A

Project Report on

Ground Survey Using Prismatic Compass

Submitted,

Under DBT Star College Scheme,

Department of Biotechnology,

Government of India.

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Year: 2020-21

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled " Ground Survey Using Prismatic Compass "Submitted by Mr. Tarwade Dhanshri , Sayali Vijay Hapse , Tarawade Rutuja , Hapse Pooja Tarwade Archana , Telore Kaveri , Jadhav Prajakta and Toge Ganesh Under DBT Scheme, Department of Biotechnology, Government of India is carried out under my supervision and guidance at the Department of Geography , Mula Education Society's, Arts, Commerce and Science college, Sonai, Tal- Newasa Dist. Ahmednagar, during the academic year 2020-2021.

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ACKNOWLEDGEMENT

I feel great pleasure to be grateful to my project guide Dr. Wagh R.V (Assistant Professor of Geography) for their inspiring guidance, positive criticism, encouragement, helping nature and showing the right path throughout my project work.

I am also thankful to Dr. Rajesh V. Wagh, Head Department of Geography, for permitting and providing all the laboratory condition and equipment required for completing this project work.

I am grateful to Mr. Shoukat Z. Fakir, Mr. Sharad K. AutiandMr. Amol S. Darandale, for the help extended me to get the project work completed in time.

I wish to express my sincere thanks to my friends and also non-teaching staff for their kind suggestion, stimulating discussion and co-operation in completing the project successfully.

I deep heartedly wish to thank my parents for their love and blessings.

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Declaration

We hereby declare that the work done in this Project entitled *"Ground Survey Using Prismatic Compass"* is submitted to Department of Geography, MES, Arts, Commerce and Science College Sonai. This project is completed under the DBT Star College Scheme and the supervision of Dr. R.V. Wagh, Mr. Sharad K. Auti and Mr. Shoukat Z. Fakir The works is original and not submitted in part or full by me or any other to this or any other University.

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Ground Survey Using Prismatic Compass

INTRODUCTION: Ground modification in the constructed environment is a new idea. For instance, the method of wattle and daub has been used for thousands of years to provide tensile reinforcement to clayey materials in buildings. The Roman road, Via Appia, now in modern-day Italy, is the earliest known example of the use of lime in ground improvement engineering. In many ways, ground improvement engineering is a relatively new field within geotechnical engineering. The terms ground improvement, ground modification, and similar terms are lexicon of the late 20th century. The first conference on the subject was "Placement and Improvement of Soil to Support Structures" and was held in Cambridge, Massachusetts, in 1968, sponsored by the Division of Soil Mechanics and Foundation Engineering of the American Society of Civil Engineers. Ground improvement may be viewed from the perspective of system performance. Shear strength is a fundamental engineering property of soils that can be increased through the application of numerous ground improvement techniques. Land surveying allows you to understand your land boundaries. A survey is performed in order to locate, describe, monument, and map the boundaries and corners of a parcel of land. It might also include the topography of the parcel, and the location of buildings and other improvements made to the parcel.

Survey

Learn how to complete your own survey and submit the data to NGS.

- Standards and Specifications for Geodetic Control Networks: Official guidance for geodetic survey work.

- User Contributed Software: Download software to process mark descriptions and observations
- Leveling Online Computations User Service (LOCUS): Upload geodetic leveling data to receive a least-squares adjustment of orthometric heights.
- Bluebooking: Submit GPS data through this process. NGS will publish the coordinates on survey mark datasheets.
- GNSS Survey Methods: NGS is exploring a proposed new file format, GNSS Vector Exchange (GVX) to more consistently use GNSS vectors in survey networks.

  Land Surveying is the science of measuring land to determine points on the ground and the angles, distances and heights between them. It is supported today with guidelines, products and services and has been a core part of the NGS mission since the 1800's.

Have you ever seen someone in a hardhat with a tripod and strange-looking stick standing by the side of a road or property? If so, you probably wondered what that person was doing. Well, wonder no more. That person was most likely a land surveyor, and he or she was probably taking a variety of precise measurements with specialized surveying equipment to determine exactly where property boundary lines were located.

Land surveyors use high-tech equipment and good old-fashioned mathematics to create maps and measurements of land. If you're wondering why such a service is needed, you may be surprised to find out that almost every property development project begins with a survey. Here's what you should know about this important service.

Land Surveying Processes

Land surveyors may have slightly different processes, depending on the specific type of surveying they do. Here's a quick overview of the various land surveyor types and the basic processes they go through to do their jobs:

- Construction or Engineering: This type of surveyor studies changes in property lines and identifies the location of buildings and roads with exactness. They may also survey road topography and grade or determine the appropriate depth for building foundations.
- Geodetic: A surveyor who uses satellite and aerial imaging to measure very large portions of the earth is called a geodetic surveyor.
- Boundary or Land: This type of surveyor fulfills the important duty of determining exactly where properly lines are located.

There are other types as well, but these are some of the most common. Surveyors must stand by their work and are required to produce accurate numbers. Fortunately, land surveyor tools make it easier for these professionals to have a high degree of confidence in their calculations.

Surveyor demand is expected to grow over 10% between 2016 and 2026, according to the Bureau of Labor Statistics. The median annual wage is around $60,000 for surveyors who work for engineering or architectural firms and approximately $70,000 for government contractors. If you're interested in pursuing this career path, you'll need to receive appropriate training and education. You'll also need the right survey

instruments, which include a theodolite and a level (sight level, laser level and/or water level). A theodolite is the ultimate surveying tool and measures vertical and horizontal angles between points. Advanced theodolites can also measure distance.

