

Land Surveying - Issue of Encroachments and How to Deal with Them

Course Description

Encroachments are a persistent and often contentious issue encountered in land surveying and property boundary determination. This course explores the technical, legal, and procedural principles behind identifying, documenting, and resolving encroachments in both urban and rural land settings. It provides a thorough understanding of the types of encroachments, their implications for property ownership, and how professional land surveyors can apply best practices to manage and mitigate disputes. The course also examines relevant legal precedents, ethical responsibilities, and communication strategies necessary for effective resolution of encroachment issues.

Course Objectives

Upon completion of this course, participants will be able to:

- Understand the definition and classification of property encroachments.
- Learn how to detect and document encroachments during the surveying process.
- Review legal principles related to adverse possession and prescriptive rights.
- Analyze techniques for boundary conflict resolution.
- Examine professional responsibilities and ethical considerations in dealing with encroachments.
- Apply practical procedures and communication methods to resolve encroachment issues effectively.

Intended Audience

This course is applicable to licensed Professional Land Surveyors, Civil Engineers, and other design professionals involved in land development, property law compliance, municipal planning, and real estate development.

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Chapter 1: Introduction to Encroachments in Land Surveying

Encroachments are among the most common and potentially contentious issues encountered during land surveying projects. They represent any physical intrusion or extension of a structure, improvement, or personal property beyond a legal property line and onto an adjacent parcel.

These conditions can be intentional, accidental, or the result of long-standing neglect or uncertainty surrounding the true location of a boundary. From fences and retaining walls to driveways, sheds, and even entire buildings, encroachments create practical, financial, and legal complications that necessitate resolution through professional surveying, documentation, and sometimes litigation.

Land surveying has long served as the principal profession for identifying and safeguarding property rights. The role of the land surveyor is not merely technical but also fiduciary—protecting the boundaries and interests of private and public landowners while ensuring adherence to statutory and recorded legal descriptions. In this context, encroachments threaten the integrity of a property boundary and can undermine the rights or assumed usage of a landowner, particularly when an encroachment has gone undetected for years and may give rise to claims of adverse possession.

The process of identifying an encroachment typically begins during a boundary survey, which includes record research, field measurements, monument recovery, and comparison with prior plats or deeds. Upon discovery of a potential encroachment, the surveyor is tasked with collecting detailed field evidence, confirming measurements, referencing any relevant public records, and preparing documentation such as a plat or report to communicate findings. However, the discovery alone does not resolve the matter. A surveyor must understand the legal principles and statutory frameworks in their jurisdiction to adequately advise clients on the significance and potential remedies available.

Encroachments can affect all types of properties, including residential lots, commercial sites, agricultural land, and government-held parcels. In rapidly developing areas, they often emerge due to hasty construction, outdated plats, inadequate staking, or poor recordkeeping. In more rural or longstanding communities, encroachments may be the product of decades-old informal agreements, generational land use, or boundary ambiguity due to natural changes in the landscape.

The professional surveyor must approach such issues with technical precision and neutrality. Because encroachment disputes frequently become emotionally charged between neighbors, the surveyor's role as a clear-headed, fact-based advisor is paramount. It is important that surveyors do not act as mediators or legal representatives, but rather produce defensible survey products that allow property owners, attorneys, or courts to make informed decisions based on the facts.

This chapter serves as a foundation for the broader examination of encroachment in surveying practice. The remaining chapters will delve into specific types of encroachments, their causes, how they are measured and reported, and how the legal and ethical considerations of the surveying profession apply in these often complex situations.

Chapter 2: Types and Causes of Encroachments

Encroachments occur when a physical object, use, or structural component extends beyond the boundaries of a property into an adjacent parcel. Understanding the variety of encroachments and their root causes is essential for land surveyors, as it influences the methodology used in detection, documentation, and resolution.

Encroachments can be broadly categorized into three groups: structural encroachments, surface encroachments, and subsurface or overhead encroachments.

Structural Encroachments are the most commonly encountered type. These involve permanent or semi-permanent structures that physically cross a property line. Common examples include buildings, garages, additions, sheds, and retaining walls. In some cases, the structure may have been constructed based on inaccurate boundary information or outdated plats.

