

Elements of Ground Disturbance

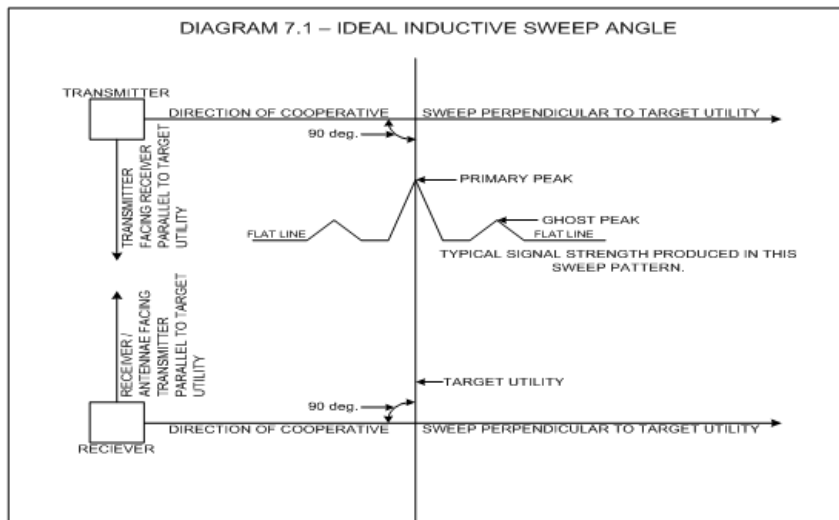
Line Locating - Theory



- Line Locating is NOT Metal Detection.
- Line Locating is based on principles of Electromagnetism.
- A flow of electrons in one direction creates a magnetic field in a perpendicular direction.
- Nearest the flow of electrons, the field is strongest, dissipating with distance, like the ripples on a pond.
- A Line Locating machine is an Electromagnetic Field Detector. If it is near an Electromagnetic Field, it can detect it, and through a certain procedure can try to pinpoint its center.
- The center of the field can be marked at surface, and it is assumed that this is close to the center of the buried facility creating the field.
- If this is done at intervals, alignment may be assumed as well, and a line can be marked out, or otherwise followed.

Elements of Ground Disturbance

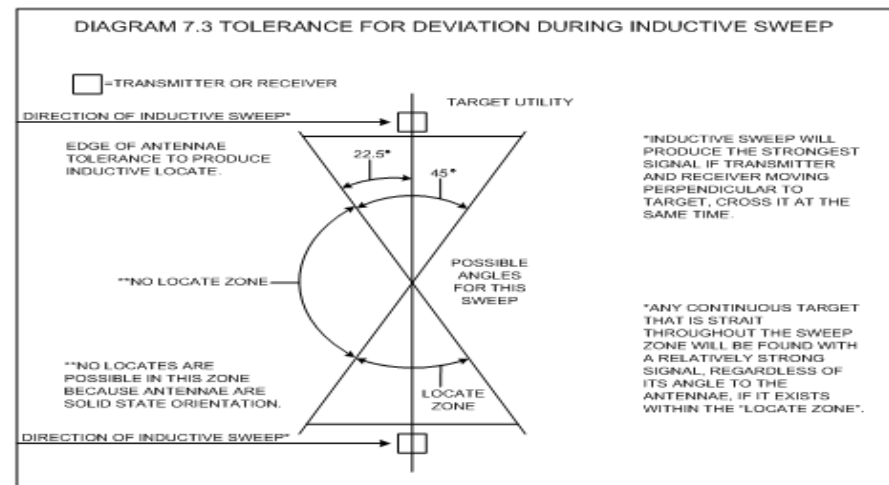
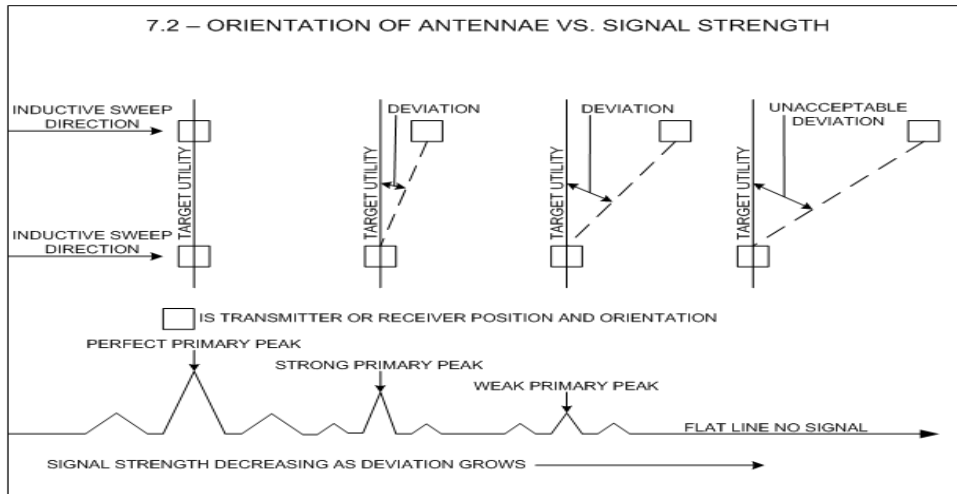
Line Locating – Inductive Sweep



