



# **Landmarks and Monuments of Interest to Surveyors**

**4 Hours**

**PDH Academy  
PO Box 449  
Pewaukee, WI 53072  
(888) 564-9098  
[www.pdhcademy.com](http://www.pdhcademy.com)**



## Landmarks and Monuments of Interest to Surveyors Final Exam

1. The Roman poet Ovid penned a lengthy tribute to this god responsible for the protection of boundary markers:
  - a. Romulus
  - b. Terminus
  - c. Orion
  - d. Titus
  
2. Which United States President executed the Louisiana Purchase, virtually doubling the area of the nation?
  - a. James Monroe
  - b. James Madison
  - c. John Quincy Adams
  - d. Thomas Jefferson
  
3. The Zero Milestone in Washington, D.C. was erected for what purpose?
  - a. To serve as an elevation benchmark
  - b. To mark the center of the city
  - c. To serve as a reference point from which to measure and name the nation's roads
  - d. To mark the midway point on the National Mall
  
4. The first and oldest monument erected on the U.S. – Canada border is in Maine and is called:
  - a. Monument One
  - b. The Initial Monument
  - c. The Primary Point
  - d. The First Monument
  
5. The northernmost point in the contiguous 48 states is found in which state?
  - a. Minnesota
  - b. Maine
  - c. Michigan
  - d. Washington

6. The highest point of elevation in the United States is located in which national park?
  - a. Rocky Mountain
  - b. Yosemite
  - c. Denali
  - d. Sequoia
  
7. What valuable substance was discovered in the Sierra Nevada Range in 1848?
  - a. Copper
  - b. Silver
  - c. Coal
  - d. Gold
  
8. This last natural landmark encountered by westbound travelers on the Santa Fe Trail is located in New Mexico and is named for its resemblance to a common item:
  - a. Wagon Mound
  - b. Bonnet Knoll
  - c. Horsehead Hill
  - d. Turkey Mountain
  
9. Which Virginia explorer led a small expedition through the Cumberland Gap several years prior to Daniel Boone's expedition?
  - a. William Clark
  - b. Meriwether Lewis
  - c. Dr. Thomas Walker
  - d. Jacques Cartier
  
10. The line of zero longitude passes through which important English institution?
  - a. Buckingham Palace
  - b. Oxford
  - c. The Royal Observatory
  - d. Parliament
  
11. Point Zero in Paris is found outside of which famous house of worship?
  - a. Notre Dame Cathedral
  - b. Winchester Cathedral
  - c. St. Peter's Basilica
  - d. St. Basil's

12. Which all-female public service organization is known for sponsoring college scholarships and for commissioning and maintaining historical monuments?
- The Daughters of the American Revolution
  - The Sisters of the Patriots
  - The Wives of the Pioneers
  - The Friends of Democracy
13. The wife of which U.S. President was instrumental in the formation of the DAR?
- William Henry Harrison
  - Benjamin Harrison
  - James Madison
  - James Monroe
14. The Westernmost point in the United States is found in which state?
- Hawaii
  - Alaska
  - California
  - Washington
15. In the early days of the Oregon Trail, an overland journey of the entire trail could be expected to take how long?
- 30 days
  - 60 days
  - 90 days
  - 160 days

## **Table of Contents:**

### **Landmarks and Monuments of Interest to Surveyors**

**By: Nathan J Walker, PLS**

**Objective:** This course will identify and describe numerous points of interest to surveyors throughout the United States and the World, the associated landmarks, and the stories of their origins. It will also present biographical information concerning the people who explored and marked some of these points of interest

#### **Introduction**

- 1. Historical Points of Interest**
  - a. The Louisiana Purchase
  - b. The Gadsen Purchase
  - c. The Mason-Dixon Survey
  - d. Historic Monuments of Washington, D.C.
  - e. Initial Points
  
- 2. Demographic, Political, and Geographic Landmarks**
  - a. Geographic Centers of the United States
  - b. The Four Corners
  - c. Tri-State Points
  - d. Geographical Extremities of the United States
  - e. Geographical Extremities of the World
  
- 3. Important American Trails and their Landmarks**
  - a. The Oregon Trail
  - b. The Santa Fe Trail
  - c. The Wilderness Road
  
- 4. International Landmarks of Interest to Surveyors**
  - a. Prime Meridian
  - b. The Equator
  - c. Zero Milestones
  
- 5. Miscellaneous**
  - a. Biographical Sketches
  - b. Daughters of the American Revolution
  - c. Conclusion

## Introduction

The concept of boundaries and land ownership dates back to the beginnings of mankind's agricultural endeavors. Wherever quantity and location of land was of economic importance, it became necessary to associate boundary lines and corners with physical objects, called monuments. Monuments of this kind are either natural or artificial. Natural monuments include such items as streams, bodies of water, ridges, trees or naturally occurring stones. Artificial monuments may be posts, metal rods, pipes, pins, nails, spikes, stones placed by individuals, or any other manmade item affixed upon the earth for the purpose of marking a particular location.

Monumentation was given such high importance (and even religious significance) in ancient Rome that the Roman pantheon included Terminus, the god responsible for the protection of boundary markers. To honor Terminus, the poet Ovid wrote:

*When the night had passed, see to it that the god who marks the boundaries of the tilled lands receives his wonted honour. O Terminus, whether thou art a stone or stump buried in the field, thou too hast been defied from days of yore. Thou art crowned by two owners on opposite sides; they bring thee two garlands and two cakes. An altar is built. Hither the husbandman's rustic wife brings with her own hands on a potsherd the fire which she has taken from the warm hearth. The old man chops wood, and deftly piles up the billets, and strives to fix the branches in the solid earth: then he nurses the kindling flames with dry bark, the boy stands by and holds the broad basket in his hands. When from the basket he had thrice thrown corn into the midst of the fire, the little daughter presents the cut honeycombs. Others hold vessels of wine. A portion of each is cast into the flames. The company dressed in white look on and hold their peace. Terminus himself, at the meeting of the bounds, is sprinkled with the blood of a slaughtered lamb, and grumbles not when a suckling pig is given him. The simple neighbours meet and hold a feast, and sing thy praises, holy Terminus: "Thou dost set bounds to peoples and cities and vast kingdoms; without thee every field would be a root of wrangling. Thou courtest no favour thou art bribed by no gold: the lands entrusted to thee thou dost guard in loyal good faith. If thou of old hadst marked the bounds of the Thyrean land, three hundred men had not been done to death, nor had the name of Othryades been read on the piled arms. O how he made his fatherland to bleed! What happened when the new Capitol was being built? Why, the whole company of gods withdrew before Jupiter and made room for him; but Terminus, as the ancients relate, remained where he was found in the shrine, and shares the temple with great Jupiter. Even to this day there is a small hole in the roof of the temple, that he may see naught above him but the stars. From that abide in that station in which thou hast been placed. Yield not an inch to a neighbour, though he ask thee, lest thou shouldst seem to value man above Jupiter. And whether they beat thee with ploughshares or with rakes, cry out, 'This is thy land, and that is his.'" There is a way that leads folk to the Laurentine fields, the kingdom once sought by the Dardanian chief: on that way the sixth milestone from the City witnesses the sacrifice of the woolly sheep's guts to thee, Terminus. The land of other nations has a fixed boundary: the circuit of Rome is the circuit of the world.*

The important places in geographic history are of particular interest to the land surveyor. As we are called to follow in the footsteps of the original surveyors, we are drawn to the critical points of historic surveys, interesting borders and boundaries, topographical extremities, and any of the other places which past surveyors have esteemed to be worthy commemorating with permanent monuments.

This course will focus mainly on American monuments and landmarks relating to land surveys and land surveyors. Some attention will also be given to significant international points of interest.

Each feature will be described in terms of location, physical characteristics, and historical and/or geographical context. Biographical information pertaining to the surveyors involved in the placement of these landmarks will be provided when appropriate.

## **Section 1 - Historical Points of Interest**

### **The Louisiana Purchase Survey Marker**

In the spring of 1803, representatives from the United States and France executed the agreement known as the Louisiana Purchase. Under the terms of this agreement, the United States acquired 830,000 square miles of land lying west of the Mississippi River and east of the Rocky Mountains. This acquisition approximately doubled the size of the United States.

President Thomas Jefferson said of the Louisiana Purchase:

*"I know that the acquisition of Louisiana has been disapproved by some ... that the enlargement of our territory would endanger its union... The larger our association the less will it be shaken by local passions; and in any view is it not better that the opposite bank of the Mississippi should be settled by our own brethren and children than by strangers of another family?"*

Meriwether Lewis and William Clark were hired by President Jefferson to explore this new area and to seek a passage to the Pacific Ocean. Their expedition began in 1804 and concluded in 1806.

In 1815, President James Monroe ordered a survey of the Louisiana Territory so that land could be conveyed to those who served the United States in the War of 1812. It was common practice in early America for the government to compensate soldiers with grants of land in lieu of cash. Prospect K. Robins and Joseph C. Brown, both prominent surveyors, were tasked with determining a starting point for this survey. Leading the expedition, Robbins traversed north 55 miles up the Arkansas River, while Brown traversed around 26 miles west up the St. Francis River. In October of 1815, Robbins crossed the east-west line already established by Brown's party. This point of intersection would be used to formally establish the initial point of the Fifth Principal Meridian. Two trees were blazed to mark the point.

Brown's party continued west to what is present-day Little Rock and the Robbins party made its way north to the Missouri River.

In time, even though this initial point and the Fifth Principal Meridian were the basis for surveys across six states, the initial point itself had not been marked with a permanent monument. In 1921, local surveyors found the original blazed trees and the Marianna, Arkansas chapter of the Daughters of the American Revolution began an effort to establish a memorial at the point. In 1926, over a century after the establishment of the initial point, a stone marker was placed.

At the dedication ceremony, the four adjoining landowners each granted two acres surrounding the point for use as a park. In 1961, the State of Arkansas designated this area as a state park which, along with additional surrounding acreage, comprises the Louisiana Purchase Historic State Park.

The survey marker is six feet tall and measures over four feet wide at its base. It is not easily accessible as it stands in a foot of swamp water most of the time. However, a footpath and a boardwalk lead to the site.

The inscription on the monument reads:

*“This stone marks the base established November 10, 1815, from which the lands of the Louisiana Purchase were surveyed by United States engineers. The first survey from this point was made to satisfy the claims of the soldiers of the War of 1812 with land bounties.”*



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Louisiana Purchase Monument, near Holly Grove, Arkansas

### **The Gadsen Purchase**

The Gadsen Purchase was a 29,670-square mile acquisition by the United States from Mexico, which now makes up southern Arizona and southern New Mexico. The land was acquired by the Treaty of Mesilla in 1854 and included the lands west of the Rio Grande and south of the Gila River. The United States desired this land for the purpose of constructing a transcontinental railroad, which was completed in 1883.

The Gadsen Purchase represented the final acquisition of territory in the contiguous United States and permanently established the location of the border between the U.S. and Mexico. The present-day American cities of Yuma and Tucson lie within the Gadsen Purchase.

International Boundary Marker, No. 1 is a monument to the boundary established by the Gadsen Purchase. Resting on the western bank of the Rio Grande River at El Paso, Texas, this monument represents the location where the U.S. and Mexican border departs the Rio Grande and heads westward overland.

The monument is also a testament to the excellent surveying skills of William Emory and the Emory-Salazar Commission who surveyed the border across 2,000 miles of unforgiving desert terrain.

This monument, placed in 1855, is twelve feet tall and stands on a five-foot square base. Interestingly, this monument stands at a common corner to two states (Texas and New Mexico) and two countries (the United States and Mexico).



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

International Boundary Marker No. 1, El Paso, Texas.

### **Monuments of the Mason-Dixon Survey**

The Mason-Dixon Line is a well-known boundary carrying great cultural significance and is of particular interest to people interested in historic land boundaries. and the circumstances surrounding their creation. In 1763, Charles Mason and Jeremiah Dixon began their survey to establish the border between Pennsylvania and Maryland. The line set down by this survey not only represented a legendary scientific achievement but ripened into the cultural dividing line between the free northern states and the slaveholding southern states.

Various markers were placed at intervals and critical points along the Mason-Dixon Line and many still exist today.

The original milestone markers placed on Mason and Dixon's survey were cut from the oolitic limestone quarry at the Isle of Portland in England. These substantial monuments were 4.5 feet long and one foot square with pyramidal tops and vertical fluting on all four faces. Each monument weighed nearly 400-pounds and was decorated with a capital letter "P" carved into one face to represent the Pennsylvania side and a capital letter "M" carved into the opposite face to represent the Maryland side.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Typical Mason-Dixon Line milestone

### **The Star Gazer's Stone**

The Star Gazer's Stone is located near Embreeville, Pennsylvania and marks the site of the temporary observatory set up by Charles Mason and Jeremiah Dixon in January 1764. On this spot, Mason and Dixon made the astronomical observations upon which they based their survey. The stone was placed about 700 feet to the north of the Harlan House, which was used as a headquarters for Mason and Dixon during the course of their lengthy survey.

The stone's location is approximately 31 miles west of what had earlier been identified as the southernmost point of Philadelphia. From this observatory, Mason and Dixon computed a precise latitude. With the knowledge of their latitude, they calculated the required distance to traverse southward with the goal of identifying the parallel of latitude situated 15 miles south of the southernmost point of Philadelphia. At this latitude, the surveyors established the east-west border line dividing Maryland and Pennsylvania.

A plaque in front of the stone bears the following statement:

*The Star-Gazers' Stone Erected in 1764 by Mason and Dixon  
in locating the Pennsylvania-Maryland Boundary Line  
Being 15 miles North thereof and 31 miles due West of Philadelphia.  
Here they also measured a degree of Latitude on the Earth's surface southward,  
and made other Astronomical observations;*

*Hence the name  
Enclosed and marked by The Chester County Historical Society*

The Harlan House and the Star Gazer's Stone were listed on the National Register of Historic Places on May 9, 1985.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Star Gazer's Stone, Embreeville, Pennsylvania

### **The Post Mark'd West**

The Post Mark'd West was placed by Mason and Dixon on June 12, 1764, and served as the initial point of their survey. It was established on the land of Mr. Alexander Bryan which is now part of White Clay Creek State Park in New Castle County, Delaware.

Mason described the point thusly, *"...the point 15 miles south of the southernmost point of the City of Philadelphia is situated in Mill Creek Hundred in the County of Newcastle, in a plantation belonging to Mr. Alexander Bryan."*

According to Dixon's calculations, the precise distance from their commencing point at Harlan's farm to the southern terminus of the line was 15 miles, 2 chains, and 93 links.

The original marker set by Mason and Dixon was a simple post with the word "WEST" carved into its west-facing side.