If you want to order online, you can submit your order to us by using our shopping cart system. Acceptable payment methods are Credit Card, Check, or Purchase Order** (read more about how we handle purchase orders below). By entering your billing and shipping address yourself, you get to see that it's correctly entered, and you instantly get an email receipt upon submitting an order to us. It's quick and

In the absence of grounding, the excess current can pass through the human body, which is a good conductor thereby electrocuting you. This can cause severe damage and burns. To prevent this from happening, grounding is important. A land survey involves locating and measuring both man-made and natural features using the principles of mathematics, geometry, and other sciences. By using various tools, a land surveyor can measure things such as elevation, angles, and boundaries on a property.

There are multiple forms of land survey, each with a unique purpose and set of required tools.

Below is information about — and equipment recommendations for — seven different types of land survey:

1. ALTA/ACSM Survey

The purpose of this type of survey is to provide a title company and/or lender with the necessary location and survey data to issue an American Land Title Association or Extended Coverage Title Insurance policy. An ALTA/ACSM survey usually shows the relationship between existing improvements on a particular parcel of land relative to the boundaries set forth in the property’s deed.

This is one of the most comprehensive types of land survey because it covers all of the features and characteristics of the property.

Recommended Products in this Category:

- Dutch Hill T-REX Composite Tripod – Constructed with an aluminum head and fiberglass composite legs, this tripod is extremely durable. It extends up to 72 inches and folds down to 43 inches, weighing just under 18 pounds.
- SitePro Single Tilting Prism System – Fully compatible with leading surveying equipment brands, this prism system is lightweight but durable and comes with a padded carry case. It has a built-in peep sight for easy setup and tilts a full 360 degrees.

2. Boundary Survey

A boundary survey is used to locate the corners and boundary lines of a parcel of land. This type of survey involves both record and field research, including any measurements and computations needed to set the boundary lines in accordance with applicable state laws. A boundary survey may also involve locating easement lines and encroachments.

Recommended Products in this Category:

- SubSurface ML-3 Locator – Used to identify property corners and buried utility lines, the SubSurface ML-3 Locator offers durable one-handed operation and is completely waterproof. It detects ferrous metal objects at depths of 8 feet or more and automatically calibrates the unit for ambient magnetic conditions.
- Schonstedt Spot Magnetic Locator – This sleek, ultra-light magnetic locator is durably built for rough terrain and severe weather. It locates objects up to 18 inches deep, such as utility lines, manhole covers, and survey pins. It also comes with a 7-year warranty.

3. Construction Survey

This type of survey requires staking out structures located on the property, including walls, buildings, roads, and utilities. Staking provides construction personnel with directions for implementing the improvements shown on the development plans. A construction survey may also involve both horizontal and vertical grading in addition to an As-Built survey.

Recommended Products in this Category:

- Pfeiler Quality Products Cantilever Column Pod – The ideal solution when stable footing is unavailable for your tripod, this enables setup of your total station or scanner up over a point anywhere between 6" and 20" from the corner of the column (eliminating the need for a tripod). The endless strap ratchet system allows for easy setup with any square, round, or i-beam column of steel, concrete, or wood. Supports up to 40 pounds.
- Pelican Case 1500 – Perfect for storing sensitive surveying equipment like prisms and tribrachs, this durable carry case is crush-proof, watertight, and dust-proof. It features an automatic pressure equalization valve, stainless steel hardware, and padlock protectors.

4. Location Survey

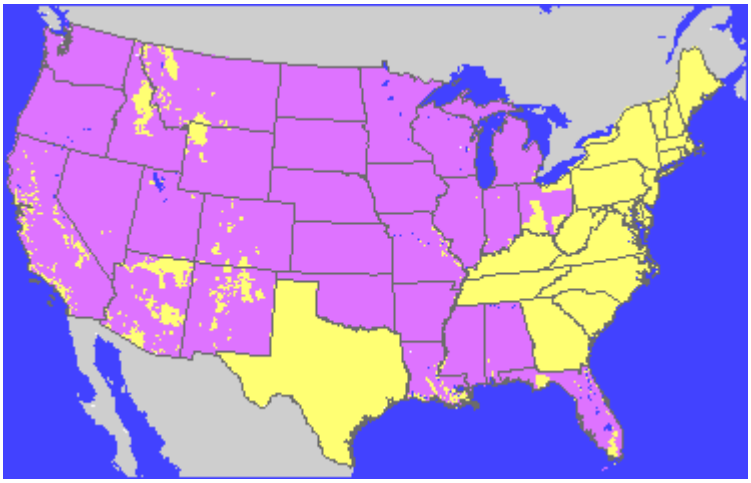
Similar to a boundary survey, a location survey provides additional information on the location of interior improvements. This type of survey is most commonly used to fulfill the requirements of a zoning permit or loan application.

Recommended Products in this Category:

- Safety Apparel "The Party Chief" Survey Vest – Safety gear is a must-have when performing ground survey work and this bright orange survey vest is a

great option. With oversized pockets, breathable mesh openings, and tapered shoulder pads, this vest makes your work comfortable and easy.

