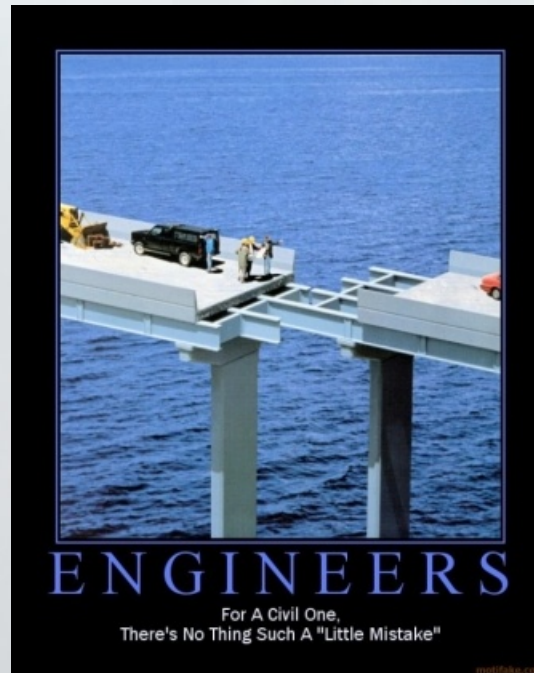


Engineering



What do Engineers Do?

I'm an
ENGINEER
ENGINEER
ENGINEER
I'm good
with math



Engineering

- **Infrastructure Planning**
- **Transportation Planning**
- **Projects**
- **Construction**
- **GIS**
- **Admin**



Engineering

- **Municipal Services – Eng & PW's**
 - ✓ **Provision of water / sewer and drainage utilities**
 - ✓ **Provide Transportation Facilities**
 - ✓ **Provide Long Range Planning, Technical Design and Project Construction Services that ensure sustainable capital replacement**

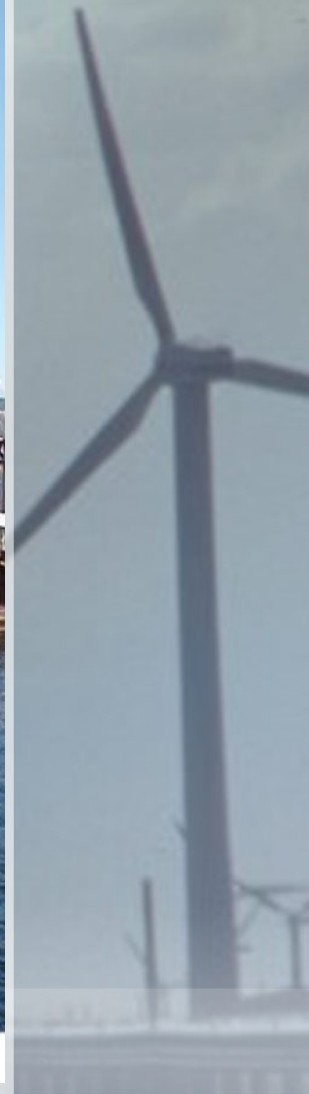
Bastion / Front Street - Then



Bastion / Waterfront - Then



Bastion / Front Street - Now



Bastion - Now

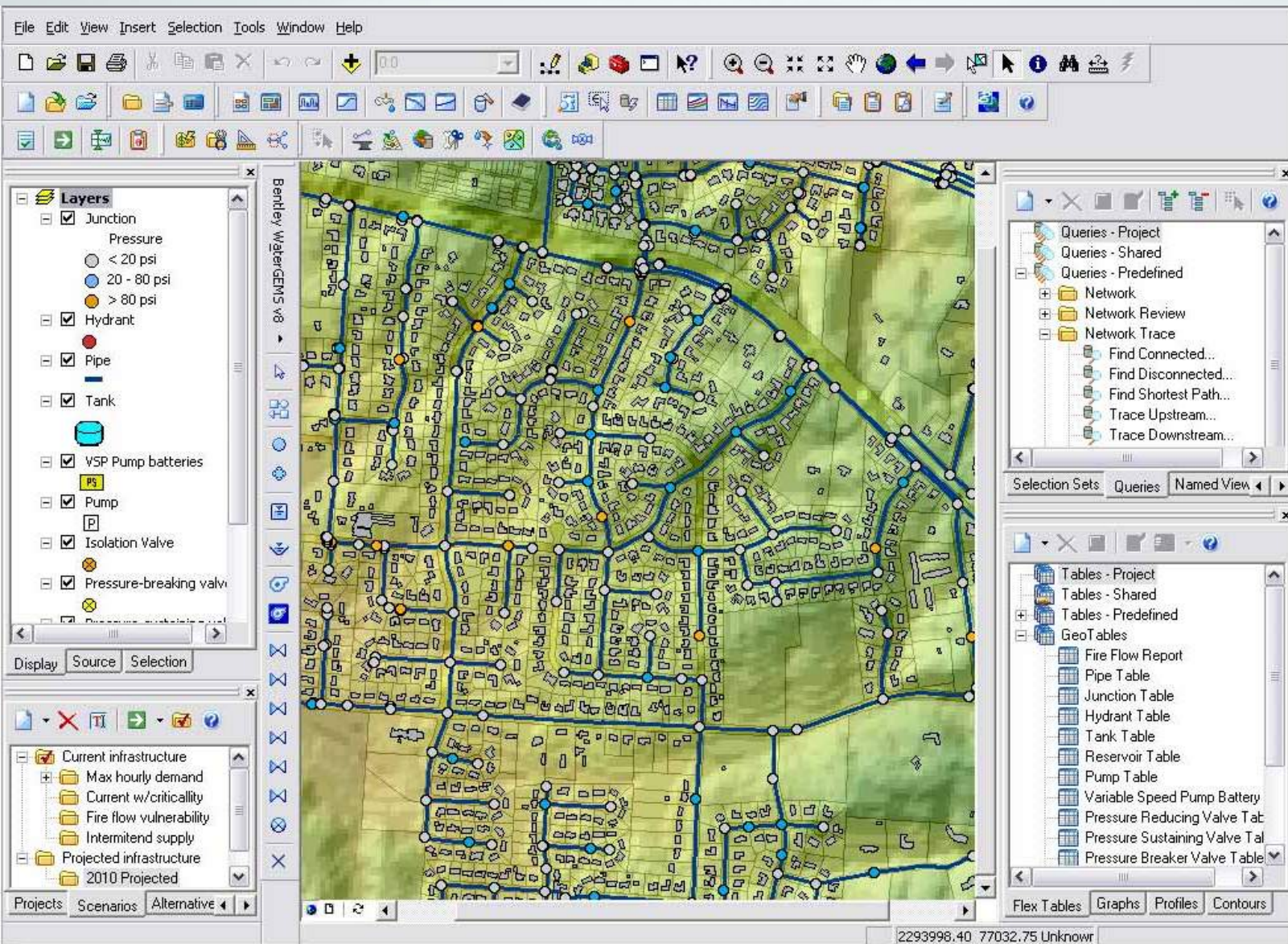


Infrastructure Planning

- **monitor the health of the physical utility infrastructure**
- **Complete infrastructure studies to determine needs and solutions for the:**
 - ✓ **Sanitary sewer system**
 - ✓ **Water distribution system**
 - ✓ **Storm system**
 - ✓ **Utilize Computer Models**



Water Model



Water Model Calibration – Flow Testing

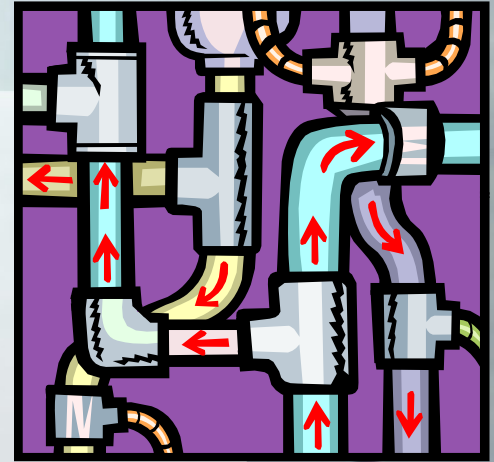


Infrastructure Planning

Asset Management

- ✓ **Condition assessment**
 - **CCTV Sewer Video**
- ✓ **Risk assessment**
 - **Probability**
 - **Consequence**
- ✓ **Prioritize Projects**
 - **Funding Source**
- ✓ **Create Five Year Capital Plan**
 - **Coordinate projects**

What are the City's Infrastructure Assets ?



Paved Roads	= 605 km
Sanitary Sewer Lines	= 555 km
Drainage Pipes	= 416 km
Drainage Ditches	= 350 km
Water mains	= 627 km
Sidewalks	= 320 km

\$ 960 Million
Plus

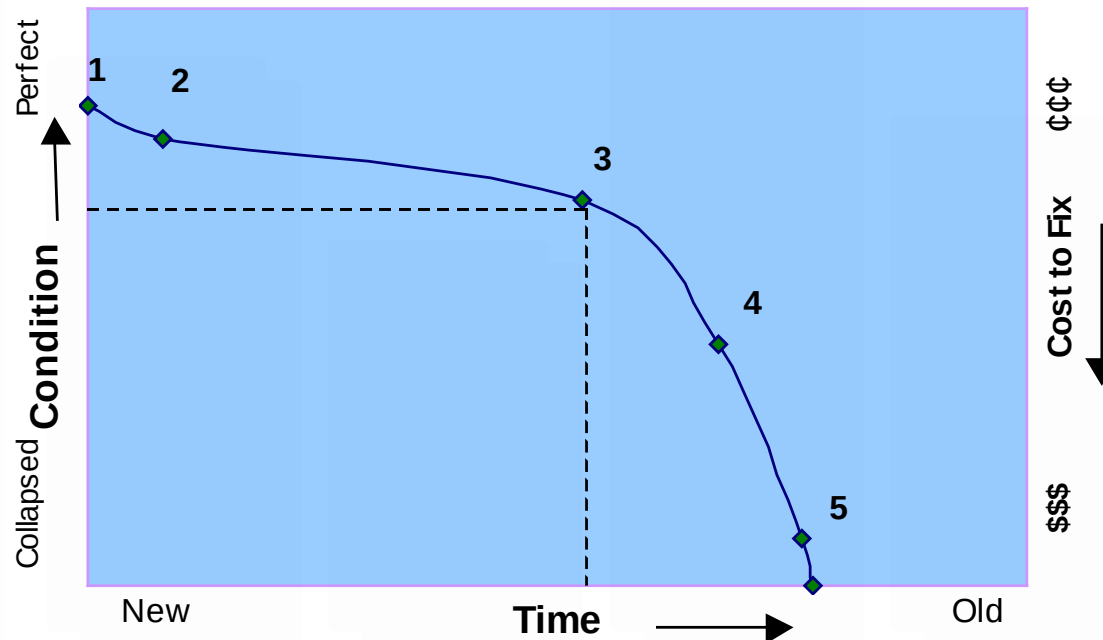
How do we best manage our Assets ?

Long Range Plan



Five Year Capital Plan

Condition & Cost of Repair vs Time

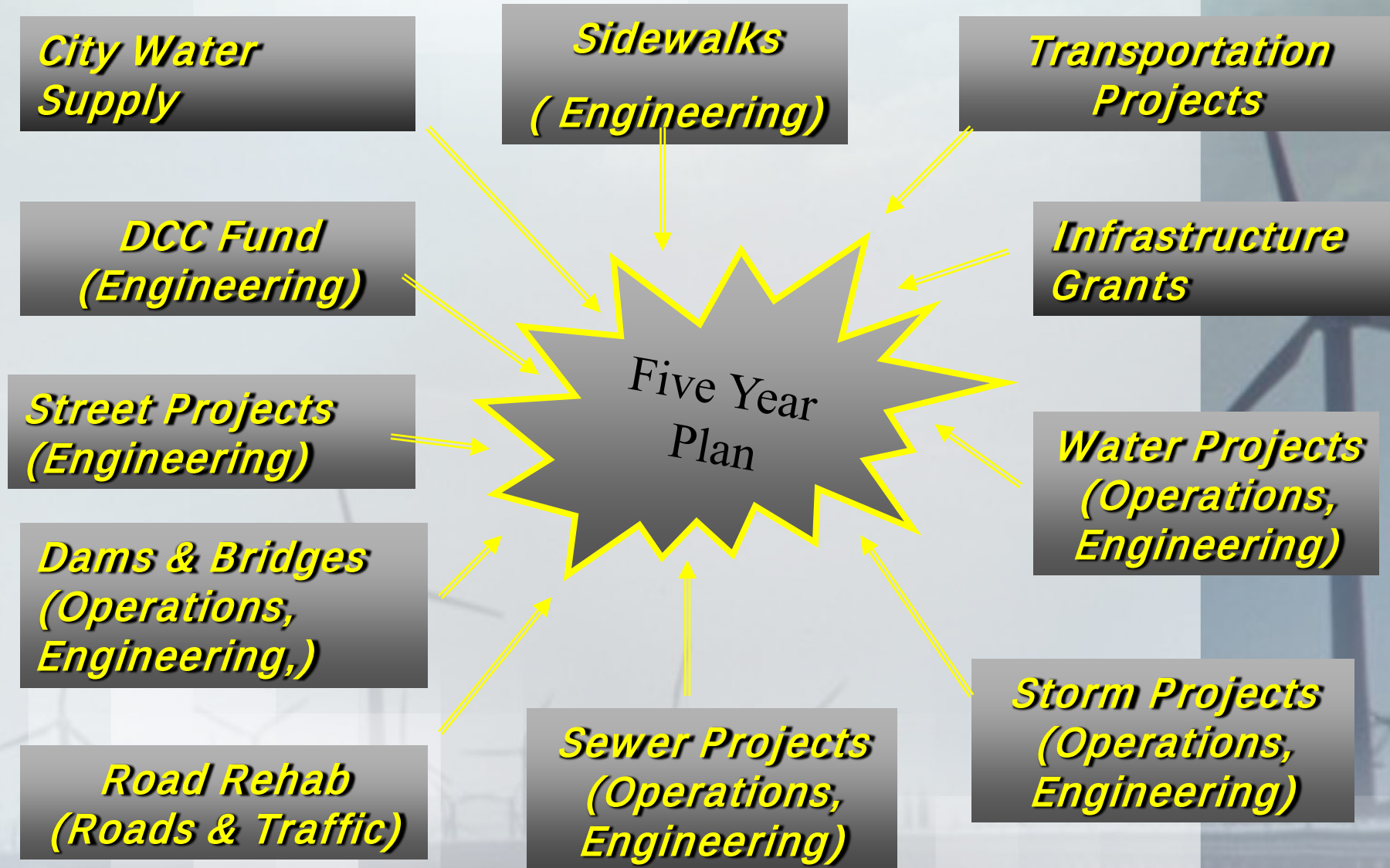


The Five Year Plan identifies short term construction projects and infrastructure improvements such as:

- **Road Rehab**
- **Street Upgrades**
- **Water / Storm / Sanitary**
- **Bridges**
- **Sidewalks**
- **Pedestrian / Bike Facilities**



Source of Projects



Identification of Projects

Studies/Proactive Investigations

Projected Growth

Hydraulic Analysis

Condition Assessment

Infrastructure Rehabilitation

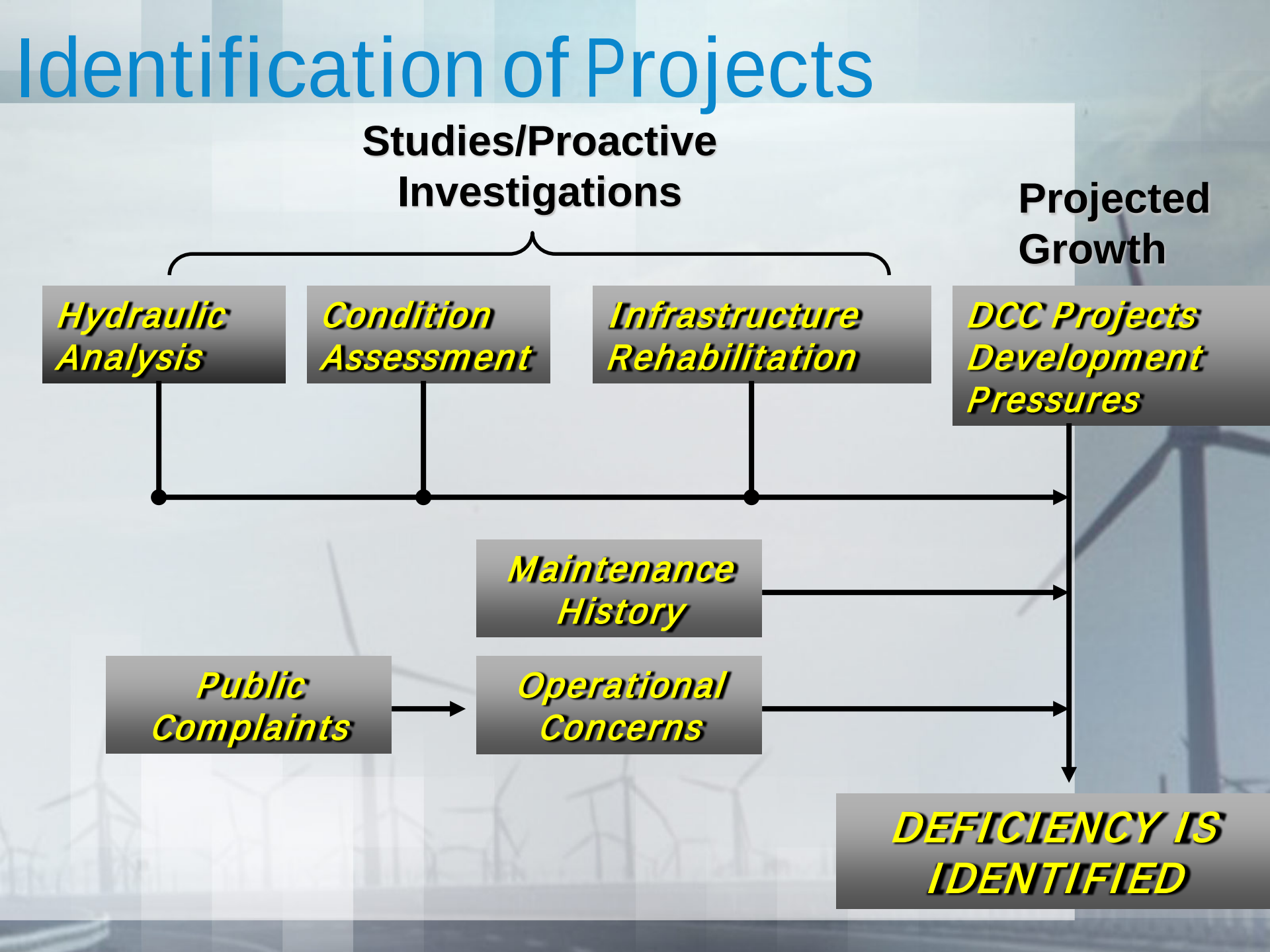
DCC Projects Development Pressures

Maintenance History

Public Complaints

Operational Concerns

DEFICIENCY IS IDENTIFIED



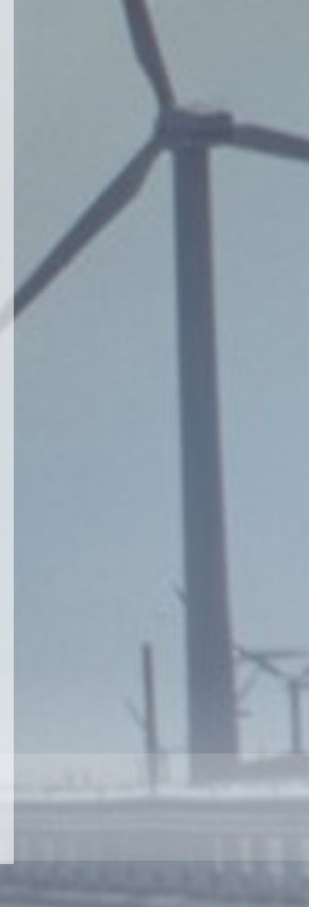
What is this?



