



MISSOURI DEPARTMENT OF AGRICULTURE  
 DIVISION OF WEIGHTS, MEASURES AND CONSUMER PROTECTION  
 LAND SURVEY PROGRAM

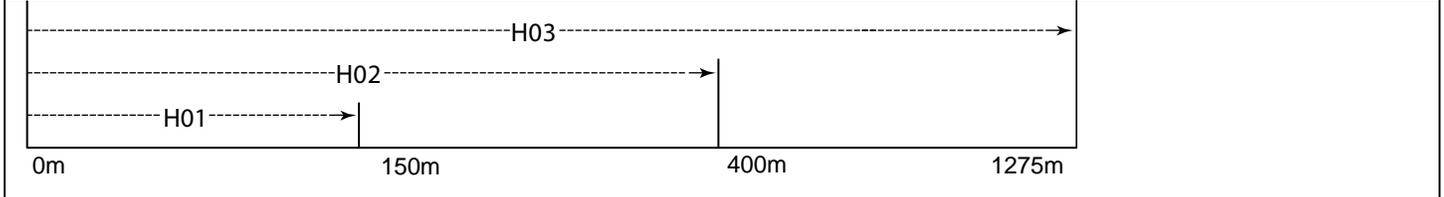
**EDM CALIBRATION REPORT – SPRINGFIELD EDM BASELINE (HORIZONTAL)**

DATE	COMPANY	REFLECTOR SETUP <input type="checkbox"/> Tripod with tribrach <input type="checkbox"/> Prism pole <input type="checkbox"/> Bipod pole
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INSTRUMENT TYPE, MODEL AND SERIAL NUMBER

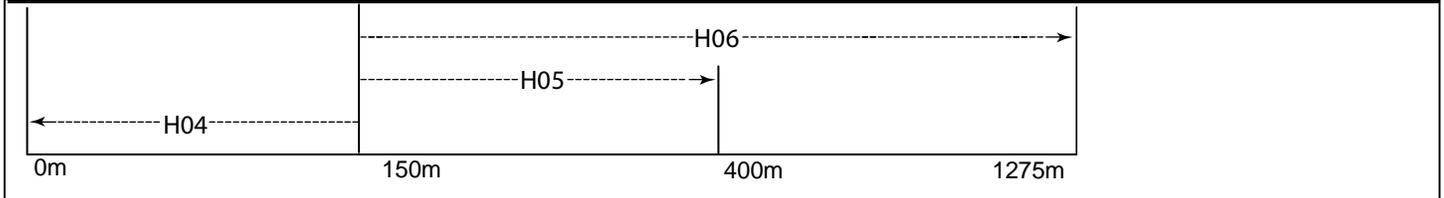
**NOTE: ALL DISTANCES SUBMITTED SHALL BE HORIZONTAL.**

**E.D.M. AT 0m**



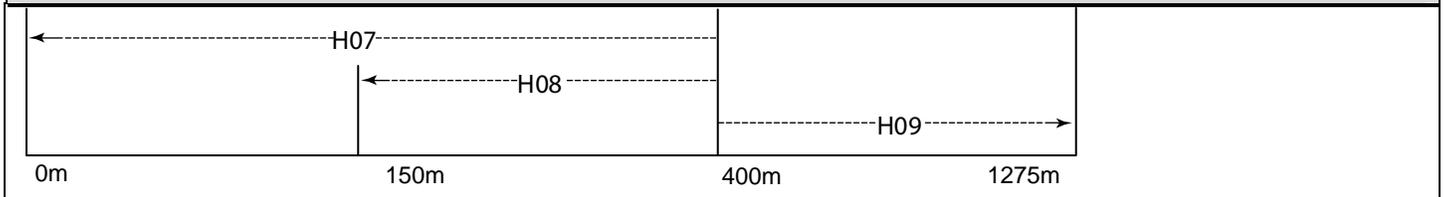
H01 =	H02 =	H03 =	TEMP
H01 = (150.2190m)	H02 = (399.9805m)	H03 = (1275.0079m)	❖ PRESS

