Crystal (Minn.).
City Council Minutes and Agenda Packets.

Copyright Notice:

Version 3
August 20, 2018

PROPOSAL

to provide:

ENGINEERING SERVICES

to:

4141 Douglas Drive North · Crystal, MN. 55422-1696

for:

36TH AVENUE NORTH

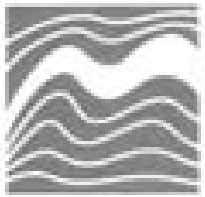
Reconstruction / Improvements

between

WELCOME & LOUISIANA AVENUES

MERILA & ASSOCIATES

ENGINEERING SURVEYING PLANNING

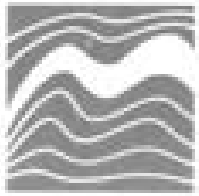


MERILA
& ASSOCIATES

ENGINEERING SURVEYING PLANNING

James R. Merila, P.E. President

8401 73rd Avenue North, Suite 63
Brooklyn Park, Minnesota 55428-1293
Telephone (612) 533-7595
Fax (612) 533-1937



MERILA
& ASSOCIATES

ENGINEERING SURVEYING PLANNING

Steven W. Thatcher, P.E.

Assistant Director
of Marketing

8401 73rd Avenue North, Suite 63
Brooklyn Park, Minnesota 55428-1293
Telephone (612) 533-7595
Fax (612) 533-1937

Merila & Associates is a Twin Cities-based firm specializing in the areas of civil engineering, municipal engineering, land surveying, site planning and site design. Since 1980, the company has provided consulting services to local municipalities, private developers, and professional consultants.

Our reputation for providing superior service is well-founded. At Merila, the majority of our supervisory personnel have over 20 years experience in engineering design, surveying and construction observation in both the public and private sectors. Senior staff members have the added advantage of having served a majority of their early careers in high-level public works positions or as project managers/engineers for well-respected engineering firms.

As a result, our staff is uniquely qualified to deal effectively with governmental representatives, construction teams, and affected residents on a wide variety of construction and land use projects.

Eagan Office Tower, Eagan.

YOU DESERVE QUALITY SERVICE

At Merila, our primary goal is to provide high quality service. We work hard to design and develop innovative solutions for your engineering and land planning challenges. We believe that accuracy, timeliness, foresight in project flow, and budget control provided by Merila ensure the high quality you deserve.

Loehmann's Plaza, Roseville.

For more information regarding the services of Merila & Associates, please call our office.

MERILA & ASSOCIATES

ENGINEERING SURVEYING PLANNING

8401 73rd Avenue North, Suite 63
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Telephone: (612) 533-7595
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Member:
- American Consulting Engineers Council
- Minnesota Land Surveyors Association
- American Water Works Association
- American Society of Civil Engineers
- National Association of Home Builders

MERILA & ASSOCIATES

ENGINEERING SURVEYING PLANNING

QUALITY SERVICE

Merila & Associates provides civil engineering, land surveying and site planning services for municipal, residential, commercial, industrial and recreational projects.

CIVIL AND MUNICIPAL ENGINEERING

Since 1980, Merila & Associates has completed more than $30 million of civil and municipal engineering projects, including:

Drainage/Storm Sewer Systems
- feasibility studies and master plans
- retention/detention pond design
- treatment ponds for phosphorus removal
- facilities design

Sanitary Sewer and Water Systems
- feasibility studies and master plans
- water wells and water storage facilities design
- system rehabilitation
- sewage lift station design
- facilities design

Street Systems
- municipal state aid and local street design
- county state aid highway design

Parks/Open Spaces
- outdoor recreational facilities design
- playgrounds, athletic fields, tennis courts, trails

Additional Services
- environmental assessment worksheets
- environmental impact statements
- grant and loan applications for project funding
- construction management/administration/ observation

Valley Drive, Minnetonka. Storm sewer improvements.

Silverthorn Townhomes, Shoreview.

LAND SURVEYING

Merila & Associates has prepared plats for more than 4,000 single family and multi-family residential units. Additionally, the company has completed more than 60 commercial and industrial developments located throughout Minnesota. Our land surveying services include:

- platting
- boundary surveys
- topographic surveys
- American Land Title Association (ALTA) surveys
- "as-built" surveys
- construction staking

Our Total Electronic Station provides concise survey data for plan development

Our CADD system allows us to provide advanced concept and design solutions.

SITE PLANNING AND DESIGN

Merila & Associates works closely with clients to evaluate development potential and optimize property value by designing creative solutions for land use after determining environmental and physical constraints.

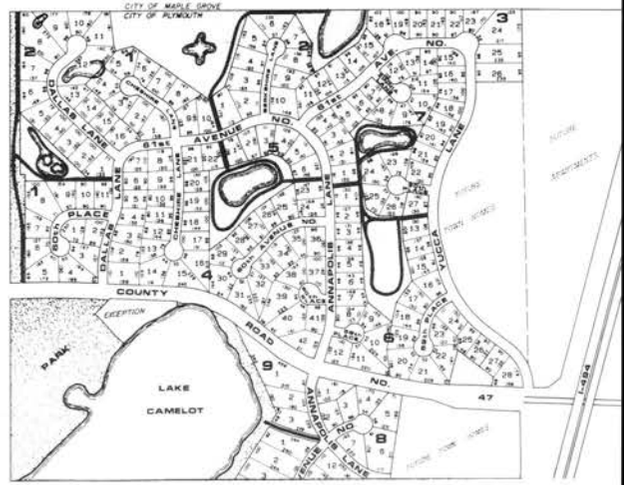
Since 1980, Merila has planned and designed numerous residential, commercial and industrial projects consisting of more than 3,000 acres of development. Planning and design services include:

Subdivision Design
- feasibility analysis
- single and multi-family design
- commercial and industrial design
- zoning analysis
- property development review
- wetland review, analysis, and enhancement

Site Design
- grading and earthwork analysis
- quantity and cost analysis
- building and parking lot layouts

TEAM APPROACH

Our approach is to provide a specific team for each project. An experienced project manager is assigned to enhance client communications, coordinate the team, and provide continuity on your project.



Lake Camelot Estates, Plymouth.

MERILA

Merila & Associates
8401 73rd Avenue North, Suite 63
Brooklyn Park, Minnesota 55428-1508
Telephone (612) 533-7595
Fax (612) 533-1937

May 4, 1990

Mr. William Monk
City Engineer
City of Crystal
4141 Douglas Drive North
Crystal, Minnesota 55422

Re: Proposal for Engineering Services

Dear Mr. Monk:

We appreciate the opportunity to submit this proposal to the City of Crystal for providing engineering services for the reconstruction/improvements of 36th Avenue North from Welcome Avenue to Louisiana Avenue.

Founded in 1980, our 31 person firm has the experience and capabilities to provide quality services to the City of Crystal at a reasonable cost. We work hard to design and develop innovative solutions for your engineering, surveying and land planning challenges. We believe that accuracy, timeliness, foresight in project flow and budget control provided by us ensure the quality you deserve.

We feel uniquely qualified for the following reasons:

1. Our professional staff has designed and managed 38 Municipal State Aid street reconstruction projects with a length of over 16 miles and a construction cost of over $6.1 million. The construction cost of each project ranged from $100,000 to $900,000. In addition, Merila has designed and supervised construction of over 60 miles of new streets since 1980.

2. James R. Merila, P.E., president of Merila & Associates and project manager for the City of Crystal, has 26 year's experience in municipal engineering. This experience includes nine successful years as city engineer/director of public works for the City of Brooklyn Center where he demonstrated leadership and technical ability in designing and managing projects that are cost effective, environmentally sound, and sensitive to community needs.

3. Merila has designed over $27 million worth of public improvement projects consisting of sanitary sewer, watermain, storm sewer and street construction projects during the past 10 years.

4. Merila has competent support personnel to provide timely completion of your project.

5. Our office is located in the City of Brooklyn Park near the intersection of I-694 and Boone Avenue, approximately 10 minutes from the City of Crystal, and our personnel has worked in the northwest suburban area for over 20 years.

For your use, we have enclosed a set of 3 inch by 5 inch photographs of 36th Avenue North taken on April 18, 1990. We find that the photographs are helpful at neighborhood meetings, public hearings and MSA variance committee meetings.

Merila is an equal opportunity employer and we have an Affirmative Action Plan approved by the Minnesota Department of Human Rights.

We would appreciate the opportunity to work with you and your staff. We can provide a high level of service and strong project management at a reasonable cost.

Thank you for the opportunity to submit this proposal. We can be available for an interview at your convenience with a relatively short notice. If you have any questions, please call us at 533-7595.

Sincerely,

MERILA & ASSOCIATES, INC.

James R. Merila, P.E.
President

and Steven W. Thatcher, P.E.
Marketing Director

JRM:SWT:cab
Enclosures

PROPOSAL

TO

PROVIDE

ENGINEERING SERVICES

TO THE

CITY OF CRYSTAL

FOR

36TH AVENUE NORTH RECONSTRUCTION/IMPROVEMENTS

MAY 1990

BY: Merila & Associates, Inc.
8401 73rd Avenue North, #63
Brooklyn Park, Minnesota 55428
Telephone: (612) 533-7595
Fax: (612) 533-1937

CONTACT PERSON: James R. Merila, P.E.

TABLE OF CONTENTS

PROPOSAL

I. PROPOSAL

We are pleased to submit a proposal for performing engineering services for the reconstruction of 36th Avenue North from Welcome Avenue to Douglas Drive and the improvement of 36th Avenue North from Douglas Drive to Louisiana Avenue.

We propose to do the work in accordance with the attached Scope of Services for time and materials with a not-to-exceed price of $73,500. A summary of the fee for determining the percentage of completion for monthly progress payments is as follows:

A.	Surveying	$ 9,000
B.	Feasibility Study	$ 7,000
C.	Final Engineering	$19,700
D.	Construction Administration	$ 5,400
E.	Construction Staking	$16,200
F.	Construction Observation	$16,200
	TOTAL	$73,500

The above costs are based on doing all work in 1990 and 1991.

We will submit a monthly statement relative to services performed during the previous month. An interest charge of 1.0 percent per month on the overdue balance will be charged for all invoices not paid within 30 days of the monthly statement.

The length of time estimated to complete each phase is as follows:

A.	Surveying	1.0 months
B.	Feasibility Study & Review Process	2.0 months
C.	Final Engineering & Review Process	2.5 months
D.	Bidding	1.5 months
E.	Construction	3.0 months

We appreciate the opportunity to provide the above engineering services proposal to you and look forward to working with you on the project.

SCOPE OF SERVICES

II. SCOPE OF SERVICES

A. SURVEYING

1. Items included:

   a. Perform topographic survey of the street.

   b. Field verify watermain gate valve, fire hydrant, storm sewer, catch basin, garage slab, tree, curb and gutter, retaining wall, driveway, street sign and electrical box locations and elevations.

   c. Preparation of an existing conditions drawing showing the above information.

2. Items not included:

   a. Work needed to secure easements from adjacent property owners. If any are required, they would be considered an additional service.

B. FEASIBILITY STUDY

1. Items included:

   a. Consider and review street cross sections, preliminary grades, alignment, intersection design, traffic, drainage and utility alternatives with city staff before incorporating into the report.

   b. Review traffic patterns for conflicts during construction and after final design.

   c. Establish preliminary grades to anticipate any problems with drainage, cover over watermain and any other utilities involved.

   d. Identify opportunities to save trees.

   e. Environmental issues will be addressed in the feasibility report. We do not anticipate that the traffic volume on this project will require preparation of an Environmental Assessment Worksheet (EAW). Therefore, preparation of an EAW is not included in the Scope of Services.

   f. Review pedestrian safety, especially at street crossings in relationship to the existing speed limit.

g. Recommend locations for securing additional traffic counts, if necessary.

h. Prepare public information plan for use during the construction phase.

i. Secure comments on the project from the following:

(1) Minnesota Historical Society

(2) Minnesota Department of Natural Resources

(3) Minnesota Department of Transportation

(4) U. S. Army Corps of Engineers

(5) Watershed District

(6) Hennepin County

(7) Gas company

(8) Telephone company

(9) Electric company

(10) Cable television company

(11) Metropolitan Transit Commission (Existing and future bus stop locations and routing during construction.)

(12) School District (school bus usage)

(13) U.S. Postal Service

j. Prepare MSA variance request including:

(1) Index map showing project location and limits.

(2) A typical road section showing inplace and proposed cross sections.

(3) Reasons for request.

(4) Statement of the economic, social, safety and environmental impacts which may result from the requested variance.

(5) Statement of the effectiveness of the project in eliminating an existing and projected deficiency in the transportation system.

(6) Statement of the effect on adjacent land.

(7) Statement of the number of persons affected.

(8) Statement of the safety considerations as they apply to:

(a) Pedestrians

(b) Bicyclists

(c) Motoring public

(d) Fire, police and emergency units

(9) Photographs of existing conditions.

(10) Topographic survey of existing conditions.

k. Attend MSA variance committee meeting.

l. Summary, recommendations, estimated costs, and source of funds analysis will all comprise a part of the feasibility report.

m. Presentation to city council and neighborhood meetings.

C. FINAL ENGINEERING

1. Items included:

a. Preparation of plans that meet or exceed MSA standards.

b. Preparation of an erosion control plan.

c. Preparation of an earthwork volume analysis.

d. Coordination of soil borings and reports with soils firm. Locate and survey elevations of soil borings.

e. Preparation of specifications and contract documents.

f. Preparation of opinion of probable construction cost.

g. Presentation to the city council and neighborhood meetings.

D. CONSTRUCTION ADMINISTRATION

1. Items included:

a. Preparation of advertisement for bids for advertisement in the *Construction Bulletin* and the city's official newspaper (*Post News*).

b. Answer bidders' questions.

c. Preparation of a bid summary and tabulation.

d. Preparation of contract documents for review by city engineer and city attorney.

e. Processing of monthly contractor requests for payment.

f. Coordination of work with utility companies.

g. Meetings with the city and neighborhood groups to review project status.

h. General project management and coordination.

2. Items not included:

a. Change orders, preparations and drawing revisions requested by the city after construction contract award.

E. CONSTRUCTION STAKING

1. Items included:

a. Street centerline grade and alignment stakes for grading.

b. Grade and alignment stakes for curb and gutter installation.

c. Grade and alignment blue top stakes for bituminous installation as needed.

F. CONSTRUCTION OBSERVATION

1. Items included:

a. Up to 330 hours of senior technician time for observation of construction activities to check conformance with plans and specifications.

b. Up to 24 hours of project engineering time for observation of construction activities to check conformance with the plans and specifications.

c. Clarification of construction documents as needed.

d. Field measurements for payment and record drawings.

e. Prepare record drawings.

2. Items not included:

a. The cost of field time due to failure of a contractor to perform on time or unanticipated soil conditions will be passed on to the city.

G. ADDITIONAL ITEMS INCLUDED

1. In-house printing supplies and mileage.

2. Overtime (invoiced at standard hourly rates).

H. ADDITIONAL ITEMS NOT INCLUDED

1. The cost of soil samples, soil borings, density tests and material testing.

2. All construction staking will be done on a one-time basis. Restaking done for any reason shall be considered extra work and will be compensated for on an hourly basis.

a. The construction contract will stipulate that restaking costs will be deducted from the contractor's partial payment requests.

3. Engineering and surveying for sanitary sewer and watermain improvements.

FEE SCHEDULE

III. STANDARD FEE SCHEDULE

Service	1990 Hourly Rates	Estimated 1991 Hourly Rates
Principal, Senior Engineer & Registered Land Surveyor	$69.50	$73.75
Project, Traffic & Office Engineer & Senior Planner	$60.50	$64.25
Design Engineer & Planner	$50.00	$53.00
Senior Technician & Junior Engineer	$40.50	$43.00
Junior Technician	$31.50	$33.50
Secretary	$26.25	$28.00
Survey Party:		
3-Man Crew	$97.50	$103.50
2-Man Crew	$80.00	$85.00
Computer Time	$23.50	$25.00
Electronic Distance Meter	$14.75	$15.75

NOTE: All outside expenses incurred by Merila will be charged directly to the client.

EXPERIENCE

IV. EXPERIENCE

Merila & Associates was founded in 1980 by James R. Merila, former director of public works for the City of Brooklyn Center.

Our primary goal is to provide quality service at a reasonable cost. We work hard to design and develop innovative solutions for your engineering, surveying and land planning challenges. We believe that accuracy, timeliness, foresight in project flow and budget control provided by us ensure the quality you deserve.

Our professional staff has designed and managed 38 Municipal State Aid street reconstruction projects with a length of over 16 miles. The construction cost of each project ranged from $100,000 to $900,000.

Our professional staff has designed and managed five county road reconstruction projects totaling 2.0 miles. In addition, Merila has designed and supervised construction of over 60 miles of new streets since 1980. See pages 10 through 16 for a summary of selected road reconstruction projects.

Merila has designed over $27 million worth of public improvement projects consisting of sanitary sewer, watermain, storm sewer and street construction projects during the past 10 years. In addition, we have designed over $10 million worth of grading work during the same period. See pages 17, 18 and 19 for a summary of selected projects.

Each of our supervisory personnel has between 13 and 26 year's experience in surveying, engineering design and construction supervision in the private and public sectors. We feel we have an excellent background and understanding of working not only with county, state and construction personnel, but also with affected agencies and residents in order to minimize potential conflicts during construction and maximize project quality.

During the past six years, our 31 person firm has provided civil engineering and surveying services to over 60 single family, over 25 multi-family and over 100 commercial/ industrial developments primarily in the Twin Cities area. A brief listing of some of these projects is as follows:

SINGLE FAMILY PROJECTS		STREETS (Miles)
1. North Oaks, South Oaks & Rolling Oaks	Vadnais Heights	3.9
2. Champlin River Park	Champlin	3.4
3. Lake Camelot Estates	Plymouth	2.6
4. Kingsview Heights	Plymouth	2.2
5. Bur Oak Hill Estates	Eagan	1.7
6. Crosswinds	Maple Grove	1.1
7. Rolling Prairie	Maple Grove	1.0

MULTI-FAMILY PROJECTS		STREETS (Miles)
1. Silverthorn Estates	Shoreview	0.9
2. Southview Gables	Inver Grove Hts	0.3
3. Crestwood Homes	Minnetonka	0.2

COMMERCIAL/INDUSTRIAL PROJECTS

1. Park Square Shopping Center	Brooklyn Park
2. The Printer of Minnesota	Maple Grove
3. Crystal Gallery	Crystal
4. Loehmann's Plaza	Roseville
5. Mounds View Business Park	Mounds View
6. Primetech Park	Eden Prairie
7. Brooklyn Center Industrial Park	Brooklyn Center
8. Eagan Office Tower	Eagan
9. Shoreview Business Campus	Shoreview
10. Chaska Industrial Park	Chaska

Merila personnel has extensive experience working in the consulting field and as previous staff members of other cities. Seven staff members of Merila have had the added experience of having served in various city engineering/public works positions as follows:

STAFF	MUNICIPALITY	POSITION	YEARS
James R. Merila, P.E.	Brooklyn Center	City Engineer/ Dir Public Works	9
	Brooklyn Center	Assist City Engr	1-1/2
	St. Cloud	Proj/Design Engr	3-1/2
John C. Johnson, P.E.	Mounds View	City Engineer/ Dir Public Works	1-1/2
Steven Thatcher, P.E.	Mounds View	City Engineer/ Dir Public Works	3
James T. Nervig	Shoreview	City Engineer	11
Stephen Johnston, P.E.	Maple Grove	Design Engineer	5-1/2
Melvin "Andy" Anderson	Bloomington	Sr Technician	11
Jarvis "Bill" Frey	Bloomington	Sr Technician	3

SUMMARY OF
SELECTED ROAD RECONSTRUCTION PROJECTS

Selected road reconstruction projects in which Merila & Associates or our professional staff has been personally involved.