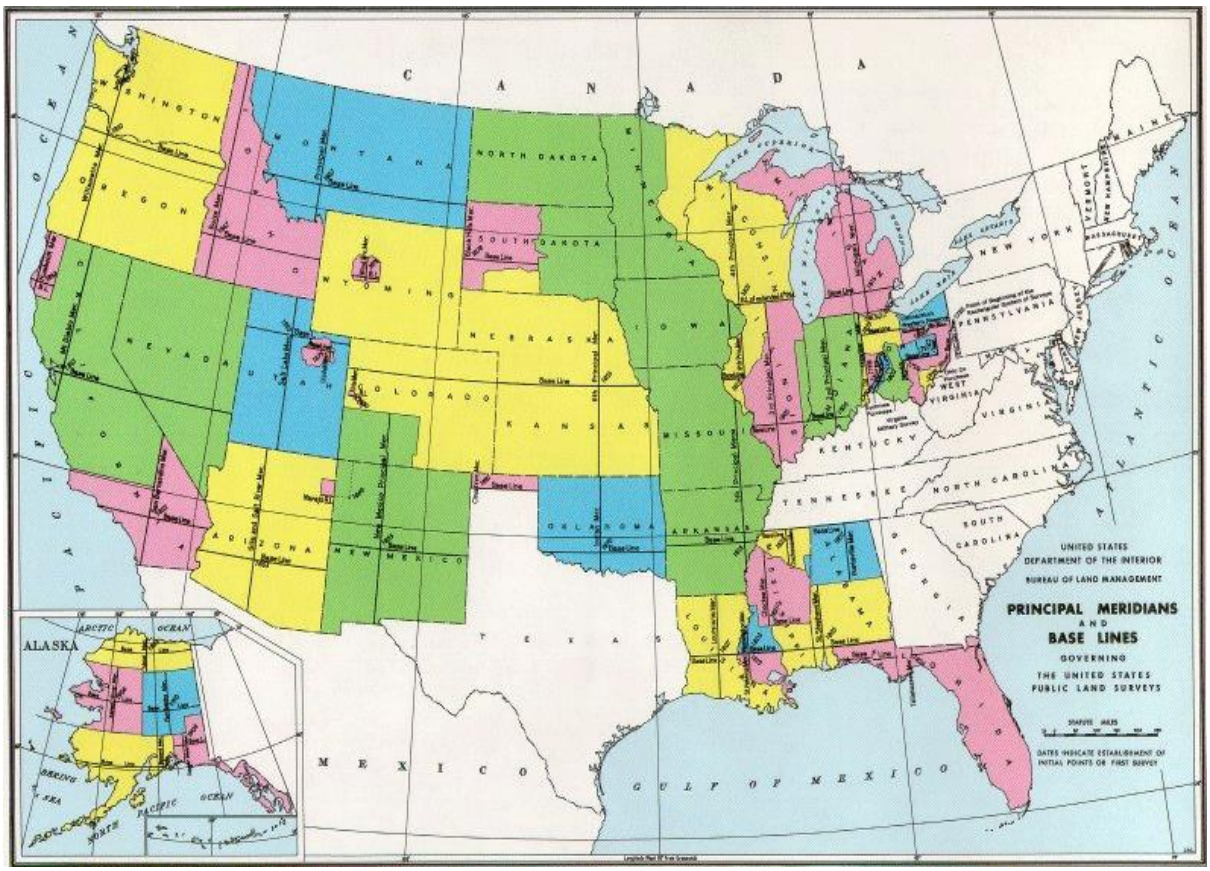
- SECO 2-Meter GPS Rover Rod – With a vinyl handgrip and durable construction, this rover rod is perfect for GPS survey work. It comes in two 1-meter sections and features a replaceable hardened steel point.
- Public Land Survey system
- The United States Public Land Survey System (abbreviated PLSS or USPLS) is a locational reference system, but not strictly a planar coordinate system. It is different from the systems you have been reading about in a few important ways.
- □ It is used to locate areas, not points.
- □ It isn't rigorous enough for spatial analysis like the calculation of distance or direction.
- □ It is not a grid imposed on a map projection (a system invented in a room), but lines measured on the ground by surveyors.
- The PLSS was established by Congress in 1785. Its purpose was to partition public lands into small, clearly-defined units so that settlement of the western United States could proceed in an orderly way. It covers about three-quarters of the country—the original thirteen colonies and Texas don't belong to it. There are other exceptions as well.
-

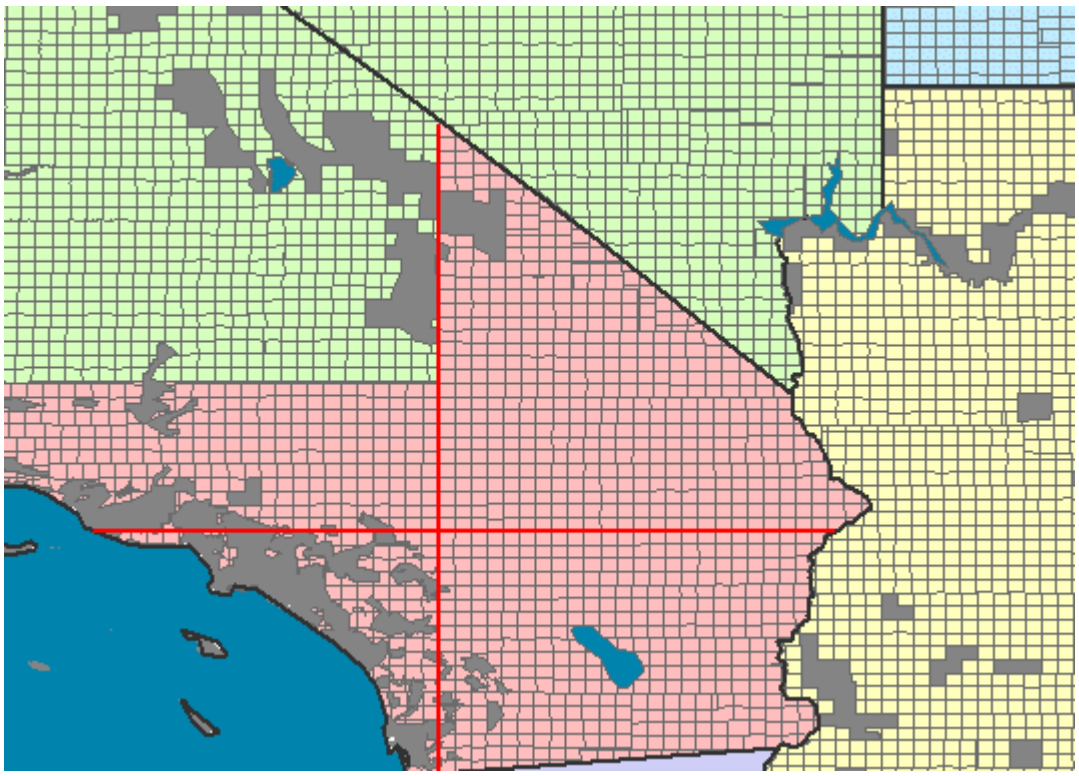


- Areas covered by the Public Land Survey system are shown in purple.