**E.D.M. AT 150m**



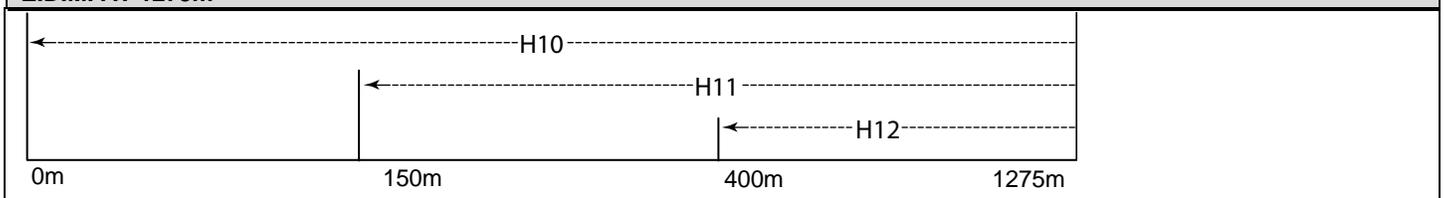
H04 =	H05 =	H06 =	TEMP
H04 = (150.2190m)	H05 = (249.7615m)	H06 = (1124.7888m)	❖ PRESS

**E.D.M. AT 400m**



H07 =	H08 =	H09 =	TEMP
H07 = (399.9805m)	H08 = (249.7615m)	H09 = (875.0273m)	❖ PRESS

**E.D.M. AT 1275m**



H10 =	H11 =	H12 =	TEMP
H10 = (1275.0079m)	H11 = (1124.7888m)	H12 = (875.0273m)	❖ PRESS

❖ Barometric pressure for EDM calibration **must be station pressure**. Do not use barometric pressure reduced to sea level.



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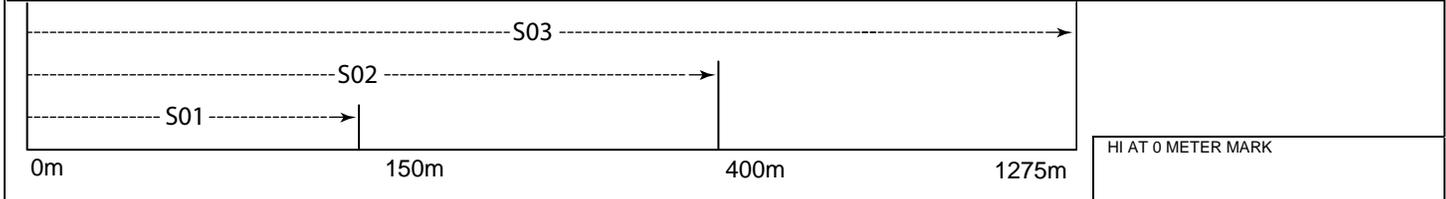
**EDM CALIBRATION REPORT – SPRINGFIELD EDM BASELINE (SLOPE)**

DATE	COMPANY	REFLECTOR SETUP <input type="checkbox"/> Tripod with tribrach <input type="checkbox"/> Prism pole <input type="checkbox"/> Bipod pole
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INSTRUMENT TYPE, MODEL AND SERIAL NUMBER

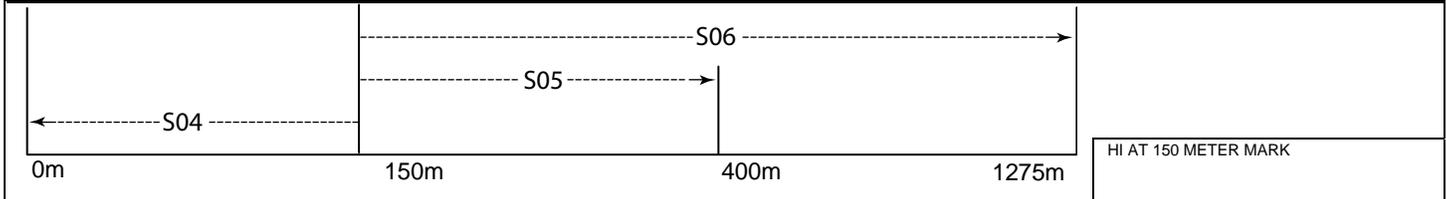
NOTE: ALL DISTANCES SUBMITTED SHALL BE SLOPE.