In 1952, S. Hallock du Pont donated a modern monument which presently marks the spot of the Post Mark'd West.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Post Mark'd West, White Clay Creek State Park, near Newark, Delaware

### **The Terminal Point**

The Mason and Dixon Survey Terminal Point is located near the community of Pentress, West Virginia. It rests upon the border between Greene County, Pennsylvania and Monongalia County, West Virginia. It signifies the westernmost progress of Mason and Dixon's survey as of October 19, 1767, at Brown's Hill.

This monument was listed on the National Register of Historic Places in 1973.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Terminal Point, near Pentress, West Virginia.

## The Middle Point

In the order of the Court of Chancery, Lord Chancellor Phillip Yorke, First Earl of Hardwicke declared that the south border of Delaware was to be a line run across the Delmarva peninsula, commencing at Fenwick Island and terminating at Taylor's Island. It was further declared that the west line of Delaware was to be a line running from the midpoint of this transpeninsular line to the point of tangency with a twelve-mile circle around New Castle.

The midpoint of the Transpeninsular Line had already been marked with an oak post in 1760 by colonial surveyors prior to Mason and Dixon's arrival to the region.

Four stone monuments are located at the site of the Middle Point. The first monument placed in 1760 is a stone with the coats-of-arms of both the Calvert and the Penn families carved into it. This monument was set 32 inches away from the calculated midpoint after the sons of William Penn and Lord Baltimore agreed that the corner would be "69 miles, 289 perches" west of the stone at Fenwick Island Marking the East end of the Transpeninsular Line.

In 1768, Mason and Dixon set a "Double Crown" stone at the midpoint as determined by their measurements. This stone bears the Penn coat-of-arms on the north and east faces, and the Calvert coat-of-arms on the south and west faces.

Another marker on the site is the stone that had marked Mile #25 on the Transpeninsular Line. It was relocated to this site after being displaced by a road construction project.

There is a fourth stone monument of uncertain origin at the site. It is commonly believed that this stone was found by a nearby landowner who thinking it to be a mile marker, placed it alongside the other stones.

The stone monuments at the Middle Point rest beneath a pavilion that was built in 1961.



*(Photo: [www.tripadvisor.com](http://www.tripadvisor.com))*

The Middle Point, Delmar, Delaware

## **The Tangent Stone**

The Tangent Stone sits at the intersection of the Tangent Line and Arc Line segments of the border between Maryland and Delaware. Mason and Dixon placed a stone of granitic gneiss composition at this position in June of 1765 and it was later replaced with a 12-inch by 18-inch granite stone marker set by Lt. Col. J.D. Graham of the United States Corps of Topographical Engineers in 1849. The monument has an “M” chiseled into the Maryland side and a “D” chiseled into the Delaware side.

## **The Tri-State Point**

The Delaware-Maryland-Pennsylvania Tri-State Point is the common point of the northwest corner of Delaware, the northeast corner of Maryland, and the south border of Pennsylvania. Mason and Dixon marked this point with a wood post in 1765, which was replaced by a stone monument in 1849. This monument disappeared and was finally reset by W.C. Hodgkins of the United States Corps of Topographical Engineers (USCTE) in 1892.

This stone is marked with “M” and “P” denoting the initial of the colony on each side. At the time of Mason and Dixon’s survey, Delaware was not yet a separate entity and therefore was not noted on the monument.

## **The Fenwick Island Monument**

On Fenwick Island at the east end of the Transpeninsular Line rests a stone monument with the coat-of-arms of the Penn family on its north face and the coat-of-arms of the Calvert family on its south face. The position of this boundary monument on the line between Maryland and Pennsylvania was ratified by King George III in 1769.

This stone marker stands just south of the Fenwick Island Lighthouse. While not part of the Mason-Dixon survey, this monument represents a point of importance relative to the survey.

The informational sign at the Fenwick Island Monument reads:

*“This stone monument, erected April 26, 1751, marks the eastern end of the Transpeninsular Line surveyed 1751-1751 by John Watson and William Parsons of Pennsylvania, and John Emory and Thomas Jones of Maryland. This line established the east-west boundary between Pennsylvania’s “Three Lower Counties” (now Delaware) and the Colony of Maryland. It established also the middle point of the peninsula, 35 miles to the west. The stone bears the coat of arms of the Calverts on the south side and the Penns on the north. It was accepted 1760 and finally ratified 1769 by King George III.”*

## **The Monuments of Washington D.C.**

Forty stone monuments were set at the four corners of the District of Columbia. Further, intermediate stone monuments were placed at one-mile intervals along the boundary lines

thereof. What follows are selected recovery notes prepared by Mr. Kenneth Lawrence pertaining to the monuments at the original four corners of the district.

**South Corner.** – Located on Jones Point in Alexandria, Virginia. The front of the stone can be seen only by approaching the location by boat on the river. It stands underneath the front steps of the old, abandoned lighthouse which now stands on a military reservation. It can also be viewed from the top, inside the fence, through a small hole directly over the center of the stone. The stone is well protected but in extremely poor condition. I could make out no lettering at all on the of the visible sides. There is nothing on the fence at any place to indicate that this is the cornerstone of the old Federal District.

**West Corner.** – This stone stands just off Meridian Avenue a short distance south of 29<sup>th</sup> Street in Falls Church, Virginia. The stone is in rather poor condition as the edges and top are badly broken and pitted. A huge oak tree has sprung up from the base of the stone and it is a wonder that its roots have not broken the stone. The fence is in good condition but has no plate of any kind to identify the stone which it surrounds.

**North Corner.** – This stone is located very close to the south side of the East-West highway, near Silver Spring. It is leaning slightly and is in fair condition but has badly battered edges. The circular fence which surrounds the stone is overgrown with vines, is rusting, and in need of paint. The plat on this fence was supplied by the Maryland Chapter, D.A.R.

**East Corner.** – This stone is located a short distance east of the intersection of Eastern and Southern Avenues in a small swamp. The stone is in good condition with deep lettering that is easily read. This stone still shows the saw marks from when the stone was cut a century and a half ago. The circular fence around the stone is in good condition, but urgently needs a coat of paint. The chapter marker on this fence was placed here by the District of Columbia Chapter, D.A.R.

### **The Jefferson Stone**

The Jefferson Stone, also known as Jefferson Pier and the Jefferson Pier Stone, lies on the National Mall just northwest of the Washington Monument. It marks the second of the Washington meridians, which passes through the White House.

The stone is three-foot tall granite monument with an inscription on its west face reading:

*“POSITION OF JEFFERSON  
PIER ERECTED DEC 18, 1804.  
RECOVERED AND RE-ERECTED  
DEC 2, 1889.  
(This line is damaged and illegible)  
DISTRICT OF COLUMBIA”*



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Jefferson Stone, Washington, D.C.

### **The Zero Milestone**

The Zero Milestone is a monument in Washington, D.C. that was originally intended to serve as the milestone from which all roads in the nation would be measured. This idea did not catch on, and today only roads in the District of Columbia make reference to the milestone.

The monument is found on the north edge of the Ellipse, just south of the White House. The monument is adorned with an ornate bronze compass rose.

The granite monument is two-feet square at the base and measures four feet tall. The monument is engraved on each of its faces as follows:

North face: “Zero Milestone”

South face: “Point for the measurement of distances from Washington on highways of the United States”

East face: “Starting point of Second Transcontinental Motor Convoy over the Bankhead Highway, June 14, 1920”

West face: “Starting point of First Transcontinental Motor Convoy over the Lincoln Highway, July 7, 1919”

Dr. S.M. Johnson was the original advocate for the Zero Milestone, having been inspired by the Golden Milestone in the Roman Forum. The milestone was dedicated in 1923.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Zero Milestone, Washington, D.C.

### **Entrance Markers**

The Garden Club of America Entrance Markers are situated on the major roads leading into the District of Columbia. These markers are all listed in the National Register of Historic Places.

A pair of entrance markers is located Westmoreland Circle at the intersection of Western Avenue NW and Massachusetts Avenue NW.

A pair of entrance markers is found adjacent to Wisconsin Avenue at Western Avenue NW in the Friendship Heights neighborhood of Washington.

A pair of markers is located in Chevy Chase Circle at the intersection of Western Avenue and Connecticut Avenue NW.

A single entrance marker is on a traffic island at the intersection of Alaska Avenue NW, Georgia Avenue NW, and Kalmia Road NW.

A single entrance marker is found in Blair Circle in Silver Spring, Maryland at the intersections of Eastern Avenue NW, North Portal Drive NW, Colesville Road, and 16<sup>th</sup> Street NW.

## **Initial Points**

### **The Seven Ranges and the Initial Point of the United States Public Land Survey**

The United States acquired the Ohio Country as the Treaty of Paris brought an end to the Revolutionary War in 1783. Even though the territory was legally closed to white settlement, unauthorized settlers began to occupy the area. These squatters were evicted by the federal government, prompting Congress to seek an orderly method for the settlement of this land.

The United States Public Land Survey was devised as a system by which to subdivide the Northwest in order to encourage settlement and development. The Land Ordinance of 1785 required that the Geographer of the United States, Thomas Hutchins, run an east-west baseline which would be the basis for the townships to the north and south. The north-south line of this survey was the previously established western boundary line of Pennsylvania, commonly known as the Ellicott Line in honor of Andrew Ellicott who first surveyed the line.

In 1786, Hutchins began his survey of what would later come to be known as the Geographer's Line, or the Baseline, at a stake on the north bank of the Ohio River which had been set the previous year to mark the boundary between Virginia and Pennsylvania and ran his baseline West, extending through the entire territory. Hutchins laid out square townships, six miles on each side, and further divided each township into thirty-six sections of one square mile or 640 acres.

The Hutchins survey, completed in 1787, established what came to be known as the Seven Ranges. This survey is considered to have been the first nationally conducted cadastral survey the world had seen.

The actual location of the Initial Point lies submerged on the border between Pennsylvania and Ohio, but a commemorative monument now stands just east of East Liverpool, Ohio. This location was named a National Historic Landmark in 1965. The commemorative monument stands on the north side of the Ohio River adjacent to Ohio Route 39 / Pennsylvania Route 68. This monument, placed in 1881, remains under the care of the East Liverpool Historical Society.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

The Initial Point Monument, East Liverpool, Ohio.

The inscription reads as follows:

*“1112 FEET SOUTH OF THIS SPOT WAS THE POINT OF BEGINNING FOR SURVEYING THE PUBLIC LANDS OF THE UNITED STATES. THERE, ON SEPTEMBER 30, 1785, THOMAS HUTCHINS, FIRST GEOGRAPHER OF THE UNITED STATES BEGAN THE GEOGRAPHER’S LINE OF THE SEVEN RANGES. THIS INSCRIPTION WAS DEDICATED SEPTEMBER 30, 1960, IN JOINT ACTION OF THE EAST LIVERPOOL HISTORICAL SOCIETY AND THE AMERICAN CONGRESS ON SURVEYING AND MAPPING.”*

### **The Initial Point of the United States – Mexico Boundary**

The initial point on the boundary line between the United States and Mexico lies at the southwestern corner of the Continental United States. By the Treaty of Guadalupe Hidalgo, executed in 1848, the U.S. – Mexican border begins on marine league south of the south point of the San Diego Bay, and from there proceeds in a straight line to the confluence of the Colorado River and the Gila River.

The first marker was a simple cairn of stones erected in 1849 on Imperial Beach. This was replaced with a 20-foot-tall marble obelisk decorated with an acorn on top in 1851.

By 1894, the monument had experienced wear and damage to the point where it had to be renovated and protected with an enclosure. The monument, which stands adjacent to the Tijuana Lighthouse bears the following inscription:

*“INITIAL POINT OF BOUNDARY BETWEEN THE UNITED STATES AND MEXICO,  
ESTABLISHED BY THE JOINT COMMISSION, 10 OCTOBER, A.D. 1849, AGREEABLY TO  
THE TREATY DATED AT THE CITY OF GUADALUPE, HIDALGO, FEBRUARY 2, A.D. 1848.  
JOHN B. WELLER, U.S. COMMISSIONER. ANDREW B. GRAY, U.S. SURVEYOR.”*

This monument was added to the National Register of Historic Places in 1974.



*(Photo: [www.waymarking.com](http://www.waymarking.com))*

The initial point of the United States – Mexico boundary, Tijuana, Mexico.

## **The Initial Point of the United States – Canada Boundary**

The border shared by Canada and the United States is the longest border between two countries in the world, measuring 5,525 miles in length. The border includes Canada's west boundary with Alaska and Canada's south boundary with the contiguous forty-eight states.

The 1783 Treaty of Paris provided that the boundary between the United States and British North America (now Canada) begin at the northwest angle point of the boundary of Nova Scotia, run to the northwest head of the Connecticut River, and follow along the center of the Connecticut River to the 45<sup>th</sup> parallel of north latitude. This border had been surveyed ten years prior by John Collins and Thomas Valentine in their survey of boundary between New York and Quebec.

Proceeding west, the boundary was identified by the St. Lawrence River and the Great Lakes. Northwest of Lake Superior, the boundary line followed rivers to the Lake of the Woods. From the northwest point of the Lake of the Woods, the boundary was supposed to have continued westward to its intersection with the Mississippi River, however the head of the Mississippi River lies well south of this line making intersection impossible.

The Treaty of 1818 acknowledged the westward expansion of the United States and British North America, and accordingly the westward extension of the border between the two nations. The border would extend west along the 49<sup>th</sup> parallel of north latitude to the Rocky Mountains.

The 1846 Oregon Treaty formally established the 49<sup>th</sup> parallel as the north boundary line of the United States from the Rocky Mountains to the Pacific Ocean. This followed a dispute in which the United States had claimed all the way to 54 degrees 40 minutes of latitude, bordering the Alaska Territory.

The western end of the border is commemorated by a large monument known as the Peace Arch. Standing 67 feet tall, it is situated between Blaine, Washington and Surrey, British Columbia in Peach Arch Park. The arch recalls the 1814 Treaty of Ghent and calls to mind the lengthy tradition of peaceful relations between the United States and Canada.

A plaque on the monument reads in part:

*“THIS UNFORTIFIED BOUNDARY LINE BETWEEN THE DOMINION OF CANADA AND THE UNITED STATES OF AMERICA SHOULD QUICKEN THE REMEMBERANCE OF THE MORE THAN A CENTURY OLD FRIENDSHIP BETWEEN THESE TWO COUNTRIES. A LESSON OF PEACE TO ALL NATIONS”*



*(Photos: [www.wikipedia.com](http://www.wikipedia.com))*  
The Peace Arch near Blaine, Washington

## **Monument One**

Monument One is a boundary monument on the border between Maine and New Brunswick in the town of Amity Maine. Erected in 1843, it represents the earliest permanent marker on the United States – Canadian border.

