

- 5.10.5 On Projects where traffic flow is maintained, the Contractor shall be responsible for repair of all traffic damages to the Work, either partially or totally completed, until such time as the Work is conditionally accepted by the Engineer. Responsible, as used here shall mean the responsibility for restoration and the cost thereof, unless otherwise expressly provided for in the Special Provisions.

GP-5.11 FAILURE TO MAINTAIN ENTIRE PROJECT

Failure on the part of the Contractor, at any time, to comply with the provisions of GP-5.09 will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the Project; and the entire cost of this maintenance will be deducted from monies due the Contractor.

GP-5.12 ACCEPTANCE**5.12.1 Conditional Acceptance**

Whenever, in the course of performance of a Contract, the Contractor shall consider the Work to have been properly completed and ready to be accepted by the County, the Contractor shall make a written application for conditional acceptance for the Contract, and payment based upon the Contractor's final estimate of the value of authorized Work done under the terms of the Contract. The Contractor shall also certify to the County the completion of the Work, the amount of his final estimate, and the total amount due to be paid the Contractor pursuant to the Contract. Prior monthly estimates are subject to correction in the Contractor's final estimate. Such application and final estimate shall be submitted to the Office of the County Controller, who shall forward same to the Engineer for verification and approval prior to payment.

Upon receipt of such application and the Contractor's final estimate, the Engineer will make an inspection of the Work. Upon completion of all repairs or replacements by the Contractor which may appear at that time in the judgment of the Engineer to be necessary, the County will process the Contractor's final estimate for Conditional Estimate Payment in accordance with Section GP-9, and will issue to the Contractor a certification of conditional acceptance.

If, at the conclusion of the conditional acceptance inspection requested by the Contractor as described above, additional tests, testing, and/or reinspection is required because of failures or defects due to improper or faulty construction, materials, and/or equipment furnished and/or installed by the Contractor, or for other reason(s) attributable to the Contractor's performance of Work under the terms of this Contract, or because of lack of preparation for the inspection by the Contractor, or because of the lack of timely delivery of documentation required by this Contract as a condition to conditional acceptance, all costs of County personnel, equipment, utilities, and services associated with the reinspection(s) and/or retest(s) will be deducted from amounts retained or to be paid to the Contractor.

~~The date of this conditional acceptance certification will be the beginning of a one year guarantee period, during which the Contractor shall at his own cost and expense,~~

~~make all repairs and replacements which, in the judgment of the Engineer, may become necessary during the guarantee period on account of any failures or defects due to improper construction or materials furnished by the Contractor. During the guarantee period, should the Contractor fail to make needed repairs and replacements within 14 calendar days of service of notice by the County, or in the case of an emergency, the County shall be empowered to make any repairs or replacements and the cost of the required repairs or replacements shall be the financial responsibility of the Contractor. To insure the County against the nonpayment of such costs, the County will either require the retainage of 5 percent of the total value of the Contract plus the value of Work remaining at the time of Conditional Acceptance or require the Contractor to post an equivalent Maintenance Bond in accordance with GP 5.12.3.¶¶~~

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The date of this conditional acceptance certification will be the beginning of a one-year guarantee period; the date of the conditional acceptance certification will be the beginning of the guarantee period. For all work other than pavement replacement and restoration in a County-owned right-of-way, the guarantee period shall be one year. The guarantee period for pavement replacement and restoration is set forth below. The Contractor shall at his own cost and expense, make all repairs and replacements which, in the judgment of the Engineer, may become necessary during the guarantee period on account of any failures or defects due to improper construction or materials furnished by the Contractor. During the guarantee period, should the Contractor fail to make needed repairs and replacements within 14 calendar days of service of notice by the County, or in the case of an emergency, the County shall be empowered to make any repairs or replacements and the cost of the required repairs or replacements shall be the financial responsibility of the Contractor. To insure the County against the nonpayment of such costs, the County will either require the retainage of 5 percent of the total value of the Contract plus the value of Work remaining at the time of Conditional Acceptance or require the Contractor to post an equivalent Maintenance Bond in accordance with GP 5.12.3.

Paving Replacement Or Restoration In A County Right-Of-Way

For a period of two years after satisfactory completion of pavement replacement or restoration in a County-owned right-of-way, the owner and permittee warrant and guarantee the quality of the work performed and are responsible for maintaining the site free from any defects resulting from the quality of the work and, in the event of such defects, for repairing or restoring the site to a condition that complies with the standard specifications and the provisions of this title.

Any repair or restoration during the warranty period shall cause the warranty period to run for one (1) additional year beyond the original two (2) year period.

5.12.2 Final Acceptance

Upon expiration of the aforesaid guarantee period, the Engineer will make a final inspection of the Work under the Contract and if at such inspection, all construction

CHAPTER XI

BUILDINGS - GENERAL

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BUILDINGS - GENERAL
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ANNE ARUNDEL COUNTY DESIGN MANUAL

CHAPTER XI

BUILDINGS - GENERAL

I. GENERAL

A. Introduction

This guide sets forth general requirements and criteria to be used in the development of a design and the preparation of bidding and construction documents for buildings for Anne Arundel County. It is applicable to all projects for construction, including additions, alterations, rehabilitation and conversion.

B. Definitions

ADA	Americans with Disability Act, Public Law 101-336, a civil rights law that prohibits discrimination based on disability
Bond	A written and sealed obligation guaranteeing completion of a contract if the contractor does not complete his agreement.
Building	Any man-made structure that supports or shelters any occupancy.
CAD	Computer Aided Drafting
Construction	All of the written, graphic, and pictorial documents describing the design, Documents location and physical characteristics of the project.
Design Professional	The Architect or Engineer who designs a project
Plans	The drawings by which a project is constructed, including plans, elevations, sections, wall sections, schedules, and details.
Specifications	The written standards that set the quality and level of materials and workmanship by which a project is constructed.

C. Codes

The current versions of the following codes as adopted by Anne Arundel County and Maryland's Building Performance Standards (MBPS) shall be used. Refer to Appendix 'A' for specific references.

Building	International Building Code (IBC)
Fire Prevention Code	NFPA 1
Life Safety Code	NFPA 101
Residential	International Residential Code (IRC)
Electrical	National Electric Code (NEC)
Fire Alarm Code	NFPA 72 National Fire Alarm Code
Plumbing	International Plumbing Code (IPC)
Mechanical	International Mechanical Code (IMC) Automatic Sprinkler Systems Code NFPA 13
Energy	International Energy Conservation Code
Accessibility	ICC/ANSI A117.1 ADA Standards for Accessible Design

D. Building Classifications

The classification of a building is used to determine attributes required of a building, such as life safety, permanence, level of finishes and such. It is project specific. Following are the classifications:

1. Public
2. Occupied
3. Unoccupied

E. Useful life

The useful life of a building is used to determine the level of quality of construction of a building and thus indirectly the cost of a building. Useful Life is project specific.

1. Temporary
2. Twenty year or less.
3. Greater than twenty years.

F. Submittals for review

The purpose of submittals for review is to provide the County a chance to see and understand the design of a building, and to then provide direction to the design

professional to more closely conform to the County's needs. The design professional shall comply with general submittal requirements in Chapter I General Instructions.

1. Schematic Design (SD) Submission

The design professional shall submit a narrative report, conceptual drawings and a cost estimate with written descriptions of the work necessary to provide the required product. The drawings shall include the overall layout of the project, results of any field investigation, a report on any deficiencies noted, preliminary floor plan and all elevations of the building, a narrative description and engineering analysis of alternative HVAC system concepts and energy sources, and indication of source of electrical power.

Drawing requirements shall be in accordance with the provisions for Contract Drawings in Chapter I, Section II of this Manual.

