

MINUTES

BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS

POSITIONAL ACCURACY AND MTS WORKSHOP

April 7, 2004

Department of Business and Professional Regulation
Board Conference Room
1940 North Monroe Street
Tallahassee, Florida

The workshop was called to order by Mr. Jeff Cooner, Chair, at 1:30 p.m.

Members Present:

Lou Bush
Pam Nobles
Jeff Cooner
Dennis Blankenship
Jeff Cooner
Beverly Sutphin
Louis Lebron
Fran Poppell
Sidney Greer

Members Not Present:

Omar Armenteros

Others Present:

Ted Madson
Eric Hill
Art Mastronicola
Richard Matthews
Alvin Gloer
David Melvin
Marilyn Evers
Harley Gilmore
Jeffrey Cooner
Ronnie Taylor
Jeffrey Carlen
Allen Nobles
Dave Gibson
Steven Woods
Julie Golding
Louis Bush
John Clyatt
Henry Echezabal

REVIEW AND APPROVAL OF THE JANUARY 12, 2004 POSITIONAL ACCURACY AND MTS WORKSHOP MEETING MINUTES

The committee reviewed the positional accuracy and MTS workshop meeting minutes and made the following motion.

MOTION: Ms. Sutphin made a motion to approve the January 12, 2004 positional accuracy MTS rule workshop meeting minutes.

SECOND: Ms. Nobles seconded the motion and it passed unanimously.

REVIEW AND DISCUSSION OF 61G17-6, F.A.C.

Mr. Cooner conducted an overview of the January workshop. Mr. Cooner advised the board that there were four areas's considered when making the revisions, reorganization of MTS, eliminate the use of tool dependent language, enhance the use of reference to metadata, and consider adding positional accuracy to the standards.

Mr. Cooner advised the board that they were going to start on page 12 of the hand out. Mr. Cooner advised the board that pages 1-11 included revisions made from the last workshop, however he was going to go back and remove the word metadata and replace it with the word information.

The board reviewed Mr. Cooner's hand out page by page and after discussion the board agreed with the following language.

I. Rule Sections

- A. Section I - Index of Sections
- B. Section II – Definitions
- C. Section III – General Mapping Requirements Applicable to all Survey Maps/Products
- D. Section IV – Types of Surveys and Survey Products
- E. Section V – Seals and Certifications

II. Definitions.

As used in this chapter, the following terms have the following meanings:

- (1) Benchmark: a relatively permanent material object, natural or artificial, bearing a marked point whose elevation above or below an adopted datum plane is known.
- (2) Corner: a point on a land boundary that designates a change in direction, for example: points of curvature, points of tangency, points of compound curvature and so forth.
- (3) Geodetic: a survey or mapping process that takes into account the curvature of the earth and astronomic observations, and which results in positions expressed on a recognized datum.
- (5) Map of Survey (or Survey Map): a graphical or digital depiction of the facts of size, shape, identity, geodetic location, or legal location determined by a survey. The term "Map of Survey" (Survey Map) includes the terms: Sketch of Survey, Plat of Survey, Right-of-Way Survey, or other similar titles. "Map of Survey" or "Survey Map" may also be referred to as "a map" or "the map." (4) For the purpose of this rule, the word "map" shall also mean drawing, sketch or plat.
- (7) Monument: an artificial or natural object that is permanent or semi-permanent, and used or presumed to occupy any real property corner, point on a boundary line, or reference point.
- (9) Photogrammetric Methods: a means of surveying and mapping that involves: making precise measurements from a combination of ground control, photographs and

other sources of imagery, to document, within pre-ordained accuracies, the existence, the identity, the location and the size of selected features.

(10) Reference Point: any defined position that is or can be established in relation to another defined position.

(12) Survey: the orderly process of determining facts of size, shape, identity, geodetic location, or legal location by viewing and applying direct measurement of features on or near the earth's surface using field or image methods; defined as follows according to the type of data obtained, the methods used, and the purpose(s) to be served:

(a) As-Built Survey: a survey performed to obtain horizontal and/or vertical dimensional data so that constructed improvements may be located and delineated; also known as a Record Survey.

(b) Boundary Survey: a survey, the primary purpose of which is to document the perimeters, or any one of them, of a parcel or tract of land by establishing or re-establishing corners, monuments, and boundary lines for the purposes of describing the parcel, locating fixed improvements on the parcel, dividing the parcel, or platting.

(c) Condominium Survey: a survey performed pursuant to Chapter 718, Florida Statutes; includes a Boundary Survey.