In other instances, the encroachment may result from a failure to stake property lines during construction, leading to buildings being erected in the wrong location. Over time, these encroachments can develop into serious title issues, especially if ownership of the parcel changes or if the encroaching party attempts to assert legal rights over the portion of land.

Surface Encroachments refer to elements such as fences, driveways, walkways, landscaping features, gardens, or pavement that extend across a boundary. While often less significant in terms of monetary value or permanence, these encroachments are the most likely to cause disputes between residential neighbors. A misplaced fence, for example, may not be noticed for years until a property transfer, redevelopment, or updated survey occurs. In rural areas, such encroachments may involve agricultural structures like pens or feedlots, or even informal pathways that gradually become expected rights-of-use.

Subsurface and Overhead Encroachments are less visible but equally important. Subsurface encroachments might include footings, foundation walls, septic systems, or underground utility lines that extend into neighboring lots. Overhead encroachments can include balconies, eaves, signage, or utilities suspended across boundary lines. These types of encroachments require careful vertical measurements and the use of modern tools such as total stations or 3D scanning technology to accurately document the extent and elevation of the intrusion.

The causes of encroachments are varied and often reflect either oversight or ambiguity in property development processes. One frequent cause is **inadequate or outdated legal descriptions** in deeds or recorded plats, leading to confusion about true boundary locations. Another is the failure to retain a licensed surveyor prior to or during construction projects, where reliance on assumptions or informal staking leads to inaccurate placement. In urban infill projects or historical neighborhoods, narrow lot dimensions and outdated survey records may no longer match current conditions, increasing the risk of boundary violations.

In many regions, **natural landscape changes** can also obscure boundary indicators, especially when physical monuments are lost due to erosion, vegetation growth, or construction. A property that once had clearly marked corners may over time become unclear, leading to misplaced assumptions during development or fencing.

Lastly, there are cases where encroachments arise from **deliberate action or informal agreements**, such as when a neighbor knowingly places a fence or structure across the boundary with verbal permission or passive acceptance from the adjacent owner. While such arrangements may appear cooperative, they often become problematic during real estate transactions or inheritance proceedings, when new parties are not bound by prior informal understandings.

Surveyors must approach each encroachment scenario with a discerning eye, gathering accurate measurements and understanding the historical context of the parcel. This ensures that any findings are not only technically correct but also capable of withstanding legal scrutiny if challenged.

Chapter 3: Surveying Methods for Detecting Encroachments

The accurate detection of encroachments is a central responsibility of professional land surveyors, requiring the application of precise surveying methodologies grounded in both modern instrumentation and traditional boundary principles. Encroachments are typically discovered during the execution of boundary surveys, ALTA/NSPS Land Title Surveys, or during specific encroachment investigations requested by property owners, developers, or legal professionals.

The first step in any encroachment investigation begins with **comprehensive research of the public record**. This includes deeds, plats, subdivision maps, right-of-way dedications, and recorded easements. These documents provide the legal framework for determining ownership limits and are essential for comparing the current physical occupation of the land with its legally described bounds. Discrepancies between the legal description and field conditions often serve as the earliest warning signs of a potential encroachment.

Once legal records are reviewed, the surveyor performs **field reconnaissance**, which involves identifying and locating any existing monuments or markers, such as iron pins, concrete monuments, or original boundary stakes. In areas with historical surveys, particularly those dating back several decades or more, locating these reference points can be challenging but is essential for maintaining continuity with the original intent of the boundary.

Surveyors then perform **field measurements using total stations, GNSS equipment (such as GPS), and in some cases terrestrial LiDAR or 3D scanning technology**. These tools allow for millimeter-level precision in establishing boundary lines and detecting whether any physical structures or improvements cross those lines. Measurements must be adjusted to match the bearing and distance systems defined in the recorded documents. The process may involve traverses, resection, or closed-loop calculations to verify the internal consistency and closure of the survey.

