



**FLORIDA DEPARTMENT OF  
TRANSPORTATION**

**BUILDING  
FACILITIES  
DESIGN  
MANUAL**

**Topic No. 625-020-016-f**



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# Chapter 1

## INTRODUCTION

### 1.1 PURPOSE

The ***Building Facilities Design Manual*** describes the Florida Department of Transportation (FDOT, Department) guidelines and requirements for providing professional Architectural/Engineering (A/E) consulting services for building facility projects. The criteria contained herein are generally based on the ***Architect's Handbook of Professional Practice***, published by The American Institute of Architects and industry standards-of-practice. They are intended to assist A/E Design Professionals fulfilling their responsibilities to the Department.

For further information or questions regarding the Department's policies and/or procedures, contact the Department's Project Manager (staff appointed to direct the project.)

This manual is intended to support ***Chapter 481 Florida Statutes*** (the ***Architects Practice Act***). All building design work is subject to the requirements of the ***Act***. It is the Department's policy to enter into a single contract with a single consulting firm when contracting for architectural services. The Architect is obligated by the ***Act*** to obtain those related services which they are not qualified to perform.

### 1.2 AUTHORITY

Sections 20.23(3)(a) and 334.048(3) Florida Statutes (F.S.)

### 1.3 SCOPE

The ***Building Facilities Design Manual*** serves as a technical reference for the A/E Design Team. This manual is intended to assist the A/E Design Team with recognizing those key issues that are interdependent and critical to the success of the project and to produce building and site designs compatible with the Department's preferred details, construction methods, CADD standards and project scope. The intent of standardizing construction elements is to provide a mechanism to design and construct economical building projects. This manual addresses project management, coordination, design, and execution of work.

This manual is primarily tailored to the standardization of building components and materials that have been proven to provide cost-effective buildings. Compliance with these requirements is generally mandatory for Department building projects and for other projects as directed by the Project Manager. Deviations from the requirements of this manual must be requested in writing to, and approved in writing by the Project

Manager.

Codes, regulations, standards, technical design memos issued by the FDOT, and project requirements are subject to change from time to time due to changes in state and local government authorities having jurisdiction over the work. Additionally, each project has unique requirements that may result in design changes to accommodate site conditions.

## 1.4 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

The ***Building Facilities Design Manual*** is published by the Department's Support Services Office.

Technical data, illustrations, and procedures have been extracted from publications of trade associations, professional societies, building product manufacturers, architectural firms and engineering firms. (***NOTE: Use the current edition of the documents adopted at the time of project implementation by the authority having jurisdiction.***)

Section 334.044(4), Florida Statutes (F.S.)  
Chapter 335.02, F.S.  
Chapter 255.251-255.2575, F.S.  
Chapter 255.30, F.S.  
Chapter 255.501, F.S.  
Chapter 553, F.S.  
American Concrete Institute  
American Institute of Architects – Architect's Handbook of Professional Practice  
American Society for Testing and Materials - ASTM Standards  
Brick Institute of America  
Florida Department of Management Services– Standards for Design of State  
Facilities  
Florida Building Code - Accessibility  
Florida Building Code – Building  
Florida Building Code – Gas  
Florida Building Code – Mechanical  
Florida Building Code – Plumbing  
Florida Building Code – Existing Building  
Florida Concrete Products Association  
FDOT – FDOT Design Manual (Topic No. 625-00-007)  
FDOT – Non-Technical Specifications  
FDOT – CADD Manual  
FFPC - Florida Fire Prevention Code  
National Concrete Masonry Association  
National Electrical Code  
National Fire Protection Association – NFPA 101 – Life Safety Code

## Portland Cement Association – Concrete Masonry Handbook

### 1.5 DOCUMENT ORGANIZATION AND USE

This document is organized into four chapters, plus appendices of supporting material:

Chapter 1 - Introduction

Chapter 2 – Project Organization

Chapter 3 – Design Guidelines

Chapter 4 – Facility Specific Guidelines

Appendices

The **Project Organization** chapter describes how projects are organized and the phases of building project delivery from planning through post-occupancy. The **Project Organization**, the **Design Guidelines** and the **Appendices** are intended to apply to all building projects. The **Facility-Specific Guidelines** apply only to specific types of facilities (i.e., rest areas, offices, weigh stations, etc.)

Users of this manual are encouraged to become familiar with those portions applicable to their individual project(s). Compliance with these guidelines is mandatory unless otherwise directed in writing by the Project Manager.

### 1.6 CONFLICTS WITH THESE GUIDELINES

Notify the Project Manager, in writing, of conflicts associated with the use of this manual that are contrary to normal design practice.

### 1.7 UPDATES

The Support Services Office will issue periodic revisions and updates to this manual. Revisions will be coordinated with various user groups and reviewed for consistency by the Forms and Procedures Office (in accordance with **Procedure No. 025-020-002, Standard Operating System**) prior to release. Use the version of the manual in effect at the time of Architectural/Engineering contract execution.

### 1.8 ABBREVIATIONS, DEFINITIONS AND STANDARDS

The following abbreviations, definitions and industry standards apply throughout this document.

#### 1.8.1 Abbreviations used in these Guidelines

ADA	Americans with Disabilities Act
A/E	Architectural/Engineering Consultant
AFF	Above Finish Floor
AIA	American Institute of Architects
AHPP	Architect's Handbook of Professional Practice, (AIA)
ACI	American Concrete Institute
AWG	American Wire Gauge
CADD	Computer-Aided Design & Drafting
CCC	Coastal Construction Code
CEI	Construction Engineering Inspection
CES	Cost Estimation System (FDOT)
CMU	Concrete Masonry Unit
CPA	Construction Project Administrator
CSI	Construction Specification Institute
DBE	Disadvantage Business Enterprise (federal)
DCE	District Construction Engineer
DMS	Department of Management Services
DEP	Department of Environmental Protection
EOO	FDOT Equal Opportunity Office
FACBC	Florida Accessibility Code for Building Construction
FBC	Florida Building Code
FCO	Fixed Capital Outlay
FDOT	Florida Department of Transportation
GPH	Gallons per Hour
GSF	Gross Square Feet
HVAC	Heating, Ventilating and Air Conditioning
LEED	Leadership in Energy and Environmental Design
LEED-AP	Leadership in Energy and Environmental Design - Accredited Professional
MBE	Minority Business Enterprise (state)
NSF	Net Square Feet
OIS	Office of Information Systems
PM	Project Manager
PVC	Poly-Vinyl Chloride
SF	Square Foot/Feet
SFM	State Fire Marshal's Office

## 1.8.2 Definitions

Definitions under this section are not necessarily complete; rather, they may be more explicitly defined within each Division, Section, or Article of the ***Technical Special Provisions***.

**Approved:** When used in conjunction with the consultant's action on the contractor's

submittals applications and requests shall be interpreted as "*Positive Action, No Exception Taken*" and shall be limited to the authority delegated to the consultant(s) acting within the scope of the duties assigned by the contract documents. Such positive action and/or approval by the consultant shall not relieve the contractor from responsibility to fulfill all the requirements as set forth and delineated in the contract documents, unless modified otherwise by supplemental agreements.