- a. Sketch site plan shall be at a minimum of 1"=40'. Plan shall show location of all existing buildings, roads, walks, utilities, flood plain, wetlands or critical areas within 200' of the building. It shall indicate proposed site improvements, grading, access, parking areas, utilities, paving, roads, etc.
- b. Floor plans shall be double line and at a scale of 1/16" = 1'-0" or 1/8" = 1'-0". Overall dimensions shall be shown. Major areas, rooms and spaces shall be identified by name, actual net square footage, and programmed net square footage. Each floor plan shall also identify the net square footage and the gross square footage of the building.
- c. Elevations of each side of the building shall be shown at 1/16" = 1'0" scale.
- d. Dates and project identification shall be shown on each sheet.
- e. Sheet size shall be 24 inches by 36 inches.
- f. Number of copies shall be project specific.

2. Design Development (DD) Submission

The design professional shall provide plans at full size, cost estimate, outline specifications, a fire protection analysis and any other design data or calculations.

- a. Drawing requirements shall be in accordance with the provisions for Contract Drawings in Chapter I, Section II of this Manual, and the following:
- b. Site plan shall be a minimum scale of 1" = 40'. Plan shall show location of existing buildings, roads, walks, utilities, flood plains, wetlands and

critical areas within 200 feet of the proposed building and/or within the Contract. It shall indicate existing and proposed contours, site improvements, grading, sediment control, storm water management, access, paving, parking, new and existing underground utilities and services and points of entrance to the building.

- c. Floor plans shall be double line and at a scale of not less than $1/8" = 1'-0"$. Overall dimensions shall be shown. Major areas, rooms and spaces shall be identified by name, actual net square footage and programmed net square footage. Each plan shall also identify the net and gross square footage of it; the first-floor plan shall identify the net and gross square footage of the entire building.
- d. Elevations of all sides of the building shall be shown at $1/8" = 1'-0"$. These elevations shall be developed to a sufficient degree to establish character of design, materials, texture and color.
- e. Sections through building shall be sufficient to establish the character and relationship of the spaces. Sections through walls shall be at a sufficiently large scale to illustrate floor-to-floor heights, ceiling heights, changes in height, and typical construction.
- f. Engineering drawings shall at a minimum consist of a single line drawing of each system: Structural, Heating, Ventilation and Air conditioning, Plumbing and Electrical distribution. Drawings shall show equipment layouts for specialized rooms such as laboratories, mechanical rooms, kitchens, etc. Lighting, receptacle, telephone and special systems are also required. The single line drawing shall be of sufficient detail to communicate the intent of the system. Plans showing all equipment in the main mechanical rooms, elsewhere inside or outside the building, or on the roof shall be submitted clearly indicating adequacy of space to accommodate service and maintenance of the equipment.
- g. Preliminary storm water management plans shall be submitted.
- h. Dates and project identification shall be shown on each sheet
- i. Sheet size shall be 24 inches by 36 inches.
- j. Number of copies shall be project specific.
- k. Outline Specifications:
 - 1) Outline specifications shall clearly define all components of the systems and materials to be used on the project.
 - 2) Number of copies shall be project specific.

1. Calculations:

- 1) Building and system load calculations of HVAC and plumbing systems shall be submitted.
- 2) Electrical calculations shall include:
 - a) Load and demand analysis
 - b) Load analysis for stand-by power rating
 - c) Lighting power budget per ASHRAE/IES 90.1
 - d) Lightning risk assessment per NFPA 78, Appendix I.
- 3) Structural calculations shall be submitted.
- 4) Number of copies shall be project specific.

3. Construction Documents (CDs) Submission

The design professional shall prepare and submit plans and specifications to be used to solicit bids, award a contract, build the building, and serve to record what was built. These plans and specifications will be submitted in three phases, 65%, 95%, and Bid Ready. The design professional shall be encouraged to produce drawings on CAD. The system used shall be that currently used by the County. See Chapter I, Section II of this Manual for CAD drafting standards.

a. 65% Submission:

Drawing Requirements:

- 1) Site Drawings: 65% Contract Drawing (CD) submission is defined as 65% completion of each drawing that will constitute the final set of electronic drawings, showing all existing and proposed conditions, materials, structures, fixtures, elements, furniture, equipment, etc., in sufficient detail to establish location, alignment and grade. The design professional shall mark review sets with “For Review Only, Not For Construction”.
- 2) Architectural and Engineering Drawings: 65% Contract Drawing submission is defined, as 65 % completion of each drawing that will constitute the final set of electronic drawings. The design professional shall mark review sets with “For Review Only, Not For Construction”.
- 3) Building plans and details shall not be less than 1/8" = 1'-0". All drawings shall have graphic scales for each scale used.

- 4) Floor plans shall show complete arrangements of all spaces, with their relation to structural, mechanical, and electrical clearly indicated. Structural, Plumbing, HVAC, and Electrical plans shall be developed to indicate and show complete systems to be used. Duct work shall be double line except in areas where not more than one duct is shown.
- 5) The elevations shall show and clearly indicate all design elements and the materials to be used, sections and details indicating any and all requirements of the structure, along with properly shown story heights.
- 6) Drawings shall contain keys to materials, symbols and abbreviations and sufficient schedules (finishes, door, window, etc.) to provide the proper organization and coordination of drawings with specifications.
- 7) Structural notes that include the following shall be placed on one of the structural drawings:
 - a) Design dead load, partition load and live load for each and every area of the building including the roof.
 - b) Design bearing values for all spread footings and caissons and bearing loads for piles.
 - c) Concrete strength required for each part of the building
 - d) Steel yield point strength for all structural steel and reinforcing bars.
- 8) On the first sheet of the mechanical drawings, include the following information:
 - a) Total heat loss for the building in BTU, the ventilation load in BTUs, domestic hot water load in BTUs, and heating design temperatures inside and outside.
 - b) Total heat gain for the building in BTUs, ventilation load for the building in BTUs, and indoor/outdoor temperature conditions and humidity.
 - c) Total plumbing fixture units, domestic water consumption maximum demand in gph, and maximum gas consumption in cu. ft. per hour.
- 9) On the first sheet of the electrical drawings, include the following information:
 - a) Total electrical load in KVA
 - b) Total lighting and receptacles in KVA
 - c) Total Power in KVA

- d) Largest motor Horsepower
- e) Estimated Emergency Power demand in KVA
- f) Type and size of stand by power units
- g) Telecommunication system description, features, interface, and definitions

Specification Requirements:

- 1) Specifications shall be prepared in the Construction Specifications Institute (CSI) division numbers Master format and Three Part Section format. Where trade names or proprietary items are identified, reference shall be made to approved equals. When approved name products are included, at least three acceptable brands shall be named. Hardware schedules are required. The design professional shall incorporate the keying system of the user.

Calculations:

- 1) Mechanical calculations shall include final load calculations for the Building, HVAC and plumbing, and equipment selection.
- 2) Electrical calculation shall include:
 - a) Load and demand analysis
 - b) Load analysis for stand-by power system, including sizing calculations for stand by equipment
 - c) Lighting power budget per latest revision of ASHRAE/IES 90.1.
 - d) Short-circuit analysis using ohmic or per unit method, depending on complexity of system.
 - e) Voltage drop analysis
 - f) Power factor correction
 - g) Lighting calculations
 - h) Pole classifications, guy vector diagrams and guy strength when overhead transmission systems are involved.
- b. 95% Submission: Contract documents at 95% submission should be complete. At the final review meeting, the electronic drawings shall be reviewed in total, to such an extent that the County and the using agency may be assured that upon submission of the final CD's the required signatures may be applied without delay.
- c. Bid Ready Submittal: At the time of Bid Ready submittals, the design professional shall submit the original drawings, sealed and signed by the design professional, along with a minimum of two copies of the specification, one bound and one unbound. They shall also submit any updated calculations or loads and demands. An updated cost estimate

shall also be submitted at this time. The number of copies for this submission shall be job specific.

