

CHAPTER II

**RIGHT-OF-WAY, EASEMENT,
FEE SIMPLE,
ACQUISITIONS, SURVEYS
AND SURVEY QUALITY (SQ)
UNDERPINNING DESIGN
PLAN**

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SURVEY QUALITY (SQ) UNDERPINNING DESIGN PLANS

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**ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS (DPW)**

DESIGN MANUAL

CHAPTER II

**RIGHT-OF-WAY, EASEMENT, FEE SIMPLE, ACQUISITIONS, SURVEYS
AND SURVEY QUALITY (SQ) UNDERPINNING DESIGN PLAN**

I. GENERAL

A. Introduction

This Chapter of the Design Manual outlines the procedures, standards, and minimum criteria that must be used by all design professionals in preparation of right-of-way, easement, and/or fee simple plats and descriptions for acquisition. This Chapter also provides a standard guideline for defining the basic quality of the land survey data underpinning a design plan along with outlining a metadata classification that classifies the quality of the survey data being utilized and noted within the General Notes on the Design Plan. This Chapter, together with Maryland Code, the Code of Maryland Regulations (COMAR), and the Anne Arundel County Code, as amended, are used by these agencies in the review of all submissions requiring their approval. Close adherence to the material presented herein will expedite the review and approval process.

Anne Arundel County record information and research assistance is available from the Department of Public Works, Drafting & Research Desk, 2662 Riva Road, 2nd floor, Annapolis, MD 21401 or by calling 410-222-7049.

<https://www.aacounty.org/departments/public-works/engineering/forms-and-publications/>

[My Anne Arundel](https://gis.aacounty.org/gcx/WebViewer/?app=c82c5cff02544a56af888e4ff5c166a2)

<https://gis.aacounty.org/gcx/WebViewer/?app=c82c5cff02544a56af888e4ff5c166a2>

[Engineering Record Drawing and Monuments](https://gis.aacounty.org/portal/apps/webappviewer/index.html?id=dfaf0eab572c40b6b709ae1567f1ed8b)

<https://gis.aacounty.org/portal/apps/webappviewer/index.html?id=dfaf0eab572c40b6b709ae1567f1ed8b>

B. Definitions

1. Right-of-Way

The legal right, established by usage or grant, through a tract of land belonging to another. A right-of-way is frequently used to describe a right belonging to a party, i.e. a right of passage over the way, and to describe an actual strip of land which encompasses the way. A right-of-way may be conveyed as a fee simple grant of ownership or as an easement right for a way for a specific use.

2. Right-of-Way / Easement Surveys

A right-of-way / easement survey is a means of obtaining, reporting, and/or displaying, the necessary data to establish or reestablish the location of sufficient property lines of the affected tract of land to assure the accurate location of the strip or parcel of land being described for the use and benefit of others. (COMAR 09.13.06.09)

3. Metes and Bounds Descriptions

The purpose of a metes and bounds description is to create a written legal description of the subject tract of land that provides information necessary to properly locate the property on the ground and distinctly set it apart from all other properties. (COMAR 09.13.06.08)

4. Boundary Surveys

The purpose of a boundary survey is to establish, reestablish, or describe, or all of these, the physical position and extent of the boundaries of real property. (COMAR 09.13.06.03)

5. Planimetric Surveys

The purpose of a planimetric survey is to locate, describe, or map, or all of these, the horizontal positions of the physical features and characteristics of the surface of the earth and other features. (COMAR 09.13.06.05)

6. Topographic Surveys

The purpose of a topographic survey is to locate, describe, or map, or all of these, the elevations and positions of the physical features and characteristics of the surface of the earth including spot elevation, contours, and other features. (COMAR 09.13.06.04)

7. COMAR 09.13.06

The Minimum Standards of Practice for individuals practicing professional land surveying and property line surveying in Maryland as established by the DEPARTMENT OF LABOR, LICENSING, AND REGULATION adopted by the BOARD FOR PROFESSIONAL LAND SURVEYORS and as published in the Code of Maryland Regulations (COMAR). All surveys must be in accordance with the Minimum Standards of Practice (COMAR 09.13.06) as adopted March 3, 1995 and as amended.

8. Fee Simple Acquisition

All rights to the property in fee simple having complete ownership in perpetuity.

9. Easement Acquisition An easement right to cross or otherwise use land of another for a specific purpose. The rights acquired, purpose, duration, and other covenants and restrictions, are detailed as written in a Deed of Easement and Agreement. The property owner continues to pay taxes and generally maintains the land, subject to the easement.

a. Utility Easement: The right to construct and maintain a utility within an easement area. Typically, for water lines, grinder pumps, sewer lines, and storm drains. Property owners are not to place obstructions, per Anne Arundel County Code 13-1-105, on the easement.

b. Drainage Easement: The right to discharge or direct water by an inlet ditch, drainage swale, storm drain outfall, and or the right to construct and maintain step pool conveyance system, subsurface piping, stormwater management pond, stream restoration or other stormwater management practice. Typical restrictions are that no permanent structures be built on this easement and that the property owner does not perform any act which interferes with the drainage flow.

c. Slope Easement: The right to construct and maintain slopes that are required to support the integrity of the project design.

d. Temporary Construction Easement: The temporary use of private property during construction of the project and for the warranty period. Used to obtain the right to grade the property, to install temporary sediment and erosion control devices, to stock pile equipment and machinery, to transition grade to a sidewalk or driveway, and/or to remove any shrubs, trees, etc. In some cases when approved by DPW, for the actual construction of the improvements. After completion of the project, the disturbed ground is to be restored to a condition equally as good as existed prior to construction and all rights of the County to utilize this area cease to exist.

e. Right-to-Discharge: The right to discharge the flow of water from such drainage facilities to adequately drain the natural watershed and adjacent properties into existing waterways, natural drainage courses and/or upon the existing ground; discharging stormwater onto private property. The discharge point is indicated by the perpetual right-to-discharge symbol (per Appendix "E"). This right-to-discharge remains with the property as long as it is needed to direct the flow of water.

- f. Pedestrian Access Easement: The right to construct sidewalks or hiker biker trails for public use. Typically, sidewalks are acquired in fee simple unless there are reasons the property owners require the fee simple rights to the area.
- g. Prescriptive Easement: A claim of easement by long continued use thereof. It is necessary to prove an adverse (a use without permission), exclusive, continuous, and uninterrupted use for twenty years or more.

