

CHAPTER 12

SIGNING AND SEALING OF PROFESSIONAL SURVEY DELIVERABLES

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Sec. 12.01 **Introduction**

The purpose of the VDOT Survey Program Area is to provide accurate and complete survey information, which meets legally required minimum standards and can be utilized for design, right-of-way and construction efforts. The creation of survey plan base, the platting of rights-of-way and easements, and the monumentation of right-of-way limits falls under the responsibility and purview of professional land surveyors. This chapter establishes new processes, streamlines existing processes and addresses issues that will bring VDOT into compliance with the Code of Virginia with respect to the professional practice of land surveying. This chapter is a general plan to focus attention on these areas of practice within the Department, to aid management in scheduling and budgeting resources for successful implementation and to assure compliance with both the Code of Virginia and Department policies and procedures.

Sec. 12.02 **Business and Legal Purpose for Signing and Sealing Survey Products**

In accordance with the Chief Engineer’s directives, beginning July 1, 2009, all new VDOT surveys, deliverables and services listed and described in this chapter and the current VDOT L&D IIM-243 “Sealing and Signing of Plans and Documents”, shall be sealed and signed by a surveyor, licensed in the Commonwealth of Virginia. The survey products and services shall meet applicable APELSCIDLA minimum standards and regulations, state recording standards and any other state codified regulations pertaining to surveys for the Commonwealth. The surveyor shall follow procedures and practices established in the Department’s Survey Manual.

VDOT requires that all plans and documents are to be signed with ACES (Access Certificates for Electronic Services) Business Representatives Digital Certificates. These certificates are purchased from IdenTrust, LLC, and supplied to VDOT staff. Adobe Acrobat Standard Version 9 will be the signing solution for VDOT. For information regarding the application of these products refer to VDOT’s CADD Manual.

Sec. 12.03 **Engineering/Topographic Surveys**

Sec. 12.03.1 **Description of Work and Guidance**

These services consist of performing records research, field work and office computations that ultimately provide certified, professionally surveyed information to the Department for its use in evaluating and ascertaining an area for its suitability for transportation purposes or for any other purpose incidental thereto. A portion of this survey work is procured for evaluating an emergency situation or to resolve maintenance issues. The work shall be performed by, or under the direct supervision of, a land surveyor in good standing, licensed in the Commonwealth of Virginia, and such work product shall meet the minimum standards set in the DPOR’s APELSCIDLA regulations and the VDOT Survey Manual (specifically chapters 4 through 7) as they apply. Safety in the field is paramount therefore; all work zones shall conform to the VDOT Work Zone Safety Protection Manual. The majority of this work occurs after project

scoping, once funding is authorized, and is delivered at various periods prior to the Plan Coordination Review stage as depicted in the VDOT Project Development Process .

Sec. 12.03.2 Materials Necessary to Provide Services

Survey work shall be performed using calibrated, modern surveying equipment, combined with practices and procedures that ensure applicable accuracy requirements are met. All work shall be authorized by the respective District Survey Manager (VDOT employees) or State Survey Engineer (limited services consultants) with a written notice to proceed and anticipated delivery date. The limits of the area and/or identified facilities requiring survey information shall be identified as the result of a scoping meeting or field site review. All surveys, including requests for updated information, shall be signed and sealed by a professional surveyor, licensed in the Commonwealth of Virginia prior to delivery to the requestor.

Sec. 12.03.3 Application of Survey Seal

These survey products will contain the surveyor's electronic seal, digital signature and certification statement(s) prior to delivery to the requestor. These products may contain notes and statements, by the professional, that define what the product represents and what it does not. The **Survey Cell Library** contains sample notes for modification and insertion into the CADD file product. These survey products are deliverables contained within the MicroStation CADD environment. The surveyor shall affix his seal in the proximity of the Title Block portion of the survey file as depicted **Figure 12-A**. Additionally, the surveyor shall include general notes pertaining to the representation of the survey in the same proximity of his seal. In the case of specific notes, the surveyor shall place these in proximity to the areas of concern that require attention. Digital signatures are to be placed with ACES (Access Certificates for Electronic Services) Business Representatives Digital Certificates.