- There are two types of Line Locating. Direct and Inductive.
- Inductive Locating can produce locates without previous knowledge of buried facilities, and is commonly called the “Blind Sweep”.
- Inductive Locating is performed by a team of two, one with a Transmitter, and one with a Receiver.
- If they walk across an energized buried facility at roughly the same time, they will recognize it, and will be able to mark it, and thereafter follow it.

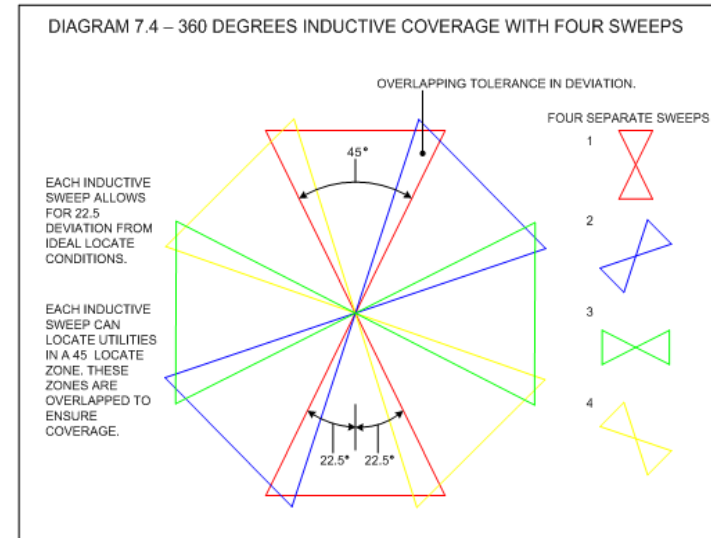
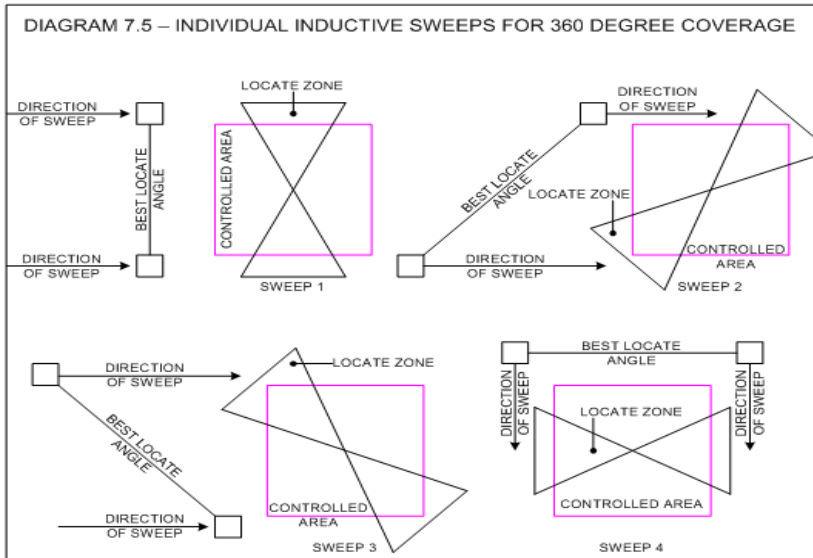
Elements of Ground Disturbance