For structures that potentially encroach, **offset measurements and perpendicular distances** are taken from the surveyed boundary to various points on the feature in question (e.g., building corner, fence post, wall face). These measurements are crucial not only to confirm the presence of an encroachment but also to quantify its extent. Surveyors must often capture vertical data as well, particularly in situations involving eaves, decks, overhead encroachments, or subsurface infrastructure such as footings or retaining wall bases.

When appropriate, **aerial imagery and photogrammetry** may be used to supplement the ground data, especially on large tracts of land or in situations where multiple properties are being evaluated simultaneously. However, these tools cannot substitute for ground truth measurements, as aerial distortion, scale inaccuracies, and vegetation interference can produce misleading results.

The final product of this process is a **boundary survey map or plat**, which clearly illustrates the boundary lines and any detected encroachments, accompanied by a written legal description and a narrative report. The narrative should describe the nature of each encroachment, its measured dimensions, and its positional relationship to the surveyed boundary. It should also note any observable or recorded easements, rights-of-way, or evidence of prior agreements that may affect the encroachment's legal status.

Surveyors must be extremely cautious not to draw legal conclusions within their reports. While it is their duty to identify and present factual boundary and encroachment data, determinations regarding ownership disputes, adverse possession claims, or enforceability of easements should be reserved for legal counsel. The role of the surveyor is to produce technically defensible and objectively verifiable documentation that may then be used by clients, attorneys, or courts in resolving the matter.

Detecting encroachments is a process that demands not only technical skill but also professional judgment. Each situation is unique, and even small encroachments can result in substantial legal or financial consequences if mishandled. Through rigorous methodology, transparent reporting, and adherence to professional standards of practice, surveyors fulfill their responsibility as neutral experts in boundary determination.

Chapter 4: Legal Framework: Adverse Possession and Prescriptive Easements

Surveyors frequently operate at the intersection of technical measurements and legal implications. When dealing with encroachments, it is essential to understand the legal doctrines that may alter or affect property rights, particularly **adverse possession** and **prescriptive easements**. While surveyors are not attorneys and should refrain from offering legal opinions, they must recognize these concepts in practice and provide documentation that allows legal professionals to assess their applicability.

Adverse possession is a legal principle under which a person who occupies land owned by another, without permission and under specific conditions, may eventually gain legal ownership of that land.

The specific requirements for adverse possession vary by jurisdiction but generally include the following characteristics:

- **Actual Possession:** The claimant must physically use or occupy the land in some tangible way.
- **Open and Notorious Use:** The use must be visible and obvious to anyone, including the rightful owner.
- **Exclusive Possession:** The claimant must possess the land in a manner exclusive of the true owner or others.
- **Hostile Claim:** The occupation must be without the permission of the owner.
- **Continuous Use:** The use must occur uninterrupted for a statutory period, often ranging from 7 to 20 years.

From a surveyor's perspective, this means that a longstanding encroachment, such as a fence or structure placed across a boundary, may carry legal weight beyond its physical presence. When a survey uncovers such features, particularly if they have existed for decades and no objection has ever been raised by the adjacent owner, there is a potential that the encroaching party may claim ownership under adverse possession laws.

Similarly, **prescriptive easements** can arise when one party uses another's land in a continuous, open, and adverse manner without ownership intent. Unlike adverse possession, which transfers ownership, a prescriptive easement grants a **legal right of continued use**. This is common in cases where driveways, utility access roads, or irrigation channels have been used across another's land without formal agreements for an extended period.

Surveyors must be particularly diligent in **documenting evidence of long-term usage patterns**. This may include worn paths, utility lines, historical imagery comparisons, conversations with neighbors, or physical evidence of aged construction. Though this evidence alone does not determine legality, it forms the factual basis upon which legal interpretation can occur.

In addition to adverse possession and prescriptive easements, **doctrines of acquiescence or estoppel** may also come into play. For instance, if two property owners agree—formally or informally—on a boundary line for many years, and structures are built accordingly, courts may be reluctant to enforce a different legal boundary after such reliance has been established.

It is not uncommon for property owners to assume their fence or structure is correctly placed, especially if it was installed by a prior owner or contractor. As a result, disputes often arise only after a formal survey uncovers boundary inconsistencies. Surveyors must resist pressure to “take sides” in these disputes and should carefully explain the factual basis of their findings, without assigning blame or asserting legal conclusions.