I. MERILA & ASSOCIATES' EXPERIENCE

A. MINNETONKA BOULEVARD (County Road 5)
Minnetonka, Minnesota

Restoration of 0.5 miles of Minnetonka Boulevard from Hopkins Crossroads to Atwater Street as part of a watermain extension project.

1. Worked directly with Hennepin County, City of Hopkins and City of Minnetonka engineering staffs during preparation of construction plans and specifications.

2. Layout and coordination of traffic detour route with Hennepin County and MnDOT.

3. Project management and administration during construction.

B. EXCELSIOR BOULEVARD (County Road 3)
Minnetonka, Minnesota

Reconstruction of 0.3 miles of Excelsior Boulevard from Mayview Road to Woodridge Road as part of a storm sewer trunk project.

1. Preparation of construction plans and specifications.

2. Coordination with and permit acquisition from Hennepin County.

3. Determination of required easements and negotiations for easements from residents.

4. Acquisition of watershed permit.

5. Construction observation

6. Construction staking

7. Construction administration

C. PLYMOUTH ROAD (County Road 61)
Minnetonka, Minnesota

Expansion of 0.3 miles of County Road 61 from a 40 foot wide two-lane roadway to a 52 foot wide four-lane roadway from Sherwood Drive to Meadow Circle.

1. Preparation of feasibility study.

2. Presentation of feasibility study at neighborhood informational meeting.

3. Worked directly with Hennepin County and City of Minnetonka engineering staffs during preparation of construction plans and specifications.

D. COUNTY ROAD 47, LAKE CAMELOT ESTATES
Plymouth, Minnesota

Reconstruction of 0.4 miles of County Road 47 to improve sight visibility and to add turn and bypass lanes as part of a $1.9 million improvement project. During construction, the road was closed to traffic. A suitable detour route was provided via the local streets within the project.

E. VALLEY DRIVE - Minnetonka, Minnesota

Reconstruction of 0.1 miles of Valley Drive as part of a storm sewer improvement project.

1. Preparation of feasibility study.

2. Presentation of feasibility study at neighborhood informational meeting.

3. Worked directly with City of Minnetonka engineering staff during preparation of construction plans and specifications.

4. Easement negotiation and acquisition.

5. Project management and administration during construction.

F. LAKELAND DRIVE - Minnetonka, Minnesota

Reconstruction of 0.1 miles of Lakeland Drive as part of a storm sewer improvement project.

1. Preparation of feasibility study.

2. Presentation of feasibility study at neighborhood informational meeting.

3. Worked directly with City of Minnetonka engineering staff during preparation of construction plans and specifications.

II. PREVIOUS MERILA STAFF EXPERIENCE

A. James R. Merila

1. 53rd Avenue North - Brooklyn Center, Minnesota

In 1979, while president of Merila-Hansen, Inc., James R. Merila was in direct charge of providing engineering design services to Brooklyn Center and Minneapolis for upgrading 1.2 miles of municipal state aid streets at a cost of $845,000 along 53rd Avenue North from Fourth Street North to Penn Avenue North, and Penn Avenue from 53rd Avenue to the Shingle Creek bridge. The work consisted of the following:

a. Coordinating an informational meeting with residents.

b. Participating in public hearings.

c. Designing the storm sewer system, street grades and structure for the full length of the project and watermain from Fourth Street to Camden Avenue North.

d. Preparing engineering estimates.

e. Coordinating an agreement between the two cities.

f. Preparing specifications and contract documents.

g. Performing a background check on the low bid contractor and recommending award of the contract for the project.

h. Brooklyn Center supervised construction of the project with their own staff.

2. City of Brooklyn Center, Minnesota

During the period of October 15, 1968, to February 28, 1979, while in the position of assistant city engineer and city engineer/director of public works for the City of Brooklyn Center, James R. Merila was responsible for planning, coordinating, supervising and administering all public works programs for the city and directing the

activities of the engineering, street and public utilities division. The 1978 operating budget for the three divisions was approximately $1.9 million (excluding approximately $1.0 million for public improvement construction) with 37 full time personnel.

James R. Merila administered the preparation of all necessary documents, reports, resolutions and presentations required for establishing and implementing the construction of 287 improvement projects and administered the design and construction of 65 construction contracts amounting to approximately $7.5 million for the following:

a. 28 Municipal State Aid street improvement projects (primarily reconstruction)

b. 58 street paving and grading improvement projects (primarily reconstruction projects)

c. 30 curb and gutter improvement projects

d. 11 alley paving improvement projects

e. 36 sidewalk improvement projects (approximately 45 miles)

f. 22 storm sewer improvement projects

g. 66 watermain improvement projects

h. 32 sanitary sewer improvement projects

NOTE: The above projects were designed by the Brooklyn Center Engineering Department.

3. City of St. Cloud, Minnesota

During the period of December 7, 1964, to October 14, 1968, while in the position of civil engineer I for the City of St. Cloud, James R. Merila worked as project engineer in charge of design and construction of 16 contracts amounting to approximately $2.76 million for construction of the following:

a. 3 Municipal State Aid street reconstruction projects.

b. 3 bituminous paving and street restoration projects.

c. 2 curb and gutter improvement projects

d. 4 storm sewer improvement projects

e. 2 municipal parking lots

f. 2 sanitary sewer and watermain improvement projects

B. John C. Johnson

While serving as project engineer and project manager for Kirkham, Michael and Associates, John C. Johnson designed and managed the following street reconstruction projects:

1. Brooklyn Park, Minnesota

Reconstruction of 0.8 miles of 63rd Avenue North from Zane Avenue to T.H. 169.

a. Preparation of feasibility study.

b. Presentation and coordination with adjacent property owners to minimize impact to homes and business.

c. Evaluation of alternate pavement and subgrade sections in deep peat areas.

d. Preparation of final plans and specifications and approvals for MSA funds.

e. Construction management, coordination and staking.

f. Prepared phasing plan and detour plan to provide access during construction to adjacent properties.

2. Hibbing, Minnesota

Reconstruction of over 10 blocks of city streets as part of a watermain replacement project.

a. Preparation of feasibility study.

b. Coordination with adjacent property owners.

c. Preparation of final plans and specification.

d. Construction administration, coordination, staking and inspection.

3. Little Falls, Minnesota

Reconstruction of over 12 blocks of residential streets as part of a watermain/storm sewer project.

a. Preparation of feasibility report.

b. Coordination with adjacent property owners.

c. Preparation of final plans and specifications and coordination with MnDOT on partial MSA funding.

d. Construction administration, coordination, staking and inspection.

e. Preparation of application and coordination with Federal Economic Development Administration for partial funding.

4. Chisago City, Minnesota

Reconstruction of over six blocks of city streets to resolve a flooding problem brought on by rising lake levels.

a. Preparation of alternate reconstruction plans.

b. Preparation of feasibility report.

c. Coordination with adjacent residents.

d. Proposed final plans and specifications.

e. Construction administration, coordination, staking and inspection.

C. Steven W. Thatcher

1. Mounds View, Minnesota

Steven W. Thatcher, while serving as director of public works for the City of Mounds View, designed and managed the reconstruction of over 2.1 miles of existing residential streets. Reconstruction of 0.4 miles of County Road I from TH 10 to Fairchild Avenue was one of the improvements.

a. Preparation of feasibility report.

b. Coordination with adjacent property owners.

c. Preparation of final plans and specifications and coordination with MnDOT on MSA funding.

d. Construction administration.

D. Stephen M. Johnston

1. Rice Lake Road (CSAH 130) - Maple Grove, Minnesota

Stephen M. Johnston, while serving as design engineer for the City of Maple Grove, was directly responsible for the reconstruction of a 1.1 mile section of County Road 130. The existing rural section roadway was part of a county turnback to the City of Maple Grove. The project was built utilizing county turnback funds, MSA funds and special assessments. The road profile was adjusted to match existing homes and driveways while replacing the existing ditch and culvert drainage system with curb and gutter and storm sewer. The project required the relocation and extension of existing sanitary sewer, watermain, telephone, gas and electric systems.

a. Writing feasibility reports

b. Project design and specifications

c. Easement acquisition

d. Construction coordination

e. Assessment roll preparation

MERILA & ASSOCIATES, INC.

SUMMARY OF SELECTED PROJECTS
INVOLVING DESIGN AND CONSTRUCTION ENGINEERING
FOR
SANITARY SEWER, WATERMAIN, STORM SEWER AND STREET CONSTRUCTION
DECEMBER 1980 THROUGH AUGUST 1989

ITEM NO.	LOCATION	CLIENT	PROJECT NAME	FACILITIES PRIVATE/PUBLIC	INVOLVEMENT DESIGN PRE/FINAL	INVOLVEMENT CONSTRUCTION STAKING/INSP	PERCENT COMPLETED	ESTIMATED CONSTRUCTION COST ($1,000) PUBLIC	ESTIMATED CONSTRUCTION COST ($1,000) PRIVATE
1.	ANOKA, MN	CITY OF ANOKA	MISSISSIPPI RIVER COMMUNITY PARK	X	X X	X X	100	$70	$0 *
2.	BLOOMINGTON, MN	BERGSTROM REALTY COMPANY	METRO AIRPORT	X		X	100	$270	$0
3.	BROOKLYN CENTER, MN	BERGSTROM REALTY COMPANY	HI CREST SQUARE ESTATES	X	X X	X X	100	$0	$240
4.	BROOKLYN CENTER, MN	DEVRIES BUILDERS, INC.	EARLE BROWN FARM ESTATES	X	X X	X X	100	$0	$300
5.	BROOKLYN CENTER, MN	KKE ARCHITECTS & COMMERCIAL PARTNERS	BROOKDALE SQUARE SHOPPING CENTER	X	X X	X X	100	$0	$170
6.	BROOKLYN CENTER, MN	HUSSMAN INVESTMENT COMPANY	EVERGREEN ESTATES	X	X X	X X	100	$0	$42
7.	BROOKLYN CENTER, MN	VILLAGE BUILDERS, INC.	ROSEMARY TERRACE	X	X X	X C	100	$0	$46
8.	BROOKLYN PARK, MN	CITY OF BROOKLYN PARK	MUNICIPAL GOLF COURSE	X	PREP E.A.W.	X	100	$0	$0
			TRUNK SANITARY SEWER & STREET CONSTRUCTION	X	PREP E.A.W.		100	$0	$0
			JOLLY LANE	X	X X	X X	100	$465	$0
			JAMES AVENUE	X	X X	X X	100	$120	$0
9.	BROOKLYN PARK, MN	CURT JOHNSON PROPERTIES	PARK SQUARE SHOPPING CTR	X	X X	X X	100	$0	$450
10.	BROOKLYN PARK, MN	KEITH T. HARSTAD	ISLAND VIEW PARK	X	X X	X C	100	$450	$0
11.	BROOKLYN PARK, MN	MYKLEBUST-BROCKMAN ASSOC	ESTEBAN'S	X	X X	X X	100	$0	$50
12.	BROOKLYN PARK, MN	WEIS BUILDERS	RAINBOW SHOPPING CENTER	X	X X	X X	100	$0	$150
13.	BROOKLYN PARK, MN	NORTHLAND DEVELOPMENT CO.	BUSINESS CENTER 8	X	X X	X X	10	$0	$200 *
			TECHNICAL PLATING	X	X X	X X	10	$0	$115 *
14.	CENTERVILLE, MN	KEITH T. HARSTAD	CENTERVILLE HEIGHTS	X	X X	X C	100	$566	$0
15.	CHAMPLIN, MN	JOHN T. ANDERSON	OFTEDAHL ADDITION	X	X X	X C	100	$151	$0
			ANDERSONS CHAMPLIN OAKS	X	X X	X C	100	$162	$0
			ANDERSONS CHAMPLIN OAKS 2ND	X	X X	X C	100	$103	$0
			HELMER ADDITION	X	X X	X C	100	$885	$0
16.	CHAMPLIN, MN	KEITH T. HARSTAD	CHAMPLIN RIVER PARK 2ND	X	X X	X C	100	$530	$0
			CHAMPLIN RIVER PARK 3RD	X	X X	X C	100	$241	$0
			EMERY ESTATES NORTH	X	X X	X C	100	$165	$0
			OXBOW GLEN	X	X X	X X	95	$380	$0
17.	CHAMPLIN, MN	KEITH T. HARSTAD & LUND DEVELOPMENT COMPANY	CHAMPLIN RIVER PARK	X	X X	X C	100	$970	$0
			HEATHERS ESTATES, NICOLES ESTATES & NATALIES ESTATES	X	X X	X C	100	$836	$0
18.	CHAMPLIN, MN	GONYEA DEVELOPMENT COMPANY	RIVERWOOD	X	X X		0	$76	$0
19.	CHAMPLIN, MN	KEN SCHEFFLER	SCHEFFLER ESTATES	X	X X	X X	100	$160	$0
20.	CHASKA, MN	CHASKA INVESTMENT COMPANY	LAKE GRACE VIEW	X	X X	X X	100	$60	$0
			LAKE GRACE VIEW 2ND ADD	X	X X	X X	100	$180	$0
			AUTUMN WOODS NORTH	X	X X	X X	100	$320	$0
			DEERWOOD ESTATES	X	X X	X X	100	$198	$0

ITEM NO.	LOCATION	CLIENT	PROJECT NAME	FACILITIES PRIVATE/PUBLIC	INVOLVEMENT DESIGN PRE/FINAL		INVOLVEMENT CONSTRUCTION STAKING/INSP		PERCENT COMPLETED	ESTIMATED CONSTRUCTION COST ($1,000) PUBLIC	PRIVATE	
			DEERWOOD ESTATES NORTH		X	X				$0	$0	
			BAVARIAN SHORES		X	X	X	X	100	$140	$0	
			TUSCANY HILLS		X	X	X	X	85	$850	$0	
			JONATHAN SQUARE	X	X	X	X	X	20	$100	$155	*
21.	CRYSTAL, MN	VILLAGE BUILDERS, INC.	NEVADA COURT	X		X	X	X	100	$0	$110	
22.	CRYSTAL, MN	KKE ARCHITECTS	CRYSTAL GALLERY	X		X	X	X	100	$0	$75	
23.	DENT, MN	CITY OF DENT	PARK DEVELOPMENT		X		X	X	C	100	$40	$0
24.	EAGAN, MN	BLUMENTALS ARCHITECTS & BRUTGERS, INC.	COACHMAN HIGHLANDS	X		X	X	X	C	100	$0	$150
25.	EAGAN, MN	METRAM PROPERTIES	ROBIN LANE 1ST ADDITION		X	X	X			0	$85	$0
26.	EAGAN, MN	KEITH T. HARSTAD	BUR OAK HILLS		X	X	X	X	X	100	$583	$0
			BUR OAK HILLS 2ND ADDITION		X	X	X	X	X	95	$1,090	$0
27.	EAGAN, MN	AL KEMPF	LEMAY LAKE HILLS	X	X		X	X	X	100	$155	$20
28.	HUGO, MN	KEITH T. HARSTAD	HUGO MEADOWS		X	X	X	X	X	100	$530	$0
29.	LILLYDALE, MN	BISANZ BROS DEVELOPMENT	RIVERWOOD APARTMENTS	X		X	X		X	100	$0	$190
30.	MAPLE GROVE, MN	MINNEASPEN ASSOCIATES	RICE LAKE TERRACE 3RD ADD	X		X	X	X	X	20	$0	$350 *
31.	MEDINA, MN	TEMROC METALS, INC.	TEMROC METALS		X	X	X	X	X	100	$220	$0
32.	MINNEAPOLIS, MN	DOVOLIS/JOHNSON/RUGGIERI	FRANKLIN BUSINESS CENTER	X		X	X			90	$120	$0
33.	MINNEAPOLIS, MN	RAY HARRIS COMPANY, INC.	CALHOUN SQUARE	X			X	X	X	100	$0	$80 *
34.	MINNETONKA, MN	LANVESCO CORPORATION	WEST OAKS	X	X	X	X	X	X	100	$75	$535
35.	MINNETONKA, MN	CITY OF MINNETONKA	STORM SEWER PROJECT 4778, 4779, 4781		X		X	X	X	100	$389	$0
			BANTA'S POINT ROAD BRIDGE REPLACEMENT		X		X	X	X	100	$80	$0
			SHAKER HTS POND/STORM SEWER		X	X	X	X	X	100	$4	$0
			WEST MARCH LIFT STATION		X	X	X	X	X	100	$55	$0
			OAKWOOD ROAD STORM SEWER		X	X	X	X	X	100	$210	$0
			OAKWOOD ROAD STORM SWR-II		X	X	X	X	X	10	$600	$0 *
			PLYMOUTH ROAD		X	X	X	X	X	100	$100	$0
			WINDYHILL ROAD STORM SEWER		X	X	X	X	X	99	$21	$0
			ARTHUR STREET STORM SEWER		X	X	X	X	X	100	$21	$0
			MINNETONKA BOULEVARD		X	X	X	X	X	100	$130	$0
			VALLEY DRIVE STORM SEWER		X	X	X	X	X	99	$60	$0
36.	MINNETONKA, MN	LOONAM COMPUTER PRODUCTS	OPUS II	X		X				85	$0	$250
37.	MINNETONKA, MN	PARAGON BUILDERS & DESGNRS	FAIRWAYS AT WEST OAKS	X	X	X	X	X	X	99	$241	$106
38.	MOUNDS VIEW, MN	EVEREST GROUP, LTD.	MOUNDS VIEW BUSINESS PARK		X	X	X		X	95	$1,000	$0
39.	MOUNDS VIEW, MN	CITY OF MOUNDS VIEW	MOUNDS VIEW BUS. PK-SOUTH	X	X	X	X	X	X	5	$400	$200 *
40.	NEW HOPE, MN	HOYT DEVELOPMENT	SCIENCE CENTER BUSINESS CTR	X		X	X			85	$0	$250
41.	NEW HOPE, MN	VILLAGE BUILDERS, INC.	MINI-STORAGE	X		X	X	X	X	100	$0	$100
42.	OAKDALE, MN	KEITH T. HARSTAD	HADLEY HILLS		X	X	X	X	X	100	$550	$0
43.	PLYMOUTH, MN	KEITH T. HARSTAD	KINGSVIEW HEIGHTS		X	X	X	X	X	100	$1,500	$0
			LAKE CAMELOT ESTATES		X	X	X	X	X	100	$1,898	$0
44.	PLYMOUTH, MN	KINGS NORTH CORPORATION	KINGS NORTH		X	X	X	X	X	100	$275	$0
			SWAN LAKE WEST	X	X	X	X	X	X	25	$450	$250 *
45.	PLYMOUTH, MN	SCHERBER/BONINE	PINE RIDGE RESIDENTIAL DEV		X	X	X	X	X	100	$131	$0
46.	RAMSEY, MN	OPLUND DEVELOPMENT COMPANY	ALICIA ADDITION	X		X	X	X	X	0	$0	$100 *
47.	ROBBINSDALE, MN	HENRY HOIBY & SCHLEE BLDRS	ROBIN LANE TERRACE		X	X	X	X	X	100	$80	$0
48.	ROBBINSDALE, MN	WM KRANZ, INC.	KRANZ ADDITION		X	X	X	X	X	100	$161	$0
49.	ROSEVILLE, MN	TANURB	LOEHMANN'S PLAZA	X	X	X	X	X		100	$300	$1,000