(d) Construction Layout Survey: the measurements made, prior to or while construction is in progress, to control elevation, configuration, and horizontal position and dimensions.

(e) Control Survey: a survey which provides horizontal or vertical position data for the support or control of subordinate surveys or for mapping.

(g) Hydrographic Survey: a survey having as its principal purpose the determination of data relating to bodies of water, and which may consist of the determination of one or several of the following classes of data: depth of water and configuration of bottom; directions and force of current; heights and times of water stages; and location of fixed objects for survey and navigation purposes.

(h) Mean High Water Line Survey: a survey to document the mean high water line as defined in Part II, Chapter 177, Florida Statutes.

(i) Quantity Survey: a survey to obtain measurements of quantity.

(j) Record Survey: a survey performed to obtain horizontal and/or vertical dimensional data so that constructed improvements may be located and delineated; also known as an As-Built Survey.

(k) Specific or Special Purpose Survey: a survey performed for a purpose other than the purposes detailed in (8)(a) -- (j) or (l) of this rule.

(l) Topographic Survey: a survey of selected natural and artificial features of a part of the earth's surface to determine horizontal and vertical spatial relations.

(13) Survey and Map Report: a written document, sometimes referred to as "a report" or "the report," detailing methods used, measurements and computations made, accuracies obtained, and information obtained or developed by surveying and mapping techniques.

(14) Surveying and Mapping: a process of direct measurement and analysis specifically designed to document the existence, the identity, the location, and the dimension or size of natural or artificial features on land or in the air, space or water for the purpose of producing accurate and reliable maps, suitable for visualization if needed, of such documentation.

III. General Survey, Map and Report Requirements

A. Regulatory Objectives - The public must be able to rely on the accuracy of measurements and maps produced by a surveyor and mapper. In meeting this objective, surveyors and mappers must achieve the following minimum standards of accuracy, completeness, and quality:

(1) The accuracy of the survey measurements shall be premised upon the type of survey and the expected use of the survey and map. All

measurements must be in accordance with the United States standard, using either feet or meters. (2) Records of these measurements shall be maintained for each survey by either the individual surveyor and mapper or the surveying and mapping business entity. Measurement and computation records must be dated and must contain sufficient data to substantiate the survey map and insure that the accuracy portion of these standards has been met.

B. Other More Stringent Requirements

(1) When more stringent survey standards than those set forth in this chapter are required by federal, state, or local governmental agencies, the survey shall comply with those standards. When more stringent survey standards or requirements than those set forth in this chapter are mandated by the client and agreed to by the surveyor and mapper, the survey shall comply with those survey standards, providing said survey requirements are within the scope of the surveyor and mapper's expertise.

C. Other Standards/Requirements that Apply to All Surveys, Maps and/or Survey Products:

(1) REGULATIONAL OBJECTIVE: In order to avoid misuse of a survey and map, the surveyor and mapper must adequately communicate the survey results to the public through a map, report, or report with an attached map. Any survey map or report must identify the responsible surveyor and mapper and contain standard content. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality:

(2) Each survey map and report shall state the type of survey it depicts consistent with the types of surveys defined in items above (12)(a) -- (k). The purpose of a survey, as set out in said items (12)(a) -- (k), dictates the type of survey to be performed and depicted, and a licensee may not avoid the minimum standards required by rule of a particular survey type merely by changing the name of the survey type to conform with what standards or lack of them the licensee chooses to follow.

(3) All survey maps and reports must bear the name, certificate of authorization number, and street and mailing address of the business entity issuing the map and report, along with the name and license number of the surveyor and mapper in responsible charge. The name, license number, and street and mailing address of a surveyor and mapper practicing independent of any business entity must be shown on each survey map and report.

(4) All survey maps must reflect a survey date, which is the date of data acquisition. If the graphics of a map are revised, but the survey date stays the same, the map must list dates for all revisions.

(5) The survey map and report and the copies of the survey map and report, except those with electronic signature and electronic seal, must contain a statement indicating that the survey map and report or the copies thereof are not valid without the signature and the original raised seal of a Florida licensed surveyor and mapper. In addition, if neither the business entity nor the individual licensee has professional liability insurance, the map and the report, if there is a report, must contain the following printed statement in letters at least 1/8" high: The survey depicted here is not covered by professional liability insurance. Additions or deletions to survey maps or reports by other than the signing party or parties is prohibited without written consent of the signing party or parties.