The original marker at this spot was erected by surveyors and consisted of iron hoops placed around the trunk of a tree. In 1817, a cedar post was installed at the spot. Finally, in 1843 after the signing of the Webster-Ashburton Treaty, a cast iron monument was set. In 1972 a concrete base was added.

The inscriptions on the monument read “Treaty of Washington, Boundary August 9<sup>th</sup>, 1842” and “Lieutenant James B. B. Estcourt and Albert Smith”, who were the commissioners of the monument.

Monument sits at the headwaters of the St. Croix River. Access to the monument is difficult, as no public roads reach the site.

## **Section 2 – Demographic, Cultural, and Geographic Landmarks**

### **The Geographic Center of the United States**

The geographic center of the United States is situated in South Dakota, around 20 miles north of Belle Fourche which is just north of the Black Hills. The center point has remained in this position since 1959 when Alaska and Hawaii were admitted to the United States.

This point is not to be confused with the geographic center of the contiguous forty-eight states, which will be covered in the next subsection.

The center point is marked by a concrete monument set thirty-six inches below ground and commemorated by a historical plaque in Belle Fourche which reads as follows:

*“In 1959 following the admission of Alaska and Hawaii to the Union, the U.S. Coast and Geodetic Survey officially designated a point 20 miles north of Belle Fourche, South Dakota as the Geographic Center of the Nation.*

*Entry of Alaska and Hawaii as states moved the site from its old position in Smith Center, Kansas to Butte County, South Dakota.*

*The U.S. Coast and Geodetic survey announced that the location of the new center is at Latitude 44 degrees 58 minutes North, and Longitude 103 degrees 46 minutes West.”*



(Photo: [www.waymarking.com](http://www.waymarking.com))

The Geographic Center of the U.S. commemorative plaque, Belle Fourche, South Dakota.

### The Geographic Center of the Contiguous 48 States

The geographic center of the contiguous 48 states is found about two miles northwest of Lebanon, Kansas. This point was established in 1918 by the U.S. Coast and Geodetic Survey by creating a correctly scaled cardboard cutout of the United States and then finding the balance point of the cutout.

In 1940, a monument was erected at a convenient nearby crossroads, as the actual center point was on private property. The plaque on the monument reads:

*“THE GEOGRAPHIC CENTER OF THE UNITED STATES*

*LAT. 39° 50’ LONG. -98°35’*

*NE ¼ - SE ¼ -S32 – T2S – R11W*

*Located by L.T. Hagadorn of Paulette & Wilson – Engineers and L.A. Beardslee – County Engineer. From data furnished by U.S. Coast and Geodetic Survey.*

*Sponsored by Lebanon Hub Club. Lebanon, Kansas. April 25, 1940.”*



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The geographic center of the contiguous 48 states, near Lebanon, Kansas.

### **The Four Corners Monument**

The Four Corners Monument marks the common corner of Arizona, Colorado, New Mexico, and Utah. It is the only point in the United States where four states share a boundary corner.

The first inhabitants of the Four Corners region were native Americans. In the 16<sup>th</sup> century, the area was claimed by the Spanish. When Mexico won its independence from Spain in 1821, the region went under Mexican control until it was ceded to the United States according to the treaty of Guadalupe Hidalgo in 1848.

The history of the boundaries in the Four Corners region date back to the period just before the Civil War as Congress attempted to thwart the spread of slavery into the region by forming governmental units.

The Compromise of 1850 created the Utah Territory and the New Mexico Territory, with the border between the two defined as the 37<sup>th</sup> parallel of north latitude. In 1861, Congress created the Colorado Territory from the Utah Territory, with the border between the two territories defined as the 32<sup>nd</sup> meridian west from the Washington meridian. In 1863, Congress in response to an attempt by residents of the southern part of the New Mexico Territory to break away and form a new territory to join the Confederacy, created the Arizona Territory, having the 37<sup>th</sup> parallel for its north border and the 32<sup>nd</sup> meridian west from Washington as its east border. This configuration created the quadripoint common to the four states.

In the western territories of the United States, borders were generally established along parallels of latitude and meridians of longitude. Given the difficulty of precisely determining latitude and longitude with the instruments of the day, these boundaries were often surveyed and staked with considerable deviations by today's standards. However, the lines as marked were accepted as the borders, superseding the calls for latitude and longitude. The position of the Four Corners Monument is the result of these surveying inconsistencies, but all four states recognize

the location of the marker as the true boundary corner, regardless of the latitude and longitude description.

In 1868, Ehud N. Darling surveyed the 37<sup>th</sup> parallel between the New Mexico and Colorado Territories. This line came to be known as the “Darling Line”. Likewise, Chandler Robbins surveyed the 32<sup>nd</sup> meridian west of Washington between the New Mexico and Arizona Territories. Robbins ran his line from south to north, and upon intersecting the Darling Line, placed a sandstone monument. This point is where the Four Corners Monument sits today.

In 1878, Rollin J. Reeves surveyed the border between the Utah Territory and the newly admitted State of Colorado. In 1901, Howard B. Carpenter surveyed the border between Arizona and Utah, thereby completing the surveys of the four border lines that meet to form the Four Corners.

The monument consists of a granite disk in which is embedded a bronze disk upon which is marked the exact point. Circling the disk is an inscription reading:

“Here meet in freedom under God four states”

Members of the Navajo Nation operate the monument as a tourist attraction.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Four Corners Monument, near Teec Nos Pos, Arizona

Coordinates:

36 degrees 59 minutes 56.3 seconds North

109 degrees 2 minutes 42.7 seconds West

## **Tri-State Corners in the United States**

Of particular interest to surveyors are the points where three states come together at a common corner. There are sixty-one such tri state points in the United States, with thirty-eight being on land and the remainder in streams or bodies of water.

Following are details on several state tripoints, with descriptions of their locations and the monuments marking the spots where applicable:

### **Idaho – Utah – Wyoming**

The old monument at this corner had been destroyed by cattle, leading a local Wyoming surveyor to lead the effort toward its reestablishment. A new monument was placed in 1992 with a plaque nearby reading:

*“THIS STONE MARKS THE INTERSECT POINT ESTABLISHED JUNE 15, 1874, BY A.V. RICHARDS, U.S. ASTRONOMER AND SURVEYOR, ON THE 34<sup>TH</sup> MERIDIAN WEST FROM THE CENTER OF THE OLD NAVAL OBSERVATORY DOME IN WASHINGTON, D.C. WITH THE STATE BOUNDARY OF IDAHO AND UTAH (THE 42<sup>ND</sup> PARALLEL NORTH), SURVEYED BY DANIEL G. MAJOR, U.S. ASTRONOMER, ON AUGUST 29, 1871.*

*THE INITIAL POINT MONUMENT OF D.G. MAJOR FOR THE 42<sup>ND</sup> PARALLEL NORTH IS LOCATED 7/10 OF A MILE EAST.*

*CONTRIBUTIONS FOR THIS REMONUMENTATION WERE OBTAINED FROM THE FEDERAL GOVERNMENT, STATES, COUNTIES, AND THE PRIVATE SECTOR.”*

### **Montana – North Dakota – South Dakota**

The boundary line between North Dakota and South Dakota is also the seventh standard parallel north in the U.S. Public Land Survey System. This line was surveyed in 1891-1892 to its intersection with the eastern boundary line of Montana.

The corner, situated in a three-way field corner, is marked by a simple pink granite post marked “1892 T.M. 360M.”. This monument is in a very remote and sparsely populated area, with the nearest paved public roadway lying two miles away.

### **Wyoming – South Dakota – Nebraska**

An excellent explanation of the Wyoming, South Dakota, Nebraska tri state point is given on the plaques flanking the corner monuments:

*“The Survey for the boundary between Nebraska and Wyoming territory began August 17<sup>th</sup>, 1869, at the intersection of the 41st Parallel of Latitude and the 27th degree of Longitude W of Washington, DC. Oliver N. Chaffee, Astronomer and Surveyor and his crew surveyed North on the 27th Meridian 138 miles, 22 chains and 67 links, and set a white limestone monument here on September 6<sup>th</sup>, 1869.*

*In 1874, beginning at the Keya Paha River and ending at the Chaffee monument, Chauncey Wiltse surveyed the 43rd Parallel of Latitude between Nebraska and Dakota Territory.*

*In 1893, Joseph Jenkins retraced the Wiltse Survey and set a quartzite monument here and at 1/2-mile intervals from the Chaffee monument to the Missouri River.*

*In 1908, Edward F. Stahle retraced the Wyoming-Nebraska boundary and set granite posts at mile intervals and brass caps at closing corners.*

*In recognition of those early Surveyors, the skills they demonstrated and the hardships they endured, we dedicate this Plaque on September 6, 1989.”*

This monument is not accessible by public roadway and is protected by a fence.

### **Wyoming – Colorado – Utah**

The tri state corner shared by Wyoming, Colorado, and Utah holds the distinction of being at the highest elevation of all the tri state corners in the United States at an elevation of 8402 feet above mean sea level. This corner is accessible by Three Corners Road and is marked by a brass disk set in a triangular concrete pad. A sign next to the monument reads:

*“PUBLIC LAND SURVEY MONUMENT  
Tri State Corner of the States of Wyoming, Utah and Colorado  
(Lat. 41° 00' 42.616" N Long. 109° 02' 42.158" Elevation 8402')*

*This point was monumented by surveyor Rolin J. Reeves on July 19, 1879, while completing the survey of the west boundary of the state of Colorado and the east boundary of Utah Territory. The boundary line separating Wyoming Territory from Colorado and Utah Territories was surveyed by US surveyor A V. Richards in 1873.*

*The original monument was found to be disturbed in 1931 and was remarked by US Cadastral Engineer E. V. Kimmel with a brass tablet seated in a concrete monument.*

*This monument is one of the corners of the National Rectangular Cadastral Survey System inaugurated in 1785, that has aided the development and orderly settlement of the public lands of the western states. From these monuments, State and Local Governments and private citizens are provided with easily identifiable boundaries. Such monuments serve as a base for the work of private surveyors in making accurate land sub-divisions and descriptions.*

*Erected by the Kiwanis clubs of Rock Springs, WY, and Craig, CO and the Lions club of Daggett County, UT in cooperation with the Bureau of Land Management, and dedicated on August 21, 1966. Embedded in the concrete base of this monument are some of the original stones which marked the location in 1879.”*

### **Montana – Wyoming – South Dakota**

This corner is interesting due to the surveying error involved. The surveyors running the 27<sup>th</sup> meridian from the south had an error of 23.3 seconds to the west, while the surveyors running the 27<sup>th</sup> meridian from the north had an error of 41.6 seconds to the west as they intersected the 45<sup>th</sup> parallel. As a result, there is a jog of about 0.88 miles between the east line of Wyoming and the east line of Montana.

The corner is marked by a stone post surrounded by a fence. The original post was placed in 1877 and was replaced with the present stone post in 1904. A rededication ceremony for the monument was held 1994.

### **Montana – Wyoming – Idaho**

This corner is unique in that it is found at the crest of the continental divide. It lies within Yellowstone National Park in the area of the 1988 North Fork fire.

Its location is quite remote, and access is only gained by a lengthy uphill hike to an elevation of 8,330 feet above mean sea level.

### **Nevada – Utah – Arizona**

Only ten miles northwest of the Littlefield exit off Interstate 15, this monument is accessible by a rugged and narrow roadway winding through the Mojave Desert landscape.

The thirty-seventh parallel of north latitude defines the borderline between Utah and Arizona. A waist-high red sandstone monument marks the corner and bears the inscription “INT L MONT NL 37”.

### **Idaho – Nevada – Utah**

Like so many of the tristate points in the western United States, the Idaho, Nevada, and Utah corner has no convenient road access. In the 1990's the Bureau of Land Management conducted a survey to retrace the location of this corner. The survey determined that the computed corner was precisely at the location of the existing monument, which dated back to 1873.

In 1999, a new granite monument was installed and dedicated at this point.

### **Oregon – Idaho – Nevada**

This point is said to be the most remote of all the tri state corners, with the nearest public roadway lying over thirty-five miles to the west. It is monumented with a three-sided stone with the letters “N-O-I” on the corresponding faces. The sign at the foot of the monument reads:

*“This monument marks the point established by Daniel G. Majors, U.S. Astronomer and Surveyor in December 1867, on the 42<sup>nd</sup> parallel north.*

*As determined from numerous observations of the stars for latitude this point is 124 miles, 17 chains and 2 links distance south of the initial point which was determined at the confluence of the Owyhee River with the Snake River.*

*This position identifies the southwest corner of Idaho, the southeast corner of Oregon and the north boundary of Nevada.*

*Note the N is for Nevada. The other two faces of the triangular marker are marked O and I.”*

### **Wyoming – Colorado – Nebraska**

The original stone monument marking the corner common to Wyoming, Colorado, and Nebraska was original marked with a stone monument in 1869. Restoration efforts furnished the monument with a three-colored stone base, with red slate on the Colorado side, white sandstone on the Nebraska side, and black slate on the Wyoming side.

The restored monument was dedicated in 1997 and the informational plaque reads thusly:

*“CORNER COMMON TO NEBRASKA AND WYOMING ON THE COLORADO STATE BOUNDARY*

*Oliver N. Chaffee, U.S. Astronomer and Surveyor, established this corner monument August 17, 1869, at the intersection of the forty-first parallel of north latitude with the twenty-seventh degree of west longitude (west of Washington, D.C.). Mr. Chaffee continued the survey northerly to a termination point on the forty-third parallel, marking the first boundary survey of Wyoming Territory.*

*Art Henrickson and Howard Kieler rehabilitated the monument in 1981. A brass disk was drilled into the top center of this corner stone in 1990. Federal, State and Local organizations coordinated additional preservation in 1997.”*

### **Colorado – New Mexico – Oklahoma**

Known as the Preston Monument, this monument is found at the northwest corner of the Oklahoma Panhandle and marks the north end of the Cimarron Meridian (103 degrees west longitude). The Cimarron Meridian represents the border between the Oklahoma Panhandle and New Mexico. The monument is named in honor of Levi S. Preston who surveyed the border lines in this area.

The present monument, erected in 1928, is found in the Black Mesa region is a vertical granite shaft atop a square block pedestal. This point is accessible via a public roadway.

## **Oregon – Nevada – California**

This corner, established by Alexey W. von Schmidt, is found at the intersection of the 42<sup>nd</sup> parallel of north latitude and the 120<sup>th</sup> meridian of west longitude.

The Von Schmidt Marker, as it is known, consists of a large cairn of native stones held together by mortar. Into one of the stones is carved “1872 AW VON SCHMIDT LON 120 LAT 42”.

