

COMMITTEE OF THE WHOLE - (WORKING SESSION) - MAY 25, 2005

H.I.R.M.S. - HISTORICAL INFRASTRUCTURE RECORDS MANAGEMENT SYSTEM

Recommendation

The Commissioner of Engineering and Public Works recommends that the report on H.I.R.M.S. - Historical Infrastructure Records Management System, be received as information.

Economic Impact

There is no economic impact to the City of Vaughan as the necessary resources have been allocated and approved.

Purpose

The purpose of this report is to advise Council of the deployment of a new tool called **H.I.R.M.S. - Historical Infrastructure Records Management System** that the Engineering and Public Works Department uses to index and catalogue engineering based drawings and technical reports.

Background - Analysis and Options

The Engineering and Public Works Department has been, over the past number of years, scanning our inventory of hard copy (paper, mylar, etc.) engineering related drawings and technical reports into a digital format referred to as an IMAGE.

The 2004 phase of this project saw the completion of the scanning aspect of this inventory. All new engineering related drawings and technical reports submitted to the City of Vaughan are done so in a digital format as a standard requirement for submission and acceptance.

Past practice had IMAGES stored on a shared network file server (the F: drive common to all City staff) organized in a folder structure typically representing the event in which the information was generated for.

While the IMAGES are available to all Engineering and Public Works Staff and the Corporation as a whole, searching for a specific drawing which may relate to a specific element of the City such as a street or bridge is a challenge. This concern was noted by the Infrastructure Management Services Section as one of the Engineering and Public Works Department's primary needs to be addressed within a larger framework for proper Infrastructure Management and hence was incorporated into the Section's business plan.

It was through the on going scanning project and search concerns that the concept for H.I.R.M.S. - Historical Infrastructure Records Management System - was born.

H.I.R.M.S. is, in its simplest terms, a formal catalogue and indexing for engineering based drawings and technical reports (Infrastructure Records). DATA describing a specific Infrastructure Record is stored on our Corporate Database Server with the associated IMAGE stored on the Application Server. Our consultant of record for the scanning project, Marmak Information Technologies, captured DATA about each and every Infrastructure Record and developed a very simple, web based application to link the DATA to the IMAGE, thereby creating convenient and meaningful ways for Staff to search and find information related the engineering drawings and technical reports.

Our current inventory of Infrastructure Records consists of approximately 33,000 engineering drawings and 360 technical reports.

The significance of this project lies in the DATA captured for all drawings and reports as well as creating a mechanism for the continued upkeep of the system as new records are added through Capital, Development and Operational activities. As a by-product of the DATA captured, duplicate records were found and eliminated. The catalogue was subsequently organized and indexed.

Marmak Information Technologies has created an intranet, web-based application to query the database and trigger the opening of the IMAGE. The application has been in use in other neighboring municipalities for a number of years. To meet Vaughan's needs, Marmak has re-engineered their application and programmed it in a .NET environment working together with our Corporate Database Server using Oracle as the database management system.

It is important to note that H.I.R.M.S. is not related to other corporate initiatives such as GIS but is a key element in effectively managing infrastructure assets. The major task of cataloging and indexing engineering based drawings and technical reports is complete and is being maintained by Engineering staff. The information is open and available for future integration with other corporate systems as they may develop. The information (IMAGES and DATA) collected through this project lends itself well towards a future enterprise document management system.

In April 2005, H.I.R.M.S. was successfully deployed to Engineering and Public Works Department Staff. This system is not restrictive in nature and is currently available to **all** City of Vaughan staff with access to a computer and our intranet. The Uniform Resource Locator (URL or website address) to access the application is hirms/pbl. Alternatively, the URL can be found under the "Quick Links" Section of the Engineering and Public Works Department's VIBE website.

We would like to recognize the commitment made by the Chief Information Officer and the staff of the Information & Technology Management and Engineering and Public Works Departments, as well as Marmak Information Technologies, in contributing to the success of this project.