- d. Upon completion of a development project, the developer shall submit two sets of record drawings to the County. These drawings shall be one set of reproducible and one set of prints of the approved construction plans with the “as built” location of all deviating surveyable features indicated in red. The record drawings shall be based on a field-run survey prepared, sealed, and signed by the appropriate design professional. Record drawings shall be as described in Section IV Construction of Chapter I.
- e. For projects which utilize AutoCAD drawings, the County shall be furnished with record drawings of electronic files. The electronic files shall be as described in Section IV, Construction, Chapter I.

4. Geotechnical Report

- a. Subsurface Exploration: The design professional shall plan and perform the subsurface exploration and evaluation and procure the information relative to the site and subsurface conditions relevant to the project requirements. The data procured shall be adequate, correct and reasonably complete for the intended purposes of planning, design, quantity, and cost estimating, and determining the construction feasibility.

The work of subsurface exploration and evaluation shall be performed under the direct guidance, direction, and control of the geotechnical engineer. All submittals relating to and including the results of the subsurface exploration, evaluation, and recommendations shall bear the seal of the geotechnical engineer.

- b. Report: The design professional shall prepare a Geotechnical Report, which shall at a minimum address each of the following:
 - 1) Geology: Geology and general nature of soil, rock, drainage, and ground water conditions of the project area.
 - 2) History: A history of the project site and relevant information relating to nearby foundations, structures, underground springs, etc.
 - 3) Boring Plan: Boring plan to scale, indicating boring and test pit locations referenced to existing physical features, and proposed locations of structures and other facilities.
 - 4) Boring logs: Boring and test pit logs, with soil and rock description, classification, and depth and character of fill, ground water observations, and any other observations, including ground surface elevations at boring and test pit locations.
 - 5) Characteristics: Information relating to soil and rock character, consistency, compressibility, shear strength, safe bearing value,

- chemical content, corrosiveness, frost penetration depth, permeability, and other relevant properties.
- 6) Rock Line: Rock line elevations with cross-sectional profiles, evidence that rock strata is sound and not underlain by mine cavities or lenses that would affect the stability and support capability.
 - 7) Foundation Analysis: Foundation analysis and recommendations, including the presentation or risk and cost effectiveness considerations.
 - 8) Foundation Information: All relevant foundation information, including design parameters, elevations of bottom of footings or pile tips, related soil bearing or pile capacity, factors of safety and settlement analysis considerations.
 - 9) Recommendations: Recommendations for design and support of floor slab, retaining or basement walls, water or dampproofing and drainage, underground utilities, pavements of roadways and parking lots, stability of slopes, ground water seepage control, and other stabilization procedures.
 - 10) Site Evaluation: relating to excavation and earthwork feasibility. If rock excavation is involved, indicate definition, removal and handling equipment, blasting requirements, etc. If earthwork, indicate shrinkage factors, suitability of on-site/off-site material, and borrow requirements. Include groundwater observations, elevations, and recommendations for temporary and permanent dewatering. Note effects of seasonal variations.
 - 11) Potential Problems: Identify problems, which may affect the cost of construction and/or may cause delays and furnish construction precautions and recommendations. Identify inspection testing and quality control requirements for construction.
 - 12) Stormwater Management Recommendations: As to type of stormwater management facilities suitable for the site and design parameters to be used for system sizing.

II. DESIGN CRITERIA

A. Pre-Design Meeting

Prior to commencing any design work on a capital project, a pre-design meeting shall be held as provided in Chapter I, General Instructions. This meeting will discuss, at a minimum, the following design criteria pertinent to this Chapter, in addition to any items, which pertain to any other Chapters, which will govern the design of the project:

- Building Program, including programmed square footage for all spaces of the building.
- Number of Floors, Basement(s), Vertical Circulation

- Use or Occupancy Classification for the building, such as Assembly, Business, Educational, Institutional, etc.
- Programmed Number of Occupants
- Type of Construction for the fire rating of the building, such as Noncombustible, Type 1 Protected, Type 2 Protected, Type 2 Unprotected; Noncombustible/Combustible, Type 3 Protected, etc.
- Fire Protection Criteria: i.e. fully sprinklered, partially sprinklered, etc.
- Utilities to be provided/extended: water, sewer system (private or public), storm water, fuel source, power, communications, alarm and security systems, etc.
- Property Zoning
- Project Budget
- Project Schedule
- Energy Budget (if applicable)
- Vehicle Parking: Type, Location, Size, Number of Spaces
- Critical Review Submittal Schedule: i.e., MDE, SHA, County Highway, etc.
- Special Criteria: i.e. Passive Solar Design, Ice Storage, “Green Building” Criteria, Historic District, Special Aesthetic goals, etc.

B. Site Plan

1. General

The building should be simply designed and sited as appropriate to the project. The location should provide for any future expansion requirements. Building location shall comply with all local requirements for setbacks.

2. Landscape Design

Landscaping provides an opportunity for aesthetic improvement and can provide an opportunity to enhance the energy efficiency of the building. Solar orientation, planting and berming should be considered during the early stages of design.

Plant and tree selection should provide permanent, low maintenance vegetation appropriate to the location. Consideration should be given to adjacent property and structures to prevent adverse impact. Trees shall be carefully selected to prevent clogged gutters and drains from leaves and blocked sewer lines from root infiltration. The planting design should be simple and orderly using a minimum of plant types and materials for framing and background aesthetics, and the screening of service areas, parking areas, and other objectionable views. Selected plant material shall be of local, hardy species that are tolerant of specific site conditions.

Planting shall be included as an integral part of the design of the project, and the location, size and quantity shall be clearly indicated on the plans.

C. Design Loadings

1. Wind: Follow applicable building codes unless there are project specific requirements.
2. Snow: Follow applicable building codes unless there are project specific requirements.
3. Public Areas: 125 lbs per sq. ft. of floor unless there are project specific requirements.
4. Non-Public Areas: Follow applicable building codes, unless there are project specific requirements.
5. Other.

D. Concrete

1. Mixes
 - a. All concrete shall have a minimum compressive strength of 4,000 psi at 28 days unless superseded by project specific requirements.
 - b. All exterior concrete shall be air entrained up to 6% air entrainment.
2. Reinforcement
 - a. All reinforcing bars shall conform to ASTM A-615, deformed bars, Grade 60.
 - b. All welded wire fabric shall conform to ASTM A-1064.
3. Cast-in-Place Concrete
 - a. Reinforced concrete shall be detailed and installed in accordance with American Concrete Institute publication, ACI 301 “Specification for Structural Concrete”.
 - b. Reinforcing steel shall be detailed in accordance with American Concrete Institute publication ACI SP-66 “ACI Detailing Manual” and ACI 315R, “Guide to Presenting Reinforcing Steel Design Details”.
4. Precast Concrete
 - a. Architectural pre-cast concrete shall be designed and installed in compliance with Precast/Prestressed Concrete Institute publication “Architectural Precast Concrete”

- b. Structural pre-cast concrete shall be designed and installed in compliance with Precast/Prestressed Concrete Industry publication “PCI Design Handbook-Precast and Prestressed Concrete”.

5. Parking Decks

- a. Parking structures shall be designed and installed in compliance with Precast/Prestressed Concrete Industry publication “Precast Prestressed Concrete Parking Structures: Recommended Practice for Design and Construction”.
- b. Evaluation of epoxy-coated reinforcing should be performed considering life cycle cost related to actual maintenance and replacement costs for existing structures.
- c. Evaluation of special top coatings for both exposed decks and other decks should be performed considering life cycle costs, coefficient of friction (slipperiness), and appearance.