Line Locating- Solid State Antennae



Elements of Ground Disturbance

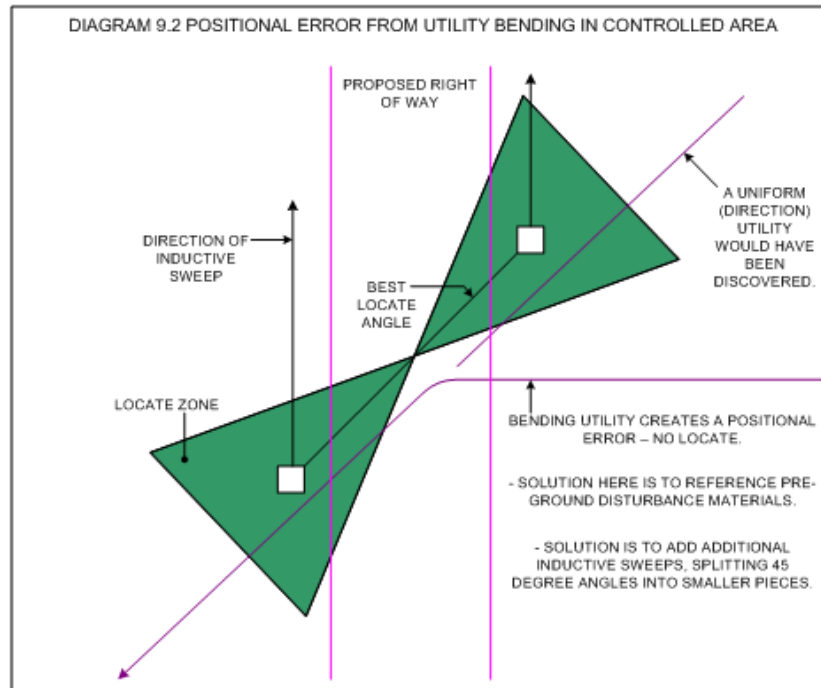
Line Locating- 4-Way Inductive Sweep



- Because each particular “Sweep” can only reliably pick up perpendicular buried facilities for 90 Degrees out of 360 Degrees, four different sweeps or sweep angles must be performed throughout the Search Area to maximize the effectiveness of the procedure.
- This is why the Inductive or “Blind” sweep is also often called the “4-way Sweep”.