Relationship to Vaughan Vision 2007

This report is consistent with the priorities previously set by Council.

Conclusion

The Commissioner of Engineering and Public Works recommends that the report on H.I.R.M.S. - Historical Infrastructure Records Management System, be received as information.

Attachments

H.I.R.M.S. Presentation

Report prepared by:

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Respectfully submitted,

Bill Robinson, P. Eng.
Commissioner of Engineering and Public Works

Gary P. Carroll, P. Eng.
Director of Engineering Services

:DB

H.I.R.M.S.

HISTORICAL
INFRASTRUCTURE
RECORDS
MANAGEMENT
SYSTEM

WHAT IS H.I.R.M.S.?

- Formal catalogue and index for engineering based drawings and reports (Infrastructure Records);
- DATA describing an Infrastructure Record is stored on our corporate database server;
- IMAGES are stored on our Application Server;
- Create convenient and meaningful ways for STAFF to search and find information.

WHERE DID THE CONCEPT FOR H.I.R.M.S. COME FROM?

- **IMS interviewed all divisions of the department to assess infrastructure information related concerns;**
- **Budget to complete the scanning of hard copy drawings through Marmak Information Technologies, scanning was part of a multi-year initiative with 2004 being the last year;**
- **Recognize an excellent opportunity to address the concerns of the Divisions and complete the scanning of drawings.**

2004 PROJECT SCOPE

PART 1 - INVENTORY RECORDS

- Compiled all scanned drawings and reports that were stored on a shared file server;
- Scanned all remaining hard copy drawings and reports into a digital format;
- Collectively, index and catalogue all drawings and reports;

2004 PROJECT SCOPE

PART 2 – SEARCH SOLUTION

- MARMAK captured information from the drawing title block or report title page and input it into a database table;
- MARMAK developed and delivered a simple web based application to query the database and link the DATA record to the IMAGE file NOTE: Information can be accessed by STAFF through technology that they currently use, Windows Explorer and Microsoft Office Document Imaging.

H.I.R.M.S. INTO THE FUTURE

FOR 2005

- Add 50,000 service connection record drawings and valve location drawings from our Public Works Division into H.I.R.M.S.;
- Make some refinements to the application.

2006 AND BEYOND

- Carry a budget to evolve the application and system based on USER needs and STAKEHOLDER feedback.

UNDERSTANDING H.I.R.M.S.

WHO?

- Eleonora Agostino, Engineering Technical Clerk
Engineering Services Division

WHAT?

- Only Official Records are entered into H.I.R.M.S.
- APPROVED and AS BUILT Infrastructure Records

WHERE?

- The action takes place in the Engineering Department

UNDERSTANDING H.I.R.M.S.

WHY?

- Many reasons...
- Legislation water/wastewater Bill 175;
- Huge return on the investment of effort;
- Infrastructure records are a vital resource to the City;
- It is an asset that represents a monetary investment;
- Currently researching into how the principles of depreciation apply to this asset class;

UNDERSTANDING H.I.R.M.S.

HOW?

- DATA entered into database via the application;
- IMAGES are moved onto the application server;
- **Where Does This DATA Come From?**
 - The GENERATOR of the infrastructure record;
 - March 2004, put some basic rules in place through our revised Design Criteria and Standard Drawings Manual;
 - We require DATA for digital submissions for both APPROVED and AS BUILT records;
 - These rules apply to EVERYONE, Capital, Development and Operations;
 - IN-HOUSE or CONSULTED projects.

UNDERSTANDING H.I.R.M.S.

HOW?

- IMS created an Excel Spreadsheet for Record GENERATORS (Staff, Consultants, etc.) to pre-fill DATA for each Infrastructure Record submitted to the City.