**Beneficial Occupancy:** Does not allow full occupancy as the ***Certificate of Occupancy*** has not been issued by the Building Department; however, the stage of completeness allows the Department to install equipment, systems and furnishings in preparation for conducting intended operations.

**Building:** That portion of the project within the footprint of a structure designed for human occupancy or use. Where project facilities, systems, or components cross this delineation, logical break points will be used:

- For a sidewalk leading to the 'building' -- the delineation would be where the sidewalk contacts the structure.
- For fencing or exterior walls -- the delineation would be where the fence or wall abuts the structure.
- For waste piping -- the delineation would be the cleanout.
- For water piping -- the delineation would be the main valve; etc.

“Building” *DOES* include:

- Building-related facilities and components, generally within 5 feet of the building perimeter and including the following:
- Roof overhangs, including projected awnings, porticos, canopies, etc.
- Pad-mounted electrical transformers adjacent to and servicing the structure.
- Appurtenant structures designed for materials storage or housing equipment (generators, lawn maintenance, etc.) or other similar uses.
- “Building” systems and components including structural, electrical, mechanical, etc.

“Building” *DOES NOT* include:

- A tender house on a moveable bridge -- this is part of the bridge structure.
- Water or wastewater treatment facilities -- these are site/civil/mechanical facilities.
- Landscape architecture -- these are site/civil materials.

- Site plans, parking lots, site utilities, stormwater, walkways and other site features.

**Conformity of Work with Standards:** Industry quality and performance standards shall apply to the construction performed, except where the contract documents specify more stringent requirements. Industry standards, as referenced in the contract documents, shall impart equal force and effect as if bound or copied directly into the contract documents. Referenced standards shall take precedence over other recognized industry standards.

**Conflicting Requirements:** Where two or more codes or standards establish conflicting requirements affecting the minimum standards for quality, quantity, and performance levels, the most stringent requirement shall govern.

**Contract Documents:** Consist of the: Special Provisions, Technical Special Provisions (specifications), Drawings, FDOT Design Manual, FDOT Standard Plans, Supplemental Specifications, and FDOT Standard Specifications, in that order.

**Designer of Record (DOR):** Either the Architect or the Engineer in charge of and responsible for each design discipline who has affixed their signature and professional seal to the appropriate construction document(s).

**Experienced:** In conjunction with "installer", refers to previous work history in successful performance of the work by the individual, company or corporate entity contracting for the work. The minimum previous experience requirement shall not be less than three (3) years of satisfactory performance of this specialized work and successfully completing five (5) previous projects of similar size, scope and design, incorporating similar materials and systems.

**Design Team:** The interoffice team of Department and consultant staff who participate in the design phase of the project.

**Furnish:** To supply all materials to be incorporated in the work under this contract including delivery to the project site, prearranged to accommodate off-loading, unpacking, assembly, cleaning, installation, and other on-site operations.

**Indicated:** Refers to graphic and/or narrative representations on the drawings, specifications sections, articles, paragraphs, schedules, and all similar requirements of the contract documents.

**Install:** Describes operations at the project site which include but are not limited to unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, adjusting and all other operations to complete and finish construction.



**Installer:** A sub-trade entity employed by the contractor to execute a specific portion of the work in a specialized field of expertise.

**Minimum:** Values expressed in quantities, quality, dimensions, volumes, gauges, thicknesses, or tolerances, shall constitute the minimum acceptable standards determining conformance to the prescribed target values or midpoint of the target range. The intent of the contract documents is that the materials and the workmanship will be in conformance with a standard of execution to realistically achieve the prescribed target values established for the project. Executed work not in accordance with the requirements of the contract documents that result in sub-standard, unsatisfactory products or systems, or unacceptable in-place work shall, under direction of the Project Manager, in coordination with the Architect, be removed, replaced, or corrected in accordance with an approved repair procedure, and all associated costs shall be paid by the contractor.

**Project Manager:** The Department staff member assigned to manage the project through construction. This person may change as the project progresses through its development phases (planning, design, and construction).

**Provide:** To furnish and install, complete and ready for use. Manufacturer's products, components, accessories comprising an assembly or system not specifically mentioned or shown in the contract documents, but conspicuously essential to produce a complete functioning installation or system, are considered part of the work and shall be provided and included in the work at no additional cost to the Department.

**Shown, Noted, Scheduled, Specified:** These terms are used to assist in locating the reference. No limitation on location is intended except as specifically noted.

**Testing Laboratories:** An independent entity (state or privately operated) engaged to perform specific inspections or tests, at the project site, the plant or point of origin and to forward the results of such inspections and tests to the CEI Project Engineer.

**Trade Association Standards:** Trade associations are nationally recognized by the construction industry, as the standards generating organization given authority to develop and maintain industry adopted standards. Trade association names and titles of general standards are frequently abbreviated. Wherever abbreviations are used in the contract documents they infer the recognized name of the trade association.

**Work:** In the context of this manual, means the project assignments appropriate to the project phase. This is intended as an inclusive term to incorporate all activities needed to fulfill project requirements.

### 1.8.3 Trade Associations

The following trade association acronyms, when followed by a number or letter

designation, or combination thereof, shall be understood to designate a procedure, test method, code or recommendation of the particular authority or organization so shown or referenced:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Association
ADC	Air Diffusion Council
AFPA	American Forest Product Association
AGCA	Associated General Contractors of America
AHA	American Hardware Association
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	Acoustical Society of America
ASC	Adhesive and Sealant Council
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating And Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWPB	American Wood Preservers' Bureau
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of America
CISPI	Cast Iron Soil Pipe Institute

CTI	Ceramic Tile Institute of America
DHI	Door and Hardware Institute
EIA	Electronic Industries Association
FCCHR	Foundation for Cross Connection Control and Hydraulic Research
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering and Research
IEC	International Electrotechnical Commission
IES	Illuminating Engineering Society
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
HI	Hydraulic Institute
MBMA	Metal Building Manufacturers Association
MISS	Manufacturers Standardization Society of Valve and Fittings Industry
NAAMM	National Association of Architectural Metal Manufacturers
NAPHCC	National Association of Plumbing - Heating - Cooling Contractors
NCMA	National Concrete Masonry Association
NDS	National Design Specification for Wood Construction
NEC	National Electrical Code (by NFPA)
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPA	National Particleboard Association
NWWDA	National Wood Window and Door Association (Formerly NWMA)
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
SDI	Steel Deck Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SJL	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TPI	Truss Plate Institute
UL	Underwriters Laboratories
USGBC	United States Green Building Council

#### **1.8.4 Federal Standards & Specifications**

The following acronyms or abbreviations referenced in the contract documents indicate names of standards or specifications producing agencies of the federal government:

COE	Corps of Engineers
DOT	Department of Transportation

FHWA	Federal Highway Administration
FS	Federal Specification
MIL	Military Standardization Documents
DOJ	Department of Justice

## **1.9 FORMS**

Contract Completion Report (FDOT Form 575-060-07; see Chapter 2, Exhibit C)

**SAMPLE** - Schedule of Contract Values (see Chapter 2, Exhibit D)

**SAMPLE** - Rest Area Computation Form (see Appendix A.1)

## Chapter 2

# PROJECT ORGANIZATION

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# PROJECT ORGANIZATION

## 2.1 CODES, RULES, and REGULATIONS

### 2.1.1 General

**Certification:** The Consultant shall provide with each design review submittal a listing of codes, rules, regulations, and standards that are applicable to the project.

