

Surveys for  
Attorneys, Realtors, & Lenders



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# TYPES OF SURVEYS



Terms in ***bold italics*** appear in the glossary, starting on page 11.

## ALTA / ACSM Land Title Survey

This is a type of boundary survey designed to reduce risk in a real estate transaction, generally one for commercial property. If a buyer or lender requires a title insurance policy without ***exceptions***, they must provide the title insurer with an ALTA survey. This allows the insurer to remove the standard exception for “encroachments, overlaps, boundary line disputes, or other matters that would be disclosed by an accurate survey and inspection” from the policy.

An ALTA/ACSM survey shows ***boundaries***, ***improvements***, ***easements***, ***rights-of-way***, and various other optional elements. It’s based on standards developed by the American Land Title Association (ALTA), and the American Congress on Surveying and Mapping (ACSM).

P&N has the experience and expertise to provide you with an ALTA survey of the highest quality in a timely manner.

**Deliverables** Three signed, stamped original copies of the survey.

## Boundary Survey (Basic)

This survey determines the official ***boundaries*** of a property, based on the property’s ***legal description***, by locating it within the Public Land Survey System.

The process includes setting or restoring ***monuments*** at the ***corners*** or along the lines of the property. A basic Boundary Survey doesn’t include any ***improvements*** or ***encroachments***.

If a Title Commitment is provided, the surveyor will review it and show any ***easements*** listed on the sketch.

During the survey, the surveyor will:

- Find or set permanent monuments at the corners of your property.
- Set stakes at permanent monuments; set additional stakes along property lines, if specified.
- Give you three signed and stamped original copies of the ***Certificate of Survey***, showing a sketch of the property, including which corner points were found or set.

**Deliverables** Permanent monuments found or set at the corners of the property; wooden stakes set by all permanent monuments. Additional stakes set along Property lines, if specified. Three signed, stamped original copies of the Certificate of Survey, showing a sketch of the property and which corner points were found or set.

## Boundary Survey (with Improvements)

This survey determines the official ***boundaries*** of a property, based on the property’s ***legal description***. The process includes setting or restoring ***monuments*** at the ***corners*** or along the lines of the property. The survey will also determine the location of any visible ***improvements*** or ***encroachments*** and will show them on the sketch. If a Title Commitment is provided, the

## TYPES OF SURVEYS (CONTINUED)

surveyor will review it and show any *easements* listed on the sketch.

**Deliverables** Permanent monuments found or set at the corners of the property; wooden stakes set by all permanent monuments. Additional stakes set along property lines, if specified. Three signed, stamped original copies of the Certificate of Survey, showing a sketch of the property, the improvements, and which corner points were found or set.

### Condominium Development

Surveyors provide many services that are necessary for *condominium* development. Michigan's Condominium Act has several requirements which must be done by a Surveyor, and others which are best done by a Surveyor. These include:

- Boundary Survey
- Topographic Survey
- Site Plans (Preliminary and Final, for Municipal Approval)
- Grading & Construction Plans
- "Exhibit B" drawings for the Master Deed

P&N has experience preparing all types of condominium documents, and will work closely with your Attorney and Architect to make your condominium development a success.

**Deliverables** Boundary Survey, Topographic Survey, Preliminary Site Plans, Grading and Construction Plans, Master Deed "Exhibit B" Drawings, and any other Drawings, Exhibits and Reports required by the client or Municipality.

### Easement Exhibits

Easement exhibits describe the *easements* on a property and show their location related to surrounding

properties. When creating a new easement, it is advisable to attach an Easement Exhibit as a supporting document. P&N will work with you and your attorney to write descriptions and prepare exhibit drawings for all types of easements.

**Deliverables** Easement exhibit drawings and easement descriptions, as required by the client.



### FEMA Flood Plain Determination

Law requires that if a building secured by a mortgage is in a Special Flood Hazard Area, the owner must get flood insurance. As Flood Maps are periodically revised, properties near water can be added to the Flood Zone – requiring property owners to get flood insurance. Unfortunately, Flood Maps aren't always accurate, and they are frequently mis-read. If you think you have been wrongly placed in a Flood Zone, we can help you set things right.

