

Units of Measure

December 10th, 2025 MSPS STL Chapter Meeting
Prepared by Austin DeSain, PLS

The Texas Vara

Texas – In 2023, the Surveyor's Historical Society held their annual Rendezvous in Southeast Texas to explore the founding of San Felipe de Austin. Stephen F. Austin's first colony. Stephen F. Was raised in southeast Missouri and the son of Moses Austin. The Austin family had a large part in the development of the lead industry in the early United States. Moses secured a large land grant from the Mexican government and sent son Stephen to colonize it. Stephen brought 300 families to the Tejas region in 1825 after Moses died in 1821.

Austin and Ingram's survey of the townsite established the surveying standards for the colony grant. Bearings were based on True North, which Ingram calculated as 10° 37' East. The linear measurement of distance – The vara – was identified at a length of 33.4 inches, making the grant 4,446 acres. Seth Ingram used a chain of 27 feet 10 inches which resulted in his measure of the 33.4 inch vara. This was about half an inch longer than the legal value established by a Spanish act in 1801. Other surveyors from neighboring colonies used the 33 1/3 inch vara because it was much better to calculate: 3 varas = 100 inches, 36 varas = 100 feet. The dimension was later revised by the Texas General Land office in 1838 and the Texas vara matched the 33 1/3 inch adoption of the vara. The result was that based on the later vara, the square "league" of land from the San Felipe de Austin grant was 4,428.4 acres.

The French Arpent

Missouri land grants from the French and Spanish colonial periods were often measured in arpents, a French unit of area. An arpent is a unit of area approximately equal to 0.84 - 0.85 acres, or 6/7^{ths} of an acre. In Missouri, a "square arpent" was equal to a side of 192.50 feet, while an arpent in Paris was about 234 feet long. 180 French feet = about 192 English feet. A Paris arpent = approximately 220 French Feet, or about 234 English feet.

The Registre d'Arpentage is French for "register of land surveying." Created between 1798 and 1806 by Antoine Soulard, often called the Soulard Surveys. Soulard was replaced as Surveyor General in 1806 due to conflicts of interest, however, some well-known settlers in Soulard's Registre include Daniel Boone, Moses Austin, Jacques Clamorgan, and Auguste and Pierre Chouteau. Although rare, women such as Pelagie Sarpy and Marie Vallé also had land grants recorded.

This collection consists of 710 surveys. For each claimant person in the register, a plat of the survey is found, usually with a brief description of boundaries and its situation in relation to other landmarks or villages. Rather than the public land survey system used later in Missouri, the surveys under the French and Spanish were done under an older system called metes and bounds. In the metes and bounds system, natural boundaries such as rivers and lakes were used along with small stones and trees, often marked with the claimant person's initials. The unit of measure was the French arpent, which equaled 6/7^{ths} of an acre.