Professional practice also requires that surveyors understand the limitations of their authority. While they provide essential data, interpretation of the law is the realm of courts and legal counsel. Many states require surveyors to include disclaimers in their reports indicating that no legal determination is being made—only the physical conditions and comparisons with record documents are being shown.

Finally, surveyors must be aware of **statutory obligations to notify property owners** when encroachments or boundary disputes are detected. In some jurisdictions, failing to communicate these findings promptly and clearly may expose the surveyor to liability if a dispute escalates.

Understanding the legal frameworks surrounding encroachments does not mean practicing law. It means recognizing when a situation may have legal ramifications, properly documenting all conditions, and directing clients to seek legal advice when necessary. A surveyor's expertise lies in delivering accurate, defensible, and neutral information that becomes the foundation for lawful resolution.

Chapter 5: Resolving Encroachments Through Boundary Agreements

When an encroachment is identified, landowners must choose from several potential avenues for resolution. These paths often depend on the nature, extent, and duration of the encroachment, as well as the willingness of both parties to engage in cooperative dialogue.

One of the most effective, non-litigious methods for resolving such disputes is the creation of a **boundary agreement**—a formal, often recorded, document that establishes the agreed-upon boundary line between adjoining landowners.

A **boundary agreement** may take the form of a Boundary Line Agreement (BLA), Lot Line Adjustment (LLA), or simply a written and notarized declaration of mutual understanding. While the specific format and legal enforceability vary by state and jurisdiction, these agreements share common traits. They serve to clarify the boundary, mitigate future legal disputes, and formalize acceptance of the boundary as surveyed or interpreted by both parties. They may be initiated based on surveyor findings, historical use patterns, or legal counsel recommendations.

Surveyors play a key role in the **preparation stage** of boundary agreements, though not in the drafting of the legal document itself. Their responsibilities include:

- Producing a detailed and certified survey that clearly identifies the recorded boundary line, the physical encroachment(s), and the agreed-upon line, if different.
- Preparing an exhibit or plat that may be attached to the boundary agreement as supporting evidence.
- Explaining the measurements, basis of bearings, monumentation, and rationale behind the determined lines to both property owners, without bias or advocacy.

Surveyors must remain cautious and refrain from interpreting legal rights or coercing either party toward a resolution. The neutral stance is essential to maintain professional integrity, especially if future litigation arises.

In many cases, boundary agreements are used in conjunction with or as a replacement for expensive litigation. They are particularly effective in disputes involving minor encroachments, such as fences, landscaping, or driveways, where both parties acknowledge the discrepancy but prefer a mutual solution. In some jurisdictions, boundary agreements can be recorded at the local land records office, giving them legal standing and preventing future challenges by successors in interest.

Another practical solution is the **granting of an easement**—a legal right to use a portion of the adjacent property for a specific purpose, such as access or utility use. This is particularly useful when structures such as sheds, septic systems, or drainfields slightly cross a line but are not easily relocated. A well-drafted easement agreement,

supported by a surveyor's exhibit, can define the area, its limitations, and the responsibilities of both parties.

In other instances, the encroaching party may seek to **purchase the portion of land encroached upon**, especially when the encroachment is substantial or the structure cannot reasonably be moved. This results in a **boundary adjustment or deed transfer**, which must be supported by a revised legal description prepared by a surveyor and confirmed through the recording process. Such adjustments may require zoning board or planning department approval depending on the locality and the impact on setback or lot size requirements.

When neither party can reach agreement, the matter may escalate to litigation, during which the surveyor may be called to testify as an expert witness. In this case, it is critical that all survey data, notes, and reports be thorough, professional, and defensible under scrutiny.

Mediation or arbitration may also serve as intermediate resolution methods before litigation. In such forums, surveyors may be asked to provide technical clarification or supply documentation that helps neutral third parties understand the scope and significance of the encroachment.