A Flood Plain Determination includes a review of the current *Flood Insurance Rate Map (FIRM)* for your area to determine if your property is included in a *Special Flood Hazard Area (SFHA)*.

- If your property is not included in the SFHA we can provide you with an *Elevation Certificate* to provide to your lender.



## TYPES OF SURVEYS (CONTINUED)

- If only a portion of your property falls within the SFHA we can provide you with a survey showing the limits of the SFHA, in relationship to the improvements on your property.
- If your property is included in the SFHA we can help you determine if it was wrongly included, and can be removed by filing a **Letter of Map Revision Based on Fill (LOMR-F)** with FEMA on your behalf, requesting a **Letter Of Map Amendment (LOMA)**.

**Deliverables** Varies (see above)

### Forensic Survey

This survey is performed as part of an investigation, often to provide support to witness testimony. The surveyors will typically collect information about the distances, angles, elevations, and locations of site features and pieces of evidence. The data is then compiled to produce reports, drawings, or maps. From accident re-construction, to insurance claims, P&N's detailed forensic surveys can help you find the truth.

**Deliverables** Maps, Exhibits, or Reports as requested by client.



### Hazardous Waste / Environmental Cleanup Survey

These are topographic surveys performed on environmentally-contaminated or other restricted-access sites — for example, mapping the limits of contaminants and staking for contamination removal or mitigation efforts.

P&N has several experienced, 40-hour HAZWOPER trained staff who can work on restricted sites, including landfills, contaminated rivers, and contaminated industrial sites.

**Deliverables** Drawings, data files, or reports, as required by the client.

### Land Division / Parcel Split

A Land Division or Parcel Split allows a property-owner to divide a piece of land into smaller **parcels** without the high cost of creating a **Subdivision** or a **Condominium** Development. Surveyors can provide many services necessary to this process, including:

- Helping determine the number of new parcels that can be created according to applicable laws.
- Filing land division applications and other items required by the municipality.
- Completing Certified Surveys.
- Writing **Legal Descriptions** for the newly-created parcels.

From complying with the Land Division Act to Municipal approvals and the filing of Certified Surveys, dividing your property can be complicated. The Surveyors at Prein&Newhof can guide you through every step of the process.

**Deliverables** Certified Survey (recorded with the Register of Deeds); Legal Descriptions; drawings and documents required by the client or the municipality.

## TYPES OF SURVEYS (CONTINUED)

### Legal Description

This is a written description of a *property*, which legally defines its boundaries. The description refers to government systems, coordinate systems, or recorded maps.

**Deliverables** Exhibits, sketches, or documents, as required by the client.



### Mortgage Inspection

This is a sketch showing the observable conditions of a property, the improvements that appear to be located on the property, and any notable areas of concern. It is a tool used by banks and other lenders to limit their liability. A Mortgage Inspection does not constitute a boundary survey or estimate of property lines.

**Deliverables** A drawing showing the Surveyor's opinion of the general location of improvements on this site.

### Record Survey / As-Built Survey

This survey shows everything that has been done during a construction project. It provides a record of the construction and verifies that it has been completed according to the approved plans.

Knowing what you have is crucial to maintenance and planning. P&N can provide you with a detailed record of the current conditions of your property or project.

**Deliverables** Record Plans and drawings as requested by client.

### Riparian/Littoral Survey

This is a detailed survey to determine the location and extent of a land owner's *Riparian* or *Littoral* Rights.

**Deliverables** Three signed, stamped original copies of the survey.

### Structural Monitoring/Deformation Survey

This is a survey to determine if a structure is moving, and the magnitude and direction of the movement. P&N offers a full range of structural monitoring customized to meet your accuracy and budget requirements. From crack monitoring, to three dimensional deformation surveys, the Surveyors at P&N have the experience to provide you with the data that you need. Our team of Surveyors, Structural and Geotechnical Engineers can help you find the source of the problem and the solutions that you need.