- How it works

  The basic unit of the PLSS is the township, an area six miles square. The system as a whole is a vast block of adjacent townships. Although it is not divided neatly into zones, the PLSS is made up of several regions, each with its own origin. Each origin is the intersection of a meridian (called a *principal meridian*) and a parallel (called a *baseline*). These more or less arbitrarily chosen locations define the starting point of the survey for a given region and the numbering scheme of the townships it includes.
- The principal meridians and baselines are shown in the following graphic. Each separate patch of color is a different region.



- Principal meridians and baselines of the Public Land Survey system. This map was downloaded from the Web site of the Bureau of Land Management in California, Geographic Services department. See the module references for the URL.
-
- The system divides into smaller and smaller units, always based on squares, as shown in the following graphics.
- 
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- PLSS townships in southern California. Townships colored pink have been surveyed from the San Bernardino Principal Meridian and its baseline (red lines). The extent of a survey is often limited by state boundaries, as is the case here. The gray areas are not part of the system. Some are unsurveyed because of difficult terrain, others are special land grants.
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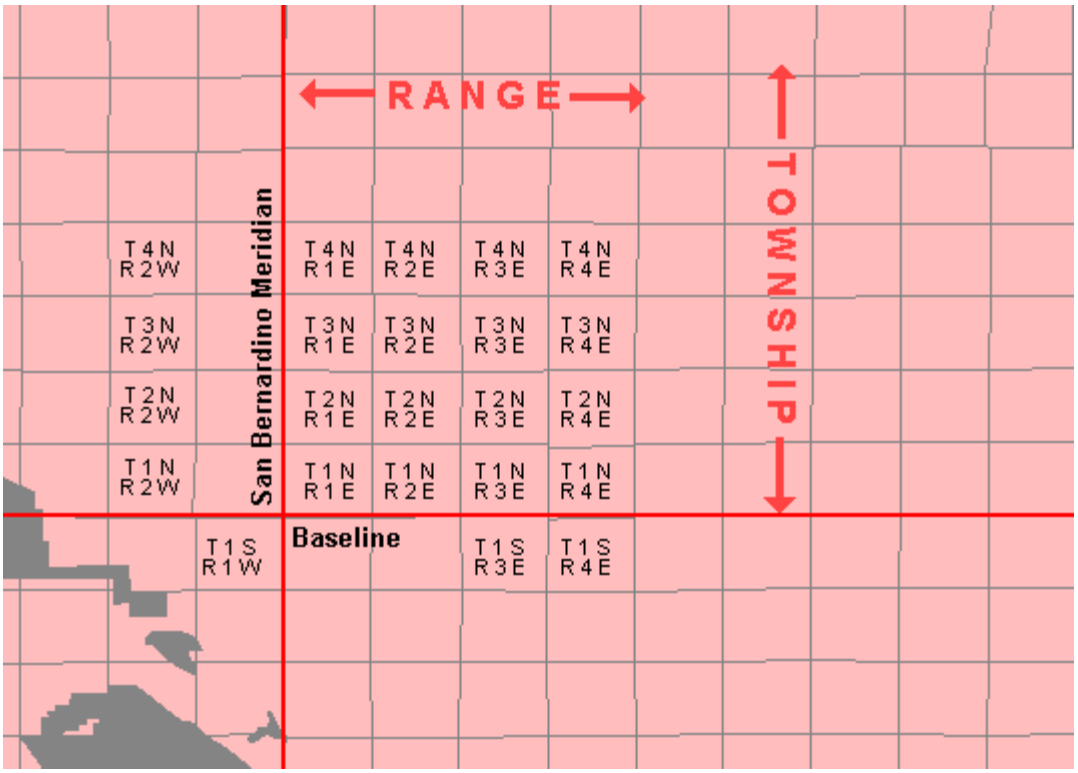
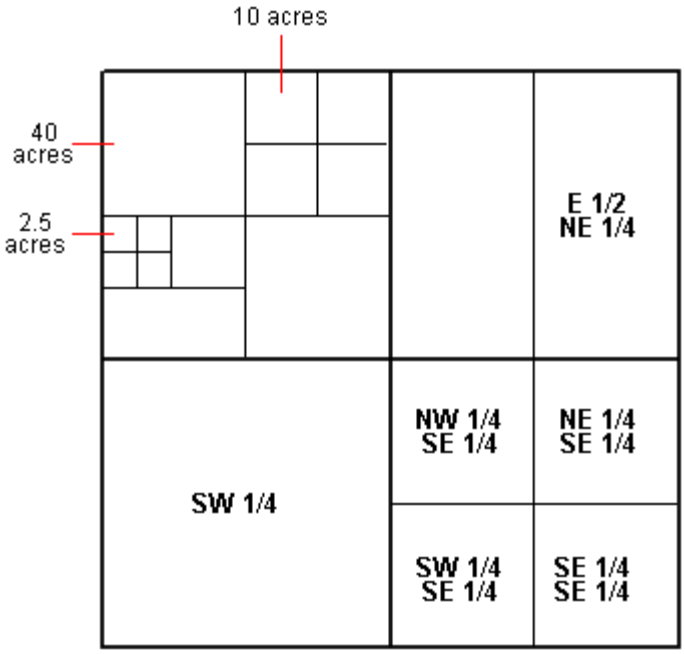


