# **HDR** Corporation

# **Derry Road West & Argentia Road**

## **Report** Subsurface Utility Engineering Services

Project #61000235



Report Date: March 20, 2014



#### **Statement of Qualifications and Limitations**

The attached Report (the "Report") has been prepared by T2 Utility Engineers Inc. ("Consultant") for the benefit of the HDR Corpporation ("Client) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations"), represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports, may be based on information provided to Consultant which has not been independently verified, has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued, must be read as a whole and sections thereof should not be read out of such context, was prepared for the specific purposes described in the Report and the Agreement, in the case of subsurface conditions, may be based on limited inspections and on the assumption that such conditions are uniform and not variable either geographically or over time.

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface conditions, is not responsible for any variability in such conditions, geographically or over time.

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

### **Report Revision Log**

Revision #	Revised By	Date	Issue / Revision Description

Report Prepared By:

Matt Bourgeois, C. Tech Branch Manager / Sr. Project Manager

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## 1. **Project Summary**

T2 Utility Engineers (T2ue) completed a Subsurface Utility Engineering (SUE) mapping investigation in accordance with CI/ASCE 38-02, for HDR Corporation as part a study for Derry Road and Argentia Road. The project involves Record request Circulation and SUE Mapping within the investigation area. HDR's project includes a Schedule 'B' Class Environmental Assessment, intersection design and road improvements. HDR has requested the SUE investigation in order to determine the horizontal alignment of underground utilities.

#### 1.1 Project Area

The Project Area is a 4-way intersection of Derry Road West and Argentia Road in Mississauga Ontario. The intersection is controlled/signal in all directions. Derry Road West is a major arterial road running north-south extending from Milburough Line through the project area and ending at Hwy 427. Argentia Road is a collector road running east-west extending from Tenth Line West through the project area ending at creditview Road. Derry Road West is a 6-lane road with center median, left turn lanes and right turn lanes with islands. Argentia Road is a 2-lane road to the west and a 3-lane road to the east with left and right turn lanes. The project area is largely a commercial area with grass and concrete sidewalks in the boulevards.

According to the record documents obtained and field investigations the project area contains numerous underground utilities. Utilities confirmed within the investigation area include water, sewer, gas, Hydro and Telecommunications. Watermains within the area include Municipal owned 300mm PVC, 300mm DI, 400mm CPP, 600mm CPP and 750mm CCP. The Municipal owned sanitary and storm sewers are throughout the investigation area and range from small lateral connections to large box culverts. Enbridge gas distribution has a 750mm steel coated extra high pressure vital main running along the east side of Derry Road throughout the project area. Enbridge also has a 100mm polyethylene intermediate pressure distribution main running along the south side of Argentia Road throughout the project area. Underground hydro includes plant from single conduit street lighting to concrete encased structures. Telecommunications extensive throughout the project area owned by Bell, Rogers, Allstream, Cogeco, Toronto Hydro and Enersource.

## 2. Equipment

The following paragraphs represent a description of some of the common equipment used by T2ue to complete the investigation. T2ue uses the latest equipment and techniques available to designate all varieties of subsurface utilities and underground structures. We have assessed the merits of every technology outlined in the ASCE Standard 38-02 and CSA S250-11 for use in utility designating. Field Technicians utilize each technology according to the manufacturer's instructions and the project conditions. Based on the project scope and discussions with HDR, T2ue has selected the appropriate equipment to ensure that our field technicians are trained and equipped with the latest information, techniques and technology.

#### 2.1 Electromagnetic Designating Equipment

T2ue primarily uses single frequency and multi-frequency electromagnetic designating equipment. Electromagnetic designating equipment does not locate the actual pipes or cables, but instead locate the magnetic fields. Electromagnetic fields are either naturally present on

conductors or are induced onto a target line by a transmitter. Signals may be distorted by any of the following:

- ground conductivity
- construction layout (i.e. bends, connections)
- utility congestion causing bleed off of magnetic fields
- materials and/or age (i.e. PVC without tracer wire, corrosion in metallic pipes)

#### 2.2 Survey Technologies

Both total station and survey grade GPS equipment is used to collect the data from the SUE Mapping investigation and tie in the results to local features and points that are obtained from the topographical base map.

## **3.** SUE Investigation Methodology

T2 Utility Engineers Inc. performs SUE mapping investigations in accordance with the CI/ASCE Standard 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility.