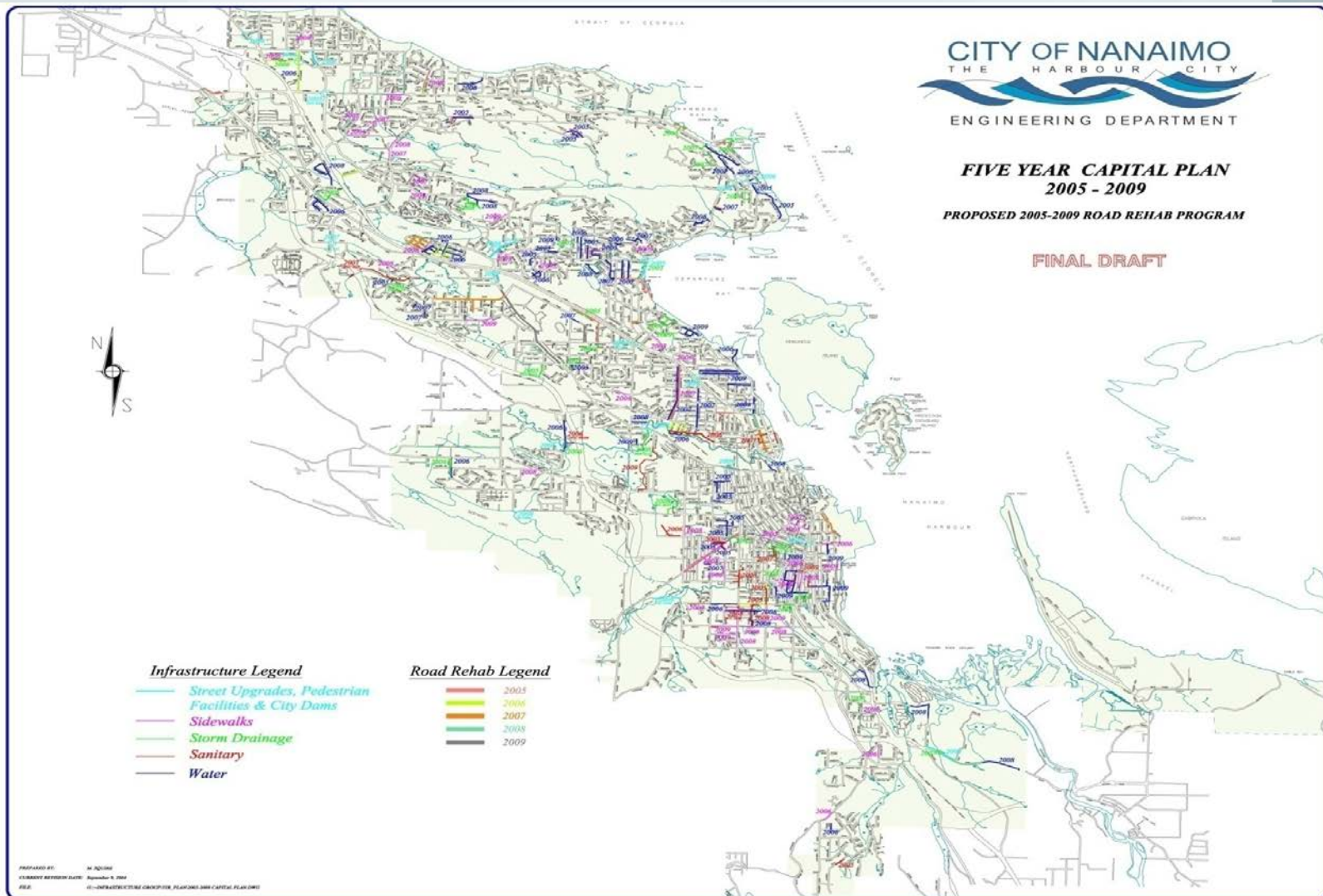
Infrastructure Planning Capital Project Creation

DEFICIENCY IS IDENTIFIED

- ❑ Deficiency formally becomes a project
- ❑ Project is given a rating and prioritized
- ❑ Solutions and options evolve into the scope of a project to address deficiency
- ❑ Proposed solution is discussed among stakeholders and costs developed
- ❑ Feasibility Assessment and determine available budget
- ❑ Capital project is then included in the Five Year Plan

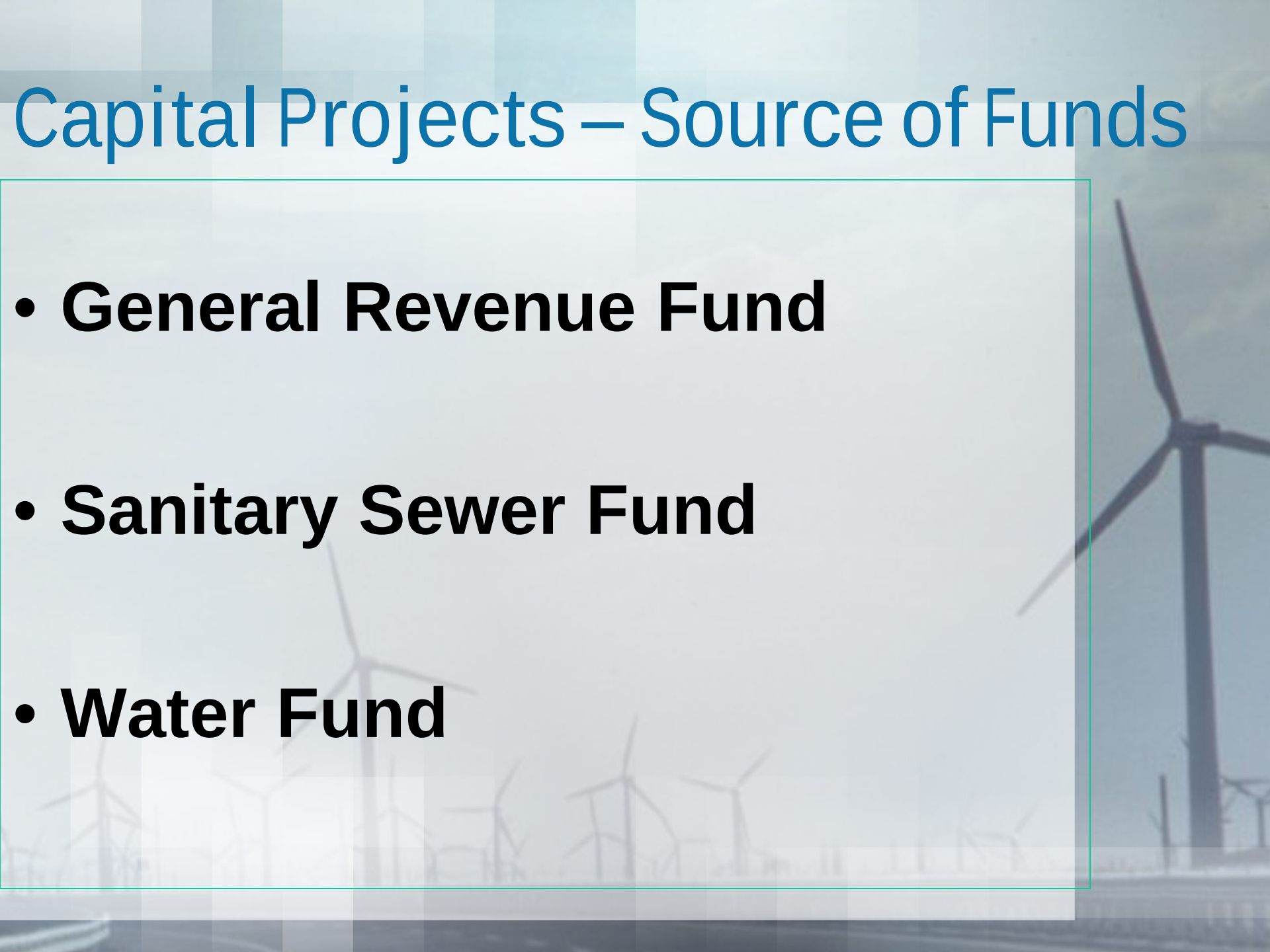


Infrastructure Planning Five Year Capital Plan Map



Capital Projects – Source of Funds

- **General Revenue Fund**
- **Sanitary Sewer Fund**
- **Water Fund**



Capital Projects Funded from General Revenue Fund

- **Roads Projects**
- **Storm Projects**
- **Sidewalks**
- **Pedestrian Facilities**
- **Bridges**

**Funded from
General
Taxation
(Property Tax)**



Capital Projects Funded from Sanitary Sewer Fund

- Sanitary Sewer replacement
- Sewer Rehabilitation
- Condition Investigation
- Studies/Designs/Monitoring



**Funded from
Sewer User
Rates**



Minor Mainline Overhaul: see City Hall Mainline Data for March 13th, 2003.
Mainline - Flow approx: 20 ft/s. Downstream Mainline - Upstream Substation
Mainline - 30m Upstream from Seventh St., March 13,

Capital Projects Funded from Water Fund

- o **Water main Replacement**
- o **Water main Rehabilitation**
- o **Investigation Programs**
- o **Studies / Design / Monitor**

**Funded from
Water User Rates**



Infrastructure Planning

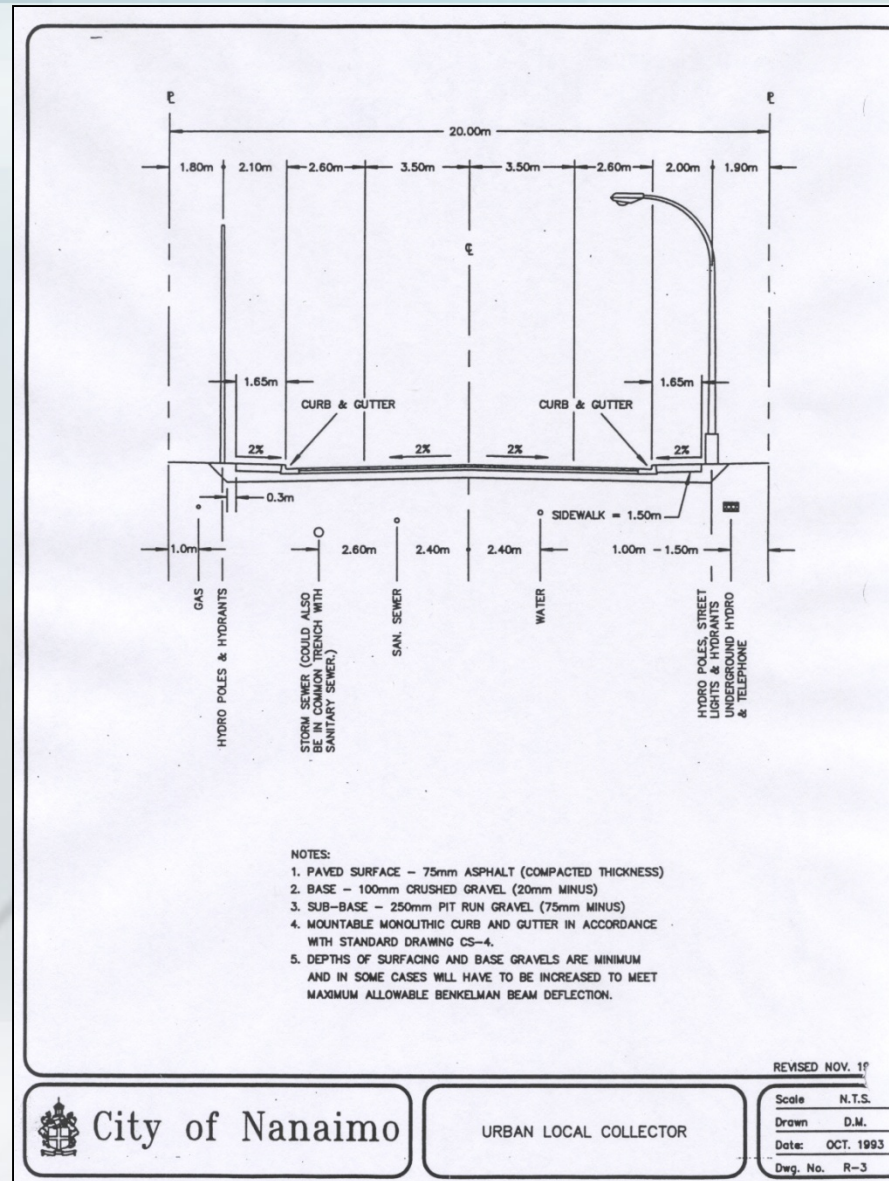
Manual of Engineering Standards and Specifications (MoESS)

- Provides standards for works built by developers or the City, that will be owned, operated, maintained and replaced by the City.
 - ✓ New Standards
 - ✓ Revisions
 - ✓ New Product reviews



Infrastructure Planning

Example of a road Standard in the MoESS



Infrastructure Planning

Development Cost Charges

- A charge to developers that provides funding for local government to build infrastructure required by new development:
 - Long Range Servicing Studies
 - Project Selection
 - Project Planning and Prioritization
 - Project Costing
 - Allocation of costs between existing community and new development.



The intersection shown?



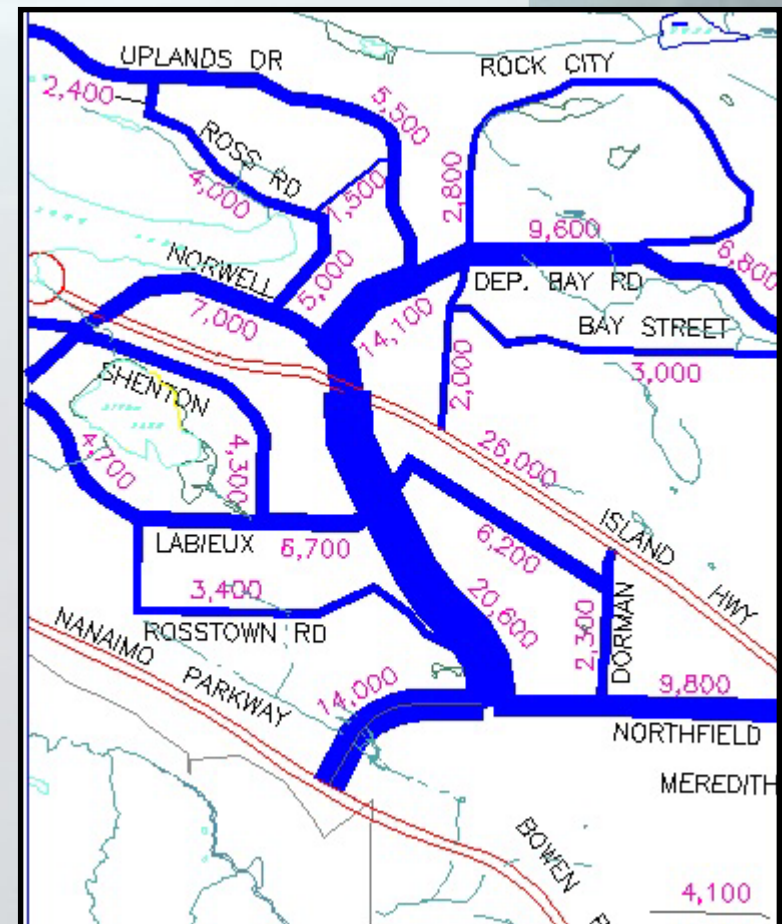
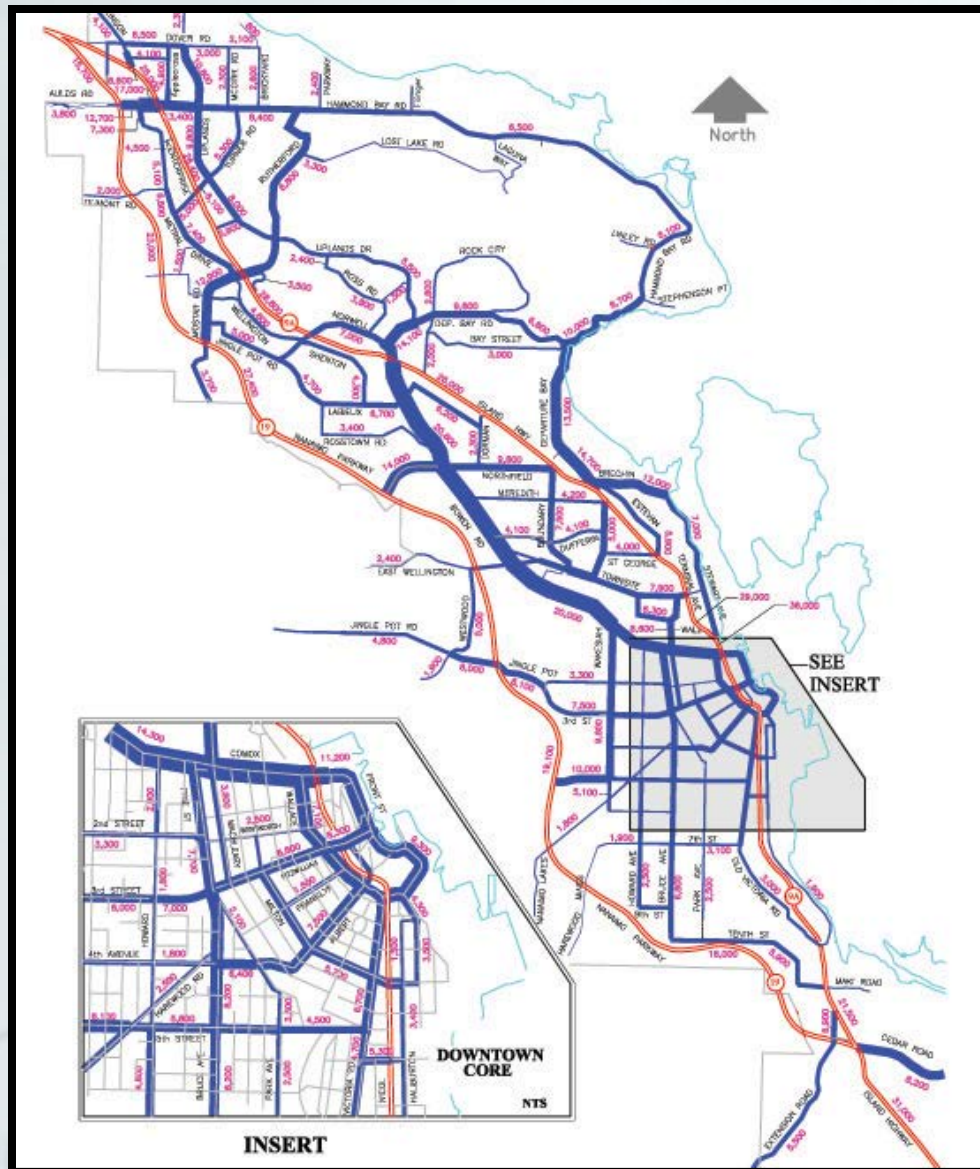
Responsible for responding to residents road safety concerns:

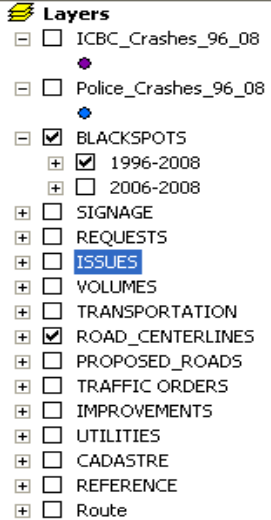
- requests for stop signs**
- Crosswalks**
- site visibility issues**
- speeding and road closures**
- Truck permits**
- Special Events / Road Closures**