Elements of Ground Disturbance

Line Locating- Positional Errors

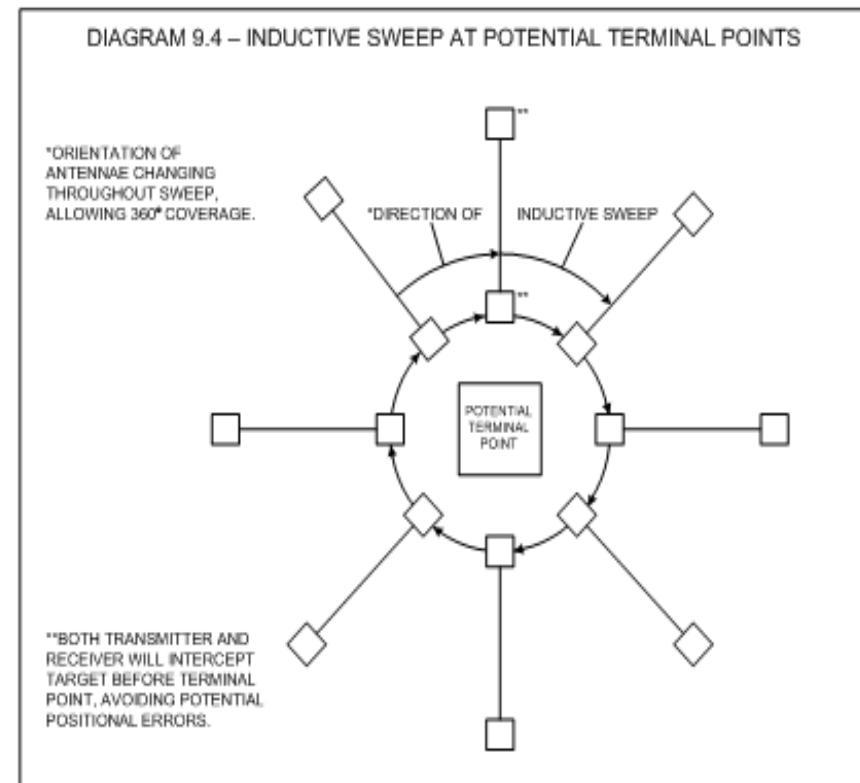
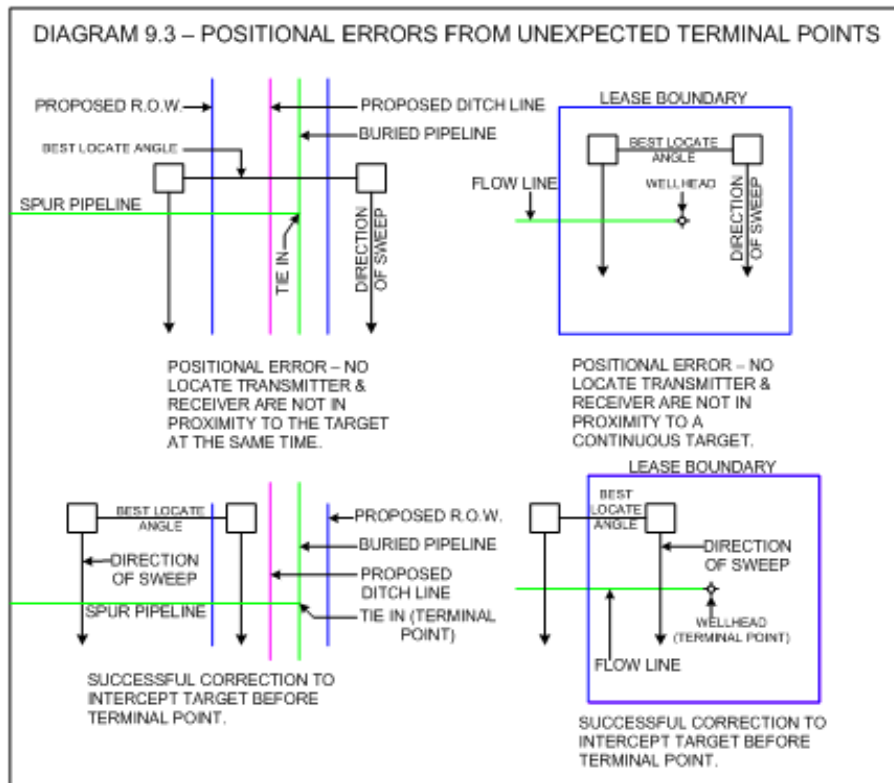


- A facility that changes alignment unexpectedly can foul the Line Locate.

Inductive Line Locating can fail.

Elements of Ground Disturbance

Line Locating- Terminal Point Errors



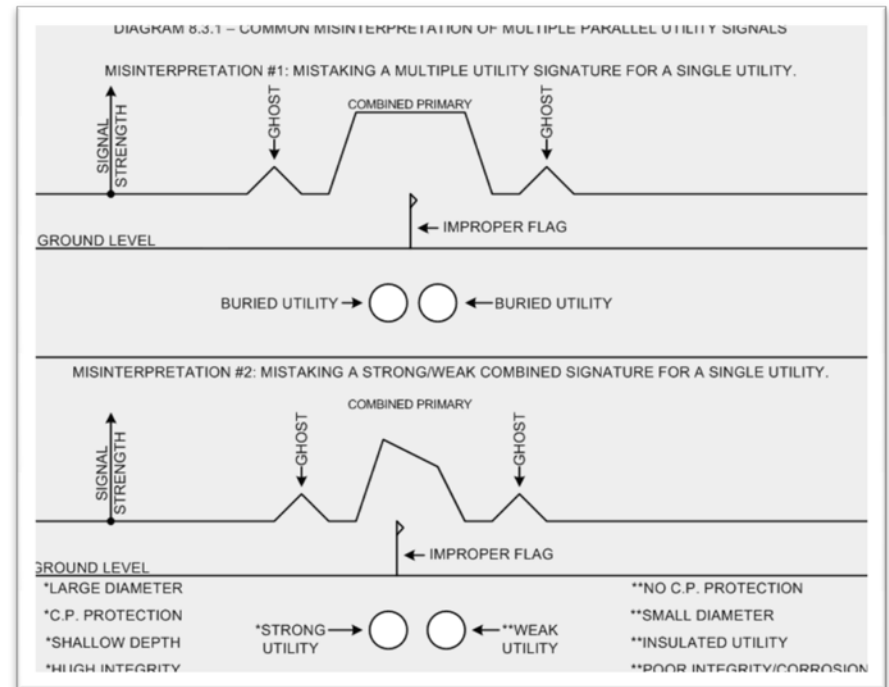
- A facility that terminates unexpectedly in the Search Area can foul the Line Locate.