#### 3.1 CI/ASCE Standard 38-02 Summary:

All utility information is assigned a quality level in accordance with the CI/ASCE Standard 38-02:

Quality Level D (QL-D) – Information derived from existing utility records, or verbal recollections.

Quality Level C (QL-C) – Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information.

Quality Level B (QL-B) – Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities.

Quality Level A (QL-A) – Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities at a specific point.

#### **3.2 SUE Investigation Scope of Work**

The following is a breakdown of the methodology used for the SUE investigation:

- Records research completed by T2ue includes the review of record documents obtained through the utility circulation request (see Appendix B), information received from HDR and gathered records information to utilize for the investigation.
- HDR provided T2ue with a base map for the area that is tied into proper coordinate systems (horizontal and vertical survey control points within the project area) including:
  - Surface topographical features: curbs, asphalt, buildings, utility poles, signs, CB's, MH's, etc.

- Utilized the topographic survey information provided to verify the position of surface features such as valves and pedestals that indicate the location of underground utilities.
- Utilized geophysical utility designating techniques to determine the horizontal position of utilities identified within the project limits. Utilities investigated included water, gas, hydro and telecommunications. The investigation also included induction scanning in key areas to help identify utilities that were not identified on the record drawings. Equipment used included single frequency and multi-frequency electromagnetic designating equipment. This process identified an undocumented utility crossing Argentia towards the east limit of the project area. If collecting additional information is required a test hole should be completed to investigate further.
- All designating marks were surveyed in order to generate the utility composite plan.
- T2ue produced a composite utility drawing based on the field findings and the records research (Quality Level D, C and B as per ASCE 38-02 SUE guidelines).

## 4. Field Investigation

The field investigation was completed in November 2013 within the limits described below. The initial field investigation for the SUE Mapping was completed and the preliminary drawings were submitted to HDR for review. After comments were provided final drawings we're provided to HDR.

The limits of investigation

• Full right of way, 300m in each direction from the center of the intersection of Derry Road and Argentia Road.



## 5. Utility Circulation Request

T2ue completed the utility circulation request on August 29, 2014. Record documents have been provided by the utility companies for the project area. A summary of the Utility Circulation Request completed by T2ue is attached in Appendix B.

## 6. Conclusion

The SUE investigation for this project provided key information regarding the location of the existing underground utilities to be used during the design. A combination of data from the field investigations and utility record information was used to create the composite utility drawings. The drawings show the utilities at the given quality levels as outlined in the CI/ASCE Standard 38-02. The investigation focused on determining the utility infrastructure that would be impacted, and as such the highest quality level of information is provided in those key areas, as requested by HDR.

The data currently shown on the drawing should provide the designers adequate information to move forward with the design. During detailed design additional test holes or additional investigations may be required to further define any new areas that may be considered if revisions are made.

APPENDIX A COMPOSITE UTILITY DRAWING (Separate from report)

APPENDIX B UTILITY CIRCULATION CONTACT LIST

#### Utility Contact Sheet:





Completed by:	N.F.
Checked by:	M.B.
Updated (dd/mm/yy)	19-Mar-14



Utility	Email Address	Contact Name	Contact Information	Info Requested (DD/MM/YY)	Info Received (DD/MM/YY)	MATERIAL RECEIVED	Notes	
Bell Canada	bell.moc@prestigetel.com	Elaine Oakley (Toronto) Chris Gill (Hamilton)	100 Borough Drive, Floor F5 Toronto, ON M1P 4W2 tel: 416-296-6587	29-Aug-13	07-Oct-13	MU 41167.dwg		
Cogeco Data Services Inc.	Samir.patel@cogecodata.com	Samir Patel Utility Mark-ups Network Implementation (Primary)	P 416-840-8755 F 416-626-7774	29-Aug-13	12-Sep-13	Argentia - Derry W and Mississauga - As-Built_CDS.dwg		
Cogeco Cable	lynanne.cane@cogeco.com	Lynanne Cane	P.O. Box 5076 Stn. Main Burlington, Ontario L7R 4S6 Tel: 905-548-8002	29-Aug-13	12-Sep-13	Derry - Millcreek and Argentia - As-Built_CDS.dwg		
Enbridge Gas Distribution	mark-ups@enbridge.com	Joe Marozzo	500 Consumers Road 4th Floor - Post A2 - VPC North York, ON M2J 1P8 tel: (416) 758-7956 fax:(416) 758-4374	29-Aug-13	13-Sep-13	DERRY-ARGENTIA_EG_NOTES.pdf		
Enersource Hydro Mississauga	mscalle@enersource.com	Rose Sawczyszyn	3240 Mavis Road Mississauga, ON L5C 3K1 Tel: 905-283-4160 Fax: 905-566-2712	29-Aug-13	11-Sep-13	EHM ARea Map - Derry and Argentia intersection.pdf EHM dwgs - Derry and Argentia intersection.pdf		
Group Telecom	pucc.circulations.gt@bell.ca	Tannis Raymond	tel: 416-848-2267	29-Aug-13	9-25-13		No Conflict, Not in study area.	
Hydro One	tpumarkup@hydroone.com	Mark Hamilton	49 Sarjeant Dr. Barrie, ON L4N 4V9 tel: 705-792-3111 P-705-797-4142* fax: 705-792-3116 F-705-797-4199*	29-Aug-13	04-Sep-13		No Conflict, Not in study area.	
Hydro One Telecom Inc.	hotosp@hydroone.com	Barbara Mahon OSP Engineering Dept.	65 Kelfield Street Rexdale, Ontario F-416-540-6790 P-416-240-6842or416-240- 3751	29-Aug-13	29-Aug-13		No Conflict, Not in study area.	