II. SUBMISSION REQUIREMENTS: Documents must be prepared in accordance with the guidelines and information items outlined below and submitted together with a completed checklist, attached hereto as “Appendix ‘A’ Right-of-Way Plat & Description Checklist”. The checklist items must be checked & initialed by the consultant and submitted to the DPW Project Manager. The DPW Project Manager, after reviewing and initialing the checklist items and reviewing the submittal documents then submits hard copies of the checklist and initial submittal documents to the Chief of Right of Way, unless previously assigned to a Property Acquisition Agent. The initial submittal documents must include the metes and bounds description(s), mylar & paper copy of plat(s), and one complete set of the design / construction plans, including profiles and cross sections, as applicable, all signed and sealed by the responsible licensee in accordance with Maryland Code, Business Occupations and Professions 14-4A-02 & 15-502.

Separate descriptions & plats must be prepared for each property owner. Multiple acquisition areas situated on property owned by the same owner must be prepared as a single description containing courses and distances for each separate part / acquisition area in general conformance with Appendix C-2. Temporary Construction Easements do not require a description but must be shown on a plat. Acquisition areas must be sufficient to accommodate the Limits of Disturbance (LOD) and other private property to be used in conjunction with the ultimate planned project, including but not limited to,, as applicable, medians, shoulders, grass strips, sidewalks, public utility facilities, drainage areas, slopes, working strips, and staging areas, except where other specific agreements or easements are existing. The right of way should not be overly intrusive on the remaining property rights of the owner.

Any subsequent resubmittals to DPW, plats and descriptions must be re-dated and resubmitted accompanied by a point-by-point comment response letter, or point-by-point comment response via e-mail, addressing all of the DPW review comments and/or recommendations.

A. Right-of-Way, Easement, Fee Simple Acquisition Plats

1. **Plats** must be prepared with black line work and text printed on 8.5" x 11" sheets bearing the standard Anne Arundel County Department of Public Works title block (Appendix "B"), unless otherwise directed by DPW such as for schools, parks, or other unique properties. Plats are labeled as Exhibit "B"; indicating Sheet 1 of 2, Sheet 2 of 2 ... et seq. as necessitated. Stand alone Temporary Construction Easement plats are labeled as Exhibit "A". Boldly outline and label all right of way, easement, fee simple and other acquisition areas so they can be easily identified. Acquisition areas must be calculated and shown to the nearest square foot and if multiple parts of the same type of acquisition show the sum of the parts within an area table. When acres are provided they are to be provided to four (4) places after the decimal point.
2. A **vicinity map** must be shown (see example Appendix "B") unless the site is located at a major street intersection where the vicinity within the county is readily apparent on the plat. When there are multiple sheets and/or match lines connecting more than two (2) sheets, show a key map on the vicinity map and or on a separate sheet to clarify the sheet layout sequence and graphic location of each part / acquisition area and to show distant property markers found, as may be necessary.
3. **Property markers** found on-site and/or off-site used to establish property and right-of-way lines must be shown. The location of at least two (2) property markers found must be shown in relation to relevant property lines or existing right-of-way lines for each acquisition area using dimensions, tie lines, or coordinates, such that the acquisition area can be accurately located and staked out in the field. Extended lines that tie acquisition areas to distant property markers found, may be shown as broken lines indicated by a symbol " ∟ " together with the bearing & distance of the tie line(s). Property markers must be set for all fee simple acquisition areas in accordance with COMAR 09.13.03.02 & .03, unless markers are otherwise existing, and/or as may be directed by DPW. **Property markers set** for fee simple right-of-ways must be set along the outermost widening lines at all PC's, PT's, bends or changes in direction, and road intersections, subsequent to construction set at final grade and shown on the as-built drawings; and/or as may be directed by DPW.

4. **North arrow** and survey work must reference the North American Datum (NAD 83/et seq.) adopted by Maryland as its official State Plane Coordinate System (SPCS) and/or as may be projected by the Anne Arundel County Control Stations, National Geodetic Survey (NGS), Global Navigation Satellite Systems (GNSS) or a project datum as may be directed by DPW. Place a notation along the North Arrow to reference the datum utilized along with separate notes to indicate the appropriate grid to ground adjustment factors (Elevation Factor, Scale factor / Combination Factor) and other relevant metadata necessary to accurately reestablish the datum on the ground. All coordinates and bearings of the surveyed lines must be in the referenced survey datum utilized for the project. On plats involving fee simple land acquisitions for parkland or other large properties and must provide a coordinate list (to a minimum of three (3) places after the decimal point) of all Survey Controls Stations / Traverse markers used for the survey printed on the acquisition plat or otherwise provided on a separate 8.5" x 11" sheet to show the point number, description/character of mark, and the elevation if available.
5. **Bearings, distances, and curved lines** must be labeled along drafted lines and/or shown by line designations found in line tables containing bearings and distances and curve data for each separate land acquisition area. When an existing line of record differs from the same line "as now surveyed", and the record line is called within the written description or otherwise shown on the plat for clarity, show the record line and record line reference between parenthesis [Example: (1st or South 42° 56' East 244.0 feet line of Book xx Page xxx)] next to the bearing and distance of the line as now surveyed. Curve data must include, at minimum, the radius, arc length, chord bearing, and chord length for all curves. Non-tangent curves must be identified.
6. **Point of Beginning** (P.O.B.) and two (2) additional property corners or property markers must be labeled with northing & easting coordinate values. All coordinate values must be shown to a minimum of three (3) places after the decimal point. All P.O.B.'s must be tied to an existing property line and tied to the project baselines, unless otherwise directed by DPW. Points of commencement, when described, must be tied to the P.O.B. by bearing & distance and labeled on the plat.
7. **Legend** and/or labels must designate each type of acquisition area utilizing the symbols per Appendix "E" and include any right-to-discharge notations, as applicable. Type of acquisition area (i.e. Fee Simple, Easement, etc.) must be boldly labeled along with the computed land area calculated to the nearest square foot. Additional symbols and abbreviations must be defined in the plat legend or otherwise the full name labeled on the plat. Acquisition areas must not be shaded.