E. Masonry

1. Mortar Mixes

- a. Mortar mixes for brick shall be selected in accordance with the recommendations of “Technical Notes on Brick Construction No.8, Mortars for Brickwork”, published by the Brick Institute of America.
- b. Mortar mixes for concrete masonry units shall be selected in accordance with the recommendations of the “Concrete Masonry Handbook for Architects, Engineers and Builders”, published by the Portland Cement Association.
- c. Use of other specialized mortars may be indicated by project specific conditions, such as refractory brick or high sulfate conditions.

2. Exterior Walls

- a. For exterior walls with a life of more than twenty years, all masonry cavity wall construction is appropriate. For exterior walls that are temporary in nature, masonry is generally not appropriate. For other cases, masonry cavity or solid walls are preferable to masonry faced stud construction.
- b. Use of walls as shear walls for seismic and wind loads is acceptable; additional bond beams and reinforced pilasters may be required.

3. Interior Walls

- a. Interior walls of masonry are acceptable, though sometimes not cost effective. Gypsum board on steel studs may be acceptable if provided with high-abuse gypsum board.
- b. Verify adequate lateral support for interior walls, as well as height/thickness ratios.

4. Decorative Finishes

- a. Exterior Walls: Decorative finishes for exterior walls should come from the character of the materials, i.e. brick color and pattern, mortar color, block texture, etc. Application of paint or other decorative material, e.g. stucco, should be reserved only for the most utilitarian concrete masonry structures.
- b. Interior walls: In occupied areas, C.M.U. and gypsum board walls may be painted.

F. Structural Steel

1. Applicability of Various Grades

The selection of steel grades for buildings will be project specific. Normal grade of steel for building construction is as follows:

- a. W Shapes: ASTM A 992, Grade 50.
- b. M, S, C, MC, and L Shapes: ASTM A 36.
- c. Pipe: ASTM A53, Grade B.
- d. HSS Round: ASTM A 500, Grade C, Fy 46 ksi.
- e. HSS Rectangular: ASTM A 500, Grade C, Fy 50 ksi
- f. HP Shapes: ASTM A 572, Grade 50.

2. Shop Coatings

- a. Ensure that shop coatings are compatible with finish coating specified, particularly if high-performance finish coat is specified.
- b. Avoid the use of primers that contain environmentally unacceptable metals, i.e. lead, chrome, mercury, etc.

3. Finishes

- a. Exposed steel should be painted. In highly corrosive conditions, a high-performance coating system should be selected.

- b. Tight-rust steel requires special design consideration. Constraints include exposure, atmosphere, run-off rust stains, and life of structure.
- c. Aluminum finishes will be considered job specific.
- d. Other more noble metals, such as copper, brass or bronze, generally do not require finishes. Use of a finish shall be project specific.

G. Wood and Plastics

1. Fasteners and Adhesives

- a. Use of fasteners and adhesives in compliance with the recommendations of the species grading criteria agency.
- b. Use of adhesives should be carefully considered in the construction of fire rated construction.

2. Timber Construction

Timber construction shall comply with the requirements of the “Timber Construction Manual”, published by the American Institute of Timber Construction.

3. Wood Preservatives

- a. Wood treated with preservatives shall be in compliance with the requirements of the “U1: User Specification for Treated Wood” and “T1: Processing and Treatment Standard”, published by the American Wood Protection Association.
- b. Disposal of preservative treated wood scrap shall conform to all local ordinances.

4. Prefabricated Wood Structural Members

- a. Prefabricated wooden trusses shall be in compliance with the requirements of the “National Design Standard for Metal Plate Connected Wood Trusses Construction, ANSI/TPI 1”, published by the Truss Plate Institute.
- b. Erection of prefabricated wooden trusses shall be in compliance with the requirements of the BCSI: "Guide to Good Practice For Handling, Installing & Bracing of Metal Plate Connected Wood Trusses", published by the Truss Plate Institute.
- c. Glued laminated timber shall be in compliance with the requirements of “Standard Specification for Structural Glued Laminated Timber of Softwood Species, AITC 117” or “Standard Specification for Structural

Glued Laminated Timber of Hardwood Species, AITC 119”, published by the American Institute of Timber Construction.

5. Prefabricated Structural Plastics

Use of prefabricated structural plastics shall be carefully coordinated with the design of the fire protection system used, due to the potential combustibility of such construction.

H. Thermal and Moisture Protection

1. Roofing

- a. Roofing shall be installed in compliance with the recommendations of “The NRCA Roofing Manuals for all roofing systems, latest versions, published by the National Roofing Contractors Association.
- b. Minimum roof pitch shall be 1/4 inch per foot. A greater pitch is preferable. Dead level roofs are prohibited.

2. Wall Systems

In the selection of a wall system to resist thermal and moisture migration, it is preferable to have redundant layer of resistance, i.e., a cavity wall rather than a single width, or a double gasketed panel system rather than a single sealant joint.

3. Dampproofing and Waterproofing

All occupied spaces that are below final grade shall be protected by exterior applied waterproofing. Type of waterproofing shall be project specific. Waterproofing materials include crystalline admixtures, cementitious, membranes, fluid applied, and colloidal. Addition of a water conveyance system at the bottom of the waterproofing is necessary.

I. Doors and Windows

1. Hollow metal doors and frames shall comply with the requirements of the appropriate specification NAAMM HMMA most recent versions of the 800 series of sections of the National Association of Architectural Metals Manufacturers, Hollow Metal Manufacturers Association. Hollow metal doors shall not be used in sewage treatment facilities, water treatment facilities, and in water and sewage pump stations.
2. Wood doors and frames shall comply with the requirements of the American Wood Institute Specifications, Section 09, AWI/AWMAC/WI 2014. Wood doors shall be warranted for the life of the installation for non-rated interior doors, one year for rated interior doors, and one year for exterior doors.

3. Fiberglass doors and frames shall be used in sewage treatment facilities, water treatment facilities, and water and sewage pump stations.
4. All commercial window units shall bear the AAMA label warranting that the window complies with ANSI/AAMA/NWDA 101-1997..
5. Hardware: Key to using agency's standard keyway.

J. Finishes

1. Walls

Wall finishes should be selected considering traffic and the wear the wall will see. Protection such as rub rails or protective plates shall be used if appropriate. Generally, wall finishes are project specific.

2. Flooring

Selection of flooring shall be project specific.

3. Ceilings

Selection of a ceiling system shall take into consideration access to building systems concealed within the system, and the probability of changes to those systems for the life of the building.

4. Special Surfaces

Finishes for special surfaces shall be project specific.

5. Painting

a. VOC content of paints specified shall comply with current standards for the State of Maryland.

b. Painting systems shall be project specific.

6. Coatings for Corrosion Protection

a. The level of performance for coatings in corrosive environments should be appropriate for the level of potential risk.

b. Increased quality control, such as increased inspection, film thickness tests, etc. may be necessary to ascertain the level of performance of these systems.

K. Dissimilar Metals

A barrier shall be placed between dissimilar metals in contact to prevent

corrosion.

L. Specialties

1. Signage and Identifying Devices

Signage systems shall comply with ADA requirements for size, tactile surface, Braille strips, contrast, mounting height, etc.

2. Pedestrian Control

Pedestrian control devices shall comply with all ADA requirements for clearances, operating force, etc. If devices do not comply, provide a easily operated means of bypass around the device. The bypass shall comply with all ADA requirements, but can be supervised locally or remotely.

