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Forensic Survey Mapping and Engineering In Eminent Domain Cases

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Introduction

"Eminent domain" is the fundamental power of the sovereign to take private property for a public use without the owner's consent. The Fifth Amendment to the United States Constitution prohibits the federal government from taking private property for public use without just compensation, and the Fourteenth Amendment prohibits state governments from condemning private property without due process of law. The Florida Constitution provides that no private property shall be taken except for a public purpose and with full compensation therefor paid to each owner.[1] As property may be taken without the owner's consent, the exchange of property and compensation typically occurs between a willing buyer and an unwilling seller. When property is acquired from an unwilling seller by a willing buyer who needs the property to complete a project, disagreements as to the fair and proper "full compensation" may occur; especially when a partial taking of a property has a devastating effect on the remaining property. If a mutually acceptable compensation cannot be achieved through negotiation or other means, the determination of "full compensation" is left to the court system.

In Florida, owners are entitled to receive compensation for the land taken, damage to the remainder property, and under certain conditions business damages. Damage to the remainder property may be partially or entirely mitigated through the implementation of a "cure plan" which replaces what was taken on the site. The agency that is acquiring the property through eminent domain is typically referred to as the "condemning authority."

Eminent Domain Process

The development of an eminent domain case is a team effort, with the team made up of an attorney, the property owner, and their experts. A real estate appraiser is responsible for preparing an appraisal of the taking, including damages. Where owners are eligible for business damages, a certified public accoun-

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tant prepares a business damage report. The appraiser and accountant are supported by additional experts, which could include professional surveyors, engineers, land planners, construction contractors, and others.

The role of the surveyor is to determine the precise location of original right-of-way lines, property boundaries, property features, and improvements, waterways and wetlands, elevations, and topography. He must review right-of-way maps for accuracy and for consistency with historical property boundaries. He aids the engineer by providing property data in much the same manner as he would in more traditional surveying and engineering roles.

The role of the engineer in an eminent domain case is to assist in the determination of full compensation due to the property owner. It is the role of the engineer to quantify damages created by the taking on the utility and availability of on-site parking, site access, loading and unloading facilities, on-site traffic circulation, stormwater management systems, site visibility, and utilities. On vacant properties, the engineer assists in the determination of property values by addressing development issues such as changes to potential site access and the ability of a proposed development to comply with local traffic performance standards, and other engineering-related development issues.

Eminent domain surveying and engineering analysis offers challenges that may differ from traditional land development and design. An engineer retained to provide design services for a proposed development is not constrained by existing buildings, stormwater management systems, driveways, and parking areas. In analyzing a property impacted by condemnation, the engineer may ultimately be called upon to develop a plan to restore functionality to a property with a severed remainder that is smaller than originally provided for the various functions of the property. This analysis requires unique experience and training beyond the standard experience required for traditional land development surveying and engineering functions.

The Surveyor

When an eminent domain action begins, the condemning authority customarily provides site plans, property plans and/or property descriptions which purport to accurately describe the parcel of property which is to be taken from the parent tract and, most generally the portion of the parent tract which remains after the taking; however, the key words are “purport to describe”. In the vast majority of cases those key words apply accurately; however, in some specific instances they do not and in such cases the property owner’s rights and assets may be at risk – frequently severely so. In these cases, the assistance of a registered, licensed land surveyor may be important. The necessity for a registered professional surveyor acting on behalf of the land owner in such cases is occa-

sioned by the fact that the accuracy and validity of the work by the condemning authority may be challenged in order to protect the best interests of the property owner. An unregistered or unlicensed individual, even if he is a registered professional engineer may be denied the opportunity to testify regarding survey matters if the case goes to court.