8. **Scale:** All the right of way plats must be prepared using the same scale as the design drawings (typically the Site Grading & Erosion Control Plans or another plan sheet that shows the Limits of Disturbance, Limits of Work and use of private property, such that the mylar plat provided with the first submittal can be directly overlaid onto the design plan). Any deviation must be approved (in writing) by the Right of Way Division, DPW in advance of the preparation of the right of way plats. A graphic scale bar must be shown on the plats.
9. **Lettering** / annotations on plats must be presented using a clear font style and at a readable scale. Font size not smaller than 0.06 inches for adjoining support information, 0.08 inches for the bearing & distance annotation, and a minimum of 0.10 inches for pertinent information such as bolded labeling of the type of acquisition, road name, owner name, etc.
10. **Property references:** Subdivision lot numbers, block designations, subdivision plat name and section, where applicable, together with property owners' name(s), plat, deed, or other record references, including the full tax account identifier (district #, subdivision#, account #) must be labeled on all subject properties.
11. **Street or road** names, right-of-way width, together with private or public, must be labeled along with the applicable plat and deed record references for all roads. If the road appears to be a traveled way without a known plat or deed reference and/or possibly a prescriptive easement by use, indicate the same together with showing the road width for the existing traveled way.
12. **Existing Easements - Property Records Searches** must be conducted, including historic grantor/grantee indexes and other readily accessible land record resources to discover any out-conveyances, dedications, and other record encumbrances pertaining to the subject property and properties abutting a proposed right of-way must be thoroughly researched and shown, particularly as to the County's interest and relevant public or private easements, covenants, restrictions, or fee simple ownership. Existing record encumbrances including, but not limited to, easements and rights-of-way must be shown on the plat along with record plat and deed reference and type of encumbrance; particularly those encumbrances that are pertinent to the project or otherwise previously acquired by Anne Arundel County. Assistance finding Anne Arundel County as-built record information is available from the Drafting & Research Desk located in the Department of Public Works office on the 2nd floor, 2662 Riva Road (410-222-7049). As-Builts or record drawings can also be found at:

<https://gis.aacounty.org/portal/apps/webappviewer/index.html?id=dfaf0eab572c40b6b709ae1567f1ed8b>

13. **Physical features**, that are pertinent to the project or located on or within 10 feet of acquisition areas, must be located and shown; including but not limited to buildings/house corners, driveways, retaining walls, decks, porches, landscape areas, woods lines, individual stand-alone trees (w/ type & Diameter at Breast Height (DBH) noted), fences, sheds, garages, out buildings, pads, well, septic clean-outs, septic fields, septic reserve areas, surface utilities, storm drain locations including drainage channels and streams, and other features affected by or within 10 feet of acquisition areas. Existing houses/buildings must always be shown on properties containing land acquisition areas.

14. **Consultants or Surveyors** name, address, e-mail address, and phone number must be shown on plat as applicable. The responsible surveyor's name, address, email address, and phone number, must also be shown when different than consultant. All right-of-way and easement acquisition plats must be signed and sealed by a licensed Professional Land Surveyor or Property Line Surveyor registered in the State of Maryland; along with the applicable COMAR statements and license expiration date. The initial submittal to DPW must be signed & sealed, and provided on polyester film / Mylar.

15. **Temporary Construction Easements** do not require a metes and bounds description unless requested by DPW or the County enters into condemnation proceedings with the property owner, at which time a metes and bounds description must be provided. All Temporary Construction Easements shown on the right-of-way plats must be dimensioned to the nearest foot together with the total square feet for each area and sum total of parts. Stand alone Temporary Construction Easement plats are to be labeled Exhibit "A" unless otherwise directed by DPW.

16. **Title Block** on plat must be provided in general conformance with the example Plat shown on Appendix 'B', to show Anne Arundel County Department of Public Works, a signatory line for approval by the Chief of Right of Way, the project name and number, subdivision & lot designation, tax map & parcel with the owner's name, full tax identification number for the subject property, along with the scale, date of latest field survey, and the date the exhibit plat was made.

B. Descriptions

Metes and Bounds Descriptions are to be prepared to accompany plats for any right-of-way, fee simple area, and permanent easement, and must be prepared in conformance with the minimum standards for Metes and Bounds Descriptions as required by COMAR .09.13.06.08, and in general conformance with the sample Metes and Bounds Descriptions found in Appendix "C-1" & "C-2" (for Easements) and Appendix "D" (for Fee Simple acquisitions). All descriptions must be signed and sealed by a licensed Professional Land Surveyor or Property Line Surveyor registered in the State of Maryland; along with the applicable COMAR statements and license expiration date. Metes and Bounds Descriptions must be prepared on 8.5" x 11" sheets and labeled as Exhibit "A" together with project number, date (prepared), and page number. All submittals to DPW must be provided, signed & sealed, on paper.

III. SURVEY CONTROLS, PROPERTY LINES, PLANIMETRIC AND TOPOGRAPHIC SURVEYS

A. Survey Controls

1. **Horizontal control** must be established by conventional “closed” traverse or accurate Global Navigation Satellite System (GNSS) surveys. All horizontal control must be tied to the Maryland State Plane Coordinate System, utilizing the control set by the National Geodetic Survey (NGS) and/or Anne Arundel County Survey Control Stations. The State Plane Coordinate System Datum must be specified, [North American Datum (NAD) i.e. (NAD. 83); (NAD. 83/91) etc., North American Terrestrial Reference Frame (NATRF2022) etc. Any pertinent metadata (See E. Survey Quality (SQ) Levels and required design and construction plan Metadata - Appendix F) about the control, such as, but not limited to, the datum, scale, date, source of data, traverse control markers, coordinate values, and character of markers, must be shown on all drawings to insure accurate location and for construction stakeout. All available traverse points, markers and control stations must be labeled on all design/construction drawings with point number, northing & easting coordinate value (minimum of 3 places after the decimal point), elevation, and description of mark (e.g. rebar & blue cap marked “Trav”, rebar & red cap marked “Control Point”, etc.). Traverse markers must be of a stable and permanent nature and set in a manner so that the position of one marker is visible from the position of one other marker. Sufficient traverse markers must be placed in stable and convenient positions such that the location of pertinent existing or proposed features can be readily calculated and marked on the ground. Accuracy Standards for Right-of-Way, Easement and Land Acquisition Surveys must be in compliance with COMAR 09.13.06.03(G). Field Run Topographic Surveys must be conducted in compliance with tolerances in accordance with COMAR 09.13.06.04(E). Planimetric Surveys must be conducted in compliance with tolerances in accordance with COMAR 09.13.06.05(E).