### 2.1.2 Applicable Codes, Rules, Regulations, and Standards

The following agencies have statutory authority over the design and construction of publicly owned and leased buildings in Florida. Each has specific requirements with which the Consultant shall comply.

- **Building Codes:** The Local Building Official has jurisdiction over building code issues. The Local Building Official will issue the Building Permit and conduct building inspections during the building construction.
- **Energy, Life-Cycle Cost Analysis (LCCA) of Components and Systems:** The Local Building Official has jurisdiction over energy code issues. Designs shall satisfy requirements of the *Florida Energy Efficiency Code for Building Construction*. Submit calculations and forms with Plans Review submittals and Building Permit Applications.
- **Fire Codes:** The State Fire Marshal (SFM) has jurisdiction over fire and life safety issues. "Plans Review and Permitting Requirements", *Appendix A.3*, describes the requirements of the SFM.
- **NOTE:** The Consultant shall work closely with the local Fire Department serving the project area, and accommodate their firefighting methods, equipment, connections, etc.
- **Environmental Permits:** The Department of Environmental Protection (DEP), the U.S. Army Corps of Engineers and regional Water Management Districts have authority over certain environmental issues. The Design Consultant is responsible for obtaining current rules and regulations, as well as appropriate permit applications that may pertain to and affect the project.
- **Zoning and Comprehensive Planning:** The Department will develop property in

accordance with local and state comprehensive development plans, zoning regulations and codes, and obtain review and approvals, including variances as required. The Consultant shall coordinate these issues to ensure the project meets local requirements.

- **Well and Storm Water Management:** Water Management Districts and local health departments have jurisdiction over certain environmental issues. The Design Consultant is responsible for obtaining current rules and regulations, as well as proper permit applications that may pertain to and affect the project.
- **Use and Development Permits:** Certain use and development permits are required by local, state, and/or federal agencies prior to commencement of construction. These permits, covering items such as sewage, water, air quality, and other environmental issues, etc., shall be obtained prior to release of documents for bidding. It is the Consultants responsibility to identify, apply for, and secure such permits on behalf of the Department. (The Contractor obtains the Building Permit from the Local Building Official.)
- **Energy Conservation and Sustainable Buildings:** Operation and maintenance expenditures associated with energy equipment and with energy consumed in state-financed and leased buildings represent a significant cost over the life of a building. Significant efforts are needed to build energy-efficient state-owned buildings that meet environmental standards and provide energy savings over the life of the building structure. It is essential that the costs of operation and maintenance for energy-using equipment and sustainable materials be included in all design proposals for state-owned buildings. It is the policy of the Department that designs for new buildings, and renovations and retrofits to existing buildings and facilities, will be constructed, to comply with the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) rating system, the Green Building Initiative's Green Globes rating system, the Florida Green Building Coalition standards, or a nationally recognized, high-performance green building rating system as approved by the Department of Management Services. It is also the policy of the Department to operate and maintain Department-owned and leased facilities in a manner which will minimize energy in accordance with Florida's State Energy Management Plan (SEMP).

### 2.1.3 Approvals

It is the responsibility of the Consultant to assure that the development of the project is fully coordinated with the appropriate state and local authorities having jurisdiction and that all approvals may be readily obtained. It is the responsibility of the Consultant to

obtain approvals from the authorities having jurisdiction at the appropriate phase of the project.

## 2.2 PERMITS AND INSPECTIONS

The Consultant is responsible for submitting plans to the State Fire Marshal, paying applicable review fees, and obtaining approved drawings. The Consultant is also responsible for submitting, acquiring permits, and paying fees for environmental, well and storm water, and use and development permits. The Consultant shall include these fees in their fee proposal.

The successful building Contractor is responsible for applying to the Local Building Official for all Building Permits for the project and for paying for building permit and inspection fees. The Contractor shall include these fees in their bid price.

### 2.2.1 Local Building Officials

The Local Building Official is the building permitting and inspection agency for State building construction projects. The Local Building Official reviews the construction plans and specifications and inspects all phases of construction for conformance to local, state and national code compliance. Inspection by and approval of the Local Building Official is intended to ensure that construction complies with applicable building codes, but does not relieve the Consultant, Contractor or the Department from complying with the building codes, standards and regulations.

The Local Building Official, in consultation with the State Fire Marshal's Office, will issue a **Certificate of Occupancy (CO)** upon final inspection and approval of the construction. Local Building Official submittal requirements may vary. The A/E Consultant is responsible for complying with the submittal requirements of the appropriate code enforcement authority.

### 2.2.2 State Fire Marshal

The Department of Financial Services, State Fire Marshal (SFM) is the review and inspection agency for State building construction projects for conformance to the **Florida Fire Prevention Code** and other fire safety standards prior to construction or change of occupancy. SFM may inspect state owned and state leased spaces as necessary during construction, renovation, or alteration, or prior to occupancy to ascertain compliance with the uniform fire safety standards. The Local Building Official will not issue a **CO** until the SFM inspects and approves the construction work.



See **Appendix A.3** for SFM submittal requirements, fee schedule and submittal checklist.

### **2.2.3 Department Project Manager**

The Department Project Manager functions as the responsible party for Department project design and construction. The project manager ensures Consultant compliance with the Consultant Contract in the execution of the work.

The Department is the final approving authority for its building construction projects statewide.

## **2.3 STANDARD DOCUMENT REQUIREMENTS**

### **2.3.1 Architectural Standards for CADD software and plans preparations.**

See Chapter 6, CADD Standards in the CADD Manual for CADD software and plans preparation standards.

### **2.3.2 Technical Special Provisions Document Size**

All technical special provisions, specifications, and special provisions shall be printed in an 8 1/2" x 11" vertical (portrait) format. Any oversize sheets shall be folded to fit within the specified format.

## **2.4 PRE-DESIGN SERVICES - Phase I**

### **2.4.1 General**

Pre-design services may, at the Department's option, be required. In this phase, the Consultant shall consult with the Department to determine services necessary to establish: 1) the facility program and 2) the budget and time constraints for the project.

### **2.4.2 Pre-design Services**

- **Project Administration:** consisting of initial consultation, project research, conferences, progress reports, etc.