When a roadway is being widened, additional right-of-way frequently is required, and it goes without saying that the precise location of the original, or old Right-of-way line is just as essential as is the location of the new, or proposed, Right-of-way line since the difference between the two will define the extent of the taking. In some cases the actual location of the existing Right-of-way line may be questionable. Over the years surveyors have encountered certain instances in which the Florida Department of Transportation has claimed the location of an existing Right-of-way line by virtue of "maintenance". According to knowledgeable attorneys, Florida law holds that a public body may acquire ownership of land adjoining a traveled roadway or highway if it has "maintained" that adjoining area for a specified period of time. That brings up a question as to the definition of "maintenance". The Florida Department of Transportation has sometimes endeavored to claim that "maintenance" may consist of simple mowing of grass on property otherwise unused or unoccupied by the Department of Transportation; however, also according to knowledgeable attorneys, Case Law applicable throughout much of the State requires that there must be an actual physical presence of pavement, sidewalks, ditches, or drainage facilities on any land to be claimed by "maintenance," and that these must be maintained over a given period of time before ownership of the area so occupied can be claimed by a public body by virtue of "maintenance." Where ditches are concerned and again according to knowledgeable attorneys, at least one decision upheld by the Supreme Court of the State of Florida indicates that the owner of a roadway or highway may claim ownership by maintenance of right-of-way out to the top of the ditch slope furthest from the center line of the highway, but not beyond, even if the area beyond is mowed and otherwise maintained, but where there is no evidence of actual prior construction existing thereon.

It seems that the Department of Transportation and perhaps other condemning authorities have sometimes forgotten such Case Law and, at such times, it may serve the best interests of the property owner if it is brought to their attention by a knowledgeable attorney working with a knowledgeable land surveyor. Representative examples of property claimed by "maintenance" recently occurred in a relatively developed area along a state highway on the outskirts of a moderate sized city in the State of Florida. The original Right-of-way was sixty-six (66) feet or thirty-three (33) feet each side of the centerline. Why sixty-six (66) feet? That's because sixty-six (66) feet is one eightieth (1/80) of one mile and is equal to the length of one Gunter's Chain which was the basic mea-

suring unit for all surveys of the public lands of the land grant states of the United States. Further, the Gunter's chain was almost universally used everywhere in the country throughout much of the eighteenth and nineteenth centuries. In the particular case under consideration, the original dedicated Right-of-way was sixty-six (66) feet wide as noted above; however, the condemning authority had, over some ten or fifteen years, mowed, or allegedly mowed, a swath of land beyond the pavement to a distance of some fifty feet wide on each side of the centerline of the roadway. The condemning authority intended to widen the road and believed that it needed a two hundred (200) foot Right-of-way in order to do so, or one hundred (100) feet each side of the centerline. At this point, the Florida Department of Transportation notified adjoining property owners of its intent to widen the road and indicated that, since it already owned one hundred (100) feet of Right-of-way, 50 feet each side of centerline, by virtue of maintenance, it planned to acquire only an additional fifty (50) feet of land on each side.

When a surveyor was retained by an attorney acting on behalf of several property owners, he determined that the top of the ditch slope furthest from the centerline generally fell at a distance of thirty five (35) to thirty seven (37) each side of the centerline which meant that the Department of Transportation was claiming ownership of a strip of land along the entire length of the roadway, amounting to thirteen (13) to fifteen (15) wide by virtue of its mowing/maintenance.

Appraisers representing the property owners valued frontage along this particular highway within this particular area at some $10 to $15 per square foot which meant that the land claimed by the DOT had a value of $130 to $225 per linear foot of frontage. One of the property owners had some seven hundred feet of frontage which meant that the Department of Transportation laid claim to a strip of land having a going value of somewhere between $91,000 and $157,500. The smallest piece of property affected by DOT claims had a frontage of one hundred feet which meant that the DOT was asking that this smallest property owner hand over $13,000 to $22,500 worth of property without compensation. As it happened, every one of those condemnation cases were settled during mediation, without trial, in favor of the property owner; however, had it not been for a knowledgeable attorney and a land surveyor who was able to define the actual extent of the "maintained" Right-of-way, the Department of Transportation would, almost certainly, have prevailed.

Was this an isolated instance? No. One has to believe that representatives of condemning authorities know of, or should know of, Case Law governing such ownership by "maintenance". Unfortunately, since such situations occur not infrequently, it appears that some condemning authorities may not be aware of all aspects of Case Law favorable to property owners.

Land use and land ownership affected by the presence or absence of water is another area of eminent domain frequently requiring the services of a land surveyor. It might be mentioned that, in the State of Florida, a land surveyor is no longer designated by L.S. (Land Surveyor or Licensed Surveyor) or P.L.S. (Professional Land Surveyor or Professional Licensed Surveyor) but is now, by action of the State Legislature, a P.S.M. (Professional Surveyor and Mapper). Regardless of designation, the surveyor is the professional authorized in most states to make determinations as to the location of water body boundaries and, in some instances, with the assistance of an ecologist, the extent of wetlands or land occasionally flooded.