Sec. 12.03.4 Professional Surveying Services & Responsibilities

a. Location Surveys

These types of surveys shall conform to **Chapter 4** of the VDOT Survey Manual, titled, "Location Surveys". These surveys include and encompass ownership of record, compiled title evidence, topography, planimetry, drainage information, subsurface utilities and base survey control. These surveys are requested to obtain information pertaining to wetland identification and mitigation and bridge site surveys. By sealing and signing the Microstation product, the land surveyor is testifying that the information shown and depicted in the survey file product is an accurate representation of the existing site and ownership conditions on that date for the area of concern.

b. Photogrammetric Surveys

These types of surveys shall conform to [Chapter 5](#) of the VDOT Survey Manual, titled, “Photogrammetric Surveys”. By sealing and signing the Microstation product, the land surveyor photogrammetrist is testifying that his or her work meets the minimum map accuracy requirements ([Appendix D](#) of VDOT Survey Manual) as they apply to the mapping product represented.

c. Closed Surveys

These types of surveys shall conform to [Chapter 6](#) of the VDOT Survey Manual, titled, “Closed Surveys”. These surveys, also referred to as Boundary Surveys or Metes and Bounds Surveys, represent an extensive effort beyond a typical location survey, to identify and delineate record title lines of a parcel of interest to VDOT. By sealing and signing the product, the land surveyor is testifying that the information shown and depicted in the survey file product is a representation of the existing field and ownership conditions on that date for the area of concern **and** that the survey meets the minimum requirements of DPOR’s APELSCIDLA regulations pertaining to boundary surveys and plats of record. These surveys are for investigative purposes and may be modified at a later time to meet standards for recordation.

d. Hydraulic Surveys

These types of surveys shall conform to [Chapter 7](#) of the VDOT Survey Manual, titled, “Hydraulic Surveys”. These surveys are requested for the specific purpose of hydrologic and hydraulic opening evaluation and engineering. The VDOT Survey Manual establishes the methods and criteria to achieve the desired result. This section of the Manual contains guidance for the performance of Bridge Situation surveys and deliverables. By sealing and signing the product, the land surveyor is testifying that the information shown and depicted in the Microstation survey file product is an accurate representation of the existing drainage, site, structure and ownership conditions on that date for the area of concern.

Sec. 12.04 **Right-of-Way, Boundary and Easement Surveys**

A committee comprised of Survey and Right-of-Way representatives was formed to address concerns relative to professional surveying work products and signing and sealing those documents. The committee addressed platting requirements, legal responsibilities and applicable minimum requirements. The agreed upon work products and documentation includes:

- The Right-of-Way Section will record an individual plat with each acquisition recordation instrument.
- The plat will be referenced in the conveyance documents.
- The Survey Section will provide acreage for fee take, permanent and temporary easements at the appraisal stage.
- The Right-of-Way Section will no longer pay landowners for the placement of right-of-way points. The cost savings will be applied during the plat approval stage to set the right-of-way points by the Surveyor of Record prior to construction.

- The generation of individual plats for each conveyance will be done in a timely manner and will not impact or delay the right-of-way acquisition schedule.
- The first of these conveyances with individual plats will be reviewed by the Central Office Right-of-Way Acquisition/Legal Section for form and accuracy prior to recordation.

Sec. 12.04.1 **Description of Work and Guidance**

These services consist of performing records research, field work and office computations that ultimately provide certified, professionally surveyed information to VDOT for its use in acquiring an area of, or rights to, land due to its suitability for transportation purposes or for any other purpose incidental thereto. The work shall be performed by, or under the direct supervision of, a land surveyor, licensed in the Commonwealth of Virginia, and such work product shall meet the minimum standards set in the DPOR's APELSCIDLA regulations and the VDOT Survey Manual as they apply. The majority of this work occurs after the Design Approval phase as depicted in the VDOT Project Development Process but before the Project Advertisement phase.