Inductive Line Locating can fail.

Elements of Ground Disturbance

Line Locating - Electromagnetic Interference

- Electromagnetic Interference can interfere with the accuracy of, or foul a Line Locate.
- **Inductive Line Locating can fail.**



Elements of Ground Disturbance

Line Locating Accuracy

- NEVER trust a depth reading taken with an electromagnetic device.
- The ONLY way to confirm the true depth of a buried facility is by “Positive Identification”. That means a visual.
- NEVER trust that the position of a Line Locating mark is directly over the target.
- Line Locating markings are approximate. This introduces the Enbridge 10 / 2 / 1 Rule.
- No mechanical excavation will occur WHATSOEVER within 10’ of any buried facility until that facility has been Positively Identified (visually).
- NOBODY will trust a Line Locate to be accurate within 10’.

Elements of Ground Disturbance

International Color Code

Alberta One-Call Corporation

http://www.albertacall.com/resources/colour_code_card.shtml



HOME

ABOUT US

CONTACT US

NEWS/STORIES

RESOURCES

LINKS

PHOTO GALLERY

STAY UP TO DATE

COLOUR CODE CARD

INTERNATIONAL COLOUR CODE FOR MARKING BURIED FACILITIES

-  **WHITE** - Proposed Excavation
-  **PINK** - Temporary Survey Markings
-  **RED** - Electric Power Lines, Cable Conduit and Lighting Cables
-  **YELLOW** - Gas, Oil, Petroleum and Gaseous Materials
-  **ORANGE** - Telephone, Cable TV, Communication, Alarm and Signal Lines
-  **BLUE** - Potable Water
-  **GREEN** - Sanitary Sewers, Storm Sewers and Drain Lines
-  **PURPLE** - Reclaimed Water, Irrigation and Slurry Lines



FACILITIES MUST BE HAND EXPOSED AND VISIBLE BEFORE MECHANICAL EQUIPMENT IS USED WITHIN THE HAND EXPOSED ZONE.



1-800-242-3447

PLEASE PROVIDE AT LEAST
2 FULL WORKING DAY'S NOTICE



[top](#)