The State of Florida claims ownership of all "navigable" bodies of water in the State. This leads to interminable controversy as to whether or not any given body of water is actually "navigable" and as to the actual extent of such body which may include lakes, ponds, rivers, and streams. The State also exerts jurisdiction over the development of wetlands and the value of a parcel, may vary dramatically based on the total size and location of wetland areas within it. Given the definition of "navigable", the division between State and private ownership lies at the "mean high water line". The meaning of "mean high water line" for bodies of water subject to tidal action is reasonably clear if not easily determined; however, the question frequently arises as to the meaning of "mean high water line" with respect to a theoretically stable body of water such as a lake. The answer, of course, is that no body of water is actually stable. The water surface level fluctuates with changes in rainfall, groundwater, drought, flood, etc. The land surveyor regardless of his designation by one state or another, is generally the professional called on to determine the actual location of the "mean high water line" which defines the boundary between public and private property not only in Florida but in many other areas of the country.

Determination of the location of the mean high water line is, in many instances, a highly complex, difficult and time consuming process dependent upon the availability of accurate water edge locations recorded over a considerable period of time or, in the absence of such, physical measurement of such locations as evidenced by identifiable high water marks and/or continuing observations.

The question now arises as to how this particular aspect of surveying may apply to eminent domain cases and the instances of application are numerous. Some examples might be:

- Governmental acquisition of Right-of-way from a parcel of property bounded on one side by a body of water (ocean, river, stream, lake) and on the other side by a public street or highway. Prior to the acquisition, the parent tract might have had adequate depth and land area for use as

residential or commercial property. After the taking the depth of the property might be reduced to such an extent that no economical structure could be built thereon while still meeting set-back requirements and other building and zoning restrictions. While the locations of the Right-of-way lines, both before and after the taking, might be reasonably clear, the location of the mean high water line bounding the adjoining body of water could have a profound impact on the usable depth of the property.

- If the condemning authority wishes to acquire the entire extent of a tract of land adjoining a body of water, the location of the mean high water line may be of great importance since such location will define the limits of the taking hence its size and thus the area which must be paid for.
- Acquisition of a strip of Right-of-way running across a tract of land adjoining a body of water might be needed by a public body for construction of an approach to a bridge for example. In this instance, the length of the Right-of-way strip acquired from a property owner may depend upon the actual location of the mean high water line.

Another not unusual instance in eminent domain actions which may require the assistance of a surveyor involves land which is subject to intermittent flooding or which, perhaps, simply has a high water table close to the surface of the ground and which may be considered a “wetland”. A condemning authority wishing to acquire a portion or all of such a piece of property may believe that the land, or a part of the land, is classified as a “wetland” and thus is unusable. If such is the case, the land would have minimum value. The property owner, on the other hand, may contend that his property is actually usable, in whole or in part, and a surveyor may be called upon to determine the true physical conditions across the property. He may be called upon to identify those portions of the property which are high enough so that they are clearly developable while defining those other portions of the property which might require fill or some other modification to make them usable. If a piece of property can be made usable by adding earth in order to raise its surface elevation, a land surveyor may be called upon to determine the depth and extent of fill required or may be called upon to provide elevation data which will enable an engineer to make such determination.

In summary, a land surveyor may often be of considerable assistance to an attorney handling eminent domain actions. When involved in eminent domain work, the surveyor may use many of the same methods and techniques employed during conventional boundary, topographic and construction surveying but successful application to eminent domain problems may require a different thought process combined with a clear understanding of the peculiarities and parameters governing the acquisition of private property by public entities.

The Engineer

It is essential that the engineer become familiar with the use and operation of the property. Though generally not trained in engineering issues, the owners are a wonderful source of information. The owner generally knows more about the property than can be learned by the engineer during routine site visitations. The engineer should tour the property with the owner, and conduct an interview to inquire about the operation of the site. Interview questions asked of the owner might include the following:

- What is the major business function performed on the property?
- How do vehicles ingress, egress, park, and maneuver on the site?
- How are deliveries made, and by what type of vehicles?
- From which direction do delivery vehicles generally approach the site?
- What happens to stormwater during a heavy rain storm?
- What utilities are available on the property?
- What is the permitting, development, and construction history of the property?
- Is an existing property survey or approved site plan readily available?
- Are there unique features to the operation of the property that might be overlooked?