ITEM NO.	LOCATION	CLIENT	PROJECT NAME	FACILITIES PRIVATE/PUBLIC		INVOLVEMENT DESIGN PRE/FINAL		INVOLVEMENT CONSTRUCTION STAKING/INSP		PERCENT COMPLETED	ESTIMATED CONSTRUCTION COST ($1,000) PUBLIC	ESTIMATED CONSTRUCTION COST ($1,000) PRIVATE
50.	ROSEVILLE, MN	EVEREST GROUP, LTD.	ROSEDALE CORPORATE PLAZA	X		X	X		X	100	$0	$250
51.	ROSEVILLE, MN	LINCOLN DEVELOPMENT	ROSEVILLE SHOPPES	X		X	X		X	100	$0	$250
			ROSEVILLE SQUARE NORTH	X	X	X	X	X	X	65	$300	$150
52.	ST. CLOUD, MN	BLUMENTALS ARCHITECT & BRUTGER COMPANY	TIMBERLAND ESTATES	X		X	X			100	$0	$50
53.	ST. PAUL, MN	BISANZ BROTHERS	RIVERWOOD II - THE BLUFFS	X	X	X	X			0	$15	$215
54.	SAVAGE, MN	KEITH T. HARSTAD	ROLLING MEADOWS		X	X	X	X	X	100	$1,100	$0
55.	SHOREVIEW, MN	KKE ARCHITECTS	MICRO COMPONENT TECHNOLOGY HEADQUARTERS	X		X	X			100	$0	$120
56.	SHOREVIEW, MN	KEITH T. HARSTAD	SILVERTHORN ESTATES		X	X	X	X	X	100	$1,800	$0
			SHOREVIEW OAKS		X	X	X	X	X	100	$1,600	$0
57.	SHOREVIEW, MN	NIELSON & ASSOCIATES	SHOREVIEW BUSINESS CAMPUS	X	X	X	X		X	100	$200	$30
58.	VADNAIS HEIGHTS, MN	VILLAGE BUILDERS, INC.	VADNAIS HIGHLANDS	X	X	X	X	X	X	100	$80	$0
59.	VADNAIS HEIGHTS, MN	KEITH T. HARSTAD	VADNAIS HEIGHTS NORTH OAKS PHASE I		X		X	X	C	100	$340	$0
			VADNAIS HEIGHTS NORTH OAKS PHASE II		X	X	X	X	C	100	$350	$0
			SOUTHS OAKS ADDITION		X	X	X	X	C	100	$950	$0
			ROLLING OAKS		X	X	X	X	C	100	$650	$0
60.	WAYZATA, MN	WALSH-BISHOP ARCHITECTS	MINNETONKA BOAT WORKS	X		X	X			100	$0	$100
			CRI	X		X	X			100	$0	$80
61.	ZIMMERMAN, MN	HARSTAD COMPANIES	ZIMMERMAN MALL	X		X	X	X	X	0	$0	$150
62.	SILVER CREEK, CO	KKE ARCHITECTS & KRAUS-ANDERSON	THE MOUNTAINSIDE AT SILVER CREEK	X		X	X			100	$0	$150
63.	RIVER FALLS, WI	VILLAGE BUILDERS, INC.	RIVER FALLS TERRACE	X		X	X	X	X	100	$0	$40
64.	POWELL, WY	BLUMENTALS ARCHITECT & BRUTGER COMPANY	POWELL MILITARY HOUSING		X	X	X			100	$150	$0
									TOTAL ESTIMATED CONSTRUCTION COST		$27,537	$7,019

X - BY MERILA & ASSOCIATES, INC.
C - BY CITY
▲ - DENOTES 1989 PROJECTS

SUMMARY
OF
MUNICIPAL RELATED ACTIVITIES

	PUBLIC NO. OF PROJECTS	PUBLIC ESTIMATED CONSTRUCTION COST	PRIVATE NO. OF PROJECTS	PRIVATE ESTIMATED CONSTRUCTION COST	TOTAL NO. OF PROJECTS	TOTAL ESTIMATED CONSTRUCTION COST
PRIOR TO 1989	64	$25,917,000	34	$5,569,000	98	$31,486,000
1989 WORK	4	$1,620,000	6	$1,450,000	10	$3,070,000
TOTAL	68	$27,537,000	40	$7,019,000	108	$34,556,000

PERSONNEL

V. PERSONNEL

Listed below are qualifications and resumes of our professional staff who will be assigned to the 36th Avenue North reconstruction/improvement project.

Responsibility	Name	Experience
Project Manager	James Merila, P.E.	26
Project Engineer	Stephen Johnston, P.E.	8
Registered Land Surveyor	Walter Gregory, R.L.S.	19
Sr. Technician/ Inspector	Melvin Anderson	23

James Merila will be the project manager who will be directly responsible for all work performed for the City of Crystal including attendance at important meetings and hearings. See pages 21 through 27 for his resume and project management experience.

Stephen Johnston will be the project engineer and his responsibilities will include preparation of the feasibility study, plans, specifications and attendance at all meetings. He has 8 years of municipal and civil engineering experience. Mr. Johnston has prepared feasibility studies, plans and specifications, and supervised construction of over $8.3 million worth of public improvement projects including 8.6 miles of streets. See page 28 for his resume.

Walter Gregory will be the project surveyor and he will be directly responsible for all surveying work performed for the project. He has 19 years of surveying experience. See page 29 for his resume.

Melvin Anderson is the senior technician/inspector who will be responsible for on-site inspection for the project. He has inspected over $5.4 million worth of public improvement projects including 7.3 miles of streets since 1985. See page 30 for his resume.

Assignment of additional personnel from our 31 person staff to this project will depend upon the time limits necessary for completion of the project. A summary of our professional staff is listed on pages 31 and 32.

Merila is prepared to dedicate the above staff (36th Avenue North Design Team) to work with the City of Crystal. If we are retained, some of the design team's other responsibilities will be delegated to other Merila personnel so that the team will be fully available to meet your needs.

JAMES R. MERILA
President

EDUCATION:

University of Minnesota, 1963
B.S. Civil Engineering

EXPERIENCE:

President of Merila & Associates, Inc., in direct charge of civil engineering and site planning since formation of the company on December 1, 1980.

Former president of Merila-Hansen, Inc., in direct charge of civil engineering and site planning for the company from March 1, 1979, to November 30, 1980.

Nine years as director of public works and city engineer for the City of Brooklyn Center, Minnesota. Responsible for planning, coordinating, supervising and administering all public works programs for the city, and directing the activities of the engineering, street and public utilities divisions. The 1978 operating budget for the three divisions was approximately $1.9 million with 37 full time personnel. Administered the design and construction of over $7 million of public improvement projects consisting of sanitary sewer, storm sewer, water distribution and supply, street construction, walkway network, sealcoating, tennis courts, athletic fields, bike trails and other park and site development projects. Reviewed all site plans, subdivisions and worked closely with the director of planning and inspection regarding development and land planning in the city. Attended all planning commission and city council meetings as an advisory staff person.

Served three months as acting city manager for the City of Brooklyn Center and was responsible for the preparation and presentation of the 1978 city budget amounting to $4.1 million.

Fifteen months as superintendent of engineering for the City of Brooklyn Center. Supervised the work of the engineering department in the preliminary design, design, and construction of approximately $2.5 million of public improvements including park construction and the initial development of the 640 acre Brooklyn Center Industrial Park.

Served four years with the City of St. Cloud as a project engineer in charge of design and construction of approximately $2.8 million of public improvements.

Worked for 1-1/2 years with the Alaska State Highway Department as assistant and project engineer in preliminary design and construction of approximately 50 miles of highway.

PROFESSIONAL REGISTRATION:

Registered Professional Engineer, Minnesota (1967)
Registered Professional Engineer, Wisconsin (1982)

PROFESSIONAL ORGANIZATIONS:

Minnesota Society of Engineers and Surveyors
Minnesota Society of Professional Engineers
National Society of Professional Engineers
Past President of City Engineers Association of Minnesota

SUMMARY OF SELECTED PROJECT MANAGEMENT EXPERIENCE
OF
JAMES R. MERILA

Summary of selected project management experience of James R. Merila prior to founding Merila & Associates.

I. March 1, 1979, to March 1, 1981

While president of Merila-Hansen, Inc., and Merila & Associates, Inc., James R. Merila was in direct charge of the following projects:

A. BROOKLYN CENTER, MINNESOTA

1. In 1980, Merila-Hansen in association with Erkkila & Associates, landscape architects, and W. L. Sutherland, electrical engineers, provided engineering services to the city for design and construction supervision for park system improvements in 16 parks. The improvements consisted of parking lots, basketball volleyball court areas, tennis court practice areas, pedestrian and bikeway trails, and a minimum security ornamental lighting system for lighting of park entrances, parking lots, buildings and some trails. The construction was completed under two contracts amounting to $445,000 and $310,000, respectively.

2. In 1980, Merila-Hansen provided engineering services to the city for design of street and utilities for 66th Avenue North within the Earle Brown 1st Addition.

3. In 1979 and 1980, Merila-Hansen provided engineering and surveying services to the city for construction of one baseball and two softball-football fields in the Central Park complex.

4. In 1979, Merila-Hansen provided engineering design services to Brooklyn Center and Minneapolis for upgrading 1.2 miles of municipal state aid streets along 53rd Avenue North from 4th Street North to Penn Avenue North, and Penn Avenue from 53rd Avenue to the Shingle Creek bridge. The work consisted of coordinating an informational meeting with residents; participating in public hearings; designing the storm sewer system, street grades and

structure for the full length of the project and watermain from 4th Street to Camden Avenue North; preparing engineering estimates; coordinating an agreement between the two cities; preparing specifications and contract documents; performing a background check on the low bid contractor and recommending award of $843,436 contract for the project. Brooklyn Center supervised construction of the project with their own staff.

B. OAKDALE, MINNESOTA

1. In 1980, Merila-Hansen in association with Erkkila & Associates, provided engineering services to the City of Oakdale for design and construction supervision of a 4.5 mile system of bicycle, hiking and cross-country skiing trails, and four tennis courts. This work was completed under a $180,400 contract.

C. CHAMPLIN, MINNESOTA

1. Provided engineering and land surveying services to Lund Development for subdivision and public improvement design for Emery Estates, a 40 acre, 95 lot subdivision in Champlin.

D. NEW HOPE, MINNESOTA

1. Provided engineering and land surveying services to Village Builders, Inc., for subdivision design and street construction supervision within the New Hope Highlands 1st, 2nd and 3rd Additions in the City of New Hope.

E. ST. CLOUD, MINNESOTA

1. Provided engineering services to Brutger Companies, Inc., for design of utility and site grading plans for a 40 unit townhouse project in St. Cloud, Minnesota.

II. February 1, 1970, to February 28, 1979

A. While in the position of city engineer/director of public works for the City of Brooklyn Center, Mr. Merila was responsible for planning, coordinating, supervising and administering all public works programs for the city and for directing the activities of the Engineering, Street and Public Utilities Division. The 1978 operating budget for the three divisions was approximately $1.9 million (excluding public improvement construction) with 36 full time personnel.

B. Mr. Merila administered the preparation of all necessary documents, reports, resolutions, presentations, etc., required for establishing and implementing the construction of 211 various improvement projects; and administered the design, construction and contract administration of 59 contracts amounting to approximately $5.67 million for construction of the following:

11 Alley Paving Improvement Projects

20 Curb and Gutter Improvement Projects

22 Municipal State Aid Street Improvement Projects

36 Street Paving and Grading Improvement Projects

25 Sanitary Sewer Improvement Projects

36 Sidewalk Improvement Projects

15 Storm Sewer Improvement Projects

42 Watermain Improvement Projects

2 Deep Well Improvement Projects

1 1.5 Million Gallon Water Tower

1 Bridge Across Shingle Creek on Freeway Blvd.

Note: All above projects except bridge were designed by the Brooklyn Center Engineering Department.

51 of the above projects are located in the Brooklyn Center Industrial Park, while the remainder of the projects are located in various residential sections of the city.

III. October 15, 1968, to January 31, 1970

A. While in the position of superintendent of engineering for the City of Brooklyn Center, Mr. James Merila prepared or supervised preparation of all preliminary estimates, petitions, reports, resolutions, etc., required for establishment and implementation of 76 various public improvement projects; and supervised the design (preparation of plans, specifications and drawings) and contract administration of six construction contracts amounting to approximately $2.4 million for construction of the following:

10 Curb and Gutter Improvement Projects

6 Municipal State Aid Street Improvement Projects

22 Street Paving and Grading Improvement Projects

7 Sanitary Sewer Improvement Projects

7 Storm Sewer Improvement Projects

24 Watermain Improvement Projects

Note: 20 of the above projects are located in the Brooklyn Center Industrial Park, while the remainder of the projects are located in various residential sections of the city in response to petitions from property owners.

IV. 1969 to March 1979

A. While employed by the City of Brooklyn Center, Mr. James Merila was involved with the following types of park development projects:

1. Provided engineering assistance in preparation of the Shingle Creek Master Trailways project. Prepared cost estimates, environmental assessments, technical data and plans for securing LAWCON grant funds. The trail consists of approximately five miles of separated bike and pedestrian paths with seven short span bridges.

2. Provided engineering assistance in preparation of the Central Park Master Plan by the Brooklyn Center Park Development for the 60 acre tract of land. Prepared cost estimates, environmental assessments, technical data and plans for securing two LAWCON grants for funding construction. The proposed park consists of three softball diamonds, a baseball diamond, football field, soccer field, tennis courts, and trail systems.

3. Designed and supervised construction of rerouting Shingle Creek through the Central Park area and grading work of Central Park for the Brooklyn Center Park Department.

4. Designed a 65 mile walkway network for the city and provided engineering services for construction of 43 miles of the network.

5. Provided engineering for design and construction of East Palmer Lake Park, West Palmer Lake Park, Firehouse Park, and improvements of numerous other parks.

6. Provided engineering design and construction administration of tennis courts at Kylawn Park, Evergreen Park, West Palmer Lake Park and Grandview Park during various years.

7. Provided engineering cost estimates and courtroom testimony for open space acquisition by Twin Lake.

8. Provided engineering design and construction supervision of site grading for the American Little League Park.

9. Designed a boat landing and parking area by the Mississippi River in conjunction with the Minnesota Department of Natural Resources and the Minnesota Department of Transportation.

10. Provided engineering design and construction administration for site work at the new City Hall/Community Center complex, municipal garage, and fire station sites.

V. December 7, 1964, to October 14, 1968

A. While in the position of civil engineer I for the City of St. Cloud, Mr. James Merila worked as project engineer in charge of design and construction of 16 contracts amounting to approximately $2.76 million for construction of the following:

3 Bituminous Paving/Street Restoration Projects

2 Curb and Gutter Improvement Projects

3 Municipal State Aid Street Construction Projects

2 Municipal Parking Lots

2 Sanitary Sewer/Watermain Improvement Projects

4 Storm Sewer Improvement Projects

STEPHEN M. JOHNSTON
Project Engineer

EDUCATION:

University of Minnesota, 1984
B.S. Civil Engineering

EXPERIENCE:

Mr. Johnston has prepared feasibility studies, plans and specifications, and supervised construction of over $8.3 million worth of public improvement projects including 8.6 miles of streets.

Merila & Associates, Inc.
1986 to Present

Project engineer and design engineer for Merila & Associates since 1986. Mr. Johnston has prepared feasibility studies, plans and specifications, and supervised construction of over $5.1 million worth of public improvements including 7.5 miles of streets.

He is responsible for design and construction supervision of public improvement projects including sanitary sewer, watermain, storm sewer, ponding, storm drainage management, streets, parking areas, parks, trails and recreation areas.

Mr. Johnston has prepared assessment rolls for the cities of Maple Grove and Brooklyn Park.

City of Maple Grove
1981 to 1986

Design engineer for the City of Maple Grove, Minnesota, from June 1981 to January 1986. Mr. Johnston designed and supervised construction of $3.2 million worth of public improvement projects including reconstruction of 1.1 miles of County Road 130.

His responsibilities included preparation of assessment rolls, reviewing site plans, approving grading and development plans, and designing street and utility projects. In addition, he assisted with MSA Street System delineation, needs reporting, traffic counting and funding allocations. He administered the annual bridge inspection program and bi-annual railroad crossing safety reports. He also has administered community block grants in Maple Grove for public utility installation in low income housing projects.

PROFESSIONAL REGISTRATION:

Registered Professional Engineer, Minnesota

WALTER J. GREGORY
Registered Land Surveyor

EDUCATION:

B.S. from University of Wisconsin-River Falls, 1970

University of Wisconsin-Extension, Madison
Surveying and Engineering Courses

EXPERIENCE:

Merila & Associates, Inc.
October 1984 to Present

Assistant to vice president in charge of land surveying operations for five years. Land surveying projects completed under Mr. Gregory's supervision include the following:

* Plats for over 1,200 single family lots
* Plats for over 300 multi-family units
* Four residential condominium plats
* Two commercial condominium plats
* Construction staking for over 40 commercial and industrial projects.
* Surveyed over 1,400 lots and provided house staking on approximately 75 percent of these lots.

In addition, Mr. Gregory has prepared legal descriptions for attorneys and has served as an expert witness in court cases.

Ogden Engineering Company
1970 to October 1984

14 year's experience as a land surveyor where he was responsible for plat preparation, boundary surveys, topographic surveys, preparation of legal descriptions, retracement surveys, as-built surveys, remonumentation of U. S. Public Land Survey Corners, and horizontal and vertical control networks.

In addition, Mr. Gregory provided engineering and surveying services for watermain, sanitary sewer, storm sewer, street, pedestrian bridge and vehicle bridge projects for three cities in Wisconsin.