#### Utility Contact Sheet:





Completed by:	N.F.
Checked by:	M.B.
Updated (dd/mm/yy)	19-Mar-14



Utility	Email Address	Contact Name	Contact Information	Info Requested (DD/MM/YY)	Info Received (DD/MM/YY)	MATERIAL RECEIVED	Notes
Level 3 Communications	level3.networkrelocations@level3.com	PJ Foley	Level (3) Communications, LLC 1025 Eldorado Blvd., 33A-615 Broomfield, CO 80021 P: (720) 888-6507 F: (720) 567-2780 E: Foley.Pj@Level3.com	29-Aug-13	04-Sep-13	Screen Shot.pdf TORBUF-01_103.pdf TORBUF-01_104.pdf TORBUF-01_105.pdf TORBUF-01_106.pdf	No Conflict, Not in study area.
MTS Allstream	Utility Circulations@mtsallstream.com	Corey Knight	50 Worcester Rd Etobicoke, ON M9W 5X2 tel: 416-649-7509	29-Aug-13	03-Sep-13	61000235-AllstreamMarkup.pdf	
PSN Fiber Network (Peel Fiber)	scott.rea@peelregion.ca	Scott Rea	905-8406300 ext 4602	29-Aug-13	29-Aug-13		No Conflict, Not in study area.
Rogers Cable Communications Inc.	GTA.Markups@rci.rogers.com	Manel De Silva	Markup Coordinator, OPE GTAC Tel: 416 446-6794	29-Aug-13	06-Sep-13	M133507_61000235.pdf M133507_Derry-Argentia.pdf	
Telus	<u>telusutilitymarkups@plantec.com</u> Telusutilitymarkups@prestigetel.com	Stephen Hoy	2696 Matheson Blvd. E, 1st Floor, West Tower, Mississauga, ON L4W 4V5 tel: 905-804-6219 p-416-833-6636° C-416-992-0617	29-Aug-13	05-Sep-13		No Conflict, Not in study area.
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TransCanada Pipelines	darlene@lehmanplan.ca	Darlene Presley	TransCanada PipeLines Limited C/O Lehman & Associates 97 Collier Street, Barrie, ON L4M 1H2 Phone: 1-366-602-0663 Direct: 705-627-2302 Fax: 705-727-9217	29-Aug-13	17-Sep-13		No Conflict, Not in study area.