(6) All computed data or plotted features shown on survey maps must be supported by accurate survey measurements unless clearly stated otherwise. Bearings, distances, coordinates, and elevations shown on a survey map shall be substantiated by survey measurements unless clearly stated otherwise.

(7) A reference to all bearings shown on a survey map or report must be clearly stated, i.e., whether to "True North"; "Grid North as established by the NOS"; "Assumed North based on a bearing for a well defined line, such as the center line of a road or right of way, etc."; "a Deed Call for a particular line"; or "the bearing of a particular line shown upon a plat." References to Magnetic North should be avoided except in the cases where a comparison is necessitated by a Deed Call. In all cases, the bearings used shall be referenced to some well-established and monumented line.

(8) A designated "north arrow" and either a stated scale or graphic scale of the map shall be prominently shown upon the survey map.

(9) Abbreviations generally used by the public or in proper names that do not relate to matters of survey are excluded from the legend requirement.

(a) Acceptable abbreviations on the face of survey maps are:

N = North

S = South

E = East

W = West

or any combination such as NE, SW, etc.

0 = Degrees

' = Minutes when used in a bearing

" = Seconds when used in a bearing

' = Feet when used in a distance

" = Inches when used in a distance

AC = Acres

+/- = More or less (or Plus or Minus)

metric notation

(b) Any other abbreviations relating to survey matters must be clearly shown within a legend or notes appearing on the face of the map or report.

(10) When special conditions exist that effectively prevent the survey from meeting these minimum standards, the special conditions and any necessary deviation from the standards shall be noted upon the map or report.

(11) Responsibility Clearly Stated. The responsibility for all mapped features must be clearly depicted on any map or report signed by a Florida licensed surveyor and mapper. In the case that features surveyed by the signing surveyor and mapper have been integrated with features surveyed by others, then the full extent of responsibility shall be clearly depicted on the map or report, and the signing surveyor and mapper shall include in the map or report an assessment of the quality and accuracy of all mapped features delivered.

(13) Report Items

(a) Report items are text statements information, as required by other parts of this chapter rule, such as: abbreviations, legends, accuracy statements, feature lists, datums used, and things done or not done as part of the survey and mapping process. In addition, the map or report shall contain other items necessary for an adequate communication of survey methods and results as judged by the surveyor and mapper such as: data sources,

measurement methods, history and lineage of data, and limitations pertaining to the information presented.

(b) ~~Text~~ Report items shall be displayed either through notes on the map, report, or in a text report delivered with the map. If the report is produced as a text document and a map is attached, the report shall be signed and sealed. If the map is delivered in digital form only, then a report is required. An attached map must clearly reference the report by title, date and subject; and the report must likewise clearly refer to the map by title, date, and subject. Statements must be made on the map and in the report that neither is full and complete without the other.

(14) Map Accuracy. The expected range of accuracies of features shown on a survey map must be stated.

(a) Vertical Feature Accuracy:

1. If contour lines are shown, then sufficient data must be obtained in order to insure that 90% of ground point elevations taken from contours are within 1/2 of the contour interval, and the remainder are not in error more than the contour interval.

2. For surveys performed, the vertical positional accuracy of map elevation features such as spot elevations, contours, or other forms of terrain models must be stated. The stated accuracy is a plus or minus tolerance that encompasses 90% of elevation differences between survey-measured values and ground truth. All such survey maps or reports with elevation data shall have a statement to the effect: "Elevations of well-identified features contained in this survey and map have been measured to an estimated vertical positional accuracy of: ---- (ft) (m)." If different accuracy levels exist for different features, then applicable features and accuracies shall be identified with similar statements.

3. Vertical Control: Field-measured control for elevation information shown upon survey maps or reports shall be based on a level loop. Closure in feet must be accurate to a standard of plus or minus .05 ft. times the square root of the distance in miles or 2.1 cm per 10KM. All surveys and maps or reports with elevation data shall indicate the datum and a description of the benchmark(s) upon which the survey is based. Minor elevation data may be obtained on an assumed datum provided the base elevation of the datum is obviously different than the established datum.

(b) Horizontal Feature Accuracy: 1. A survey and map's horizontal positional accuracy must be stated. The stated accuracy is a plus or minus tolerance that encompasses 90% of coordinate differences between map displayed values and ground truth. All survey maps or reports shall have a statement to the effect: "Well-identified features in this survey and map have been measured to an estimated horizontal positional accuracy of ---- (ft) (m)." If different accuracy levels exist for different features, then applicable features and accuracies shall be identified with similar statements.