PROFESSIONAL REGISTRATION:

Registered Land Surveyor, Minnesota (1981)
Registered Land Surveyor, Wisconsin (1975)
Certified Soil Tester - On-Site Waste Disposal Systems

PROFESSIONAL ORGANIZATIONS:

Minnesota Land Surveyors Association

MELVIN E. ANDERSON
Senior Technician/Inspector

EXPERIENCE:

Merila & Associates, Inc.
March 1985 to Present

Melvin "Andy" Anderson has inspected over $5.4 million worth of public improvements including 7.3 miles of streets since 1985. His responsibilities include inspection, design and drafting of utility and street construction projects.

Bonestroo, Rosene, Anderlik & Associates, Inc.
June 1984 to March 1985

Project engineer for Part II of central interceptor sanitary sewer line at Fergus Falls, Minnesota.

Research Engineers, Inc.
September 1982 to June 1984

Project engineer for Part I of central interceptor sanitary sewer line at Fergus Falls, Minnesota.

Owen Ayres & Associates, Inc.
May 1976 to March 1982

Supervisor of inspectors for storm sewer, street, sanitary sewer and water improvements at Trimont, Big Lake, and Savage, Minnesota.

Kirkham, Michael & Associates
November 1967 to January 1976

Inspector and field engineer for storm sewer, sanitary sewer, water and street improvements at Brooklyn Park, Brooklyn Center, Morristown, Dodge Center, Rochester, Chisago City, St. Louis Park, Maple Grove and Maplewood, Minnesota.

MERILA & ASSOCIATES, INC.

*Key Personnel

STAFF LIST & SUMMARY OF PERSONNEL EXPERIENCE
January 1990

	NAME	TITLE	DUTIES	YEARS AT COMPANY	YEARS EXPERIENCE
*1.	James R. Merila, P.E.	Registered Civil Engineer, President	Head of civil engineering and site planning.	9	26
*2.	John C. Johnson, P.E.	Registered Civil Engineer, Vice President	Head of civil engineering in charge of subdivisions and community development.	4-1/2	17
*3.	Walter J. Gregory, R.L.S.	Registered Land Surveyor	Head of surveying operations.	5	19
*4.	Steven W. Thatcher, P.E.	Registered Civil Engineer	Project Manager	2-1/2	13
*5.	Stephen M. Johnston, P.E.	Project Engineer	Engineering design and project management.	4	8
*6.	Jeffrey A. Shopek, P.E.	Project Engineer	Engineering design and project management.	3-1/2	9
*7.	John S. Bergh	Senior Planner/Technician	Subdivision design, layout and preliminary design.	5	22
8.	James T. Nervig	Project Coordinator	Engineering design and project management.	4	19
9.	Sean Cullen, E.I.T.	Design Engineer/Technician	Engineering design.	2-1/2	4
10.	Chris Call, E.I.T.	Design Engineer/Technician	Engineering design.	1/2	3
11.	Nick Gionfriddo	Sr Technician/Inspector	Design, drafting and inspection.	2-1/2	35
12.	Melvin "Andy" Anderson	Sr Technician/Inspector	Design, drafting and inspection.	4	23
13.	Charles Kvern	Sr Technician/Inspector	Inspection and drafting.	5-1/2	21
14.	Ross Larson	Sr Technician/Inspector	Design, drafting and inspection.	5	9
15.	Richard Rannow	Sr Technician	Design and drafting.	1/2	18
16.	Patricia Champagne	Technician	Drafting.	6	23
17.	Theresa Bosley	Technician	Drafting.	1/2	9
18.	Darnell Corbin	Technician	Drafting.	1/2	7
19.	Richard Lamb	Technician	Drafting.	2-1/2	2-1/2
20.	Jarvis "Bill" Frey	Sr Surveying Technician	Subdivision design and drafting.	6-1/2	35
21.	Norman Landecker	Survey Party Chief	Chief of survey crew.	6-1/2	23
22.	Paul Parsons	Survey Party Chief	Chief of survey crew.	5-1/2	20
23.	Ron Landecker	Survey Party Chief	Chief of survey crew.	4-1/2	6
24.	Rick Christiansen	Survey Technician	Survey crew member.	3-1/2	3-1/2
25.	Heath Peterson	Survey Technician	Survey crew member.	3-1/2	3-1/2
26.	Bob Landecker	Survey Technician	Survey crew member.	2-1/2	2-1/2
27.	Brian Dietrich	Survey Technician	Survey crew member.	1/2	1/2
*28.	Marilyn Lindsay	Administrative Office Manager	Head of business administration office and special assessments.	9	23
29.	Carol Bednarek	Secretary	Word processing/pay estimate processing.	3	10
30.	Joyce Holm	Receptionist/Clerk	Receptionist/cost accounting data entry.	2	9
31.	Rea Merila	Clerk	Clerical.	4	4

PROFESSIONAL STAFF

FIRM: Merila & Associates, Inc.

ADDRESS: 8401 73rd Avenue North, Suite 63
Brooklyn Park, Minnesota 55428
Telephone: (612) 533-7595
Fax: (612) 533-1937

YEAR FOUNDED: 1980

STAFF:

5 Professional Engineers (Municipal)

1 Registered Land Surveyor

3 Graduate Engineers

1 Planner

1 Engineer Intern

4 Senior Technicians/Construction Project Representatives

5 Technicians

3 Survey Party Chiefs

4 Survey Technicians

4 Administrative and Clerical

31 TOTAL STAFF

PROFESSIONAL PRACTICE: Engineering-Surveying-Planning

Merila & Associates... specializing in Civil Engineering, Municipal Engineering, Land Surveying, Site Planning, and Site Design.

At Merila, our primary goal is to provide high quality service to our clients.

Since 1980, the company has provided consulting services to local municipalities, private developers, and professional consultants. Our staff is uniquely qualified to deal effectively with governmental representatives, construction teams, and affected residents on a wide variety of engineering, construction, and land use projects.

We work hard to design innovative solutions for your engineering and planning challenges.

MERILA & ASSOCIATES

ENGINEERING
SURVEYING
PLANNING

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Office (612) 533-7595 Fax (612) 533-1937

CORPORATE PROFILE

At conference table, L to R: Stephen Johnston, Steven Thatcher, James Merila (President), Marilyn Lindsay, Walter Gregory, John Johnson, Jeffrey Shopek

Merila & Associates is a Twin Cities-based firm specializing in civil engineering, municipal engineering, land surveying, site planning and site design.

Since 1980, the company has provided consulting services to local municipalities, private developers, and professional consultants. Our experience includes work in a variety of areas, including municipal, residential, commercial, industrial and recreational projects.

Merila & Associates is proud of its well-founded reputation of providing clients with high quality service.

Experienced Staff

At Merila, the majority of our supervisory personnel have more than 20 years experience in engineering, surveying, and construction observation in both the public and private sectors. Senior staff members have the added advantage of having served a majority of their early careers in high-level public works positions or as project managers/engineers for well-respected engineering firms.

As a result, our staff is uniquely qualified to deal effectively with government representatives, construction teams, and affected residents on a wide variety of engineering, construction, and land use projects.

Team Approach

Merila & Associates uses a team management approach with each project. Each project is assigned a specific team, headed by an experienced project manager. The project manager is charged with the responsibilities of enhancing client communications, coordinating the team's efforts, and providing continuity on your project.

Quality Service

The success of our firm is made clearly evident by one factor–quality service. Since 1980, Merila & Associates has enjoyed a very high percentage of repeat business from its clients. Our firm has grown steadily from an original four person operation to over 30 people.

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Civil and Municipal Engineering

Since 1980, Merila & Associates has completed more than $34 million of civil and municipal engineering projects, representing hundreds of individual projects.

Merila & Associates employs highly qualified civil and municipal engineers. Many of our senior staff members spent a great deal of their early careers as engineers in the public sector. Through their many years of hands-on experience, these engineers gained a complete understanding of local, state, and federal rules, regulations and policies. Our engineers often rely on their public sector experience to facilitate a successful project.

Those engineers who previously worked in the private sector are equally as talented and experienced in their field. Many of our engineers were employed in senior engineering capacities at other highly-regarded private engineering firms before joining Merila & Associates.

Merila & Associates has provided civil and municipal consulting services in the following areas:

Drainage/Storm Sewer Systems
- feasibility studies and Master Plans
- retention/detention pond design
- treatment ponds for phosphorus removal
- storm water management plans
- facilities design

Sanitary Sewer and Water Systems
- feasibility studies and Master Plans
- water wells and water storage facilities design
- system rehabilitation
- sewage lift station design
- facilities design

Street Systems
- municipal state aid and local street design
- county state aid highway design
- highway design

Parks/Open Spaces
- outdoor recreational facilities design
- playgrounds, ball fields, tennis courts, trails
- golf courses

Additional Services
- capital improvement programs
- grading plans
- parking lots
- watershed district plans and management
- plat review
- Environmental Assessment Worksheets
- Environmental Impact Statements
- permit application preparation
- grant and loan applications for project funding
- construction management/administration/observation/bidding
- expert witness testimony
- computer aided design and drafting (CADD)

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Land Surveying

Proper design and construction of any development project begins with accurate, reliable survey work. Our talented team of land surveyors uses state-of-the-art survey equipment in order to guarantee our clients meticulous survey results.

Our survey staff is capable of assisting clients either in the field, or in the office. In addition to providing field survey work, such as boundary surveys, topographic surveys, and construction staking, our land surveyors will assist clients by developing new legal descriptions or reviewing existing legal descriptions.

Merila & Associates has provided surveying services and prepared plats for more than 4,800 single-family and multifamily residential units. Additionally, the company has provided surveying and staking services for more than 100 commercial and industrial developments located throughout Minnesota.

Merila & Associates provides the following land surveying services:

- Platting
- Boundary surveys
- Topographic surveys
- Lot surveys
- Judicial surveys
- American Land Title Association (ALTA) Surveys
- "As-Built" surveys
- Construction staking
- Building staking
- Condominium plats
- Legal description development and review
- Expert witness testimony
- Computer aided design and drafting (CADD)

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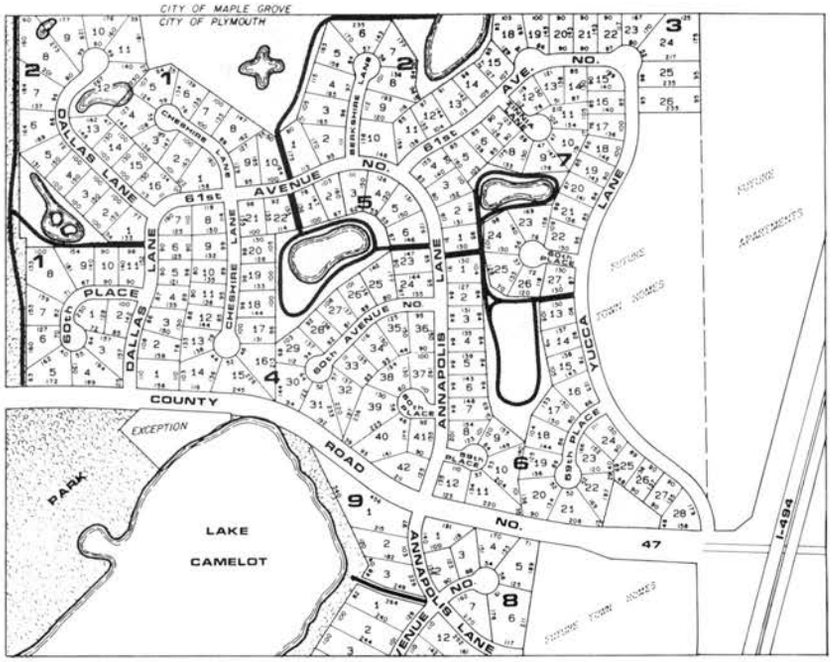

Site Planning and Design

Merila & Associates works closely with clients to evaluate development potential and optimize property value by designing creative solutions for land use after carefully reviewing environmental and physical constraints.

The planning, design and development of effective land use schemes is becoming increasingly complex. A maximum of engineering expertise is essential from the start of any project. As consulting engineers and land surveyors, we assist our clients in the planning stage by defining objectives, studying alternatives, and determining project feasibility. As the project progresses, we assist our clients by providing the technical expertise needed to accomplish their goals.

Since 1980, Merila has planned and designed numerous residential, commercial and industrial projects—totalling more than 3,000 acres of development.

Merila & Associates provides the following planning and design services:

Subdivision Design
- feasibility analysis
- single- and multi-family design
- commercial and industrial design
- zoning analysis
- property development review
- wetland review, analysis, and enhancement

Site Design
- grading and earthwork analysis
- quantity and cost analysis
- building and parking lot layouts
- storm water management
- utility plans
- drainage and erosion control

Additional Services
- Master Plans
- Environmental Assessment Worksheets
- Environmental Impact Statements
- presentations and displays
- construction management/administration/observation/bidding

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EXECUTIVE SINGLE-FAMILY RESIDENTIAL

North Oaks
Rolling Oaks
South Oaks

Vadnais Heights, Minnesota

Overview:

These three contiguous developments make up one of the Twin Cities' most prestigious suburban neighborhoods. The entire 137-acre project consists of 276 single-family lots. It is located in Vadnais Heights, directly adjacent to Grass-Vadnais Regional Park.

Land here is ideal for an executive suburban development. Rolling hills, open dry meadowland, marshlands, and heavily wooded areas make up the site. Merila engineers tailored plans and designs to adapt to and to enhance the natural beauty of the surrounding environment, a factor that proved to be an added benefit to the developer and to the residents of the area.

Merila was responsible for the planning and engineering work for the project, including: site planning and design; drainage; storm sewer, sanitary sewer, and water systems; street design; land surveying; and construction administration and supervision.

Points of Interest:

- Sensitivity to the developer's timing and scheduling needs influenced Merila engineers to complete the work in one construction season. All earthwork, public improvements, and private improvements were completed in a few months so the developer could begin building and selling homes as quickly as possible. Merila's ambitious efforts resulted in the developer saving thousands of dollars by turning the property over quickly.
- Excavation for the major storm water detention areas had to be done during the winter months due to the tight schedule. Merila engineers oversaw the successful completion of this portion of the project.
- Numerous permits were required for the project, a task where our firm is well-experienced. City, county and federal permits and approvals were all obtained expediently and effectively.

We understand that delays in permit approvals often cost clients valuable time and money. To this end, we continually keep abreast of changes in ordinances, laws, rules and regulations.

- Storm water management was needed because runoff from the site flows into Sucker Lake which is part of the water supply system for the City of St. Paul. The city has strict codes which limit the nutrient and sediment loads that enter its reservoir system.

Merila engineers designed an innovative storm water management system that directs water to a series of ponding areas with control structures that release storm water at a pre-determined rate in order to limit the nutrients and silts entering the St. Paul water supply system.

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SINGLE- AND MULTI-FAMILY PLANNED UNIT DEVELOPMENT

Lake Camelot Estates

Plymouth, Minnesota

Overview:

Lake Camelot Estates is a 170-acre residential Planned Unit Development consisting of 186 executive single-family homes, 148 townhomes, and 191 apartments. The project is located in the northeast corner of Plymouth, a fast-growing, desirable suburban Twin Cities community.

Prior to development, this land was used for agriculture. Its gently rolling hills, wooded areas, and numerous wetlands provided interesting site planning and design challenges for Merila engineers.

Merila provided the following services on the project: site planning; surveying; Environmental Assessment Worksheet preparation; preliminary engineering; platting; engineering design; and construction management, staking, and observation.

Merila engineers worked with the developer, neighborhood groups, and the city to arrive at a land development concept that has proven to be a major attraction for the people who live in Lake Camelot Estates. By incorporating the natural surroundings, including the wetlands, into the PUD design, our firm created very attractive and inviting green spaces and open areas for residents of the neighborhood.

Points of Interest:

- Merila retained a wildlife specialist to inventory the site and to provide input on the design of the open spaces.
- Open space, green space and wetlands are optimized throughout the project. Not only did this prove to be a major amenity for the residents of the project, but also a tremendous selling factor for the developer.
- Careful planning was exercised to allow direct access and/or views of the open areas within the development for the maximum number of homes.
- Amenities of the green space include: walking/biking trails which connect to the city trail system; two play areas with innovative play equipment; scenic wildlife ponds; wooded preserves; and play fields.
- Merila prepared a detailed soils analysis and developed several layouts in order to manage poor soil conditions, minimize related earthwork expense, and optimize the number of lots.

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MULTI-FAMILY PLANNED UNIT DEVELOPMENT

Silverthorn Estates

Shoreview, Minnesota

Overview:

Silverthorn Estates is a 175-unit twinhome and tri-plex development located on 111 acres in an established residential neighborhood.

Merila provided the following services for the project: site planning; managing development in and near wetlands; preliminary engineering; platting; Environmental Assessment Worksheet preparation; soils analysis; surveying; engineering design; bidding; construction management; and observation.

Prior to development, the site included 65 acres of wetland, peat soils over 45 feet deep, a high water table, a DNR-protected pond, and inadequate storm water drainage.

After determining the site's environmental and physical constraints, Merila created an innovative plan that optimized this property's value.

Points of Interest:

- In order to compensate for filling 8.4 acres of wetlands, we prepared a plan which enhanced or created an additional 9.6 acres of wetland. The final result was the reclamation of 8.4 acres of previously unusable land.
- The project consisted of a combination of public streets and private driveways that had to be incorporated into the final plan.
- Merila engineers prepared and implemented an area-wide drainage study (196 acres) to effectively manage the area's storm sewer, which included a system of ponds.
- Our firm designed and created a natural trail system through the wetland, and around the DNR-protected pond in order to allow access to 65 acres of wetland.
- We creatively designed a site plan to minimize construction in those areas with poor soil conditions.

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MIXED-USE BUSINESS PARK

Mounds View Business Park

Mounds View, Minnesota

Overview:

Mounds View Business Park is a 51-acre commercial/ industrial/office development located at U.S. Highway 10 at Interstate 35W. The 550,000 sq. ft. business park consists of six separate lots: one lot designated for offices; four lots designated for office/warehouse buildings; and the final lot designated for a restaurant.

Merila and Associates provided engineering and land surveying services, including overall site grading, drainage, utility designs, platting as well as the sanitary sewer and storm sewer sections of both the Environmental Assessment Worksheet and the Environmental Impact Statement.

The firm also provided construction plans, specifications, construction staking, construction observation, and construction administration for the City of Mounds View on the municipal improvements made to the property. Municipal improvements consisted of sanitary sewer, watermain, storm drain, streets, and traffic signals at the site entrance from U.S. Highway 10.

Points of Interest:

- One of the requirements made to Merila & Associates by the developer was to incorporate flexibility into the office/ warehouse building. The dock/parking area had to remain adaptable for at-grade loading, loading docks, or flat surface parking. Merila accomplished this task by designing an innovative drainage system to accommodate up to a four foot grade difference between the loading dock option and the parking lot option.
- Merila designed a series of five on-site ponding areas at the business park that were designed to accomplish three goals. First, the ponding system would provide detention storage for storm water. Second, the ponding system would remove pollutants, like phosphorus and nitrogen, before being discharged into the downstream creek and lake system. And finally, the ponding system would reduce outflow pipe size.