3. Fire Protection

- a. Fire protection requirements shall conform to the requirements of the applicable building code for occupancy and type of construction.
- b. Public and occupied buildings other than temporary shall be fully sprinklered.
- c. Extinguisher type and location shall conform to the requirements of NFPA 10-94.
- d. Automatic fire detection systems shall conform to the requirements of the applicable building code.

4. Exterior Sun Control Devices

- a. The use of exterior sun control devices shall be investigated when fenestration area exceeds 15% of the exterior wall area on the south and west walls, or 25% on the north and east walls. An analysis of the use of exterior sun control devices versus the use of high-performance glazing systems shall be performed.
- b. Integration of exterior sun control devices and day lighting assemblies is desirable.

M. Special Construction

1. Liquid and Gas Storage Tanks

- a. General: Tank capacities, dimensions, construction, and thickness shall be in strict accordance with UL-58 and designed for a minimum thirty (30) year life for underground storage of heating oil. Tanks shall meet the requirements of ACT-100 specification. Each tank shall be fitted with welded and coated connections for external and internal piping, sized appropriately for expected consumption rates. Each tank opening shall be designed to withstand a minimum of 150 foot-pounds of torque and 1,000 foot-pounds of bending with a minimum 2 to 1 safety factor and shall be provided with threaded connections conforming to American Society of Mechanical Engineers Standard B1.20.1 (ASME B 1.20.1) and include a full-sized threaded dielectric bushing. Anchor straps shall be provided.

Tank removal shall involve notification to the Maryland Department of the Environment, Hazardous and Solid Waste Management Administration, Underground Storage Tank Division, at least 48 hours prior to commencing any excavation for tank removal. All flammable or combustible liquids, and / or sludge shall be removed from the system and disposed of in accordance with all Federal, State, and Local requirements. All existing supply pipes, vents, filler pipes, etc. shall be completely removed and properly disposed of. All saturated soils found in the tank excavation shall be disposed of in accordance with all Federal, State, and Local requirements.

Reference drawings for liquid and gas storage tanks are available as a separate document from the County DPW. These reference drawings provide the design professional with the minimum notes, details and drawing layouts which the DPW requires on design drawings for liquid and gas storage tank installations.

- b. Pre-Design Meeting: Prior to commencing any design work, a pre-design meeting shall be held as provided in Chapter I, General Instructions. This meeting will discuss, at a minimum, the following design parameters pertinent to this Chapter, in addition to the items which pertain to any other Chapter which will govern the design of the project:
 - 1) Tank Construction
 - 2) Fill Connection Details
 - 3) Vapor Recovery Methods
 - 4) Vent Piping Detail
 - 5) Suction Piping

- 6) Fuel Dispensing Equipment Required
 - 7) Emergency Shutoff Method
 - 8) Monitoring Method
- c. Demands: Fuel storage tanks must meet the required storage capacity for the specific application. The design capacity for the underground fuel storage tank shall consider existing and projected fuel consumption rates. Prior to installation, the tank(s) shall be carefully inspected, and the coating checked for damage. Any damage shall be repaired in strict accordance with the tank manufacturer's requirements.

Concrete shall be cured per ACI 308R Guide to External Curing of Concrete, American Concrete Institute (ACI). All areas disturbed by tank removal or installation shall be restored with sod, gravel driveway shall be restored with CR6 and gravel.

The demolition and installation of underground fuel storage tanks shall conform to the following Regulations, Codes, and Standards:

- 1) National Fire Protection Association Standard 30 and 30A, "Flammable and Combustible Liquids Code" and "Code for Motor Fuel Dispensing Facilities and Repair Garages"
- 2) National Fire Protection Association Standard 70, "National Electrical Code"
- 3) National Fire Protection Association Standard 328, "Recommended Practice for the Control of Flammable and Combustible Liquids and Gases in Manholes, Sewers, and Similar Underground Structures"
- 4) National Fire Protection Association Standard 329, "Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases"
- 5) American Petroleum Institute Publication 1615, "Installation of Underground Hazardous Substances or Petroleum Storage System"
- 6) American Petroleum Institute PEI RP-100, "Recommended Practices for the Installation of Underground Liquid Storage Systems"
- 7) Federal Environmental Protection Agency, "Underground Storage Tank Implementation Handbook" and "Underground Storage Tanks: Requirements and Options"

- 8) Underwriter's Laboratories Inc. UL 58, "Standard for Steel Underground Storage Tanks for Flammable and Combustible Liquids"
 - 9) Underwriter's Laboratories Inc. UL 142, "Aboveground Flammable Liquid Tanks"
 - 10) The Association for Composite Tanks (ACT)
 - 11) Maryland Department of the Environment, COMAR 26.10.01, "Oil Pollution and Tank Management"
 - 12) Anne Arundel County Building and Fire Codes
- d. Finishes: Tanks shall be designed to prevent internal and external corrosion as outlined in Chapter I - General Instructions and Paragraph I of this Chapter. The weight of the tank shall be clearly marked on its exterior.
- e. Service Connections: Service connections shall be designed in accordance with the details provided in the Reference Drawings for Liquid and Gas Storage Tanks, and shall, at a minimum, address the following:
- 1) Overfill prevention shall be provided on underground tanks. A spill container for the fill shall also be provided. The spill container shall be corrosion resistant, be equipped with a removable drain and have a minimum 5-gallon capacity.
 - 2) Above ground storage tanks shall be fitted with containment dikes for spill protection. The dike shall have 110% capacity for the enclosed tank.
 - 3) A vapor recovery connection shall be provided.
 - 4) Tank shall be properly vented and shall have electronic leak detection equipment.
- f. Distribution Lines (If Required): Distribution lines, if required, shall be designed in accordance with the details provided in the Reference Drawings for Liquid and Gas Storage Tanks, and shall address, at a minimum, the following:
- 1) Suction piping shall be provided for connection to dispensing system of choice.
 - 2) Connection from suction piping to the dispensing system shall be equipped with an emergency shut-off valve.

- 3) Fuel dispensing island (if required).
 - g. Civil: Civil work shall be designed in accordance with the details provided in the Reference Drawings for Liquid and Gas Storage Tanks, and shall address, at a minimum, the following:
 - 1) Fuel dispensing island (if required) shall be equipped with bollards to prevent potential collision damage.
 - 2) Excavation and support for underground storage tanks.
 - h. Backfill: Underground tanks shall be backfilled with washed pea gravel, a clean naturally rounded aggregate 1/4" nominal size, ranging from 1/8" to 3/4" diameter. Backfilling and compaction shall be in accordance with tank manufacturers recommendations.
2. Pre-Engineered Structures

Drawings and calculations for pre-engineered structures shall be signed and sealed by a Professional Engineer registered in the state of Maryland.
 3. Solar Energy Systems
 - a. Active solar energy systems shall have an economic payback not to exceed ten years.
 - b. Passive solar energy systems shall have an economic payback not to exceed twenty years.
 4. Fire Suppression Systems

Installation of sprinkler systems shall comply with the requirements of NFPA 13-94, Installation of Sprinkler Systems.
 5. Fall Protection

The design professional shall design and specify temporary and permanent fall protection for all floor and wall openings in buildings in accordance with the requirements of the latest edition of OSHA 29 CFR, 1926.502. Fall protection includes, but is not limited to railings, toeboards, screens, covers, hatches, grills, slats, and fences. Floor openings include, but are not limited to, ladderways, hatchways, trap doors, chute openings, pits and manholes. Wall openings include, but are not limited to chute openings, low windows, temporary openings, and openings where there is a hazard of material falling through the opening. Open sided floors, platforms, runways, and stairways shall likewise be protected in accordance with the same OSHA regulations.