Communication between the engineer and the surveyor is important as more topographical information for an eminent domain action is generally required than is typically provided on a topographical survey. The survey needs to include all property features impacted by the taking. It should not be assumed that only items within the taking area are impacted. The location of property boundaries should be precisely located, and roadway location and features need to be shown.

Local Codes and Ordinances

The engineer must become familiar with the local zoning, land development, and other applicable codes and ordinances that relate to engineering design and permitting. Additionally, it is essential to determine which agencies have jurisdiction over the property. For example, one property could be subject to partial jurisdictional control of the City, County, Department of Transportation, Water Management District, Department of Environmental Protection, and others. State and Federal regulations such as the Americans with Disabilities Act must also be considered in the analysis.

Property records with all jurisdictional agencies should be reviewed when available, and file copies of important permits, site plans, and other documents should be obtained. If possible, ordinances that were in place at the time of site plan and building permit approvals should be obtained. Property features such as parking, landscaping, setbacks, and stormwater management systems that do not meet present-day requirements may have complied with ordinances that were in place at the time of approval. It might be possible that the property development pre-dates any zoning or land-development regulations. Engineers should work closely with planners and zoning experts to understand the applicable requirements for the property.

When preparing cure plans, a determination should be made of the appropriate codes to be used. For example, in Florida, the analysis is typically based on the requirements that were in place at the date of taking. Care in this area should be taken when evaluating a parcel where the taking has not yet occurred, or where the taking occurred some time in the past.

Right-of-way and Construction Plans

The right-of-way plans and the roadway construction plans are among the first important documents that must be reviewed by the engineer. The engineer should become familiar with the property to be acquired by the condemning agency. A thorough review of the construction plans early in the process is extremely important. Sometimes errors, problems, or conflicts with the construction plans are identified, and can be resolved with the agency. An example is an error in a roadway construction plan that will cause water to flow from the gutter onto a private property. Such an error brought to the attention of the condemning agency early in the process can eliminate headaches later. Temporary and permanent construction easements on the right-of-way plans should be compared with the construction plans to determine whether the proposed easements are adequate to accommodate the roadway construction.

The engineer should become generally familiar with the entire roadway project, and intimately familiar with the plans adjacent to the subject property. The engineer must be in a position to describe to the attorney, appraiser, owner, and ultimately a jury what will be constructed. Items of importance that can have major impacts on the property might include location of median openings, design and location of driveways, changes in roadway elevation, location and design of stormwater inlets, and whether the project will have an under-ground or above-ground stormwater conveyance system. It may also be necessary to know the design speed and proposed posted speed of the roadway and the projected traffic volumes for the roadway. Of course, the engineer must always note whether the roadway construction plans under review are preliminary or final.

Identify the Pre-Take Condition

One of the most important early tasks of the engineer is the identification and quantification of the existing property features prior to the taking. The following list is an example of some of the items that should be identified, quantified, or described by the engineer:

- Size of the property
- Pervious and impervious areas
- Building areas
- Number of parking spaces
- Parking space dimensions
- Parking configuration
- Number of driveways
- Number of accessible parking spaces
- Size of driveways
- Sight obstructions at driveways
- Landscaped areas
- Site visibility
- Building and sign setbacks
- Stormwater management facilities
- Septic system or sewer
- Well or public water

The engineer should personally visit the property and take his own inventory. It will eventually be necessary for the engineer to render an opinion such as how many parking spaces a property had prior to the acquisition (a task more difficult than it sounds). It will be very important for the inventory to have been performed by the testifying engineer rather than a member of his or her support staff.

With a property survey and the engineer's inventory completed, a scale drawing can be prepared depicting the property in the pre-take condition. This drawing should be at a scale large enough to make out important details, and should be easily read and interpreted by non-engineers. It is not necessary for such a presentation graphic to include excessive dimensions and notes that are meaningful only to engineers or contractors. Features such as parking spaces,

driveways, signs, buildings, stormwater areas, and landscaped areas should be easily identifiable. A summary listing features such as number of parking spaces might be included as part of the drawing.