In all scenarios, it is essential for the surveyor to ensure clear and complete documentation, including:

- Accurate maps and plats showing the encroachment in relation to property lines.
- Field notes and monument recovery reports.
- Copies of recorded documents used to establish the boundaries.
- Disclaimers stating that the surveyor is not offering legal conclusions.

Resolution of encroachments through boundary agreements and related means allows property owners to maintain relationships, reduce legal costs, and achieve certainty in land ownership. Surveyors are indispensable to this process when they adhere to the highest standards of technical accuracy, neutrality, and professional ethics.

Chapter 6: Ethical Responsibilities and Professional Practice

The practice of land surveying carries with it a significant ethical burden, particularly in cases involving encroachments where disputes may already be present or likely to arise. Surveyors are expected to operate as neutral professionals whose primary responsibility is to the integrity of the survey, the legal framework that governs it, and the public interest. Their work must reflect objectivity, technical accuracy, and fairness regardless of the financial or emotional stakes involved for the parties involved.

A surveyor's foremost ethical obligation is to the **truthful representation of physical and legal conditions**. In an encroachment scenario, this includes precisely identifying and documenting the nature and extent of any structural or surface intrusion. The accuracy of field measurements, the reliability of data interpretation, and the transparency of all procedures followed must be beyond reproach. Any bias or manipulation of data—whether intentional or due to professional negligence—can result in lasting legal ramifications and disciplinary action.

Surveyors also have a **duty to avoid conflicts of interest**. When hired by one party in a boundary dispute, the surveyor must maintain neutrality and not advocate for that party's position beyond the provision of factual findings. This obligation extends to avoiding relationships or financial arrangements that might influence the survey's outcome. If a conflict of interest arises, it must be disclosed to the client, and the surveyor may need to withdraw from the assignment if neutrality cannot be preserved.

Professional ethics also require that surveyors **respect confidentiality and property rights**. Accessing property for surveying must be done in accordance with applicable statutes or with the landowner's permission. Any information gathered must be handled with discretion and shared only with authorized parties. Even when encroachments are discovered, surveyors must not disclose findings to third parties beyond those legally entitled to receive the report.

Moreover, surveyors must refrain from **providing legal opinions or engaging in the unauthorized practice of law**. This is a common pitfall in encroachment cases, where clients may pressure the surveyor to assert ownership rights or recommend legal remedies. A professional surveyor should instead offer clear, factual reports and recommend that clients consult qualified legal counsel to interpret the implications of the findings. Overstepping into legal interpretation can not only undermine the integrity of the surveyor's work but also expose them to liability.

Surveyors must adhere to the **standards of practice** as established by the licensing board in their jurisdiction. Most states outline minimum technical and ethical requirements, including monumentation practices, documentation retention, record research, and plat preparation. Encroachments, in particular, demand strict compliance with these standards because they often result in legal challenges, title claims, or property transfers.

Communication is another vital element of professional conduct. Surveyors should **explain findings in clear, non-technical language** when speaking with clients or members of the public. Reports should include explanatory notes that define terms such as "encroachment," "easement," or "occupational evidence" to prevent misunderstanding. When possible, surveyors should be prepared to answer questions factually and calmly, especially when clients are emotional or disputes are ongoing.

Another ethical consideration involves **follow-up responsibilities**. If a surveyor discovers an encroachment that affects public infrastructure, utility easements, or municipal rights-of-way, there may be a statutory or contractual obligation to report such findings to the appropriate agencies. Failing to do so may place the surveyor in violation of professional conduct codes or expose third parties to legal or physical risk.

Surveyors also contribute to the long-term credibility of their profession by **maintaining thorough and defensible records**. Field notes, sketches, GPS logs, monument references, and correspondence should be retained in accordance with state requirements, often for several years. In the event of future litigation, these records become invaluable and can determine whether the surveyor's work withstands legal challenge.

In summary, the ethical role of a surveyor in encroachment cases is one of **accuracy, impartiality, discretion, and compliance**. By upholding these principles, land surveyors reinforce public trust in their profession and ensure that property boundaries—both literal and figurative—are maintained with integrity.