- **Agency Consulting/Review/Approval:** consisting of code research, reporting, appearances on behalf of the Department at various project meetings, etc.
- **Owner Data Coordination:** consisting of review of existing drawings, equipment list, and other documents.
- **Master Planning** for multiple facilities within a site.
- **Facility Programming:** including site requirements, special equipment and systems, space relationships, etc.
- **Existing Facilities Surveys:** including photos, field measurements, analysis of existing structural, mechanical, electrical, and plumbing systems, etc.
- **Project Development Scheduling:** consisting of establishing schedules for documentation, design, decision-making based on consultant services and owner responsibilities.
- **Presentations** of Pre-design analysis and recommendations to the Department.

## 2.5 SCHEMATIC DESIGN - Phase II

### 2.5.1 General

In the Schematic Design Phase, the Consultant shall prepare ***Site Analysis and Schematic Design Documents*** consisting of drawings and other documents illustrating the general scope, scale, and relationship of project components for approval by the Department. Designs shall be conceptual in character based on: 1) program requirements provided by the Department and reviewed and agreed upon by the Consultant or 2) program requirements developed jointly by the Consultant and the Department.

### 2.5.2 Schematic Design

- A narrative description, analysis, and sketches of the design and construction concepts for site, architectural, structural, mechanical (HVAC and plumbing), fire protection, electrical, security, communications, and electronic systems.
- A plan showing how the project fits into the master plan for facility development.

- Site plan showing existing and proposed roads, pedestrian and vehicular circulation, utility systems, landscape architecture and special site features. All existing and proposed R/W required for the project shall be shown.
- Studies relative to the site: its topography, ecology, botanical and other relevant features contributing to the solution or requiring alterations of the existing site.
- A description of land use, zoning, or other factors restricting development, as well as recommendations to resolve them.
- Results of fire flow test (as appropriate) run to determine if water service improvements are necessary to handle fire protection requirements.
- Determination of building occupancy used to establish structural load requirements, plumbing fixture counts, etc.
- Floor plans, building elevations, sections, and sketches necessary to adequately present the design concept.
- If the project is an addition, or otherwise related to existing buildings on the site, the plans shall show them and their general arrangement and relationships.
- Mechanical, electrical, and computerized building management systems, and equipment, presented in suitable detail and accompanied by a schematic format to enable an energy design submission of an energy analysis in compliance with the **Florida Building Code – Energy Conservation**.
- Specific layouts of complex areas such as mechanical rooms, computer rooms, conference rooms, operational areas, ceiling layouts, etc.
- Description of the features and provisions provided in the facility for use by persons with disabilities in compliance with the **ADA** and the **Florida Building Code - Accessibility**.
- Details sufficient to describe the work.
- Description of the provisions to be taken to satisfy acoustic requirements.
- Outline specifications, using CSI/AIA format.
- Provide a review of codes that impact the project, report specific problems, and

recommended solutions.

The Project Manager shall approve the above elements of Schematic Design before proceeding with Design Development.

## **2.6 DESIGN DEVELOPMENT - Phase III**

### **2.6.1 General**

Upon approval of the Schematic Design and Site Analysis Phases, and authorization by the Department, the Consultant shall proceed with the Design Development documents.

The Consultant shall, with the Department's concurrence, schedule and conduct necessary conferences and meetings with the Department and other affected parties, to ensure that the project is developed in a coordinated manner. At these occasions, the Consultant shall present and explain the project in adequate detail, responding to all questions and comments. The Consultant shall compile and provide minutes of all project meetings to all participants.

The Consultant's Design Development submission shall be of sufficient detail to fully explain scope of the project in all its particulars to be readily understandable. The information consisting of drawings, cost estimates, specifications, design criteria, and other data presented shall be coordinated and complementary.

If the Design Development documents are acceptable, the Department project manager may authorize the Consultant to proceed with the next phase.

### **2.6.2 Design Development**

The Design Development documents shall include, but not be limited to the following:

- **Site:** Plans and information to include location, property and topographical surveys, subsurface borings, ecological and botanical surveys, location and relationship of permanent development features, environmental controls, buildings, roads, walks, paths, parking areas, utilities services characteristics and distribution, utility operation costs, emergency power systems, fire protection system, sewage management system, storm water management, communications, structural system, security system, irrigation system, landscaping, fencing, and traffic control plan during construction.

- **Building(s):** Plans shall include a plan of each floor, exterior and interior elevations, building sections, wall sections and details, schedules for finishes and equipment, type and class of construction, large scale drawings of special conditions, reflected ceiling plans, door and window schedules, safety equipment, description of materials, color schemes and schedules, and other information necessary to explain the design.
- **Structural:** Indicate foundation types and conditions, required and maximum foundation bearing capacity(s); floor plans showing framing plan, column sizes, structural walls, and special conditions; structural building sections showing size and relationships between columns, beams, and other structural components; structural details and schedules; limiting load capacities; design loads for wind, seismic, live and dead loading; reinforcing bar schedule (where applicable), and other data required to fully explain the structural system.
- **Heating, Ventilation, Air Conditioning (HVAC):** Provide floor plans showing equipment and duct work horizontal layout; building sections showing vertical location and relationship of equipment and duct work with building structure; provide design criteria for all systems; indicate type of control system; delineate control zones; describe all aspects of the various components of all systems; design calculations.
- **Plumbing:** Provide design and information for drinking water distribution and wastewater collection systems; provide preliminary layout of systems including elevations and line sizes; plans showing horizontal and vertical services with sizes; fixtures and equipment; water pressure and volume requirements; additional details and information necessary to fully describe the complete systems.
- **Electrical:** indicate source of service to project site; service entrance, transformer location(s), phase and voltage; provide panel schedules and schematics showing lighting, power, equipment, special equipment; provide total connected load calculations with demand factors; location of all electrical panels and switch gear; location of all switches, lighting fixtures, and receptacles; show all circuits with number, size, and type of conductors; provide for protective devices, and emergency systems; provide for low voltage communication system, and other electrical system requirements.
- **Communications, Electronics, Instrumentation:** Provide systems design schematics and information for proposed intercom, telephone, public address, television, radio communications, computers, electronic communications, protective alarm, emergency response, and their respective antenna structures

and locations; any other data or systems called for in the program. Indicate equipment and instrumentation arrangement and space requirements including racks, consoles, and mountings; wiring and cable requirements; power and lighting requirements including emergency and standby requirements; air conditioning, humidity, and dust control requirements; bonding and grounding requirements.

- **Fire Protection:** Provide plans and information showing horizontal and vertical layouts service hydrants, stand pipes and test valves; risers and hose cabinets; sprinkler system and type (wet or dry), including water pressure and volume, special systems (foam, carbon dioxide, etc.); hazard rating and insurance rating; other necessary data. Show results of fire flow tests.
- **Special Equipment:** Show location and type of special equipment.
- **Security Systems:** Show key elements of system - monitoring, access, and control equipment, etc.

Provide data to explain the design concept and Design Development documents.

### 2.6.3 Design Development Checklist

## 2.7 CONSTRUCTION DOCUMENTS - Phase IV

### 2.7.1 General

Subsequent to approval of the Design Development documents and upon authorization by the Department, the Consultant shall prepare complete **Contract Documents** sufficient for construction purposes. The Consultant shall review in general with the Department all codes, permits, and other requirements, prior to preparation of construction documents.