Traffic Planning

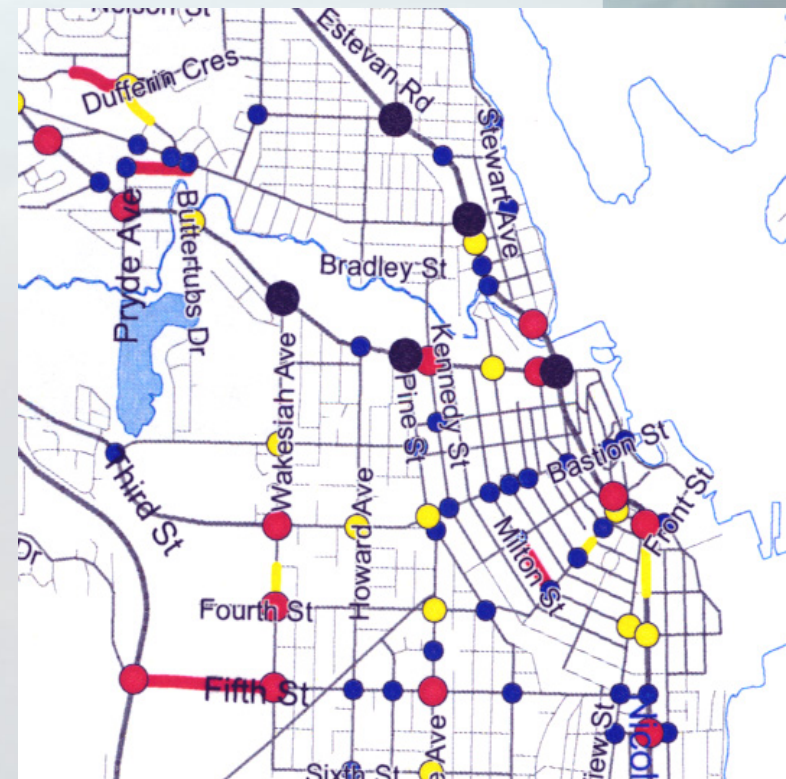
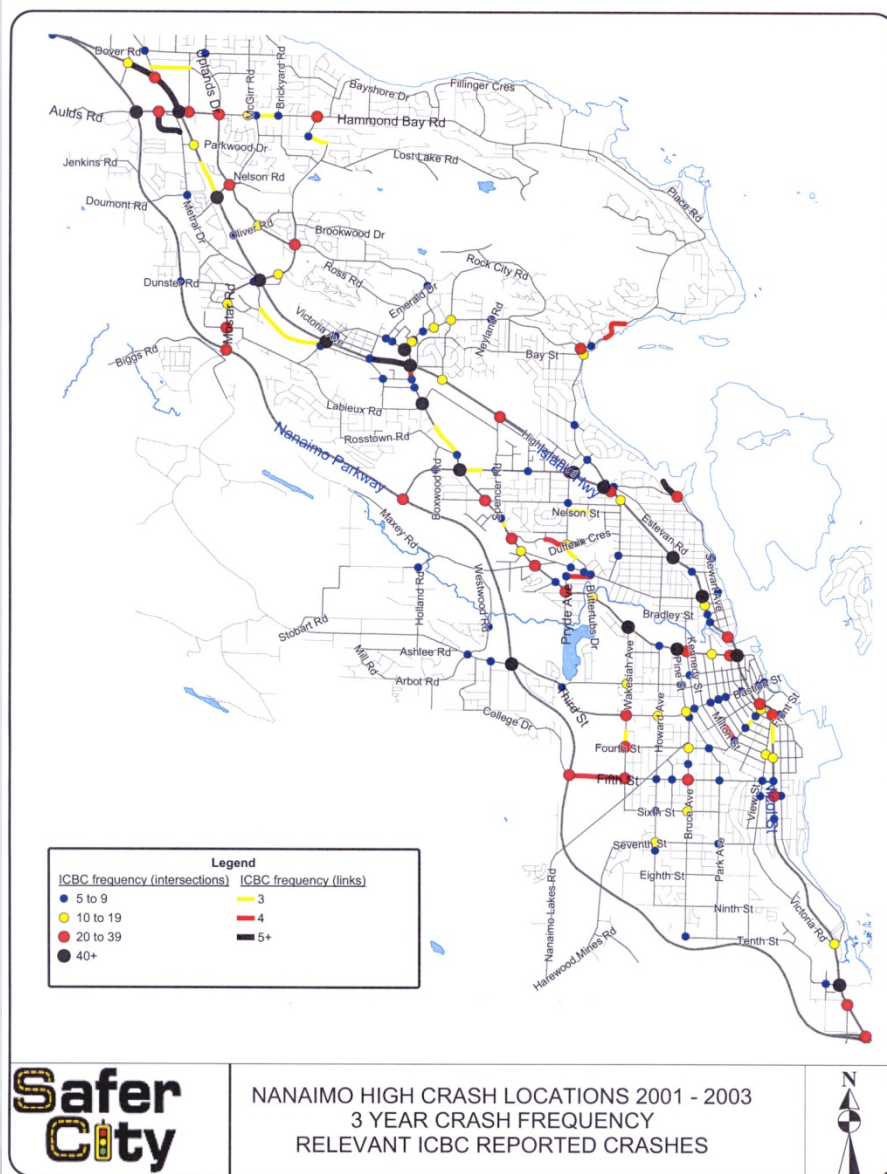
- **Technically Based Decision Making**
 - Traffic Count/Speed Information
 - Accident Information
 - Traffic Signal Information
 - Crosswalk Information
 - Sidewalk Information
 - Traffic Simulation Models
 - Traffic Improvement Maps

Traffic Count/Speed Information

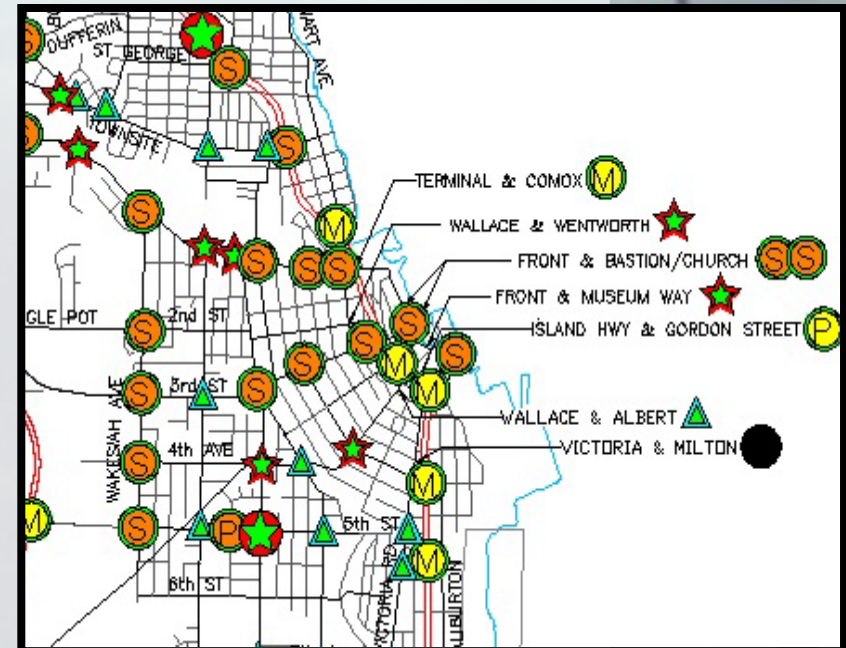
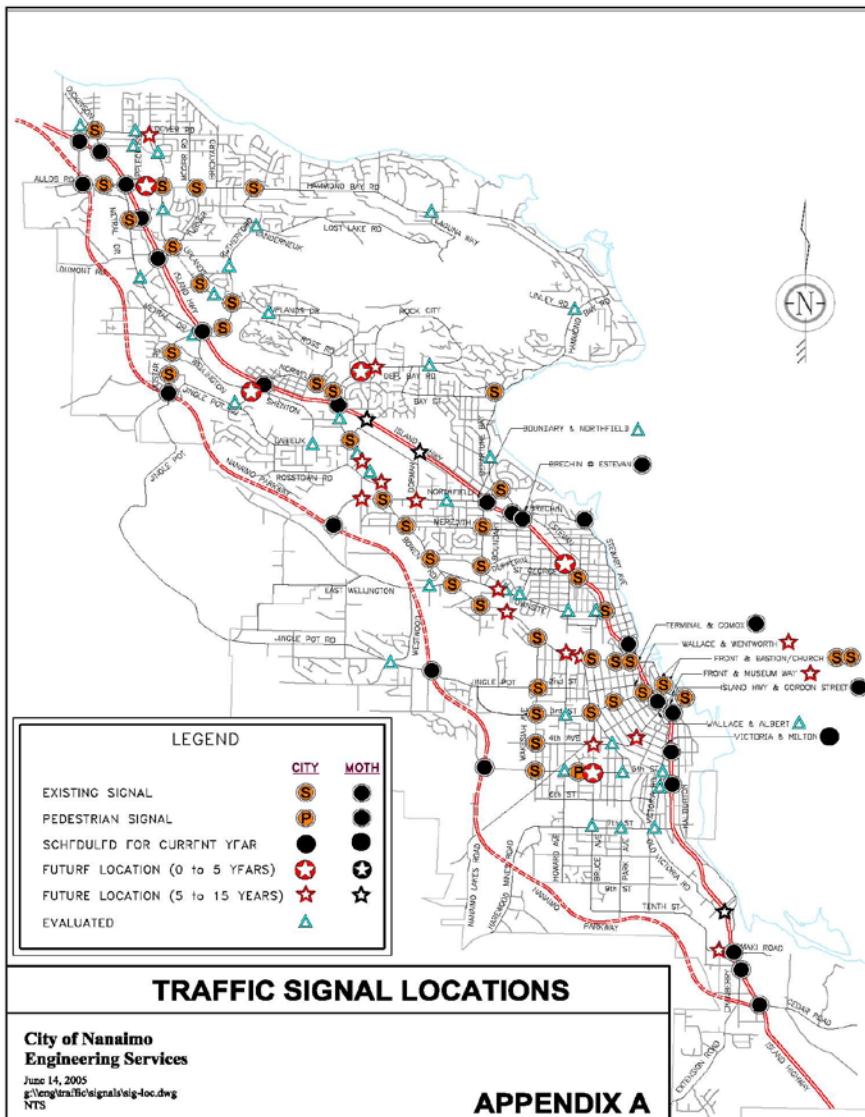




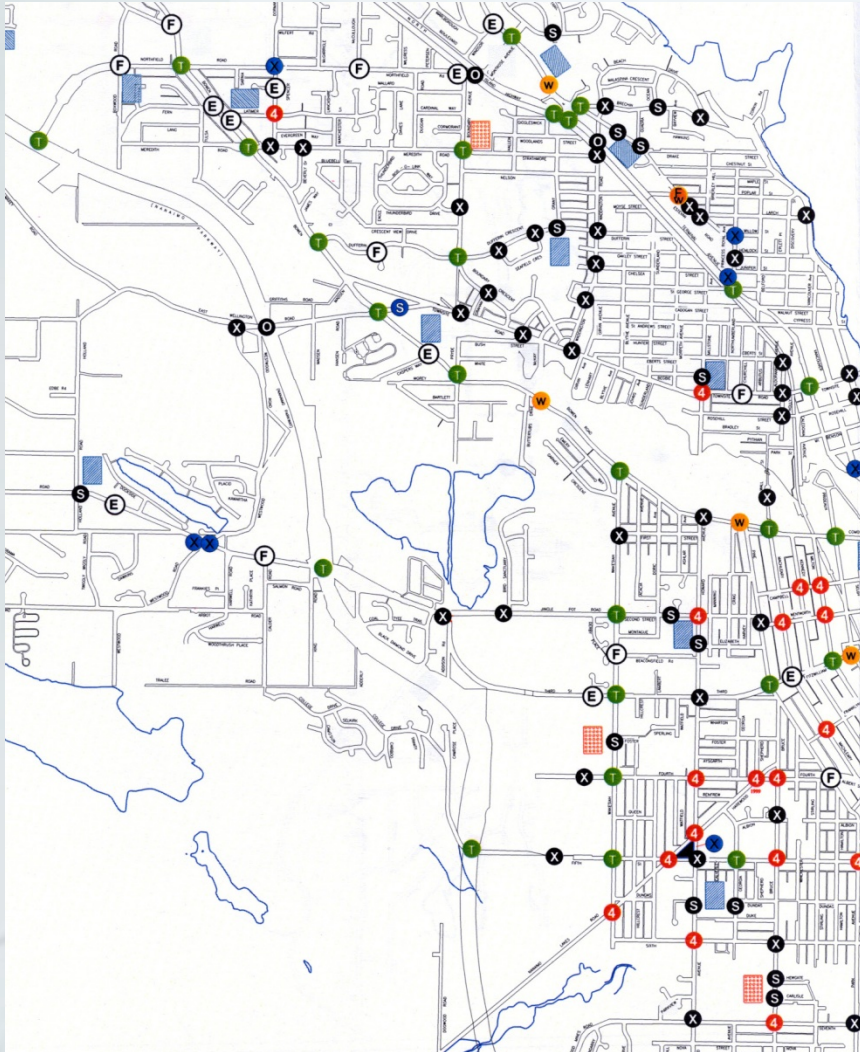
Accident Information



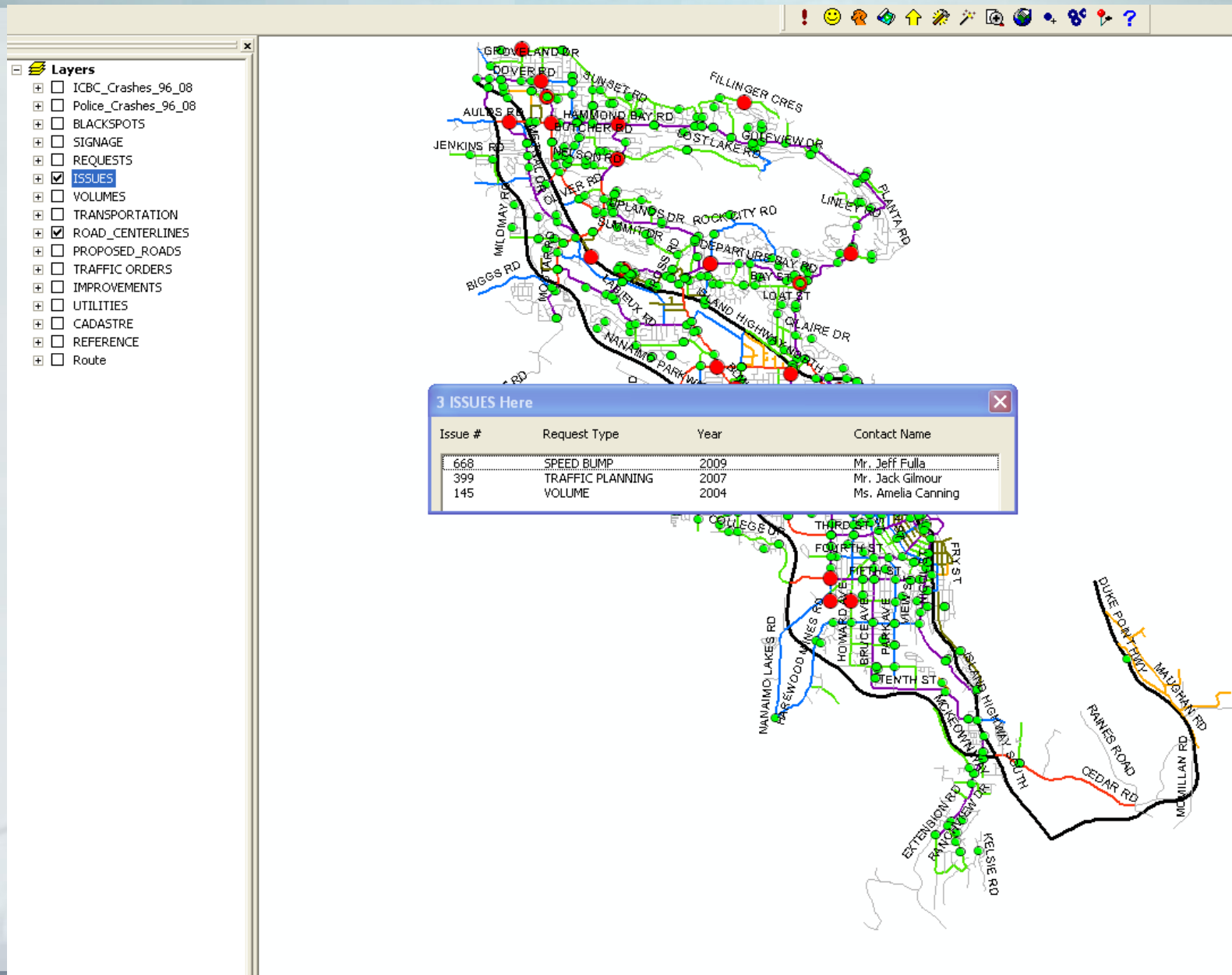
Traffic Signal / Roundabout Information



Crosswalk Information



Managing Traffic Issues using GIS



Traffic & Highway Order



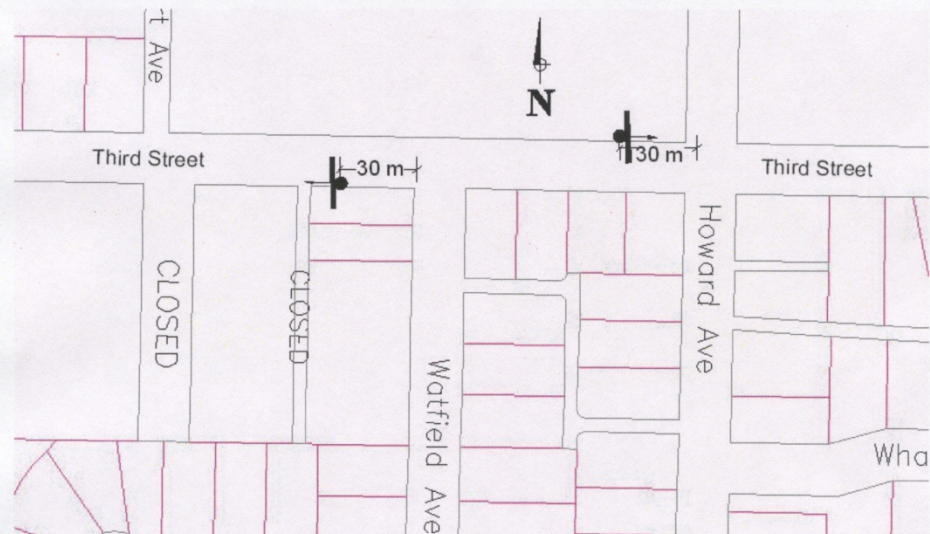
CITY OF NANAIMO TRAFFIC AND HIGHWAY ORDER

2005.123

UNDER THE PROVISIONS OF PART 9, SECTION 48, OF THE CITY OF NANAIMO TRAFFIC AND HIGHWAYS REGULATION BYLAW 1993, NO. 5,000,

THE DIRECTOR HEREBY ORDERS:

"50 KM/H" SPEED SIGN, RB-1, LOCATED ON THE SOUTHERLY SIDE OF THIRD STREET APPROXIMATELY 30 METRES WEST OF THE WESTERLY SIDE OF ITS INTERSECTION WITH WATFIELD ROAD.



Dated at Nanaimo B.C.

This 20th Day of September, 2005

L. deVries
Manager, Engineering Support Services
(for Director, Engineering & Public Works)

Reason:

Traffic reviewed and determined that additional 50 km/h signs are needed to reinforce the speed on Third Street.