Microsoft Excel - HIRMS DATA TEMPLATE.xls

File Edit View Insert Format Tools Data Window Help

Times New Roman 12

D11

	A	B	C	D	E	F	G
1	ENGINEERING						
2	HOVER YOUR MOUSE OVER EACH HEADING TO REVEAL INSTRUCTIONS						
3							
4							
5							
6	File Name	Status	Drawing Category	Drawing Type	Reference Number	Streets	From Location
7	65M-3160-010	ASBUILT	SUBDIVISION	PLAN AND PROFILE	65M-3160	LANTRY PLACE	0+000
8	T00-0014-00		TENDER	PLAN AND PROFILE		PAYSON ROAD	STEELES AVENUE
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- EROSION AND SEDIMENTATION
- FENCING, STREETScape AND LANDSCAPE
- GENERAL
- GRADING PLAN
- NOTES, LEGEND AND INDEX
- PAVEMENT MARKING
- PLAN AND PROFILE
- PUMPING STATION

INSTRUCTION TO USER ENGINEERING SUBDIVISION LEGAL SITE PLAN BLOCK MAP TECHNICAL REPORT SERVICE CONNECTION DRAWING

Draw AutoShapes

THE APPLICATION...

Infrastructure Records were broken down into the following major categories:

- Engineering
- Subdivision
- Legal
- Site Plan
- Block Map
- Geodetic Control
- Technical Reports
- Service Connections

THE APPLICATION...

Tools Available

- Query Filters
 - Search By Field
 - Pick List Filters
- Display Number of Records Per Page
- Export Button
- Email Button



File Name	Status	Drawn	Drawn Category	Drawn Type	Reference Number	Drawn Location	To Location	Consultant	Drawn Date	Description	Comments	Storage Location
002001-002				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.		DICK BRIDGE, LOT 31-32, CON. 9-10 W.Y.S.	NO STREET INFORMATION FOUND, FS	
002001-003				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.	7/26/1995	WING & RETAINING WALL DETAIL, DECK BRIDGE, LOT 31-32 CON. 9-10 W.Y.S.		
002001-004				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.	7/26/1995	FRAME DETAILS, LOT 31-32, CON. 9-10 W.Y.S.	NO STREET INFORMATION FOUND, FS	
002001-005				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.	7/26/1995	GENERAL ARRANGEMENT, LOT 31-32, CON. 9-10 W.Y.S.	NO STREET INFORMATION FOUND, FS	
002001-006				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.	7/26/1995	SITE PLAN, DICK BRIDGE, LOT 31-32 CON. 9-10 W.Y.S.		
002001-007				BRIDGE		DICK BRIDGE		DUNCAN HOPPER AND ASSOCIATES LTD.	7/26/1995	BAR LIST, DICK BRIDGE, LOT 31-32 CON. 9-10 W.Y.S.		
004601-001				BRIDGE		HWY # 7	WOODBRIDGE	MCCORMICK RANKIN & ASSOCIATES LIMITED	7/1/1975	ALIGNMENTS AND WING WALLS, NUMBER RIVER PEDESTRIAN BRIDGE		
004601-002				BRIDGE		HWY # 7	WOODBRIDGE	MCCORMICK RANKIN & ASSOCIATES LIMITED	7/1/1975	ALUMINUM PEDESTRIAN HAND RAIL		
004601-003				BRIDGE		HWY # 7	WOODBRIDGE	MCCORMICK RANKIN & ASSOCIATES LIMITED	7/1/1975	BOX BEAM DETAILS, NUMBER RIVER PEDESTRIAN BRIDGE		
004601-004				BRIDGE		HWY # 7	WOODBRIDGE	MCCORMICK RANKIN & ASSOCIATES LIMITED	7/1/1975	COVER, NUMBER RIVER PEDESTRIAN BRIDGE	COVER DATE, NO STREET INFORMATION FOUND, FS	

ACKNOWLEDGMENTS

- The Engineering and Public Works Department would like to recognize:
 - Engineering & Public Works Department
 - Information & Technology Management Department
 - Marmak Information Technologies
- **PROJECT SUCCESS!!**

QUESTIONS?

CONTACT

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Engineering Services Division

Engineering and Public Works Department