The Consultant shall submit progress documents, at 30%, 60%, and 90% phase per the consultant contract and the project schedule. Upon completion of **Contract Documents**, the Consultant shall submit sets of documents to the Department in a quantity as required by the consultant contract or as directed by the Project Manager to allow simultaneous review by all reviewing parties (agencies).

Upon satisfactory written response to all review comments and appropriate revision of the contract documents, the Department will determine the acceptability of the contract

documents and advise the Consultant.

## 2.7.2 Construction Documents

**Construction Documents** shall be a further development of the design development documents described above.

Contents of the **Construction Documents** shall be in accordance with the requirements of the consultant services contract. Refer to **Exhibits A and B** for information to be included on the drawing cover sheet(s).

The Consultant shall ensure the drawings and specifications are final and complete with all elements thoroughly checked and coordinated, with no conflicts between architectural, structural, mechanical, plumbing, electrical, and other portions of the work. The documents shall be prepared so that change orders during construction will be minimized due to errors, omissions, conflicts, or inadequacies between the various component disciplines, or with the specifications. The Consultant is liable for additional project costs incurred by the Department due to errors or omissions in construction documents.

When applicable, design data shall be shown on the drawings, such as roof and floor loads, wind loads; working stresses for concrete, steel, wood, and concrete masonry; allowable soil bearing pressures, bearing values for each foundation type.

## 2.7.3 Construction Documents Checklist

## 2.8 BID PHASE - Phase V

Release for Printing: Upon completion of reviews, revisions, and receipt of approvals from the Department, the Local Building Official and SFM, and authorization from the Department, the Consultant shall print and properly sign and seal the **Construction Documents** per the requirements above.

The Consultant shall assist the Department in preparing or prepare the **Construction Documents** for bidding per Consultant Contract requirements.

The Consultant shall respond to Contractor inquiries concerning the technical requirements of the **Construction Documents**. The Consultant shall also prepare letters of clarification and/or addenda, with the Department's approval and authorization. The Department will issue these documents.

## 2.8.1 Pre - Bid Conference

The Consultant shall attend a Pre-Bid Conference administered by the Department. The Consultant shall be prepared to answer questions from prospective bidders who have reviewed the **Construction Documents**. The Consultant shall take notes of all questions asked and responses given in the meeting. The Consultant, based on these notes, shall prepare a formal written response to be distributed by the Department to all prospective bidders.

## 2.8.2 Construction Contract Award

The Department will award the Construction Contract to the low responsive bidder. The Consultant shall assist the Department in Construction Contract Award per the Consultant Contract requirements.

## 2.9 CONSTRUCTION ADMINISTRATION - Phase VI

### 2.9.1 Notice to Proceed

The Department's Project Manager will issue the **Notice to Proceed**, authorizing the Contractor to proceed with the construction of the project.

### 2.9.2 Pre - Construction Conference

Prior to commencement of construction, the Department will conduct a Pre-construction conference with the Consultant, CEI, Contractor, Subcontractors, and other interested parties. The purpose of this conference is:

- To review requirements and responsibilities of the various parties involved to achieve efficient progress handling of the construction contract.
- To instruct to all parties concerning required and standard procedures, required submissions during construction, and regulations applicable to the project.
- To review the scope of the project and project problem-solving procedures.

### 2.9.3 Partnering

On many projects, the Department may determine that project "Partnering" will benefit all parties. The intent of Partnering is to mold groups of unorganized, sometimes



uninterested individuals into organized, interested teams whose members share a common purpose.

This requires developing a team concept in the minds and actions of the Department and the contracting industry. It is the desire of the department that partnering will become the way of conducting business and that partnering workshops are only the first steps.

Partnering workshops are held for bringing together those key people who are involved in the project. Representatives usually include: the design consultant, the Department project manager, construction superintendent, safety officer, EOO officer and major subcontractors, suppliers and DBE or MBE subcontractors.

The partnering philosophy is founded on a combination of team building with all decision makers and team resolution of specific problems. Partnering workshops allow for expedient team building and effective problem solving or process resolution. Team spirit, relationships and cooperative attitude developed during partnering workshops establish a solid foundation for very successful and satisfying projects. On a partnering project, the team works to achieve mutual goals and objectives. Most importantly a partnering team takes a pro-active approach to problem solving in a timely and effective manner.

#### **2.9.4 Periodic Construction Conferences**

The Department Project Manager, Construction Engineer, or third-party Construction Engineering Inspector (CEI) will schedule construction conferences at a frequency acceptable to the Department to resolve periodic problems, to ensure the project remains on schedule and is progressing in a satisfactory manner. Representatives of the Department, the Contractor, major subcontractors, and other affected parties will attend these meetings. The Consultant may be required to attend these conferences as determined by the Department's project manager, and/or the Department's Construction Engineer.

These meetings should review the project. Certain essential information will be sought and reported in each meeting, including, but not limited to:

- Construction progress as related to the schedule
- Pay requests
- Supplemental Agreements
- Evaluation of the work
- Special and routine problems
- Remedial actions to previous problems

The Department's standard construction meeting agenda form will be used. The Project Manager will determine and identify the specific requirements for the conferences.

### **2.9.5 Shop Drawings, Material and Equipment Submittals**

The Consultant shall review shop drawings, catalog data, finish hardware, equipment, and material sample submittals, etc., which are required to be submitted by the Contractor in a timely manner as described in the Consultant Contract. The Consultant shall review these submittals to determine conformance with the contract documents and appropriateness of products and systems.

### **2.9.6 Supplemental Documents**

**General:** The Consultant shall prepare supplemental drawings, technical special provisions, and/or letters of interpretation clarifying the contract documents as needed. Whenever such documents are prepared, the Consultant shall avoid any adverse impact to the construction cost or schedule. The Consultant shall bring any change impacting the contract cost or schedule to the Project Manager's attention.

**Issuance and Transmittal:** Whenever it is necessary to issue documents that modify and/or clarify the contract documents, the Consultant will provide them to the Department. The Department will then distribute the supplemental documents to the Contractor and other appropriate parties. The Consultant will not issue any supplemental documents directly to the Contractor or any other party unless specifically authorized by the Project Manager.

### **2.9.7 Substantial Completion**

**General:** The Consultant or CEI shall conduct a Substantial Completion Inspection upon notification by the Contractor that the project is ready for such. The Contractor will coordinate with all parties involved in determining the time of the substantial completion inspection. The Substantial Completion Inspection shall not be scheduled until all building components and systems are completed and operational. The Contractor will be required to demonstrate that all building systems are operational during the inspection.

**Requirements:** If, during the Substantial Inspection, the Consultant determines the work is substantially complete, the Consultant or CEI will provide the Contractor a "Punch List" of items of work that requires further attention to complete. The Consultant or CEI will prepare a ***Certificate of Substantial Completion*** and will issue this ***Certificate*** and the ***Punch List*** to the Contractor.