Sidewalk Program

- **Annual Sidewalk Program**
- **Construct new sidewalks annually**



SIDEWALK EVALUATION SHEET

LOCATION: _____

FROM: _____

TO: _____

TYPE 1: 1.5m wide - concrete abutting concrete curb

TYPE 2: 1.5m wide - raised asphalt with concrete curb

TYPE 3: 1.5m wide - asphalt walking shoulder

COST PER METER

\$81.00

\$115.00

\$30.00

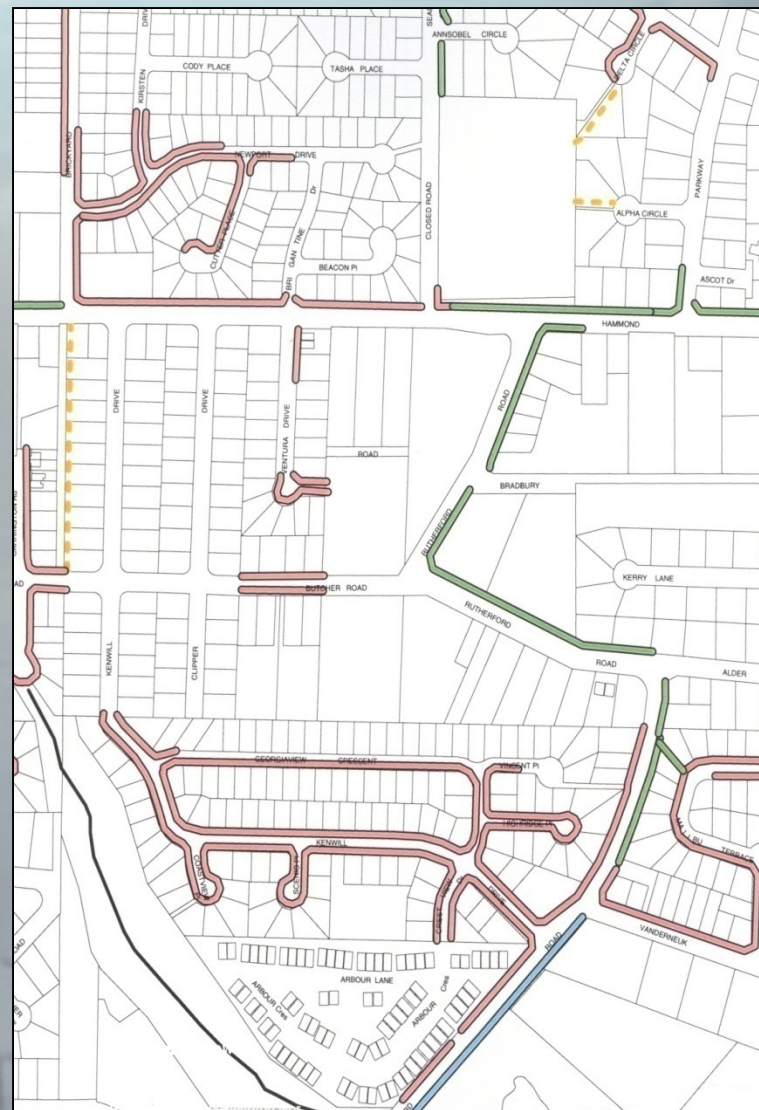
Length x Type x (Eng + Cont + GST) Total

ESTIMATED COST: 1.25 \$0.00

RATING CRITERIA	Wght Factor	APPLICABLE FACTOR	RATING
a) Public Safety:			
i) Traffic Safety, Hazardous Area, Accident Stats	5		
ii) No Hazard	0		
b) Road Class:			
i) Arterial	4		
ii) Urban Collector	2		
iii) Local	0		
c) Destination/Location:			
i) School	3		
ii) Shopping	2		
iii) Park	1		
iv) Does Not Rate	0		
d) Sidewalk Network:			
i) Corridor	3		
ii) Part of Sidewalk Network	2		
iii) Continuation of existing sidewalk	1		
iv) Not part of Network	0		
e) Other:			
i) Bus Route	1		
ii) Request	0		
iii) Existing Paved Shoulder	-1		
iv) Existing Sidewalk	-5		
f) Zone:			
i) 200 Meter Radius	6		
ii) 400 Meter Radius	4		
iii) 600 Meter Radius	2		
iv) Outside	0		

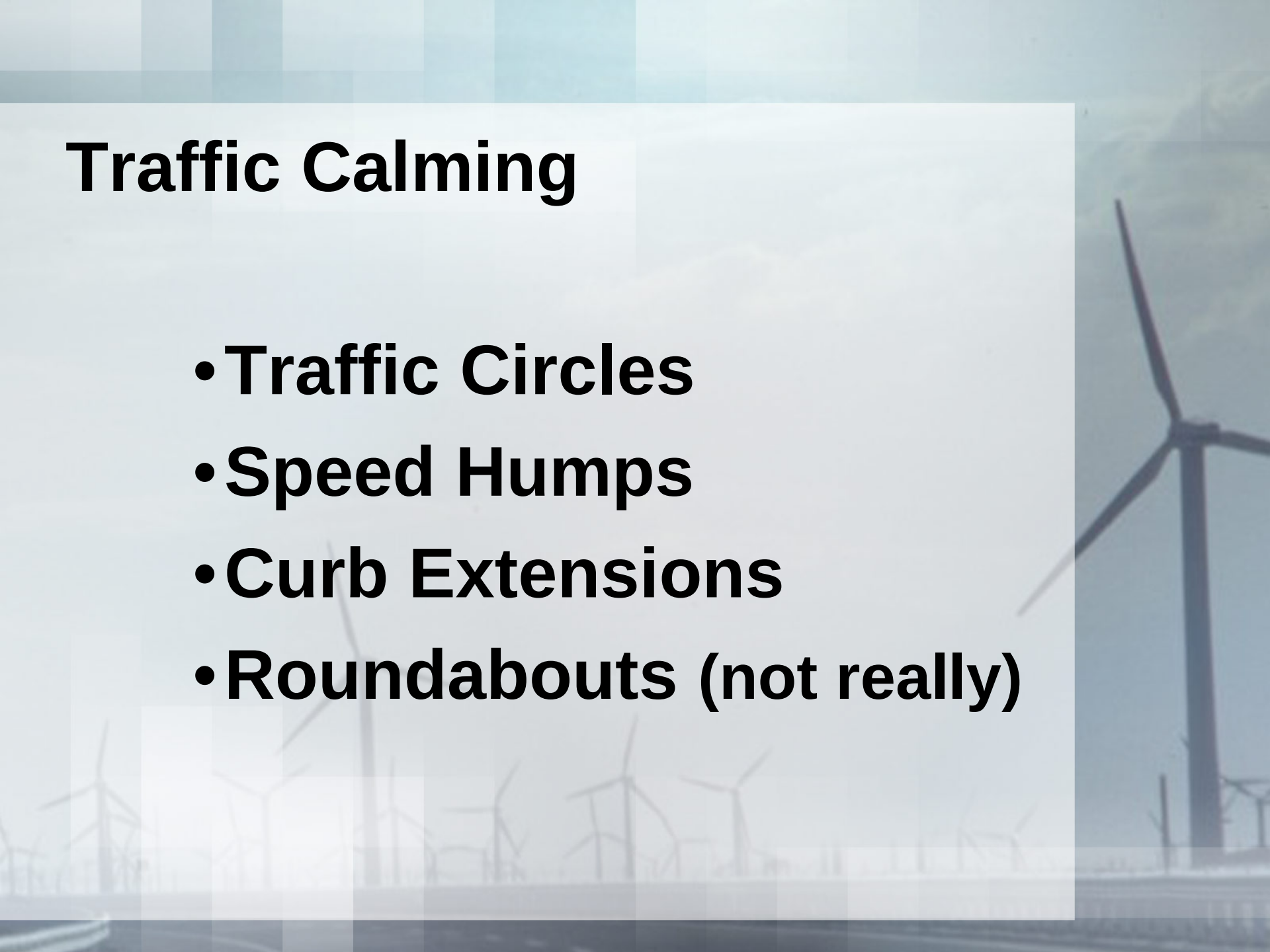
RATING 0

ARKS: _____



Traffic Calming

- **Traffic Circles**
- **Speed Humps**
- **Curb Extensions**
- **Roundabouts (not really)**



Hecate Street – Traffic Circle



Place Road – Speed Hump



Front Street

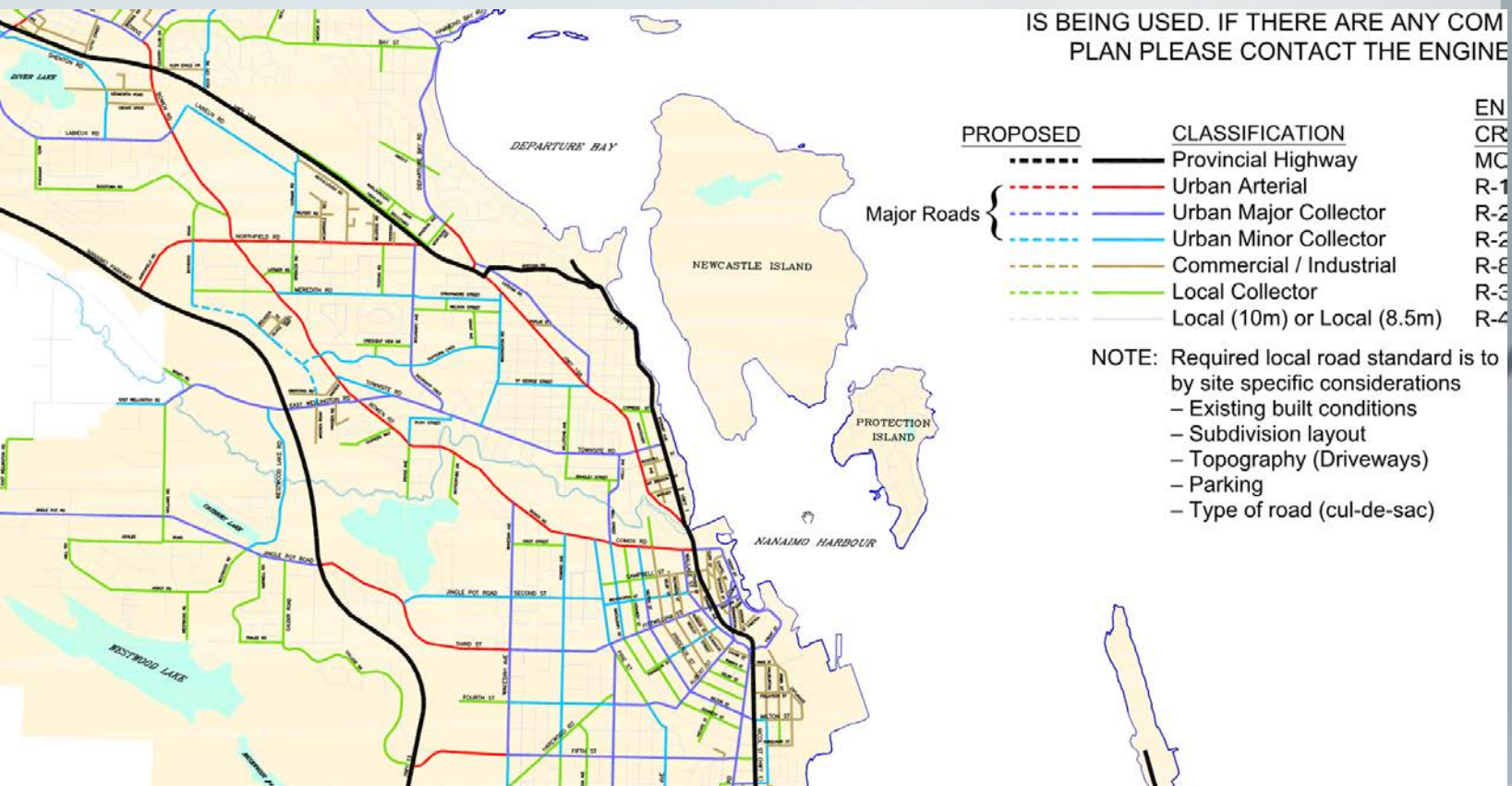
Pedestrian Flasher / Median Curb extensions



Roundabout



Transportation Planning – Major Roads Network Classification Plan



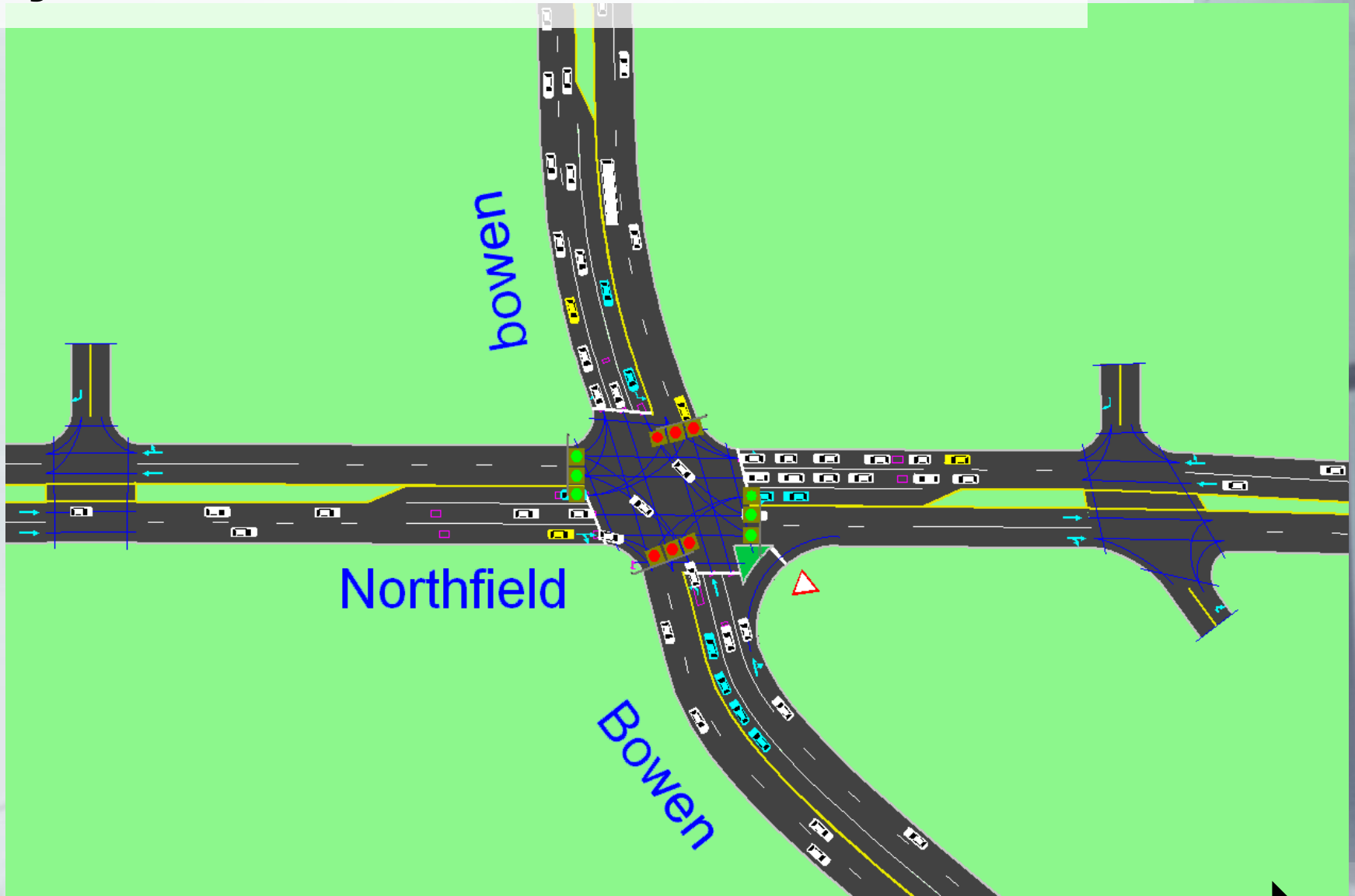
Which intersection is this?



Bowen/Northfield



Synchro Intersection Simulation



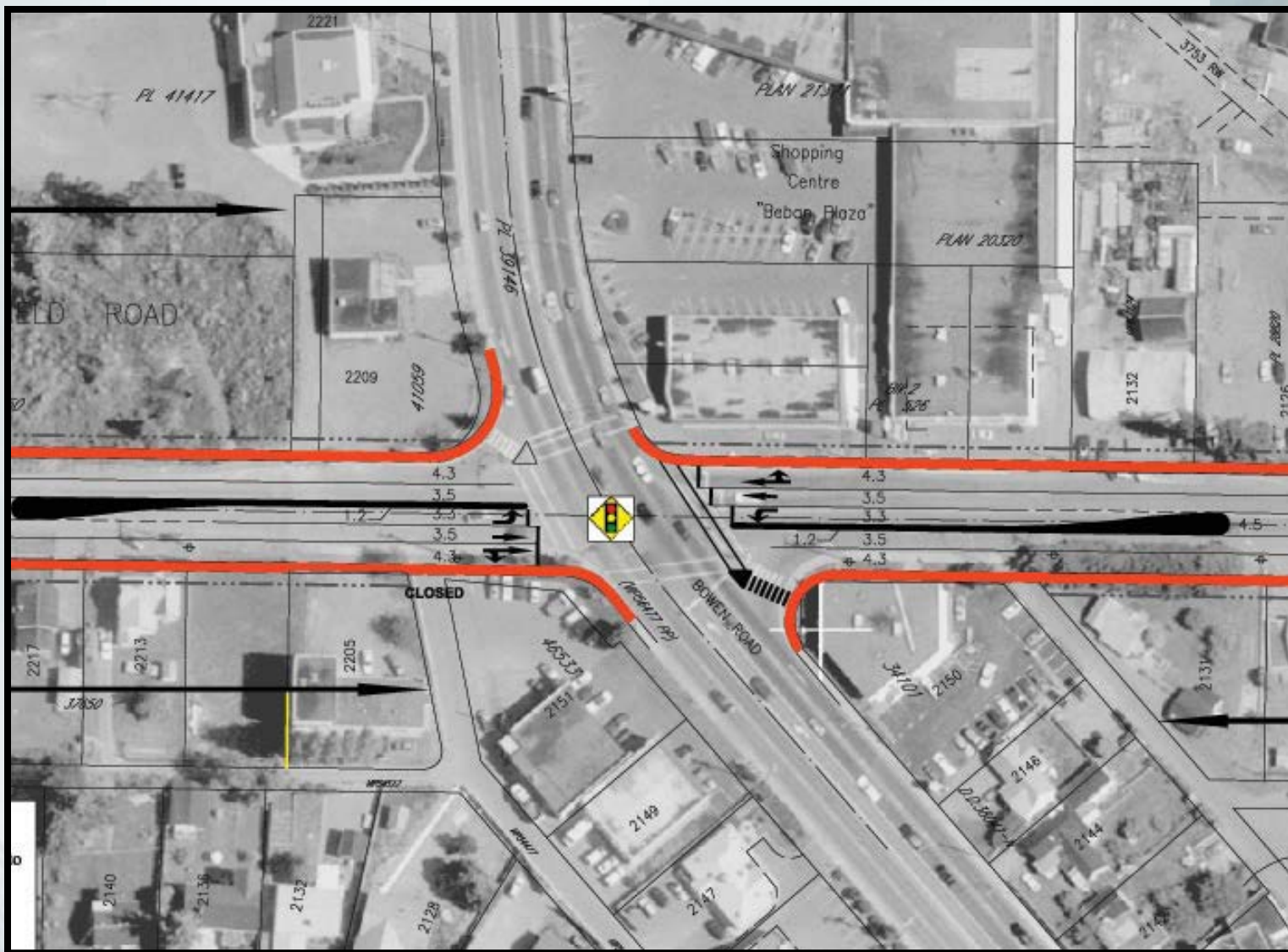
NEXT

Synchro Network Simulation



NEXT

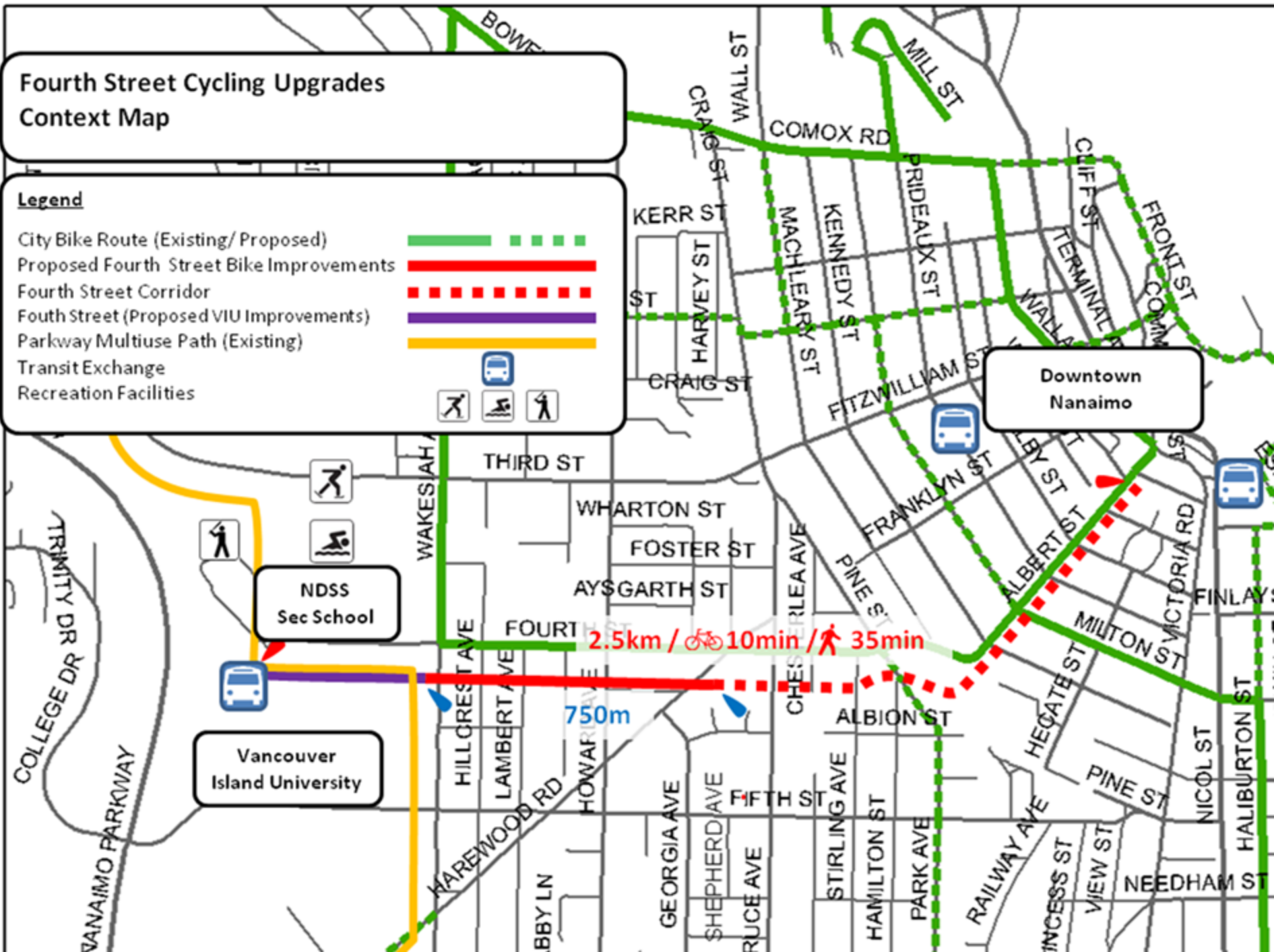
Corridor Plans



Fourth Street Cycling Upgrades Context Map

Legend

- City Bike Route (Existing/ Proposed)
- Proposed Fourth Street Bike Improvements
- Fourth Street Corridor
- Fourth Street (Proposed VIU Improvements)
- Parkway Multiuse Path (Existing)
- Transit Exchange
- Recreation Facilities