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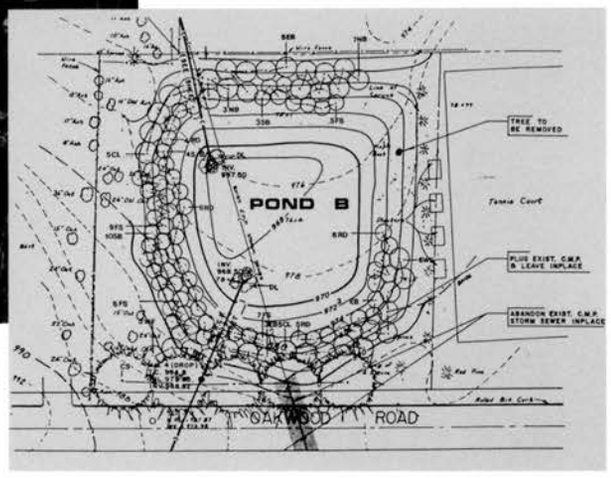
STORM SEWER TRUNK SYSTEM



Oakwood Road Storm Sewer Trunk

Minnetonka, Minnesota

Overview:

The Oakwood Road Storm Sewer Trunk is a prime example of the sensitivity and creativity Merila & Associates displays for its clients.

The City of Minnetonka had adopted a Comprehensive Storm Water Management Plan which called for the development of additional detention and retention/detention basins, and the installation of a significant amount of piping. This project is a part of that plan. The total area of the project is approximately 33 acres and consists of rolling, wooded terrain and many established executive homes with beautifully-landscaped yards.

The existing system was deemed inadequate and badly needed to be replaced. Merila was charged with the responsibility of designing an improved system that would eliminate the flooding in the area, with as little disruption to the homes and natural setting as possible.

Merila provided planning, engineering, and surveying services for the city, including; area-wide storm water management plan revisions; storm sewer design; detention pond design; easement negotiations; and construction management, staking, and observation.

The end result is comprised of two storm sewer detention ponds with interconnecting pipelines. The system has proven effective in managing flooding in the area and also has retained the natural surroundings of the neighborhood.

Points of Interest:

- Merila engineers held a series of meetings with residents of the neighborhood in order to gather relevant information and to discuss the options with them. Many of the residents expressed appreciation for the community meetings–they appreciated the chance to present their concerns and appreciated the effort Merila took to keep them abreast of the situation.
- Merila suggested that the city solve the flooding problem by purchasing an empty lot in the neighborhood and constructing a storage pond. Initially, this idea was not accepted by the city. However, after significant city review and community discussions, this plan was approved and adopted.
- Merila prepared the necessary drawings and easement documents and later met with affected residents to successfully negotiate the easements on behalf of the city.
- Merila engineers took great care to limit the disruption of the natural setting caused by the new ponding area and the pipelines. The firm worked with Phyllis Hanson, a talented landscape architect, to minimize disturbance to existing trees and landscaping. Today, the pond blends beautifully into the natural landscaping of the area.

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CHAMPIONSHIP GOLF COURSE/ADJACENT DEVELOPMENT

Edinburgh Golf Course Area

Brooklyn Park, Minnesota

Overview:

Years ago, the City of Brooklyn Park prepared a Master Plan to transform a 1,000-acre tract of agricultural land into a world-class golf course, commercial developments, and residential homes consisting of executive single-family homes, mixed density homes, and condominiums.

Today, the Edinburgh Golf Course is a beautifully landscaped, 150-acre 18-hole public course, designed by golf master and architect Robert Trent Jones, II. Since its construction in 1985, the course has become a favorite for not only Twin Cities residents, but also for tourists visiting Minnesota.

The project is located in the heart of Brooklyn Park, a fast-growing suburb of the Twin Cities.

Merila & Associates was hired by the City of Brooklyn Park to assist in the development of the project, including: preparation of an Environmental Assessment Worksheet for the golf course; major roadways and utilities adjacent to the golf course; surveys for proper locations of tees, fairways, and greens; and location staking, horizontal control, and construction staking for the $1.4 million golf course.

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RESUME

James R. Merila, P.E.

President

James Merila founded Merila & Associates in 1980. As president, Merila oversees the total operation of the entire company. He is also in direct charge of the company's civil engineering and site planning services.

Previous to founding the company, Merila was president of Merila-Hansen, Inc., a full service engineering firm, where he oversaw all civil engineering and site planning services.

Before becoming self-employed, Merila spent nearly 20 years as an engineer in the public sector. He spent nine years as director of public works and city engineer for the City of Brooklyn Center (population 35,100). Here, Merila was responsible for planning, coordinating, supervising, and administering all public works programs for the city with an annual operating budget of close to $2 million.

Merila was also responsible for directing the activities of the engineering, street, and public utilities divisions. He administered the design and construction of nearly $7 million of public improvements for the city, including: sanitary sewer, storm sewer, water distribution and supply, street construction, and recreational facilities. Merila also reviewed all site plans and subdivisions, and worked closely with other city officials regarding land planning and development within the city.

Previously, Merila held the position of superintendent of engineering for the city of Brooklyn Center, where he was responsible for supervising the engineering department in the preliminary design, and construction of approximately $2.5 million of public improvements, including the initial development of the 640-acre Brooklyn Center Industrial Park.

Merila's career also includes work as a project engineer in St. Cloud, Minnesota and for the State of Alaska.

Education:

- Bachelor of Civil Engineering–University of Minnesota (1963)

Professional Registrations:

- Minnesota–Professional Engineer (1967)
- Wisconsin–Professional Engineer (1982)

Professional Organizations:

- Minnesota Society of Engineers and Surveyors
- Minnesota Society of Professional Engineers
- National Society of Professional Engineers
- Past-president of City Engineers Association of Minnesota

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MERILA
& ASSOCIATES

ENGINEERING SURVEYING PLANNING

Proposal
for
36th Avenue North Improvments

CITY of CRYSTAL

rieke
carroll
muller
associates, inc.
engineers
architects
land surveyors

May 3, 1990

Mr. William Monk, P.E.
City Engineer
4141 Douglas Drive North
Crystal, MN 55422-1696

Dear Mr. Monk:

We are pleased to respond to your request for proposal to provide engineering services for improvements to 36th Avenue North between Welcome and Louisiana Avenues. RCM's municipal design team has the experience and expertise to complete the full range of services needed on your project.

The design team has worked together since the early 1970's and has completed several street improvement projects of a similar nature involving MSA and local funds. The improvements will be designed in our Minnetonka, Minnesota office with experienced personnel familiar to you and this type of project.

RCM is an employee-owned Minnesota firm, prepared to commit our design team to this project to provide competent and responsive services. We are enthusiastic about the opportunity to work with you. Thank you for your consideration.

Very truly yours,

Robert C. Robertson, P.E.
Manager Municipal Engineering
RIEKE CARROLL MULLER ASSOCIATES, INC.

RCR/jj

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carroll
muller
associates, inc.
engineers
architects
land surveyors

equal opportunity employer

10901 red circle drive
box 130
minnetonka, minnesota 55343
612-935-6901

TABLE OF CONTENTS

RCM

RCM

RCM has considerable experience with projects similar to the 36th Avenue North project. The reconstruction of 36th Avenue may involve some replacement or repair to the underground utilities system. The RCM team has considerable experience in infrastructure replacement that was demonstrated on the Hopkins Sixth Avenue Storm Sewer construction project featured in the Related Experience section of this proposal. Our design team has the experience to produce a design that will allow the contractor as much flexibility as possible to complete the project on time and minimize disruption to traffic and the project area. Our goal is to:

- Maintain traffic
- Lower costs by allowing contractor flexibility
- Maintain high quality construction

With a project of this complexity and publicity, communication during study, design and construction between the City Staff, RCM, the contractor, and the community will be critical to the success of this project. Our inspectors have experience working in developed areas and can resolve most routine problems and concerns which may arise during construction. There are times when an inspector cannot resolve a problem and it becomes necessary for the project engineer to be involved. Our office is only fifteen minutes from 36th Avenue and **the project engineer is only a phone call away** from being on the project site. This unique capability can save the City money, helps prevent project delays, and improve the project quality. This capability and RCM's demonstrated desire to provide responsive service to the City provides a valuable benefit to Crystal.

PROFESSIONAL QUALIFICATIONS

PROFESSIONAL QUALIFICATIONS

Rieke Carroll Muller Associates, Inc. (RCM) is an employee-owned firm, incorporated in the State of Minnesota. RCM began operations in 1955 in the areas of Municipal and Environmental Engineering. From that time, the firm has grown into one of the region's largest multi-service engineering and architectural firms with approximately 110 employees.

RCM is organized principally to serve the needs of Minnesota cities. To accomplish this, a full range of technical design services are available in-house. The technical services most often used by cities - Civil Engineering and Survey - are decentralized to better serve a large geographic area. These skills are available from the headquarters office in Minnetonka and our three branch offices in Minnesota. Technical skills for architectural design, mechanical, electrical and structural engineering are available in our Minnetonka office. Cost effective analysis is performed routinely on projects that RCM is involved by all disciplines.

Highway, street and infrastructure design is a specialty area of practice for RCM. We have developed this specialty in the civil engineering disciplines that are required to complete a project like the Crystal 36th Avenue reconstruction.

RCM's policy is to encourage participation from its clients. We invite our clients to review methods and alternative solutions with us. We work closely with involved agencies such as the MnDOT, DNR, Corps of Engineers and Watershed Districts.

We are organized to serve the City of Crystal in the development of the 36th Avenue Project and have the staff and qualifications to provide the services you require.

Municipal Engineering and Surveying

RCM's Municipal Engineering and Survey Department includes 11 graduate engineers, 15 technical support personnel and 12 survey personnel. The principal activities of this department include the design of sanitary sewer, watermain, storm drainage systems, site grading and transportation systems. The department performs as a consulting engineer to various communities throughout Minnesota.

Transportation and Infrastructure Design Services are a specialty function of this department. Available services range from project design reports and feasibility studies through preliminary and final design of facilities and include construction services by personnel familiar with MnDOT methods and specifications. Clients who have used these services include cities, the State of Minnesota (Camp Ripley), MnDOT, U.S. Corps of Engineers, U.S. EPA and private clients.

Our approach employs the use of a team of civil, electrical, mechanical, structural and architectural personnel appropriate to the specific project. Our experienced staff can design grading, paving and sidewalks for roadways, utilities, parking lots, street lighting and signals, street scape and downtown renovation including store front remodeling.

The RCM design team has demonstrated an ability to expedite projects from planning to completion of construction. Every assignment receives the necessary personal attention to meet each client's differing requirements and need of unique solutions. The firm has prided itself in being able to deliver projects on time and within budget. In addition, the ability to provide realistic cost estimates; clean, concise and complete drawings; and understandable specifications is a result of thorough quality assurance.

Construction Services

RCM's Minnetonka Construction Services Department includes 15 permanent technical persons. In addition, each branch of the Municipal Department is staffed with personnel that are qualified for inspection and surveying. The principal activities of Construction Services personnel include:

- contract administration,
- shop drawing review,
- observation of construction to determine conformance to plans and specifications,
- construction staking,
- coordination of project start-up, and
- assistance with grant administration.

In addition to roadways, our Construction Services staff has experience with the following types of projects:

- municipal utilities,
- bridges,
- multi-family housing,
- commercial buildings, and
- renovation of older structures.

The skills derived from this variety of construction types is an added benefit on city reconstruction projects.

Outside Consultants

Due to our in-house capabilities, the need for outside consultants will be limited. The use of a geotechnical consultant would be needed for soil borings and testing. We propose to use a geotechnical consultant that is acceptable to the City.

We propose to use Benshoof & Associates, Inc. as our traffic consultants to assist us in analyzing traffic flow, turning movements, and geometric layout.

Through a combination of experience and personnel, Benshoof & Associates, Inc. is well qualified to assist RCM to provide the services necessary for this project including:

- analysis of traffic operations,
- design of roadway improvements,
- traffic analysis and signal design, and
- traffic control plans during construction.

PROJECT APPROACH

PROJECT APPROACH

Problem Statement

The City of Crystal has found it necessary to reconstruct 36th Avenue North from Welcome Avenue to Louisiana Avenue. Due to the deterioration of the driving surface throughout the length of the proposed project, the City finds it desirable to consider the following elements:

East Half of Project
(Douglas Drive to Welcome Ave.)

- Proposed 48' width (44' existing)
- New curb and gutter
- Sidewalk
- Complete storm sewer
- Utility repair as needed
- New pavement, base/subbase
- Funding - MSA (assessments possible if needed)

West Half of Project
(Douglas Drive to Louisiana Ave.)

- Existing 44' width
- Spot repairs/patching
- Bituminous overlay
- Funding - City infrastructure fund

For both sections of the project it will be necessary to:

- Relocate traffic signals and control as required.
- Evaluate problems with construction including detours, phasing and schedules.

Issues

RCM has identified what we believe to be some of the key issues involved with the proposed project. These are the issues that should be addressed in the project development report and during the initial stages of the preliminary design. With these questions answered, the project can proceed in a timely fashion with delays minimized. These issues are seen as follows:

- Concern of residents about trucks, street width, speed, pedestrian crossings, noise, and air quality.
- The need to retain a residential identity.
- Develop plans and specifications that will allow construction to proceed and still provide residents access.
- Maintain City Council and public support throughout the project.
- Project financing and assessments.
- Variance from 52' width required by state aid.

- Extensive drainage work east of Douglass - Corps of Engineers project on Bassett Creek now complete.

- Communication with staff, Council and residents to accomplish the project with emphasis on the issues listed above.

Feasibility Study

The feasibility study of the 36th Avenue project will deal with a combination of all project elements and analysis of each component as it relates to the identified issues. The RCM design team has extensive experience with each of the issues identified as they relate to the project development.

Initially, RCM will provide design alternatives which will attempt to improve traffic flow patterns, if possible. Issues which will be considered in design are turning movements, traffic lighting, and pedestrian crossings.

Secondly, we will analyze possible traffic flow patterns during construction and provide alternatives for detouring vehicular and pedestrian traffic around construction and allow access to residences which are being affected by the construction.

The public utilities in 36th Avenue will then be reviewed for integrity, capacity, and compliance with the City's Master Plan. Areas where the utilities need to be replaced or repaired will be identified (as directed by City Staff) and various construction methods will be analyzed. Issues which will be addressed are:

- Minimizing disruption to residences access.
- Providing for vehicular and pedestrian traffic across 36th Avenue.
- Construction schedule - will the project have to be built in phases?
- Construction affects on adjacent buildings.
- Soil conditions.

In addressing the soils, the RCM design team will draw from their own experience as well as that of an experienced soils consultant as necessary to develop and evaluate alternate solutions. Based on our experience, we would recommend a soil investigation during the initial feasibility study to determine soil conditions on the project. This information would be necessary to evaluate alternate solutions and the viability of the project.

RCM will then provide an initial cost estimate for any alternatives developed and review possible funding options such as state aid, utility funds, infrastructure funds and assessments. Our goal will be to obtain as much state funding as possible to reduce local costs.

Throughout the initial feasibility study, we will work closely with the City staff to address their concerns and incorporate their ideas. When the feasibility study is completed and in agreement with the City Staff, RCM will present the feasibility study to the City Council and the various committees involved with the street reconstruction for review and comments. RCM will attend Council and Committee meetings to address concerns that are raised. We will also hold public meetings for the neighborhoods adjacent to the project to address their concerns. Our goal is to keep the public informed about the project, maintain community support.

RCM will then present the Feasibility Study to committees, if directed by City Staff, for their review and comments. Our goal will be to obtain the support for the project. We will then present the Feasibility Study to City Council for their review and comments as directed by the Staff.

Design

At this stage one design alternative has been chosen by the City to be used for final plans and specifications. The principal objective of final design is to produce bidding documents (construction drawings and specifications) consistent with the program established in the Feasibility Report. These documents will be technically compatible with the requirements of MnDOT to qualify for State Aid funds.

During design RCM will contact all the private utility companies involved and coordinate utility relocation and replacement with them. We will also determine a construction schedule and establish deadlines for the utility companies to move, support or replace their lines.

Also, during design we will meet with potential Contractors to discuss the constructability of the project and incorporate ideas they may have which would help speed construction and reduce costs. RCM's goal is to produce a construction schedule and deadlines that a contractor can realistically meet. By setting a realistic schedule and phasing the project, if necessary, the City isolates construction to certain areas and can minimize disruptions. This will help maintain community support for the project by finishing a phase of the project on time.

RCM will then submit a complete set of plans and specifications to MnDOT for review to qualify for State Aid Funds and to other appropriate agencies for review to obtain additional funds and the proper permits. Plans and specifications will also be submitted to the City Staff for review and comments.

A detailed cost estimate will be prepared to be submitted, with the plans and specifications, to the City Council for review and approval.

Bidding and Construction

During the period of advertisement for bids, the design team will monitor and respond to questions regarding project requirements for prospective bidders. They will provide written responses in the form of addendas to the specifications if necessary.

When bids are received they will be reviewed and checked for accuracy and a recommendation for award of contract will be made. RCM personnel will also assist the City in preparing construction contracts and final steps to secure a notice to proceed with construction.

RCM personnel will organize and conduct a pre-construction conference including representatives of the City, the contractor, sub-contractors and utility representatives. The contractor's detailed construction schedule will be available for this meeting. This schedule will be used to prepare a cash flow analysis for the City and the funding agencies.

Other topics to be addressed at this meeting will be:

- procedures for contractor submittals,
- conformance to permit requirements,
- on-site storage of materials and equipment,
- start-up procedures and the responsibility and authority of participants in the construction process.

RCM will also conduct a public meeting to inform the community of the upcoming construction and discuss the construction schedule, outline detours that will be in affect and discuss a procedure for asking questions and registering concerns during construction. This procedure will include an opportunity for people to call our resident inspector after business hours until 8:00 p.m. Afterwards an answering machine will be on line to provide construction information and updates.

The design team will also prepare a detailed "Construction Phase Service Guidelines" for use during construction. The principal items covered will be as follows:

- Daily documentation to be prepared by the resident project inspector including personal diaries and photographs.
- Weekly progress reports.
- Coordination procedures for construction activities.
- Sampling/testing schedules and procedures for construction materials.
- Contractor's submittal schedule.
- Construction record drawing documentation procedure.
- Control system for measuring and documentation of construction quantities.

The resident inspector can implement his activity in accordance with the procedures outlined in the "Construction Phase Service Guidelines." He will utilize survey crews and testing services as construction progress demands.

Progress meetings will be conducted to maintain communications among all project participants. Written reports will be issued by RCM to assess the status of the pertinent elements, review potential problems and document site visits as directed by the City.

