who has not passed an examination in another jurisdiction that was substantially equivalent to that approved by the board at the time of the applicant's original licensure. If the applicant does not meet the requirements for licensure in Virginia that were in effect at the time of original licensure, the applicant shall be required to meet the entry requirements current at the time the completed application for comity is received in the board's office. All applicants shall be required to pass a written Virginia state-specific examination. The examination shall include questions on law, procedures and practices pertaining to land surveying in Virginia.

B. A person holding a current license to engage in the practice of land surveying or photogrammetric surveying issued to the applicant by other states, the District of Columbia or any territory or possession of the United States based on requirements that do not conflict with and are at least as rigorous as the provisions contained in 18VAC10-20-310 C may be licensed as a surveyor photogrammetrist without further examination except for the Virginia state examination provided that the applicant was originally licensed prior to the ending date of the provisions contained in 18VAC10-20-310 C.

Historical Notes:

Derived from VR130-01-2 §5.9, eff. October 18, 1985; amended, Virginia Register Volume 4, Issue 8, eff. March 1, 1988; Volume 6, Issue 20, eff. September 1, 1990; Volume 7, Issue 14, eff. May 8, 1991; Volume 8, Issue 7, eff. February 1, 1992; Volume 10, Issue 15, eff. May 19, 1994; Volume 16, Issue 3, eff. December 1, 1999; Volume 18, Issue 7, eff. March 1, 2002; Volume 23, Issue 1, eff. February 1, 2007; Volume 25, Issue 3, eff. December 1, 2008.

18VAC10-20-370. Minimum standards and procedures for land boundary surveying practice.

A. The minimum standards and procedures set forth in this section are to be used for land boundary surveys performed in the Commonwealth of Virginia. The application of the professional's seal, signature and date as required by these regulations shall be evidence that the land boundary survey is correct to the best of the professional's knowledge, information, and belief, and complies with the minimum standards and procedures set forth in this chapter.

B. Research procedure.

The professional shall search the land records for the proper description of the land to be surveyed and obtain the description of adjoining land(s) as it pertains to the common boundaries. The professional shall have the additional responsibility to utilize such other available data pertinent to the survey being performed from any other known source(s). Evidence found, from all known sources, including

evidence found in the field, shall be carefully compared in order to aid in the establishment of the correct boundaries of the land being surveyed. The professional shall clearly identify on the plats, maps, and reports inconsistencies found in the research of common boundaries between the land being surveyed and the adjoining land(s). It is not the intent of this regulation to require the professional to research the question of title or encumbrances on the land involved.

C. Minimum field procedures.

1. Angular measurement. Angle measurements made for traverse or land boundary survey lines will be made by using a properly adjusted transit-type instrument which allows a direct reading to a minimum accuracy of 30 seconds of arc or metric equivalent. The number of angles turned at a given station or corner will be the number which, in the judgment of the professional, can be used to substantiate the average true angle considering the condition of the instrument being used and the existing field conditions.

2. Linear measurement. Distance measurement for the lines of traverse or lines of the land boundary survey shall be made with metal tapes which have been checked and are properly calibrated as to incremental distances, or with properly calibrated electronic distance measuring equipment following instructions and procedures established by the manufacturer of such equipment. All linear measurements shall be reduced to the horizontal plane, and other necessary corrections shall be performed before using such linear measurements for computing purposes.

3. Field traverse and land boundary closure and accuracy standards. For a land boundary survey located in a rural area, the maximum permissible error of closure for a field traverse shall be one part in 10,000 (1/10,000). The attendant angular closure shall be that which will sustain the one part in 10,000 (1/10,000) maximum error of closure. For a land boundary survey located in an urban area, the maximum permissible error of closure for a traverse shall be one part in 20,000 (1/20,000). The attendant angular closure shall be that which will sustain the one part in 20,000 (1/20,000) maximum error of closure.

   The maximum permissible positional uncertainty based on the 95% confidence level of any independent boundary corner or independent point located on a boundary that has been established by utilizing global positioning systems shall not exceed the positional tolerance of 0.07 feet (or 20 mm + 50 ppm).