**Deliverables** Drawings, data files, or reports, as required by the client.

# FREQUENTLY ASKED QUESTIONS

## What does a surveyor actually do?

There are many types of surveys, but they all involve surveyors doing one of two things:

- Taking information from paper (deeds, construction plans, etc.) and marking the features on the ground, often with wooden stakes.
- Taking information from markers on the ground and using it to create paper documents (maps, plats, legal descriptions etc.).

## How do surveyors describe the location of a property?

Surveyors use the Public Land Survey System. The state of Michigan was originally surveyed in the early to mid-1800's by the Government Land Office and was divided into Townships (six miles square) and Sections (one mile square, 640 acres). These Sections were then divided into smaller squares by repeated halving and quartering. A quarter section is 160 acres and a "quarter-quarter section" is 40 acres.

The Legal Description of a property could, for example, place it at "The South 1/2 of the Northwest 1/4 of the Northeast 1/4 of Section 24, Town 17 North, Range 8 West, Warner Township, Acme County, Michigan." A surveyor's job would be to identify and mark that location on a map and physically on the site.

## Why do surveys sometimes contradict each other?

The state of Michigan was originally surveyed in the early to mid-1800's by the Government Land Office and was divided into Townships (six miles square) and Sections (one mile square, 640 acres). These Sections were then divided into smaller squares by repeated halving and quartering. A quarter section is 160 acres and a "quarter-quarter section" is 40 acres. Surveyors marked out Section corners with wooden posts or other monuments.

At that time, surveyors used steel chains to measure distances and a simple compass to measure angles, so their work was sometimes inaccurate by today's standards. It is not uncommon to find that the measurement between two monuments that are supposed to be one half mile apart, will actually be significantly longer or shorter than a half mile. This is why it is common for a description of: The NE 1/4 of NE 1/4 of Section 26, commonly known as a "40 acre parcel" to contain 36.5 acres or 43.7 acres, when it is actually surveyed.

The Federal Government realized this immediately, and issued original deeds to the land using a system known as "aliquot parts" (i.e. The N.E. 1/4 of the S.E. 1/4, and so forth.) By law the location of the posts placed in the ground by those early Surveyors controls the location of the description.

Moreover, few of the original Section Corners remain to serve as a reference. Surveyors today must rely on

NW 1/2 160 acres		N 1/2 NE 1/4 80 acres			
		S 1/2 NE 1/4 80 acres			
NW 1/4 SW 1/4 40 acres	NE 1/4 SW 1/4 40 acres	N 1/2 NW 1/4 SE 1/4 20 acres		NE 1/4 SE 1/4 40 acres	
		S 1/2 NW 1/4 SE 1/4 20 acres			
SW 1/4 SW 1/4 40 acres	SE 1/4 SW 1/4 40 acres	W 1/2 SW 1/4 SE 1/4 20 acres	E 1/2 SW 1/4 SE 1/4 20 acres	NW 1/4 SE 1/4 SE 1/4	NE 1/4 SE 1/4 SE 1/4
				SW 1/4 SE 1/4 SE 1/4	SE 1/4 SE 1/4 SE 1/4

## FREQUENTLY ASKED QUESTIONS (CONTINUED)

the best available evidence of where the posts were set. This increases the likelihood that two surveyors may form different opinions as to the location of a particular corner.

The surveyor must find, interpret, and weigh the available evidence (both on the ground and from historic documents) to find the location of each point on the boundary of a parcel. This means that the surveyor must be part historian, part archeologist, part lawyer, and part mathematician.



### What steps does a surveyor take?

During a typical boundary survey, the surveyor may:

- Study your property's Legal Description; they may also study the Legal Descriptions of surrounding properties.
- Study previous surveys in the area.
- Locate the boundary onsite (first locating Section Corners and other controlling monuments, then locating the property's boundary with reference to those points)
- Mark property corners and stake property lines, if requested
- Prepare a survey map

### What is that stake left in my yard by the surveyors?

Surveyors often establish 'control points' to help them with their calculations during a survey. These are necessary and should remain in the ground. If any of the surveyor's markers are an annoyance to you, please let the field team know before they leave.

### How accurate are a surveyor's measurements?

The question of accuracy depends somewhat on the quality of instruments used, and the physical conditions present at the time the measurement is made. On average, a Surveyor using typical modern equipment can make a measurement within a few hundredths of a foot in angle and distance. This equates to roughly  $\frac{1}{4}$  of an inch, or the size of a pencil eraser.