## **Kansas – Nebraska – Colorado**

This point lies on the 40<sup>th</sup> parallel of north latitude and is accessible by a farm lane. It is marked by a brass disc monument and an adjacent plaque reading:

*“THE CORNER COMMON TO NEBRASKA AND KANSAS ON THE COLORADO LINE*

*The survey of the base line of the 6th principal meridian, which also marks the boundary between Nebraska and Kansas, was extended from the Alma, Nebraska area to the summit of the Rocky Mountains by Jarret Todd and James Withrow in 1859.*

*In 1869 Oliver N. Caffee [sic] surveyed the western boundary of Nebraska, and failing to locate the baseline, set the limestone monument 621.7 feet South of this position.*

*In 1872 John J. Majors surveyed the boundary between Kansas and Colorado, commencing at Chaffee's monument.*

*On June 15, 1873, Edwin Burwell intersected the baseline with Chaffee's state line and established the corner of Nebraska and Kansas on the Colorado line.*

*On October 17, 1990, the Bureau of Land Management re-monumented this tri-state corner.*

*In recognition of those early Surveyors, the skills they demonstrated and the hardships they endured, we dedicate this Plaque on June 1, 1991.”*

## **Texas – New Mexico – Oklahoma**

This point is known as the Texhomex marker. It is found on the Cimarron Meridian (103 degrees west longitude) as surveyed by John H. Clark and marks the southwest corner of the Oklahoma Panhandle.

The corner is marked by a concrete monument with a brass disk on top and is conveniently located near U.S. Highway 56 and Texas State Line Road.

## **Oklahoma – Kansas – Colorado**

The State of Kansas was admitted to the Union in 1861, with the 25<sup>th</sup> meridian west of Washington, D.C. established as the west boundary thereof. In 1858, an attempt was made to organize the new State of Jefferson in this area but by a vote of the residents, it was decided to establish a territorial government.

The corner is monumented by a manhole-sized disc in the intersection of two public roadways. Weld beads on the monument identify the arrangement of the states and their years of admission into the Union, “OKLA 1907 – KANS 1861 – COLO 1876”.

## **Oklahoma – Kansas – Missouri**

The 37<sup>th</sup> parallel of north latitude marks the boundary between Kansas and Oklahoma, while the west line of Missouri runs along the meridian passing through the confluence of the Kansas River and the Missouri River.

The monument is near Interstate 44, just southwest of Joplin, Missouri. The point itself is marked by a square monument flush with the ground.

## **South Dakota – Minnesota – Iowa**

This corner is found at the intersection of 268<sup>th</sup> Street and 488<sup>th</sup> Avenue about 15 miles east of Sioux Falls. The actual corner is marked by a brass pin in the intersection and a commemorative monument sits in the South Dakota corner of the intersection with a plaque reading:

*"TRI-STATE MARKER 1859 SET AT THE JUNCTION OF THE STATES OF MINNESOTA, IOWA AND DAKOTA TERRITORY BY FEDERAL LAND OFFICE SURVEY OF MINNESOTA'S WESTERN BOUNDARY".*

The monument was vandalized in the early 1900s and accordingly restored in 1938. It was later damaged by traffic in 1979 before being restored again in 1981.

## **Oklahoma – Arkansas – Missouri**

This corner lies just outside of Southwest City, Missouri and is commemorated by a monument on the west side of Missouri Route 43 or Oklahoma Route 20. When the west line of Missouri was originally surveyed, a stone monument was placed at 36 degrees 30 seconds north latitude. The present monument was erected in 1915 with part of the original monument imbedded within it. The substantial stone monument was placed upon a new pedestal in 1955.

A roadside parking area grants easy access to visitors.

## **Texas – Louisiana – Arkansas**

The northern boundary of the territory that is now the State of Louisiana was surveyed in 1806 on the 33<sup>rd</sup> parallel of north latitude. In 1895, the western six miles of the line was again surveyed, and a monument was placed at the intersection with the east boundary line of Texas.

The corner position is monumented by a concrete post with a bronze disc imbedded in the top. The monument is found just off of the north side of Louisiana Route 1 or Texas Route 77.

## **Indiana – Ohio – Michigan**

Lying just northeast of Clear Lake, Indiana, the corner common to Indiana, Ohio, and Michigan is commemorated by a stone monument bearing the following inscription:

*“130 FEET SOUTH IS THE POINT WHERE INDIANA, MICHIGAN AND OHIO MEET. THIS MARKER WAS ERECTED BY THE HILLSDALE COUNTY HISTORICAL SOCIETY – 1977-.”*

The actual corner is in the center of North County Road 100 East. In 1817, William Harris set a wood post at the tripoint as part of his survey of the west boundary line of Ohio. In 1869, the wood post was replaced with a sandstone. As part of a 1915 resurvey of the line, the sandstone monument was replaced with a granite block set in concrete beneath the center of the road. In 1999, surveyors from the three states had a new plaque mounted atop the granite monument. A steel cover at the road surface provides access to the monument.

## **Tennessee – Georgia – Alabama**

The corner common to Tennessee, Georgia, and Alabama was by statute to lie at the 35<sup>th</sup> parallel of north latitude, however the actual corner is found approximately a mile to the south, just south of Nickajack Lake.

The current location of this corner is the result of an incorrect survey, performed by James Camak, in 1818. This survey was ordered by the State of Georgia to locate the border between Georgia and Tennessee following the creation of the Alabama Territory by Congress in 1817. The south border of Tennessee was defined as the 35<sup>th</sup> parallel of north latitude when Tennessee was admitted as a state in 1796. Had the border been correctly run on the 35<sup>th</sup> parallel, a portion of the Tennessee River would have entered into Georgia. The location of this boundary became a matter of dispute.

A second survey by James Camak in 1826 was in reasonable agreement with the prior survey. As part of this survey, Camak set a stone at the common corner, which became known as the "Camak Stone". This stone monument was apparently stolen in 2009 and a replacement monument was set in 2011. This monument consists of a concrete post with a brass disc in the top.

Huckabee Lane permits visitors to drive to the foot of the hill where the corner is a short but steep hike away.

### **Tennessee – North Carolina – Georgia**

Like the Tennessee, Georgia, and Alabama tripoint, this corner lies approximately one mile south of the 35<sup>th</sup> parallel due to a surveying error.

This point is at a fence corner and is monumented with a concrete post with a bronze USGS disc at approximately ground level.

### **Tennessee – Kentucky – Virginia**

This point sits atop Tri-State Peak in the Cumberland Gap National Historical Park. It is found by hiking southwest from the saddle of the gap, which was discovered by Dr. Thomas Walker and later became a key point on Daniel Boone's Wilderness Road by which thousands of settlers made their way westward.

This point lies upon the Royal Colonial Boundary of 1655, which runs at 36 degrees 30 seconds north latitude from the Atlantic Ocean to the Mississippi River. The boundary was the idea of King Charles II of England and was initially intended to run all the way to the Pacific Ocean, dividing the Colony of Virginia and the Province of Carolina. In time, this line became a boundary for several states.

The corner common to Tennessee, Kentucky, and Virginia is marked by a disc set in a large flagstone patio. A historical marker sign in the nearby community of Cumberland Gap, Tennessee reads:

*“THREE STATES CORNERSTONE*

*1 ½ mi.*

*The cornerstone for Virginia, Kentucky, and Tennessee is on Three States Peak. The first Virginia – North Carolina (later Tennessee) boundary at this point was surveyed in 1779 by Dr. Thomas Walker and Col. Richard Henderson. The present line and corner were established by compromise following a controversy in 1802. A Supreme Court decision in 1903 finally approved the location.”*

### **Kentucky – Virginia – West Virginia**

Lying about a mile south of the small community of Warncliffe, the corner common to Kentucky, Virginia, and West Virginia is monumented by a USGS disc atop a two-foot-high iron pipe. It is found on the bank of the Tug Fork of Big Sandy River.

Access to this corner requires a short but rugged hike and the fording of Tug Fork, and as such is best attempted in the late summer or autumn.

## **North Carolina – Virginia – Tennessee**

Owing to the limitations of the instruments of the day and compass variations, errors were commonplace in the early surveys of the eastern United States. For example, in 1799 North Carolina and Virginia were involved in a dispute over the location of their common border, which was defined at 36 degrees 30 minutes north latitude. Two separate surveys were conducted, one known as Henderson's Line (North Carolina's north line) and the other known as the Walker line (Virginia's south line). The result of these surveys were two parallel boundary lines. Following numerous attempts at compromise, the dispute made its way to the Supreme Court in 1803, where it was ordered that the border be halfway between the Henderson and Walker lines.

The corner lies in the Iron Mountains, about four miles southwest of Whitetop, Virginia. It is marked by a USGS disc in a mass of concrete at the end of a fence.

## **New York – Pennsylvania – New Jersey**

The corner common to New York, Pennsylvania, and New Jersey is known as the Tri-States Monument or Tri-State Rock. It is also sometimes referred to as Carpenter's Point and lies at the confluence of the Delaware and Neversink Rivers. It is marked by a granite monument atop which a bronze marker is inlaid. The abbreviations of the respective states and lines indicating the directions of their borders are carved in the stone.

In 1931, the U.S. Supreme court described the boundaries of the three states, relative to this corner in the case of *New Jersey v. New York*, writing:

*"... where it (the Delaware) forms a boundary between New York and Pennsylvania. The Delaware continues its course as such boundary to Tristate Rock, near Port Jervis in New York, at which point Pennsylvania and New York are met by New Jersey. From there the river marks the boundary between Pennsylvania and New Jersey until Pennsylvania stops at the Delaware state line, and from then on the river divides Delaware from New Jersey until it reaches the Atlantic between Cape Henlopen and Cape May."*

A witness monument dated 1882 is found near the corner with the following information on the New Jersey side:

*"South 64 degrees W. 72+1/4 feet from this is the Tri State Rock which is the northwest end of the New York & New Jersey Boundary & the north end of the New Jersey & Pennsylvania Boundary."*

The New York side reads as follows:

*"The corner between New York & Pennsylvania is in the centre of the Delaware River 475 feet due west of the Tri State Rock."*

### **Pennsylvania – West Virginia – Maryland**

This corner has the distinction of lying on the famed Mason-Dixon Line, which separates Pennsylvania and Maryland. This four-foot stone pyramid monument is found along a utility maintenance drive at the edge of an electric transmission line clearing. The monument is marked with a date of 1910.

### **Massachusetts – Vermont – New York**

This corner is found just over three miles northwest of Williamstown, Massachusetts, on the side of a ridgeline in the Taconic Range.

The Corner is marked by a massive stone pillar with the date 1896 carved upon it and the respective state abbreviations marked on the corresponding sides.

### **Vermont – New Hampshire – Massachusetts**

The Connecticut river forms the boundary between Vermont and New Hampshire, with New Hampshire claiming the actual bed of the river. This places the tripoint at the low-water mark on the Vermont side of the river at the north line of Massachusetts. A commemorative marker rests on the bank above the river in the form of a substantial granite monument inscribed, *“ERECTED BY THE STATES OF MASSACHUSETTS, NEW HAMPSHIRE AND VERMONT, 1897”*.

The actual corner is marked by what colloquially known as the “Mud Turtle”, which is a copper bolt imbedded into a 6-foot by 6-foot polished granite block with faces marked as "MASS", "VT" and "NH". This monument has been submerged in the Connecticut River since 1960 when the dam at Turner’s Fall, Massachusetts was raised, thereby raising the water level.

### **Connecticut – New York – Massachusetts**

This corner is near the true peak of Mount Frissell of the Taconic Range. It is only accessible by way of a lengthy and steep hike. This point is only three-tenths of a mile away from the highest point in Connecticut, which is on the shoulder of Mount Frissell.

This corner is marked with a large stone pillar inscribed with “MASS-1898-NY-CONN”

### **Rhode Island – Connecticut – Massachusetts**

This boundary corner is marked by a granite monument that stands four feet above the ground in a hilltop clearing. It measures about 14 inches square with a pyramidal top. It is inscribed with “MASS 1883” on the north side, “R.I. 1883” on the south side, and “CONN” on the west side.

The monument was erected in 1883 by a joint Massachusetts and Rhode Island Commission. Connecticut officials disputed the position of the corner.

## **Delaware – Maryland - Pennsylvania**

The Delaware-Maryland-Pennsylvania corner is commonly known as the “Tri-State Point” and represents the northwest corner of Delaware, the northeast corner of Maryland, and the south border of Pennsylvania. Mason and Dixon monumented this corner with a wood post in 1765, which was later replaced by a stone monument in 1849. This monument vanished and was later replaced by W.C. Hodgkins of the United States Corps of Topographical Engineers in 1892.

The arc-shaped boundary of what would become Delaware was identified in the 1681 charter granted to William Penn as:

*“A circle drawn at twelve miles distant from Newcastle northward, and westwards unto the beginning of the 40<sup>th</sup> degree of northern latitude.”*

This stone is marked with “M” and “P” to identify the colony on each side. At the time of Mason and Dixon’s survey, Delaware was not yet a separate entity and therefore was not noted on the monument.

## **The Geographical Extremities of the United States**

### **Northernmost Point of the United States**

The northernmost point of the United States is found at Point Barrow, Alaska, lying a mere 1,291 miles from the north pole. It was named in honor of British geographer, Sir John Barrow in 1826. A modest sign on the icy beach identifies the point.

The Point Barrow area is tragically known as the site of the 1935 plane crash that claimed the lives of famous aviator Wiley Post and beloved humorist Will Rogers.

### **Northernmost Point of the Contiguous 48 States**

Prior to Alaska’s admission to statehood, the Northwest Angle Inlet in the Lake of the Woods, Minnesota held the distinction of being the northernmost point of the United States. The 1783 Treaty of Paris set forth the boundaries of the newly formed United States. However, this boundary description referred to the intersection of the 49<sup>th</sup> parallel with the Mississippi River, which is not possible because the source of the Mississippi is found at Lake Itasca, over 100 miles to the south. Later exploration revealed this error.

Eventually, this miscalculation was rectified by running the border south from the northwest corner of the Lake of the Woods to the intersection with the 49<sup>th</sup> parallel. This correction created the Northwest Angle, known locally as The Angle. This land is cut off from the mainland by the Lake of the Woods and Canadian Land.

A large, semi-conical concrete monument commemorates the location of this corner.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Northernmost Point Marker, Angle Inlet, Minnesota.

### **Southernmost Point of the United States**

Ka Lae (or South Point), Hawaii is the southernmost point of the United States (excluding territorial land). This point is home to rugged cliffs, high winds, and dangerous sea currents. A light beacon stands at the southern tip of the Island of Hawaii at 18 degrees 54 minutes 39 seconds north latitude.