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	DISCLAIMER: This drawing has been prepared for the use of true's client and
	MAY NOT BE USED, REPRODUCED OR RELIED UPON BY THIRD PARTIES, EXCEPT AS AGREED BY T2UE AND ITS CLIENT, AS REQUIRED BY LAW OR FOR USE BY GOVERNMENT REVIEWING AGENCIES. T2UE ACCEPTS NO RESPONSIBILITY, AND DENIES ANY LADRUTY WHATSOFVER TO ANY PARTY THAT MODIFIES THIS
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PRELIMINARY	HORIZONTAL SCALE
<u>GENERAL NOTES</u> T2 UTILITY ENGINEERS (T2UE) SUE FIELD	
VESTIGATION WAS COMPLETED IN SEPTEMBER 2013. HANGES TO UTILITIES THAT OCCURRED FOLLOWING IR INVESTIGATION MAY NOT BE SHOWN. INSIDERATION SHOULD BE GIVEN TO UPDATING THIS	engineers
AN PRIOR TO FINAL DESIGN AND CONSTRUCTION.	1-855-222-T2UE   WWW.T2UE.COM
FIELD VERIFICATION OF UTILITIES WAS COMPLETED	
ING A COMMINATION OF ELECTROMAGNETIC PIPE ID CABLE LOCATE EQUIPMENT. EMPTY CONDUITS, SERVICES, STREETLIGHTING	Region of Peel
ABLES, LATERALS TO BUILDINGS, ABANDONED CILITIES, WITHIN THE INVESTIGATION AREA MAY OT BE SHOWN ON THE DRAWING.	Wanbiun fan 1911
T2UE USED AVAILABLE MEANS IN AN ATTEMPT TO TERMINE THE LOCATION OF UNDOCUMENTED ILITIES HOWEVER CANNOT BE RESPONSIBLE FOR NDING ALL UNDOCUMENTED UTILITIES	TURKING TUR YUU
SURVEY OF T2UE'S UNDERGROUND UTILITY FORMATION WAS COMPLETED BY ACL.	
THE BASEPLAN WAS PROVIDED BY THE CLIENT, EREFORE T2UE IS NOT RESPONSIBLE FOR ITS CURACY.	DERRY-ARGENTIA INTERSECTION IMPROVEMENTS
UTILITY MATERIALS AND SIZES SHOWN ON AWING ARE BASED ON RECORDS INFORMATION CEIVED, PROFESSIONAL JUDGEMENT, OR FIELD	DERRY ROAD & ARGENTIA ROAD INTERSECTION)
UTILITY OWNERSHIP SHOWN ON DRAWING IS BASED	SUBSURFACE UTILITY ENGINEERING INVESTIGATION
DEEMENT, OR FIELD OBSERVATIONS.	CAD Area Area Project No. 61000235 Checked by M.B. Drawn by N.F.
- URMATIUN.	Date OCTOBER 2013 Sheet 3 of 5 Plan No. U3