### Why do surveyors often stand in the middle of the road?

Most county roads were built along Section and quarter-Section lines, as a matter of convenience. This gave easy access to property owners and gave the County a convenient way to describe the road right-of-way; most roads are 66 feet wide, with 33 feet being on each side of the section line.

This system is both a blessing and a curse for surveyors. The roadway makes it much easier for surveyors to access the Section Corners, but it exposes them to many hazards. Each year several surveyors are injured or killed in traffic incidents.

Unfortunately, the monuments which mark Section Corners are often damaged or destroyed in the course of road construction, requiring the surveyor to spend



## FREQUENTLY ASKED QUESTIONS (CONTINUED)

even more time in the road to reestablish the location of the corner.

### Can't you just plug it in to your GPS?

GPS is a tool for measuring between two points; it is essentially a high-tech tape measure. GPS equipment does not and cannot determine the location of a boundary line.

The location of boundary lines is determined by many features (section corners, platted subdivision monuments, railroad boundaries, road and highway boundaries, etc.), and finding them requires research and evaluation, not just measurement.

### When is a survey necessary?

A survey is useful any time you need to define exactly where a piece of property is and what's included on it, for example:

- Before purchasing or dividing a piece of property.
- Before adding buildings or other improvements to a property.
- To identify encroachments and title matters, such as easements and rights-of-way.
- To settle a boundary dispute.

### I'm buying new property, and my lender doesn't require a survey. Why should I get one?

A survey will:

- Give you a legal document that will help you defend your property rights, should the need arise.
- Let you see exactly where the property's boundaries are.
- Identify easements called for in the legal description.

- Notify you if any of the improvements on the property encroach onto a neighbor's property.
- Make you aware of potential encumbrances that may exist on the property.
- Give you a professional opinion on the quality of the property's Legal Description.

In short, a survey alerts you to potential problems that you wouldn't otherwise notice. For example, if the former property owner built a garage over part of a utility easement, the utility provider may have the legal right to remove the garage if it interferes with the installation or maintenance of the utility. A survey would make you aware of this problem and allow you to negotiate a solution with the seller before you purchase the property.



### There's an existing survey of the property. Do I need another one?

There are several potential problems with using an older survey:

It could be out of date. Do you know that there have been no changes to the property in the last several years? Has anything been built near or across the property lines? Have the neighbors bought or sold their lands recently?

## FREQUENTLY ASKED QUESTIONS (CONTINUED)

It could be copyrighted to the surveyor for a specific purpose, and using it for another purpose (such as a financial transaction) without notifying the surveyor could violate that copyright.

It could leave you financial liable. Each survey is certified to a specific party at a specific time; it is intended to be used for a specific purpose and no other. If a survey is not certified to you, and it causes you financial problems, you have no legal recourse against the surveyor.

Having a property re-surveyed is the only way to avoid these problems.



### I have title insurance. Do I still need a survey?

Yes. Title insurance only covers defects in the title of your property, it does not and cannot protect you from problems with the boundaries of your property.

All title insurance policies include exceptions for, "(i) easements, or claims of easements, not shown by the public record; and (ii) encroachments, overlaps, boundary line disputes, or other matters that would be disclosed by an accurate survey and inspection."

Having a survey done is the only way to know if easements, encroachments, etc. exist. For most

private residential property, a Boundary Survey with Improvements (together with a review of the Title Insurance Commitment by the Surveyor) will be sufficient to notify the buyer of any potential problems. Buyers of commercial property should consider an ALTA/ACSM survey.

### Will a Survey tell me what I own?

No. A survey identifies the boundaries of a piece of property. It doesn't establish ownership or guarantee a title.

### Once a surveyor marks my boundaries, are they indisputable?

No. Any person has a right to dispute the location of boundary lines in court. Surveyors provide their professional opinion on the location of boundary lines, and they are liable for their opinion, but they are not the final word. The final word in boundary matters belongs to the courts.