Figure 1 shows a restaurant property located on a State Highway in its pre-taking conditions. The site has one driveway connection to the State Highway, and two driveway connections to the side street. There are 88 parking spaces on the site, including four legally non-conforming handicap accessible spaces. Current zoning regulations require 56 parking spaces for a restaurant of this size. However, even though the available parking exceeds that required by local codes, the restaurant has experience and data to support the fact that they require more parking than the minimum number of spaces required by the zoning code. There is traffic circulation around the entire site, with adequate space for the maneuvering of single-unit delivery trucks. The main restaurant entrance is on the north side of the building. There is landscaping on the south and west perimeters of the property. There are no on-site stormwater management facilities, as stormwater flows from the property into the public right-of-way.

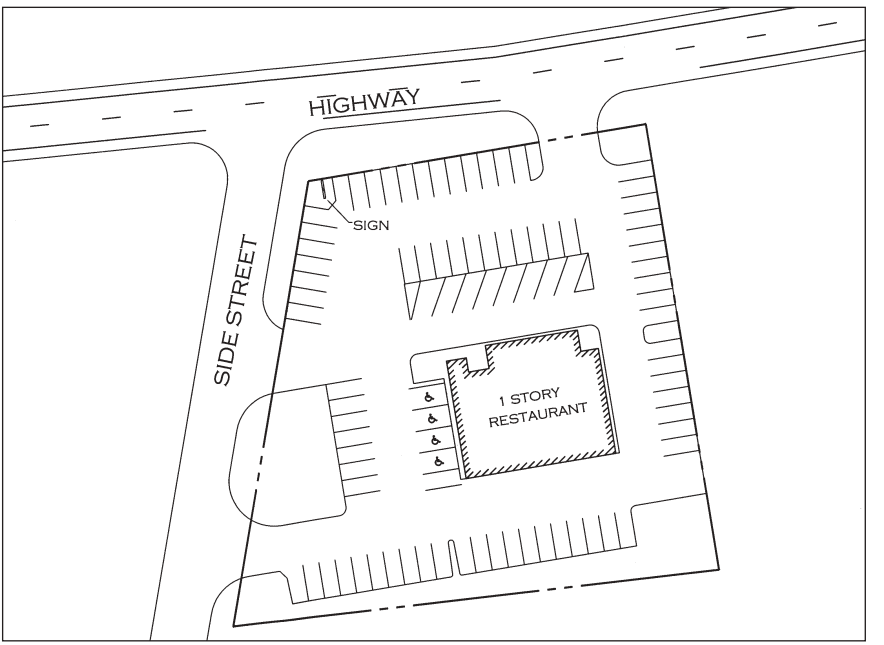

Figure 1
BEFORE CONDITION DRAWING shows the property and adjacent roadway configuration prior to property acquisition. The restaurant property has two driveways on the side street, one driveway on the highway, and 88 parking spaces.

The Taking

In road widening projects in developed commercial areas partial property acquisitions are common. These takings may include a strip of land adjacent to the roadway frontage, and perhaps a corner clip to accommodate roadway radii and/or traffic signalization equipment. An inventory of items that fall directly in the taking area should be prepared. The engineer should review the right-of-way and roadway construction plans to determine the purpose of the taking, and explain its purpose to the team. Permanent and temporary easements should be reviewed to determine their purpose, and to determine whether the easements are adequate to accommodate the intended purpose.

Figure 2 shows the restaurant site with the property that is to be acquired through eminent domain shaded. The purpose of the taking is to accommodate the widening of the State Highway and improvements to the intersection. The taking area includes asphalt parking and traffic circulation area, approximately twenty (20) parking spaces, a small amount of landscaping, and a large business identification sign.