2. Horizontal Control: All surveys and maps or reports expressing or displaying features in a publically published coordinate system shall indicate the coordinate datum and a description of the control points upon which the survey is based. Minor coordinate data may be obtained and used on an assumed datum provided the numerical basis of the datum is obviously different than a publically published datum. The accuracy of control survey data shall be verified by redundant measurements or

traverse closures. All control measurements shall achieve the following closures::

Urban/Commercial/High Risk: Linear: 1 foot in 10,000 feet;; ;

Suburban: Linear: 1 foot in 7,500 feet;;

Rural: Linear: 1 foot in 5,000 feet; .

~~Or: If statistical procedures are used to calculate survey accuracies, the maximum acceptable positional tolerance, based on the 95% confidence level, should meet the same equivalent relative distance standards as set forth above. When statistical procedures are used a closed geometric figure is not required. Relative Positional Accuracy may be tested by comparing the relative location of points in a survey to the same points measured by an independent survey of higher accuracy. The comparison should include the measurement of both distances and directions. Relative Positional Accuracy may also be tested by the results from a minimally constrained, correctly weighted least squares adjustment of the survey data. Note that sufficient redundancy in the survey measurements is required, if accuracy is to be tested this way. (ONE NOTE HERE IS THAT I HAVE USED THE 95% CONFIDENSE LEVEL EVERY PLAGE? PREVIOUSLY, PHOTO. METHODS USED 90%)~~

(c) Map Plotting Accuracy: The horizontal position of physical features surveyed by field methods must be plotted to within 1/20 of an inch at the map scale.

(d) Intended Display Scale: At the maximum intended display scale, a survey and map's positional accuracy value occupies 1/20" on the display. All maps or reports of surveys produced by photogrammetric methods and delivered with digital coordinate files must contain a statement to the effect of: "This map is intended to be displayed at a scale of 1/-- or smaller".

IV. Types of Surveys and Survey Products

A. As-Built/Record Surveys

(1) As-Built (or Record) Survey:

(a) When performing as-built or record surveys, the surveyor and mapper shall obtain field measurements of vertical or horizontal dimensions of constructed improvements so that the constructed facility can be delineated in such a way that the location of the construction may be compared with the construction plans, and when the surveyor and mapper prepares as-built maps they will clearly show by symbols, notations, or delineation's, those constructed improvements located by the survey. All maps prepared shall meet applicable minimum technical standards.

(b) The vertical and horizontal accuracy of the measurements made ~~and mapped~~ shall be such that it may be determined whether the improvements were constructed consistent with planned locations.

B. Boundary Survey, Map, and Report.

(1) BOUNDARIES OF REAL PROPERTY

(a) REGULATIONAL OBJECTIVE: The public must have confidence that boundaries of real property are located on the ground in an adequate and defensible manner. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality;

(b) The surveyor and mapper shall make a determination of the position of the boundary of real property in complete accord with the real property

description shown on or attached to the survey map or report. All boundary surveys shall result in a map.

(c) Any discrepancies between the survey map and the real property description must be shown. (d) All changes in direction, including curves, shall be shown on the survey map by angles, bearings or azimuths, and will be in the same form as the description or other recorded document referenced on the map.

(e) Curved lines with circular curves shall show the radii, arc distances and central angles, or radii, arc distances, chord distances and chord bearings. When intersecting lines are non-radial to a curve, sufficient angular data shall be shown to relate the line to the curve.

(f) Surveys of all or part of a lot(s) which is part of a recorded subdivision shall show the following upon the map:

1. The lot(s) and block numbers or other designations, including those of adjoining lots.

2. A comparison between recorded directions and distances with field measured directions and distances when they vary.

3. A comparison between the recorded directions and distances with field measured directions and distances to the nearest street intersection, right of way intersection or other identifiable reference point.

4. The dimensioned remaining portion of a lot(s) when part of a lot is included within the description.

~~5. Sufficient information shall be shown on the map so that the approach used to establish the lot(s)/block(s) boundaries is explained. If the boundary method/solution relies upon previous survey work by the Surveyor, that fact should be noted on the map. Other meta-data regarding surveys in a recorded subdivision is not required.~~

(g) Surveys of parcels described by metes and bounds shall show the following upon the map:

1. The relationship of the parcel(s) to at least one established identifiable real property corner;

2. All information called for in the property description, such as point of commencement, course bearings and distances, and point of beginning;

3. A comparison between recorded directions and distances and field measured directions and distances on the boundary when they vary;

4. The most current abutting recorded instrument or recorded plat either known by the surveyor and mapper or furnished to the surveyor and mapper.