### **Southernmost Point of the Contiguous 48 States**

Numerous points may be considered to be the southernmost point of the contiguous 48 states, depending on definition.

Western Dry Rocks in the Florida Keys lies at 24 degrees 26 minutes 44 seconds north latitude and is above water only at low tide.

Ballast Key, Florida is found at 24 degrees 31 minutes 15 seconds north latitude and is continuously above water. This 26-acre island is part of the Mule Keys and is part of the Key West National Wildlife Refuge.

Certainly, the most visited and well-known of the southernmost points is found at Key West, Florida. Key West holds the distinction of being the southernmost incorporated community in the contiguous 48 states at 24 degrees 32 minutes 39 seconds north latitude. The point is commemorated by the Southernmost Point Buoy, which is a buoy-shaped concrete monument at the corner of South Street and Whitehead Street in Key West. The buoy has been a popular tourist attraction and photo spot since 1983.

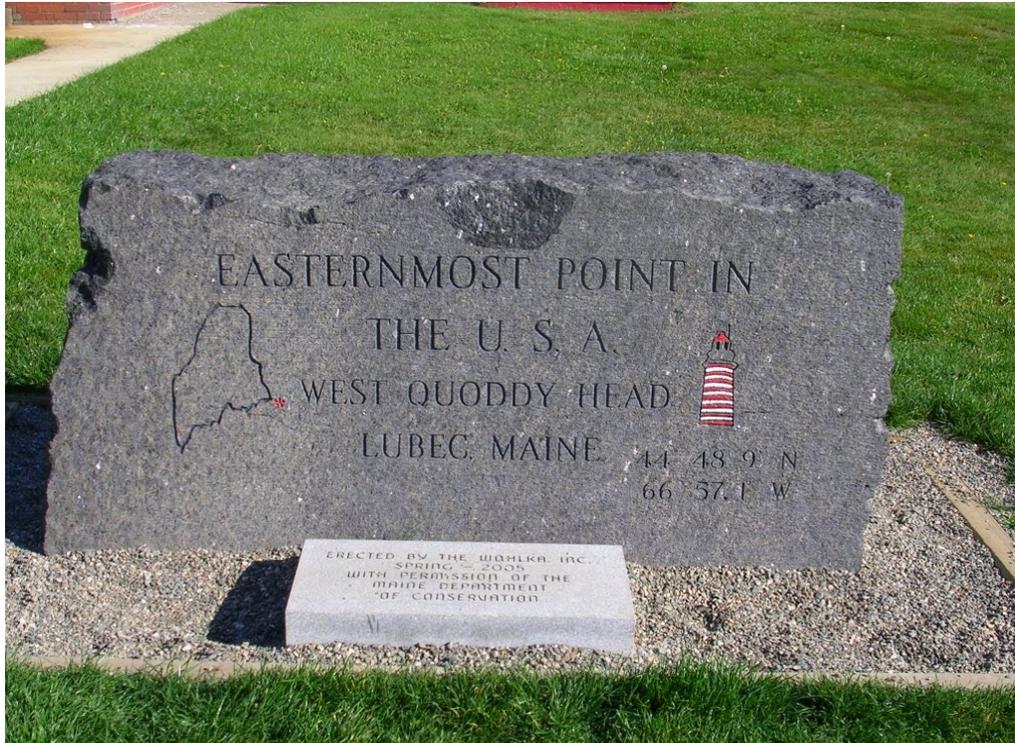


*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Southernmost Point Buoy, Key West, Florida

### **Easternmost Point of the United States**

The easternmost point in the United States is found at Sail Rock, a tiny island just east of Quoddy Head near Lubec, Maine at a longitude of 66 degrees 56 minutes 49 seconds west. In nearby Quoddy Head State Park, a stone monument commemorates the easternmost point.



(Photo: [www.uskings.us](http://www.uskings.us))

Easternmost Point Monument, Lubec, Maine.

Interestingly, this point in Maine is closer to the African continent than any other point in the United States.

### **Westernmost Point of the United States**

The westernmost point of the United States is located in the Aleutian Island chain at the small, uninhabited Peaked Island off the western tip of Attu Island, Alaska. It sits at an *east* longitude of 172 degrees 26 minutes 16 seconds, being west of the international date line.

### **Westernmost Point of the Contiguous 48 States**

The westernmost point in the contiguous 48 states is found at Cape Alava in Clallam County, Washington. It is part of Olympic National Park. Access to the point is provided by a three-mile-long boardwalk starting at a nearby ranger station. The westernmost point lies at 124 degrees 43 minutes 59 seconds west longitude.

### **Highest Point in the United States**

The peak of Denali, formerly known as Mount McKinley, in Alaska is the highest point in the United States with an elevation of 20,310 feet above mean sea level. The Koyukon, who reside in the area surrounding the mountain, have always known it as "Denali". However, in

1896 a gold prospector called it “Mount McKinley” based on his support of William McKinley, who was at that time running for President. The name of Mount McKinley stuck and was the name officially recognized by the United States Government until 2015, when the U.S. Department of the Interior announced that the official name of the mountain would be changed to Denali.

In 1906, Frederick Cook claimed to have completed the first known ascent of Denali but his feat was not verified. The first ascent to be verified was achieved by Hudson Stuck, Harry Karstens, Walter Harper, and Robert Tatum in 1913.

In 2015, a team of surveyors set two global positioning system receivers on the peak of Denali to establish a precise elevation. Data was logged for fourteen hours. As a result of this survey, the United States National Geodetic Survey recognizes an elevation of 20,310 feet above mean sea level, which is ten feet lower than the previously accepted value.

### **Highest Point in the Contiguous 48 States**

The peak of California’s Mount Whitney is the highest point in the contiguous 48 states, with an elevation of 14,505. Part of the Sierra Nevada range, it rises 10,778 feet above the landscape to the east.

As with most mountains, the accepted elevation of Mount Whitney’s summit has changed several times. These changes are due to improved measurement technology and changing vertical datums. The elevation stamped on the United States Geographical Survey’s brass disk at the summit reads 14,494 feet. An older plaque reports an elevation of 14,496.811 feet. Observing the North American Vertical Datum of 1988 (NAVD88) the benchmark at the summit is now reported to be 14,505 feet.

The mountain received its name in 1864 when the California Geological survey named it after Josiah Whitney, the State Geologist of California. After World War II, a group of citizens began a movement in an attempt to have the mountain renamed in honor of Winston Churchill, but the name Mount McKinley still remains.

### **Lowest Point in the United States**

Midway between Fresno and Las Vegas, Badwater Basin in California’s Death Valley National Park holds the distinction of being the lowest point of elevation in the United States, with an elevation of 282 feet below mean sea level. Amazingly, Mount Whitney’s peak of 14,505 feet is a mere 85 miles away and can be reached by automobile in a little over two hours.

Badwater Basin is an endorheic basin, meaning that it collects rainwater but has no outlet to any streams or bodies of water. Rainwater collected in the basin is left to evaporate in the desert heat. The basin contains a spring-feed pool which collects the salty and unpotable water that gives the basin its name.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

## Badwater Basin, Death Valley, California

An informational sign at the parking lot for Badwater Basin reads:

*“Badwater Basin in Death Valley National Park is the lowest point in North America, with an elevation of 282 ft below sea level. At Badwater, significant rainstorms flood the valley bottom periodically, covering the salt pan with a thin sheet of standing water. Each newly formed lake does not last long though, because the 1.9 inches of average rainfall is overwhelmed by a 150-inch annual evaporation rate. This means that even a 12-foot-deep, 30-mile-long lake would dry up in a single year.”*

## Geographical Extremities of the World

### Highest Point in the World

Of all the geographical extremities of the world, Mount Everest is undoubtedly the most familiar. On the border between China and Nepal, Everest’s summit rises to an astonishing 29,031.7 feet above mean sea level. Everest is located in the Mahalangur Himal subrange of the Himalayas.

The summit of Everest attracts mountain climbers from around the world and has claimed the lives of over 300 of them. The first official ascent to the summit was achieved by Edmund Hillary and his guide, Tenzing Norgay in 1953.

The Tibetan name for Mt. Everest is Qomolangma which translates to “Holy Mother”. In 1857, Andrew Waugh, the British Surveyor General of India, recommended that the mountain be named in honor of British surveyor, Sir George Everest, who had been his predecessor as Surveyor General of India. Everest himself objected to the name because it could be neither written nor easily pronounced in the language of the local residents. Regardless of Everest’s objection, the Royal Geographical Society official adopted the name of Mount Everest in 1865.

In 1802, the British government commenced the Great Trigonometric Survey of India to determine the exact locations and heights of the great mountains of the Himalayas. The surveyors used enormous theodolites, weighing 1,100 pounds each and requiring a team of

twelve men to carry. The surveyors met with conflict with the Nepalese government who would not allow them to enter their country, not trusting their intentions. The British surveyors were compelled to make their observations from Terai, just south of Nepal. Three of the surveyors died of Malaria while traversing through Terai.

In 1852, an Indian surveyor and mathematician, Radhanath Sikdar, was the first person to identify what would become known as Mt. Everest as the highest peak in the world. His calculations were repeated and verified by Andrew Waugh, who along with his staff spent two years working through the calculations, making considerations for refraction, air pressure, and temperature due to the incredible distances, both horizontal and vertical, that were involved in the field measurements. At last, in 1856 Waugh presented the findings and declared the peak to be 29,000 feet. Curiously, the public declaration was an elevation of 29,002 feet out of concern that the round number of 29,000 might appear to be the result of a mere estimate.

Subsequent surveys of the peak of Mount Everest have yielded different elevation values, with 29,032 feet being the commonly accepted modern figure.

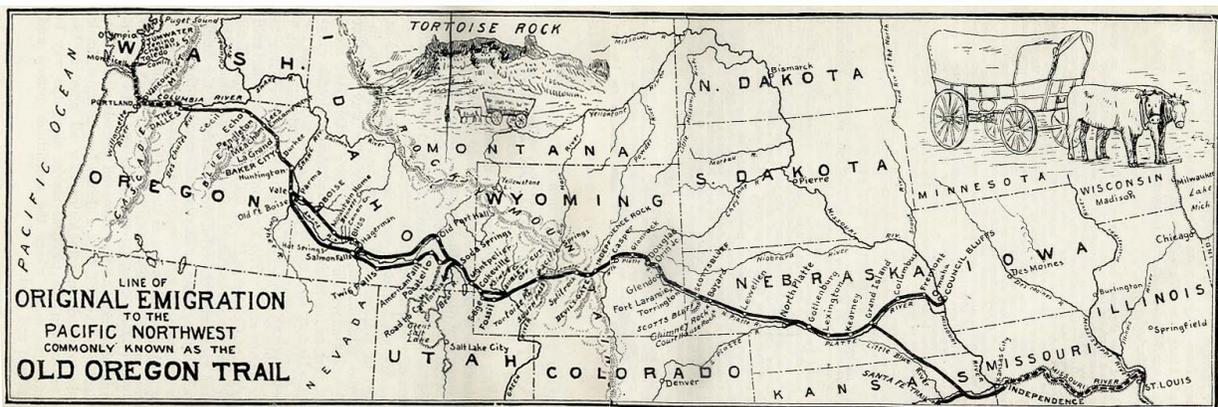
### Lowest Point in the World

The Dead Sea is a salt lake bounded by Jordan to the east and Israel to the west. It is primarily fed by the Jordan River. The normal shoreline of the lake is 1,412 feet below mean sea level, cementing its place as the lowest land elevation on Earth.

The floor of the sea is estimated to be a remarkable 2,409 feet below sea level.

## Section 3 – Important American Trails and their Landmarks

### The Oregon Trail



The Oregon Trail was a 2,170-mile wagon trail running from Missouri to Oregon. The trail crossed territories that now make up the states of Missouri, Kansas, Nebraska, Wyoming, Idaho, and Oregon. Originating around 1811, the trail was only passable on foot or horseback.

By the year 1836, the trail was suitable for wagon travel all the way to Fort Hall, Idaho. Accordingly, a wagon train of westbound settlers was assembled in Independence, Missouri.

Over the next three decades, an estimated 400,000 people migrated west on the Oregon Trail in search of opportunity and inexpensive land. The Oregon Trail was the primary thoroughfare connecting the eastern half of the country to the northwest, which was rich in resources and ripe for settlement. The overland journey took approximately 160 days in the early years of the trail. Improvements and ferries later helped reduce the transit time considerably.

President Jefferson commissioned Meriwether Lewis and William Clark with the following instruction in 1803:

*"The object of your mission is to explore the Missouri river, & such principal stream of it, as, by its course & communication with the waters of the Pacific Ocean, whether the Columbia, Oregon, Colorado and/or other river may offer the most direct & practicable water communication across this continent, for the purposes of commerce."*

Lewis and Clark did find a land route to the Pacific Ocean, however the passes they discovered through the Rocky Mountains were impractical for wagon traffic. On their return trip, the group crossed the continental divide at a different pass that would later bear their names, however this pass would also prove to be too rugged for wagon travel. While Lewis and Clark did not succeed in finding an easy pass through the Rockies, their surveys laid the groundwork for other explorers, who within a few years discovered the most practical route.

In January of 1848, James Marshall discovered gold in the American River in the Sierra Nevada Range.

The Oregon Trail was used through the Civil War, but traffic was reduced when the Panama Railroad made it possible for ships to carry cargo from New Orleans and the eastern seaboard to Panama. The cargo could then be carried by rail across Panama, loaded on ships, and carried north to ports on the west coast.

Many natural landmarks served as guideposts to the early travelers of the Oregon Trail. Near present-day Bridgeport, Nebraska are Courthouse Rock and Jail Rock. These impressive 400-foot-tall sandstone formations were the first noteworthy formations encountered on the journey west.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Jail Rock (left) and Courthouse Rock (right), near Bridgeport, Nebraska

The historical marker at Courthouse and Jail Rocks reads as follows:

*“Courthouse and Jail Rocks are two of the most famous landmarks of westward migration. Nearby passed the Oregon-California Trail, the Mormon Trail, the Pony Express Trail and the Sidney-Deadwood Trail. The rocks were vanguards of unforgettable scenic wonders that travelers would encounter farther west, including Chimney Rock's curious spire and the rugged heights of Scott's Bluffs. Hundreds of overland emigrants mentioned Courthouse Rock in their diaries. Often called a "castle" or "solitary tower," the name Courthouse was first used in 1837. One 1845 traveler described the rock as "resembling the ruins of an old castle [which] rises abruptly from the plain. . . . It is difficult to look upon it and not believe that art had something to do with its construction. The voyagers have called it the Courthouse; but it looks infinitely more like the Capitol." Courthouse and Jail Rocks, rising some 400 feet above the North Platte Valley, are erosional remnants composed of clay, sandstone and volcanic ash. The rocks are listed in the National Register of Historic Places and in the Nebraska Natural Areas Register.”*

A mere fourteen miles to the northwest is Chimney Rock, a 286-foot-tall formation that served as a well-known waypoint along the Oregon Trail. Consisting of Brule clay, volcanic ash, and sandstone, its unmistakable spire rising above the level plain is visible from miles away.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Chimney Rock, near Bayard Nebraska.