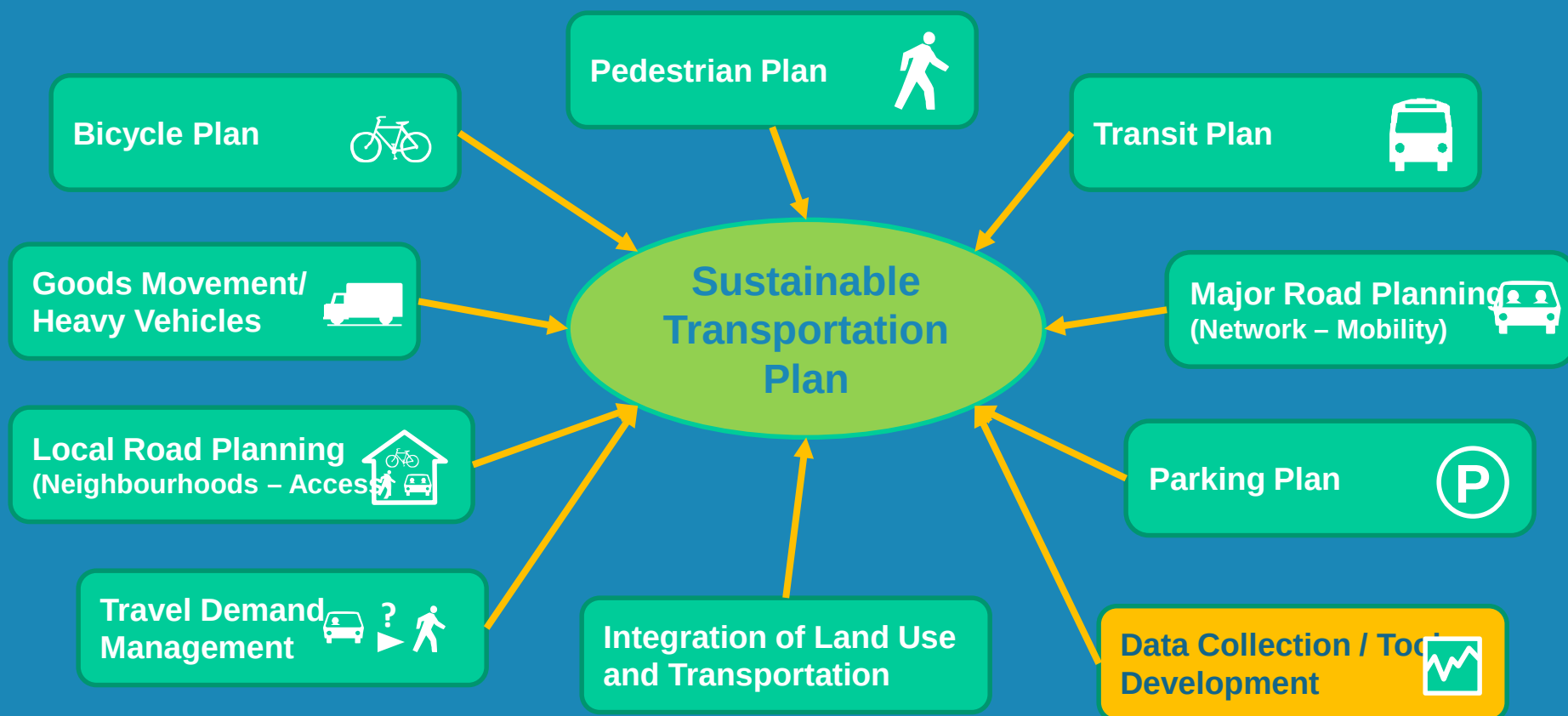


Transportation Master Plan

- **Transportation Advisory Committee**
- **Council Priority**
- **Stakeholders Meetings**
- **2012 /2013 Public Consultation**
- **2014 Completion**



Elements of the Transportation Master Plan



Transportation Plan can help us get from here...



Estimated number of trips from 2006 census
proportional to area.

to here... over the next 20 years...

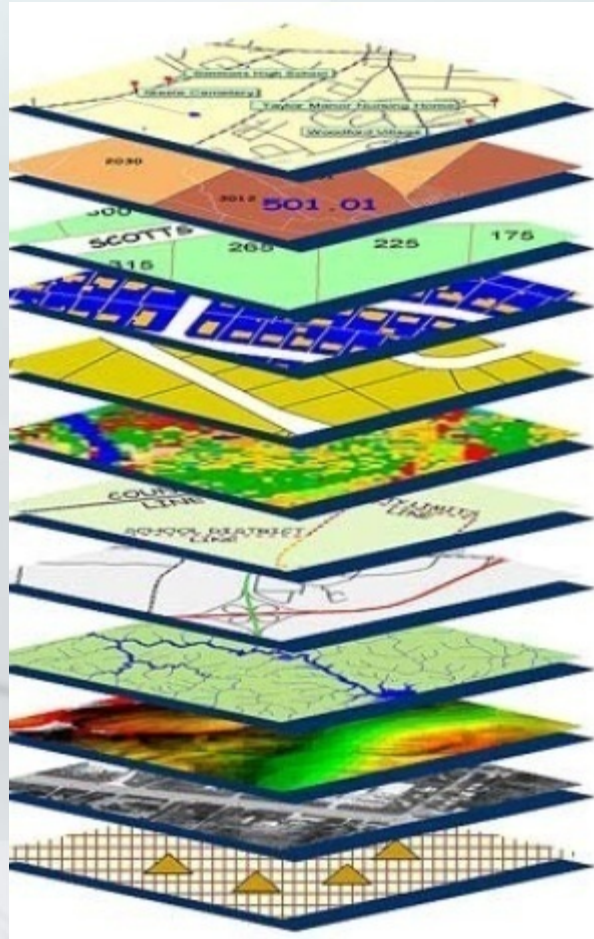


GIS Components

Step 1

Building and Maintaining key components of Corporate data:

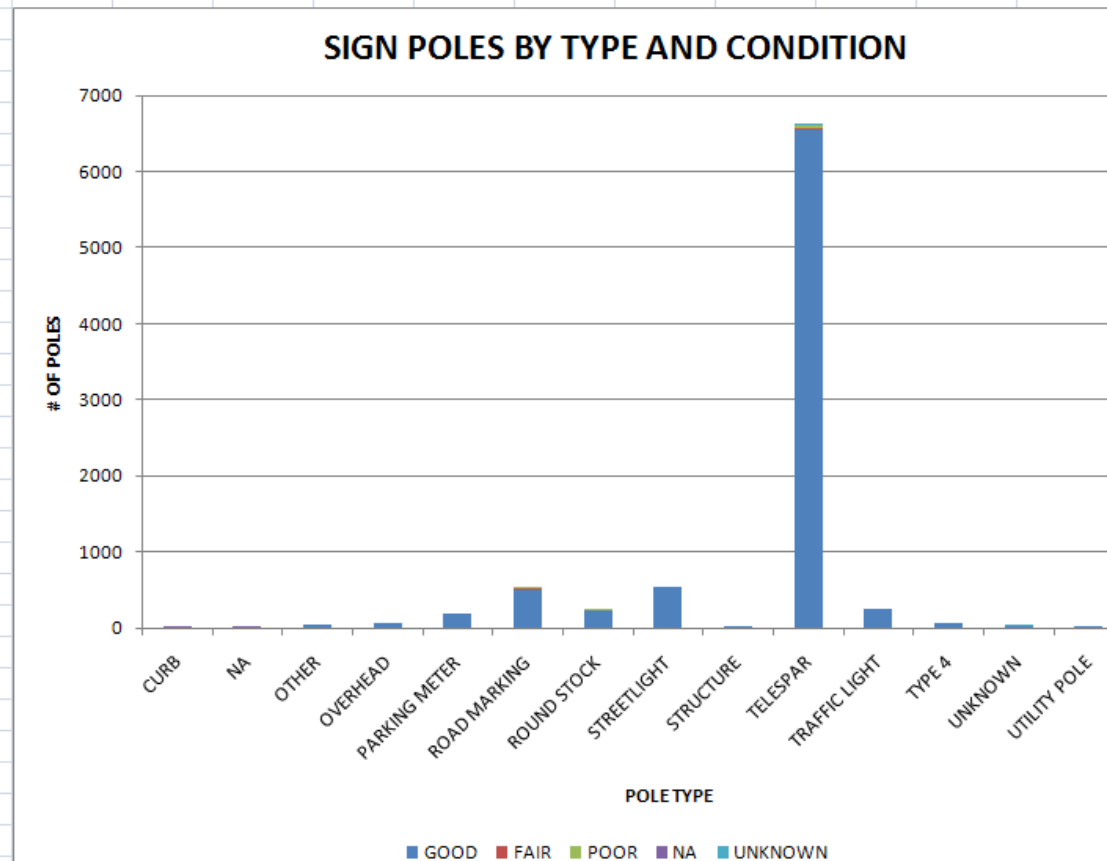
- Geographic Land Base (Cadastral).
- Roads
- Sewer
- Storm
- Water
- Transportation
- Street Lights
- Street Signs



Step 2
Querying
Analyzing and
Sharing
Our data

GIS is used in asset management to answer questions – Where is it? How many are there? What is the condition?

Count of POLE_TYPE	Column Labels					
Row Labels	GOOD	FAIR	POOR	NA	UNKNOWN	Grand Total
CURB	2			9		11
NA				1		1
OTHER	39					39
OVERHEAD	74					74
PARKING METER	186					186
ROAD MARKING	500	23	13			536
ROUND STOCK	226	1	2			229
STREETLIGHT	532					532
STRUCTURE	32					32
TELESPAR	6554	21	39	2	3	6619
TRAFFIC LIGHT	251					251
TYPE 4	61					61
UNKNOWN	20	1	1		1	23
UTILITY POLE	21					21
WOOD	14					14
Grand Total	8512	46	55	12	4	8629



Surficial Soils

- 2-Ground Moraine Deposits
- 3a-Glacio-Fluvial Deposits (hummocky)
- 3b-Glacio-Fluvial Deposits (terrace)
- 4a-Marine Deposits (silt, clay)
- 4b-Marine Deposits (gravel, sand)
- 4c-Marine Deposits (gravel, marine veneer)
- 4c/1 - Marine Deposits Fractional Unit
- 4c/2 - Marine Deposits Fractional Unit
- 4d-Marine Deposits (varied stoney)
- 6-Valley Alluvium & Colluvium
- 7-Pleistocene & Recent
- Bedrock
- R - Bedrock Outcrop
- x-Unknown Soil Deposit

Slope Class

- 2 - 15-30 degrees
- 3 - 30-45 degrees
- 4 - > 45 degrees

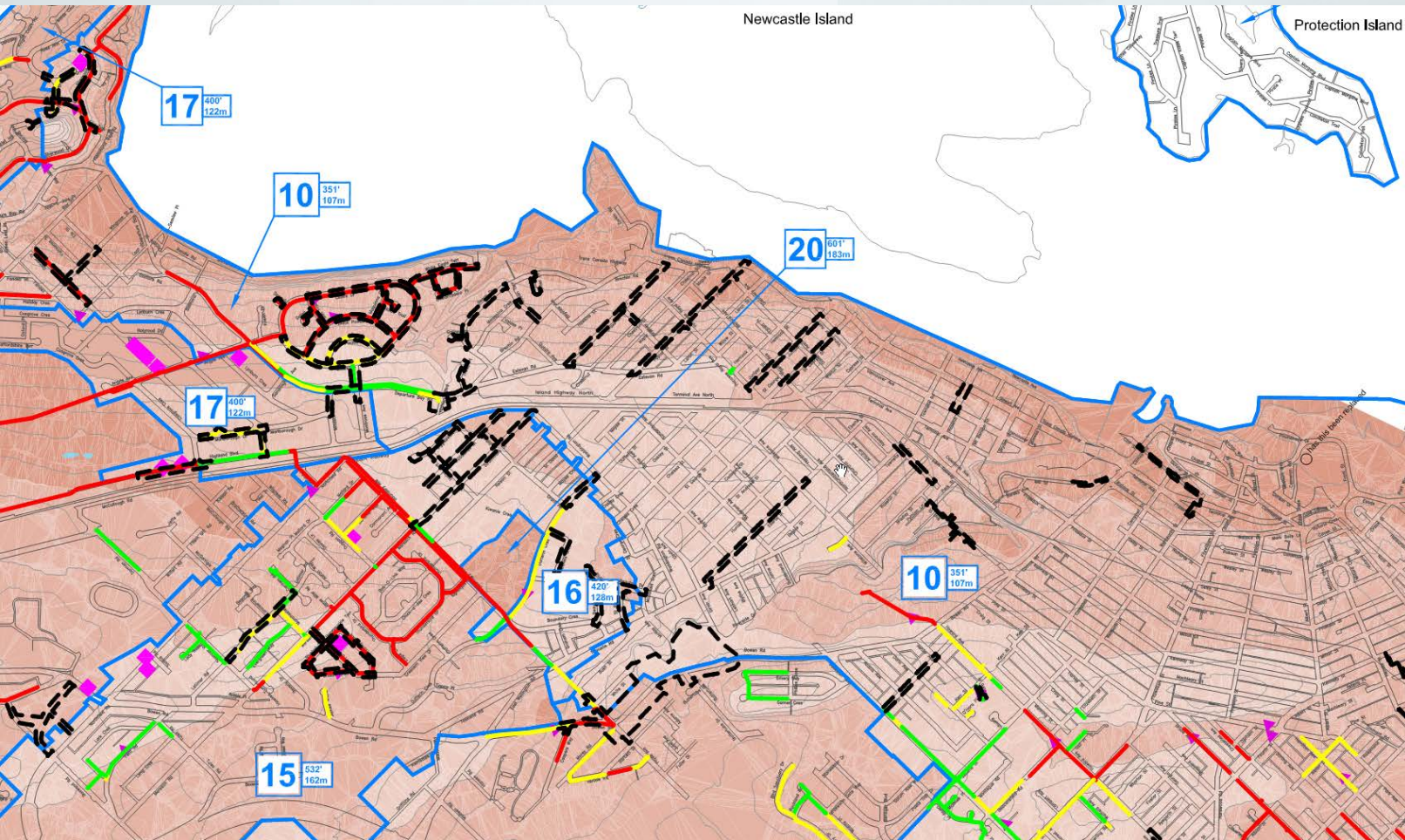
Miscellaneous

- Water
- Sanitary
- Storm
- Storm Culvert
- Storm Channel
- Storm Detention Pond
- City Boundary

Produced by: Engineering GIS
Production Date: 4/9/2014

CITY OF NANAIMO
 THE HARBOUR CITY

AC watermain break analysis



GIS

**GIS digital data is
downloadable
from the City
Web Page in
Many file formats**

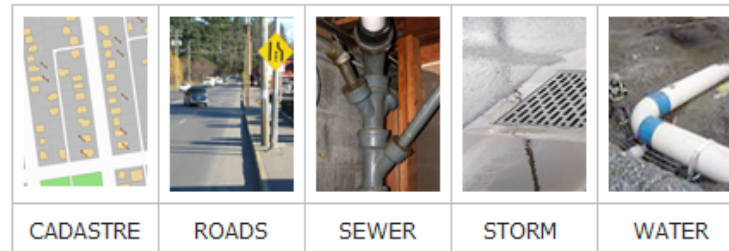
www.nanaimo.ca

Digital Data

- > [DWG](#)
- > [GDB](#)
- > [KML](#)
- > [SDF](#)
- > [SHP](#)

The Engineering Support Services group maintains a digital library of GIS data that defines the infrastructure of the City.

These data sets include the framework of infrastructure water, storm and sewer and cadastral land base systems.



Each data set contains information specific to the type of infrastructure, simply select the format you wish to download and then select which type of infrastructure you are interested in.

*Available Data Formats - Select a format to download your desired format and framework of data...

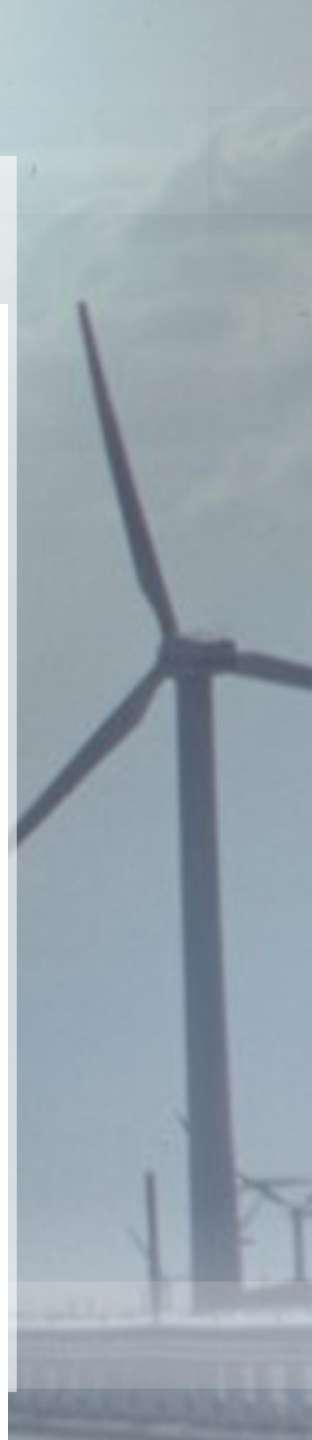
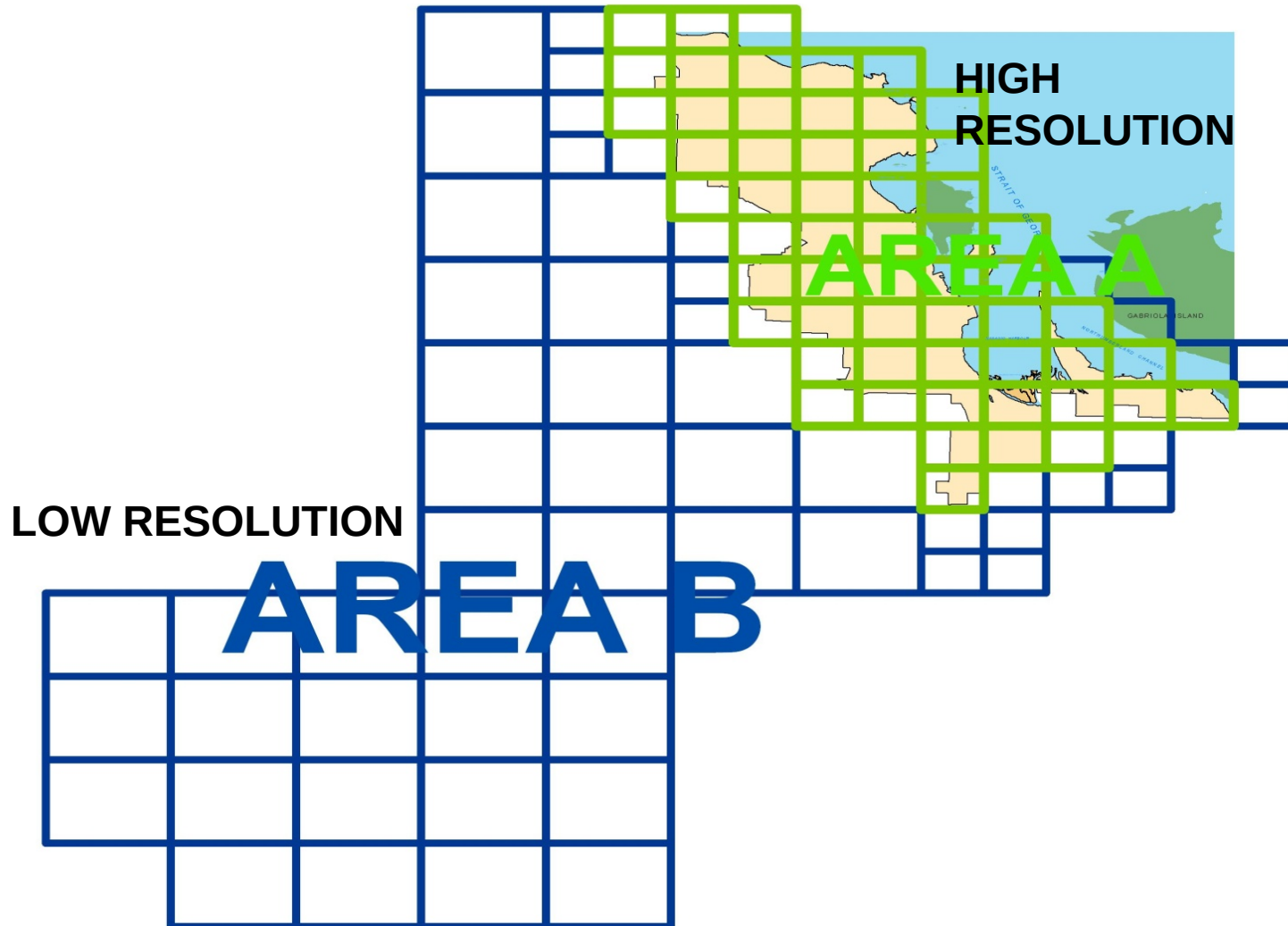
- [KML](#) - Google Earth KML/KMZ format
- [Autocad DWG](#) - Autodesk DWG format
- [SDF](#) - Autodesk Spatial Data File format
- [SHP](#) - ESRI Spatial Data File Format (Shape Files)
- [GDB](#) - ESRI File Based Geodatabase Format