Sec. 12.04.2 **Materials Necessary to Provide Services**

All survey work shall adhere to the minimum specifications and guidance as referenced in the VDOT Survey Manual and applicable requirements contained within DPOR's APELSCIDLA regulations. All work shall be authorized by the respective District Survey Manager (VDOT employees) or State Survey Engineer (limited services consultants) with a written notice to proceed and anticipated delivery date. The responsibility of the accuracy, completeness and professional diligence rests with the responsible surveyor of record.

Sec. 12.04.3 **Application of Survey Seal**

These survey products will contain the surveyor's electronic seal, digital signature and certification statement(s) upon delivery to the requestor. These products may contain notes and statements that define what the product represents and what it does not. Currently, these survey products are developed within the MicroStation CADD environment, but delivered to the requestor in a PDF file format. Additionally, the surveyor may include general notes pertaining to the representation of the survey in the same proximity of his seal. In the case of specific notes, the surveyor shall place these in proximity to the areas of concern that require attention. Digital signatures are to be placed with ACES (Access Certificates for Electronic Services) Business Representatives Digital Certificates

Sec. 12.04.4 Professional Surveying Services & Responsibilities

a. Right-of-Way Acquisition Plats

Right-of-Way Division and Location and Design have agreed to utilize The Survey Section to develop right-of-way acquisition plats for use in acquiring fee property and/or interest in property for transportation purposes. The plat shall contain a note that it is produced from compiled data, and will contain the fee take, all easements and applicable minimum requirements as required by DPOR's APELSCIDLA regulations. The plat shall meet the State Library standards for recordation. Preliminary plat preparation shall begin after all Field Inspection comments have been incorporated into the project plans. The naming convention of the plats shall be s(project#)_parcel#. Preliminary Plats shall be submitted to the Central Office Plan Coordination Section prior to the Form LD-368 being completed to notify Right-of-Way Division that plans are available for printing and viewing for Notice to Proceed (NTP) in accordance with the Electronic Plan Submission Process Flow Chart. Preliminary plats shall be provided to right-of-way staff prior to the initial offer being made to a property owner. Upon completion of negotiations with property owners, the plats shall be finalized and electronically sealed and digitally signed and submitted to the Regional Right-of-Way Team Leader for recordation within 45 days. If the courthouse will not accept a digital signature, then a wet signature shall be placed on the seal and provided to the courthouse for recordation. By sealing and signing the product, the land surveyor is testifying that the information shown and depicted in the Right-of-Way Acquisition Plat is a representation of the existing field and ownership conditions on that date for the area of concern, it is produced from compiled sources of data **and** that the survey meets the minimum requirements of DPOR's APELSCIDLA regulations pertaining to boundary or compilation surveys and plats of record. Please refer to [Figure 12-D](#) for a sample Right-of-Way Acquisition Plat. **Bearings and Distances are the controlling elements for acquisition plats. Stations and offsets are shown on the plat to tie the plat to the project baseline controls (Provide a minimum of 2 points).. Plats shall reference the VDOT project number, UPC number parcel number and the corresponding plan sheet associated with these project controls and plusses and offsets. Plats shall clearly show calculated areas of right-of-way and/or easements required to construct the project.**

As part of plat development, recordation and prior to the commencement of construction, **The Surveyor of Record will be responsible for setting right-of-way break points and points of intersection between the new right-of-way and existing property lines.** Such break points will be shown on the acquisition plats. VDOT will no longer pay the affected property owners for the placement of these points.