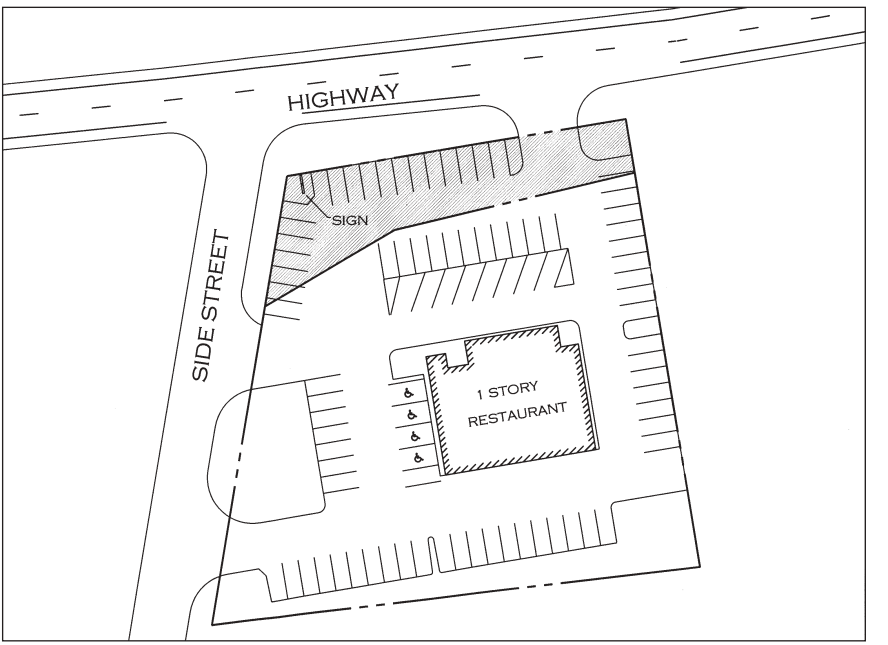

Figure 2
AREA OF TAKING DRAWING shows the parcel to be acquired through eminent domain in the shaded area.

Post-taking Condition

A detailed engineering analysis of the uncured severed remainder is the first major step in assisting the appraiser in evaluating damages created by the taking. The engineer should evaluate the property as though the only changes are those proposed on the roadway construction plans, and that no on-site modifications are made to cure any problems created by the taking. The uncured post-taking scenario is then compared with the pre-taking condition to evaluate the impacts of the taking. Some of the questions that might be addressed could include the following:

- How many parking spaces are lost?
- Is on-site traffic circulation reduced or eliminated?
- Are remaining parking spaces and driveways functional?
- Does the property suffer a loss or change in access?
- Are signs or other identifying features impacted or lost?
- Are stormwater ponds and systems severed?
- Are there non-conformities created by the taking?
- Are utility systems still functional?

Once an analysis of the impacts of the severed remainder is completed, the results should be reported to the attorney and appraiser. They can then make a determination as to whether a cure plan should be prepared in an attempt to mitigate some or all of the damages.

Figure 3 shows the configuration of the restaurant site after the taking, along with the proposed roadway improvements. It illustrates that even though 68 of the original 88 parking spaces remain on the property, only 55 of the spaces are useable. Vehicular access to the spaces marked with an “X” has been lost, rendering those spaces unuseable. Landscaping islands at the driveways and at the corner are lost, as is the business identification sign. This shows that the property suffers more than just the loss of property adjacent to the State Highway. The remaining property is damaged through the loss of its sign, and the presence of a confusing and non-functional parking lot.

The Cure Plan

In Florida, analysis must be performed to determine whether damages to the remaining property can be partially or fully mitigated by on-site modifications. The plan that is developed in this process is called a “cure plan.” The development of a cure plan related to an eminent domain action offers a unique and challenging engineering experience. The engineer is called upon to restore