	ARGE	U4 ITIA ROAD			U3 HIGHWAY		
	KEY PLAN (N.T.S.)	U			U5		
	DATE			ETAILS			INIT
		G		ETAILS EGEND GAS GAS SERVIC WATER SER SANITARY L STORM SEW STORM LAT BURIED ELE BURIED ELE BURIED ELE BURIED ELE UNKNOWN FIBRE OPTIC CABLE TV BURIED TEL QUALITY LE QUALITY LE QUALITY LE OVERHEAD HOLE (QL-	CE VICE SEWER ATERAL /ER ERAL CTRIC STRE CTRIC STRE CTRIC TRAF C CABLE ECOMMUNIC VEL "B" VEL "C" VEL "D" HYDRO A)	ET LIGHT FIC LIGHT ATIONS	
		'* # ABD ≫	NOT S BASED NOT S BASED ABANI FLOW	ON FIELD, ON FIELD URVEYED, L ON RECOF DONED <u>ARROW</u>	LOCATION OBSERVATIO LOCATION RD INFORMA	dn Tion	
	THE WA 38- WHI DET	E UTILITY IN S COLLECTE -02. THE IN CH INDICAT FERMINE TH	ASCE QUA IFORMATION ED IN ACCO VFORMATION ES THE LE E LOCATION	ALITY LEV I SHOWN O DRDANCE TO I IS SHOWN VEL OF EFF N OF THE D	ELS N THIS DRA D ASCE STA N BY QUALIT FORT USED DATA	WING NDARD IY LEVEL TO	
	I N C R E A S F	QUALITY L FROM EXIS RECOLLEC QUALITY L BY SURVE GROUND U PROFESSIO THIS INFO INFORMAT	LEVEL "D" STING RECO TIONS. LEVEL "C" CYING AND JTILITY FEA ONAL JUDG RMATION T ION.	- INFORMA DRDS OR VE - INFORMA PLOTTING N TURES ANE EMENT IN C O THE QUA	TION DERIVE ERBAL TION OBTAIN /ISIBLE ABO ) BY USING CORRELATIN( LITY LEVEL	ID NED VE G "D"	
		QUALITY L THROUGH SURFACE THE EXIST POSITION QUALITY L AND VERT	LEVEL "B" THE APPLI GEOPHYSIC TENCE AND OF THE UT LEVEL "A" FICAL LOCA	<ul> <li>INFORMA</li> <li>CATION OF</li> <li>CAL METHOE</li> <li>APPROXIM,</li> <li>TILITIES.</li> <li>PRECISE</li> <li>TION OF U1</li> </ul>	TION OBTAIN APPROPRIA DS TO DETER ATE HORIZO HORIZONTA TILITES OBTA	NED TE RMINE NTAL L	
	THE ENGINEER HAVE BEEN IN PRACTICES. A OTHERS AND	BY THE A MEASUREN 'S SEAL HE IVESTIGATED LL OTHER II IS NOT A F	ACTUAL EXF MENT OF S EREON IS T D IN ACCOF NFORMATIO PART OF TH	POSURE ANI UBSURFACE O CERTIFY RDANCE WIT N HEREON HIS CERTIFIC	D SUBSEQUE UTILITIES. THAT THE U TH STANDAR HAS BEEN CATION.	UTILITIES SHO D SUE INDUS PROVIDED BY	DWN STRY Y
	DISCLAIMER: THIS DRAWING MAY NOT BE U AS AGREED BY GOVERNMENT R DENIES ANY LIA DRAWING WITHO	HAS BEEN SED, REPRO T2UE AND EVIEWING A ABILITY WH <i>A</i> DUT T2UE'S	PREPARED DDUCED OR ITS CLIEN GENCIES. T ATSOEVER, EXPRESS	FOR THE U RELIED UF T, AS REQU 2UE ACCEF TO ANY PA WRITTEN CC	JSE OF T2U PON BY THIF VIRED BY LA PTS NO RES RTY THAT I NNSENT.	E'S CLIENT A RD PARTIES, W OR FOR U PONSIBILITY, MODIFIES THI	ND EXCEPT JSE BY AND S
	10m	0	10	20	30m	ORIZONTAL	SCALE
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UTILITIES WAS COMPLETED ELECTROMAGNETIC PIPE MENT.		<b>)</b> _		••	ſ¬		
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OF UNDOCUMENTED T BE RESPONSIBLE FOR ED UTILITIES. DERGROUND UTILITY TED BY ACL.					1.	7	
SIZES SHOWN ON		DI RSEC A	ERRY TION RGEN	'-ARG   IMPF 	SENTI ROVE ROAD	A MENT	S
DUDGEMENT, OR FIELD DWN ON DRAWING IS BASED RECEIVED, PROFESSIONAL SERVATIONS.	(D CAD Area	ERRY ROA	AD & ARGI BSURF EERING	ENTIA ROA ACE UT INVES		ECTION)	 
FOR ADDITIONAL	Checked by N Date OCTOBFF	1.B. R 2013	Drawn by Sheet	N.F. 4 of 5	Plan No.	U4	JZJÖ

Date OCTOBER 2013 Sheet 4 of 5 Plan No.

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<u>GENERAL</u> 1. T2 UTILITY ENGINEERS (T2 INVESTIGATION WAS COMPLET CHANGES TO UTILITIES THAT OUR INVESTIGATION MAY NOT CONSIDERATION SHOULD BE ( PLAN PRIOR TO FINAL DESIG

2. LIMIT OF INVESTIGATION: FROM CENTERLINE OF DERR` ROAD INTERSECTION.

3. FIELD VERIFICATION OF U USING A COMBINATION OF E AND CABLE LOCATE EQUIPM

4. EMPTY CONDUITS, SERVICE CABLES, LATERALS TO BUILDI FACILITIES, WITHIN THE INVES NOT BE SHOWN ON THE DRA

5. T2UE USED AVAILABLE ME DETERMINE THE LOCATION OF UTILITIES HOWEVER CANNOT E FINDING ALL UNDOCUMENTED

6. SURVEY OF T2UE'S UNDER INFORMATION WAS COMPLETE

7. THE BASEPLAN WAS PROV THEREFORE T2UE IS NOT RES ACCURACY.

8. UTILITY MATERIALS AND SI DRAWING ARE BASED ON REC RECEIVED, PROFESSIONAL JUE OBSERVATIONS.

9. UTILITY OWNERSHIP SHOW ON RECORDS INFORMATION R JUDGEMENT, OR FIELD OBSER 10. SEE PROJECT REPORT F INFORMATION.



