drop structures to lower the ditch grade from the existing level to the original ditch grade.



Eroding Bank Gully of County Ditch 9

Client Benefits:

Houston Engineering provided alternatives that allowed completing ditch repairs while maintaining the existing gully profile.



ESTIMATED BUDGET ANOKA COUNTY DITCH 56 OUTLET RELOCATION

Houston

\$106

\$150 \$124

Rates ==>

\$100

\$110

\$55

Total Estimated Labor Total Estimated Expenses Total Estimated Budget

Date Prepared: May 15, 2012
Date Revised: June 6, 2012
Checked by: MRD

\$66,200 \$766 \$66,966

							Tot	Total Labor
TASK DESCRIPTION	Senior Project Manager	Project Engineer	Field Crew	Geotechnical Subconsultant	Senior Designer	Admin. Assistant	Hours	Dollars
ANOKA COUNTY DITCH 56 OUTLET RELOCATION		337	12	60	130	8	563	\$66,200
Phase 1 - Engineering Report	лб	172	4	0	28	×	218	\$26,172
Project Kickoff/Obtain County Data		4	4		07	o	1/3	92,310
Field Survey / Site Visit	İ	4	4		2			
Existing Conditions Hydrologic Model		24						
Proposed Conditions Hydrologic Model	4	200			40			
Preliminary Opinion of Probable Construction Cost	-	∞ -			2			
Determination of Public Benefit	2	4						
Preliminary Report		50						
Revisions and Final Report	7	16		0	> ∞	→	3	000
Notice of Public Hearing		4					0	##, OOA
Public Hearing		12						
Summary of proceedings and recommendation	1	0 0						
County Board Meeting		တင						
Phase 2 - Final Design Services	8	127	0	40	66	0	241	\$28,208
75% Plans	0	31	0	40	42	0	113	\$12,464
Existing Conditions/Demolitions		_\ .			4			
Plan and Profile		4			œ			
Sheet Pile structural design and panel layout		4			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
Details		2 -			4 ∞			
Traffic Plan		4			4			
Geotechnical evaluation		2		40				
Preliminary cost estimate		4			2			
uesign Weeting	»	60	0	0	16	0	84	\$10.400
Revisions to plans	4	∞ 8			∞ ;	·		
		Ø						
Project Specifications - Division 1 and 2	4	16						
Final Cost estimate		4						
Final revisions		8			∞			
Permitting	0	36	0	0	8	0	44	\$5,344
WCA Joint Notification Form		32			0			
Phase 3 - Construction Services	2	38	8	20	36	0	104	\$11,820
Bidding	2	18	0	0	0	0	20	\$2,532
Questions from bidders / Addenda	2	10						
Recommendation to Board		4						
Construction Management	0	18	0	0	32	0	50	\$5,752
Preconstruction Meeting		Ø						
Construction Observation		4			32			
Payments and certification	0	S	×	20	4	0	34	\$3.536
Staking		2	4					7
Record Drawings			4		4			
Geotechnical testing				20				





Outlet Relocation Anoka County Ditch 56

The following is a schedule of hourly rates and charges for engineering and surveying services offered by Houston Engineering, Inc.

Senior Project Manager	150.00 per hour	Computer Technician	108.	00 per houi
Project Manager	137.00 per hour	Carian Administration Assista	Land C1	00 mar: 1
Project Engineer	124.00 per hour	Senior Administrative Assist		00 per houi
Professional Engineer	111.00 per hour	Administrative Assistant	55.	00 per houi
Design Engineer	99.00 per hour			
Graduate Engineer	88.00 per hour			
Legislative/Grant Specialist	127.00 per hour			
Expert Witness	165.00 per hour			
		Chargeable Expenses		
Senior Environmental Project Manager	151.00 per hour		1.0	
Senior Environmental Scientist	131.00 per hour	Subsistence	Actual Cost	
Environmental Scientist	113.00 per hour	Travel Vehicles –		
Scientist	98.00 per hour	2-wheel drive	IRS Standard Mile	age Rate
Graduate Scientist	88.00 per hour	4-wheel drive	IRS Standard Mile + \$0.20 per mile	
Senior Designer	110.00 per hour	GPS Equipment	\$25.00 per hour pe	er unit
Designer	93.00 per hour	Robotic Total Station		
	100.00		\$20.00 per hour	
Senior Land Surveyor	122.00 per hour	All Terrain Vehicle	01500	
Land Surveyor	103.00 per hour	Snowmobile / Boat	\$15.00 per hour	
Graduate Land Surveyor	88.00 per hour	Long distance telephone, facsimile, overnight		
Senior Construction Engineer	122.00 per hour	mail and postage	Actual Cost	
Construction Engineer	103.00 per hour	Cost of surveying materials,		
Graduate Construction Engineer	88.00 per hour	printing, special equipments and other materials require		
Senior Technician	88.00 per hour	for the job	Actual Cost	
Technician	80.00 per hour			,
Graduate Technician	69.00 per hour	Sub-Consultants	Actual Cost + 10%	0 .
Technician Intern	61.00 per hour			
Senior GIS Project Manager	130.00 per hour			
GIS Project Manager	115.00 per hour			
GIS Developer	105.00 per hour			
GIS Specialist	88.00 per hour			
GIS Technician/Developer II	77.00 per hour			
GIS Technician I	67.00 per hour			
Surveyors: One-person crew	106.00 per hour			
Two-person crew	132.00 per hour			
Three-person crew	164.00 per hour			
Four-person crew	187.00 per hour			
i.				
CADD Manager	88.00 per hour			
CADD Supervisor	80.00 per hour			
Senior CADD Operator	69.00 per hour			
CADD Operator	61.00 per hour			