Chapter 7: Documentation, Communication, and Reporting of Encroachment Issues

Proper documentation and effective communication are essential components of professional land surveying, particularly when encroachments are identified. A surveyor's ability to convey findings clearly and accurately, both through drawings and narrative explanation, often determines whether a dispute escalates into legal conflict or is resolved amicably. The surveyor's report must stand alone as a complete, technically sound, and unbiased record that may be relied upon by property owners, attorneys, planners, title insurers, and courts.

The primary deliverable in most encroachment cases is the **survey plat or map**, which illustrates both the legal boundaries and any discovered encroachments. The plat must comply with applicable state standards and professional board rules, including the use of standard symbols, north orientation, scale, monument descriptions, and a legend explaining all observed features. Encroachments should be explicitly labeled, dimensioned, and referenced to the boundary line, often with offset notations such as "Fence encroaches 1.2 ft over line into Parcel B."

Accompanying the plat should be a **narrative report**, which interprets the field findings in a professional and accessible format. This report is not a legal document, nor should it assert legal conclusions. Rather, it provides context for the field data, describes how the boundary was determined, identifies which record documents were used, and explains how encroachments were identified and measured.

A well-written report includes:

- A summary of the purpose of the survey.
- A list of record documents reviewed (deeds, plats, easements, etc.).
- Description of monuments found, set, or referenced.
- Identification and measurement of any encroachments, including their direction, extent, and type.
- Discussion of any observable evidence of occupation or use that may suggest prescriptive rights or long-standing encroachment.

Clear **communication with clients** is also essential. Upon identifying an encroachment, the surveyor should notify the client promptly, explain the nature of the encroachment in non-technical terms, and provide guidance on next steps. This may include referring the client to a legal professional or explaining how the survey can support resolution through a boundary agreement or easement. It is not appropriate for the surveyor to suggest litigation or make assumptions about fault, ownership, or intent.

In contentious cases, or when the survey is likely to become part of a legal proceeding, the documentation must be especially thorough and defensible.

The surveyor should ensure that:

- Field notes are dated and legible.
- Measurements are verified through multiple methods or redundant observations.
- Digital data such as GPS logs or total station files are archived.
- Photographs are taken of the encroachment and surroundings, particularly when they involve structures or features that may be altered or removed.

If the encroachment affects more than one property owner or crosses a public right-of-way, the surveyor may need to prepare **multiple reports or coordinate with public agencies**. In such cases, the communication should be consistent, neutral, and based strictly on the survey findings.

Surveyors may also be asked to attend meetings with attorneys, title companies, or planning boards to present their findings. While this is appropriate, any participation must remain within the scope of technical explanation—not legal advocacy.

Surveyors must also ensure that **reports are securely archived** in accordance with the statutes or administrative rules of their licensing board. In most states, records must be retained for a minimum of five to ten years, though longer retention is often advised in cases involving encroachments, subdivisions, or legal disputes.

In summary, the quality and clarity of a surveyor's documentation and reporting define their professionalism and play a pivotal role in the resolution of encroachment issues. Through accurate platting, detailed reporting, and clear communication, the surveyor upholds their responsibility to provide unbiased, defensible findings that can guide lawful and equitable property decisions.

Chapter 8: Case Studies of Encroachment Disputes and Resolutions

Real-world case studies of encroachment disputes provide valuable insight into how surveyors apply technical skills and ethical principles to resolve boundary conflicts. These examples illustrate a spectrum of outcomes—from amicable agreements to legal confrontations—and demonstrate the critical role that professional documentation and impartiality play in guiding resolutions.

Case Study 1: The Misplaced Fence on a Residential Lot

In a suburban neighborhood, a homeowner commissioned a boundary survey before installing a swimming pool. The survey revealed that the neighbor's wooden privacy fence encroached approximately 1.5 feet onto the subject property along the rear lot line, extending the full width of the parcel. The fence had been in place for over fifteen years and was installed by a prior owner.

The surveyor's fieldwork recovered original iron pins at the lot corners, and the recorded subdivision plat supported the surveyed boundary. The encroachment was clearly shown on the certified survey plat, with narrative documentation describing the monuments found, field procedures, and encroachment location relative to the recorded boundary.