The **Punch List** shall include all items found to be incomplete or unsatisfactory at the time of the Substantial Completion Inspection. The Contractor must correct all **Punch List** deficiencies within 30 days of Substantial Completion.

## 2.9.8 Final Acceptance and Contract Completion

**General:** Prior to the Final Inspection, the CEI and Contractor shall review the Punch List to determine that all deficient items have been corrected. If so, then the Final Inspection will be scheduled.

**Final Inspection:** Upon completion of construction and correction of all Punch List items, but no later than 30 days after the Substantial Completion Inspection, the Contractor shall notify the Consultant or CEI and the Project Manager that the project is ready for Final Inspection. The Consultant or CEI will then schedule the Final Inspection, in coordination with the Project Manager and the Consultant or CEI. The Final Inspection shall be conducted by the Consultant or CEI, and the Project Manager within 10 days of the Contractor's notification.

Following the Final Inspection, the Consultant or CEI will provide the Contractor a list of any additional items for corrective action and conduct an additional inspection, if necessary, to ensure that the work has been completed.

**Project Closeout:** If the project is deemed complete at the Final Inspection, the Consultant or CEI will prepare the **Certificate of Contract Completion (Exhibit C)** and distribute it to the Contractor to complete all copies and return them to the Consultant or CEI. The total contract amount stated in the **Certificate** shall include all Supplemental Agreements.

**Acceptance:** Department acceptance and occupancy of the project will not occur until the project is declared to be complete by the Consultant, CEI and Department, and the **Certificate(s) of Occupancy** has been received from the Local Building Official and SFM, and all required documentation (i.e., equipment operation and maintenance manual, manufacturer's warranties, roof warranties/bonds, as-built documents, etc.) has been delivered by the Contractor to the Department.

## 2.10 POST CONSTRUCTION SERVICES: Phase VII

### 2.10.1 General:

**As-Built/Record Drawings:** The Consultant may assist the Department in obtaining

information from the Contractor and other parties; certify information on all changes made during construction from the **Contract Documents** and actual locations of all concealed work installed during construction. The Consultant or CEI may review the accuracy of the information submitted by the Contractor; prepare record drawings reflecting all significant changes in the work made during construction; and transmit record drawings and all other relevant project data to the Project Manager.

**Warranties and Guarantees:** The Consultant may participate in inspections prior to expiration of the warranty and guarantee period to determine adequacy of material, systems, and equipment performance; document defects and recommend to the Department actions concerning inadequate performance of building components, systems, and/or equipment.

**Operation and Maintenance:** The consultant may coordinate instructions on operation and maintenance of equipment with supplier/manufacturer; review all operation and maintenance manuals.

**Start-up Assistance:** The Consultant may participate-in site observations, troubleshooting, and assistance in the operation of building systems during initial occupancy; assist in coordinating remedial work by the Contractor(s) after completion.


## Exhibit A Sample Cover Sheet Layout

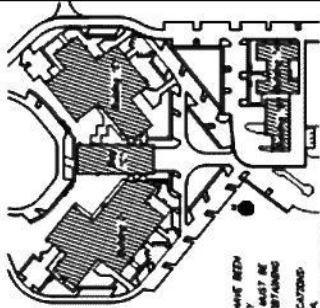
**STATE OF FLORIDA**  
**DEPARTMENT OF TRANSPORTATION**  
**PLANS OF PROPOSED**

**STAINLESS STEEL PANEL INSTALLATION  
 TO BUILDING D ROOM D144**

**AT**  
**STATE MATERIALS OFFICE**  
**GAINESVILLE, FLORIDA**  
**FM # 418220-1-52-01**

**PROJECT LOCATION**





**PROJECT LOCATION**

**INDEX OF PLANS**

SHEET NO.	SHEET DESCRIPTION
1	Cover Sheet, Location Map
2	Reference Plan Building D
3	Room D144 Floor Plan and Specifications

**Summary of Work**

D144 1st/2nd Floor metal stainless steel finisher partition ceiling and wall and stainless steel door installation.

**GENERAL NOTES**

1. All dimensions are given unless otherwise indicated.
2. All work shall be in strict accordance with all State and Local Codes which apply to this project.
3. The Contractor shall be responsible for obtaining all necessary permits and approvals from the appropriate authorities.
4. The Contractor shall be responsible for obtaining all necessary permits and approvals from the appropriate authorities.
5. All work shall be in strict accordance with all State and Local Codes which apply to this project.
6. The Contractor shall be responsible for obtaining all necessary permits and approvals from the appropriate authorities.
7. Cutting and patching shall be required as necessary for each replacement.
8. The State Materials Office required hours of operation are 7:00am to 5:00pm Monday thru Friday. Provide 30 days notice prior to starting work.
9. All work shall be in strict accordance with all State and Local Codes which apply to this project.
10. Other conditions and work instructions are listed on these specifications sheet.

**REVISIONS**

NO.	DATE	DESCRIPTION
1		
2		

**GENERAL NOTES**

These Plans have been prepared and checked in accordance with the following schedule listing:

Florida Building Code (FBC)-10	2000 Edition
Florida Building Code (FBC)-15	2000 Edition
Florida Building Code (FBC)-20	2000 Edition
Florida Building Code (FBC)-25	2000 Edition
Florida Building Code (FBC)-30	2000 Edition
Florida Building Code (FBC)-35	2000 Edition
Florida Building Code (FBC)-40	2000 Edition
Florida Building Code (FBC)-45	2000 Edition
Florida Building Code (FBC)-50	2000 Edition
Florida Building Code (FBC)-55	2000 Edition
Florida Building Code (FBC)-60	2000 Edition
Florida Building Code (FBC)-65	2000 Edition
Florida Building Code (FBC)-70	2000 Edition
Florida Building Code (FBC)-75	2000 Edition
Florida Building Code (FBC)-80	2000 Edition
Florida Building Code (FBC)-85	2000 Edition
Florida Building Code (FBC)-90	2000 Edition
Florida Building Code (FBC)-95	2000 Edition
Florida Building Code (FBC)-100	2000 Edition

**ARCHITECT'S RECORD**


Mark A. Waddy, P.E.  
 Florida Dept. of Transportation  
 FL Lic. #00000000

**OWNER'S REPRESENTATIVE:**  
 Steve Perry  
 Florida Department of Transportation  
 State Materials Office  
 8007 N.E. 28th Avenue  
 Gainesville, FL 32609