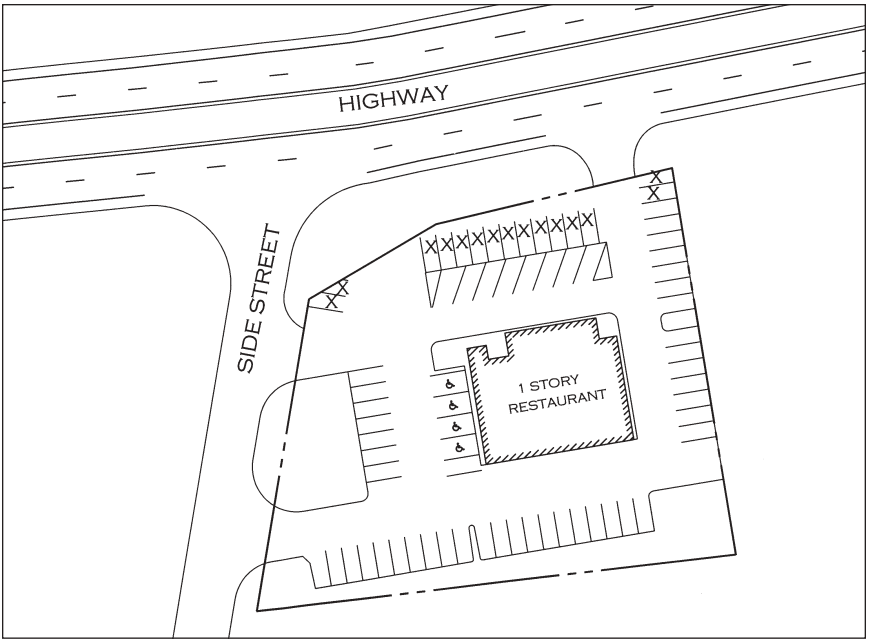

Figure 3
AFTER CONDITION DRAWING shows the property and adjacent roadway configuration after the right-of-way acquisition and accompanying roadway construction. The restaurant property is left with numerous unusable parking spaces (marked with x) and a poorly functional parking lot. Fifty-five (55) useable parking spaces remain. Thirty-three (33) parking spaces have been lost.

functional utility to a property in an area that is generally inadequate for replacing what has been lost. Changes in the size and shape of a property typically make it difficult or impossible to fully restore the site to its pre-taking condition. Engineers must be trained and experienced to effectively develop these types of plans and must have a basic understanding of local condemnation laws. For example, in Florida the conversion of land from one use to another in the development of a cure plan may result in additional damage. For this reason, communication between the engineer, attorney, appraiser, and other experts during the development of the cure plan is essential.

The engineer must treat the design of a cure plan as he would any other development design project in that all applicable zoning and land development regulations should be met. It is generally unacceptable to assume that variances that would allow reductions in development requirements, that might facilitate the design of a cure plan, could be granted. For example, a condemning authority might argue that they will waive their required landscape buffer require-

ments to make room for more parking in the cure plan. In cases where a local regulatory agency offers reductions in requirements such as landscaping, parking, and stormwater management, the engineer must still evaluate whether such reductions are in the best interest of the property owner, the community, and the overall safety and operation of the site. In the case of the reduction or elimination of the normally required landscape buffer, the engineer must determine whether that reduction might introduce hazards such as vehicles overhanging the public right-of-way or sight triangle obstructions at driveways. The condemning authority must be able to demonstrate that local authorities typically grant similar variances.

Figure 4 shows a proposed cure plan for the restaurant site. The front parking area has been redesigned to accommodate the traffic flow through the driveways and around the site. The sign is relocated adjacent to the State Highway. Since the site had no landscape buffer along the State Highway in the pre-taking condition, none is provided in the cure plan in order to allow parking on the northern perimeter of the site. The accessible parking spaces on the west side of the building have been redesigned in compliance with present-day accessibility requirements. Due to the reduction of total parking on the site there was also a reduction in the required number of accessible parking spaces. This plan provides 69 parking spaces, which is a loss of 19 spaces from the pre-taking condition. However, it partially mitigates the damages created by the taking by providing 14 more spaces and better traffic circulation than the uncured remainder shown in Figure 3.

It was proposed by the condemning authority that additional parking spaces be provided in the landscaped area between the driveways on the side street, perpendicular to the driveway throat areas. This would further reduce the parking loss, and therefore reduce the damages to the remainder property. The owner's engineer rejected this concept due to the increased hazard of traffic backing out of parking spaces in the driveway throat. This hazard did not exist in the pre-taking condition. Additionally, the proposed additional parking would reduce what was already inadequate landscaped area on the property.

The engineer should be consistent in his analysis of the pre-taking, the severed remainder, and the cured property. For example, in determining the number of display spaces available for a car sales lot, the engineer should use the same size display spaces in each phase of the analysis. He should not prepare a vehicle display area in which the display spaces are 10 feet by 20 feet in the pre-taking analysis, and then reduce the spaces to 8 feet by 17 feet in the post-taking analysis in order to reduce the number of display spaces lost to the taking. The engineer should also avoid design features that provide a "betterment" as part of the cure plan, except to comply with the applicable regulatory require-