2. **Vertical control** for all projects must be referenced to the National Geodetic Vertical Datum (NAVD) of 1988 (NAVD 88), the National Geodetic Vertical Datum (NGVD) of 1929 (NGVD 29) or the North American-Pacific Geopotential Datum (NAPGD2022), at the design professional's option and as approved by DPW. The datum and bench marks utilized by the design professional must be clearly indicated on all drawings. Project bench marks must be of a permanent stable nature and must not be spaced more than 1000 linear feet apart. All project bench marks must be established by field survey as part of a closed vertical control loop. The character (e.g. rebar & blue cap marked "Trav", mag-nail in curb joint, etc.), location, and datum of bench marks must be clearly shown and referenced in detail on all Design and Construction Drawings. A minimum of one (1) Bench marks must be shown on the applicable plan sheet. Tie-ins to record as-built elevations must be field checked to assure compatibility with design datum. Field Run Topographic Surveys must be conducted in compliance with tolerances in accordance with COMAR 09.13.06.04(E). Planimetric Surveys must be conducted in compliance with tolerances in accordance with COMAR 09.13.06.05(E).
3. **Baselines**, when utilized, must be annotated with bearings, distances and curve data including the delta angle. All PC's, PT's, bends or changes in direction, endpoints, and intersection points must be labeled together with stationing and station equalities. Baseline stationing must be shown at every 50 linear feet, at control points, and all intersecting points. Station equalities must be shown for all common intersecting control points. Two (2) or more coordinate values must be shown for each baseline. When two (2) or more different baselines are shown, label all pertinent geometry such that they can be tied together. Extend baselines for the full length of the project and to a minimum of 100 linear feet beyond anticipated limits of work.
4. **Spur lines** must be run on all intersecting roads, railroads, streams, and natural drainage courses, and must be tied into the main baseline.
5. All **Survey Control Stations** that will be affected by the proposed construction must be noted on the design drawings as being protected or to be relocated accordingly. Where there is a need to protect or relocate Anne Arundel County Control Stations, DPW-Surveys must be notified of the need and sent a set of design drawings at the 60% design submittal.

B. Property Lines

1. **Property lines** taken from tax maps, Geographic Information Systems (GIS) data, survey records, deeds, plats, and/or other available record survey information may be utilized for engineering studies, drainage area maps, or Concept designs and in areas not affected by design or land acquisition. Schematic Design, Design Development Plans and Contract Drawings for construction must show the location of sufficient property lines of the affected tract(s). Sufficient property lines of the affected tracts must be established or reestablished in accordance with the requirements of a Right-of-Way/Easement Survey (COMAR .09.13.06.09) and in compliance with all terms, conditions, standards and procedures in Regulation .03 (Boundary Surveys) per (COMAR 09.13.06.09(C). Surveys for fee simple acquisition of entire properties, existing right-of-way lines, and property lines that bind on or define the location of a proposed land acquisition area, must be conducted in accordance with the requirements of a Boundary Survey (COMAR 09.13.06.03).
2. **Property markers found** or located in areas that will be affected by proposed design and construction must be referenced by accurate ties/project coordinates and must be accurately reset after construction. **Property markers for fee simple land acquisition areas must be set**, unless otherwise existing, subsequent to plat recordation and construction; and/or as may be directed by DPW. Property markers for fee simple right-of-ways must be set along the outermost widening lines at all PC's, PT's, bends or changes in direction, and road intersections, subsequent to plat recordation; and/or as may be directed by DPW.

C. Topographic Surveys

1. Topography Survey requirements to be shown on the design or contract drawings must show elevations by contours and spot elevations, and include but not be limited to the horizontal / planimetric location of all buildings and structures, utility poles, conduits, structures, overhead lines, manholes, water & sewer mains, valves, hydrants, meters, wells, springs, septic systems, fences, paving, edge of paving, curb & gutter; woods lines, and in areas of proposed disturbance all stand-alone individual trees (type & size), hedges, shrubs, landscape beds, storm drain pipes and drainage facilities, streams, non-tidal wetlands, and all other topographic and planimetric features necessary for the design and construction of the proposed project. Topographic data taken from available public records such as Anne Arundel County obtained LiDAR or Aerial Photogrammetry may be utilized for engineering studies, drainage area maps, and Concept designs. Schematic Design Plans, Design Development Plans / Contract Drawings must utilize field run topographic and planimetric surveys, unless otherwise approved by the DPW. Topographic Surveys must be in compliance with COMAR 09.13.06.04(E).
2. **Subsurface utility** information must be provided as warranted by the project or project design phase, and as determined by DPW to the appropriate Quality Level A, B, C, or D in accordance with the Standard Guideline for Investigating and Documenting Existing Utilities as published by the American Society of Civil Engineers (ASCE) CI/ASCE 38-22 and as may be updated or amended.
3. **Contour lines** must be shown on the Schematic Design Plans, Design Development Plans and Contract Drawings as required by the Anne Arundel Soil Conservation District (SCD) and in accordance with the Plan Submittal Guidelines/Checklist, last updated April, 2015 found at www.aascd.org. Contour interval requirements must be a minimum of two (2) foot contours or as otherwise directed by DPW.
4. **Topographic data** must be collected sufficiently to provide cross-sections at fifty-foot stations, and at intersecting roads, driveways, entrances, rivers, streams, and railroads. Cross-sections must be at right angles or radial to the proposed alignment, and extend a minimum of 100 feet beyond the proposed right-of-way line on each side and topographic data to a minimum of 200 feet beyond anticipated project limits. The minimum distances indicated herein should be extended accordingly in order to provide sufficient information to establish profile grade lines beyond the actual project limits or to locate other topography or topographic relief relative to the design or construction of the proposed improvements.

D. Planimetric Surveys

1. Planimetric surveys determine the horizontal positions of physical features (existing physical and/or natural features) and their characteristics. Planimetric Surveys must be provided in compliance with COMAR 09.13.06.05.
2. Planimetric data taken from available public records such as Anne Arundel County obtained LIDAR or Aerial Photogrammetry may be utilized for engineering studies and drainage area maps or concept plans. All feature locations affected by Design Development must be acquired by actual field surveys, unless otherwise directed by DPW.