Final Right-of-Way Acquisition Plats shall be submitted with the advertisement plans at plan coordination review stage in accordance with the Advertisement Cut-Off Chart. For In-House Design Only, they shall be electronically sealed and digitally signed by all parties when notified that the status has been set to seal/sign in Falcon by Plan Coordination Section. Once the plats have been electronically sealed and digitally signed, they shall be posted in Falcon. For Consultants, once the Plan Coordination Review has been completed, the plats shall be electronically sealed and digitally signed and files

posted to Falcon. This is the same time that the advertisement plans are electronically sealed and digitally signed. The Final Right-of-Way Acquisition Plats put to record will also be included in the project construction contract documents.

Sec. 12.05 **Construction Surveys**

Sec. 12.05.1 **Description of Work and Guidance**

This work shall consist of performing and providing professionally surveyed information to the Department for its use in construction purposes or for any other purpose incidental thereto. The work shall be performed by, or under the direct supervision of, a land surveyor, licensed in the Commonwealth of Virginia, and such work product shall meet the minimum standards set in the DPOR's APELSCIDLA regulations and the VDOT Survey Manual as they apply. Safety in the field is paramount therefore; all work zones shall conform to the VDOT Work Zone Safety Protection Manual.

Sec. 12.05.2 **Materials Necessary to Provide Services**

All survey work shall adhere to the minimum specifications and guidance as referenced in [Chapters 8](#) and [9](#) of the VDOT Survey Manual. Survey work shall be performed using modern surveying equipment, practices and procedures that ensure applicable accuracy requirements are met. All work shall be authorized by the respective District Survey Manager (VDOT employees) or State Survey Engineer (limited services consultants) with a written notice to proceed and anticipated delivery date. The limits of the area and/or identified facilities requiring survey information shall be identified as the result of a scoping meeting or field site review. All surveys, including requests for updated information, shall be electronically sealed and digitally signed by a professional surveyor, licensed in the Commonwealth of Virginia prior to delivery to the requestor.

Sec. 12.05.3 **Application of Survey Seal**

These survey products will contain the surveyor's electronic seal and digital signature and certification statement(s) upon delivery to the requestor. These products may contain notes and statements that define what the product represents and what it does not. These survey products are deliverables contained within the MicroStation CADD environment, ascii file, or field book in the standard manner. Additionally, the surveyor shall include general notes pertaining to the representation of the survey in the same proximity of his seal. In the case of specific notes, the surveyor shall place these in proximity to the areas of concern that require attention. Digital signatures are to be placed with ACES (Access Certificates for Electronic Services) Business Representatives Digital Certificates

Sec. 12.05.4 **Professional Surveying Services & Responsibilities**

a. Levels, Benchmarks and Project Elevations

These types of surveys shall conform to [Chapter 8, Sec. 8.03](#) of the VDOT Survey Manual, titled, “Levels, Benchmarks and Project Elevations”. Project benchmarks are shown on the survey alignment data sheet in the plan set. Benchmarks should be checked prior to their use in stakeout. Differential leveling should be run between benchmarks and recorded in field notes. Any appreciable differences in benchmark elevation should be recorded in field notes and check levels should be run to verify the difference. If additional benchmarks are set on the project, a list of the benchmarks with a description and elevation should be given to the project inspector and contractor. For examples of level notes see [Figures 8F, 8G, and 8H](#) of the VDOT Survey Manual.

b. Borrow Pits

These types of surveys shall conform to [Chapter 8, Sec. 8.05](#) of the VDOT Survey Manual, titled, “Borrow Pits”. Borrow Pits will be surveyed by creating a digital DTM surface. DTM’s are used to secure elevations, then an appropriate number of control stations should be used to insure integrity of the pit and readings should be secured at appropriate intervals to insure accurate coverage for computations of volume.

c. Culvert Stakeout

These types of surveys shall conform to [Chapter 8, Sec. 8.06](#) of the VDOT Survey Manual, titled, “Culvert Stakeout”. All box culverts are to be staked, according to furnished alignment and grades. [Figure 8-L](#) illustrates a procedure for checking the stake out of a box culvert. All culverts will be staked in accordance with [Section 105.13 and 517](#) of VDOT’s Road and Bridge Standards and [Figure 1](#) as shown at the beginning of [Figure 8-L](#) of the VDOT Survey Manual.