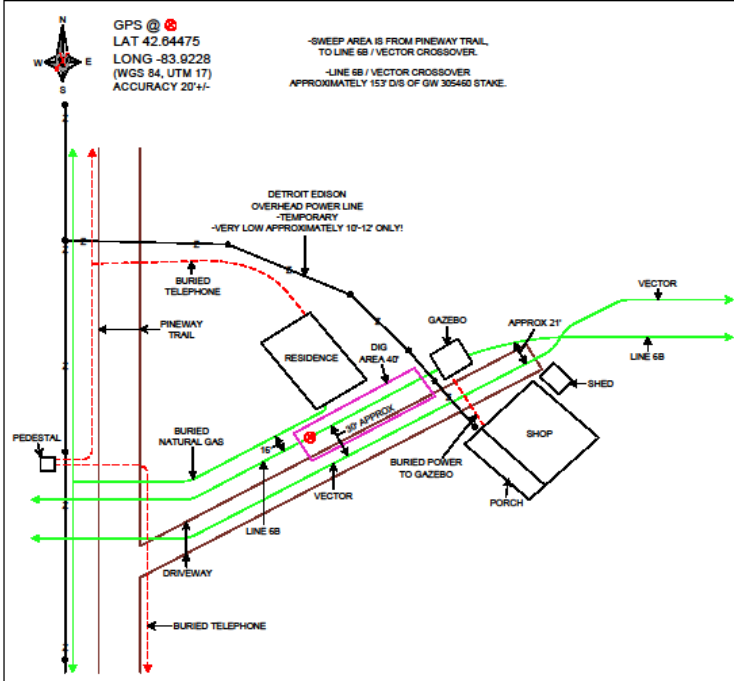
Elements of Ground Disturbance

Line Locating Diagrams



Record of Pipe & Utility Location

1-866-877-4567	8012-45 Ave Rocky Mt House, AB	xcal@tatusplane.net	EMF #	34188	AB One Call #
Type Of Facility	6B R.O.W	Title	GW 305460	Comments	Drawing is not to scale and all distances are approximate.



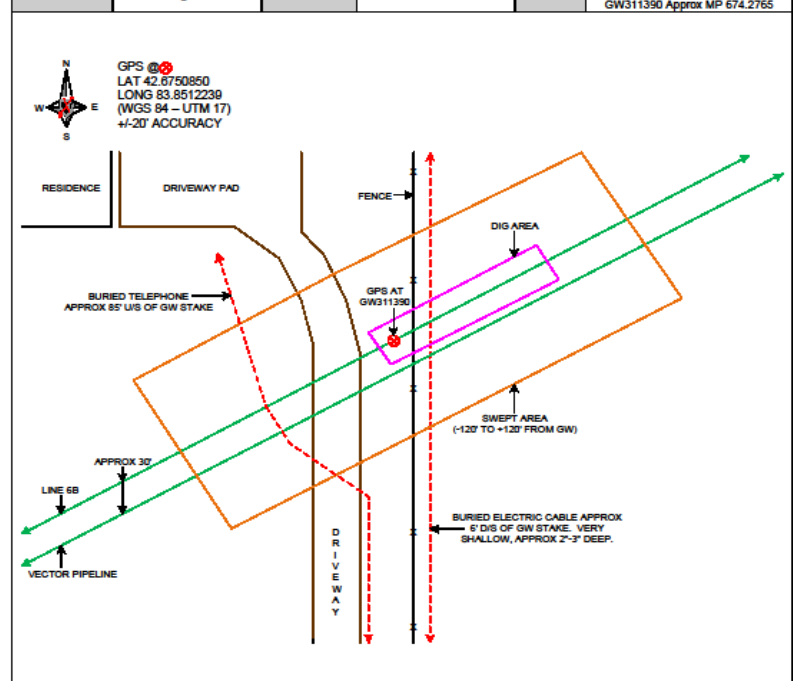
Facilities Located at	GW 305460 Approx MP 689.9281			
Located By (Please Print)	Jay Quintal	Customer's Name	Al Sawatzky	
Date Located (Yr/Mo/Day)	2011/02/07	Time	3:00pm	Company
				Enbridge Pipelines Inc

Note: All locating is approximate. Map is not to scale. All depths marked in field or on map are approximate and for day lighting purposes only. X-calibur accepts no responsibility for any ground disturbance at or near shown facility. All facilities within 5m of ground disturbance must be day lighted. This drawing is for reference for this project only. Any change in the scope of work will require more locating.



Record of Pipe & Utility Location

1-866-877-4567	8012-45 Ave Rocky Mt House, AB	xcal@tatusplane.net	EMF #	32190	One Call #
Type Of Facility	Enbridge ROW	Title	GW311390	Comments	Drawing is not to scale and all distances are approximate. GW311390 Approx MP 674.2765



Facilities Located at	Lat 42.6750850 Long 83.8512239 +/- 20' Accuracy (WGS 84 - UTM 17)			
Located By (Please Print)	Jason Quintal	Customer's Name	Al Sawatzky	
Date Located (Yr/Mo/Day)	2011/01/20	Time	09:52	Company
				Enbridge Pipelines Inc

Note: All locating is approximate. Map is not to scale. All depths marked in field or on map are approximate and for day lighting purposes only. X-calibur accepts no responsibility for any ground disturbance at or near shown facility. All facilities within 5m of ground disturbance must be day lighted. This drawing is for reference for this project only. Any change in the scope of work will require more locating.