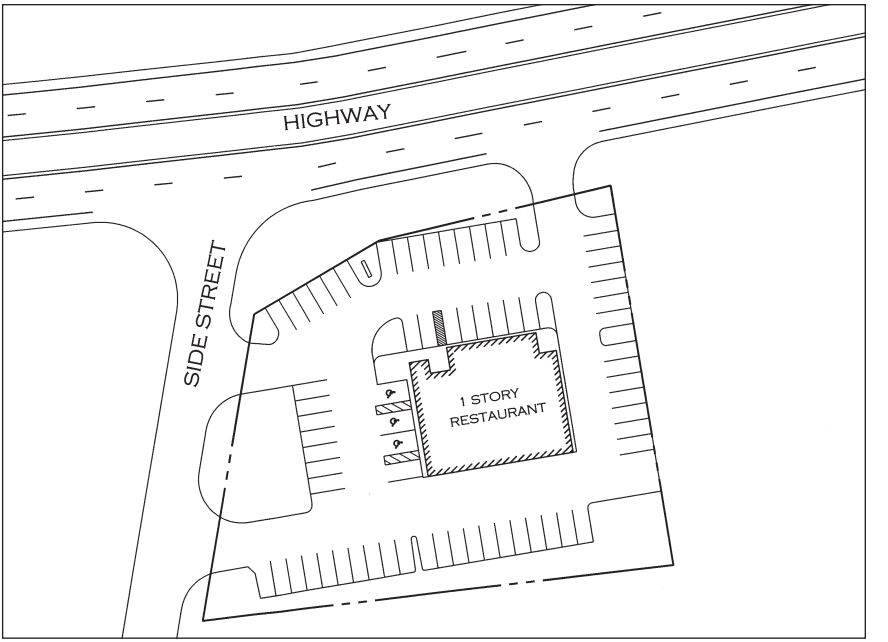

Figure 4
AFTER CONDITION WITH PARTIAL "CURE PLAN" DRAWING shows the property reconfigured to provide a useable parking lot. Fourteen (14) of the 33 lost parking spaces have been restored. A total of 69 parking spaces are provided reducing the total loss to 19 spaces.

ments. When the engineer believes that certain features of the cure plan may provide a "betterment" to the property, whether by regulatory requirements or not, he should report the betterment to the attorney and appraiser for their determination of compensability. If it is determined that compliance with a regulatory development requirement results in a non-compensable betterment, the engineer should not be pressured to eliminate that feature from the cure plan.

It should be understood that the development of a plan that fully and completely cures the impacts of the taking is rarely possible. Even if parking can be fully restored to the site, it is often replaced at the expense of other property features. Teamwork between the engineer, attorney, appraiser, and other experts is important in determining the most appropriate cure plan to be used in the determination of full compensation.

Undeveloped Properties

In Florida, the condemning authority is required to pay land values consistent with the perceived highest and best use of the property in the market place.

The engineer can play an important role is assisting in the evaluation of the highest and best use of undeveloped properties. In determining the highest and best use of an undeveloped property, it is essential to know what access would be available when the property is developed. It is also important to conduct due diligence to determine the development requirements related to local traffic performance standards, public utilities, infrastructure, drainage issues, environmental issues, and wetland mitigation issues. Property values can be affected by the ability of a proposed development to comply with local standards.

In analyzing undeveloped properties, the engineer should perform an analysis of local access management requirements to determine where driveways could be constructed, how many, and what size in both the Before and After Taking Conditions. A right-of-way acquisition could change the configuration of the property, reducing the number of driveways that a property can have. A traffic impact analysis for the proposed highest and best use should be performed to determine what types of impact fees and roadway improvements would be required for development of the property in the Before and After Conditions. Analyses should be performed to determine whether the proposed roadway construction will block or alter the flow of water across the site. Water and sewer systems must be evaluated to determine whether there is available capacity in the systems to support future property development. Properties that can be developed with lower impact fees and which have adequate infrastructure in place may be more valuable than those which require major impact fees, roadway improvements, or other off-site improvements in order to acquire development approval. Therefore, the engineer's analysis of development issues on undeveloped properties is essential in determining the Before and After property values, and in determining the compensation due for the condemnation.

Trial Exhibits

Typical trial exhibits include drawings of the property similar to those shown in Figures 1 through 4. Aerial photographs of the property help to orient the jury to the property and surrounding vicinity. Other types of trial exhibits include computer or video animations, scale models, and interactive exhibits using scale cutouts on top of the drawings.

Conclusion

The forensic surveyor and engineer play important roles in the evaluation of an Eminent Domain case. Their analysis can provide the major support for damages and for the valuation of the property. It is important that the engineer communicate regularly with the attorney, appraiser, and other experts to ensure that they understand and correctly interpret his analysis. The engineer must prepare his analysis and exhibits in a way that will be beneficial and understandable to non-engineers. A thorough engineering analysis, combined with constant communication with the members of the team, can be an important contributing factor in the determination of full compensation related to a right-of-way acquisition.

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