~~(h) Boundary Surveys — Positional Accuracy:~~

~~Urban/Commercial/High Risk: plus or minus 0.07 feet (21mm) plus 50 ppm RPA or 1:15,000 linear.~~

~~Suburban: plus or minus 0.13 feet (40mm) plus 100 ppm RPA or 1: 10,000 linear.~~

~~Rural: plus or minus 0.26 feet (79mm) plus 200 ppm RPA or 1: 7,500 linear.~~

~~In circumstances where the parcel(s) surveyed are so small (such as small lot and block type surveys) as to make it impossible or impractical to meet these accuracy standards, the surveyor shall note that fact and the expected accuracy level that was achieved.~~

(2) BOUNDARY MONUMENTS

(a) REGULATIONAL OBJECTIVE: In order to prevent boundary conflicts, the public must have assurance that the corners of accurately located real property boundaries as found by a survey are durably marked with survey monuments that may be identified on the ground with the aid of the survey

map. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality;

(b) The surveyor and mapper shall set monuments as defined herein, unless monuments already exist or cannot be set due to physical obstructions at such corners or unless a water boundary has been located in approximate position. The survey map shall clearly label all approximate water boundaries with notes and these shall be mapped in a distinctly different graphic fashion from water boundaries located to full survey accuracy.

(c) Every boundary monument set shall:

1. Be composed of a durable material;
2. Have a minimal length of 18 inches;
3. Have a minimum cross-section area of material of 0.2 square inches;
4. Be identified with a durable marker or cap bearing either the Florida license number of the surveyor and mapper in responsible charge, the certificate of authorization number of the business entity; or name of the business entity;
5. Be detectable with conventional instruments for finding ferrous or magnetic objects.
6. If a corner falls in a hard surface such as asphalt or concrete, alternate monumentation may be used that is durable and identifiable.

(d) All monuments, found or placed, must be described on the survey map. The corner descriptions shall state the size, material, and cap identification of the monument as well as whether the monument was found or set.

(e) When a parcel has an irregular roadway as a boundary, such as a dirt road or a common law road, then a monumented meander or survey line shall be established along or near the feature. For other irregular boundaries such as a river, lake, beach, marsh or stream, not identified as in section (b), a dimensioned meander or survey line may be used. If a meander or survey line is used, monuments shall be set at the meander or survey line's terminus points on real property boundary lines. If a meander or survey line is used, dimensions shall be shown between a meander or survey line and the boundary line sufficient to show the relationship between the two.

(f) A boundary survey updating a previous survey made by the same surveyor and mapper or business entity, and which is performed for the purpose of locating non-completed new improvements by measurements to the property lines or related offset lines placed on the property since the previous survey, need not have the property corners reset.

(g) Side ties to locate or set monuments shall be substantiated by a redundancy of measurements.

(3) BOUNDARY INCONSISTENCIES

(a) REGULATIONAL OBJECTIVE: In order to protect and enhance stability of property location and title, the public must have assurance that potential boundary inconsistencies are adequately researched and disclosed. A survey map should present the factual basis of potential boundary inconsistencies in a clear fashion. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality:

(b) Potential boundary inconsistencies that the survey process did not attempt to detect shall be clearly indicated and explained on the survey map or in the report. Where evidence of inconsistency is found, the nature of the inconsistency shall be shown upon the survey map, such as:

1. overlapping descriptions or hiatuses;

2. excess or deficiency;
 3. conflicting boundary lines or monuments; or
 4. doubt as to the location on the ground of survey lines or property rights.
- (c) Open and notorious evidence of boundary lines, such as fences, walls, buildings, monuments or otherwise, shall be shown upon the map, together with dimensions sufficient to show their relationship to the boundary line(s).
- (d) All apparent physical use onto ~~the property being surveyed or by the property being surveyed onto~~ from adjoining property must be indicated, with the extent of such use shown or noted upon the map.
- (e) In all cases where foundations may violate deed or easement lines and are beneath the surface, failure to determine their location shall be noted upon the map or report.

(4) RIGHTS-OF-WAY, EASEMENTS, AND OTHER REAL PROPERTY CONCERNS

(a) REGULATIONAL OBJECTIVE: In order to provide assurance of the status of access and other real property rights, the public must be informed of the existence and location of rights-of-way and easements associated with property being surveyed. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality:

(b) All recorded public and private rights of way shown on applicable recorded plats adjoining or across the land being surveyed shall be located and shown upon the map.