## Exhibit B Sample Cover Sheet Details

Drawing Index	Project Name												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">SHEET NO.</th> <th style="text-align: left; border-bottom: 1px solid black;">SHEET DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Cover Sheet, Location Map and Index of Sheets</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Reference Plan Building D</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Room D144 Floor Plan and Specifications</td> </tr> </tbody> </table>	SHEET NO.	SHEET DESCRIPTION	1	Cover Sheet, Location Map and Index of Sheets	2	Reference Plan Building D	3	Room D144 Floor Plan and Specifications	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"> <b>STATE OF FLORIDA</b>  <b>DEPARTMENT OF TRANSPORTATION</b>  <hr/> <b>PLANS OF PROPOSED</b>  <hr/> <b>STAINLESS STEEL PANEL</b>  <b>INSTALLATION TO</b>  <b>BUILDING D ROOM D144</b>  <b>AT</b>  <b>STATE MATERIALS OFFICE</b>  <b>GAINESVILLE, FLORIDA</b>  <b>FM# 418220-1-52-01</b> </td> </tr> </table>	<b>STATE OF FLORIDA</b> <b>DEPARTMENT OF TRANSPORTATION</b> <hr/> <b>PLANS OF PROPOSED</b> <hr/> <b>STAINLESS STEEL PANEL</b> <b>INSTALLATION TO</b> <b>BUILDING D ROOM D144</b> <b>AT</b> <b>STATE MATERIALS OFFICE</b> <b>GAINESVILLE, FLORIDA</b> <b>FM# 418220-1-52-01</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"> <b>ARCHITECT OF RECORD</b>                      Mark A. Weigly R.A.                      Florida Department of Transportation                      FL Lic. #AR93024                 </td> <td style="padding: 5px; vertical-align: top;"> <b>OWNER'S REPRESENTATIVE:</b>                      John Petty                      Florida Department of Transportation                      State Materials Office                      5007 N.E. 39th Avenue                      Gainesville, FL 32609                 </td> </tr> </table> <p style="text-align: center; margin-top: 10px;">Project Responsible Parties</p>	<b>ARCHITECT OF RECORD</b> Mark A. Weigly R.A. Florida Department of Transportation FL Lic. #AR93024	<b>OWNER'S REPRESENTATIVE:</b> John Petty Florida Department of Transportation State Materials Office 5007 N.E. 39th Avenue Gainesville, FL 32609
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Florida Fire Prevention Code (FFPC) 2004 Edition													
National Electrical Code (NEC) 2002 Edition													

## Exhibit C Certificate of Contract Completion

<small>STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION</small> <b>CONTRACT COMPLETION REPORT</b>		<small>FORM 575-060-C RIGHT OF WAY 05/1</small>
		Item/Segment No.: _____
		Managing District: _____
		F.A.P. No.: _____
		State Road No.: _____
		County: _____
		Contract No.: _____
		Parcel(s) No.: _____
		_____
		_____
Contractor: _____		
Address: _____		
_____		
Contract Completion Date: _____		
<b>CONTRACTORS AFFIDAVIT</b>		
<p>I CERTIFY that the work under the above name contract which began on _____, and all amendments thereto has been satisfactorily completed; that all materials, labor and other charges against the project have been paid in accordance with the terms of the contract; that no liens have been attached against the project; that no suits are pending by reason of work on the project under the contract; that all workmen's compensation claims have been settled; and that no public liability claims are pending except as follows: _____</p>		
_____		
CONTRACTOR		
_____		
By: _____		
Sworn to and subscribe before me this _____ day of _____, _____ by _____		
_____ (name of affiant). He/She is personally known to me or has _____ (type of identification)		
as identification.		
_____		
(Notary's printed name      My commission expires		
_____		
(TO BE COMPLETED BY FDOT OFFICE)		
Inspection Date: _____		
Remarks: _____		
_____		
_____		
_____		
_____ Date		Property Management Administrator Office of Right of Way
		<small>RECYCLED PAPER</small> 

## Exhibit D Sample Schedule of Contract Values

### SCHEDULE OF CONTRACT VALUES

Contractor \_\_\_\_\_ State Job No. \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_  
 Job Name \_\_\_\_\_ Date \_\_\_\_\_

ITEM DESCRIPTION	UNIT	QUANTITY	MATERIAL	LABOR	CONTRACT VALUE	AMOUNT PAID	AMOUNT REQUESTED	TOTAL COMPLETE TO DATE	BALANCE TO COMPLETE
GENERAL CONDITIONS	MO								
BOND & INSURANCE	EA								
MOBILIZATION & LAYOUT	LS								
SITE WORK - site demolition	SF								
- clearing & grubbing	CY								
- grading	CY								
- landscaping	LS								
CONCRETE - foundations/slabs	CY								
- sidewalks, curb & gutter	CY								
- reinforcing	TN								
MASONRY - concrete masonry units	SF								
- brick masonry units	SF								
- reinforcing	LS								
METALS - structural metals	TN								
- architectural metals	LS								
- fasteners, misc.	LS								
WOOD & PLASTICS - wood framing	BF								
- wood sheathing	SF								
- finish woodwork	LS								
THERMAL & MOISTURE PROT.									
- insulation	SF								
- roofing	SQ								
- damp/moisture proofing	SF								
DOORS & WINDOWS - doors	EA								
- windows	EA								



## Exhibit D (cont.) Sample Schedule of Contract Values

### SCHEDULE OF CONTRACT VALUES

State Job No. \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_  
 Job Name \_\_\_\_\_ Date \_\_\_\_\_

Contractor \_\_\_\_\_

- skylights, etc.	EA									
FINISHES	SF									
- painting/coatings	SF									
- floor coverings	SF									
- wall coverings	SF									
SPECIALTIES	LS									
EQUIPMENT	EA									
SPECIAL CONSTRUCTION	LS									
CONVEYING SYSTEMS - elevators	EA									
- horizontal conveyors	EA									
MECHANICAL - plumbing piping, etc.	LS									
- plumbing fixtures & eq.	LS									
- HVAC equipment	LS									
- HVAC distribution sys.	LS									
- fire protection systems	LS									
ELECTRICAL - wiring, cabling, etc.	LS									
- electrical conduits, etc.	LS									
- electrical equipment	LS									
- fire protection systems	LS									

NOTE: SCHEDULE OF CONTRACT VALUES shall be submitted within 30 days of Notice-to-Proceed and updated and submitted with each progress payment unless otherwise stated in contract documents.

## Chapter 3

# GENERAL DESIGN GUIDELINES

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## CHAPTER 3

### GENERAL DESIGN GUIDELINES

#### 3.1 GENERAL

This chapter describes design guidelines for the project manager and the consultant to use while developing the building project design. The building systems, components and items described are minimum requirements. These **Guidelines** have been developed over a period of years of satisfactory performance on state building projects. They are intended to aid the consultant by establishing design criteria, quality levels, and limiting the selection of systems and materials to those that have a proven record. These **Guidelines** are not intended to inhibit the use of innovative materials and techniques where those can be proven to provide equal or better performance than the described items.

The **Design Guidelines** are separated into 48 Divisions recognized by the Design and Construction Industry. This manual will review in general terms, those divisions and their respective subsections that are applicable to the design and construction of FDOT buildings. Divisions are not used for areas outside the building. For areas outside the building use the *FDOT Standard Plans for Road and Bridge Construction (Topic No. 625-010-003)*. These **Guidelines** will not address all 48 divisions and subsections individually. They will focus on key issues and the interdependency and relationship of the divisions used to develop Department projects.