Schedule

The amount of time to develop the 36th Avenue Project will vary due to such unknowns as:

- The amount of public involvement desired.
- Funding availability.
- City Staff and Council participation.

A suggested time frame for the project is as follows:

• Consultant selected	May 15, 1990
• Complete Contracts - Start Feasibility	May 29, 1990
• Complete Feasibility Study	August 6, 1990
• Begin Project Design	August 1990
• Complete Design	November 1990
• Bid Project	January/February 1991
• Start Construction	April 15, 1991
• Complete Construction	September 1991

The time frame for the project may be shortened, but City, Public and State participation time will be reduced accordingly.

RELATED EXPERIENCE

RELATED EXPERIENCE

MUNICIPAL ENGINEERING EXPERIENCE

RCM has developed expertise in municipal engineering by providing a wide variety of professional engineering services in hundreds of municipalities, counties and townships. The planning, design and construction of the following public works projects have been at the forefront of the firm's work volume:

- surveying,
- streets and roadways,
- watermain systems,
- sanitary sewer systems, and
- storm sewer systems.

RCM's objective is to help cities find a solution to existing problems and minimize future problems through creative and effective full service engineering.

Several pictures of municipal projects we are particularly proud of are presented at the end of this Section.

Our quarterly publication, entitled the RCM Record, provides topics of interest to our clients. Two issues of the RCM Record are included at the end of this Section. They present issues of "Infrastructure" and "Municipal Engineering."

The following are areas of service the Municipal Engineering Department has provided to the listed clients.

Surveying

RCM has been providing land surveying services for both public and private clients for over 30 years. RCM has **four survey crews,** each crew led by a **registered land surveyor.** RCM's surveying experience includes:

- subdivisions/plats,
- certificates of survey,
- easement descriptions, and
- lot corner placement and replacement.

Surveying experience includes areas as small as a city lot, up to developments of several hundred acres. RCM developed the master plan and is providing surveying services for U.S. Homes for a **600 acre phased residential development plan** in the City of Rosemount.

RCM has **"total station" capability** for our surveying crews to more efficiently provide surveying services for our clients. The output from this system is **downloaded into RCM's existing CADD system** to automatically prepare survey drawings.

Streets and Roadways

RCM has considerable experience in:

- Municipal State Aid (MSA),
- County State Aid Highway (CSAH),

- Municipal State Aid (MSA),
- County State Aid Highway (CSAH),
- Minnesota Department of Transportation (MnDOT),
- Federal Aid Urban (FAU), and
- State Trunk highway turnback projects.

Our personnel have set up original MSA systems and completed a substantial number of **MSA projects.** An example of a more unique MSA project was the Schooner Boulevard project in Eden Prairie. The project included combinations of excavation and backfill surcharging, subdrains and the use of geotextile fabric to solve problems with unstable soils and peat deposits.

Watermain Systems

RCM's experience ranges from watermains in numerous rural communities to **30-inch transmission lines** in Marshall and Mankato, and has played a significant role in the development of **municipal water systems for nearly 70 municipal clients.** This has often included the design of water distribution systems in difficult soils such as peat. These conditions required varied design requirements including:

- piling,
- engineered backfill, and
- soil stabilization through surcharging.

Sanitary Sewer Systems

RCM's design experience includes hundreds of miles of sanitary sewer, trunk sewer, and several **interceptor sewers for more than 70 communities** throughout Minnesota. Sizes have ranged from 8 inches up to 90 inches, and have been **installed at depths up to 70 feet.**

The North Interceptor project in Eden Prairie and the Three-barrel Siphon crossing of the Minnesota River are of particular interest. These major sanitary interceptor sewer projects collect wastewater from the Southwest and Lake Minnetonka communities and transport it to the Blue Lake Treatment Plant in Shakopee. **RCM won the Consulting Engineers Council's Grand Award for engineering excellence for this major wastewater conveyance system.**

Storm Sewer Systems

RCM has conducted studies and designed drainage facilities for areas ranging in size from more than **100 square miles down to subdivisions of a few acres.** These projects have included the design of:

- storm sewers,
- open channels,
- culverts,
- stormwater detention and retention ponds,
- erosion control structures,
- pumping stations,
- sediment basins, and
- low head dams.

STREET PROJECTS

Eden Prairie Subdivision
Eden Prairie, Minnesota

Schooner Boulevard
Eden Prairie, Minnesota

Valley View Road - Prairie Center Drive
Eden Prairie, Minnesota

This project is a part of the Eden Prairie Center Ring Road from Trunk Highway 169 crossing Highway 5 to Baker Road in Eden Prairie. This 2.8 mile MSA project is a four-lane divided highway with turn lanes and the project included utility relocation and construction, storm water ponding and traffic signals. Unique features of the project included a high water table that required use of underdrains and geotechnical fabric and areas of unstable soils that required a design using surcharge techniques as well as conventional excavation and backfill.

WATER RESOURCES ENGINEERING
1989 Construction Projects

Hopkins Sixth Avenue Storm Sewer

County Road 3 Box Culvert Foundation

RCM Record

Infrastructure

"The underlying foundation or basic framework (as of a system or organization)."

Webster's Dictionary

Every day more than 1 million gallons of tapwater disappear through leaks beneath the streets of Berwyn, Ill. In Milwaukee there were 170 watermain breaks in January alone.

Newsweek, August 2, 1982

The frailty of New York City's antique structures was dramatized 18 months ago when a badly corroded cable broke loose from the 99-year-old Brooklyn Bridge and killed a Japanese freelance photographer. The city has provided only limited funds to replace the cables, which have merely been encircled with a band of steel so that when the next one pops, it will not mangle cars or pedestrians.

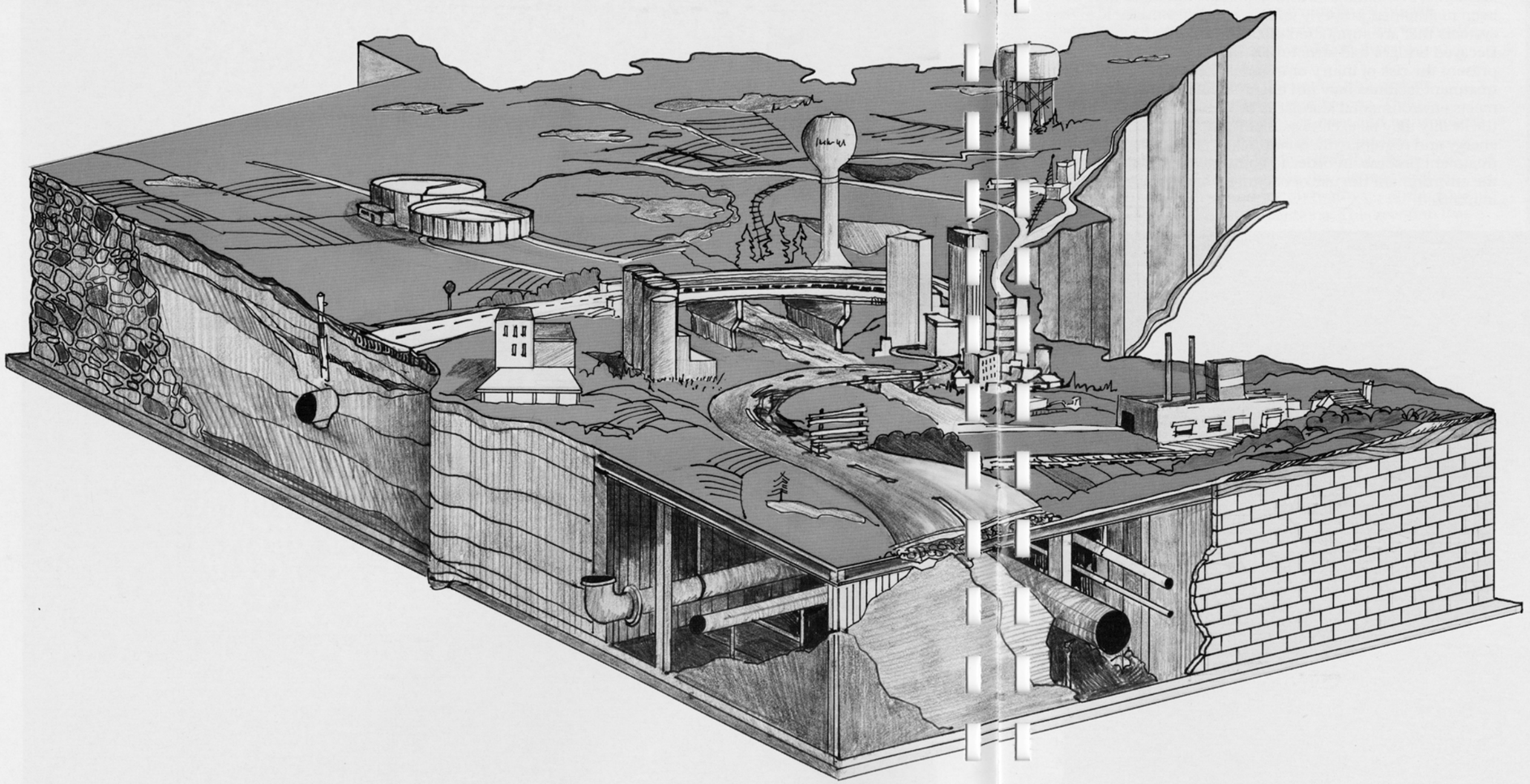
Time, January 10, 1983

"Hardly a week goes by that we don't have some kind of roof problem at one of our 29 fire stations," says St. Louis budget director Jack Webber, whose city hall roof nearly fell in on him last year. In New York City nearly half of the 1,087 public schools are at least 50 years old and many suffer rotted windows and outdated plumbing and electrical systems.

Newsweek, August 2, 1982

A state-commissioned study in Louisiana found the roads so rough that the average driver wasted $97 a year in unnecessary gasoline costs. Illinois motorists pay an average of $50 a year on new shock absorbers and front-end alignments necessitated by bumpy roads.

Time, January 10, 1983



Across the country, events like these are becoming more common as the infrastructure supporting our cities ages and decays. Bridges, roads, dams, buildings, wastewater collection and water distribution systems, and treatment plants are showing evidence of old age and in many instances a lack of maintenance. The interstate highway system, for example, was built mostly in the 1950s and was designed to last about 25 years. Today the Congressional budget office says that two-thirds of the system is in poor or fair condition. Although Congress funded 90% of the original construction costs, it wasn't until 1976 that Congress budgeted money for interstate repair. The larger network of primary and secondary roads are thought to be in worse condition than the interstate system. Many city streets are plagued by potholes. Nationwide, many bridges are becoming structurally deficient or functionally obsolete. Some bridges are restricted by weight or already closed. Public buildings such as schools, government buildings, police and fire stations, prisons, jails, and public hospitals are deteriorating, resulting in roofing problems, faulty electrical and mechanical systems, and concern for the structural integrity of the building. Sanitary and storm sewer lines are deteriorating and cracking causing infiltration and inflow problems. The capacity of other lines are inadequate causing backup problems for the residents and businesses in the affected area. Water and wastewater facilities are in need of repair and process upgrading.

Minnesota's Infrastructure

Minnesota is thought to be in better condition than many states. Some reasons for this are that Minnesota's cities are not as old as many of the cities in the United States and cities in Minnesota have been well-planned which has aided in orderly maintenance procedures. The public's concern for its facilities has also been apparent. Minnesota has constantly spent more than the U.S. average on maintenance and repair.

However, Minnesota is not without problems. Structures 30 to 40 years old are wearing out, particularly those that have been neglected or overused. The Minnesota climate deteriorates building materials at a faster rate than more temperate climates. It is estimated that more than one-half of the state's infrastructure budget could go to repair or replace deteriorating roads and bridges. There are more than 3,400 bridges in Minnesota in need of repair. The network of roads in this state is costly to maintain. It is estimated that approximately 61% of the trunk highway system is at least 35 years old. In 1978 the Economic Development Administration surveyed 117 wastewater treatment facilities in Minnesota and found 42 were operating at 80% or more of plant capacity. Water treatment fared better—only 15 of the 168 surveyed were using 70% or more of their capacity. In addition to pushing the capacity of treatment facilities, many communities are seeing deterioration in the treatment plants' physical, electrical, and mechanical systems.

The Cost Of Infrastructure

Inspection, repair, and maintenance are costly, and many communities have adopted a "we-can't-afford-it" posture. However, a National League of Cities study shows that massive spending is not the answer. Smaller investments over a number of years could take care of many priority infrastructure needs in Minnesota. In order to prevent infrastructure from becoming a dumping ground for an endless stream of money, it is important that communities initiate maintenance programs and use current engineering methods to identify and solve problems.

The longer repairs are delayed the costlier they become. Not only do repair costs grow as work is postponed, but the hidden costs of faulty infrastructure add up as well. Deteriorating highways cause damage to cars and slow traffic, resulting in gasoline waste on congested highways. The Highway Administration estimates that a car's operating costs increase 35% when driven on roads rated in poor condition rather than good condition. When trucks have to avoid bridges, we pay more for the goods they carry. Industrial use puts a strain on treatment, distribution, and collection systems and may exceed the system's design limitations. Communities may lose businesses needed for economic growth because their public facilities are inadequate. Studies estimate that half of all American communities cannot expand because their water treatment systems are at or near capacity. With the U.S. importing a significant part of its oil, and as the cost of energy again starts to rise, we will need to be conscious of our energy usage. Energy is a significant cost in operating treatment facilities and public buildings. When these facilities do not operate efficiently, every community member pays through increased taxes or higher user charges. Repairing and maintaining infrastructure is an investment. It prepares the community for economic development, preserves historically significant structures, and enhances the overall aesthetics and usefulness of the facilities.

Hazards To Health And Life

Health and life hazards result from deteriorating infrastructure. Deteriorating roads can cause car accidents. In buildings, heating systems that have not been maintained properly and power distribution systems that are antiquated often present fire hazards. Decayed bridges and structurally deficient buildings all present the risk of injury or even loss of lives. Faulty treatment facilities may not ensure treated water that meets environmental standards or the cost of operating the facility may be excessive. Inefficient plants may waste energy and require extra quantities of chemicals for the treatment process. In order to control cost and protect the environment the use of chemicals should be minimized.

How A Consulting Engineer Can Help

Transportation

In evaluating a road system the engineer will examine levels of use, materials used, surrounding drainage patterns and facilities, and the integrity of the roadway, base, and bridges, foundations, and peripheral equipment such as lighting.

In the northern region of the nation, the climate created the need for special design criteria. The expansion and contraction of pavement and bridge decks due to annual climatic changes accelerates the deterioration of roads and bridges and the freeze/thaw cycles create additional stress on the highway system. Salt used to melt snow and ice on roadways and bridge decks accelerates chemical reactions. This reaction can eventually attack the reinforcing steel used in concrete pavement and bridge decks and structural systems. The salt also causes deterioration of the concrete. Often the structural systems can be repaired and replacement is not necessary.

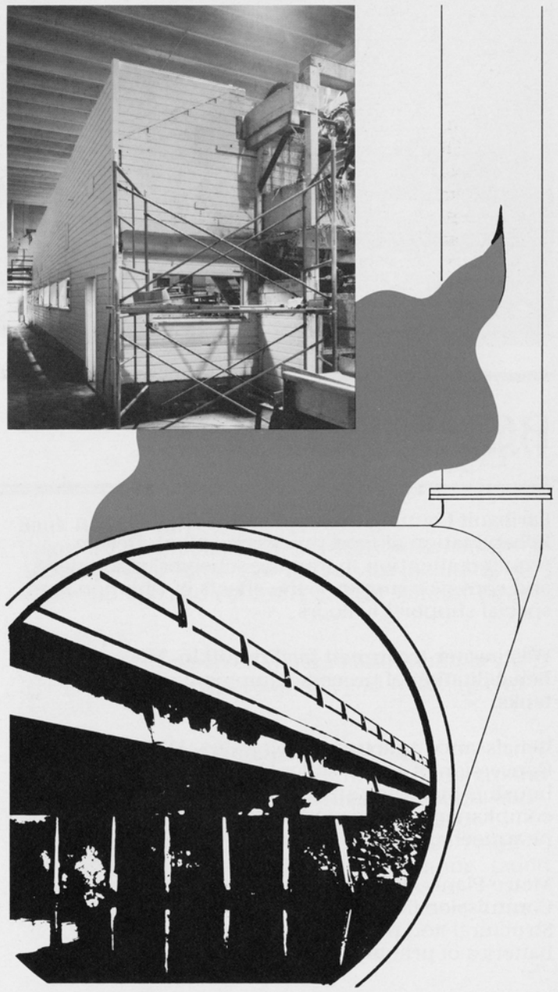
Another problem is increased traffic loads on bridges and roads. Many of these systems were not designed to handle the volume and weight of traffic they now receive. Rehabilitation, and not replacement, can often improve the transportation system without incurring the costs of a totally new system.

Buildings

A professional architect and engineer will evaluate a building's systems and materials to determine what needs to be done to bring the building into compliance with current governmental codes. An architect will also consider the function of the building and assess if space planning is needed to create a functional and orderly work space. An architect will evaluate the possibility of reusing of these materials in the rehabilitation of the building. They will also consider how an addition can be designed to enhance the existing facility's appearance. An assessment of the structural, electrical, and mechanical systems may be appropriate. These systems in older buildings are often outdated and can be a safety hazard. Newer electrical and mechanical designs are likely to be safer and more energy efficient.

Sewer Systems

In constructing sanitary sewer collection systems in Minnesota, clay pipes were often used. Because of their age many of these pipes are now cracking and collapsing resulting in leaks, blocked flow, and resulting sewer back-up. The evaluation of a sanitary sewer system, and the infiltration and inflow of water is commonly referred to as an I/I study. Some methods used for this evaluation include the daily monitoring of the amount of flow and televising the line to examine the pipes. In communities that have combined storm and sanitary sewers, a system that is no longer permitted in new construction, an engineer can evaluate the existing system to determine the best approach to either separating the sewers or handling the combined flows into the communities wastewater treatment facility.



RCM Offices

Rieke Carroll Muller Associates Inc., a professional firm of engineers, architects and land surveyors is one of the largest diversified consulting design organizations in the upper midwest. Operation offices are located in four cities.

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The Record

Municipal Issue

Summer 1989

THIS ISSUE:

UPCOMING ISSUES:

FALL '89 ENVIRONMENTAL ISSUE

- TREATMENT PLANT FUNDING
- CURRENT LANDFILL REGULATIONS
- TRICKLING FILTER REBIRTH

WINTER '89 ARCHITECTURAL ISSUE

- HANDICAPPED ACCESS TO BUILDINGS
- COMPUTERS IN ARCHITECTURE DESIGN
- BUILDING DESIGN

PAVEMENT MANAGEMENT SYSTEMS

by Glen Hodgson, PE
Grand Rapids Office Manager

The "Problem Solvers" section of this issue of The Record deals with the use of Pavement Management Systems (PMS's) as a tool in developing a solution to the current crisis of insufficient funding of roadway and street maintenance and repair. Although the concept of PMS has been around since at least 1979, most of the PMS work at the local level has been done in the past five years. The concept may, therefore, be a new or unfamiliar one to many local officials.