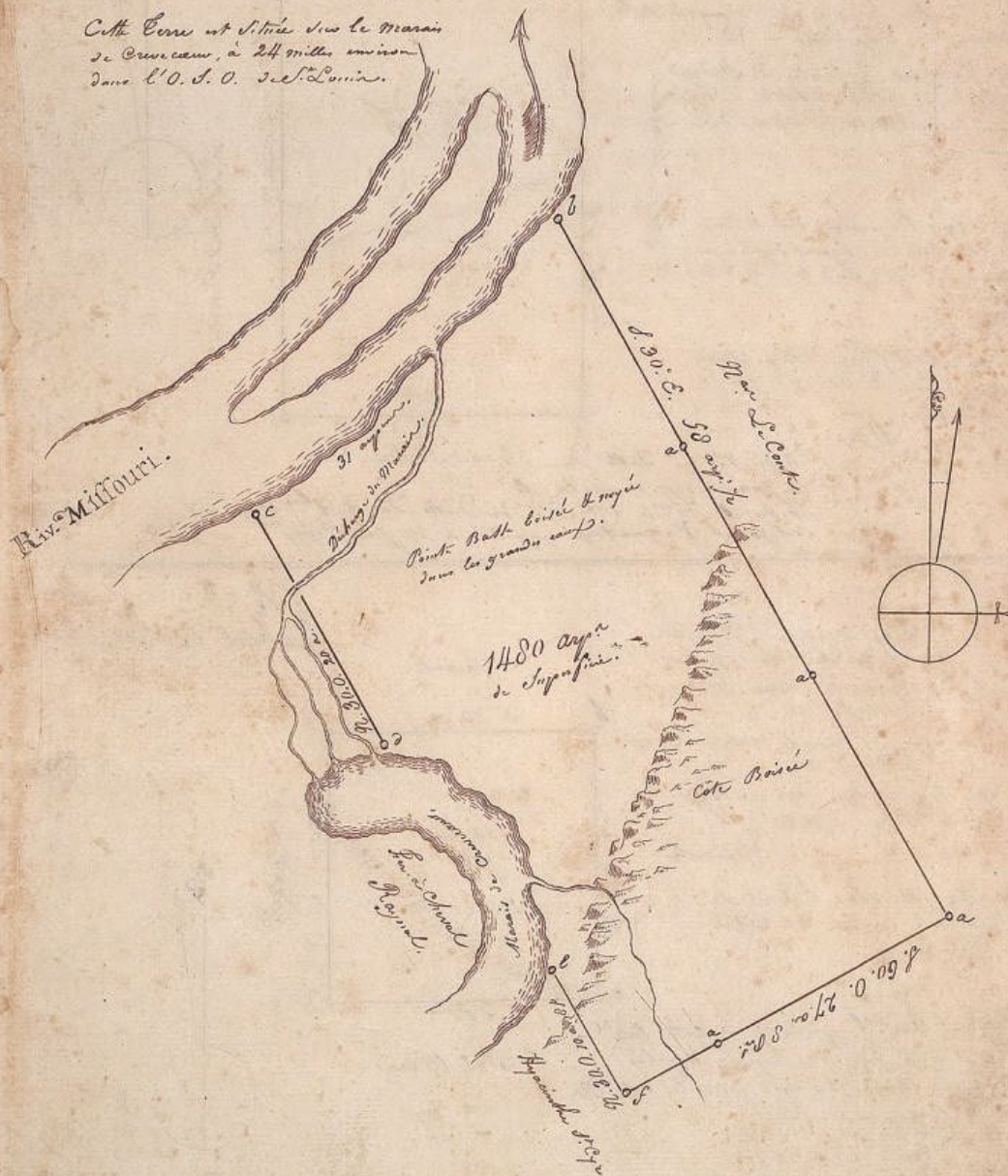
https://www.sos.mo.gov/archives/mdh_splash/default.asp?coll=registre

- a. Bornes de Pierre témoins de Marché.
- b. Colonneur, borne naturelle.
- c. Colonneur & Bois incertain.
- d. Petite Mairie.
- e. Pierre.
- f. Neige.

N^o 1
Regis Loisel.

Note. Tous les arbres de ligne sont marqués
selon Marais du Propriétaire R.L.

Cette terre est située vis le Marais
de Crevecoeur, à 24 milles environ
dans l'O. S. O. de St. Louis.



Le Certificat d'arpentage expédié
par le N^o 119, p^o 16 du Liv. A

Note. Dans l'arpentage de cette terre
il a été donné un arpent de plus
pour chaque 20 arpent pour la
perte de la chaîne. *J. J.*

COMMON AND UNCOMMON CONVERSIONS

*Prepared by Chris Ferguson, MSPS President-Elect
for the December 2025 Missouri Surveyor Newsletter*

USPLSS

1 chain = 4 rods/poles/perches = 100 links = 66 feet

1 rod = $\frac{1}{4}$ chain = 25 links = 16.5 feet

1 link = .01 chains = .66 feet = 7.92 inches

1 mile = 80 chains = 320 rods = 1760 yards = 5280 feet

1 league = 3 miles

1 acre = 43560 sq. ft. = 160 sq. rods = 10 sq. chains = 4840 sq. yards

1 section = 640 acres

Side of one section = 80 chains = 1 mile = 5280 feet

Side of one quarter = 40 chains = $\frac{1}{2}$ mile = 2640 feet

Side of one forty = 20 chains = $\frac{1}{4}$ mile = 1320 feet

Side of one 10-acre = 10 chains = $\frac{1}{8}$ mile = 660 feet

Side of one square acre = 208.71 feet

40 sq. rods = 1 rood

4 roods = 1 acre

FRENCH AND SPANISH MEASURE

1 arpent (linear) = 192.5 feet = 2.916 chains

1 arpent (square) = 0.8507 acres

1 perch (French) = $\frac{1}{10}$ arpent

1 foot (French) = 1.0694 feet (English)

1 torse = 6 feet (French)

1 league (French - square) = 7056 arpents (square) = 6002.5 acres

1 league (Spanish – square) = 4428.4 acres

1 league and labor (Spanish – square) = 4605.5 acres

1 side of league (Spanish) = 5000 varas

1 side of labor (Spanish) = 1000 varas

1 vara = $33 \frac{1}{3}$ inches = 2.778 feet