The homeowner approached the neighbor amicably. Although initially defensive, the neighbor agreed to retain their own surveyor, who confirmed the findings. Rather than pursuing litigation, the parties executed a **boundary line agreement** that legally acknowledged the correct boundary. The agreement allowed the neighbor's fence to remain in its current location under a **revocable license**, which was recorded with the county to notify future owners.

This resolution preserved the legal boundary, maintained neighborly relations, and avoided court involvement—all supported by clear and accurate survey documentation.

Case Study 2: Garage Encroachment and Adverse Possession Claim

In a rural subdivision, a property owner preparing to sell their parcel ordered a boundary survey, which revealed that the neighboring property's detached garage encroached more than four feet onto the subject parcel. The garage had been constructed at least fifteen years prior and was fully integrated into the neighbor's driveway.

The surveyor prepared a plat detailing the encroachment, confirmed with record research and visual verification from satellite imagery spanning multiple decades. Discussions with long-term residents confirmed the structure's age and its unchallenged presence.

The neighbor claimed they had always understood the garage to be on their land and subsequently initiated a legal action for **adverse possession**, citing open, exclusive, and continuous use. Based on the survey and historical evidence, the court granted the adverse possession claim, transferring ownership of the encroached land area to the neighbor.

This case underscores how surveys may serve as the foundation for legal resolution, particularly when they include historical comparisons and precise fieldwork that document the duration and nature of an encroachment.

Case Study 3: Commercial Parking Lot Encroachment into a Public Right-of-Way

In a small town, a newly established engineering firm acquired a commercial parcel. During the design of a new facility, a boundary and topographic survey revealed that part of the existing paved parking lot extended nearly eight feet into a municipal right-of-way. The encroachment had occurred gradually over years through informal expansion and repaving by a prior property owner.

The surveyor prepared a detailed survey plat illustrating the property lines, the edge of pavement, and the right-of-way limits. Upon notification, the municipality reviewed the encroachment in the context of public use and safety.

Instead of requiring demolition of the parking area, the municipality issued a **revocable encroachment license**, which permitted continued use of the area under specific terms. The agreement required the business to maintain the surface, provide liability insurance, and relinquish the area upon municipal demand. The surveyor's documentation was used as an attachment to the recorded agreement.

This case highlights how municipal flexibility, supported by accurate surveying and professional communication, can provide practical solutions to longstanding encroachments on public land.

Case Study 4: Agricultural Fence Line Dispute in a Rural Setting

A dispute arose in a rural area between two adjoining landowners over a fence line that had shifted gradually across seasons. One farmer accused the neighbor of encroaching into his field by several feet and cultivating part of his land. Tensions were high due to crop damage and competing claims of historical land use.

A surveyor was retained to perform a boundary retracement based on original deed calls, quarter section corners, and long-standing monuments. The surveyor's investigation revealed that the complaining farmer had, in fact, installed his own fence several feet beyond the recorded boundary years earlier, inadvertently occupying the neighbor's land.

With both parties present at a boundary review meeting facilitated by a local extension agent, the surveyor presented the findings neutrally, using historical documents, plat overlays, and monument evidence to support the conclusion. The parties agreed to remove all current fencing and reestablish the boundary as described in the original deeds.

A **mutual boundary acknowledgment agreement** was signed and recorded, bringing the dispute to a close without litigation.

This case underscores the power of objective surveying to settle emotionally charged conflicts, especially when accompanied by professional conduct and unbiased presentation of facts.

Case Study 5: Overhanging Commercial Signage Above a City Sidewalk

In a redeveloping urban corridor, a commercial property owner installed a cantilevered sign above the sidewalk to advertise a new business. A boundary and right-of-way survey was conducted as part of a city-wide improvement project. The survey identified that the sign projected approximately three feet into the city's airspace above the public right-of-way, violating local zoning codes prohibiting private structures within public airspace without permits.

The surveyor used LiDAR-based scanning to measure the overhang precisely and determine its elevation above the sidewalk. The encroachment was documented and submitted to the city for review.