4. Monumentation. As a requisite for completion of the work product, each land boundary survey of a tract or parcel of land shall be monumented with objects made of permanent material at all corners and changes of direction on the land boundary with the exceptions of meanders, such as meanders of streams, tidelands, lakes, swamps and prescriptive rights-of-way, and each such monument, other than a natural monument, shall, when feasible, be identified by a temporary witness marker. Where it is not feasible to set actual corners, appropriate reference monuments shall be set, preferably on line, and the location of each shall be shown on the plat or map of the land boundary.

   All boundaries, both exterior and interior, of the original survey for any division or partition of land shall be monumented in accordance with the provisions of this subdivision, when such monumentation is not otherwise regulated by the provisions of a local subdivision ordinance.

5. For land boundary surveys providing for a division when only the division, in lieu of the entire parcel, is being surveyed, any new corners established along existing property lines shall require that those existing property lines be established through their entire length. This shall include the recovery or re-establishment of the existing corners for each end of the existing property lines.

D. Office procedures.

1. Computations. The computation of field work data shall be accomplished by using the mathematical routines that produce closures and mathematical results that can be compared with descriptions and data of record. Such computations shall be used to determine the final land boundary of the land involved.

2. Plats and maps. The following information shall be shown on all plats or maps, or both, used to depict the results of the land boundary survey:

   a. The title of the land boundary plat identifying the land surveyed and showing the district, town, and county or city in which the land is located and scale of drawing.

   b. The name of the owner of record and deed book reference where the acquisition was recorded.

   c. Names of all adjoining owners of record with deed book references, or subdivision lot designations.

d. The professional shall clearly note inconsistencies found in the research of common boundaries between the land being surveyed and the adjoining land(s).

e. Names of highways and roads with route number, and widths of right-of-way, and/or distance to the center of the physical pavement and pavement width, name of railroads, streams adjoining, crossing, or in close proximity to the boundary and other prominent or well-known objects which are informative as to the location of the land boundary.

f. A distance to the nearest road intersection, or prominent or well-known object. In cases of remote areas, a scaled position with the latitude and longitude must be provided.

g. Items crossing any property lines such as, but not limited to, physical encroachments, and evidence of easements such as utilities and other physical features pertinent to the boundary of the property.

h. Bearings of all property lines and meanders to nearest 10 seconds of arc or metric equivalent.

i. Adequate curve data to accomplish mathematical closures.

j. Distances of all property lines and meanders to the nearest one hundredth (.01) of a foot or metric equivalent.

k. Pursuant to 18VAC10-20-370.C.5, the bearing and distances from the new corners to the existing corners on each end of the existing property lines.

l. For property located in rural areas, area to the nearest hundredth (.01) of an acre or metric equivalent.

m. For property located in urban areas, area to the nearest square foot or thousandth (0.001) of an acre or metric equivalent.

n. North arrow and source of meridian used for the survey.

o. For interior surveys, a reference bearing and distance to a property corner of an adjoining owner or other prominent object, including, but not limited to, intersecting streets or roads.

p. Tax map designation or geographic parcel identification number if available.

q. Description of each monument found and each monument set by the professional.

r. A statement that the land boundary survey shown is based on a current field survey. The application of the land surveyor's seal, signature and date shall constitute compliance with all the current standards of a land boundary survey as of the date of the application of signature unless otherwise clearly stated in the title of the plat that the plat is to be construed otherwise.

s. A statement as to whether or not a current title report has been furnished to the professional.

t. If the land boundaries shown on the plat are the result of a compilation from deed or plats, or both, or based on a survey by others, that fact will be clearly stated and the title of the plat shall clearly depict that the plat does not represent a current land boundary survey.

u. A statement as to whether any or all easements are shown on the plat.

v. Name and address of the land surveyor or the registered business.

w. The professional's seal, signature and date.

3. Metes and bounds description. The professional shall prepare a metes and bounds description in narrative form, if requested by the client or his agent, for completion of any newly performed land boundary survey. The description shall reflect all metes and bounds, the area of the property described, all pertinent monumentation, names of record owners or other appropriate identification of all adjoiners, and any other data or information deemed as warranted to properly describe the property. Customarily, the metes and bounds shall be recited in a clockwise direction around the property. The professional shall clearly identify in the metes and bounds description any inconsistencies found in the research of common boundaries between land being surveyed and the adjoining land(s). For subdivisions, the professional shall prepare a metes and bounds description in narrative form for only the exterior boundaries of the property.