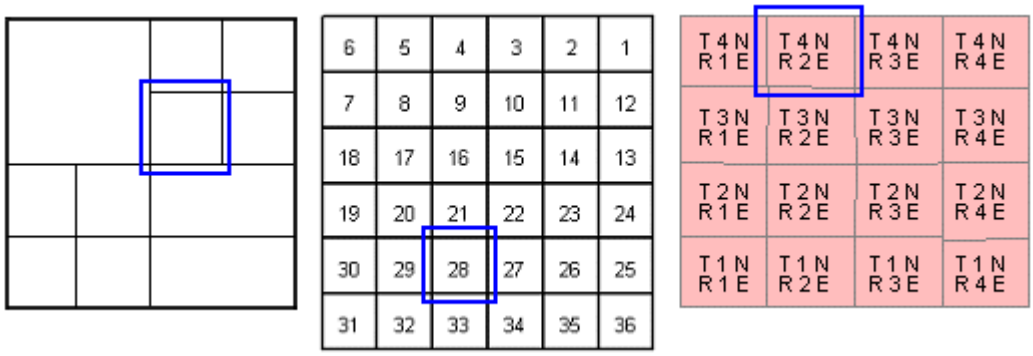
- Each township, or six-square-mile block, is identified by a Township and Range label. The labels start at the intersection of the principal meridian and baseline. Township values (rows) increment north and south of the baseline. Range values (columns) increment east and west of the principal meridian. The numbering scheme continues to the boundary of an adjacent survey.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

- A township is divided into 36 sections, each a square mile (640 acres). Sections are numbered by row, beginning in the upper right corner. The numbers reverse direction with each row.



- A section, in turn, is divided into 160-acre quarters, identified by quadrant (NW, NE, SW, SE). These quarters can be further divided into halves, quarters, and so on, with each piece identified by its geographic position. For example, the ten-acre square labeled in the graphic is the northwest quarter of the northeast quarter of the northwest quarter of the section.
-
- To identify a location in PLSS, you start at the most detailed level and work your way out. In the graphic below, the location (indicated by blue squares) is:
- SW1/4, NE 1/4, Section 28, T.4N.-R.2E., San Bernardino P.M.
-



"The surveyors, as they are respectively qualified, shall proceed to divide said territory into townships of 6 miles square, by lines running due north and south, and others crossing these at right angles, as near as may be, unless where the

> boundaries of the late Indian purchases may render the same impracticable, and then they shall depart from this rule no further than such particular circumstances may require. ...As soon as 7 ranges of townships and fractional parts of townships, in the direction from south to north shall have been surveyed, the geographer shall transmit plats thereof to the board of treasury, who shall record the same, with the report in well bound books to be kept for that purpose."
>
> Land Ordinance of 1785

This digital collection is a compilation of the state's original plat maps drawn by the U.S. Surveyor General's Office over the years 1848–1907. The collection includes later plat maps, up to the year 2001, drawn from surveys conducted by the General Land Office and the Bureau of Land Management.

The original public land survey plats were created during the first government land survey of the state. They serve as fundamental legal records for real estate, as an essential resource for surveyors, and as an analytical tool for the state's physical geography prior to European settlement. The original public land survey plats are the official legal land records for Minnesota and all property titles and descriptions stem from them.

The collection of plat maps can be viewed by clicking the "View the collection" link on the navigation bar located on the left-hand side of each screen. You can view and download high quality, full color images of the over 3,500 plat maps and associated textual data (tables of meanders appear on the back of some maps). Each plat map is available as a high resolution PDF and a lower resolution resampled PDF. The PDF images have NOT been georeferenced; however, a georeferenced JPG version is available.

There are three primary methods of GPS measurement that surveyors use, which are listed below.

- Static GPS Baseline. A Static GPS Baseline is a technique used to determine accurate coordinates for survey points. ...
- Real-Time Kinematic Observations. ...
- Continuously Operating Reference Stations

Surveying has changed substantially over the years — what used to take months of observation, measurement and geometrical calculations now takes a few hours or days thanks to the introduction of GPS technology. In fact, the surveying industry was one of the first to utilize GPS technology, recognizing the potential benefits of the technology. Today, surveying professionals rely on GPS to provide accurate and reliable data for clients across a wide range of industries and applications. Despite the widespread usage of GPS technology in surveying, however, it's not a topic many know about — that's why we're here to explain the GPS surveying basics. To understand the GPS surveying process, you need to understand what GPS is. In short, GPS, or the global positioning system, is a satellite-based navigation system. GPS was first developed for military use starting in the 1970s and became fully operational in 1993. Since then, it has expanded its use to consumer and commercial applications. GPS uses a network of satellites, which communicate with receivers on the ground. When a receiver requests data to calculate its location, four or more GPS satellites will communicate with the receiver, sending the position of the satellite, the time the data was transmitted and the distance between the satellite and the receiver. The information collected from these satellites then calculates the latitude, longitude and height of the receiver. If the receiver is moving, continuous data collection can be used to calculate the changing position of the receiver over time, which can be used to calculate speed. No matter the weather conditions or time, GPS can triangulate the signal and provide a location.

While most people are familiar with GPS and have used it to some degree on their smartphones or car navigation systems, GPS is a powerful tool for commercial applications. It's particularly useful for the surveying industry. Surveying was one of the first commercial adaptations for GPS for its ability to obtain latitudes and longitudes without the need for measuring distances and angles between points. In combination with other surveying equipment, like the Total Station, GPS technology provides valuable information for surveyors to help develop plans and models for client projects.

GPS surveying uses similar technology to nearly any other GPS application — however, how surveyors use GPS differs significantly. The primary differences are in two areas — technology and usage.

- Technology: Surveyors use more sophisticated technology than typical GPS applications to increase the accuracy of the data they collect. The receivers used for surveying are significantly more complex and expensive than those you would find in a typical car navigation system, with high-quality antennas and more sophisticated calculation technology.
- Data Usage: The data surveyors collect from the GPS technology is used differently than in a typical navigation system — instead of using location data for navigation, the data is used for measuring between two points. These measurements are collected then stored, manipulated and displayed in a geographic information system, or GIS, for use in a survey model.