The historical marker at Chimney Rock offers the following information:

*“Rising 470 feet above the North Platte River Valley, Chimney Rock stands to the south as the most celebrated of all natural formations along the overland routes to California, Oregon, and Utah. Chimney Rock served as an early landmark for fur traders, trappers, and mountain men as they made their way from the Rockies to the Missouri River. To later emigrants, the solitary spire marked the end of plains travel and the beginning of the rugged mountain portion of their journey. The tip of the formation is 325 feet above the base. Chimney Rock is composed of Brule Clay with interlayers of volcanic ash and Arickaree sandstone. Thousands of travelers carved their names in the soft base only to have these records disappear through the forces of nature. This eroded landmark is smaller than that which greeted early visitors to the area, but its presence for the generations of the near future is secure. In 1941 the eighty acres containing the site were transferred to the Nebraska State Historical Society by the Roszel F. Durnal family. In 1956 Norman and Donna Brown deeded additional land to the Society. In that same year, Chimney Rock was designated a National Historic Site by the federal government.”*

Another twenty miles to the northwest lies Scotts Bluff, which is just outside of present-day Gering, Nebraska. The Scotts Bluff area features two bluffs, known as South Bluff and Scotts Bluff, and five additional rock formations called Dome Rock, Sentinel Rock, Saddle Rock, Eagle Rock, and Crown Rock. The early travelers of the Oregon Trail considered Scotts Bluff to be an ominous landmark, as it hinted at the transition from the flat plains to the mountainous terrain ahead.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Scotts Bluff, near Gering, Nebraska.

Crossing into present-day Wyoming, travelers on the Oregon Trail encountered Register Cliff, which was another important navigational landmark. The 100-foot-high cliff is made of a relatively soft and chalky stone and because of that, it was common for settlers to chisel their family names into the stone. This fact has established Register Cliff as a particularly important historical record. It was an especially valuable waypoint to the travelers as it assured them that they were headed for the correct pass through the mountains.

The historical marker at the base of Register Cliff reads:

*“The wayfarer's penchant for inscribing names and dates on prominent landmarks excites the interest of his descendants. Regrettably, marks of historic value are often effaced by later opportunists.*

*Along the Oregon Trail, famed transcontinental route of the 19th century, pertinent dates are from the 1820's through the 1860's. Three outstanding recording areas exist within Wyoming: Register Cliff here; Independence Rock, 180 miles west; and Names Hill, a further 175 miles along the Trail's wandering course. Register Cliff and Names Hill are self-evident titles; Independence Rock derives from a July 4th, 1825, observance which, according to some authorities, was staged by Mountain Men of Fur Trade fame.*

*Register Cliff invited emigrants because broad river bottoms offered pleasing campsites and excellent pasture. Hardship and illness were inevitable to Trail travel; of 55,000 emigrants during a peak year, some 5,000 died enroute. Cliffside graves attest to the high mortality. This being their lot, travelers eagerly sought and singularly valued recuperative layovers. Here, rest offered the opportunity to register.*

*But not all who registered were worn and grieving emigrants. early inscriptions were by Mountain Men inured to wilderness life -- many descendants of two centuries of French Fur Trade; One reads: 1829 This July 14. Does it denote an observance? If the American Independence Day was celebrated in 1825 at Independence Rock could the French trappers have noted Bastille Day at Register Cliff in 1829?"*

Another landmark upon which the travelers of the Oregon Trail marked their names was Independence Rock, a 130-foot-tall granite formation found in a desolate region of central Wyoming along State Highway 220.

Names Hill is yet another "recording area" where travelers carved their names into the rock. Names Hill is a bluff adjacent to a popular crossing of the Green River, about five miles south of the town of La Barge in southwestern Wyoming.

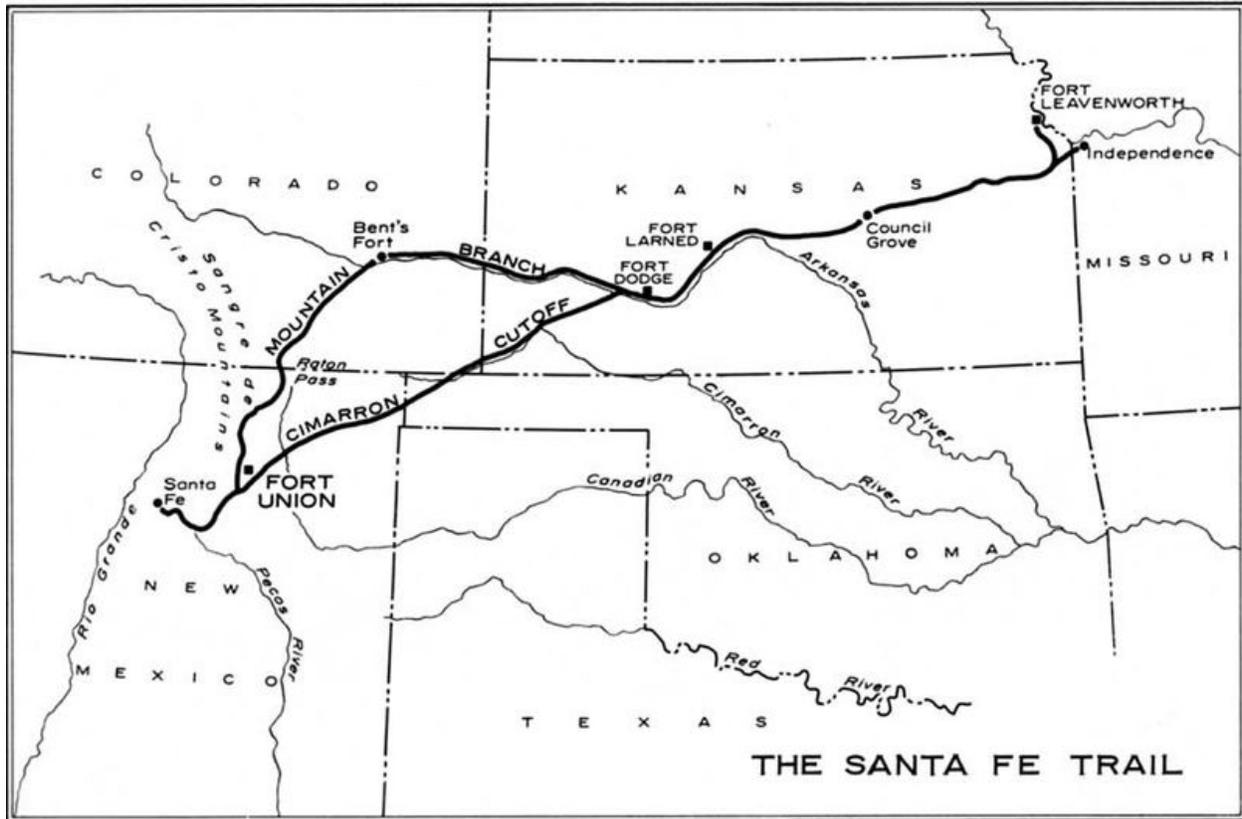
In Boise, Idaho, twenty-one obelisk monuments mark the Oregon Trail's course through the city. Additionally, several historical sites relating to the trail are found. At the spot on the Boise River where early travelers were ferried across, the Oregon Trail Memorial Bridge now stands.



(Photo: [www.idahostatesman.com](http://www.idahostatesman.com))

Oregon Trail monument, Boise, Idaho.

## The Santa Fe Trail



The Santa Fe Trail was an economically vital route that ran between Franklin, Missouri and Santa Fe, New Mexico up through 1880 when the railroad was completed. The trail was conceived as a way to facilitate trade between Americans in the eastern half of the United States and the Spanish settlers in the southwest.

Pierre Vial, the French Explorer, pioneered the route for the trail in 1792, and French fur traders from Missouri soon developed a successful fur trade in Santa Fe. After the Louisiana Purchase, American traders and settlers began to use the trail as it effectively allowed goods from the Mississippi River to be hauled from Saint Louis to Independence, and then on to Santa Fe.

Settlers looking for plentiful and inexpensive land made heavy use of the Santa Fe Trail and the trails that branched off of it toward fertile lands in the west, helping to bring to fruition the concept of Manifest Destiny, the belief that United States was destined to stretch from the Atlantic to the Pacific.

The Santa Fe Trail was a 900-mile course, fraught with vast plains, deserts, and mountains. The weather provided additional hardships with fierce winters and hot summers. Additionally, there was the ever-present danger of attacks from the Apache and Comanche, who

considered the travelers to be unwelcome trespassers on their land. In spite of these difficulties, the Santa Fe Trail, like the Oregon Trail, played a major role in opening the western United States for settlement and commerce. Eventually, the development of railroads across the continent made wagon trails obsolete.

Numerous natural landmarks existed along the Santa Fe Trail. Upon setting out from Franklin Missouri, William Becknell and his fellow travelers crossed the Missouri River on the ferry at Arrow Rock and filled their water stores at the nearby Santa Fe Spring. This spring came to be a popular landmark and a source of water for people beginning their westward treks. Today, the Arrow Rock State Historic Site commemorates this critical point on the trail. A historical marker found at the site reads:

*"At the Arrow Rock State Park entrance stands this pioneer town as a memorial to the Boon's Lick Country and the expanding frontier. In the 24-acre park are Arrow Rock Tavern, built by Joseph Huston, ca. 1834, for travelers on the Santa Fe Trail, restored and operated as a museum an Inn by the State Society of D.A.R. and State of Missouri; Arrow Rock Academy museum, a former girls' school, chartered 1843; "a one-man" jail; the state-restored George C. Bingham House; and other sites.*

*Southwest of town are Sappington and Arrow Rock cemeteries; Sappington and Marmaduke house; Nathaniel B. Tucker home, "Ardmore"; Site of Thomas A. Smith's prairie farm, "Experiment." Some 12 miles southeast is grave of fur trader William H. Ashley, Missouri's first lieutenant governor. Across the river is Boon's Link, where Daniel Boones' sons boiled salt probably as early as 1807.*

*Near town lived D. John Sappington, noted for his "Anti-Fever (quinie) Pills," auther first medical book west of Mississippi, founder of Sappington School Fund; and Governors M.M. and John S. Marmaduke and C.F. Jackson.*

*This ancient Site was noted by explores and travelers. The Frenchman D'anville marked Pierre a Fleche (Fr. Arrow Rock) on his map of the Missouri River, 1755; the Lewis and Clark Expedition noted the site, 1804; and S.H. Long of the Yellowstone Expedition, 1819, said that it got its name from the Indians' using the outcropping flint to point their arrows.*

*A blockhouse, which also served as an Indian trading post, was built and operated here, 1813-1814, by George C. Sibley, trading agent from Fort Osage (Missouri). Also in the area were Cox's Fort. McMahan's Fort, and across the river Cooper's Fort-family defenses in the War of 1812.*

*In 1821 William Becknell crossed the river here, at what became Santa Fe Crossing, on the first successful trading expedition to Santa Fe.*

*Laid out as new Philadelphia in 1829, and later renamed Arrow Rock, the town served as seat of Saline County for one year, 1839. During the Civil War a part of the town was burned."*

Sapling Grove on Turkey Creek, in present-day Overland Park, Kansas, was an important campsite along the Santa Fe Trail. Today, a wooded suburban park commemorates this once popular stopping point.

Pawnee Rock, situated between Great Bend and Larned in central Kansas represented the approximate halfway point on the Santa Fe Trail. This sandstone outcropping rises from the surrounding prairie and as such has served as a landmark to Native Americans and settlers alike.

For travelers on the Santa Fe Trail, Pawnee Rock was not without its dangers. Native Americans hostile to western settlement used the rock as a lookout point and as cover from which to stage ambush attacks.

Sadly, Pawnee Rock was heavily damaged in the late 19<sup>th</sup> century by railroad construction and by settlers cutting away stone for building. In 1908, the remainder of the rock was purchased by the Woman's Kansas Day Club, who donated it to the State of Kansas so that it may be preserved. In 1912, an elaborate stone monument was erected and dedicated to Pawnee Rock State Historic Site.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Pawnee Rock Monument at the Pawnee Rock State Historic Site in Kansas.

A nearby historical marker reads:

*“A mile north east is Pawnee Rock, a famous landmark on the Santa Fe Trail. Considered the mid-point of the long road between Missouri and New Mexico, Pawnee Rock was a symbol of challenges overcome. Many early travelers mentioned it in their journals, and many of them scratched their names into its soft surface. Here young Kit Carson, standing guard one dark night in 1826, is said to have shot his own mule, mistaking it for a Pawnee. Perhaps it was his unkind companions who named Pawnee Rock to commemorate the young man's blunder*

*Freighters, soldiers, gold seekers, and emigrants admired the rock as they paraded by on the trail. In later years local settlers and railroad builders quarried the rock down to about half its original height. An overlook, monument and historical signs now grace its reduced summit.”*

The Rabbit Ears are a pair of mountain peaks near present-day Clayton, New Mexico. They formed a distinctive waypoint along the Santa Fe Trail. The two peaks that make up the Rabbit Ears and Rabbit Ear Mountain and Mount Clayton.

The Rabbit Ears were of particular importance to travelers on the trail because several creeks in the area provided sources of good water. Further, they were visible across the plains from over 30 miles away, providing an excellent navigational landmark.

Raton Pass is on the border of Colorado and New Mexico. Passing through the rugged and permanently snow-covered Sangre de Cristo Mountains, the pass represented a crucial but hazardous portion of the Santa Fe Trail. The pass is found between Trinidad, Colorado and Raton, New Mexico. Today, Interstate 25 provides passage through the mountains at this spot.

A boulder at the pass is imbedded with a plaque that reads:

*“Raton Pass Between Colorado and New Mexico Altitude 7,881 feet*

*Raton" is spanish for "Mouse".  
On mountain branch Santa Fe Trail  
Crossed by Kearny's Army of the  
west in the mexican war and by  
first regiment, Colorado Volunteers  
in the civil war. "Uncle Dick"  
Wooten's toll road built 1865.  
Railroad constructed 1878.  
Improved Highway built 1919 – 1922”*

The ominously named Starvation Peak (also called Bernal Hill) lies near the tiny community of Bernal, New Mexico. A flat-topped butte rising nearly 900 feet above the surrounding terrain, it was an easily identifiable waypoint on the Santa Fe Trail. Just as importantly, the springs at the base of the butte were a reliable source of water. Accordingly, Bernal became a popular campsite along the trail.