6. Elevators

Design of elevators and elevator improvements shall be in conformance with ASME A17.1/CSA B44. Any project involving new elevator construction or the modernization/refurbishment of an existing elevator shall include three to four (3–4) Cat6 cables within the cabling bundle. These cables support both telephone and camera systems. A site visit to inspect the elevator machine room shall be scheduled at the onset of each project. This inspection allows OIT to verify the presence of a network switch; if none exists, one must be added. The County vendor for maintenance shall be confirmed during design to ensure conformance with their contractual requirements. A minimum one (1) year warranty period and one (1) year maintenance period shall be included in the scope of any new or refurbished elevator project. All associated documentation shall be forwarded to FMD for record keeping.

N. Mechanical

1. Plumbing

- a. Potable water lines shall be copper, type L, for lines 3 inches and smaller. Larger sizes shall be galvanized steel.
- b. Soil, waste, drain and vent lines below grade shall be standard weight cast iron. Soil, waste, drain and vent lines above the lowest floor shall be standard weight cast iron or galvanized steel.
- c. Heating water lines larger than 3 inches shall be black steel. Smaller sizes shall be the same as potable water lines.
- d. Fuel oil piping shall be black steel, standard weight.
- e. Gas piping, low pressure, shall be black steel, standard weight.
- f. Plumbing fixtures shall be the water conserving type.

2. Heating, Ventilation and Air Conditioning

- a. General: Mechanical systems shall be designed in accordance with the provisions of the ASHRAE Guide and data book.
- b. Selection of energy source for the heating system shall be based on a comparison of all energy sources available at the site. The design professional shall prepare a life cycle cost analysis supporting the type proposed. This analysis shall address the differential in initial construction costs and the annual operating/maintenance costs for all fuels. Calculations shall be in discounted dollars and shall utilize documentable local fuel costs and certain escalation forecasts as prepared by the Department of Commerce.

3. Automatic Temperature Controls

- a. The Building Automation System (BAS) manufacturer shall furnish and install a fully integrated building automation system incorporating direct digital control (DDC) for energy management, equipment monitoring and control, energy management system and subsystems incorporate the buildings to the BAS. The installation of the control system shall be performed by and under the direct supervision of the controls manufacturer authorized representative. System shall utilize the Tridium Niagara Framework and be fully compatible with the most recent versions of Niagara systems..
- b. System communications between DDC building control panels and workstations shall consist of CAT 5E cabling utilizing Ethernet technology. The BAS contractor shall be responsible for all system communications design and installation including, but not limited to, fiber-optic and CAT 5E cabling, Ethernet hubs, routers, switches and fiber patch panels. Power required for Ethernet components shall be provided by the BAS contractor from designated power distribution panels.

4. Testing and Balancing Completed Systems

- a. Upon completion of installation and field testing, performance-test and adjust the supply, return, make-up and exhaust air systems, and hot water heating systems, to provide the air volume and water flow quantities called for in the contract documents. Accomplish all work in accordance with the agenda and procedures specified in the Associated Air Balance Council (AABC) publication #71679 or the Procedural Standards of the National Environmental Balancing Bureau (NEBB).
- b. Provide a report of the testing and balancing work that includes the following:
 - 1) A general description of each air and water system with their associated equipment, and operation cycles for heating, intermediate and cooling. Where different cycles are used for day and night, they shall be described independently.
 - 2) A complete listing of all air and water flow and air terminal measurements performed.
 - 3) Specific test pressures and parameters for determining specific quantities, e.g. flow drafts from the actual field measurements.
 - 4) Detailed description of performance test procedures and the location of all test openings.

5. Energy Conservation

- a. General: Energy efficiency, selection and availability are a design requirement, which at a minimum will involve consideration of the total least cost, current and future availability, environmental compatibility, and renewability.
- b. Buildings shall be sited to utilize winter sun, prevailing winds, and natural landforms. Landscaping and plantings shall be used for shading the summer sun and blocking winter winds.
- c. Evaluate the use of earth berms against exterior walls. Decision for use is project specific.
- d. Provide enclosed vestibules at high use entrances in heavily occupied buildings.
- e. Energy conservation requirements are given in CABO MEC-95, Model Energy Code.
- f. Provide destratification fans in high bay spaces that are occupied.
- g. If any exhaust hoods are required in kitchens or elsewhere, evaluate the type that supplies untempered make-up air through an outer jacket of the hood, so that minimal conditioned air is exhausted.

O. Electrical

1. Service and Distribution

- a. General: The interior electrical distribution should be designed for the most efficient and economical distribution of power, using the highest voltage consistent with the load served. A three (3) phase, 208/120-volt system will be the minimum, with the use of a 480/277-volt system where loads are sufficient to justify it.
- b. Ground fault protection shall be used in accordance with NFPA 70.
- c. Power and lighting panels, telecommunication and electrical equipment should not be located in the maintenance/custodial area or in storage rooms; provided small electrical closets, or mount discreetly in corridor walls.

2. Lighting

- a. General: Energy efficient LED lighting fixtures should be used throughout. Lighting levels shall conform to the recommendations of the Illuminating Engineering Society (IES).

- b. Emergency egress lighting shall generally be by use of dual-purpose LED fixtures at appropriate locations, such as corridors, stairs, and exitways, in preference to a dedicated battery pack emergency light. If battery packs are used, they shall be hard-wired, not plug-in type.
 - c. Exterior lighting shall be provided to illuminate sidewalks from parking areas to the building, and other areas as required for safety and security. Exterior lighting type shall be LED. Vandal resistant lenses shall be provided where appropriate. Exterior lighting should not be directed onto neighboring properties. The minimum level of exterior lighting shall be a 0.2 foot candle, measured at the point (to be illuminated) farthest from the light fixture. Exterior lighting fixtures should be equipped with photoelectric cells for control. A time clock control system may be provided on a job specific basis.
 - d. Exterior architectural lighting may be provided on a job specific basis if the architectural character of the building and its prominence in the community make it appropriate.
- 3. Special Systems
 - a. Fire alarm systems shall be provided on all occupied buildings; type and design shall be job specific. Fire alarm systems shall comply with the requirements of NFPA 72-93, National Fire Alarm Code. Requirements for a fire detection system and type and design shall be job specific.
 - b. Requirements for intrusion detection and alarm systems shall be job specific.
 - c. Environmental hazard detection and alarm systems shall be provided if installation of a potential hazard (such as a buried fuel tank) is part of the building project.
- 4. Communications
 - a. General: The design professional shall coordinate with the Information Systems Office of Anne Arundel County to determine requirements for telephone and telecommunication systems.
 - b. The design professional shall include in the contract work exterior trenching, conduit and cable to the terminal board, the terminal board, cable tray and/or conduit, outlet boxes, associated wiring, any cabinets and cabinet mounting boards and outlets.
- 5. Lightning and Surge Protection
 - a. Requirements for lightning protection are job specific.

- b. Requirements for surge protection are job specific.
- 6. Energy Conservation
 - a. The use of high efficiency lighting and high efficient fluorescent lighting shall be mandatory. Consideration for solar, combined heat and power, and stored energy systems shall be taken into account for the design.
 - b. For all buildings larger than 35,000 sf, a separate analysis shall be completed of alternatives showing how the building can meet the requirements of the State's "Building Energy Performance Standards" (BEPS).

III. CONTRACT DRAWINGS AND DOCUMENTS

A. Reports

- 1. Required Submittals: See paragraph I.F of this Chapter.
- 2. Format
 - a. General: All reports shall be standard paper size, 8 ½" x 11", bound, with drawings not to exceed 11" x 17" unfolded. Larger drawings shall not be bound into the report
 - b. See Chapter 1, Paragraph II.C.