All pipe culverts, with an equivalent hydraulic opening of 12.6 square feet and larger, and all culverts with design grades, are to be staked in accordance with section [105.13 and 517](#) of the Road and Bridge Specifications. All pipe culverts with equivalent hydraulic openings less than 12.6 square feet may be staked by contract personnel.

All pipe culverts with design grades, such as storm sewers, regardless of size may be staked by the contract surveyor when specifically requested by the project engineer.

d. Bridge Stakeout

These types of surveys shall conform to [Chapter 8, Sec. 8.07](#) of the VDOT Survey Manual, titled, “Bridge Stakeout”. Stakes should be set at the intersection of the baseline of the bridge and the centerline of each pier. Also, stakes shall be set on the baseline of the bridge at the intersection of the lines shown on the plans on the abutments from which the dimensions were referenced. These intersection points will be shown on the sub-structure layout sheet of the bridge plans. All bridge staking shall be in accordance with [Section 105.13 and 517](#) of VDOT’s Road and Bridge Standards and [Figures 2 and 3](#) in Chapter 8 of the VDOT Survey Manual.

e. As-built or Final Surveys

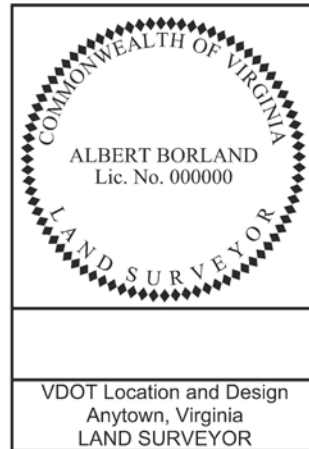
These types of surveys shall conform to [Chapter 4](#) of the VDOT Survey Manual, titled, “Location Surveys” and [Chapter 9](#) of the Survey Manual titled, “Final Surveys”. As-built Surveys represent the existing condition post-construction. These surveys are invoked by special request and can include and encompass location and volumetric information for the entire project or just items selected specifically for review and investigation. By sealing and signing the product, the land surveyor is testifying that the information shown and depicted in the survey file product is an accurate representation of the existing site, feature or facility post-construction on that date for the area(s) of concern. Currently, these products may be delivered as a PDF or MicroStation CAD file(s).

Sec. 12.06 **Survey Information Not Requiring a Seal or Signature**

Asset management surveys, or those surveys that are for purely quantitative purposes (i.e. measuring linear feet of guardrail, number of signs, etc.) will not require a seal or signature unless deemed necessary by the requestor. Information secured by surveyors that does not depict critical elevations or planimetric locations, modeled existing conditions or boundary evidence are not required to be sealed and signed. Right-of-Way Plans, Right-of-Way Data Sheets, Right-of-Way Revision Data Sheet, and Construction Plans are not required to be sealed and signed by the surveyor of record. These documents will be prepared without referencing stations and offsets.

Information not listed above that is contained within the [Chapter Contents](#) section of Chapter 8 of the VDOT Survey Manual will not require sealing and signing unless specifically requested.

Figure 12-A



Route : 1
Project : 0001-026-107-PI01.C501
District : Richmond
County : Dinwiddie
From : 0J6 MI.N.Of Int.Rte.1 & Rte.226
To : 0J5 MI.S.Of Int.Rte.1 & Rte.226
Horizontal Datum Based On NAD 83 (93)
Vertical Datum Based On NAVD 88
Survey By : Albert Borland L.S.
Operator : P.W. Herman
Date : 7 - 13 - 09
Scale : 1" = 25'
UPC : 73268

NOTES:

I HEREBY CERTIFY THAT THIS ROUTE SURVEY TO THE BEST OF MY KNOWLEDGE AND BELIEF IS CORRECT AND COMPLIES WITH THE STANDARDS AND PROCEDURES AS ESTABLISHED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION LOCATION AND DESIGN DIVISION, SURVEY MANUAL 2009.