E. Survey Quality (SQ) Levels

1. Introduction

NOAA's National Geodetic Survey (NGS) provides the geodetic framework for all infrastructure positioning activities and is in the midst of redefining the National Spatial Reference System (NSRS) with the upcoming release of new NSRS datum's beginning in 2022 and expected final implementation sometime in 2025.

Recent technological convergence of new equipment tools and data processing technologies such as the Global Navigation Satellite Systems (GNSS), Light Detection And Ranging (LiDAR), together with Geographic Information Systems (GIS) now allow for the cost-effective collection, depiction, and management of geospatial data. Evaluating the quality of the survey data underpinning the design and construction plans, such that it meets user expectations, is critical to engineering best practices. The following Survey Quality (SQ) Levels guideline is intended to simplify the evaluation of the survey data such that it can be relied upon to meet user expectations.

Application of this guideline establishes a credible nomenclature that can be used as a reference, as part of a specification for a proposed design plan, and or used to generally evaluate the survey data underpinning the design plan that must be noted on the Design Plan within the General Notes. (see example Appendix F)

2. Definitions of Survey Quality (SQ) levels

SQ Level D – Data / information from record and or electronic record data.

SQ Level C – Composite of record data information by computation, composite or the approximated correlation of existing record data. (e.g. deed composite, mathematical computations, interpolations or GIS desktop survey of topographic and property line record data)

SQ Level B – Both; contains both record data (SQ Level D or C) together with a limited amount of current survey fieldwork (SQ Level A). (e.g. record LiDAR / Aerial topography supplemented in areas of proposed work with current field run topography, or e.g. property lines from computed deed & plat records supplemented in areas of proposed work with field located boundary lines). Limits of the extent of current field surveys shown by dashed line or otherwise noted on plan.

SQ Level A – A current & reliable land survey (reliability defined by Metadata attached thereto) and surveyed in one or more of the following spatial aspects:

- 1 – Horizontal (i.e. property lines, planimetrics or other geometric locations)
- 2 – Vertical (i.e. topography, and elevations such as for utility pipe inverts, building floor elevations or other height measurements)
- 3 – Other (e.g. LiDAR scanning registered to recoverable ground control points)

3. Metadata – required as part of the Design Plan General Notes for defining the quality of the horizontal and vertical survey data and locations underpinning the design plan as depicted and noted as follows:

- 1- Survey Quality / SQ Level (D, C, B or A) accuracy/ precision noted
- 2- Datum – national, state, or record datum (how was it realized)
- 3- Units of measurement - meters, feet (US / International)
- 4- Title / Purpose / Intended use
- 5- Source of data
- 6- Survey control marks and / or bench marks, recovered or set, that can utilized for the re/establishment of relevant design data on the ground
- 7- Credentials of licensed or certified Professional / organization responsible for the survey information being utilized
- 8- Date (date data collected, date certified / released)

(See Appendix “F” for Survey Metadata Notes example)

IV. APPENDICES

- A. Right-of-Way Plat & Description Checklist
- B. Sample Plat with Title Block
- C. Sample Metes and Bounds Descriptions for Easement Areas (C-1 & C-2)
- D. Sample Metes and Bounds Descriptions for Fee Simple Area
- E. Standard Land Acquisition & other Symbols
- F. Example of Survey Metadata notes noted within the General Notes on a Design Plan

Appendix "A" Right-of-Way Plat & Description Checklist

GENERAL INFORMATION:

Project Name: _____

Address/Location _____

Project Number: _____ Contract Number _____

PROFESSIONAL'S CERTIFICATION

I hereby certify, with my signature and seal, that I have personally reviewed the materials submitted together with this checklist and that to the best of my ability have insured that the submittal is complete and accurate.