But how do surveyors use GPS to collect data? The specifics come down to the GPS surveying techniques that they use. While the basics of GPS are simple to understand, there are several techniques that surveyors use to make the most of the GPS measurements they collect. There are three primary methods of GPS measurement that surveyors use, which are listed below.

Prismatic Compass survey : Surveying is the art and science of determining the relative positions of various points or stations on the surface of the earth by

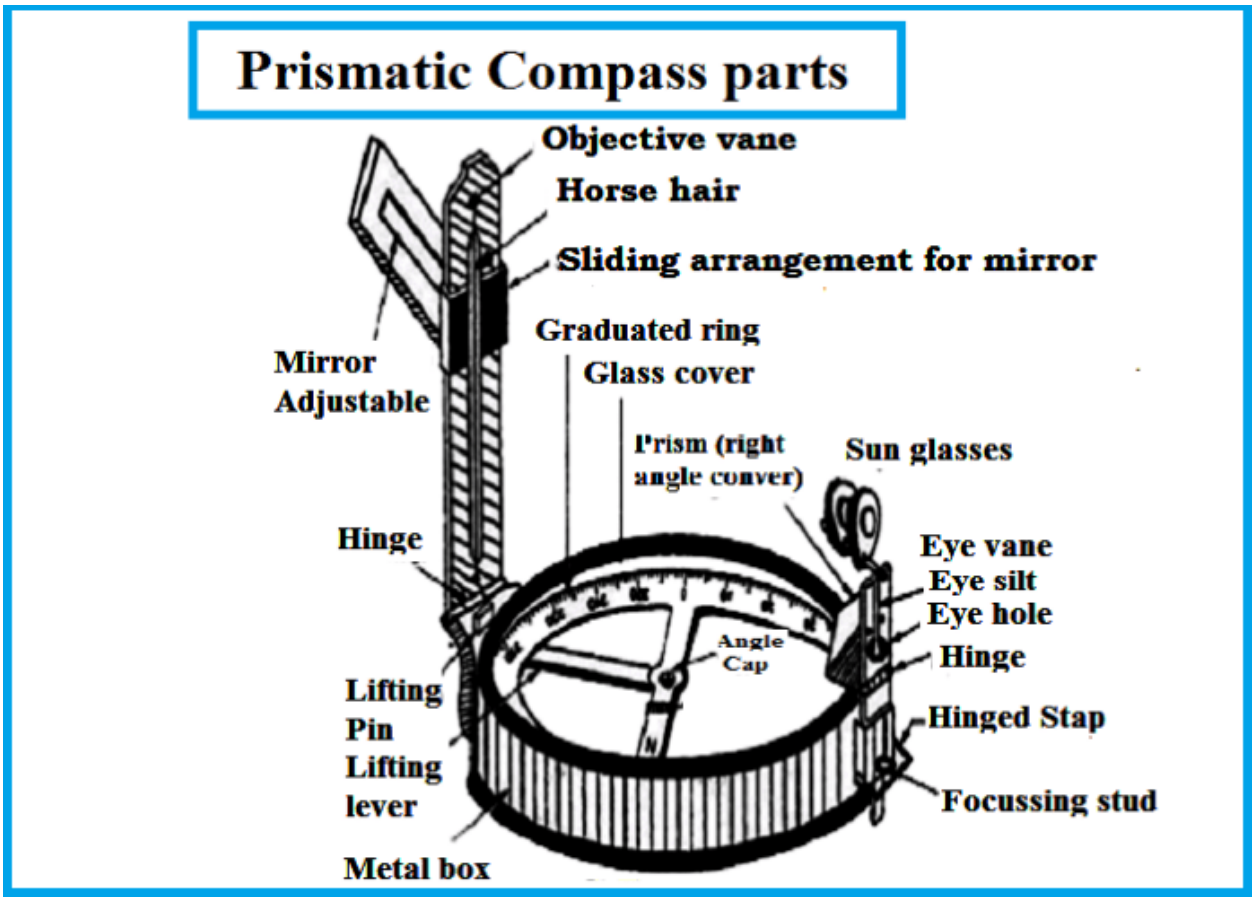
measuring the horizontal and vertical distances, angles and taking the details of these points and by preparing a map or plan to any suitable scale. The survey is based on the instrument known as prismatic compass. In this survey prismatic compass is used to measure the angles known as bearings and the distances are measured with the measuring tape. Thus the position of the object is determined by measuring angular and linear distances. A prismatic compass is one of the most convenient and portable forms of the magnetic compass. It can be held in hand or in a tripod stand for carrying out the measurement. The line of sight is defined by the object vane and the eye vane. A prismatic compass helps to conduct both sightings and reading simultaneously. The compass is initially held over the starting station of the survey line and the adjustments are provided. The magnetic meridian is thus obtained and then starts to take the measurements by sighting to the next station. The readings increase in clockwise direction i.e. from the south (0 degrees) to West (90 degrees) and North (180 degrees) and East (270 degrees) Instruments Required

Prismatic compass surveying is the type of surveying prismatic compass are used to measure the angles known as bearing and the distance are measured measuring tape.

It is small and portable usually carried on the hand. This prismatic compass is one of the two main kinds of magnetic compasses include in the collection for the purpose of measuring magnetic bearing, with the other being the surveyor's compass.

The main difference between the two instruments is that the surveyor's compass is usually larger and the more accurate instrument is generally used to stand on a tripod.