Orthophotography (aerial photos)



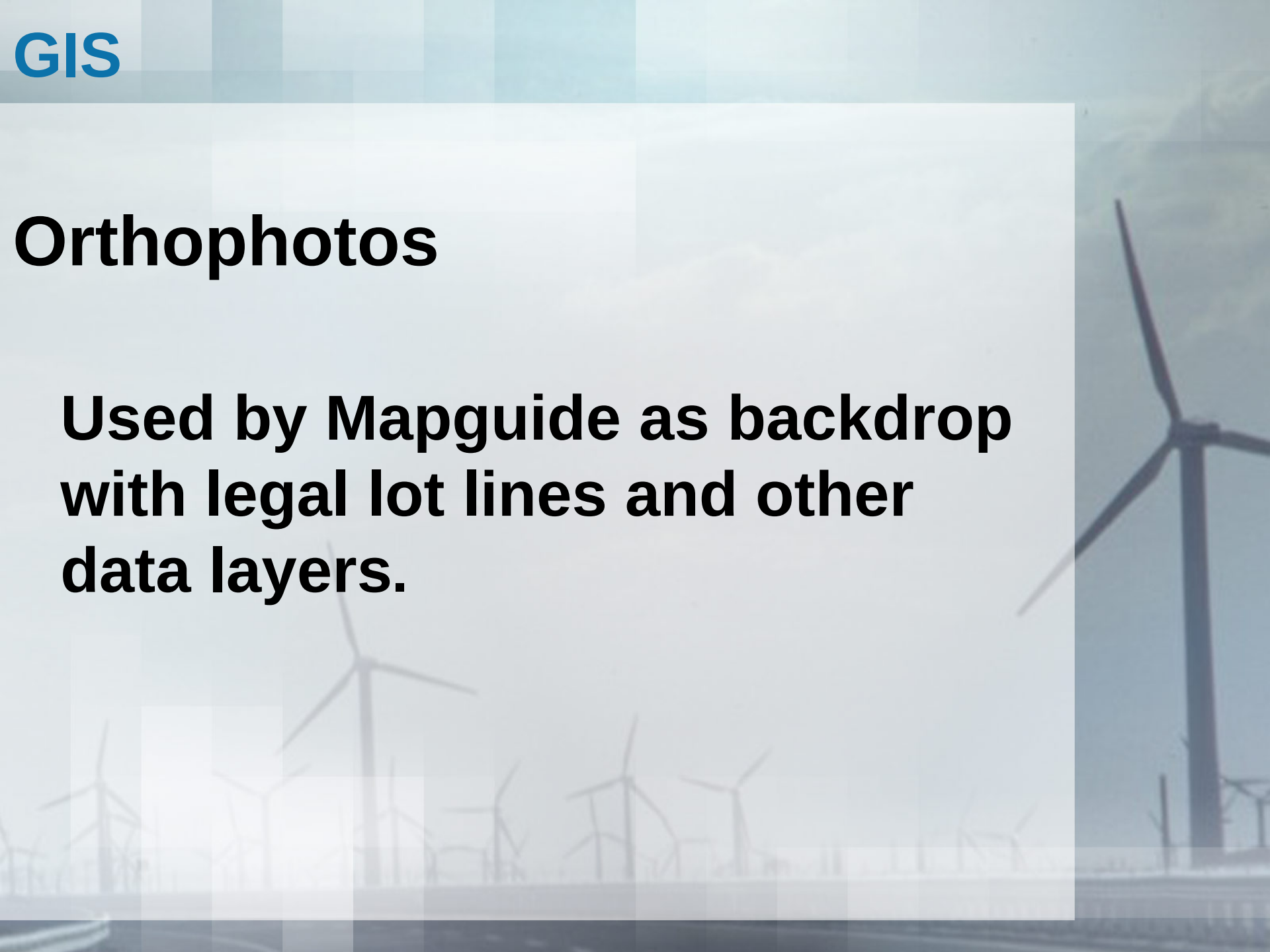
GIS - Orthophotography Coverage Area

- Area B – The Watershed



Orthophotos

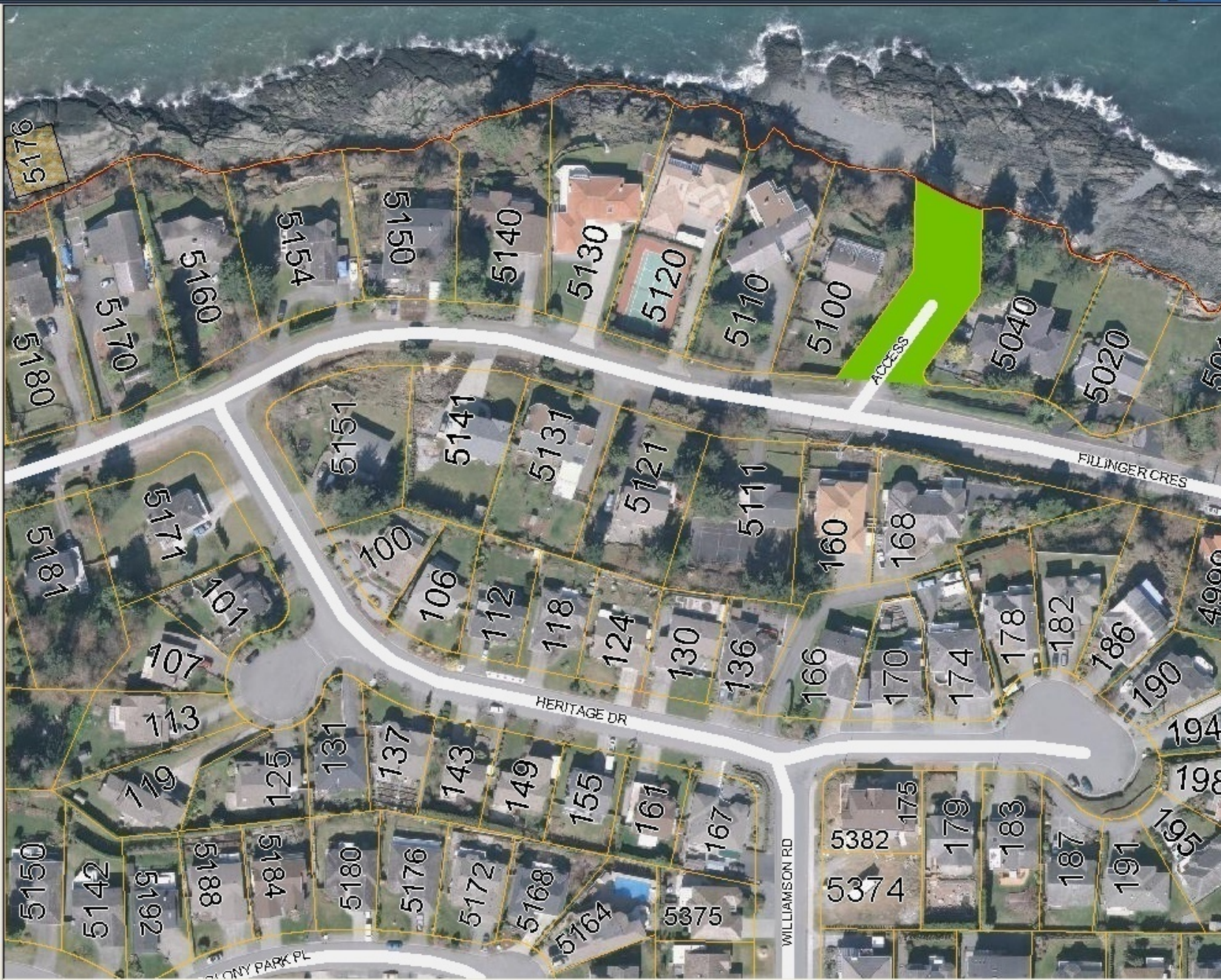
**Used by Mapguide as backdrop
with legal lot lines and other
data layers.**





MAP

- ☐ Capital Projects
- ☐ ESA
- ☐ SHIM
- ☐ Map Books
- ☐ Bus Stops
- ☐ Street Lights
- ☐ Development Permit
- ☐ Rezoning Application
- ☐ WITS Validated W/L
- ☐ Survey Monuments
- ☐ Contours
- ☐ Util - Sanitary
- ☐ Util - Storm
- ☐ Util - Water
- ☐ Easements
- ☐ Util - Fiber Optic
- ☐ School Catchment A
- ☐ Legal Text
- ☐ Zoning
- ☒ Transportation
 - ☐ Sidewalks
 - ☐ Crosswalks
 - ☐ On Street Bicycle
 - ☐ Bridges
 - ☐ Road Classification
 - ☒ Road Names
- ☒ Street Address
 - Abc
- ☐ Active Building Perm
- ☐ All Building Permits b
- ☐ Completed Building F
- ☐ Posting Plans
- ☐ Building Footprints
- ☒ Properties
 - ☒ Strata Buildings
 - ☒ Mobile Homes
- ☒ Air Space
- ☒ Lease (Water)
- ☒ Lease (Lots)
- ☒ Lotlines
- ☒ Land Parcels



ONY PARK PL

HERITAGE DR

WILLIAMSON RD

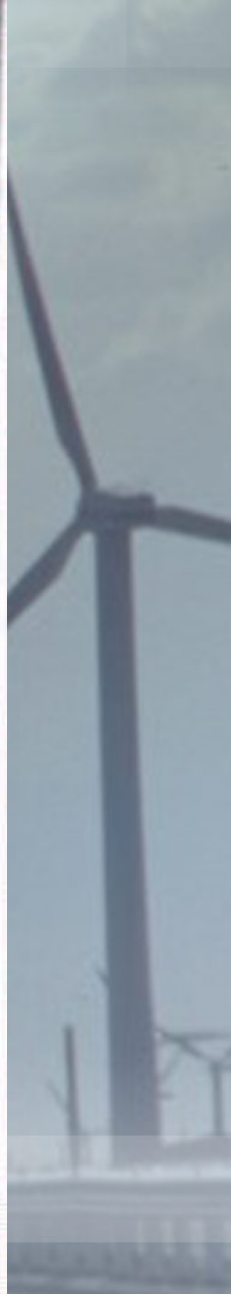
FILINGER CRES

Other Orthophoto Products

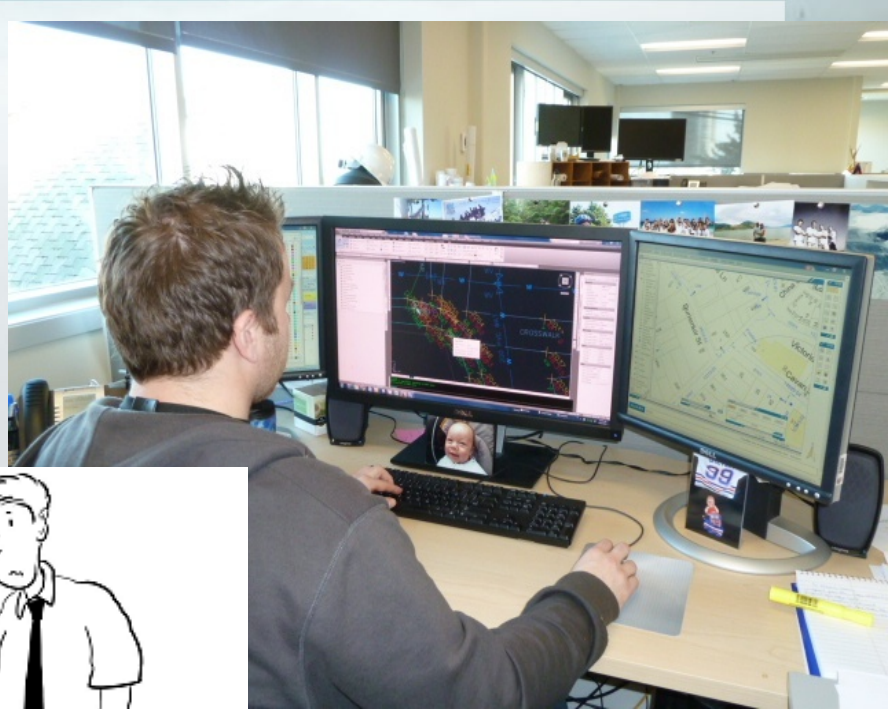
1. Digital Elevation Model
 - ✓ Design
2. Building Spot Elevations
 - ✓ Planning (3D models)
3. Surface Type Identification
 - ✓ Storm design
4. Infrastructure Location
 - ✓ Asset Inventory
5. Vegetation Cover
 - ✓ Parks Planning
6. Encroachments
 - ✓ Bylaw Enforcement



What some people think we do....



Survey and Base Drawing



Design

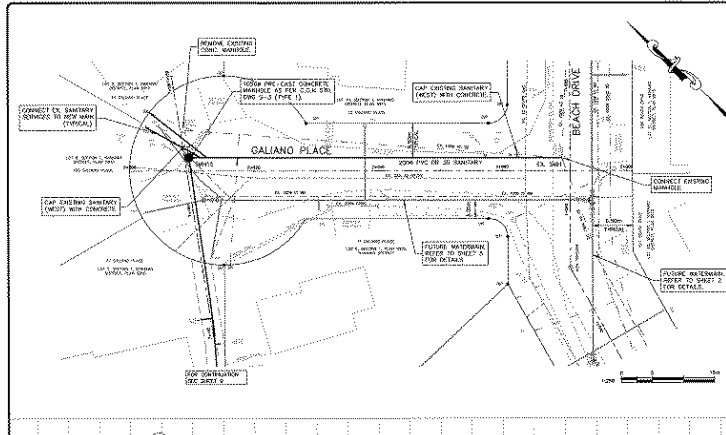
Design Process

- **Detail scope of projects
(Planning to Design to Construction)**
- **Meet with stakeholders in design process**
- **Establish accurate project cost estimates**
- **Identify approvals required from other jurisdictions – Environment / Gas / Hydro**
- **Identify land acquisition requirements**
- **As built info for asset management inventory**

Manage Designs by Consultants

- **Define scope of work**
- **Prepare Terms of Reference**
- **Prepare Calls for Proposals or Qualifications**
- **Evaluate proposals and award design work**
- **Manage work of Consultants**
- **Approve invoices**
- **Review designs at 50%, 95% and 100% stage.**
- **Approve final designs.**

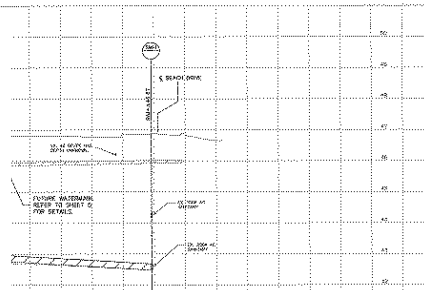
Design process



PROJECT 2011 Design Package "B" Sanitary Works COST ESTIMATE SCHEDULE OF QUANTITIES AND PRICES

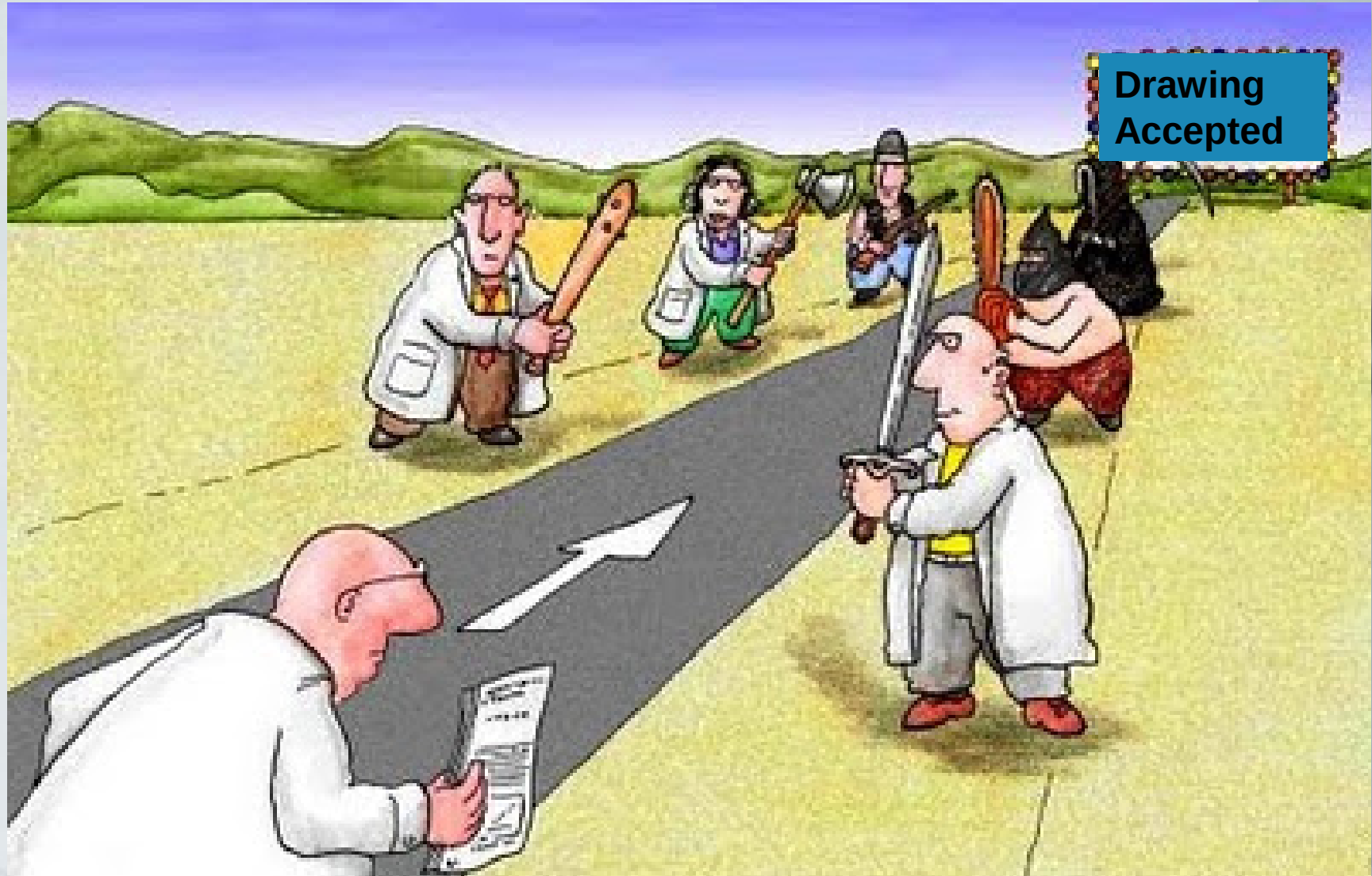
Estimate by Date: McElhenny Consulting Services (CMF) JAN 13/13

Item	Description	Units	Unit Price	100% Design Est Qty	Class A Total
Section 2 General Conditions					
2.1	Location of Works - Project Layout (Article 7) (not to exceed 5% of the total contract price)	lump sum	4,500.00	1.00	4,500.00
Total Section 2					4,500.00
Section 3 General Requirements					
3.1	Existing Structures and Utility Works (Section 3.70)				
a)	Location of Existing Structures	no.	100.00	4.00	280.00
b)	Storm, Sanitary, and Water	no.	110.00	2.00	220.00
c)	Hydro, and/or Ties	no.	120.00	2.00	240.00
3.5	Control of Public Traffic (Section 3.73)	lump sum	5,000.00	1.00	5,000.00
3.7	Removal of Existing Structures (Section 3.75)				
d)	Manholes	no.	360.00	4.00	1,440.00
e)	Clean outs	no.	180.00	2.00	280.00
f)	Fences	no.	100.00	0.00	0.00
Total Section 3					8,280.00
Section 4 Trench Excavation, Bedding and Backfill					
4.4	Imported Granular Fill (Section 4.73)	1	12.00	3,260.00	39,120.00
4.7	Surface Restoration (Section 4.76)				
a)	UNTRAVELLED	m2	7.00	90.00	630.00
b)	TRAVELLED	m2	35.00	500.00	17,500.00
c)	Asphalt Curb	m	20.00	40.00	800.00
Total Section 4					58,050.00
Section 5 Sanitary Sewer System					
5.1	Piping and Fittings (Section 5.70)				
(i)	PPRAC				
a)	150mm dia.	m	210.00	50.00	10,500.00
b)	200mm dia.	m	280.00	180.00	49,000.00
c)	Remove Existing 150mm dia AC	m	60.00	130.00	7,800.00
5.3	Connection to Existing Piping (Section 5.72)				
a)	150mm dia.	no.	80.00	1.00	80.00
b)	Tie into Existing Manhole and Re-Bench	no.	1,400.00	2.00	2,800.00
5.4	Pre-cast Manhole Sections (Section 5.73)				

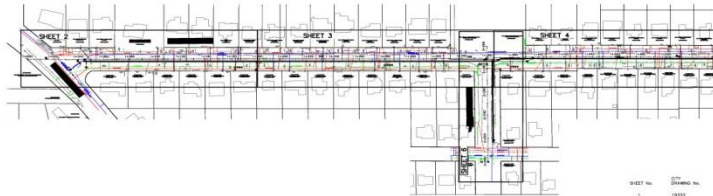


ASSESS EXISTING CONDITIONS FOR CONFLICTS
DETERMINE FUTURE ALIGNMENTS
CALCULATIONS FOR CAPACITY, PIPE SIZE AND MATERIAL
COST ESTIMATE

Drawing review process



**ISSUED FOR
CONSTRUCTION**



LOCATION PLAN



The map shows a residential area with several streets and lots. The streets shown are Elysian Road at the bottom left, Green Road at the bottom center, Malabar Creek running horizontally across the middle, and Beach Drive at the top right. There are also smaller roads like Ridge Road and Ridge Lane. Lots are outlined and many are numbered. Specific areas are highlighted with boxes and labels such as SHEET 1, SHEET 2, SHEET 3, SHEET 4, SHEET 5, and SHEET 6. Some lots have names like 'MADISON' or 'GREEN'. A north arrow is located in the upper left corner.