Rather than demanding removal, the city issued a **conditional variance and air rights license** allowing the sign to remain, contingent upon annual inspection, indemnification clauses, and structural integrity assurances. The license was made possible due to the high-quality technical survey documentation that clearly defined the encroachment and its relationship to public infrastructure.

This example illustrates how modern surveying tools and clear reporting enable cities and property owners to reach functional resolutions for non-traditional encroachments.

Case Study 6: Encroachment Discovery Sparks Litigation

In a wooded residential neighborhood, a landowner hired a surveyor prior to installing a perimeter fence. The survey revealed that a concrete block addition from the neighbor's home extended more than two feet into the client's property. The structure had been constructed eight years earlier with local permits but no recorded survey.

The neighbor disputed the findings and refused to acknowledge the encroachment. Mediation attempts failed, and the case proceeded to court. The surveyor was called to testify and submitted original field notes, monument recovery documentation, photographic records, and the certified plat. The judge upheld the survey's accuracy and ordered partial removal of the encroaching structure, along with financial damages for loss of land use.

This case underscores the importance of **recordkeeping, professional neutrality, and defensible methodologies**, especially when survey work becomes part of legal proceedings.

Through these diverse case studies, we see that land surveyors serve a critical role in the identification and resolution of encroachments. Whether through mediation, boundary agreements, court rulings, or municipal coordination, their work forms the factual foundation upon which all resolutions rest. The key to successful resolution lies in the surveyor's unwavering adherence to precision, neutrality, documentation, and ethical standards.

Chapter 9: Summary of Best Practices and Risk Mitigation

Encroachments pose a recurring challenge in land surveying and boundary management, especially as property development continues to intensify and land becomes more subdivided, repurposed, or repurchased. The responsibility to detect, document, and communicate encroachments falls squarely on the shoulders of the professional surveyor, whose role in preserving property rights and preventing disputes is both technical and ethical.

The best practices for handling encroachments can be distilled into several essential principles. First, surveyors must prioritize **accurate record research**. All encroachment assessments begin with a complete understanding of deed descriptions, prior surveys, easements, and subdivision plats. Understanding the legal descriptions and how they relate to existing occupation patterns is critical for identifying discrepancies.

Second, **methodical fieldwork and precise measurement** must form the core of the surveyor's operation. This includes monument recovery, clear identification of physical features, and use of reliable instruments such as total stations, GPS, and, where appropriate, 3D scanning technologies. Surveyors should aim to collect not only horizontal but vertical data when structures or utilities encroach overhead or below the surface.

Third, surveyors must ensure **clear, defensible documentation**. A certified plat, along with a written narrative, should communicate the encroachment conditions in both technical and understandable language. All field data, photos, and notes should be retained for future verification and potential litigation support.

Fourth, the professional surveyor must remain **neutral and objective**, especially when dealing with neighboring landowners, municipal officials, or legal representatives. They must resist the temptation to assign blame or offer legal interpretations. Their role is to present facts clearly and allow others—attorneys, mediators, judges, or planners—to resolve the implications based on that evidence.

Fifth, understanding **jurisdictional legal doctrines** such as adverse possession, prescriptive easements, and doctrines of acquiescence allows the surveyor to recognize when a case may involve more than just a technical boundary error. While not responsible for determining ownership, the surveyor must frame findings in a way that equips clients with the facts needed to pursue resolution.

Sixth, in cases involving governmental or public land boundaries, surveyors must be especially diligent in ensuring compliance with applicable **local codes and ordinances**, including notification procedures, public right-of-way regulations, and required reporting protocols. Failure to adhere to these standards can create liability or invalidate the findings.

Lastly, surveyors should promote **risk mitigation through proactive client education**. Property owners often have limited understanding of boundary issues. By explaining

findings clearly, outlining available options (e.g., boundary agreements, easements), and referring clients to legal counsel when needed, surveyors can prevent small issues from escalating into costly legal battles.

By consistently applying these practices, surveyors protect the public interest, reduce the risk of litigation, and reinforce trust in the profession. Encroachments may be inevitable in the natural evolution of property usage, but with diligent surveying and sound professional conduct, they can be addressed with clarity, equity, and resolution.

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