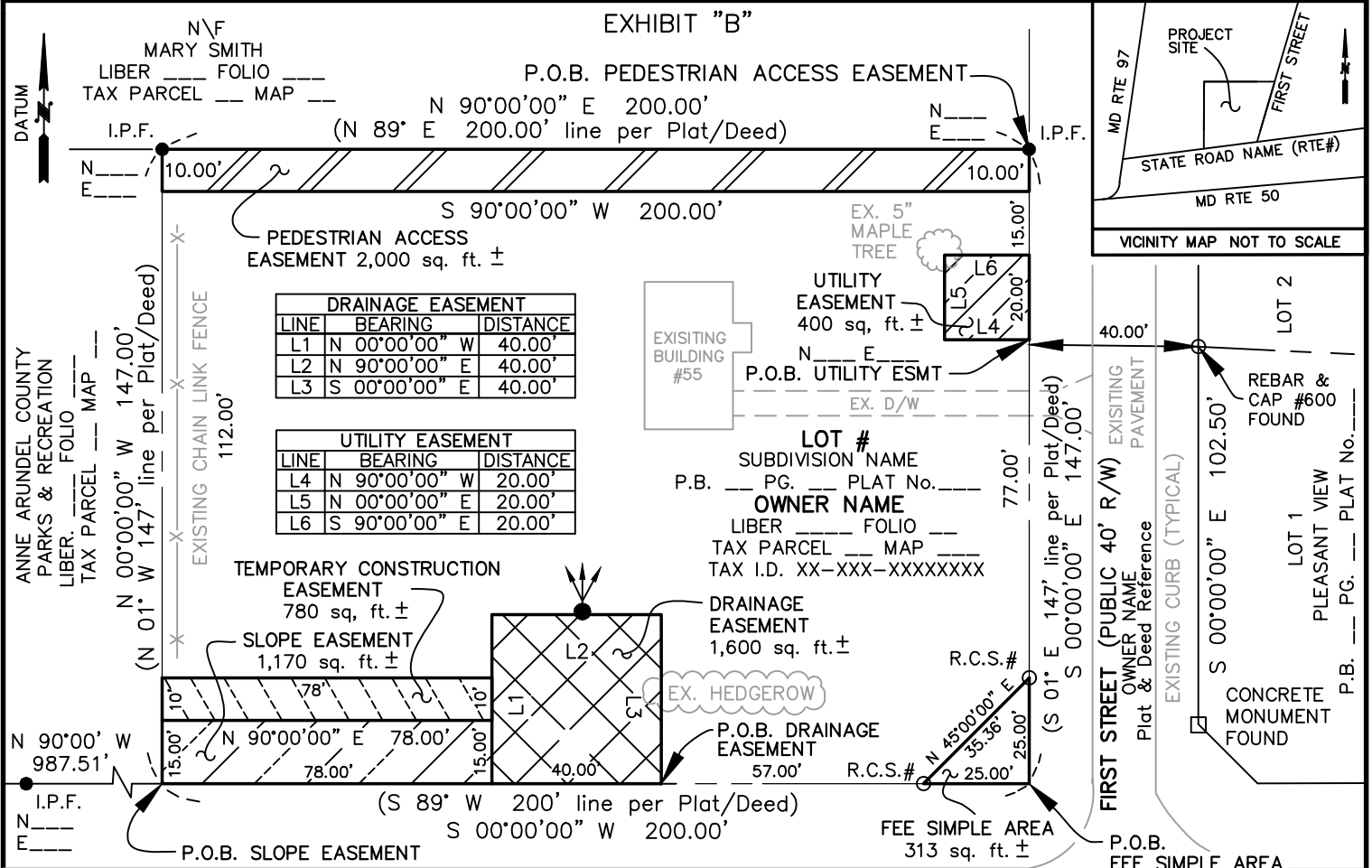
Signature: _____ Seal & Date _____

Consultant / Surveyor	Project Manager	Plat Checklist
		Item Description
		Submission Requirements per Section II of Chapter II Design Manual
		- Metes and Bounds Description(s) – signed & sealed hard copy (with initial submittal)
		- Plat(s) on paper & polyester film/mylar – signed & sealed hard copies (with initial submittal)
		- Complete Set of Plans, profile & x-sections – signed & sealed hard copy(with initial submittal)
		A. Plats (see sample plat Appendix B)
		1) 8.5"x11" (Labeled Exhibit B) unless otherwise directed
		a) Acquisition Area and type boldly labeled and hatched per Appendix E
		b) Areas designated to nearest square foot (if acreage shown, to 4 decimal places)
		2) Vicinity Map shown (add Key Map for multiple parts or sheet layout as needed for clarity)
		3) Two Property markers found & location shown (show property markers to be set)
		4) North Arrow shown & labeled with Datum reference
		5) Bearings & Distances including curve data placed along lines and/or using Line Tables
		a) Curve data shown using Radius, Arc Length, Chord Bearing & Distance
		6) Point of Beginning labeled (show coordinates, and on 2 other points, to 3 decimal places)
		7) Legend to show hatching (Appendix E), define all symbols and abbreviations used
		8) Scale matches design plan(s) that show existing features, and proposed limits of work
		9) Lettering and all annotations use clear font, style, size (pertinent info bolded)
		10) Label Lot/Tax Parcel #, owner name, deed & plat/map references, and full Tax I.D.#
		11) Road name(s) labeled together with Route Numbers where applicable
		a) Existing Right-of-Way (R/W) width
		b) Existing R/W Plat reference labeled (Plat Book, Page, Plat No.)
		c) Existing R/W deed reference labeled (if undetermined, label "Deed Undetermined")
		d) Label Road Public or Private (Based on deed references) label width of traveled way
		12) Existing easements & encumbrances shown together with deed/record references
		13) Show & label all existing physical features located on or within 10' of acquisition area
		a) Include the location of wells, septic fields, septic reserve areas, utilities, trees(DBH & type)

		14) Consultants or Surveyors name, address, e-mail address, phone number shown on plat
		a) Signature & Seal of Surveyor (with COMAR statement & license expiration date)
		15) Temporary Construction Easements (labeled Exhibit "A " if shown on stand-alone sheet)
		16) DPW Title Block used and complete (see Appendix B)
		a) Type of Acquisition (Fee Simple Area, Utility Easement, Drainage, Temporary, etc.)
		b) County Project Name & Project Number and Contract Number
		c) Grantor Name, Deed Reference, Parcel/Lot Number with map and/or plat reference
		d) Full Tax Identification Number (district#-subdivision#-account#)
		e) Scale of drawing must match design plan
		f) Sheets numbered (when multiple sheets 1 of 3, 2 of 3 , 3 of 3 as needed)
		g) Date of Latest field survey work
		h) Date that Exhibit Plat was prepared
		i) Signature Line for Chief of R/W - "Approved: Chief of Right-of-Way"
Consultant / Surveyor	Project Manager	Description Checklist
		Item Description
		B. Metes and Bounds Description provided on 8.5" x 11" on paper labeled "Exhibit 'A'" (see examples Appendices C-1, C-2, & D)
		1) Description has Heading completed
		a) Description of (Title Type of Acquisition) e.g. Utility Easement across the property of..., Fee Simple Part of the property of...etc.
		b) Lot #, subdivision name and recording reference or Tax Parcel #,grid & Map reference
		c) Owner name and title deed reference
		d) Tax Identification Number (district # xx-sub# xxx-acct# xxxxxxxx)
		e) Tax District, County, State
		2) Being clause- provides title identity and general location & as now surveyed datum
		a) Part of (if Fee Simple) or in, through, over and across (if Easement)... ref. ex. record docs
		3) Body –precise location using descriptive calls
		a) Point of Beginning shown and tied to existing record lines and/or property markers
		b) Line Courses numbered and call when binding on existing lines of record
		c) Square feet matches plat
		4) Together With clause... (if applicable)
		5) Subject To clause...(if applicable)
		6) Signature & Seal of Surveyor (with COMAR statement & license expiration date)
		7) Label Project Number, date prepared & page number in footer or header
Project Manager	Right of Way	Project Manager submittal Checklist
		For use by County Project Manager for submittal to DPW Right of Way Division
		One Copy of Checklist (Appendix "A") checked/signed-off
		One complete full size hard copy set of Plans (include digital copy, if available)
		Plats on mylar together with one Paper copy of both the Plats & Descriptions (signed & sealed)
		Environmental Assessment
		Capital Improvement Budget Page (first page showing Project No. & Description)
		Land owner contact information, if known
		Other important information unique to the project

APPENDIX "B"

EXHIBIT "B"



STATE ROAD NAME (ROUTE #)
PUBLIC VARIABLE WIDTH R/W
STATE HIGHWAY ADMINISTRATION PLAT
OWNER NAME
LIBER FOLIO

RIGHT TO DISCHARGE
THE PERPETUAL RIGHT TO DISCHARGE THE FLOW OF WATER FROM SUCH NECESSARY DRAINAGE FACILITIES AND APPURTENANCES TO ADEQUATELY DRAIN THE NATURAL WATERSHED AND ADJACENT PROPERTIES INTO EXISTING WATERWAYS AND/OR NATURAL DRAINAGE COURSES AND/OR UPON THE EXISTING GROUND. SUCH POINTS ARE INDICATED BY THE SYMBOL.