KEY PLAN

1000

GENERAL NOTES:

10. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CITY OF ANN ARBOR CONSTRUCTION STANDARDS AND SPECIFICATIONS.
11. ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES SHALL BE APPROXIMATE (IF NOT SHOWN) BE DETERMINED BY USE OF A P.P.S. LOCATOR AND RECORD, SHOWN, AND ARE STRAIGHTENED NOT NECESSARILY SHOWN.
12. ALL ELEVATIONS ARE TO EXISTING DATUM.
13. ALL UTILITY CONNECTIONS TO BE DETERMINED ON SITE USING SATELLITE SURVEYING TECHNIQUES.
14. ALL WATERMAIN JOINTS WITHIN ONE HUNDRED (100) FEET VERTICAL OF CONSTRUCTION SHALL BE REPAIRED BY SHOWN W/IN PERMITS OF THE CITY OF ANN ARBOR.
15. ALL APPROVED UTILITY VALUES AND PROVISIONS SHALL BE REPRODUCED AS SHOWN ON THE RECORD DRAWING.
16. ALL MATERIALS TO BE SPECIFIED MATERIALS ON APPROXIMATIONS TO BE USED SHALL BE APPROVED BY THE CITY OF ANN ARBOR.
17. TRUNK LINES SHALL BE HANDLED FOR ALL UTILITIES AS PER THE CONSTRUCTION STANDARDS AND SPECIFICATIONS UNLESS NOTED OTHERWISE. ALL UTILITIES SHALL BE HANDLED AS SHOWN.
18. PREPARED: TEST, OBSERVATION AND EXISTENTIAL RECORD REQUIREMENTS TO CITY OF ANN ARBOR STANDARD SPECIFICATIONS.
19. ALL CONSTRUCTION SHALL BE TO FOLLOW THE LATEST WORK BOOK SET OF STANDARDS.

**ISSUED FOR
TENDER**



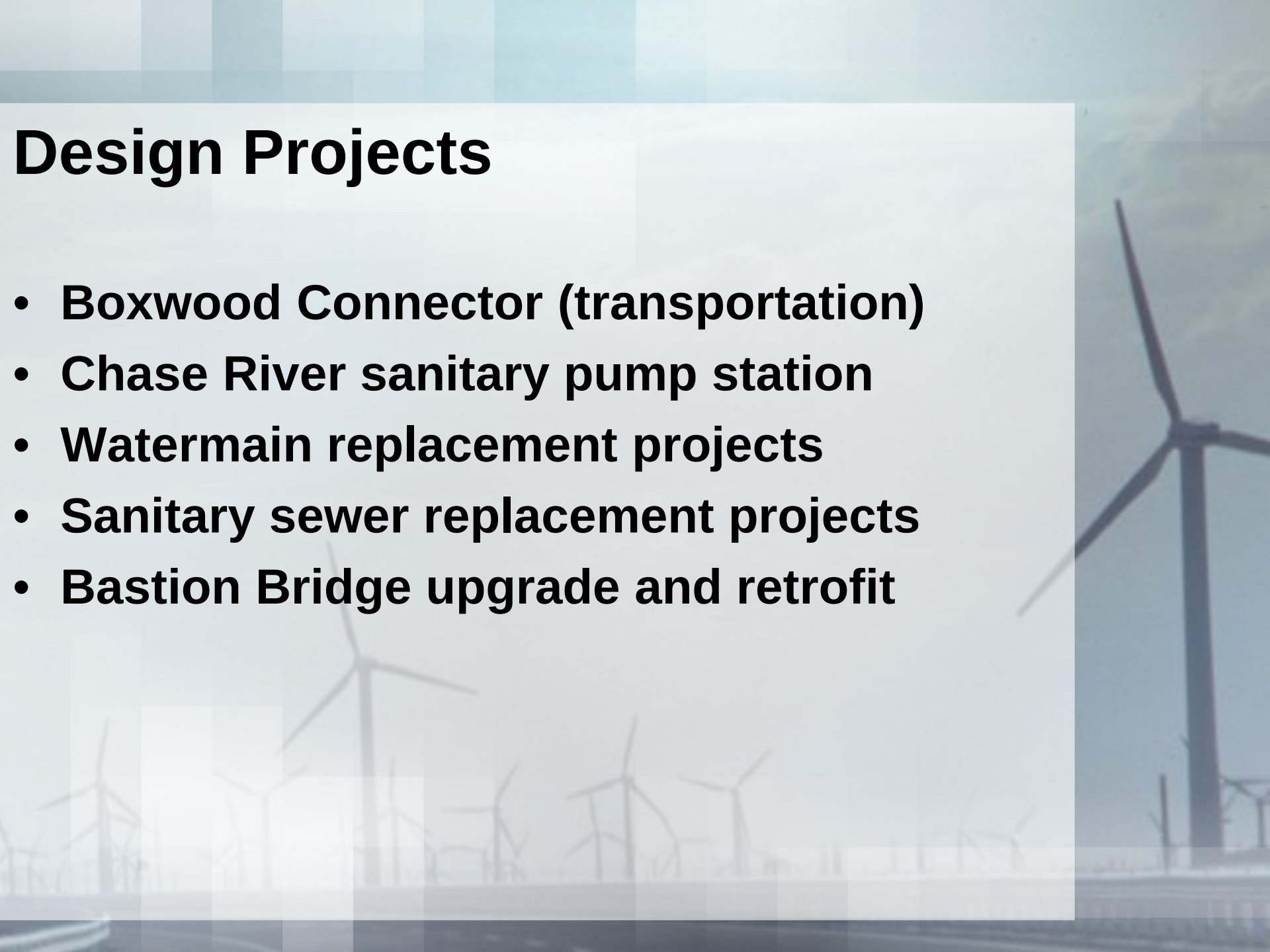
SHEET No.	Revision No.	Revision To	PROJECT	TITLE
1	101036	101036-01-01	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	CONCEPT DESIGN SLOAN PARKWAY & SLOAN LANE PLAN & PROFILE DATA - 0+00 TO 1+00
2	101036	101036-01-02	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 1+00 TO 1+400
3	101036	101036-01-03	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 1+400 TO 1+600
4	101036	101036-01-04	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 1+600 TO 1+800
5	101036	101036-01-05	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 1+800 TO 2+000
6	101036	101036-01-06	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 2+000 TO 2+400
7	101036	101036-01-08	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 2+400 TO 2+600
8	101036	101036-01-107	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 2+600 TO 2+800
9	101036	101036-01-108	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 2+800 TO 3+000
10	101036	101036-01-201	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 3+000 TO 3+400
11	101036	101036-01-203	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 3+400 TO 3+600
12	101036	101036-01-204	2011 SLOAN PARKWAY & SLOAN LANE BLACK HILLS	PLAN & PROFILE DATA - 3+600 TO 3+800

McElharney
McElharney Consulting Services Ltd.
5011 J. R. Macdonald Dr. Suite 1000
Vancouver, BC V6X 2S6 Canada
Tel: 604.278.8888 Fax: 604.278.8889
www.mcelharney.com

DDC FILE No. 0010-01,003
 C.O.N. DDC No. 19379

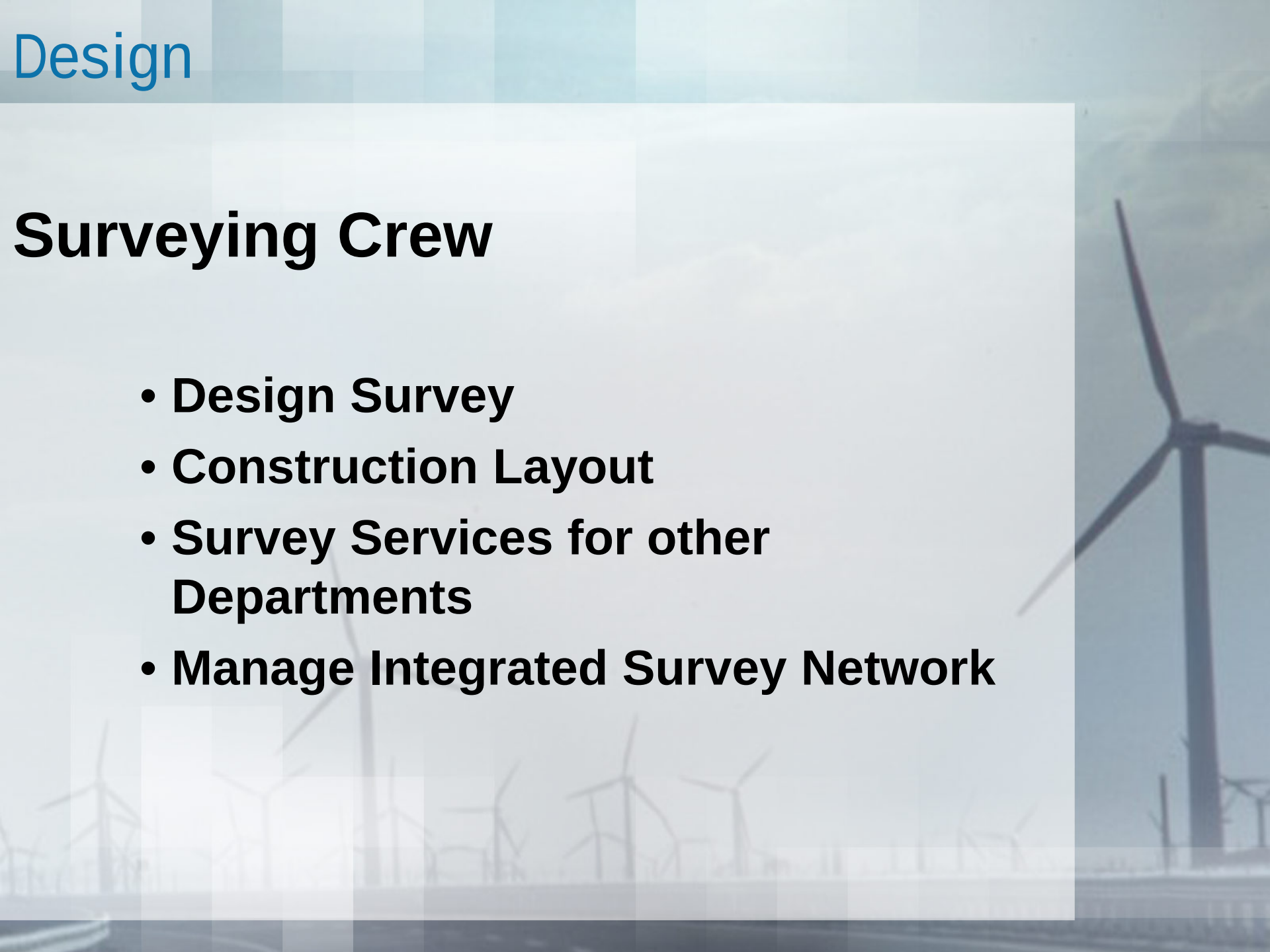
Design Projects

- **Boxwood Connector (transportation)**
- **Chase River sanitary pump station**
- **Watermain replacement projects**
- **Sanitary sewer replacement projects**
- **Bastion Bridge upgrade and retrofit**



Surveying Crew

- **Design Survey**
- **Construction Layout**
- **Survey Services for other Departments**
- **Manage Integrated Survey Network**



Support Services

Customer Service

- Create brochures
- Issue permits
- Print maps and as built drawings
- Committees and Open Houses support

Office Management

- Travel arrangements
- Track memberships and subscriptions
- Organization charts
- Coordinate Office renovations
- Manage filing system, archival and destruction.

Support Services

Budget Management

- **Prepare Purchase Requisitions**
- **Process Invoices**
- **Prepare Financial Plan support documents.**

Equipment and Supplies

- **Photo copiers and printers,**
- **Digital cameras**
- **Laptop computers**



Engineering Library

- **Maintain library of videos CD's, DVD's and hard or digital copies of Engineering reports and technical publications.**
- **Engineering Library inventory available to organization via Intranet.**
- **Publications may be requested electronically or in person.**

Support Services Engineering Library

Engineering
searchable
library has
over 2000
volumes



Quick Search

Employee Search



CITY APPLICATIONS

[City Search](#)
[City Internet Site](#)
[MapGuide](#)
[Parks & Trails](#)
[Cemetery Map](#)
[Drawing Database](#)
[Map Books](#)
[WebCust\(Test\)](#)
[MyCity \(Test\)](#)
[Public Works Call Sheet](#)
[Engineering Library](#)
[Hay 360](#)
[Staff Perf Review](#)
[SAP Training and Documentation](#)
[Help Desk](#)
[Organizational Chart](#)

ONLINE TRAINING

[View Catalog](#)

CORPORATE INFO

[Documents](#)
[Policies](#)
[Forms](#)
[Job Postings](#)
[Job Descriptions](#)
[Status of Competitions](#)
[Job Evaluation](#)

ENGINEERING LIBRARY

SEARCH • HELP • Logged in as: **Lynn Devries**

No. Media

Title

Author

Year Pub to

Keyword

☐ AutoComplete

NO	TITLE	AUTHOR	PUB DATE	LOCATION	MEDIA	STATUS	TYPE
1	CHASE RIVER TRUNK SEWER STUDY	Dayton & Knight	1974-Jul	Engineering	Book	Available	Report
2	SOLID WASTE COLLECTION IN VANCOUVER	Simon Fraser University	1971-Mar	Box 2396	Book	Available	Report
3	COMPUTER SYSTEM FEASIBILITY STUDY	Boeing Computer Services	1976-Feb	Box 2396	Book	Available	Report
4	DEPARTURE BAY ROAD TRUNK SEWER	RDN	1975-Jul	Box 2396	Book	Available	Report
5	SHELLFISH - GROWING WATER	Environmental Protection Services	1976-May	Box 2396	Book	Available	Book
6	FIVE FINGER ISLAND OUTFALL	Dayton & Knight	1972-Jun	Box 2396	Book	Available	Report
7	FIVE FINGER ISLAND OUTFALL	Malaspina College	1975-Dec	Box 2396	Book	Available	Report
8	PROPOSED SEWER TREATMENT PLANT	Golder Brawner & Associates	1972-Nov	Box 2396	Book	Available	Report
9	FRENCH CREEK WATER POLLUTION CENTRE	Dayton & Knight	1976-Feb	Box 2396	Book	Available	Report
10	JUMP CREEK DAM SITE - LAND ACQUISITION	Golder Brawner & Associates	1970-Sep	Box 2396	Book	Available	Report
11	LANTZVILLE INTERCEPTOR	Dayton & Knight	1973-Nov	Box 2396	Book	Available	Report
12	LANTZVILLE INTERCEPTOR - DESIGN REPORT	Dayton & Knight	1974-Oct	Engineering	Book	Available	Report
13	MASTER STORM DRAINAGE STUDY - PROPOSAL	WCT	1976-Jul	Box 2396	Book	Available	Report
14	MILLSTONE RIVER TRUNK STAGE I - CONTRACT	Dayton & Knight	1976-Jan	Box 2396	Book	Available	Contract
15	MILLSTONE RIVER TRUNK STAGE II - CONTRACT	Dayton & Knight	1976-Jul	Box 2396	Book	Available	Contract
16	NANAIMO RIVER ESTUARY STATUS	Environment Canada	1976-Jul	Box 2396	Book	Available	Report
17	NORTHFIELD TRUNK SEWER EXTENSION - CONTRACT	Dayton & Knight	1975-Dec	Box 2396	Book	Available	Contract
18	NORTH WELLINGTON AND DEPARTURE BAY WATER DISTRIBUTION	Associated Engineering	1976-Jan	Box 2396	Book	Available	Report
19	LAND DEVELOPMENT DL 17, 19, N. WELLINGTON	Associated Engineering	1975-Feb	Box 2396	Book	Available	Report
20	CIVIL ENGINEERING COMPUTING TOOLS - VOLUME 1	Dept. of Civil Engineers	1988-Aug	Box 2396	Book	Available	Book
21	OCEANOGRAPHIC INVESTIGATION - RDN	Dayton & Knight	1973-Nov	Box 2396	Book	Available	Report
22	CIVIL ENGINEERING COMPUTING TOOLS - VOLUME 2	Dept. of Civil Engineers	1988-Aug	Box 2396	Book	Available	Book
23	WATER QUALITY ANALYSIS - VOLUME 4	AWWA	1982	Engineering	Book	Available	Report
24	SOUTH FORKS WATERMAIN HYDRAULIC INVEST.	Associated Engineering	1976-Sep	Box 2396	Book	Available	Report
25	STANDARDS FOR MEMBER FACILITIES - RDN	Dayton & Knight	1976-Aug	Box 2396	Book	Available	Report
26	STAND BY DIESEL GENERATOR SET - CONTRACT	Dayton & Knight	1976-Dec	Box 2396	Book	Available	Contract

Engineering Mapping and Records

- **Provide plans, maps and other records**
- **Enter proposed drawings and As Built drawings into data base.**
- **Nanaimo drawing viewer**

Support Services

Nanaimo Drawing Viewer

- IT built a customized Corporate Viewer

The screenshot shows a software application titled "Drawing Database". It features a menu bar with "Print", "Print Settings", and "Help". Below the menu is a form with the following fields:

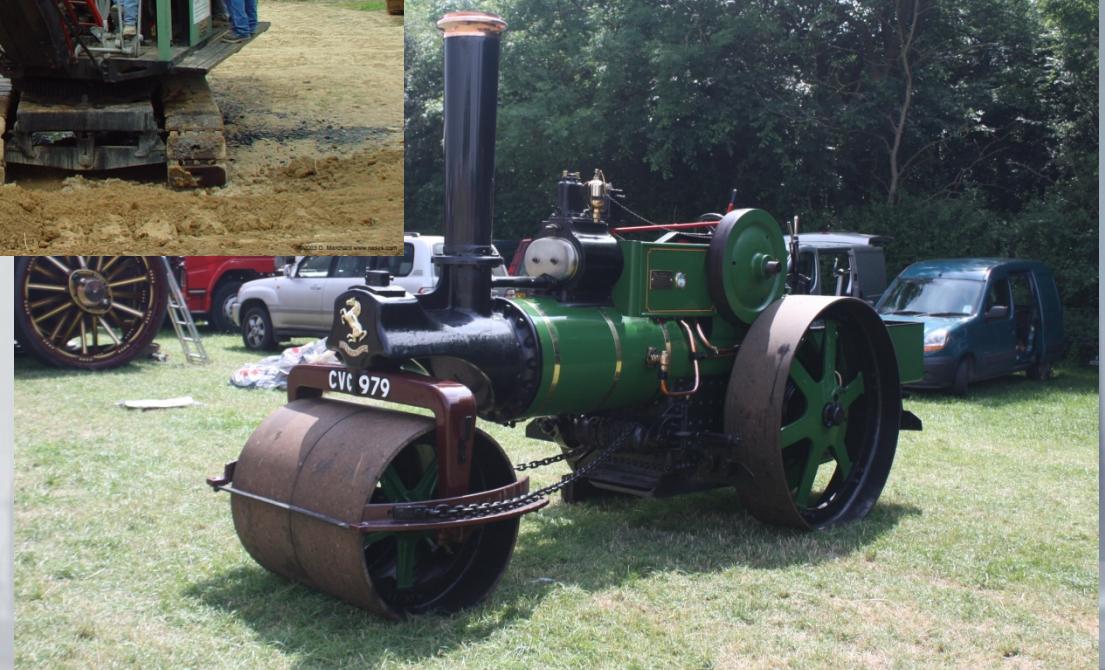
- Street Name: **FAIRBROOK CRESCENT**
- Consultant: **NEWCASTLE**
- Title: **SITE PLAN**
- From: (empty)
- Date: **22-06-99**
- To: (empty)
- Location: **GABS**
- Project: **SUNSHINE RIDGE**
- City Dwg No: **13276**
- Key Words: **SITE**

To the right of the form is a preview window showing a site plan drawing. Below the form is a filter section with a dropdown menu, a "Goto" button, and a record count of "14542 Records". To the right of the filter are "View" and "Print" buttons. Below the filter is a table with the following columns: "City Dwg ...", "Alt Dwg No", "Street Name", "From", "To", and "Consultant".