(c) Easements shown on applicable record plats or open and notorious evidence of easements or rights-of-way on or across the land being surveyed shall be located and shown upon the map.

(d) If streets or street rights-of-way abutting the land surveyed are physically closed to travel, a note to this effect shall be shown upon the map.

(e) If location of easements or rights-of-way of record, other than those on record plats, is required, this information must be furnished to the surveyor and mapper.

(f) Human cemeteries and burial grounds located within the premises shall be located and shown upon the map if open and notorious, or if knowledge of their existence and location is furnished to the surveyor and mapper.

(5) REAL PROPERTY IMPROVEMENTS

(a) REGULATIONAL OBJECTIVE: The public must be informed of the existence and location of pertinent real property improvements and their relation to the boundary of real property. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality:

(b) Location of fixed improvements pertinent to the survey shall be graphically shown upon the map and their positions shall be dimensioned in reference to the boundaries, either directly or by offset lines.

(c) If fixed improvements are not located or do not exist, a note to this effect shall be shown upon the map.

Reset property corners

Building corners are acceptable as monumentation so long as use of building corners as monumentation is clearly noted on survey drawing. If boundary survey updating previous survey is made by same surveyor or survey firm for purpose of locating non-completed new improvements, property corners need not be reset; however, if boundary survey is updating previous survey made by same surveyor or survey firm and is performed for purpose of locating completed new improvements, property corners must

be reset. When boundary survey is updating previous survey made by different surveyor or survey firm, for purpose of locating either non-completed or completed new improvements, property corners must be reset.

~~C. Condominium Survey
(See FS Chapter 718)~~

~~(1) Boundary Surveys to be made according to B above.~~

D. Construction Layout Survey

~~(1) Construction Layout Survey – General: When the surveyor and mapper provides construction staking, these stakes must be based on controls established using the survey standards set out in Section III, C, (14) of this chapter. The stakes provided should be adequate in number and position and accuracy so that the physical items can be constructed from the plans as designed and in the correct relation to other planned or existing improvements.~~

~~(2) Horizontal and Vertical Controls for Public and Private Construction Layout.~~

~~(a) Section 472.003(3), Florida Statutes, provides an exemption from licensing for certain classes of individuals performing construction layout from boundary, horizontal and vertical controls that have been established by a licensed professional surveyor and mapper. This rule is designed to set out what constitutes horizontal and vertical controls:~~

~~(b) Horizontal control monumentation for the purpose of this rule includes:~~

~~1. Points of Curve, Points of Tangency, Points of Tangent Intersections, Points on Line and Points on Curve.~~

~~2. Points of Intersection of other streets or roads.~~

~~3. Angle points or changes in direction.~~

~~(c) Horizontal control monumentation for road centerline, right-of-way lines, reference lines or base lines shall be at least a minimum of two (2) points placed so that no point on the line being monumented is more than 700 feet from a control monument.~~

~~(d) Horizontal control monumentation for main utility lines (such as water, sewer, storm drainage, electric, telephone, television, gas, etc.) when not constructed within or along a road right-of-way control in accordance with subsection (2)(b) shall be at least a minimum of two (2) points placed so that no point on the line being monumented is more than 700 feet from a control monument.~~

~~(e) Horizontal control monumentation for building and/or primary constructions shall be at least:~~

~~1. Boundaries, or~~

~~2. Control or base lines (minimum of 2 points), or~~

~~3. A minimum of a four-corner envelope for nonresidential construction improvement layout.~~

~~(f) Horizontal control monumentation required by plans as a control for horizontal location not included in subsections (2)(b), (c) or (d) shall meet the requirements of (2)(a).~~

~~(3) All construction requiring benchmarks shall have a minimum of two (2) existent or established benchmarks for vertical control.~~

~~(4) Vertical control for linear type construction sites such as roads and sewer lines shall have a maximum of 1,100 feet between existent or established benchmarks.~~

(6) Vertical control for acreage construction sites shall have two (2) existent or established benchmarks on the first ten (10) acres plus an additional benchmark for each additional ten (10) acres.