No metes and bounds description shall be required for the verification or resetting of the corners of a lot or other parcel of land in accordance with a previously performed land boundary survey, such as a lot in a subdivision where it is unnecessary to revise the record boundaries of the lot.

Historical Notes:

Derived from VR130-01-2 §5.10, eff. October 18, 1985; amended, Virginia Register Volume 4, Issue 8, eff. March 1, 1988; Volume 6, Issue 20, eff. September 1, 1990; Volume 7, Issue 14, eff. May 8, 1991; Volume 8, Issue 7, eff. February 1, 1992; Volume 10, Issue 15, eff. May 19, 1994; Volume 13, Issue 23, eff. October 1, 1997; Volume 18, Issue 7, eff. March 1, 2002; Errata, 18:10 VA.R. 1342 January 28, 2002; Volume 23, Issue 1, eff. February 1, 2007.

18VAC10-20-380. Minimum standards and procedures for surveys determining the location of physical improvements; field procedures; office procedures.

A. The following minimum standards and procedures are to be used for surveys determining the location of physical improvements on any parcel of land or lot containing less than two (2) acres or metric equivalent (sometimes also known as "building location surveys," "house location surveys," "physical surveys," and the like) in the Commonwealth of Virginia. The application of the professional's seal, signature and date as required by these regulations shall be evidence that the survey determining the location of physical improvements is correct to the best of the professional's knowledge, information, and belief, and complies with the minimum standards and procedures set forth in this chapter.

B. The professional shall determine the position of the lot or parcel of land in accordance with the intent of the original survey and shall set or verify permanent monumentation at each corner of the property, consistent with the monumentation provisions of subdivision C 4 of 18VAC10-20-370. All such monumentation, other than natural monumentation, shall, when feasible, be identified by temporary witness markers.

When the professional finds discrepancies of sufficient magnitude to warrant, in his opinion, the performance of a land boundary survey (pursuant to the provisions of 18VAC10-20-370), he shall so inform the client or the client's agent that such land boundary survey is deemed warranted as a requisite to completion of the physical improvements survey.

The location of the following shall be determined in the field:

1. Fences in near proximity to the land boundary lines and other fences which may reflect lines of occupancy or possession.

2. Other physical improvements on the property and all man-made or installed structures, including buildings, stoops, porches, chimneys, visible evidence of underground features (such as manholes, catch basins, telephone pedestals, power transformers, etc), utility lines and poles.

3. Cemeteries, if known or disclosed in the process of performing the survey; roads or travelways crossing the property which serve other properties; and streams, creeks, and other defined drainage ways.

4. Other visible evidence of physical encroachment on the property.

C. The plat reflecting the work product shall be drawn to scale and shall show the following, unless requested otherwise by the client and so noted on the plat:

1. The bearings and distances for the boundaries and the area of the lot or parcel of land shall be shown in accordance with record data, unless a current, new land boundary survey has been performed in conjunction with the physical improvements survey. If needed to produce a closed polygon, the meander lines necessary to verify locations of streams, tidelands, lakes and swamps shall be shown. All bearings shall be shown in a clockwise direction, unless otherwise indicated.

2. North arrow, in accordance with record data.

3. Fences in the near proximity to the land boundary lines and other fences which may reflect lines of occupancy or possession.

4. Improvements and other pertinent features on the property as located in the field pursuant to subsection B of this section.

5. Physical encroachments, including fences, across a property line shall be identified and dimensioned with respect to the property line.

6. On parcels where compliance with restriction is in question, provide the closest dimension (to the nearest 0.1 foot or metric equivalent) from the front property line, side property line, and if pertinent, rear property line to the principal walls of each building. Also, all principal building dimensions (to the nearest 0.1 foot or metric equivalent).