The butte known as Wagon Mound was the last major natural landmark on the Santa Fe Trail. It is named for its shape, which resembles a Conestoga wagon. This formation is found next to the town of Wagon Mound, adjacent to Interstate 25 in northeast New Mexico. The site has been established as a National Historic Landmark.

To the weary westbound travelers, Wagon Mound was a welcome landmark because it signaled that Santa Fe was only 100 miles away. Equally as important, the nearby Santa Clara Canyon contained a reliable spring that provided much needed water for people, livestock, and working animals.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Wagon Mound, at Wagon Mound, New Mexico.

## **The Wilderness Road**

*"Thus we behold Kentucky, lately an howling wilderness, the habitation of savages and wild beasts, become a fruitful field; this region, so favourably distinguished by nature, now become the habitation of civilization, at a period unparalleled in history, in the midst of a raging war, and under all the disadvantages of emigration to a country so remote from the inhabited parts of the continent."*

*Daniel Boone, The Adventures of Colonel Daniel Boon[e] (1784).*

In 1775, frontier hero Daniel Boone blazed his way through a gap in the Appalachian Range, through present day Kentucky to the Ohio River. This trail would come to be known as the Wilderness Road and would become the pathway to the west (meaning in this era the land west of the Appalachians) for about 300,000 settlers. These pioneers established settlements throughout Kentucky and the Ohio River Valley.

The Wilderness Road had its prehistoric beginnings as a buffalo trace, used by the herds of bison that inhabited the region. Later, the Cherokee and Shawnee used this trail as a transportation route, oftentimes to wage war against one another. The native name for this trail can be generally translated to "The Warrior's Path" or "Path of the Armed Ones".

In 1750, an expedition led by Dr. Thomas Walker of the Loyal Land Company set out from Virginia in search of fertile land in the west that may be suitable for settlement. Walker's expedition passed through the Cumberland Gap, near the common corner of Virginia, Kentucky,

and Tennessee, and proceeded into southeastern Kentucky. Finding the terrain to be unsuitable for settlement, Walker's expedition returned to Virginia. Walker's detailed journal of the expedition proved to be a useful resource for later explorers, including Daniel Boone.

Daniel Boone first traveled through the Cumberland Gap on a hunting trip in 1767. Seeing potential in the western lands, he assembled a group of would-be settlers in 1773 for the purpose of developing homesteads in Kentucky. Sadly, this group was attacked by Cherokees, resulting in the deaths of two members of Boone's party, including his son.

In 1775, a group of investors formed the Transylvania Company with the goal of settling Kentucky and establishing it as the 14<sup>th</sup> colony. The company hired Daniel Boone, because of his considerable knowledge of the region, to blaze a trail through the Cumberland Gap and into Kentucky. In time, the trail was extended to reach the Falls of the Ohio at Louisville, Kentucky.

Boone and his team of 30 men set out from what is now Kingsport, Tennessee, traveling along the Warrior's Path through Big Moccasin Gap (between Weber City and Gate City, Virginia) of the Clinch Mountains. Boone's team crossed the Clinch River at the site of present-day Speers Ferry, Virginia, following Stock Creek to Kane's Gap at Powell Mountain, and entering into the Powell River Valley. Crossing the Powell River Valley and travelling along the long ridge of the Cumberland Mountains, the group came to the Cumberland Gap and passed through to Kentucky. Just outside of their selected settlement site on the Kentucky River, Boone's party was attacked by a group of Shawnee warriors who viewed the men as trespassers.

The Wilderness Road quickly became the main road for eastern settlers looking to move westward. As the population boomed, communities began to form throughout eastern Kentucky, leading to its admission as the 15<sup>th</sup> state in 1792. After victory in the Revolutionary War, the nation yearned to grow westward. The Wilderness Road opened the vast expanse of land between the Appalachian Range and Mississippi River to the settlement of what proved to be excellent land for every purpose. Still today, this eastern part of the Mississippi River basin remains a vital agricultural and industrial region.

With the development of improved transportation in the form of canals, and later, railroads, the Wilderness Road gradually became obsolete beginning in the middle of the 19<sup>th</sup> century. A number of roadways now trace portions of this important historic trail.

Many natural and manmade landmarks along the trail served as waypoints to the early settlers. Among the first to be encountered by the westbound travelers was Big Moccasin Gap. A marker at the gap reads:

*"In March 1775, Daniel Boone made a road through this gap to Boonesboro, Kentucky. It followed the original Indian path and was known as the Wilderness Road. For a long time, it was the main route to Kentucky from the east."*

Carter's Fort was a popular stop for travelers of the Wilderness Road. It was found eight miles from the North Fork of the Clinch River and was also known as Rye Cove Fort, Rye Cove Station, Crissman's Fort, and Fort Lee.

Martin's Station was another important stop on the east side of the Cumberland Gap. Between present-day Ewing and Wheeler, Virginia on State Highway 58, it originated as a frontier fort. Its significance was due to its location as an intermediate point along the Wilderness Road, providing travelers an opportunity to prepare for their journey across the mountains.

Martin's Station was also the site of an earlier Cherokee raid that caused the fort to be abandoned for six years. Today, a state park commemorates the location of Martin's station and a monument to its founder stands in tribute.

*"Dedicated to the Memory of General Joseph Martin, Martin's Station and the more than 200,000 settlers whose courage and fortitude helped to carve our great nation out of a vast wilderness and gave birth to the American frontier spirit."*

A roadside historical marker at Martin's Station reads:

*"Martin's Station - In March 1769 Joseph Martin led a party of men and attempted to establish a settlement nearby. By that fall they abandoned the site after conflicting with Native Americans. Martin returned here with a party of men in early 1775 and built a fort, known as Martin's Station on the north side of Martin's Creek. The wooden fort contained between five and six cabins built about 30 feet apart with stockades between each building. This site was abandoned in June 1776 during further regional conflicts between settlers and Native Americans."*

A well-known natural landmark on the Wilderness Road was Indian Mound, or Ely Mound. This mound is a 12-foot-high temple-style mound that dates back as early as the 1200's.

Perhaps the most striking natural landmark along the wilderness road is the Cumberland Mountain ridge known as the White Rocks near Ewing, Virginia. These gorgeous sandstone cliffs are visible for miles across the valley floor and served as a signal to travelers that the Cumberland Gap was only a day's travel away. Today, the White Rocks are a popular destination for hikers and rock climbers.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

### White Rocks, Ewing Virginia

A nearby historical marker reads:

*“White Rocks – The cliffs to the north were a familiar landmark along the Wilderness Road which was blazed by Daniel Boone in March 1775, and which was the principal route from Virginia to Kentucky. They are part of the Cumberland Mountains.”*

The most recognizable and important landmark on the Wilderness Road was the passageway through the Appalachian Range known as the Cumberland Gap, a mountain pass through the long ridge of the Cumberland Mountains.

The gap was named after Prince William, Duke of Cumberland, who the explorer Dr. Thomas Walker admired. Dr. Walker likewise named the Cumberland River after the duke.

A historical marker reads:

*“The pass was long the gateway to the west. On April 13, 1750, Dr. Thomas Walker reached the gap, which he named for the Duke of Cumberland, son of George II. A few years later Daniel Boone and numberless pioneers passed through it on the way to Kentucky. In August 1863, Cumberland Gap was captured by a Union Army under General Ambrose E. Burnside.”*



*(Photo: [www.waymarking.com](http://www.waymarking.com))*

Boone's Trail D.A.R. Monument at the saddle point of the Cumberland Gap.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

The Cumberland Gap, at the border of Kentucky and Virginia.

The strategic significance of the Cumberland Gap was expressed by Union General George W. Morgan after viewing the fortifications thereupon. The General wrote to Secretary of

War Edwin M. Stanton, "Cumberland Gap is the strongest position I have ever seen except Gibraltar".

Proceeding into Kentucky, the next major natural landmark on the Wilderness Road is known as the Pine Mountain Narrows. This is a V-shaped notch in the ridge of Pine Mountain through which the Cumberland River flows. The Narrows were a most welcome landmark to the pioneers because they represented a gateway out of the mountains into more agreeable foothills, with arable land (the object of their journey) being not much farther ahead.

In London, Kentucky a monument on the lawn of the Laurel County Courthouse commemorates the intersection of the Wilderness Road and the original Boone Trace, which was the first trail blazed out of the Cumberland Gap. One face of this monument is inscribed:

*"1775-1795  
Boone Trace  
Kentucky  
Sesquicentennial  
1792-1942  
George Rogers Clark  
Passed this way  
1776 to Virginia  
For help for  
Colonists"*

The opposite face reads:

*"1775-1795  
Wilderness  
Road  
Crossed  
Boone Trace  
Here  
Laurel County  
Established  
1825  
London 1826"*

The traditional end of the Wilderness Road is at Boonsboro, Kentucky, just a few miles southeast of Lexington. The land in this area was excellent for settlement and as such, any further organized trail conveying multitudes of people from one place to another was no longer necessary. Later extensions of the trail eventually proceeded north to the Falls of the Ohio, at present-day Louisville. This opened the rich land north of the Ohio River to settlement. Interestingly, at the Falls of the Ohio existed a trail known as the Buffalo Trace, which was an ancient bison-worn trackway traversing southern Indiana to the important community of Vincennes (the site of George Rogers Clark's victory against the British in the Revolutionary

War). From Vincennes, the buffalo trails split, making their ways west across Illinois to the Mississippi River and north to Lake Michigan at the site of what would become Chicago.

In a very real way, the pioneers who made their way from Virginia through Kentucky completed the missing mid-section of a network of paths, trails, and roads that connected the colonies on the eastern seaboard to what would become the major cities of the Midwest. Furthermore, The Wilderness Road, the Buffalo Trace, the Santa Fe Trail, the Oregon Trail, and other corollary trails taken together meant that by the early 1800's, overland transportation from the eastern United States to the southwest or even to the west coast was possible.

## **Section 4 – International Landmarks of Interest to Surveyors**

### **The Prime Meridian**

The Prime Meridian is a randomly selected reference meridian passing through the Royal Observatory at Greenwich, England. It was established in 1851 by Sir George Airy and within a generation became the most important longitudinal reference in worldwide shipping and navigating. In 1884, U.S. President Chester A. Arthur hosted the International Meridian Conference, including delegates representing 25 nations, in Washington D.C. The conference chose to observe the meridian at Greenwich as the Prime Meridian, owing to its overall international popularity.

Prior to the acceptance of the Prime Meridian, most advanced countries used their own local meridian. In 1721, Great Britain established its own national meridian through the new Royal Observatory at Greenwich, now part of London. Over the years, the position of the meridian was moved slightly several times due to the installation of new and improved equipment within the observatory. Finally, the Prime Meridian was defined as an imaginary meridian around the entire earth, passing through the north pole, the south pole, and Sir George Airy's transit circle at the Royal Observatory.

Numerous monuments and markers commemorate the location of the Prime Meridian. The most famous of these markers is the metal strip inlaid in the pavement of the courtyard of the Royal Observatory. In 1999, a green laser was installed in the Royal Observatory, emitting a beam aligned with the Prime Meridian.

This spot at the observatory is a popular tourist attraction where people often pose for photographs while having one foot in each hemisphere.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Prime Meridian Marker, Greenwich, England.

Another popular tourist stop is the Prime Meridian Walk on the north bank of the Thames in London at the site of the former Brunswick Wharf Power Station. It began as a simple bronze strip with parallel rows of trees on each side. In 2008, an ornate compass rose was constructed with colorful paving stones. The avenue leading to the compass rose is called Prime Meridian Walk.



*(Photo: [www.waymarking.com](http://www.waymarking.com))*

Prime Meridian Walk, London, England.

The Prime Meridian exits Great Britain at Peacehaven, which lies on the northern shore of the English Channel. A commander in the Royal Navy spearheaded an effort to erect a commemorative monument at the site. A public fundraiser covered the cost of this monument which was unveiled in 1935.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Prime Meridian Monument at Peacehaven, England.

The Millennium Stone is found next to St. John the Baptist Church in Somersham, England. The stone was unveiled in 2001 with plaques that read:

*“SOMERSHAM MILLENNIUM STONE. ERECTED AS A LASTING MEMORIAL TO THE YEAR 2000. FOR THREE CENTURIES THE ZERO MERIDIAN HAS BEEN DEFINED SIX TIMES FOR DIFFERENT PURPOSES. THERE IS NO RIGHT OR WRONG LINE AS EACH HAS ITS OWN SIGNIFICANCE. BUT ONE IS MORE FAMOUS. 71 METRES TO THE EAST LIES THE GREENWICH PRIME ZERO MERIDIAN ADOPTED BY INTERNATIONAL TREATY IN OCTOBER 1884.”*

*“ERECTED BY THE GENEROSITY OF BRIDGET & RICHARD WELLS, HUNTINGDONSHIRE DISTRICT COUNCIL, M.A.D. FUND & RESIDENTS OF SOMERSHAM.”*



*(Photo: [www.waymarking.com](http://www.waymarking.com))*

The Meridian Stone, Somersham, England.

## **The Equator**

While the location of the Prime Meridian is an arbitrary position, the location of the Earth's equator is a direct function of the earth's shape and rotation. The equator is the imaginary line located at zero degrees latitude and lies at the midpoint of any meridian line between the north pole and the south pole. By definition, the equator is the intersection of the spheroid with the plane perpendicular to its axis of rotation.

An interesting note about sites on the equator is that sunrise and sunset times are virtually constant throughout the year. Equatorial locales do not experience longer days in the summer and longer nights in the winter as the rest of the world does.

The equator crosses the land of eleven different nations which are: Brazil, Ecuador, Colombia, Indonesia, Somalia, Kenya, Uganda, Sao Tome` and Principe, Gabon, Republic of the Congo, and the Democratic Republic of the Congo. Monuments signifying the location of the equator are commonplace.

Among the more elaborate monuments to the equator is found at La Ciudad Mitad del Mundo (Middle City of the World), just to the north of Quito, Ecuador. This is the location of the Monument to the Equator and memorializes the 18<sup>th</sup> century Franco-Spanish Geodesic Mission led by Louis Goudin, Pierre Bouguer, and Charles Marie de La Condamine that determined the location of the equator.

The monument stands just short of 100 feet tall and was completed in 1982. It is made of iron and reinforced concrete and has a veneer of polished andesite.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Monument to the Equator, Quito, Ecuador.