PROPERTY INFORMATION IS BASED ON DEEDS AND PLATS OF RECORD. PHYSICAL EVIDENCE FOUND WAS PLACED ON DRAWING.

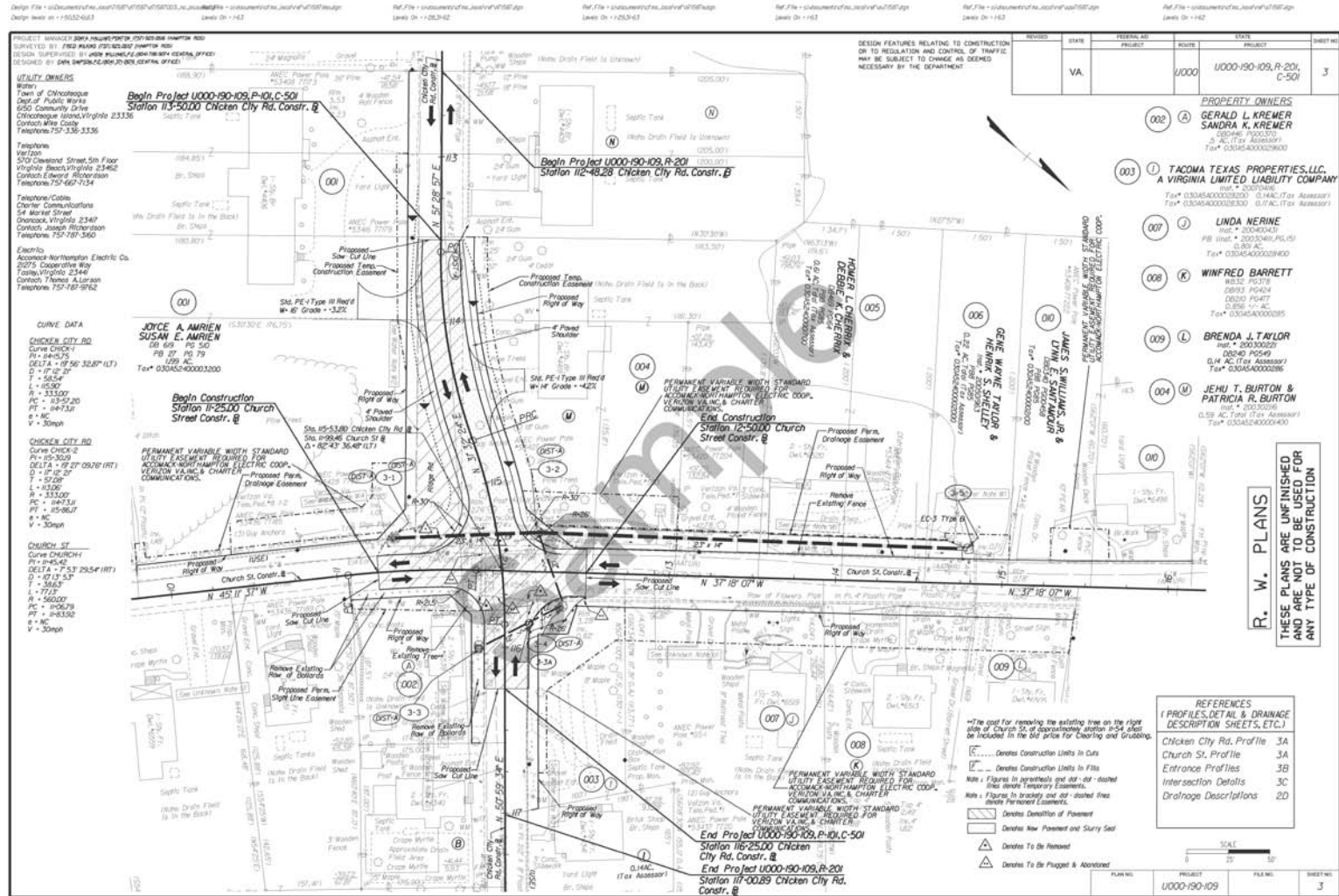
THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING LAND RECORDS AND DOES NOT REPRESENT A BOUNDARY SURVEY.