(7) The only required documentation for this type of survey product shall be field notes ~~as outlined in section III, A, (2) above.~~

E. Control Survey

(1) Geodetic Control Surveys: If applicable, all geodetic control surveys, both vertical and horizontal, shall conform to the Standards and Specifications for Geodetic Control Networks (1984) as set forth by the Federal Geodetic Control Committee (FGCC), which Standards and Specifications are incorporated herein by reference, effective 5-13-96, and the Geospatial Positioning Accuracy Standards Parts 1, 2, and 3, FGDC-STD-007.1-1998, entitled "Geospatial Positioning Accuracy Standards Part 1: Reporting Methodology", FGDC-STD-007.2-1998, entitled "Geospatial Positioning Accuracy Standards Part 2: Standards for Geodetic Networks", and FGDC-STD-007.3-1998, entitled "Geospatial Positioning Accuracy Standards Part 3: National Standard for Spatial Data Accuracy", which are hereby incorporated by reference, effective 5-18-00, copies of which may be obtained via the Internet web site (<http://fgdc.er.usgs.gov>). No use of the terminology of these standards may be made without adopting and following the standards in all details. If these standards are not employed, a survey map or report shall explain applicable standards used in the geodetic control survey. All geodetic control survey maps or reports shall show the horizontal and vertical datum used and shall contain adequate graphical or written descriptions of the locations, construction and marking of all marks used or set and shall explain methods employed in the survey and adjustment.

(2) Other Control Surveys: Any control survey map or report shall detail the datum used and control stations used in a manner consistent with the general survey and map provisions of Section III, C, (14) above.

F. Descriptions/Sketch to Accompany Description

(1) Descriptions written by a surveyor and mapper to describe land boundaries by metes and bounds shall provide definitive identification of boundary lines. ~~A statement giving the relationship between the described property and the survey control or the basis of the property location should be made (if applicable).~~

~~(2) A statement of the basis of bearings (if applicable) must be made.~~

~~(3) Both the relationship of the described property and the survey control and the basis of bearings shall be contained within the body of the description.~~

(4) If a sketch accompanies the property description, it shall show all information referenced in the description and shall state that such sketch is not a survey. The initial point in the description shall be tied to either a government corner, a recorded corner, or some other well-established survey point.

G. Digital Data

(1) When survey information is provided in digital form only, the Surveyor shall provide ~~information and~~ a signed and sealed report as outlined above.

(2) The digital file will reference the report and that the digital file is not full and complete without the report.

H. ~~Elevation Certificate/Certificate of Elevation~~

~~(1) REGULATIONAL OBJECTIVE: To insure that the public understands certified elevation data and the intended use of the information.~~

~~(2) When survey information is obtained and provided to be relied upon by a public or private client for a stated or specific purpose the surveyor shall provide the information in the form of a signed and sealed report of survey or standard elevation certificate.~~

~~(3) If the purpose of the certified elevation information is for a limited specific purpose, then the certified document shall so state the purpose and that the information is not for any other use. If the user of the certified information is limited then the certified document shall so state this limitation.~~

GIS

I. ~~Hydrographic Survey~~

~~1. Measurements~~

~~2. Positional Accuracy~~

~~3. Mapping~~

~~4. information~~

J. ~~Mean High Water Survey~~

~~(See FS Chapter 177, Part II)~~

~~(1) Boundary Surveys to be made according to applicable portions of B above.~~

K.

L. (MOVED TO TOPOGRAPHIC MAPPING SECTION)Quantity Survey

~~(1) The surveyor and mapper shall obtain horizontal and vertical measurements adequate to delineate graphically geometric configurations and/or dimensions so that quantities can be mathematically computed.~~

~~(2) The required information sections as outlined above shall include sufficient information so that the user of the survey data can determine the expected range of quantities that are calculated from the survey data.
See old description~~

M. Raster Imagery

(1) REGULATIONAL OBJECTIVE: The public must be able to rely on surveys and maps presented in image form, digital or graphical, where coordinate positions of mapped features on a recognized coordinate system may be extracted from the image.

(2) The survey and map report must contain a list of control points employed in geo-referencing the image along with the source of control positions used.

(3) Feature accuracies shall be stated in a manner consistent with the general survey and map accuracy provisions outlined in Section III, C, (14)above.

N. Subdivision Record Plat

(1) This rule shall not apply to plats being prepared for filing and recording pursuant to Chapter 177, Florida Statutes; however, this rule shall apply to any boundary survey performed during the preparation of the plat.

(2) For boundary surveys prepared for record plats filed pursuant to Chapter 177, Florida Statutes, see Section IV, B above.