City Dwg ...	Alt Dwg No	Street Name	From	To	Consultant
13269	D-3005	JUMP CREEK ROAD			KLOHN-CRIP
13270	D-3006	JUMP CREEK ROAD			KLOHN-CRIP
13271	D-3007	JUMP CREEK ROAD			KLOHN-CRIP
13272	D-3008	JUMP CREEK ROAD			KLOHN-CRIP
13273	4088-06-313	JUMP CREEK ROAD			AESL
13274	4088-06-314	JUMP CREEK ROAD			AESL
13275	0	NORWELL DRIVE	LONG LAKE OUTLET CHANN...	NORWELL DRIVE	CON
13276	L0190410-03	FAIRBROOK CRESCENT			NEWCASTLE
13277	L0190411-3	FAIRBROOK CRESCENT			NEWCASTLE
13278	L0190412-3	FAIRBROOK CRESCENT			NEWCASTLE
13279	L0190415-3	ROAD A		FAIRBROOK CRESCENT	NEWCASTLE
13280	L0190417-2	FAIRBROOK CRESCENT			NEWCASTLE

At the bottom of the application window, there is a status bar with checkboxes for "Digital File", "Out for Aperture", and "Proposed", and an "Exit" button. The Windows taskbar at the very bottom shows the Start button, several application icons, and the system clock displaying "11:18 AM".

Historic equipment

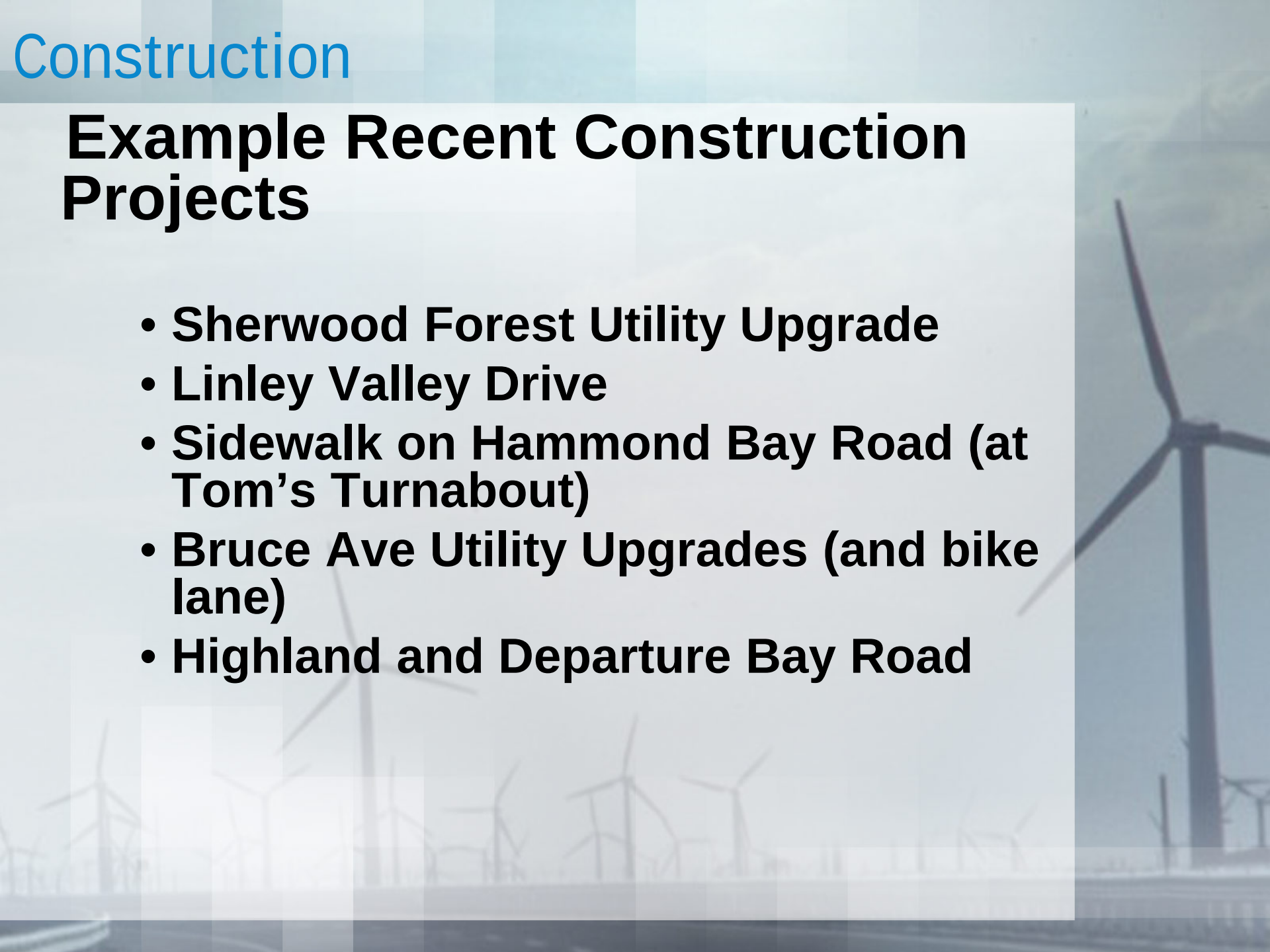


OOPS!



Example Recent Construction Projects

- **Sherwood Forest Utility Upgrade**
- **Linley Valley Drive**
- **Sidewalk on Hammond Bay Road (at Tom's Turnabout)**
- **Bruce Ave Utility Upgrades (and bike lane)**
- **Highland and Departure Bay Road**



Construction

Construction Project Management

- **Tender the projects**
- **Manage Contractors**
- **City Construction Crew**



Projects completed by the City Construction Crew:

- **2013:**
 - Campbell Street Sewer
 - Selkirk check valve
 - Drake and Brierley watermain
 - First street watermain
 - Marlborough watermain
 - Rockmount water and storm
 - Opal Road watermain
 - Smugglers Hill watermain
 - Sandy Court watermain
 - Southview watermain
 - Victoria Road watermain



Construction

Contract Administration (Other Departments)

- **Parks**
 - **E & N Trail**
 - **Oliver Rd Recreation Centre**
 - **Wall Street sidewalk upgrade**
- **Fire Department**
 - **Chase River Fire hall**
- **Administration**
 - **New Nanaimo Center (SARC)**

Permits

- **Annually Inspect and approve permits for:**
 - **Utilities Permits**
(Hydro, Telephone, Gas)
 - **Work in City Streets Permits**
 - **Fill Permits**

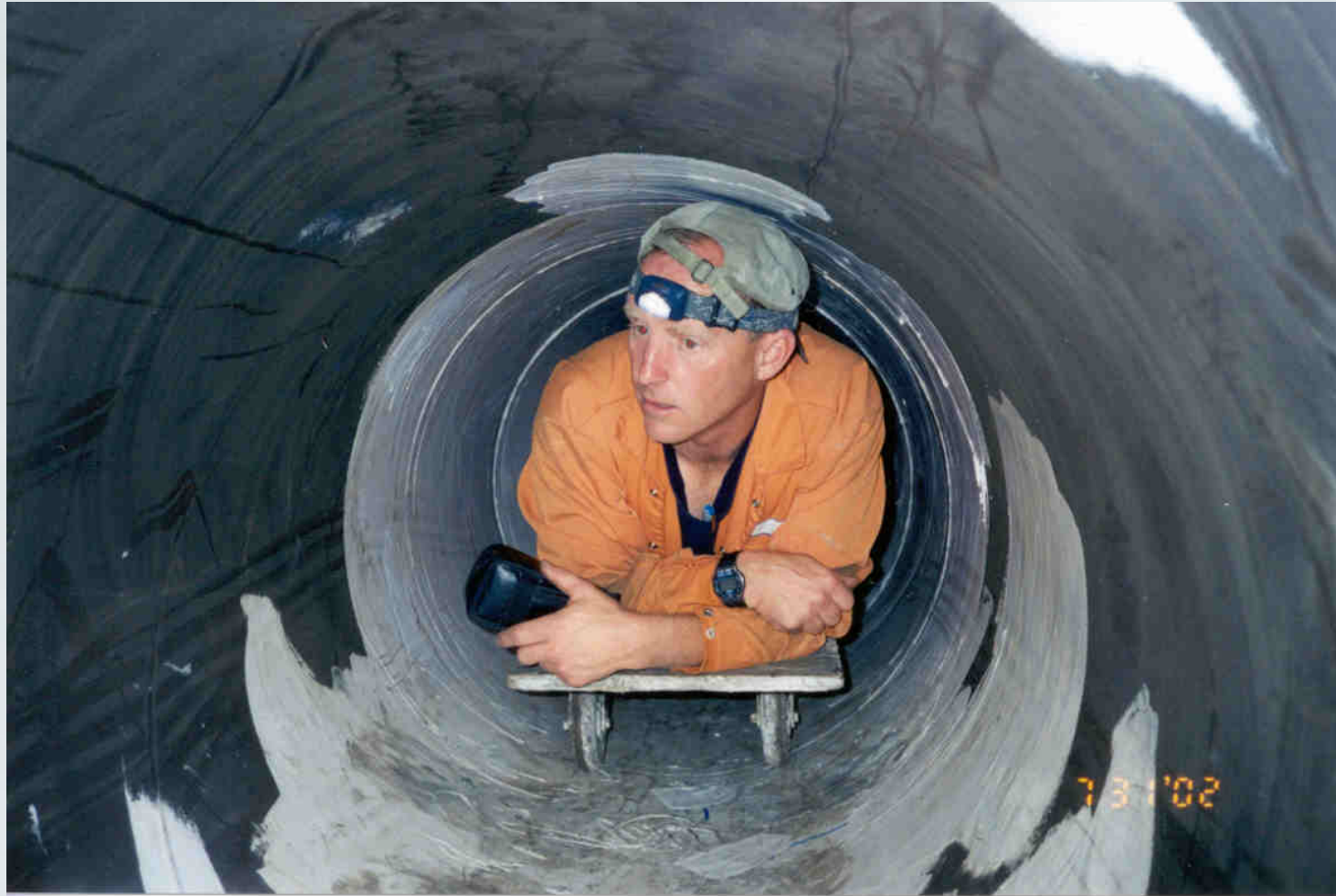


Inspection Services

- **Inspection of City Capital Projects**
- **Subdivision and development inspection for Millions \$\$\$ worth of development frontage and infrastructure works annually**



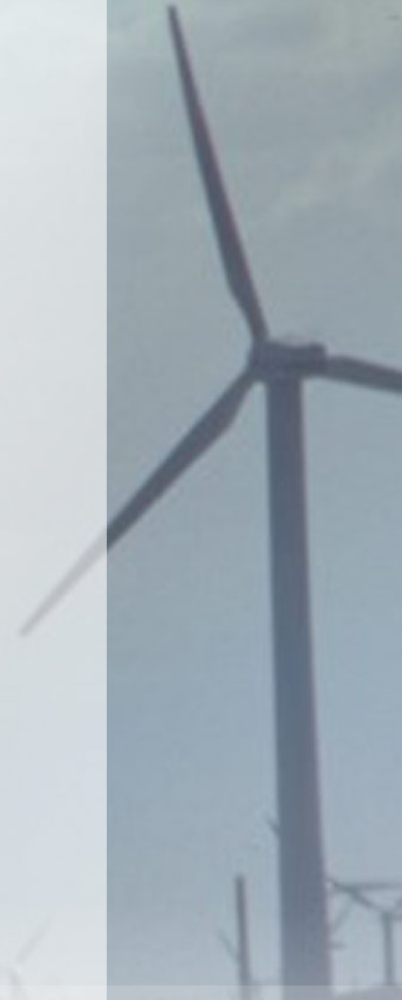
Engineering Construction – Inspection Duke Point Supply Line – 750 mm / 30 inch Inside diameter



Financial Services

- **Budget Preparation**
- **Financial Reports (PSAB)**
- **Current Year Construction Costs**

Which intersection?



Summary of Engineering Groups

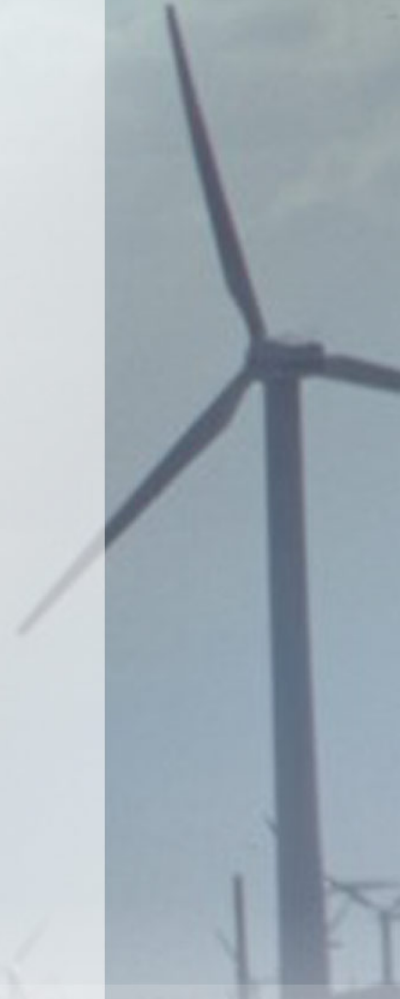
- **Infrastructure Planning and Transportation**
 - Figure out the problems
 - Identify solutions
 - Set up budgets
- **Design and Projects Group**
 - Develop project plans and details
 - Get project organized and approvals in place
- **Construction Group**
 - Procure the construction services
 - Monitor construction and Contract Administration
- **GIS group tracks asset information and provides analysis to facilitate decision making**



Completed Projects



Construction crew – typical project



Westwood Bridge Reconstruction



Westwood Bridge Reconstruction



Westwood Bridge Reconstruction













CAUTION
SECTIONS OF
TRAIL FLOODED





















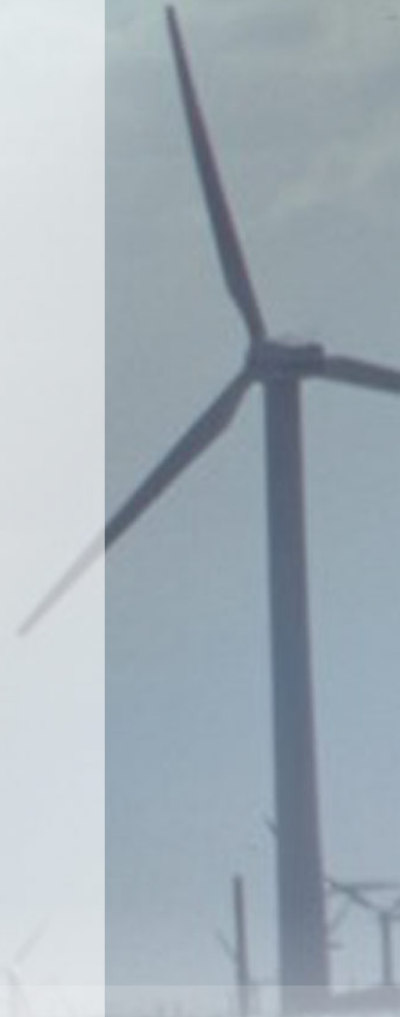


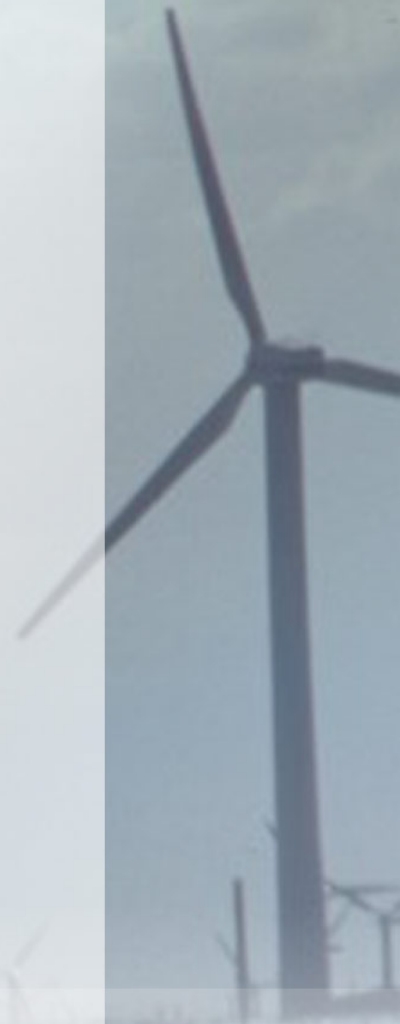
1500
C478



Buttertubs/Millstone Sewer





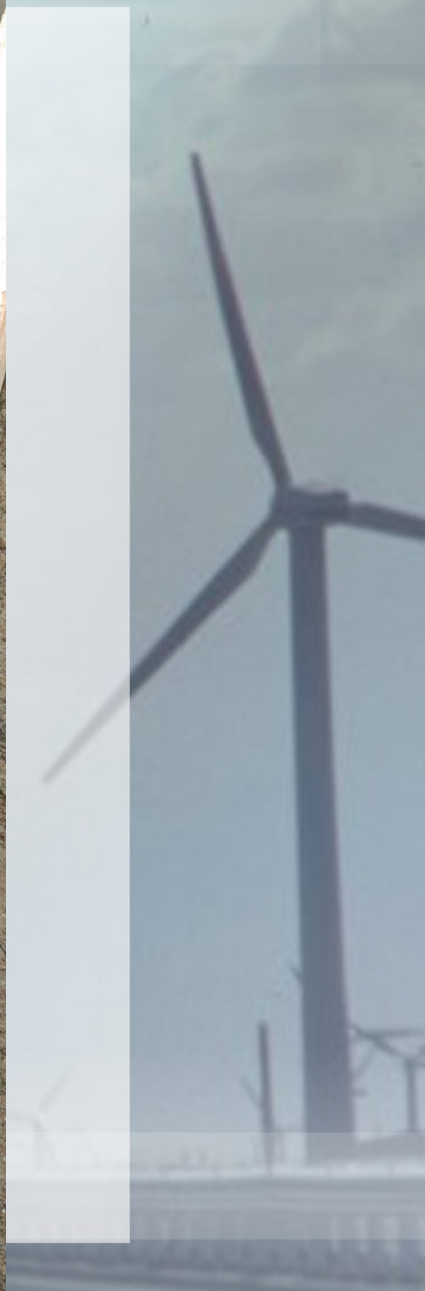
















 **United
Rentals**

TRENCH SAFETY
800-UR-RENTS



Questions ?