B. Design Computations

- 1. Structural calculations shall include:
 - a. Roof live, dead and snow loads
 - b. Roof uplift restraint
 - c. Roof framing
 - d. Floor loading
 - e. Supported floors
 - f. Supported floor framing
 - g. Slabs on grade
 - h. Columns
 - i. Bearing walls

- j. Basement and retaining walls
 - k. Foundations
 - l. Lateral loading, both wind and seismic
 - m. Lateral load resistance system
2. Mechanical calculations shall include final load calculations for the Building, HVAC and plumbing, and equipment selection.
3. Electrical calculation shall include:
- a. Load and demand analysis
 - b. Load analysis for stand-by power system, including sizing calculations for stand by equipment
 - c. Lighting power budget per latest revision of ASHRAE/IES 90.1.
 - d. Short-circuit analysis using ohmic or per unit method, depending on complexity of system.
 - e. Voltage drop analysis
 - f. Power factor correction
 - g. Lighting calculations
 - h. Pole classifications, guy vector diagrams and guy strength when overhead transmission systems are involved.

C. Specifications

Specifications shall be prepared in the Construction Specifications Institute (CSI) division numbers Masterformat and Three Part Section format. Where trade names or proprietary items are identified, reference shall be made to approved equals. When approved name products are included, at least three acceptable brands shall be named. Hardware schedules are required. The design professional shall incorporate the keying system of the user.

D. Contract Drawings

Contract Drawings shall be in accordance with the provisions for Contract Drawings in Chapter I, Section II of this Manual.

E. Estimates

Cost estimates shall be prepared in accordance with the provisions for Cost Estimates in Chapter I, Section II, Paragraph L of this Manual.

IV. CONSTRUCTION

A. Record of Pre-Construction Condition

It shall be the Contractor's responsibility to keep records of any pre-construction conditions that affect his responsibilities under this contract. Records may be written, photographic, or videotape. The Contractor shall review all records of existing conditions with the County's inspector at the time of recording.

B. Contractor Bonds and Certifications

1. Performance and Payment Bonds are required when the amount of the initial contract award, including base bid and any alternates awarded, is in excess of \$100,000.
2. Each of the bonds shall be in the full amount of the contract price.

C. Contractor Safety Requirements

1. The Contractor shall provide and maintain work environments and procedures, which will:
 - a. Safeguard the public, workers on site, County personnel, property, materials, supplies and equipment exposed to contractor operations and activities;
 - b. Avoid interruptions of County operations and delays in project completion dates; and
 - c. Control costs in the performance of this contract.
2. For these purposes, the Contractor shall:
 - a. Provide appropriate safety barricades, signs, and signal lights;
 - b. Comply with the provisions of the Maryland Occupational Safety and Health Act;
 - c. Comply with the standards issued by the Secretary of Labor at 29 CFR Part 1926 and 29 CFR Part 1910; and
 - d. Comply with all the requirements of the contract and any additional safety measures the Country determines to be reasonably necessary.

D. Shop Drawings

1. Shop drawings, product data, samples, etc., shall be submitted as provided for in Chapter I, Section IV, of this Manual.
2. After checking and verifying all field measurements and after complying with applicable procedures specified in the contract documents, contractor shall submit to the architect for review and approval, in accordance with the contractor's schedule, shop drawings and other submittals, which will bear a stamp or specific written indication that the contractor has satisfied its responsibility under the contract documents with respect to the review of such submissions. The data on the shop drawing or submittal must be complete with respect to quantities, dimensions, specified performance and/or design criteria, materials and similar data to enable the architect to review the information as required. These documents shall be prepared in conformance with the best practice and standards of the trade concerned. Due regard shall be given to speed and economy of fabrication and erection.
3. All shop drawings and submittal must show the name of the project and the County's contract number.
4. Size of the drawings: All shop drawings and details submitted to the architect for approval shall be printed on sheets of the same size as the contract drawings prepared by the architect. Sheets larger than the architect's drawings will not be accepted except when specifically approved by the County. It is acceptable to print more than one drawing on a sheet the size of the architect's drawing. It is acceptable to use an 8 ½" x 11" sheet for schedules and small details.
5. Items for which shop drawings will be required: Shop drawings shall be required for all items which are specifically fabricated for the building, or when the assembly of several items is required for a working unit. Shop drawing requirements shall be specified in each specification section.
6. Copies to be required: Contractor shall supply two copies of shop drawings and submittals for the architect's file and two copies for the County, in addition to such copies as the contractor may desire to be returned for his own use.

E. As-Built Record Requirements

1. Record drawings shall be maintained and submitted as provided for in Chapter I, Section IV, of this Manual.
2. The contractor shall be required to compile and prepare Record Drawings, Operations and Maintenance Manuals, and Record and Information Manuals for the building.
 - e. Record Drawings: The contractor is to record by drafting all change order items, alterations, and precise locations of underground and other

concealed work on a clean, undamaged set of blue or black line prints of the Contract Drawings and shop drawings.

- f. Operation and Maintenance Manuals: The contractor is to prepare manuals that contain a complete description of each mechanical, plumbing, and electrical system in the building containing the following:
- 1) Manufacturer's shop drawing and submittal data, showing all model numbers and equipment capacities and characteristics, and manufacturer's cut sheets on equipment furnished.
 - 2) Manufacturer's installation manual, service manual and parts list, including maintenance and lubrication instructions.
 - 3) Name, address, and telephone number of local or nearest Manufacturer's representative.
 - 4) Name, address, and telephone number of firm or persons to perform service work during guarantee and warranty period.
 - 5) Descriptions of each system installed and operating instructions.
 - 6) "As installed" control diagrams and description of sequence of operation by the Control Manufacturer.
 - 7) Complete "as installed" color-coded wiring diagrams of refrigeration system and all electrical connection of other mechanical equipment.
 - 8) Copies of all valve charts.
 - 9) Copies of pipe, ductwork, and equipment charts.
 - 10) Electrical panel circuit identification charts.
 - 11) Manufacturer's and Contractor's guarantees.
- g. Record and Information Manuals: The contractor shall prepare two separate books, one for Division 15 Mechanical, and Division 16 Electrical, which shall contain complete description of each mechanical and electrical system for the building. These shall include the following items:
- 1) Complete catalog data on each piece of HVAC equipment furnished.

- 2) Maintenance and lubrication instructions for each piece of HVAC equipment furnished, on the letterhead of the manufacturer of the equipment.
- 3) “As-built” temperature control diagram by the control manufacturer
- 4) Complete catalog data of each motor control center furnished.
- 5) Complete catalog data of each distribution panel.
- 6) “As-built” motor control center and panel schedules
- 7) Complete catalog data of fire alarm system, including intercommunication logic.
- 8) Catalog cuts of all lighting fixtures, showing in which rooms they are installed.

F. Warranty

The contractor shall be obliged to warrant for the period specified below the following:

1. That the work contains no faulty or imperfect material or equipment, nor any imperfect, careless or unskilled workmanship.
2. That all mechanical and electrical equipment, machines, devices, etc., shall be adequate for the use to which they are intended, and shall operate with ordinary care and attention in a satisfactory and efficient manner.
3. That he will re-execute, correct, repair, or remove and replace with proper work without cost to the County any work found not to be as guaranteed by this section or otherwise not in conformity with the contract, and that he will make good all damages caused to other work or materials in the process of complying with this section.
4. That the entire work shall be watertight and leak-proof in every particular.
5. County Projects: One year
6. Privately Constructed Projects: One year
7. Federal Aid Projects: Two years

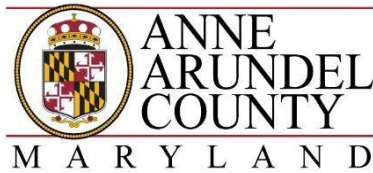
G. Equipment Training, Testing and Start-Up

Upon reaching substantial completion, the contractor shall provide training to County personnel for start-up and operation of all moving equipment. Equipment, number of personnel and duration shall be project specific.