- The prismatic compass on the other hand is often in a small instrument which is held in the hand for observing and therefore employed on the rougher classes of work.
- The graduation on this prismatic compass is situated on a light aluminum ring fastened to the needle and the zero of the graduation coincide with the south point of the needle the graduation, therefore, the remains stationary with the needle, and the index turn with the sighting vanes.
- The circle is read the observer end the graduation run clockwise from the south end of the needle.
- The prismatic attachment consists of a 45 degree reflecting prism with the ice and reading faces made slightly convex so ass to magnify the image of the graduation.
- The prism is carried out a mounting which can be moved up and down between slides fixed on the outside of the case.
- The purpose of this up and down movement is to provide an adjustment for focusing.
- The image of the graduation is seen through a small circular aperture in the prism mounting and immediately above this aperture is a small v cut on top on the mounting over which the vertical wire in the front vane may be viewed.
- The mirror located in front of the forward vane slide up and down the vane and hinged to fold flat over it or to rest inclined at any angle with it.
- This mirror is used for soler observations or for viewing any very high object and is normal fitting to a compass.



- Cylindrical matel box

The cylindrical box having a diameter 8 to 12 cm protects the compass and from the entire casting or body of the compass.

- Pivot

The pivot is provided at the center of the compass and support a freely suspended magnetic needle.

- Magnetic needle

The magnetic needle is the heart of the instrument. This needle measures angle of a line from the magnetic meridian as the needle always remains pointed towards the north-south pole at two ends of the needle when freely suspended on any support.

- Graduation circle

This is an aluminum graduated ring marked with 0 degrees to 360 degrees to measure all possible bearing of lines, and attached with a magnetic needle.

- Prism

Prism is used to read graduation on the ring and to take an exact reading by compass. It is placed exactly opposite to object vane. The prism hole is protected by a prisms cap to protect it from dust and moisture.

- Object vane

The object vane is diametrically opposite to the prism and eye vane. The object vane carrying horsehair or black thin wire to sight the object in line with the object sight.

- Eye vane

An eye vane is a fine silt provided with the eyes hole in the bottom to bisect the object from silt.

- Glass cover

It covers the instrument box from the top such that the needle and graduated ring is seen from the top.

- Sunglasses

These are used when some luminous object are to bisected.

- Reflecting mirror

It is used to get an image of an object located above or below the instrument level while bisection is placed on the object vane.

- Spring break

To damp the oscillation of the needle before taking a reading and to bring it to rest quickly the light spring break attached to the box is brought in contact with the wedge of the ring by gently pressing in word the brake pin.

Uses of prismatic compass

This mirror is used for solar observations, or for viewing any very high object, and is not a normal fitting to a compass.

The two circular discs in front of the back vane are dark glasses which can be swung in front of the vane when solar observation are being taken.

Advantages of Prismatic compass

The greatest advantage of a prismatic compass is that both sighting the object as well as reading the circle can be done simultaneously without changing the position of the eye. The circle is read at the reading at which the hairline appears to cut.

Method of using a compass

To take a reading from a compass the following temparory of adjustment is required-

1. Centering – the compass should be fixed to the stand and set over the station. To the center, the compass legs of the tripod stand should be moved inward- outward or in the circumference direction. To check centering plumb may be used a pebble from the center of the compass.
2. Leveling – in compass surveying perfect leveling is not necessary but it should be sufficient to permit free suspension of the magnetic needle. After centering bubble should be ensured in the middle of the circle provided for it in the level.

3. Focusing the prism – in prismatic compass to focus the prism on the graduated circle, it's attachment is slid up and down till the reading are clearly visible.

Also, read

- 10 Types of levelling in surveying and two Pages test levelling
- Chain Surveying: Principle, Procedure, offset, Instrument, errors
- What is surveying and Principal of surveying
- Large dam In India

- A prismatic compass is a navigation and surveying instrument which is extensively used to find out the bearing of the traversing and included angles between them, waypoints (an endpoint of the lcourse) and direction.[1] Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass, and the length of the surveying lines are measured with a tape or chain or laser range finder.[2] The compass is generally used to run a traverse line. The compass calculates bearings of lines with respect to magnetic needle. The included angles can then be calculated using suitable formulas in case of clockwise and anti-clockwise traverse respectively. For each survey line in the traverse, surveyors take two bearings that is fore bearing and back bearing which should exactly differ by 180° if local attraction is negligible. The name *Prismatic compass* is given to it because it essentially consists of a prism which is used for taking observations more accurately.[3]

- Least count[edit]

- Least count means the minimum value that an instrument can read which is 30 minutes in case of prismatic compass. It means compass can read only those

observations which are multiples of 30 minutes, 5° 30′, 16° 00′, 35° 30′, for example.[4]

- Bearings[edit]

- The compass calculates the bearings in whole circle bearing system which determines the angle which the survey line makes with the magnetic north in the clockwise direction. The whole circle bearing system also known as the azimuthal system varies from 0 degrees to 360 degrees in the clockwise direction.[5] The included angles can be calculated by the formulas F-P ±180 in case of anti-clockwise traverse and P-F ±180 in case of clockwise traverse, where 'F' is the fore bearing of forward line in the direction of survey work and 'P' is the fore bearing of previous line.[4]

Prismatic compass survey is the kind of prismatic compass survey used only to determine the angles identified as bearing as well as the range is determined by the measuring tape.

Prismatic compass is compact and flexible, normally borne by hand. This prismatic compass is among the two major types of magnetic compasses used in the series for the function of magnetic bearing measurement, the exception being the magnetic compass.

The circle is read as observing the conclusion of the graduation run clockwise from the south end of the needle. The mirror located in front of the forward vane slides up and down the vane, folding flat over it, or resting inclined at any angle with it.

This mirror is used to see single objects or to view some very high object and is normally fitted to a compass. The prismatic adapter consists of a 45-degree translucent prism with ice and a strongly convex reading mask to magnify the image of the graduation.

The prism is installed and can be rotated up and down between both the slides around the outside of the case. The goal of this up and down movement is to have a concentration change.

The graduation image is seen through a small circular aperture in the prism mounting and immediately above this aperture is a small v cut on top of the mounting over which the vertical wire in the front aperture can be viewed.