BEARINGS AND DISTANCES IN PARENTHESSES ARE FROM RECORDED PLATS OR DEED DATA

Sample Location of Seal and Signature in MicroStation File

(Note: Digital Signature is embedded in the MicroStation Cell

Figure 12-B



Sample Right-of-Way Plan Sheet

Figure 12-C

Design File: c:\pub\msh\msh\1000190109\1000190109.dwg
 Design Area: 1163

PROJECT: 1000190109
 SURVEYED BY: FRED MAHRE (2/18/2010)
 DESIGN: 1000190109
 REGION SUPERVISOR: JIMMIE WOODS (2/18/2010)
 DESIGNED BY: SARA WILSON (2/18/2010)

R. W. PLANS
 THESE PLANS ARE UNFINISHED
 AND ARE NOT TO BE USED FOR
 ANY TYPE OF CONSTRUCTION

RIGHT OF WAY DATA SHEET

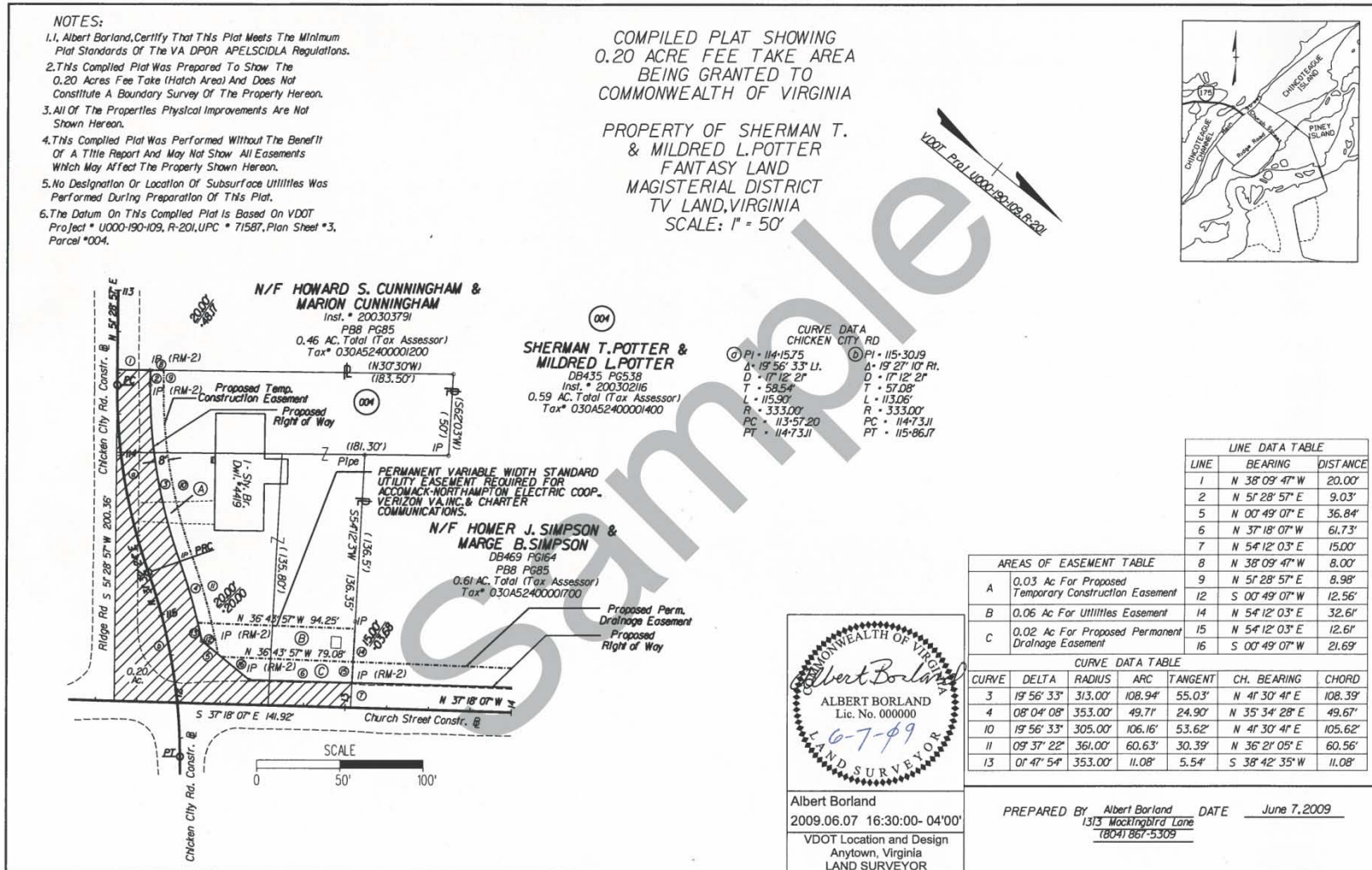
City/County: *Chincoteague*
 UPC No.: *71587*