H. Extra Material and Spare Parts

The amount of extra material and spare parts for equipment shall be project specific.

V. APPENDIX**A. References****B. Design Check List****C. Construction Inspection Check List****D. Office Space Standards**



ADMINISTRATIVE PROCEDURE

Title: Anne Arundel County, Maryland Standardized Building and Office Space
in County-owned locations Occupied by County Staff
Department: Office of Central Services
Effective Date: August 11, 2025

1. PURPOSE.

In an effort to achieve consistency and efficiently maximize space, it is imperative to follow standards for office space in County buildings. The standards below include direction for the size of offices, cubicles, kitchens, break rooms, and conference rooms. The standards also include other location-specific facility items.

From time-to-time County office space must be reconfigured or renovated to accommodate a change in mission. Guidelines are needed to ensure equitable distribution of office space. No changes will be made to existing office space as a result of this policy; however, decisions after the effective date of this policy about office space allocation, construction, renovation, or any other changes will be made in accordance with this policy.

- A. Office space is to be assigned according to roles and responsibilities.
- B. Office space is a tool for an employee to accomplish a job, task, or function.
- C. The assignment of or change in the type of office space is not to be used as a disciplinary tool.
- D. Employees are to have an office environment suitable to allow them to perform their job functions.
- E. Individual assigned offices will be deprioritized in order to more efficiently use available square footage.
- F. Agencies and agency employees are assigned office space for their usage, but the space is not “owned” by that agency or the assigned employee. Office space is a strategy to accomplish a mission, and decisions as to allocation of County office space are made by the Central Services Officer (“CSO”).

G. Shared office space may be the most appropriate allocation of square footage. In the case of shared office space, the assigned staff should take care to use the space with care and to leave the space in the same or better condition at the end of each work day.

2. APPLICATION.

This Admin Pro shall apply to all County facilities and office spaces.

3. DEFINITIONS.

“Hybrid workspace” is defined as any workspace where some staff are in person in offices or meeting rooms while others join from remote locations, whether that is home, another County worksite, or another location that is convenient with sufficient connectivity. A hybrid workspace includes some workspaces that are assigned to one person, two people, a group of staff rotating the use of the space throughout the week, or is unassigned and anyone may use the space. All office spaces belong to the County and may be used by anyone for work purposes.

4. POLICY.

The flexibility of working remotely and the added efficiency of allowing team members to work wherever and whenever has outweighed the loss of face-to-face time. However, making a hybrid workspace continue to perform effectively requires effective communication and management skills to ensure all employees are performing all required job functions. Virtual meetings also require leaders to employ appropriate meeting management skills to ensure meeting participants are engaged.

5. PROCEDURE.

A. **Workspace Standard:** The following is a standard guide for workspaces occupied by County Staff:

In an effort to achieve consistency and efficiently maximize space, it is imperative to follow standards for office space in County buildings. The standards below include direction for the size of offices, cubicles, kitchens, break rooms, and conference rooms. It is recognized and acknowledged that individual facility restraints may prevent strict adherence to the sizes indicated, and that the CSO will exercise discretion in enforcement of these standards based on those considerations. Office spaces should be shared when staff with similar job functions telework.

Office space will be allocated according to job function in the following manner, subject to the discretion of the CSO and upon request from the Department Head:

I. Office Space Sizes:

1. **Offices:** (approximate within 20%): defined as walls to the ceiling with a door

- a. **250 square feet:** Executive
- b. **150 square feet:** Department Heads
- c. **120 square feet:** Deputy Department Heads or Officers, Managers, Other examples, but not all inclusive: Executive/Senior Management Assistants, Program Administrators, Coordinators, and Senior Adjusters

2. **Cubicles: 64 square feet:** Examples (but not all inclusive) of Classifications - Program Managers, Planners I, II, III, GIS Specialists, Interns, Consultants, Inspectors, Technicians, Secretary, Management Aides, Office Support Staff, and Adjusters

3. **Hoteling: 30 square feet** Hoteling space is appropriate for staff who telework on a regular basis. This ensures everyone has access to a seat when arriving for all staff meetings, but does not waste space when staff telework or work routinely from remote locations.

II. Other shared space:

1. **Kitchen/Breakrooms: 480-700 square feet**
2. **Conference Rooms: 700-1000 square feet**
3. **Telephone/Meeting Rooms: 100-700 square feet** to allow for small meetings or private space for phone calls

B. Responsibilities:

I. **Facilities Administrator:** The Office of Central Services, Facilities Management Division (“FMD”) shall be responsible for:

1. Design, construction, demolition, or changes to office space within the County. Space renovation will be as needed for either function or maintenance, and aesthetics.
2. Funding for relocation or renovation is allocated annually to FMD through the annual budget process. Requests for space modifications under this provision are submitted by departments annually before the budget process.
3. Prioritization for expenditure of allocated funds is made at the discretion of the CSO and upon recommendation of the Facilities Administrator.
4. Setting County-wide building security policies;
5. Managing heating and air conditioning temperatures for comfort; and
6. Arranging for trash, recycling, and pest control services.

II. Real Estate Manager: The Office of Central Services, Real Estate Division shall be responsible for:

1. Assigning office space to a department or agency;
2. Processing written requests from non-County entities wishing to lease real property;
3. Processing written requests from County agencies wishing to lease additional real property to meet their mission;
4. Reviewing proposals for conformance with this policy;
5. Securing approval as needed from County staff for the proposed use;
6. Drafting leases for Office of Law approval; and
7. Maintaining records of the leases and monitoring lease term expiration dates as appropriate.

C. Leasing County Property to non-County entities

Leasing property to non-County entities may be advantageous if the property has a potential future use and, as such, the County does not want to declare it surplus and dispose of the property.

Prior to undertaking a lease of County property to a non-County entity, the Real Estate Manager shall review the proposed use of the property on a case-by-case basis. A lease for County property may be entered into if:

- I. The lease is in the best interest of County citizens;
- II. The proposed use supports the mission of Anne Arundel County and is a cost-effective means to deliver County services;
- III. Sufficient space is available for the proposed use at the proposed location, including such factors as parking spaces, building size and layout; and
- IV. The proposed use will not likely conflict with the existing uses of the surrounding neighborhood or area.

Requests by non-County entities to lease County property shall be handled on a first-come, first-served basis and are handled individually without regard to other properties, tenants, or unrelated issues.

D. ADA Considerations

A reasonable accommodation is a modification to an employee's normally-assigned job duties or office space that may be necessary for a person with a disability to be able to perform the essential functions of the job. Reasonable accommodations may include facility modification, job restructuring of non-essential functions, reassignment to a vacant position, modification of work schedules, or acquisition of special equipment. Reasonable accommodations will be considered in the event an employee's illness or injury constitutes a disability under the ADA and such an accommodation would allow the employee to perform the essential functions of their job. Workspace related reasonable accommodation requests should be made to the Central Services Officer who will consult with the Office of Personnel for guidance on appropriate renovations in coordination with the appropriate Department Head.

Requests for lactation spaces shall be made to the Central Services Officer. Renovations after the date of this policy shall include lactation space.

Signed this 11th day of August, 2025.

DocuSigned by:

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Susan Herrold
Central Services Officer

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Christine M. Anderson
Chief Administrative Officer

Approved as to form and legal sufficiency:

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Gregory J. Swain
County Attorney