### How much will a survey cost?

There many factors that determine survey cost, including:

- Physical Conditions – Survey price is affected by the size of the property, travel time to the job site, and any terrain conditions that make surveying more difficult (rough terrain, heavy underbrush, wetlands, busy streets, etc.).
- State of Existing Data – Each survey is based on existing records and monumentation. Surveyors must research available legal documents, verify and analyze physical monuments in the field, and compare all other existing evidence. If your boundaries are not described clearly on your Legal Description, or if there is little information in the

## FREQUENTLY ASKED QUESTIONS (CONTINUED)

available records and physical evidence is scarce, the surveyor may have a very complex job.

- **Legal Issues** – In the course of researching a survey, the surveyor may discover disputed boundaries or Legal Descriptions that contradict each other. Sorting these out is complicated and adds time to the survey process.
- **Liability** – Any survey completed by a Professional Land Surveyor includes a guarantee that the surveyor has not erred or omitted any information, and that the boundaries shown in the survey are correct. The surveyor accepts limited liability for his or her actions; the more valuable the property, the more liability the surveyor accepts.

While surveys can be expensive, it is important to remember that you are paying for a professional service. You are paying for the surveyor's knowledge and experience, and for all the information that the survey company has on record. As with all professional services, those with more knowledge and experience are often worth the higher fees that they charge.

### What information will the surveyor need to give me a quote?

Because every survey is different, a surveyor cannot normally provide you with a cost estimate before doing some preliminary research.

The more information you can provide, the better. At minimum, you will need to provide your name and contact information, the address of the property to be surveyed, and the type of survey you need. If you aren't sure what type of survey you need, say so. Tell the surveyor what you plan to do with the survey, they can help you make sure you get exactly what you need.

If possible, provide the property's Legal Description. If you own the property, the Legal Description will be on your deed. If you are purchasing the property, the Legal Description will be on the Title Insurance Commitment. You can also usually obtain an abbreviated Legal Description from tax records.

The more information you provide, the more accurate your cost estimate will be. If you know more about the property (acreage, existence of easements, etc.), please provide it to the surveyor.



# GLOSSARY

Like any industry, the Surveying Profession has developed its own unique terminology. The following glossary is provided to help you understand some of the more common terms used by surveyors. It is by no means exhaustive. If a Surveyor uses a term you aren't familiar with, please ask for clarification.

**Acre** A unit of area equal to 43,560 square feet, or ten square chains.

**Adjoiner** The land in contact with a property; neighboring land. Can also refer to the written deed for the adjoining property.

**Bearing** The angle between north or south and a direction, for example, N36°26'17"E ("from North 36 degrees, 25 minutes, and 17 seconds East").

**Benchmark** A physical object (natural or artificial) with a known elevation. It is used to determine the elevation of other points.

**Boundary** A line of demarcation between adjoining parcels of land, as determined by their legal descriptions.

**Certificate of Survey** A statement signed by the surveyor regarding the work they performed. It generally appears on the drawing. Each type of survey has its own unique certificate.

**Chain** The unit of measure used for Government Surveys in Michigan. It is equal to 66 feet. A chain is divided into 100 links, each 0.66 feet (7.92 inches) long. A Rod is equal to ¼ of a Chain; a Link is equal to 1/100 of a Chain.

**Condominium** A system of co-ownership where individuals own portions of a larger property and share joint ownership of common areas. The larger property is referred to as the Condominium Development; the individual parcels are called Condominium Units. Condominium Units may be

unimproved land, space in an existing or proposed building, marina slips, etc. Condominiums in Michigan are regulated by the Condominium Act.

**Coordinate System** A reference system for defining points in space.

**Corner** A point at which two or more boundary lines meet.

**Deed** A legal document which conveys ownership from one person (the grantor/seller) to another (the grantee/buyer).



**Easement** The right of someone other than the property owner to use a piece of private property for a specific purpose (for example, the right of the public to use a trail that crosses private property, the right of a utility company to install power lines on private property, etc.). Easements are often used to create a narrow passage across a property. An easement restricts the owner's rights to that piece of property but doesn't take them away; the details vary depending on the easement and situation.