**E.D.M. AT 0m**



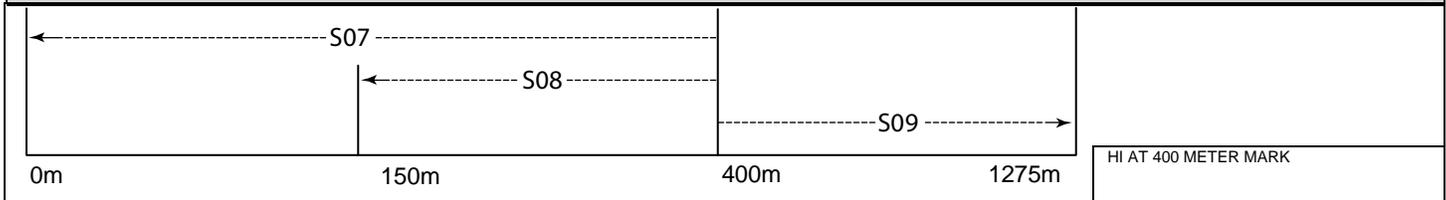
0m	150m	400m	1275m	HI AT 0 METER MARK
S01 =	S02 =	S03 =	TEMP	
H0 =	H0 =	H0 =	❖ PRESS	

**E.D.M. AT 150m**



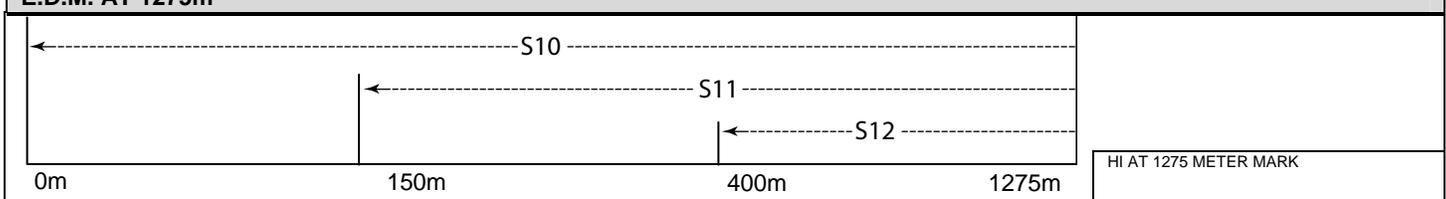
0m	150m	400m	1275m	HI AT 150 METER MARK
S04 =	S05 =	S06 =	TEMP	
H0 =	H0 =	H0 =	❖ PRESS	