7. Building street address numbers, as displayed on the premises, or so noted if no numbers are displayed.

8. Stoops, decks, porches, chimneys, balconies, floor projections, and other similar type features.

9. Street name(s), as posted or currently identified, and as per record data, if different from posted name.

10. Distance to nearest intersection, based upon record data. If not available from record data, distance to nearest intersection may be determined from best available data, and so qualified.

11. Building restriction or setback line(s) per restrictive covenants, if shown or noted on the record subdivision plat.

12. The caption or title of the plat shall include: the type of survey performed; lot number, block number, section number, and name of subdivision, as appropriate, or if not in a subdivision, the name(s) of the record owner; town or county, or city; date of survey; and scale of drawing.

13. Adjoining property identification.

14. Easements and other encumbrances set forth on the record subdivision plat, and those otherwise known to the professional.

15. A statement as to whether or not a current title report has been furnished to the professional.

16. The professional shall clearly note inconsistencies found in the research of common boundaries between the land being surveyed and the adjoining land(s).

17. Professional's seal, signature and date.

18. Name and address of the land surveyor or registered business.

D. Notwithstanding the monumentation provisions of subsection B of this section, or any other provision of these regulations, a professional, in performing a physical improvements survey, shall not be required to set corner monumentation on any property when corner monumentation is otherwise required to be set pursuant to the provisions of a local subdivision ordinance as mandated by § 15.2-2240 of the Code of Virginia, as amended, or by subdivision A 7 of § 15.2-2241 of the Code

of Virginia, as amended, or where the placing of such monumentation is covered by a surety bond, cash escrow, set-aside letter, letter of credit, or other performance guaranty. When monumentation is not required, the surveyor shall clearly note on the plat "no corner markers set" and the reason, to include name of guarantors.

E. Notwithstanding anything to the contrary in this chapter, this chapter shall be construed as to comply in all respects with § 54.1-407 of the Code of Virginia, as amended.

Historical Notes:

Derived from VR130-01-2 §5.11, eff. October 18, 1985; amended, Virginia Register Volume 4, Issue 8, eff. March 1, 1988; Volume 6, Issue 20, eff. September 1, 1990; Volume 7, Issue 14, eff. May 8, 1991; Volume 8, Issue 7, eff. February 1, 1992; Volume 10, Issue 15, eff. May 19, 1994; Volume 13, Issue 23, eff. October 1, 1997; Volume 18, Issue 7, eff. March 1, 2002; Volume 23, Issue 1, eff. February 1, 2007; Volume 25, Issue 3, eff. December 1, 2008.

18VAC10-20-382. Minimum standards and procedures for surveys determining topography; field procedures; office procedures.

A. The minimum standards and procedures set forth in this section are to be used for topographic surveys performed in the Commonwealth of Virginia pursuant to Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia. The application of the professional's seal, signature and date as required by these regulations shall be evidence that the topographic survey is correct to the best of the professional's knowledge and belief, and complies with the minimum standards and procedures.

B. Minimum field and office procedures. The following information shall be shown on or contained in all plats, maps, or digital geospatial data including metadata used to depict the results of the topographic survey:

1. Physical improvements on the property, all man-made or installed structures, as well as visible evidence of underground features (such as manholes, catch basins, telephone pedestals, power transformers, etc.), and utility lines and poles shall be shown or depicted when they are visible based on the methodology and scale. If the methodology or scale prevents the depiction of physical improvements on the property, all man-made or installed structures, as well as visible evidence of underground features (such as manholes, catch basins, telephone pedestals, power transformers, etc.), and utility lines and poles, then such notice shall be clearly stated on or contained in the map, plat, or digital geospatial data including metadata.

2. Elevations shall be provided as spot elevations, contours or digital terrain models.

3. Onsite bench mark(s) shall be established with reference to vertical datum, preferably North American Vertical Datum (NAVD), and shown in the correct location.

4. The title of the topographic survey identifying the land surveyed and showing the state, county or city in which property is located.

5. Name of the individual or entity for whom the survey is being performed.

6. Date, graphic scale, numerical scale, and contour interval of plat, map, or digital geospatial data including metadata.