Also found at Ciudad Mitad Del Mundo is the Quitsato Sundial. It was constructed in 2006 to bring awareness to the immense astronomical knowledge possessed by the native cultures in the region.

The sundial is made of a circular platform, 177 feet in diameter, upon which is inlaid an eight-point star of dark pebbles, the point of which indicate the cardinal directions plus the equinoxes and solstices. The gnomon of the sundial is a 32-foot-high cylindrical tube.



*(Photo: www.wikipedia.com)*

### Quitsato Sundial, Quito Ecuador

Another large monument found on the equator is the Equator Monument in Pontianak, Indonesia, on the Island of Borneo. Pontianak is the largest city on the equator. The monument was originally completed in 1930 and rebuilt in 1938. In 1990, it was rebuilt and a replica monument, five times larger in size was constructed. The monument is a tourist attraction, particularly on the days of the spring and autumn equinoxes, when for a few minutes at midday, the shadows cast by the monument completely disappear, with the sun being directly overhead.



*(Photo: www.atlasobscura.com)*

The Equator Monument, Pontianak, Indonesia.

### **Marco Zero – Sao Paulo, Brazil**

Marco Zero (Zero Milestone) is a monument in Sao Paulo Brazil. Installed in front of the Sao Paulo Cathedral in 1934, the monument was to mark the center of the city from which all distances would be measured and from which street names and numbers would be referenced.

The monument is a hexagonal marble shaft upon a granite pedestal with a bronze plate on top. Each face of the monument is marked with the city that it faces.



(Photo: [www.wikipedia.com](http://www.wikipedia.com))

Marco Zero, Sao Paulo, Brazil.

### **Point Zero – Paris, France**

In the public square outside the Notre Dame Cathedral in Paris is found the monument known as Paris Point Zero. It was placed as a geographic marker from which all distances in Paris were to be measured.

While many cities and countries possess a similar “Zero Point”, the one in Paris is unique in that it was supposedly intended to mark the center point of the city. The monument is an octagonal brass plate inlaid into the public square.



(Photo: [www.atlasobscura.com](http://www.atlasobscura.com))

Point Zero, Paris, France.

## **Biographical Sketches**

### **Prospect K. Robbins**

Born in 1789 in Pittsfield, Massachusetts, Prospect K. Robbins was a surveyor of renown in St. Charles and Lincoln Counties in Missouri. He is most known for establishing the Fifth Principal Meridian, which was the foundational meridian for the public land surveys in a large portion of middle-America.

Robbins served as a U.S. Army Lieutenant in the War of 1812. Robbins died in Missouri in 1847.

### **Joseph C. Brown**

Joseph C. Brown is noteworthy for his major surveys in the Louisiana Territory, including the Initial Point of the Fifth Principal Meridian, the First Plat of St. Louis, the boundary between Missouri and the Indian Territory (now Kansas), the Santa Fe Trail.

Brown also served as the sheriff and county engineer of St. Louis County, Missouri.

### **Thomas Hutchins**

Thomas Hutchins was born in 1730 in New Jersey. At the age of sixteen, he joined the British militia and served in the French and Indian War. In 1766, he took an engineering position with the British Army and joined an expedition down the Ohio River to survey the land newly acquired by the 1763 Treaty of Paris. Hutchins built his career conducting surveys throughout the southern colonies. In 1774, he participated in a survey of the Mississippi River.

In 1781, Congress appointed Hutchins the Geographer of the Southern Army, a title which was later changed to Geographer of the United States. He was the only person to ever hold that title. In 1785, Hutchins set out on his survey of the Seven Ranges in the Northwest Territory. Hutchins died in 1789 while working on this important survey.

### **Charles Mason**

Charles Mason was born in Gloucestershire, England, and spent the early years of his career serving as an assistant to Astronomer Royal, Reverend James Bradley. Mason spent much of his time toward the perfection of Tobias Mayer's Lunar Tables, a critical resource for maritime navigators.

In 1761, Mason embarked upon a sea voyage to Bencoolen on the Island of Sumatra to observe the transit of Venus for the purpose of collecting data as part of an organized international scientific effort to compute the distance between the Earth and the Sun. Due to a delay caused by an attack on the H.M.S. Seahorse by a French naval ship, Mason's team observed the transit instead from the Cape of Good Hope in South Africa and then continued to

the Island of St. Helena where Mason assisted famed British astronomer, Nevil Maskelyne in collecting tidal data until the end of 1761.

Beginning in 1763, Mason began his famed work with Jeremiah Dixon (who had accompanied Mason on the expedition), at the request of Lord Baltimore and William Penn, to settle the boundary line between Pennsylvania and Maryland. Mason kept a detailed journal of astronomical observations and cultural information collected during of the survey.

Upon completion of the Mason-Dixon Line survey, Mason returned to Greenwich, England was employed by the Royal Society on an astronomical assignment at Cavan, Ireland. During this eventful six-month assignment, Mason observed another transit of Venus, a partial solar eclipse, the moons of Jupiter, and the Great Comet of 1769.

In 1786, Mason relocated with his family to Philadelphia, but became ill and died in October of the same year.

### **Jeremiah Dixon**

Jeremiah Dixon was born in Cockfield, County Durham, England, one of seven children born to a Quaker family of the Landed Gentry. Dixon attended school at Barnard Castle, taking an early interest in mathematics and astronomy.

Dixon worked as an assistant to Charles Mason on his 1761 expedition, observing the transit of Venus from the Cape of Good Hope. Dixon later returned to the Cape of Good Hope to assist with Nevil Maskelyne's experiments with gravitation.

Dixon arrived with Charles Mason in Philadelphia in November of 1763 to begin their survey of the border between Pennsylvania and Maryland. Completing the survey in 1766, both men remained to conduct an additional survey on the Delmarva Peninsula in Maryland on behalf of the Royal Society and to perform several gravitational measurements prior to returning to England in 1768.

Dixon was installed as a Fellow of the Royal Society in 1773.

Returning to England, Dixon resumed his profession as a land surveyor in Durham. Dixon remained unmarried until his death in 1779 at the age of 45. He was interred in the Quaker Cemetery at the village of Staindrop.

### **Sir George Biddell Airy**

Sir George Biddell Airy was an English mathematician and served as the Astronomer Royal from 1835 to 1831. He is known for his achievements in the study of planetary orbits and the computation of the earth's mean density. He is most remembered, however, for his establishment of the Prime Meridian in 1851, which was recognized by the international community in 1884.

Airy is also credited for his early work in the discovery of Neptune by predicting that irregularities in the motion of Uranus were due the gravitational attraction of an unobserved

body. Airy spent his long life on the leading edge of scientific discovery, particularly in the fields of astronomy and physics. In honor of his contributions, he was knighted in 1872.

Airy retired from his scientific pursuits in 1881 and lived the final decade of his life with his two unmarried daughters near Greenwich. He died in 1891 and is buried at St. Mary's in Playford.

### **Dr. Thomas Walker**

Thomas Walker was a physician, explorer, planter, and surveyor who served multiple terms in the General Assembly of Virginia. Born in 1715, Walker was raised as an English subject and attended the College of William and Mary.

Walker married the widowed Mildred Thornton in 1741 and acquired her late husband's estate, which include large tracts of land and enslaved people. The couple raised twelve children at their home known as Castle Hill.

In 1749, the Loyal Land Company was created with Walker, fellow surveyors Joshua Fry and Peter Jefferson, and a team of investors. The company received a royal grant to 800,000 acres in southeastern Kentucky. In 1750, Walker led a team to explore and survey the grant for the purpose of finding land suitable for settlement. As part of this expedition, Walker and his men constructed what was the first house built by settlers in Kentucky.



*(Photo: [www.wikipedia.com](http://www.wikipedia.com))*

Replica of Walker Cabin, Dr. Thomas Walker State Historic Site, Knox County, Kentucky.

During the expedition, Walker made a detailed journal giving names to the many topographical features encountered, including the Cumberland River and the Cumberland Gap. The knowledge gathered and recorded by the Walker expedition was instrumental in later westward explorations, particularly those of Daniel Boone.

Years later, Walker was commissioned to survey the border between Kentucky and Tennessee. This border is known as the Walker Line.

Walker died in Virginia in 1794. In remembrance of his numerous contributions, a number of things, such as roads, communities, parks, and schools in the Cumberland Gap region bear his name. A sign at the Dr. Thomas Walker State Park reads:

*“Dr. Thomas Walker was born on January 25, 1715. When he was young, he studied medicine and became a practicing physician in Fredericksburg, Virginia. He was also a member of the Loyal Land Company which was a group of ambitious land speculators.*

*On April 13, 1750, the first English Expedition was organized by Dr. Thomas Walker and passed the Cumberland Gap through the mountains, named after the Duke of Cumberland. By April 23, 1750, the Walker expedition had arrived in Kentucky. The Walker expedition also encountered a river which was named Cumberland by Dr. Thomas Walker.*

*After the successful exploration, Walker constructed a small, crude cabin to legally claim the land that the expedition had found. On July 13, 1750, Dr. Thomas Walker and his expedition returned to Virginia and never came back to Kentucky. Based on Walker’s Journal Records, the structure of the cabin was around twelve feet by eight feet. According to Kentucky State Parks, “the Barbourville Post of the American Legion became interested in honoring the memory of Walker. They campaigned to make the traditional site of the Walker cabin a state shrine. The American Legion and the Barbourville community donated the 12-acre tract to the commonwealth”*

## **Daniel Boone**

Daniel Boone was an American pioneer whose famous adventures lifted him to folk hero status in his own lifetime and ever since. Born in 1734 in Pennsylvania into a Quaker Family. Boone gained fame for developing the Wilderness Road and for opening up Kentucky and points west to settlement and development. Boone also founded the settlement of Boonesborough, Kentucky, along the Kentucky River, which was the first community of English speakers in the entire region. Boone said of his exploits into Kentucky:

*“It was the first of May, in the year 1769, that I resigned my domestic happiness for a time, and left my family ... to wander through the wilderness of America, in quest of the country of Kentucky.”*

Boone later served as a militia officer in the Revolutionary war. Boone’s service included many battles against native people who had formed alliances with the British. Boone was captured by Shawnees in 1778 but managed to escape. During the war, Boone was elected into the Virginia General Assembly, where he served three terms.

After the war, Boone went into business as a surveyor and merchant but experienced financial hardship later in life due to his failure as a land speculator.

An account of Boone's remarkable exploits was published in 1784, making him into an iconic figure. Even after his death, Boone's stories, both real and fictional, carried on and established him as an idealized frontier hero.

Daniel Boone died in 1820 at his son's home in Missouri. He was buried next to his wife, who had died seven years earlier. In 1845, the remains of the Boones were disinterred and reburied in Frankfort, Kentucky.

Boone's legacy as a vigorous man, at home in nature was expressed by Lord Byron in his 1822 poem, *Don Juan*:

*"Of the great names which in our faces stare,  
The General Boon, back-woodsman of Kentucky,  
Was happiest amongst mortals any where;  
For killing nothing but a bear or buck, he  
Enjoyed the lonely vigorous, harmless days  
Of his old age in wilds of deepest maze."*

A monument in tribute to Daniel Boone and his wife, Rebecca was constructed by John Hanley in 1860. Two years later, Robert E. Launitz added four stone panels showing important scenes their lives. One panel shows Daniel in combat with two native Americans. Another panel depicts Rebecca milking a cow. Yet another panel shows Daniel talking to a child and the final panel shows Daniel in front of his cabin with a deer that he had killed. The panels were vandalized during the Civil War and then damaged by a falling tree some eighty years later. Only one of the original panels is known to exist intact and is on display at the Waveland State Historic Site in Lexington.

## **The Daughters of the American Revolution**

Any study of American monuments, landmarks, and historical markers must include a mention of the Daughters of the American Revolution (DAR), because of their consistent dedication to the establishment and preservation of these important reminders.

The DAR is a service organization for women who are directly descended from any person involved in the United States' struggle for independence. The DAR is a non-profit organization that promotes patriotism and education. The DAR's motto is "God, Home, and Country."

Patriotic fervor was high in 1889 when the centennial of President George Washington's inauguration was celebrated. A renewed interest in recognizing the brief history of the young country resulted in the founding of several patriotic clubs and societies.

In 1890 after the Sons of the American Revolution disallowed the admission of women into their club, Mary Smith Lockwood penned the story of Hannah White Arnett, who patriotically prevented a group of men (including her own husband) from declaring allegiance to Great Britain in exchange for property and protection. This story was published in *The*

*Washington Post*, with the author questioning how “The Sons and Daughters of the American Revolution” would remember Arnett’s patriotism. Later that same year, a great-grandson of Hannah White Arnett published an article proposing the formation of a patriotic society for women. The first meeting of the Daughters of the American Revolution was held on August 9, 1890.

First Lady, Caroline Lavina Scott Harrison supported the founding of the DAR and served as its first President General. She was interested in historic preservation, having recently arranged for a renovation of the White House.

In the early years of the DAR, the members began to install markers at the gravesites of Revolutionary War veterans to call attention to their service. They also began the tradition of placing small American flags at the graves of veterans on Memorial Day.

In time, their activities expanded to commissioning monuments to be placed at battle fields and other sites important to the war.

At the beginning of the Spanish-American War in 1898, the U.S. Army named Dr. Anita Newcomb McGee the Acting Assistant Surgeon to assemble a group of nurses to work for the Army, as the Army at that time did not have its own organization of nurses. Dr. McGee founded the DAR Hospital Corps to select suitable candidates for service. The Hospital Corps selected a cohort of 1,081 nurses to serve in the war. This group was the predecessor of the Army Nurse Corps, founded in 1901.

The modern DAR promotes education by providing scholarship opportunities to college-bound students through its local chapters.

The DAR also continues to foster American patriotism by establishing and maintaining historical monuments and markers.

## **Conclusion**

As professional surveyors, we are naturally curious about matters of geography and human history. Perhaps no other subject marries those two concepts as well as the study of monuments and landmarks.

By our society’s monuments, we are able to contemplate how our predecessors viewed the world and which people, places, and events they considered worthy of sharing with generations to come. We may also consider the feats of surveying and scientific skill by which our ancestors marked abstract locations (i.e.: parallels of latitude and meridians of longitude) on the Earth. We may recall how the surveyors of the past ran remarkably straight lines and measured remote elevations with what are now considered primitive instruments, and often times in unfavorable terrain.

By our society’s landmarks, we may think of how past generations found their way around a vast unknown territory and we may marvel at their determination in completely trusting

their own wits to get them across a land absent of roads, towns, or any of the conveniences that modern travelers rely upon.

When we have the opportunity to visit the important landmarks and monuments of our country and our world (whether in person or virtually), let us keep an eye to the past and appreciate those who went before us exploring and marking the land.