**Electronic Distance Meter (EDM)** An instrument that measures distances electronically using infrared or laser light.



## GLOSSARY (CONTINUED)

**Elevation Certificate** A certificate that verifies the elevation of a structure on a given property relative to the ground level, with reference to a published datum. Communities and builders use Elevation Certificates to comply with floodplain management ordinances; insurance companies use them to determine flood insurance policies.

**Encroachment** A structure that is located (wholly or in part) on property not owned by the occupant.

**Encumbrance** Anything that effects or limits the value of property ownership but doesn't prevent the transfer of ownership (easements, mortgages, etc.).



**Exception (Title Insurance)** Any facts identified and excluded from coverage in a title insurance policy, resulting in less than a free and clear title.

**Exception (Legal Description)** Portions of land that are included in the description of a larger parcel of land but then excluded from it by a subsequent legal description.

**FEMA** The Federal Emergency Management Agency, which plans for, mitigates against, and responds

to man-made and natural disasters. A part of the Department of Homeland Security.

**Flood Insurance Rate Map (FIRM)** The official FEMA map showing both the Special Flood Hazard Areas and Risk Premium Zones in a community. Insurance companies use these maps to determine which property owners must obtain flood insurance.

**Gap** An area of land between two neighboring properties that is not included in the legal description of either property, the ownership of which is uncertain.

**Government Land Office (GLO)** The federal agency that conducted Government Surveys in Michigan prior to 1946, when it was combined with other federal agencies to create the Bureau of Land Management (BLM).

**Government Survey** The original survey of a tract of land conducted by the Federal Government. Most of the land in Michigan was surveyed under the Public Land Survey System, which divided the land into six-mile-square Townships, each consisting of 36 Sections of one square mile each. Most land descriptions reference these original surveys.

**GPS (Global Positioning System)** A network of satellites that can be used to determine the location of points on the ground. Also refers to the instruments that receive and process the satellite signals. The system is more accurately called the Global Navigation Satellite System (GNSS), since GPS refers only to a specific group of satellites, not to the satellite-positioning system as a whole. Modern survey equipment receives signals from several groups of satellites.

## GLOSSARY (CONTINUED)

**HAZWOPER** From the term “HAZardous Waste OPerations and Emergency Response.” A standard established by OSHA for dealing with hazardous waste.

**Hundredth** A unit of length equal to 1/100 of a foot (0.12 inch or 1/8 inch).

**Improvements** Man-made structures of a permanent, durable nature (such as buildings, pavement, or fences) are improvements whether or not they add value to the property. Structures that can be easily removed from the property (such as detached decks or sheds with no foundation) are not normally considered improvements for the purposes of a survey.

**Iron** A general term for monuments that are made of metal.

**Legal Description** A written description of a piece of property that describes its precise location by reference to government surveys, recorded maps, or coordinate systems. It is the official, authoritative description of a piece of property.

**Level** An instrument used to determine the difference in elevation between various points on the ground.

**Link** A unit of length equal to 1/100 of a chain, or 0.66 feet (7.92 inches).

**Littoral** Coastal; pertaining to a shore. Littoral Rights are an owner’s rights to use a body of water (lake, ocean, etc.) that touches their property, including travel rights and use of the shore and bed.

**Locate** To determine the site of an object or boundary, so that the object or boundary can be shown on a map, described in writing, or marked on the ground.

**LOMA (Letter Of Map Amendment)** An official document from FEMA that amends a Flood Insurance Rate Map, and can remove the flood insurance requirement for the included properties.

**LOMR-F (Letter of Map Revision Based on Fill)** An official document from FEMA that amends an effective Flood Insurance Rate Map, and can remove the Federal flood insurance requirement for the included properties.

**Lot** A piece of land that has been identified on a plat. Lots are usually identified by their lot number and subdivision name (Lot 94, Shady Acres).

**Monument** A physical object that represents the lines and boundaries of a survey. Monuments can be natural (boulders, trees, lakes, etc.) or man-made (wooden stakes, iron rods, concrete monuments, etc).



**Overlap** An area of land between two neighboring properties that is included in the legal description of both properties, the ownership of which is uncertain.