- LEGEND**
- FEE SIMPLE
 - UTILITY EASEMENT
 - DRAINAGE EASEMENT
 - SLOPE EASEMENT
 - TEMPORARY CONSTRUCTION EASEMENT
 - PEDESTRIAN ACCESS EASEMENT
 - D/W DRIVEWAY
 - R/W RIGHT OF WAY
 - N/F NOW OR FORMERLY
 - P.O.B. POINT OF BEGINNING
 - I.P.F. IRON PIPE FOUND
 - R.C.S. REBAR AND CAP SET (WITH I.D.#/NAME)

A LICENSEE EITHER PERSONALLY PREPARED THIS PLAT OR WAS IN RESPONSIBLE CHARGE OVER ITS PREPARATION AND THE SURVEYING WORK REFLECTED IN IT, ALL IN COMPLIANCE WITH COMAR REGULATION 09.13.06.12.

SURVEYORS NAME _____ DATE _____
PROFESSIONAL LAND SURVEYOR/PROPERTY LINE SURVEYOR
MARYLAND LICENSE NUMBER _____
LICENSE EXPIRATION DATE _____
COMPANY NAME _____
ADDRESS _____
EMAIL ADDRESS, PHONE NUMBER _____

0 40 80
GRAPHIC SCALE

DRAWN BY: _____	ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	SCALE: 1"=40'
	JOB NUMBER: _____	PROJECT NAME FEE SIMPLE ACQUISITION/EASEMENT TYPE
CHECKED BY: _____	PROPERTY OWNER NAME TITLE DEED, BOOK & PAGE LOT, SUBD & REFERENCE OR TAX MAP, PARCEL TAX ID NO. XX-XXX-XXXXXXX	FIELD WORK DATE: _____
SHEET NUMBER: _____ OF _____		EXHIBIT PLAT DATE: 12/23/21
		APPROVED: _____ CHIEF OF RIGHT OF WAY

Example Easement Description – Appendix C-1


Exhibit “A”

**Description of a Utility Easement
Across Lot #, Subdivision Name
Plat Book ___ Page ___ Plat No. ___ and Parcel #, Grid #, Tax Map #
Property of _____
Book ___ Page ___
___ Tax District
Tax ID. No. 0X-XXX-XXXXX
Anne Arundel County, Maryland**

Being a strip or parcel of land hereinafter described in, through, over and across the property conveyed from _____ unto _____ by deed dated _____ and recorded among the Land Records of Anne Arundel County, Maryland in Liber ___ Folio ___, said property also designated as Lot ___ as shown on a Plat of subdivision entitled, “_____,” recorded among the said Land Records in Plat Book ___, Page ___, Plat No. _____; and being more particularly described as now surveyed in the Maryland State Plane Datum (NAD 83/___) as follows:

Beginning on the southern line of Main Street (60’ wide) at a rebar & cap found (# ___) marking the northeasterly end of the North 30 ° 07’ 04” East, 25.96 feet line of the aforesaid Lot ___ as shown on said Plat, now surveyed as North 39 ° 06’ 51” East; thence running reversely with and binding on part of said lot line

1. South 39 ° 06’ 51” West, 21.50 feet; thence across said lot
2. North 50 ° 53’ 27” West, 202.00 feet;
3. North 55 ° 06’ 47” West, 30.50 feet; and
4. Southto a point on the eastern or the North 20° 06’ 06’ East 1003.4 feet right-of-way line of Annapolis Road (150’ wide) as shown on a plat of subdivision entitled “Wetlands View Estates” recorded among the aforesaid Land Records in Plat Book XX, Page X, Plat No. XXX, now surveyed as North 20° 11’ 22” East 1003.43 feet, distant 250.30 feet from the southerly end thereof; thence running with and binding on part of said line as now surveyed
5. North 20° 11’ 22” East 100.00 feet; thence departing said line and across said Lot
6. North 40° 00’ 00” East 40.00 feet to the beginning of the 5th or North 44° 30’ East 80 feet line described in Liber XXX Folio XX, now surveyed as North 44° 30’ 14” East 80.02 feet; thence running reversely with and binding on part of said line as now surveyed
7. South to the point of beginning;

Containing 24,343 square feet of land, more or less, and shown thus  (show hatch for specific type of easement) on Exhibit “B” attached hereto and made a part hereof.

A licensee either personally prepared this description or was in responsible charge over its preparation and the surveying work reflected in it, all in compliance with requirements set forth in COMAR Regulation 09.13.06.12.

Surveyor’s signature _____ (date)
Name

Seal

Maryland Licensed (Property Line Surveyor/Professional Land Surveyor) # _____
License Expiration date _____

Project/Contract No. xxxxxx

Prepared: August 30, 2023

Page 1 of 1

**Example Easement Description-Multiple Parts, Same Owner
Appendix C-2**

Exhibit "A"

**Description of a Drainage Easement, Slope Easement and Utility Easements
Across Lot #, Subdivision Name**

Plat Book ___ Page ___ Plat No. ___ and Parcel #, Grid #, Tax Map #

Property of _____

Liber ___ Folio ___

Liber ___ Folio ___

Tax ID. No. 0X-XXX-XXXXX

Tax ID. No. 0X-XXX-XXXXX

Tax District

Anne Arundel County, Maryland

Being X (#) of strips or parcels of land hereinafter described as Part One, Part Two, etc. ... in, through, over and across the property conveyed from _____ unto _____ by deed dated _____ and recorded among the Land Records of Anne Arundel County, Maryland in Liber ___ Folio _____, and the property conveyed from _____ unto _____ by deed dated _____ and recorded among the Land Records of Anne Arundel County, Maryland in Liber ___ Folio _____, said property also designated as _____ shown on a Plat of subdivision entitled, "_____" recorded among the said Land Records in Plat Book ___, Page ___, Plat No. _____ ...; and being more particularly described as now surveyed in the Maryland State Plane Datum (NAD 83/___) as follows:

Part One – Drainage Easement across Recreation Area 1, Plat Book ___ Page ___ Plat No. ___

Beginning for said Part One

Containing ___ square feet ... as shown on Exhibit "B" (Sheet 1 of X) attached hereto...