PARCEL NO.	LANDOWNER	SHEET NO.	AREA																	
			TOTAL		FEE TAKING		PRESCRIPTIVE R/W		FEE REMANDER		EASEMENTS					PROFFERS				
			ACRES OR SQUARE-FEET	ACRES-OR SQ. FEET	HECTARES/ OR SQ. METERS	ACRES-OR SQ. FEET	HECTARES/ OR SQ. METERS	ACRES OR SQUARE-FEET	HECTARES/ OR SQ. METERS	ACRES-OR SQ. FEET	HECTARES/ OR SQ. METERS	ACRES OR SQ. FEET	HECTARES/ OR SQ. METERS	ACRES OR SQ. FEET	HECTARES/ OR SQ. METERS		ACRES-OR SQ. FEET	HECTARES/ OR SQ. METERS	ACRES-OR SQ. FEET	HECTARES/ OR SQ. METERS
001	Joyce A. Amrien, Susan Amrien Russell, John Amrien	3	1.199 Ac	2444		7013		1.143 Ac		611		2492				706				
002	Gerald L. Kremer and Sandra K. Kremer	3	0.5 Ac	627		2729		0.486 Ac		498										
003	Tocoma Texas Properties, LLC, A Virginia Limited Liability Company	3	0.17 Ac	181		3026		0.143 Ac				1750								
004	Jehu T. Burton and Patricia R. Burton	3	0.59 Ac	3890		4919		0.501 Ac		991		2695				1374				
005	Homer L. Cherris and Debbie K. Cherris	3	0.61 Ac			2251		0.61 Ac		1778										
006	Gene Wayne Taylor and Henrik S. Shelley	3	0.22 Ac			750		0.22 Ac		706										
007	Linda Nerine	3	0.801 Ac	599		1796		0.787 Ac				2395								
008	Winfred Barrett	3	0.856 Ac	451		1376		0.846 Ac				1766								
009	Brenda J. Taylor	3	0.14 Ac	311		906		0.133 Ac				1206								
010	James S. Williams, Jr. & Lynn E. Santamour	3	0.29 Ac			1856		0.29 Ac				684								

PROJECT: 1000190109
 SHEET NO: 18

Sample Right-of-Way Data Sheet

Figure 12-D



Sample Right-of-Way Acquisition Plat