7. Depiction and definition of north used for the survey.

8. Names of highways, streets and named waterways shall be shown.

9. The horizontal and vertical unit of measurement, coordinate system, and datums, including adjustments if applicable.

10. The following minimum positional accuracies shall be met:

a. Scale and contour interval combinations:

Map or Plat Scale	**Contour Interval**
1” = 20’	1 or 2 feet
1” = 30’	1 or 2 feet
1” = 40’	1 or 2 feet
1” = 50’	1 or 2 feet
1” = 100’	1 or 2 feet
1” = 200’	2, 4 or 5 feet
1” = 400’	4, 5 or 10 feet

b. Vertical accuracy standards:

	Contours - Vertical Positional Accuracy	**Spot Elevations - Vertical Positional Accuracy**
Contour line 1' interval	± 0.60 feet	± 0.30 feet
Contour line 2' interval	± 1.19 feet	± 0.60 feet
Contour line 4' interval	± 2.38 feet	± 1.19 feet
Contour line 5' interval	± 2.98 feet	± 1.49 feet
Contour line 10' interval	± 5.96 feet	± 2.98 feet
Positional Accuracy is given at the 95% confidence level.		

c. Horizontal accuracy standards:

Well defined ground points - Horizontal (Radial) Positional Accuracy		
Map or Plat Scale	Absolute Horizontal Positional Accuracy	Relative Horizontal Positional Accuracy
1" = 20'	± 0.8 feet	± 0.20 feet
1" = 30'	± 1.1 feet	± 0.30 feet
1" = 40'	± 1.5 feet	± 0.40 feet
1" = 50'	± 1.9 feet	± 0.50 feet
1" = 100'	± 3.8 feet	± 1.00 feet
1" = 200'	± 7.6 feet	± 2.00 feet
1" = 400'	± 15.2 feet	± 4.00 feet
Positional Accuracy is given at the 95% confidence level.		

The accuracy standards tables as shown are not intended to be acceptable in all situations. The professional shall be responsible to perform the work to the appropriate quality and extent that is prudent or warranted under the existing field conditions and circumstances.

Metric or other unit of measurements shall meet an equivalent positional accuracy.

Map or plat scales, or contour intervals, other than those defined in these tables shall meet an equivalent positional accuracy.

11. A statement, in the following form, shall be shown on or contained in plats, maps, or digital geospatial data including metadata:

This _____ (provide description of the project) was completed under the direct and responsible charge of, _____ (Name of Surveyor or Surveyor

Photogrammetrist) from an actual ☐ Ground or ☐Airborne (check the one that is applicable) survey made under my supervision; that the imagery and/or original data was obtained on _____ (Date); and that this plat, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

Historical Notes:

Volume 25, Issue 3, eff. December 1, 2008

18VAC10-20-390. Geodetic surveys.

All geodetic surveys, including the determination and publication of horizontal and vertical values utilizing Global Positioning Systems (GPS), which relate to the practice of land surveying as defined in § 54.1-400 of the Code of Virginia, as amended, shall be performed under the direct control and personal supervision of a licensed land surveyor as defined in Part I of these regulations.

Historical Notes:

Derived from VR130-01-2 §5.12, eff. October 18, 1985; amended, Virginia Register Volume 4, Issue 8, eff. March 1, 1988; Volume 6, Issue 20, eff. September 1, 1990; Volume 7, Issue 14, eff. May 8, 1991; Volume 8, Issue 7, eff. February 1, 1992; Volume 10, Issue 15, eff. May 19, 1994; Volume 23, Issue 1, eff. February 1, 2007.

18VAC10-20-392. Photogrammetric surveys.

The use of photogrammetric methods or similar remote sensing technology to perform any part of the practice of land surveying as defined in Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia, shall be performed under the direct control and supervision of a licensed land surveyor or a licensed surveyor photogrammetrist.

Historical Notes:

Volume 25, Issue 3, eff. December 1, 2008

18VAC10-20-395. Standard of care.

In no event may the requirements contained in 18VAC10-20-280 through 18VAC10-20-392 be interpreted or construed to require the professional to perform work of a lesser quality or quantity than that which is prudent or warranted under the existing field conditions and circumstances.

Historical Notes:

Volume 25, Issue 3, eff. December 1, 2008