**E.D.M. AT 400m**



0m	150m	400m	1275m	HI AT 400 METER MARK
S07 =	S08 =	S09 =	TEMP	
H0 =	H0 =	H0 =	❖ PRESS	

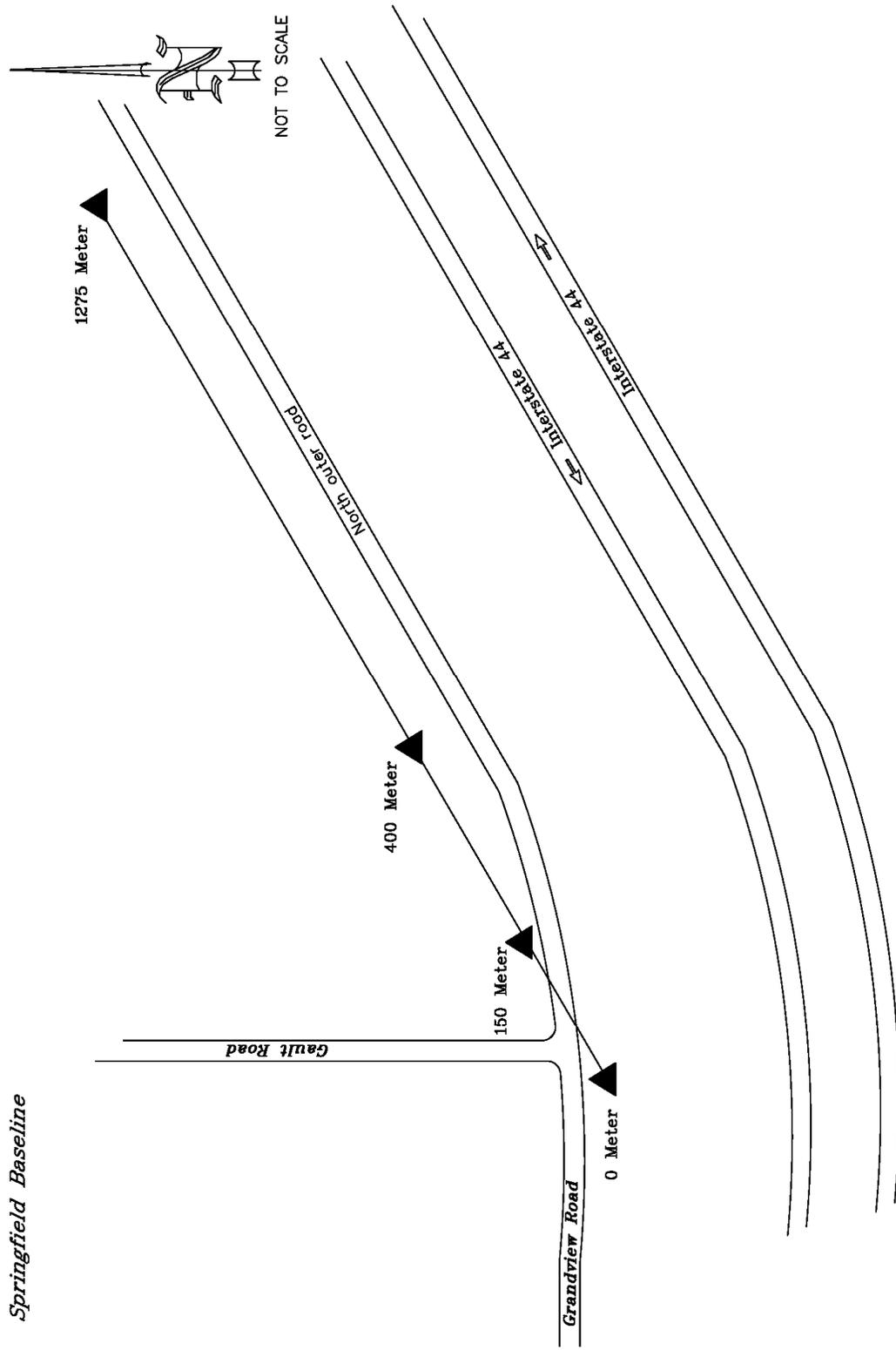
**E.D.M. AT 1275m**



0m	150m	400m	1275m	HI AT 1275 METER MARK
S10 =	S11 =	S12 =	TEMP	
H0 =	H0 =	H0 =	❖ PRESS	

Heights or delta elevations between monuments (referenced to NAVD88).  
 0m = 427.38m    150m = 427.64m    400m = 428.56m    1275m = 434.00m  
 ❖ Barometric pressure for EDM calibration **must be station pressure**. Do not use barometric pressure reduced to sea level.