A PMS has been defined as "an integrated set of systematic procedures designed to assist engineers and managers in making consistent and cost effective decisions related to the design, maintenance and restoration of pavements." More simply, PMS is a tool that local officials can use to make better decisions in spending their road and street maintenance dollars.

A properly developed, implemented and operated PMS will provide local governments with substantial improvements over more subjective, "rule-of-thumb" management approaches. With PMS the management approach emphasizes life-cycle costing and preventive rather than corrective maintenance and repair actions. A good PMS will help local officials apply preventive measures to a street before major repairs are needed and major repairs before total reconstruction is needed. The basic strategy is to put the available money into streets before the natural and inevitable pavement deterioration becomes too severe to apply low-cost corrections.

Most Pavement Management Systems are computer-based. It is possible though, particularly for smaller road

PAVEMENT continued on back page

WASTEWATER BACKUPS — RELIEF IS NEEDED

by Doug Parrott, PE
Project Manager

Wastewater backups in basements! It's an unpleasant experience for both homeowners and city officials. What can be done? This situation was faced by officials in the City of Glencoe, including Wastewater Superintendent Tom Vogt. Homeowners in northwest Glencoe were experiencing wastewater backups during heavy rainfall events — an obvious indication that clear water was entering the sanitary sewer system from infiltration/inflow (I/I). Residents demanded a solution to the problem. Since the city's wastewater plant and main interceptor lines were located over a mile away, a new trunk sewer line was not cost effective. Removal of I/I was an alternative solution, but a great deal of time and expense would be required to identify, locate, and remove the I/I.

A low cost alternative was rerouting a portion of wastewater flows from high flow areas to low flow areas. RCM and Mr. Vogt proceeded to analyze the feasibility of this alternative. The analysis included monitoring wastewater flows. The study concluded that

surcharged wastewater flows could be rerouted to a low flow area without harming residents in that area and thereby eliminate backups in northwest Glencoe.

The relief sewer system will be constructed and operational by July of this year. The project is estimated at $86,000 and will provide the relief both homeowners and city officials are seeking.

COMPUTER MAPPING SYSTEM

by Wallace N. Johnson, PE
Mapping Director

The use of a computer mapping system is changing the way we conduct our day-to-day business. This new technology is providing new tools for graphic and attribute record maintenance as well as increasing efficient data exchange between departments.

In order to select the most effective mapping system, one must first carefully analyze the work organization and review the present management of records and maps. When this process is complete, an appropriate selection is made of one of the dozens of mapping systems available.

As recent as three years ago, one dominant factor for system selection was compatibility with other in-house or neighboring computers from which existing record data are to be tapped. Efficient system selection involves finding the software capabilities and database design that will best serve work needs. The goal being to eliminate redundancy, maintain current information, and provide speedy and convenient service.

With a successful computer mapping system, a city or county can expect to realize lower map user costs, increased productivity and pay back of system costs in five to seven years.

"JUMPING ACROSS" HIGHWAY 10

by Terry Wotzka, PE
Project Engineer

Finishing touches were completed earlier this year on the new 90 acre **Sauk Rapids Industrial Park East.** The park is located east of U.S. Trunk Highway 10 in Sauk Rapids.

The construction of the Industrial Park allowed the City to "jump across" Highway 10 with water and sewer utilities, thereby opening up the East Side for future development.

The project construction costs were approximately $1.5 million, a portion of which was funded by a grant from the Economic Development Administration. As of April of this year, the park was already 80% occupied.

RUNWAY RESURFACING

by Duane Cramer
Project Engineer

The Federal Aviation Administration (FAA) has revised its F.A.R. Part 139; Certification and Operations: Land Airports Serving Certain Air Carriers. As a result, those airports served by certificated air carriers have been advised that providing a skid resistant runway surface is a high priority item with deadlines. If these schedules are not met, possible enplanement funding could be lost or curtailed.

RCM personnel have explained the options to several potential airport clients throughout Minnesota. Those options include grooving the runway surface, overlaying the runway surface with a porous friction course (an open graded asphalt mix that allows rainwater to pass through the course and drain off to the side of the runway) or seal coating the runway. Each method will increase the skid resistance. The grooving and porous friction course provide a longer term solution. With passenger safety in mind, the FAA has accelerated this program.

Problem Solvers

About the Author

Glen Hodgson, PE
Grand Rapids
Office Manager

Mr. Hodgson recently joined RCM to open the Grand Rapids Office. He has 14 years experience in municipal engineering with 13 of those years in the public sector. Mr. Hodgson has been City Engineer in both Faribault and Grand Rapids.

The Issue

PAVEMENT MAINTENANCE AND FUNDING

Local government agencies in the United States have jurisdiction over 2.8 million miles of roads and streets. Those roads and streets are among the most visible parts of any county, township or municipality. They also command a large part of the annual budgets of those agencies.

Unfortunately, many of the roadway and street pavements are reaching the end of their design life at the same time that local governments are being squeezed financially. This unfortunate coincidence means that *given traditional management approaches* sufficient funds are not available to maintain the roadway and street systems at current serviceability levels. In addition to funding increases, some management tool is therefore needed to better allocate a local government's roadway budget. In short, a tool is needed to provide the taxpayer with the best pavements for the funds invested.

The Solution

The development of a Pavement Management System (PMS) can provide a local government with the required, new management tool.

When first discussing PMS, it is important to recognize the dichotomy between the network level and the project level. The network level deals, of course, with a jurisdiction's total roadway or street system. The project level deals in more detail with single segments within the system. A good PMS will embody effective management practices at both the network and project levels.

The network level element of a PMS that is at the heart of the whole system is an inventory of street segments. Data that might be included in the inventory are segment identification, length, width, functional classification, ADT and pavement structure.

Also a critical network level element is a standardized pavement inspection system. Inspection data (e.g. roughness, structural parameters, visual distress, skid resistance) are combined to generate an objective, numerical, composite rating of the condition of each street segment. Typically this condition rating is expressed as a "pavement condition index" (PCI).

Another essential part of network level management is a set of defined, accepted, and applied standards of what is the minimum acceptable PCI. (The minimum PCI can and probably should vary from arterial to collector to residential streets.)

Given the PCI's from segment inspections and the standard, minimum acceptable PCI's, a PMS must then include an analysis system that recognizes and flags subpar segments. Although it can be manual, this system is typically computer driven. It can be a simple comparison of a segment's current PCI to the standard. It can also be a more complex prediction of future PCI followed by a comparison to the standard.

Once subpar segments are flagged, the PMS network level procedures should produce a list of feasible maintenance or repair actions for each segment. PMS should then select the best action (this can be modified at the project level) and generate costs to rehabilitate the flagged segments.

Further analysis at the network level sets priorities for rehabilitation of the various segments if the total costs exceed budgeted monies.

The more involved and complex PMS's may also include optimization routines that allocate budget dollars in such a way as to maximize the network-wide PCI. These advanced PMS's also could have a package to compare the effects on network PCI (present and future) of varying funding levels.

The final result of network level analysis is a listing (to the project level) of roadway segments to be improved, repaired or rehabilitated.

The first step at the project level is a more detailed engineering analysis of a segment to determine the most appropriate treatment. After this critical step, plans and specifications are prepared and a contract is let or the work is done in-house.

In summary, it is worthwhile repeating that a Pavement Management System is only a tool to help local officials make more informed decisions. Dedicated professionals and elected officials will always be needed to effectively utilize even the best PMS.

Insights

PAVEMENT continued

authorities, to start with a manual system. A first upgrade might then be to implement a microcomputer based pavement inventory system. As needs and/or finances increase, it is then possible to move up to a more sophisticated system with predictive and analytical functions.

However, whether it is manual or computerized, a full PMS will assist local officials in objectively looking at the entire street network and allocating the budget in a way that maximizes *network-wide* benefits.

ARE MUNICIPAL ENGINEERS CIVIL?

Municipalities have many needs, including on going needs for professional engineering services. The municipal engineer is perhaps the "general practitioner" of the engineering profession. Airports, bridges, buildings, drainage, streets, parking facilities, pumping stations, sewers, watermains, subdivisions, and wastewater, among other things often involve municipal engineers in some-way. Providing, maintaining, expanding, and upgrading a community's "Infrastructure" describes the scope of most municipal engineering projects.

Municipal engineers are usually graduate civil engineers. Civil engineering, the oldest of the engineering professions, includes the planning, design, construction, operation and maintenance of public facilities. In addition, good civil engineers have "people skills." They know how to lead as well as follow. They appreciate and practice teamwork.

I feel municipal engineers are civil. In addition, most of them are courteous and caring! When you need a municipal engineer, seek one that is not only civil, but also a capable professional.

Bob Roskopf, PE, PhD
President/CEO

The Record

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(612) 253-1000

grand rapids
cedarwood center
15 northeast 5th street 55744
(218) 326-4508

FOR MORE INFORMATION
CALL (612) 935-6901

MUNICIPAL CLIENT REFERENCES

References for some of RCM's municipal engineering capabilities from established clients are presented below:

Eden Prairie, Minnesota
Mr. Carl Jullie, City Manager
(612) 937-2262

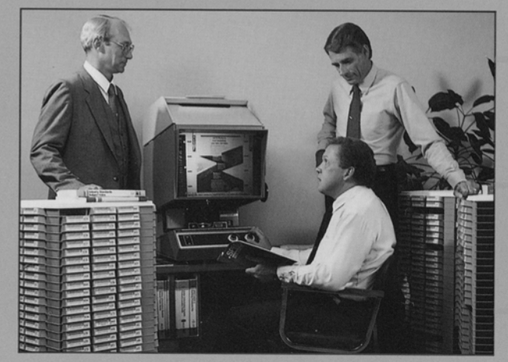
Hopkins, Minnesota
Mr. Jon Thiel, Director of Public Works
(612) 939-1382

Mankato, Minnesota
Mr. Paul Baker, Director of Public Works
(507) 625-3161

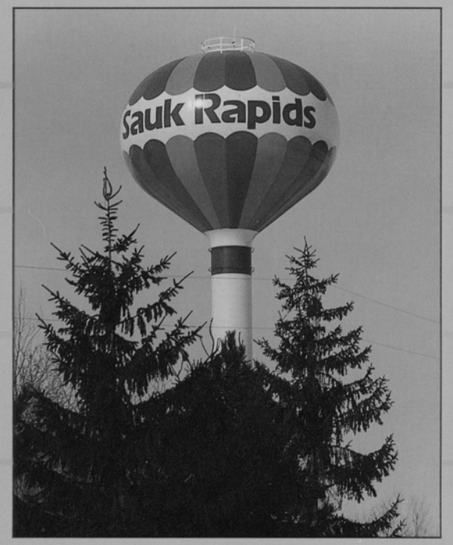
RCM

Since the establishment of Rieke Carroll Muller Associates Inc. (RCM) in 1955, we have carefully assembled a well-educated, experienced professional and technical staff to provide clients with a consistent standard of excellence in engineering and architectural counsel and design. As an employee-owned company, our strength has always been in our people and their ability to competently solve specific problems.

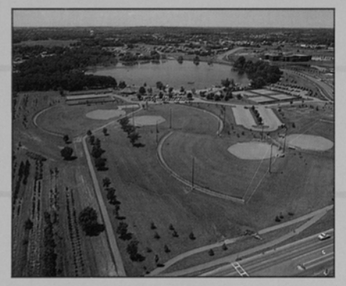
The RCM key to assuring client satisfaction is total commitment to a team approach. Every project is assigned to a team of qualified specialists, each of whom is specifically picked for his or her expertise as it relates to that project. From municipal, civil, transportation, environmental, water resources, electrical, mechanical, and structural engineering to architecture, land surveying, and construction services, we provide the right people for your project. Our record of repeat business from clients is a good measurement of RCM's dedication to meeting our clients' needs.



The Firm

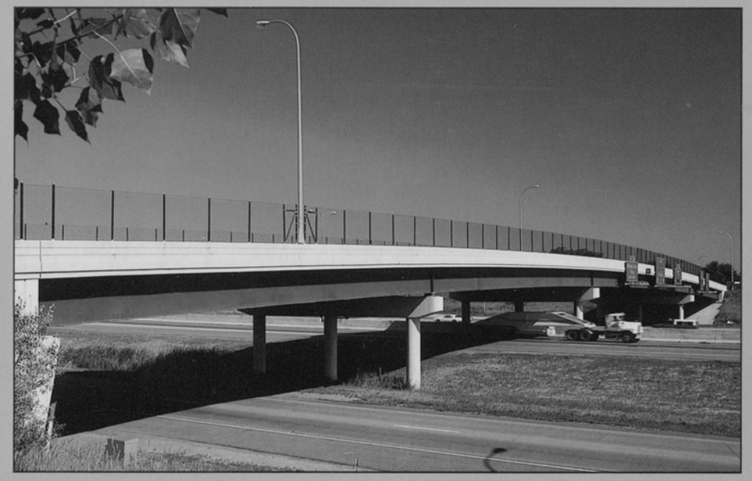


The quality of life in urban and rural areas throughout the Upper Midwest has been enhanced by the many municipal improvement projects completed by RCM. By successfully meeting a wide variety of engineering needs in numerous municipalities, counties, and townships, RCM has become a leader in the municipal engineering field. Our experienced engineering specialists in water, sanitary and storm sewers, streets, downtown renewal, parks, and auxiliary municipal services have met the development, growth, and infrastructure needs of large and small communities since 1955. Many municipal clients have used RCM's planning, design, and construction-phase services for more than two decades, a reflection of our commitment to quality, responsiveness, and professionalism.

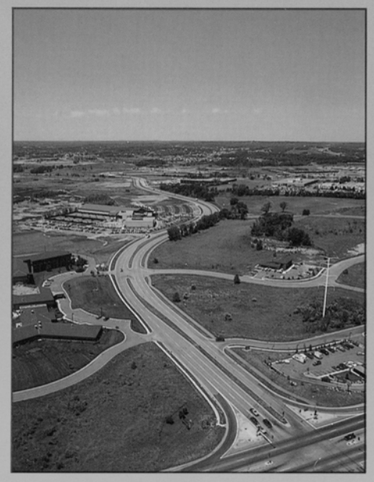


Municipal

Transportation



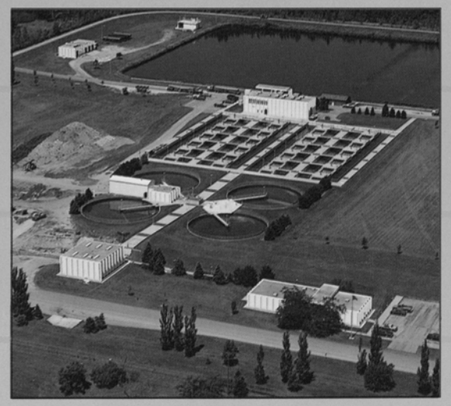
Transporting people from home to work, commodities from farm to market and goods from manufacturer to consumer requires safe, durable, and well designed municipal streets, township and county roads, state highways, bridges and airports. RCM has engineered such transportation systems in communities ranging in size from 200 to over 25,000 residents. Our expertise is especially valuable when difficult conditions, such as high ground water and unstable soils, are present. RCM's transportation systems experience and capability includes the design of culverts, multi-span highway bridges, signalization, sidewalks, parking facilities, bike paths, intersection geometrics, signage, airport runways, navigational aids, hangars, and more.



Municipal-State-Aid (MSA) and Federal-Aid-Urban (FAU) street projects are a significant portion of the work we do in the transportation field. Our engineers have the experience to design quality yet economical transportation systems.

Environmental

Preserving the water quality of our streams, rivers and lakes through proper and cost-effective design of treatment facilities for municipal and industrial wastewater has been a priority at RCM since the design in 1963 of the first of our more than 50 wastewater treatment plants. Our environmental engineering staff offers the educational background, years of experience and innovative engineering design to individually meet the needs of each community. From stabilization ponds in smaller communities and an award winning activated sludge plant in northern Minnesota, to major metropolitan area wastewater treatment plants, our environmental engineers employ the latest in technology to provide facilities which significantly improve the quality of our environment.

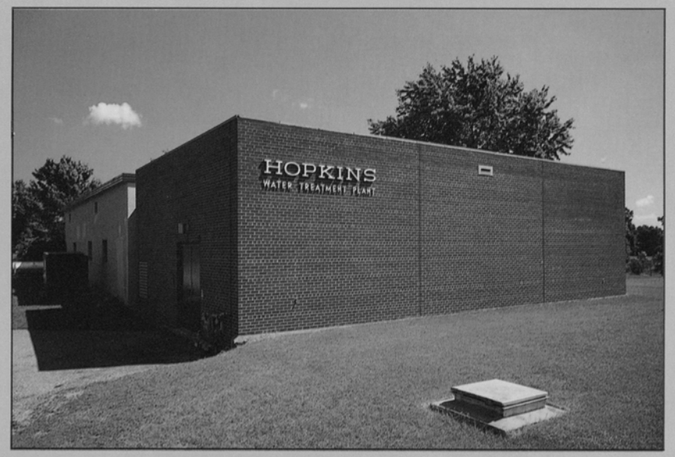


Solid waste and waste-to-energy systems represent additional areas of environmental expertise. RCM designed the first sanitary landfill in Minnesota that had to meet the Minnesota Pollution Control Agency's demanding leachate collection regulations. RCM also prepared the first approved solid waste management plan under Minnesota's current guidelines.

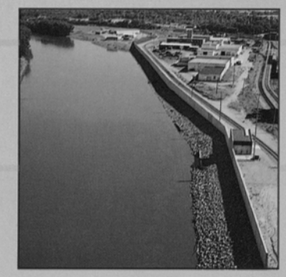
From rehabilitation projects to new facilities, RCM is ready to help you meet the requirements of complex environmental conditions and regulations.

Water is a timeless, renewable, and — in the Upper Midwest — plentiful resource. Yet it must not be taken for granted. Changing water demands, increasing groundwater contamination, aging water supply systems, polluted runoff, and flooding are but a few of the many needs that require effective water resource planning and engineering. RCM provides such services in several specific ways.

We have designed more than 100 municipal wells, 40 water storage facilities, 65 water distribution projects, and 30 water treatment plants for small towns and large metropolitan areas. Today, RCM is well prepared to provide beneficial solutions to the water needs of any community, from the traditional concerns of iron removal and softening to the emerging problems of water contamination by synthetic organic chemicals.



RCM also specializes in surface water management, with extensive experience in stormwater and watershed management projects over the past 30 years, ranging in size from a few acres to 100 square miles. Using up-to-date computer techniques for hydrologic and hydraulic analysis, we create effective methods for managing surface water quality and quantity.