Part Two – Slope Easement across Recreation Area 2, Plat Book ___ Page ___ Plat No. ___

Beginning for said Part Two

Containing ...

Part Three – Utility Easement I across Parcel ...

Part Four – Utility Easement II across Lot ...

Part Five – etc. ...

(see Appendix C-1 / Appendix D)

Project/Contract No. xxxxxx

Prepared: August 30, 2023

Page 1 of 1

Example Fee Simple Description- Appendix D

Exhibit "A"

Description of a Fee Simple Area

Part of Lot #, Subdivision Name

Plat Book ___ Page ___ Plat No. ___ or (if not a platted subdivision) Parcel #, Grid #, Tax Map #

Property of _____

Book ___ Page ___

___ Tax District

Tax ID. No. 0X-XXX-XXXXX

Anne Arundel County, Maryland

Being part of the property conveyed from _____ unto _____ by deed dated _____ and recorded date among the Land Records of Anne Arundel County, Maryland in Liber ___ Folio _____, said property also designated as Lot ___ as shown on a Plat of subdivision entitled, "_____", recorded among the said Land Records in Plat Book ___, Page ___, Plat No. ____; and being more particularly described as now surveyed in the Maryland State Plane Datum (NAD 83/___) as follows:

Beginning on the southern right-of-way line of Main Street (60' wide) at a rebar & cap found (#___) marking the northeasterly end of the North 39° 06' 51" East, 25.96 feet line of the aforesaid Lot ___ as shown on said Plat; thence running reversely with and binding on part of said line

1. South 39° 06' 51" West, 21.50 feet; thence departing said right-of-way line crossing the aforesaid property
2. North 50° 53' 27" West, 202.00 feet;
3. North 55° 06' 47" West, 30.50 feet; and
4. Southto a point on the eastern or the 286.00 foot curved right-of-way line of Annapolis Road (150' wide) as shown on a plat of subdivision entitled "Wetlands View Estates" recorded among the aforesaid Land Records in Plat Book XX, Page X, Plat No. XXX, 50.00 feet from the southerly end thereof; thence running with and binding on part of said curved line
5. 236.00 feet along the arc of a curve deflecting to the right, having a radius of 700.00 feet and a chord bearing and distance of North 20° 11' 22" East 235.20 feet; thence departing said line and crossing said property
6. North 40° 00' 00" East 40.00 feet to the beginning of the 5th or North 44° 30' East 80 feet line described in Liber XXX Folio XX, now surveyed as North 44° 30' 14" East 80.02 feet; thence running reversely with and binding on part of said line as now surveyed
7. South 44° 30' 14" West 50.00 feet; thence....
8. to the point of beginning;

Containing 2.5588 acres of land, more or less, and shown thus on Exhibit "B" attached hereto and made a part hereof.

A licensee either personally prepared this description or was in responsible charge over its preparation and the surveying work reflected in it, all in compliance with requirements set forth in COMAR Regulation 09.13.06.12.

Surveyor's signature _____ (date)

Seal

Name

Maryland Licensed (Property Line Surveyor/Professional Land Surveyor) # _____

License Expiration date _____

Project/Contract No. xxxxxx

Prepared: December 15, 2021

Page 1 of 1

APPENDIX "E"
LAND ACQUISITION SYMBOLS



FEE SIMPLE



UTILITY EASEMENT (WATER, SEWER, STORM DRAIN)



DRAINAGE EASEMENT



SLOPE EASEMENT



TEMPORARY CONSTRUCTION EASEMENT



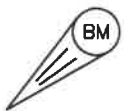
PEDESTRIAN ACCESS OR OTHER EASEMENT*



PERPETUAL EASEMENT TO DISCHARGE FLOW OF WATER FROM OR INTO EXISTING WATERWAY OR NATURAL DRAINAGE COURSE (SEE APPENDIX "B" FOR PLAT NOTE)



PERPETUAL EASEMENT TO DISCHARGE FLOW OF WATER UPON EXISTING GROUND (SEE APPENDIX "B" FOR PLAT NOTE)



BENCH MARK (BM)



TRAVERSE/SURVEY CONTROL STATION

*When varied symbology is used to identify unique acquisition areas; annotate areas clearly and define within the legend all symbology used on plat.

APPROVED

ANNE ARUNDEL
COUNTY
DEPARTMENT OF
PUBLIC WORKS

DATE: 04/27/21

STANDARD LAND
ACQUISITION SYMBOLS

Appendix "F"

General Notes - Survey Metadata (made part of General Notes on Design Plan)

1. Horizontal / Geometric
 - a. Property lines _____, Planimetrics _____
Identify Survey Quality Level "D", "C", "B", or "A" Per DPW Design Manual Chapter II, Section III (E) 2
 - b. Datum _____ (e.g. NAD 83/epoch) / record datum)
 - c. Purpose / Intended use _____ (Concept, Design, Construction)
 - d. Units of measurement _____ (International or US Feet /Meters)
 - e. Cite source of data _____ (records / Field Survey / AA Co. GIS / other)
 - f. Equipment utilized _____
 - g. Survey control points / Traverse control
 - Northing _____ Easting _____ Point Description _____
 - Northing _____ Easting _____ Point Description _____
 - h. Credentials of licensed or certified Professional / organization responsible for the survey information and data being utilized. _____
 - i. Date of survey data _____ (latest field work date) _____ (record date)

2. Vertical / Geopotential
 - a. Topography/elevations _____, Utility inverts _____
Identify Survey Quality Level "D", "C", "B", or "A" Per DPW Design Manual Chapter II, Section III (E) 2
 - b. Datum _____ (e.g. NAVD 88 / survey epoch / record datum)
 - c. Purpose / Intended use _____ (Concept, Design, Construction)
 - d. Units of measurement _____ (International or US Feet /Meters)
 - e. Cite source of data _____ (records / Field Survey / AA Co. GIS / other)
 - f. Equipment utilized _____
 - g. Survey control points/Bench Marks
 - Elevation _____ Point Description _____
 - Elevation _____ Point Description _____
 - h. Credentials of licensed or certified Professional / organization responsible for the survey information and data being utilized. _____
 - i. Date of survey data _____ (latest field work) _____ (record date)

Note:

Property Markers for fee simple areas must be set by licensed surveyor (per Anne Arundel County Design Manual, Chapter II, Section II (A) 3) at completion of construction / project, and shown on the as-built record drawings.