*Springfield Baseline*



DATE OF SKETCH 2003

# **SPRINGFIELD BASELINE**

## **Electronic Distance Measurement (EDM) Calibration Baseline Greene County, Missouri**

**Established by the  
Missouri Department of Agriculture  
Division of Weights, Measures & Consumer Protection  
Land Survey Program**

**in cooperation with the  
Springfield Chapter of the Missouri Association  
of Registered Land Surveyors**

**1983**

The baseline is located in Greene County about four miles east of Springfield, Mo., and about four miles west of Strafford. It is on the north side of the north outer road of Interstate Highway 44.

To reach the baseline from I-44 Exit 84, go north on state Route 744 for 0.4 miles to the intersection of state Route 744 and Farm Road 104. Go east along Farm Road 104 for 0.9 miles to the intersection of Farm Road 104 and Gault Road. Go south on Gault Road to the intersection with the north outer road and the 0 meter station for the Springfield Baseline.

The baseline station elevations are established on the North American Vertical Datum 1988 (NAVD88) and are as follows:

0 meter – 427.38 meters  
150 meter – 427.64 meters  
400 meter – 428.56 meters  
1,275 meter – 434.00 meters

Baseline station autonomous point positions are:

	<u>0 meter</u>	<u>1,275 meter</u>
Latitude	37° 15' 18.39"	37° 15' 34.81"
Longitude	093° 10' 12.28"	093° 09' 24.80"

## **ELECTRONIC DISTANCE MEASUREMENT (EDM) CALIBRATION BASELINES IN MISSOURI**

The Missouri Department of Agriculture has established 12 Electronic Distance Measurement (EDM) calibration baselines in Missouri. Modern equipment provides the user a multitude of options in the art of measurement. Inability, inexperience and incompetence using these systems can cause serious blunders. The EDM baseline will allow the operator to verify the instrument is in calibration, affirm the instrument is being operated properly and substantiate all the equipment utilized in measurement is properly adjusted and used correctly.

Each EDM baseline consists of four monumented stations. The monuments are nominally spaced at 0 meters, 150 meters, 400 meters and 1,275 meters. Each station will be occupied by the EDM instrument and a measurement made to the other three stations for a total of 12 measurements. The results will determine the scale factor, the system constant and the standard deviation of the measurement in parts per million.

The EDM should be tested using the same procedures as in every day fieldwork. This will not only confirm the EDM is in good working order, but will ensure the entire system is properly adjusted. The measuring system includes, but is not limited to, the instrument, the tripods, bipods, tribrachs, prisms, prism poles, thermometers and barometers/altimeters.

### **WHEN TO CALIBRATE YOUR INSTRUMENT?**

- After taking delivery of a new or used instrument
- Immediately after service
- Anytime the operator feels the instrument is not working properly
- Before and after the Missouri Department of Natural Resources or other government agency contracts

### **BEFORE RUNNING THE BASELINE, PERFORM THE FOLLOWING:**

- Check and adjust optical plummets, bull's-eye bubbles and plumbing poles
- Check thermometers and barometers/altimeters
- Make sure all tripods are rigid and stable
- Clean prisms
- Fully charge all batteries
- Have an EDM Calibration Report form for the baseline you are running

When filling out the EDM Calibration Report form, fill in all lines that apply and add additional information if needed.

**IMPORTANT NOTE:** Before each measurement, enter the temperature and station pressure or absolute pressure into the instrument. The barometric pressure given over the radio and at airports has been reduced to sea level. **DO NOT ENTER SEA LEVEL PRESSURE INTO THE EDM.** One method used to find station pressure or absolute pressure is by elevation. The barometric pressure is reduced 0.1 inches of mercury for every 90 feet of elevation. So, to correct the sea level pressure obtained from the radio or airport, pick an average elevation for your area and divide by 90. Example: if the elevation is 1,000 feet, dividing 1,000 by 90 equals 11.11. Therefore, subtract 1.11 inches from the sea level pressure to obtain station pressure or absolute pressure.