## GLOSSARY (CONTINUED)

**Parcel** Any portion of land that cannot be designated by lot number.

**Parent Parcel** The original portion of land from which a parcel has been taken; also any parcel that has the potential to be divided. According to Michigan's Land Division Act, parcels that existed on March 31, 1997, or have been in existence for at least 10 years, are eligible to be parent parcels.

**Patent** The title conveyed by the government describing land sold or granted by the government. This may be thought of as the original deed to a property.



**Plat** A map showing the boundaries and subdivisions of a tract of land, along with all essential data about the individual properties, as determined by a survey. The term is sometimes used to refer to the subdivision itself, rather than to the map.

**Rod** A unit of length equal to a quarter of a Chain, or 16.5 feet. Rods are also sometimes called Poles.

**Right-Of-Way** A parcel of land granted (by deed or easement) to someone else, usually for construction and maintenance of transportation or utility lines (streets, ditches, power lines, etc.).

**Riparian** Pertaining to a stream or river and its banks. Riparian Rights are an owner's rights to use a stream or river that touches their property, including travel rights and use of the bank and bed. (This term is often used interchangeably with Littoral, which refers to lakes and oceans.)

**Section** A division or parcel of land created by the Government Survey, approximately one square mile (640 acres).

**Section Corner** A point on the boundary of a Section of land, established by the Government Survey. Section Corners were established every half mile along the exterior boundary of each Section. This term is often used in reference to the physical monument, although this is not technically correct.

**Special Flood Hazard Area (SFHA)** An area identified by FEMA as a high risk for flooding, making flood insurance mandatory for properties in the area.

**Subdivision** A portion of land that has been divided into lots; the process of splitting a section of land into smaller properties. In Michigan, subdivisions are regulated by the Land Division Act. A map of a subdivision is called a Plat.

**Theodolite** An instrument for measuring angles.

**Tenth** A unit of length equal to 1/10 of a foot (1.2 inches or 1 3/16 inches)

**Title** The legal evidence of the right of ownership in a piece of property. Can also refer to the formal documents that serve as proof of these rights.

**Total Station** A surveying instrument that integrates a theodolite with an Electronic Distance Meter (EDM) to measure both angles and distances.

**Tract** An area of land, large or small.

# ABOUT PREIN&NEWHOF



At P&N, our goal is to serve our clients wisely – meeting their infrastructure needs with a combination of experience, integrity, creativity, and common sense. This commitment has made us the engineer of choice for over 50 communities across West Michigan.

P&N offers a wide range of engineering, surveying, consulting, and laboratory services, including:

- Water & Wastewater Systems
- Stormwater Management
- Roads & Trails
- Airports
- Private Development
- Environmental Consulting
- Laboratory Testing
- Structural Engineering
- Geotechnical Engineering
- Surveying
- GIS & Mapping

## Employees

Prein&Newhof is 100% employee-owned, with 80 full-time personnel, including, surveyors, drafters, geologists, chemists, communication specialists, and support staff.

## Sustainability

At P&N, if it isn't sustainable, it isn't good design. So what does sustainability mean to us?

- Lower Ecological Impact – Smarter designs that fit seamlessly into our ecosystems.
- Energy Recovery & Conservation – Intelligent systems that do more with less.
- Environmental Renewal – Creative engineering that restores and improves communities.
- Financially-Sustainable Improvements – Smarter spending through big-picture planning.

## Locations

Grand Rapids Office (Corporate Office)  
3355 Evergreen Drive NE, Grand Rapids, MI 49525  
t. 616-364-8491 • f. 616-364-6955

Holland Office  
258 James Street, Holland, MI 49424  
t. 616-394-0200

Kalamazoo Office  
7123 Stadium Drive, Kalamazoo, MI 49009  
t. 269-372-1158 • f. 269-372-3411

Muskegon Office  
4910 Stariha Avenue, Muskegon, MI 49441  
t. 231-798-0101 • f. 231-798-0337

Traverse City Office  
1220 Airport Access Road, Traverse City, MI 49686  
t. (231) 946-2394 • f. (231) 946-0580

Environmental Laboratory  
3260 Evergreen Drive NE, Grand Rapids, MI 49525  
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