O. Specific or Special Purpose Survey

Surveys which are performed for a purpose other than the purposes encompassed by the definitions in Section II(12)(a) -- (i) or (k), shall be permitted only where unusual conditions make impracticable or impossible the performance of one of the types of surveys defined in Section II(12)(a) - (i) or (k). Such purpose and conditions shall be clearly shown upon the survey map or in the survey report.

Surveys performed for purposes of monumenting, referencing, describing, and mapping centerline or baseline may be performed as specific purpose surveys. Additionally, surveys performed for purpose of monumenting official right-of-way lines may be performed as special purpose surveys.

P. Topographic Survey

(1) Topographic surveying and mapping by field methods shall meet general provisions applicable to all surveys and maps as set out in III A – D, above. A minimum of two site benchmarks on or near the survey shall be indicated upon the survey map.

3 Topographic map Features :

(a) REGULATIONAL OBJECTIVE: The public must be able to rely on topographic information contained on a survey map and must be able to correctly interpret the intended map coverage.

(b) Intended Features. The surveyor and mapper shall devise a method of reporting which topographic features were intended to be surveyed and mapped, the style of cartographic representation employed for each, and the degree of intended completeness in the surveying and mapping of each feature. As with abbreviations, any symbols, line types, etc. shown on the survey map shall be explained/defined in a legend.

(c) Obscured Areas. Features in obscured areas where the desired points or surfaces being mapped are not clearly visible on source images shall be clearly labeled on the map as "interpolated" or "estimated" through the use of notes and shall be depicted graphically clearly different from other surveyed features.

(d) Scale of Map. The scale of the map that is selected if provided in hard copy shall be sufficient to accurately and clearly show the results of the survey.

(e) Property Lines. Any depiction of property lines on a topographic map shall be accompanied with a statement in the information as to the source and expected accuracy of the property lines shown.

(4) Digital Ortho-Photos.

(a) REGULATIONAL OBJECTIVE: The public must be able to rely on Ortho-Photo based surveys and maps presented in image form, digital or graphical, where coordinate positions of mapped features on a recognized coordinate system may be extracted from the mapping.

(b) ~~Meta-data~~ Information: The survey and map must contain a list of control points employed in geo-referencing the image along with the source of control positions used. The survey and map product must contain a statement(s) regarding the intended use of the map product.

(c) Positional Accuracy: Feature accuracies shall be stated in a manner consistent with the general survey and map accuracy provisions of Section III, C, (14).

~~Q. — Survey Report~~

~~(1) Reports for purposes other than outlined above may be provided so long as the licensed professional surveyor has the education or experience in the type of work.~~

~~T. — Survey Map and Report~~

~~V. — Seals and Certifications~~

~~A. — General (what to seal, etc.)~~

~~(1) All maps, except those with electronic signature and electronic seal, must contain a statement indicating that the map is not valid without the signature and the original raised seal of a Florida licensed surveyor and mapper.~~

~~(2) If a map, report or map and report are certified to a specific entity or party and the intended use is for those parties referenced in the certification, then that fact shall be noted on the survey map or report.~~

REVIEW AND DISCUSSION OF 61G17-1.008 AND 61G17-1.0051, F.A.C.

Ms. Patterson advised the board that there were typographical error in section 61G17-1.008 and 61G17-1.0051. Mr. Martin stated he could proceed with the technical corrections with out board action.

REVIEW AND DISCUSSION OF 61G17-1.020, F.A.C – Exemption for Renewal for Spouses of Members of the Armed Forces of the United States (New)

Mr. Martin advised the board that draft language was included in their agenda materials and he asked the board to review the draft. Mr. Martin advised the board that the exemption was for the spouse of the armed force member. The board reviewed the draft and following their review the following motion was made.

MOTION: Ms. Sutphin made a motion to approve the draft language and to move forward with rule adoption.

SECOND: Mr. Bush seconded the motion and it passed unanimously.

REVIEW AND DISCUSSION OF PROPOSED CHANGES TO 61G17-2.001, F.A.C.

Mr. Lebron provided the board with at draft proposal of changes to 61G17-2.001, F.A.C. The board reviewed Mr. Lebron's proposed changes to the minimum and maximum fines. The board made some changes to Mr. Lebron's proposal. Mr. Martin advised the board that some violations of Chapter 472 are also a violation of Chapter 455 and additional fine could be added. The board asked Mr. Martin to review the rule and bring draft proposal to the next meeting.

NEW/OLD BUSINESS

No board action.

There being no other business the meeting adjourned at 5:30 p.m.