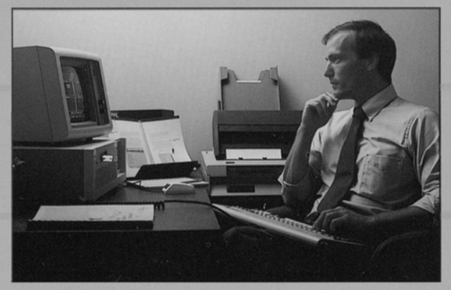


Water Resources

As society grows ever more complex, its buildings require a higher level of architectural response.

Buildings reflect an architectural image and require creative solutions, both aesthetically and dimensionally. That's why we place strong emphasis on client communication — so that we provide a functional and comfortable environment for the people who use the buildings and meet the owner's present and future requirements.

One major benefit our clients enjoy is the option of choosing from a variety of architectural services, from feasibility through design studies to services during construction. And these services are provided by a project manager using a fluid and diverse team approach to match the right people to the right job.

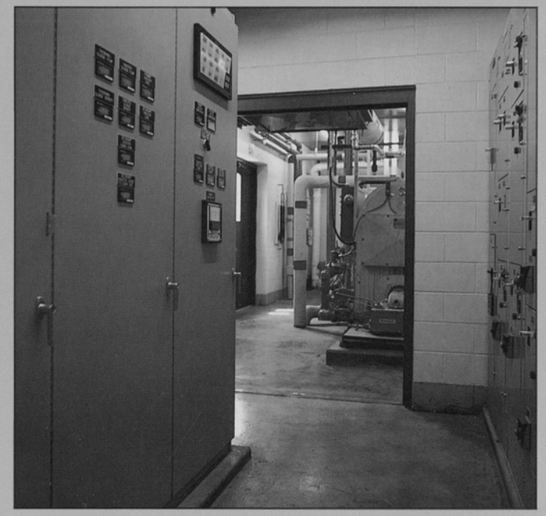


RCM's structural engineers evaluate and select the structural system and materials that are appropriate for the project budget and schedule. Design documents are coordinated with other members of the design team to address aesthetic features, electrical/mechanical systems and occupancy requirements.

In an era of lightning fast technological changes and rapidly compounding building codes, RCM's multi-disciplinary design teams provide a welcome measure of foresight to each project.

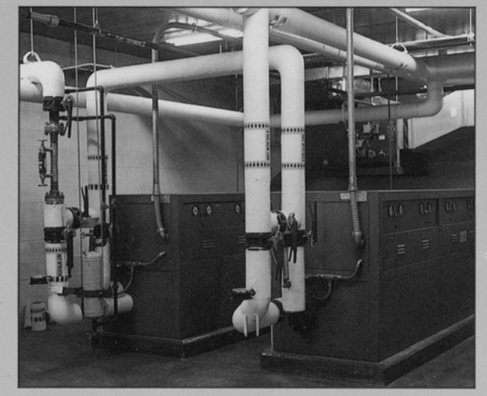
Architectural/Structural

Electrical/Mechanical



The Electrical/Mechanical Engineering Department is an important part of RCM, making us truly a "full-service" firm that can satisfy clients' needs from start to finish.

On electrical projects, energy conserving designs are innovatively engineered for power distribution, utilization, and generation equipment through 69kV. Whether the job at hand is a simple pressure control switch or a complex computer controlled system, RCM's electrical engineers pay careful attention to detail and incorporate advanced techniques to provide modern and efficient electrical solutions.

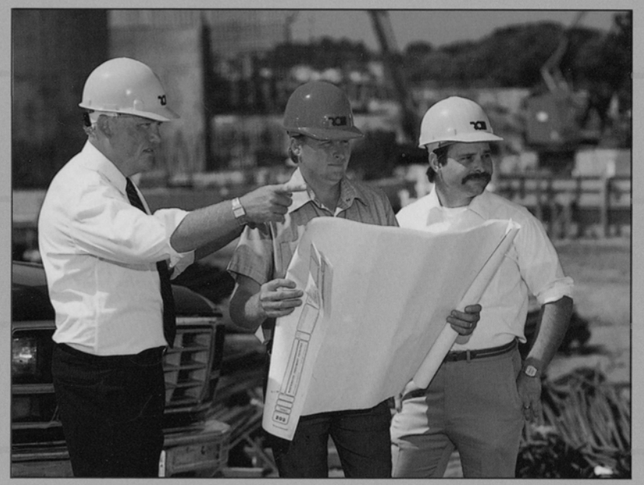


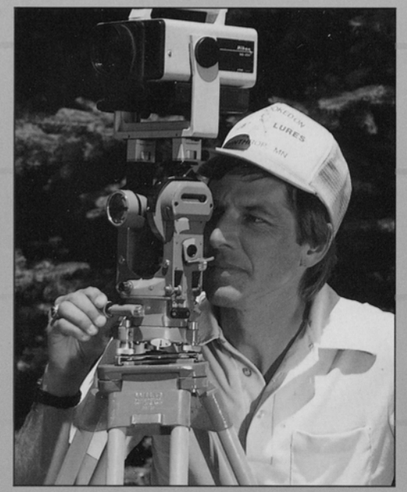
Examples of completed electrical projects include navigational aids and field lighting for airports, complex electrical systems for municipal facilities, outdoor and roadway lighting, integrated electrical distribution and control systems, interior lighting, and automatic stand-by power generation systems.

On mechanical projects, RCM provides cost-effective design considerations for heating, air-conditioning, stand-by fuel facilities, and environmental conditioning for commercial, industrial, and multi-family residential buildings.

Land Surveying/Services During Construction

RCM offers a full range of survey services (from construction staking to topographic, boundry, and mapping surveys) directed by Registered Land Surveyors for municipal and individual clients. With the expertise of our surveying, engineering, and architectural personnel, we are well equipped to provide design services in the preparation of industrial, commercial, and residential subdivisions and plats.





A crucial period of construction begins after a project is designed and the bidding phase is completed. And it's during this period that our clients have appreciated the experience and knowledge of RCM in the areas of soils, concrete, buried utilities, site restoration, and numerous other elements of construction. With this solid construction phase foundation, we are able to provide the following essential services:

Observing contractor performance
Coordinating the sampling and testing of materials
Reviewing shop drawings and submittals
Evaluating and preparing payment requests
Maintaining project records
Preparing progress reports
Coordinating start-up procedures

Our emphasis on communication with contractor and owner provides a significant contribution to a successful project.

rieke carroll muller associates, inc.
engineers
architects
land surveyors

MINNETONKA
Shady Oak Office Building
Suite 200, 10901 Red Circle Drive
Minnetonka, MN 55343
612-935-6901

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217 North 3rd Street
P.O. Box 776
Gaylord, MN 55334
612-237-2924 612-338-2800 Metro

ST. CLOUD
P.O. Box 51
St. Cloud, MN 56301
612-253-1000

GRAND RAPIDS
15 Fifth Street NE
Grand Rapids, MN 55744
(218) 326-4508

RESUMES

ROBERT C. ROBERTSON, PE

Education	University of Minnesota 1955 Bachelor of Civil Engineering
Registration	Minnesota Wisconsin Iowa Nebraska
Professional Affiliations	Central States Water Pollution Control Association Consulting Engineers Council Minnesota Society of Professional Engineers National Society of Professional Engineers Professional Engineers in Private Practice Water Pollution Control Federation Society of American Military Engineers Minnesota Public Works Association

Experience

Mr. Robertson, Chairman of the Board at RCM, is the administrative director of the organization's operations as a diversified consulting/design firm throughout the Upper Midwest.

Joining RCM in 1964, he served as a design engineer in development of plans leading to construction of streets, drainage systems, water supply systems and waste treatment facilities for many municipalities. Mr. Robertson was project manager for numerous interceptor sewer projects sponsored by the Twin Cities Metropolitan Area Waste Control Commission. Included were the three-barrel siphon crossing of the Minnesota River to reach the Blue Lake Wastewater Treatment Facility, the North Interceptor through Eden Prairie to Minnetonka, and sewage and water systems for many other Minnesota communities. He was also project manager for the trunk and interceptor sewer system studies for the cities of Eden Prairie and Mankato. Mr. Robertson was named Engineering Manager of RCM/Minnetonka in 1974 to coordinate design engineering work of several departments. He also serves as Manager of the Minnetonka Municipal Engineering Department.

Prior to joining RCM, Mr. Robertson was City Engineer for the City of Litchfield, MN, from 1960 to 1964 with responsibility for design, construction and maintenance of streets, parks, waste treatment facilities, landfills, sewers and for building inspection. Prior to his Litchfield position, he served as a civil engineer for two years with the Minnesota Department of Highways (now Mn/DOT) with responsibility for construction administration and surveying of Interstate Highway 494/Trunk Highway 5 in the Fort Snelling area.

PETER J. CARLSON, P.E.

Education	B.S., Civil Engineering University of North Dakota
Registration	Minnesota California
Professional Affiliations	American Society of Civil Engineers American Public Works Association

Experience

Mr. Carlson is on the Municipal Engineering Department Staff involved in design of public improvements for several Midwest communities. This work includes the planning and design of site developments and utility improvements and street design. Recent projects include:

- 95 acre subdivision in Eden Prairie,
- 100 acre site in Rosemount,
- 50 acre development in International Falls, Minnesota.

Other municipal projects include:

- concrete road repair for the cities of St. Anthony and Hopkins,
- township road improvements for Itasca and Lake Counties,
- utility and road improvements for Eden Prairie,
- sanitary sewer and watermain study for Hopkins, and
- managing the Wastewater Treatment Facility expansion for the City of Marshall, Minnesota.

Most recently, Mr. Carlson was the project engineer for a storm sewer and culvert improvement project for Hopkins, Minnesota. The storm sewer project involved installing a 66-inch RCP through a residential and light commercial area of Hopkins, lowering the existing sanitary sewer 10 feet, and replacing the old watermain and services with new pipe. The culvert improvement involved installing a 12-foot wide by 7-foot high precast reinforced concrete box culvert support by timber pilings.

Mr. Carlson is familiar with the permitting process and grants and loan process of the:

- Department of Natural Resources,
- Minnesota Pollution Control Agency,
- Environmental Protection Agency,
- Farmers Home Administration,
- Minnesota Department of Transportation,
- Minnesota Department of Health, and
- various watershed districts.

Prior to joining RCM, Mr. Carlson was employed by Los Angeles County Flood Control District. There he was involved in soils exploration, storm sewer design and storm water conservation. Projects in which he was involved included a large diameter storm sewer through downtown Los Angeles, coastal erosion control, and storm water retention basins to recharge the groundwater supply in the desert areas of Los Angeles County.

HARRY KOUTSOUMBOS, PE

Education	St. John's University BS Physics 1967 University of Michigan BS Civil Engineering 1970
Registration	Minnesota Nebraska Pennsylvania Michigan
Professional Affiliations	America Concrete Institute American Institute of Steel Construction Post-Tensioning Institute

Experience

A member of RCM's engineering staff since 1970, Mr. Koutsoumbos currently serves as a Project Manager/Design Engineer for civil engineering projects and as Manager of Construction Services. As a Project Manager/Design Engineer, he is responsible for performing administrative and technical services during the design and construction phases of a variety of project types. Specific duties include the preparation of feasibility studies, preliminary and final designs, detailed plans and specifications. As Manager of Construction Services, Mr. Koutsoumbos has overall responsibility for project inspection of RCM projects during the construction phase.

Mr. Koutsoumbos has almost two decades of experience associated with the structural design of projects. Structural systems for a variety of water and wastewater treatment plants have been designed under Mr. Koutsoumbos' direction. Wastewater treatment plants (at Austin, Faribault, Mankato, Glencoe, and Savage, Minnesota) and water treatment plants (at Pelican Rapids, Baxter, and Hutchinson, Minnesota) have been constructed utilizing Mr. Koutsoumbos' structural layout plans and details. The investigation and repair of the steel ground storage reservoirs at Worthington and Marshall, and the concrete reservoirs at Hutchinson and Marshall were under the direction of Mr. Koutsoumbos.

Structural systems for a variety of commercial and institutional facilities have been designed under Mr. Koutsoumbos' direction. Project design experience includes single-story through eight-story office and condominium projects, housing projects, and schools.

Mr. Koutsoumbos' experience and background in structural dynamics and physics serves as the basis for his creative and functional design approach. A variety of computer aided structural design programs are utilized to assist in providing a structural design that meets the project objectives.

RICHARD C. POTZ

Education — Mankato State University
Dunwoody Technical Institute

Professional Affiliations — Construction Specifications Institute
Minnesota Society of Engineers & Surveyors

Experience

Mr. Potz has served as a Senior Engineering Technician in the Municipal Engineering Department of RCM/Minnetonka since 1969. His primary responsibility is supervision of technical design, survey and drafting of municipal transportation systems, water supply, distribution and storage reports, municipal wastewater collection system reports, storm water collection drainage improvements involving improvement to existing and new storm water retention and siltation basins prior to discharging to wetlands and lakes, and construction documents.

Mr. Potz supervised the technical design and writing of specifications for municipal airport construction in Brooten, Mankato, Waseca, Worthington, 2 projects at Grand Rapids, and at Camp Ripley which is the training center for the Army National Guard. His field operations experience was gained in serving as resident engineer for construction of various utility systems and wastewater treatment facilities in Butterfield, Fairmont, Glencoe and Mankato.

His role as a project manager recently included preparation of plans for transportation facilities, water and wastewater distribution and collection systems up to 72" diameter for the Minnesota communities of Bemidji, Mankato, Eden Prairie, Faribault, Minnetonka, St. Louis Park and Worthington, and for the Twin Cities Metropolitan Area Waste Control Commission. He served as project manager for development of water supply, treatment and storage systems for the cities of Bemidji, Eden Prairie, Hewitt, Hill City, Paynesville, Sartell and Albany.

Before joining RCM, he worked five years in the employ of a Twin Cities area consulting firm as a design technician and a resident engineer for state, municipal and private sewer, water and storm water collection systems and paving projects.

GREGORY GAVEL

Education — BA University of Central Florida, 1973

Experience

Mr. Gavel has been involved in a wide spectrum of project inspection and administration services including bid review; daily, weekly and monthly inspection reports; change order preparation; pay estimate review and approval, and related services.

Since his employment with RCM in 1988, project experience includes watermain, sanitary sewer, storm sewer and roadway improvements in the Cities of Rosemount, Marshall, St. Anthony, Hopkins and Worthington. Most recently he concluded work on box culvert improvements in Hopkins, and utility and street maintenance in Rosemount.

Prior to joining RCM's staff his experience included projects in Florida and Minnesota such as the Orlando International Jetport, Orlando, Florida; Northeast Wastewater Transmission System, Orange County, Florida; University Avenue Sewer and Water Improvements, Orange County, Florida; West Palm Beach International Airport Runway/Taxiway and Perimeter Road Improvements, West Palm Beach Florida; Cedar Avenue Watermain Improvement, Lakeville, Minnesota and various subdivision improvements in the Lakeville Area.

BENSHOOF & ASSOCIATES, INC.

TRANSPORTATION AND LAND USE CONSULTANTS

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JAMES A. BENSHOOF, P.E.

Education:

University of Newcastle Upon Tyne, England, M.S., Traffic Engineering, 1969
Northwestern University, M.S., Transportation Engineering, 1968
University of Minnesota, B.S., Civil Engineering, 1966

Experience:

1982 - President of Benshoof & Associates, Inc. with overall responsibility for services provided by the firm. Has directed a variety of traffic and transportation projects for public and private clients.

1981 to 1982 - Principal with Strgar-Roscoe, Inc., Minneapolis. Responsible for all traffic engineering, transportation planning, and transit planning projects performed by the firm.

1980 to 1981 - Vice-President with Westwood Planning & Engineering Company, Minneapolis. Responsible for all transportation services provided by the firm.

1971 to 1980 - Project Manager and Associate with BRW, Inc., Minneapolis. Responsible for a variety of transportation, traffic and transit projects.

1969 to 1971 - Traffic Engineer with Alan M. Voorhees and Associates, Inc., Buffalo, New York. Participated in various transportation projects.

Affiliations: Institute of Transportation Engineers

Registrations: Minnesota (P.E.) and Iowa (P.E.)

Professional Involvements:

Made presentations at three conferences as follows:
- "Traffic Plans for Major Sports Arena and Outdoor Amphitheater," Institute for Transportation Engineers Annual Meeting, September 1988.
- "Framework for Traffic Forecasts in Minneapolis/St. Paul Metropolitan Area," Real Estate Development, Minnesota Institute of Legal Education, April 1988.
- "Municipal Traffic Engineering and Planning," Third Annual Municipal Engineering Conference, University of Minnesota, March 1988.

Past Board Member, Eden Prairie Chamber of Commerce
Past Chairman of Transportation Committee, Eden Prairie Chamber of Commerce
Current Member of Streets and Highways Committee, City of St. Louis Park

FEES

FEES

Feasibility Study

For a municipal project, the feasibility report phase typically includes the following tasks:

- Public meetings
- Collection and interpretation of data.
- Identification and evaluation of alternative solutions.
- Recommendations regarding feasibility.
- Evaluation of regulatory agency requirements.
- Recommendations for further implementation of the project.

Fees for a feasibility report can be based on a "Percent of Construction Cost" and are typically 1/2-2% of the construction cost. This feasibility study may involve an unusual number of public meetings to maintain community support and therefore the costs may be slightly higher than average ($12-15,000).

Project Design Fees

Fees for the design phase for standard municipal projects are usually determined in accordance with the following typical schedule:

Estimated Project Costs	Drawings & Specifications
Less than $50,000	Hourly
$50,000 - $100,000	10.0%
$100,000 - $200,000	8.6%
$200,000 - $300,000	7.8%
$300,000 - $400,000	7.4%
$400,000 - $500,000	7.0%
$500,000 - $750,000	6.6%
$750,000 - $1,000,000	6.2%
$1,000,000 - $2,000,000	5.7%

Bidding and Construction Services Phase

The fees for bidding and construction phase services are normally based upon hourly rates or a lump sum. In order to arrive at a reasonable lump sum fee, the level of effort must be mutually agreed upon. This phase of service is generally the most difficult to estimate "up-front" because of such things as the degree of construction supervision desired by the client and variables that are outside of the engineer's control (quality of construction contractor, weather, etc.).

However, with a mutually agreed upon level of effort coupled with allowances for these uncontrollable variables, even this phase of services can be accomplished on a lump sum basis. Construction phase services typically are approximately 8% of construction costs.

SCHEDULE OF RATES
1990

Senior Civil Engineer	$70.00/hr.
Civil Engineer	$60.00/hr.
Senior Civil Technician	$55.00/hr.
Civil Technician	$50.00/hr.
Senior Field Representative	$50.00/hr.
Field Representative	$40.00/hr.
Senior Draftsperson	$45.00/hr.
Draftsperson	$35.00/hr.
3-Person Survey Crew	$88.00/hr.
2-Person Survey Crew	$70.00/hr.
Registered Land Surveyor	$45.00/hr.
Secretary/Reprographics	$30.00/hr.

Reimbursables:

Mileage: $0.265/mile

Out of Pocket: At cost