The prismatic compass is mostly found in a compact instrument which would be kept in the hand for observation and is thus used in rougher working groups.

The uses of a prismatic compass:

1. A prismatic compass is a navigation and surveying instrument which is extensively used to find out the bearing of the traversing and included angles between them, waypoints (an endpoint of the course) and direction.

2. Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass, and the length of the surveying lines are measured with a tape or chain or laser range finder.

3. The compass is generally used to run a traverse line.

4. The compass calculates bearings of lines with respect to magnetic needle.

5. The included angles can then be calculated using suitable formulas in case of clockwise and anti-clockwise traverse respectively.

6. For each survey line in the traverse, surveyors take two bearings that is fore bearing and back bearing which should exactly differ by 180° if local attraction is negligible.

7. The name Prismatic compass is given to it because it essentially consists of a prism which is used for taking observations more accurately.

551 views

The survey which is based on the readings of learning takes with the help of a prismatic compass survey. In this survey the length of a line is measured with a chain or a tape. Thus the direction and length being known, the line can be easily plotted.

Prismatic Compass: This type of compass also has a compact circular metallic shallow box with a glass cover. It also has a diameter between 6.25 and 15 cms. and the rim about 1.5 cms. in height.

The 'Prismatic Compass' was invented by the maker Charles Schmalcalder and patented in 1812. When the instrument is not in use, the prism and its mounting can be folded about a hinge to lie flat against the side of the case of the instrument.

This compass was invented in 1814; this compass consists of a small circular box of about 100m.

• This prismatic compass can either be used as a hand instrument or mounted on a tripod; and is very useful in a situation where rough surveys are needed, i.e., where the accuracy of the survey is not the main consideration but the speed.

This compass box, lifting lever, needle, Agate cover, Glass cover, magnetic needle, graduated ring, prism, prism cap, sighting slit, lifting pin, colored glasses, focusing screw, object hair -vane; horsehair, reflecting mirror, brake pin, and spring break.

• This Prismatic compass is useful for filling in details in a survey and in places where the ground does not allow the use of chaining.

Like the prismatic compass for which Charles Schmalcalder obtained a British patent in 1812, this one lets the user read the card while sighting a distant object. It has a tall folding sight at north, and at south, a shorter sight with a prismatic eyepiece at its

base. The floating card is colored bright green; the numbers around its edge read correctly when seen through the prismatic eyepiece. Unlike the Schmalcalder instrument, this one has a solid plate covering most of the card. It was termed an Improved Hutchinson Prismatic Compass, said to be lighter and less bulky "than the old form," and was "adopted by the various branches of the English and Foreign Services." This example belonged to the University of Missouri at Columbia. A. S. Aloe & Company became A. S. Aloe Co. in 1894.

There are different kinds of compasses that are differently built and have different purposes. We will mention some of them here:

Two main types of the compass are magnetic compass and gyro compass. First one has a magnetic element (needle or a card) that aligns itself with magnetic lines of Earth's magnetic field to point to the magnetic poles of the Earth. Gyro compass has a rapidly spinning wheel whose rotation interacts with the rotation of the earth until its axis of rotation is parallel with the Earth's and points to the Earth's rotational poles. This compass points to the true poles of the Earth.

Liquid compass - has a magnetized needle or card immersed in fluid. This method lessens excessive swing and wobble and improves readability while reducing wear.

Marine compass or a card compass - This type of compass has a needle that is fixed and a compass card that is mounted in fluid and rotates according to orientation. It is used on boats because the moving card absorbs much of the motion of a boat which makes it easier to read than a needle compass.

Prismatic compass or lensatic compass - has a glass prism or a lens and a lid that has a hairline. These are used for lining up with an object whose bearing is sought. It also has compass card which rotates in the base. When the compass card stops, the required bearing is read off through the prisms or lens. Some of them have liquid as a damping mechanism while other uses electromagnetic induction for the same

purpose. Some also have tritium and a combination of phosphors which help to read of the compass in the dark.

Base plate compass or Orienteering compass - is a liquid filled compass placed on the rectangular base made of transparent plastic so a map can be read through it. It often has a magnifying lens for map reading, some sort of light for low light conditions and a ruler. It is often used for plotting.

Thumb compass - is a variant of base plate compass but smaller. It is fixed on the thumb (as its name says) which leaves one hand free.

Solid state compasses - are found in electric devices. They often have two or three magnetic field sensors from which microprocessor reads data about the orientation of the device. They can often be found in clocks, mobile phones and tablets.

Qibla compass - is used by Muslims to show the direction to Mecca so they would know where to turn while praying.

GPS compass - uses satellites in a geo synchronous orbit over the Earth to show exact location and direction of movement of bearer.

Astrocompass - uses positions of various astronomical bodies to find true north. It is used in Polar Regions where magnetic compasses and gyrocompasses are unreliable. It uses current time and geographical position in the form of latitude and longitude. According to this information, it is sighted on to any astronomical object with a known position to give an extremely accurate reading.

Prismatic compass	Surveyor compass

Prismatic compass	Surveyor compass
In this compass the reading are taken with the help of prism.	There is no prism on it. Reading are taken with naked eyes
With the help of prismatic compass whole circle bearing (W.C.B) can be measured	With the help of surveyor compass reduced bearing can be measured.
Graduation in prismatic compass are marked from 0∘∘ to 360∘∘	Surveyor compass is divided into four quadrant and graduation are marked from 0∘∘ to 90∘∘ in each quadrant.
In a prismatic compass a mirror is provided with the sight vane.	In a surveyor compass no mirror is attached to the objective vane.
Sighting the object as well as reading the graduated circle can simultaneously be done without changing the position of the eye.	Sighting the object as well as reading the graduated circle cannot be done simultaneously without changing the position of eye.

Conclusion about the Prismatic compass survey: hence is is simple principle instrument is useful for the ground survey. We had made prismatic compass survey for the ground survey in college campas.

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