#### 3.2 CODES AND STANDARDS

**Appendix A.2** contains a list of codes, standards and other regulations adopted for use in Florida. Consult with authorities having jurisdiction for applicable codes and inform the Project Manager about any changes from the list, for his/her information only.

Review with the Project Manager what submittals are required by the Contract for interim reviews, letting documents, and final close out of the project, i.e., CADD "as-builds," CD ROMs, bound maintenance manuals, etc. Refer to the **FDOT Design Manual, Topic No.625-000-002** for general Department design criteria and process information.

Utilize the room numbering system provided by the Project Manager. Provide fire extinguishers as required by code. Locate on plans.

### 3.3 DESIGN INFORMATION

Space Planning / Facility Programming: Consult with the Project Manager and the **Facility-Specific Guidelines, Chapter 4**, to determine the space and organizational requirements of the project. Develop the facility program to the level appropriate to the scope of services.

### 3.4 SITE DESIGN CONSIDERATIONS

#### 3.4.1 Paving and Surfaces

Provide maneuvering room for trucks and service vehicles which require access to the building loading, recycling and dumpster areas.

Provide concrete paving for loading docks and dumpster areas.

Pavement markings for parking spaces shall be 4" minimum width. Marking color shall be white for standard parking spaces with blue added to designate accessible spaces. Access aisles for accessible parking spaces shall be white. Refer to the **Standard Plans for Road and Bridge Construction (Topic No. 625-010-003)** for details on parking space layouts.

Number of Spaces Required for Project: Parking spaces are required in accordance with the following or are governed by local ordinances (whichever is greater). Advise the Project Manager where local ordinances are at variance with these standards:

- Building occupants: 1 space per 300 gross sq. ft. min. or meet requirements of local zoning ordinances, whichever provides the greatest number of spaces.
- Visitor spaces: Per project facility program.
- Parking for disabled: In accordance with the current Florida Accessibility Code for Building Construction
- Special parking: Per project facility program.

Parking Layout and Relationship to Building (Subject to topography and local site conditions):

- Screen majority of off-street parking from view from the street with regional landscape materials. The parking layout should be near the building it serves.
- Arrange parking rows and access driveways perpendicular to the building so pedestrians may easily walk to the building via the driveways.
- Locate parking at a 90° angle to the driveway entrance. Driveways should allow 2-way traffic patterns.
- Landscaped islands with curbs shall be located at the ends of all parking rows and throughout the parking lot at an interval that averages no fewer than one island for every 12 consecutive spaces, or where governed by local codes (whichever is greater).
- Use continuous flow layouts with 2-way traffic.

#### Parking Space Size and Dimensions:

- Unless larger dimensions are required by other considerations, the following minimum dimensions apply:
  - Off-street parking spaces shall be 9' wide and 19' long. Where the front end of the space abuts a sidewalk, install a wheel stop to prevent vehicles from over-hanging the sidewalk or widen sidewalk to 8' minimum width.
  - Driveways along the parking rows must be a minimum of 24' wide, and the aisles at the end of the rows must be minimum 25' wide to allow for vehicle turning movements.

#### Parking Area Materials:

- Driveways and parking spaces shall be hard surface paving materials. Porous paving may be substituted as an alternative design to aid storm water management.
- Curbs and curb ramps shall be concrete.

#### Accessible parking for persons with disabilities:

- Locate accessible parking spaces near public entrances and major staff entrances. If multiple entrances are provided, distribute accessible spaces among the entrances.
- Accessible spaces should be adjacent to a curbed sidewalk that is 5' wide minimum.
- Accessible space shall be 12' minimum wide and 19' minimum long.
- Access aisle shall be 5' minimum wide and full length of adjacent parking space(s) and shall be marked in accordance with Standard Plans.
  - Two perpendicular accessible parking spaces may share a single access aisle.
  - If diagonal accessible parking spaces are used, provide an access aisle for each space, located on the right/passenger side of the space.
- For elevated sidewalks, provide a curb ramp within the sidewalk limits or slope the sidewalk down to the level of the access aisles. A curb ramp shall NOT extend into the access aisle or accessible space. NOTE: Detectable warnings are not required in parking lots.
- Slopes in accessible parking spaces and access aisles shall not exceed 2% in any direction. 1.5% cross slope is recommended.

#### Visitor and Assigned Parking:

- Locate visitor parking spaces near the main entrance of the building and closer to the building than staff parking.
- If parking spaces are assigned by FDOT, the spaces shall be identified by numbers painted on the pavement at the back of the parking space.
- Paint for parking area pavement markings shall be durable traffic paint listed in the Departments Qualified Products List in colors described in the **Standard Plans**.

#### Building Entry Walks/Plazas:

- Sidewalks shall be a minimum of 5' wide. Surfaces shall be slip resistant under wet and dry conditions. Slope to drain away from building. 1.5% cross slope is recommended.
- Sidewalks shall meet the requirements of the **ADA Standards** and the **Florida Accessibility Code**:
  - If slope is greater than 1:20 (5%), ramp must have 5'-0" minimum level landings each 30" rise.
    - 5'-0" landings at top and bottom of ramp and at interim landings
  - At changes-in-direction of ramps, provide 5'x5' landing.
  - Maximum slope of ramp is 1:12; 1:14 maximum is preferred.
  - Handrails are required on both sides of ramp.
    - 34"-36" high
    - 2" maximum pipe (outside diameter)

### 3.4.2 Site Lighting

Refer to IES Lighting Handbook for exterior lighting levels.

### 3.4.3 Drainage

Storm drain inlets should be located 25' minimum from major building entrances. Provide ground surface grades to prevent ponding during heavy rain and runoff from entering the building. Coordinate with storm-water requirements.

Parking Areas:

- Concrete valley gutters shall be used to control runoff in parking areas if uniform sheet flow is determined not to be feasible. If valley gutters are used, they shall be placed along the island curbs at the side of an access drive, and not down the center of the drive.
- The minimum slope in off-street parking lots without valley gutters is 1%. The maximum slope is 5%. If the topography is so steep that the parking area cannot be graded without exceeding a 5% slope, the parking area shall be terraced using continuous landscaped islands with a minimum width of 8'. A grade

transition will occur in the islands sufficient to allow for a 5% maximum slope in the parking area.

#### Sidewalks and Plazas:

- Walks and paths shall have a maximum cross slope of 2%. 1.5% cross slope is recommended.
- Walks and paths should be arranged to traverse steep areas at an angle to site contours, with turns back and forth at landings so runoff does not become concentrated in any one direction for long distances.
- Plazas should have a maximum slope of 2% (1.5% is recommended) in any direction and a uniform surface that prevents ponding.

#### General Site Drainage:

- Ditch and swale side slopes shall be no steeper than 1:3.
- Sod areas, except for retention ponds, should have a minimum slope of 1%, and a maximum slope of 1:3.
- Landscaped areas may be used for storm-water conveyance and retention/detention. Swales, retention ponds, and other storm-water management facilities may be designed to provide attractive open space in addition to functional storm-water management.

### 3.4.4 Site Improvements

Review security surveillance features during the design of plazas, terraces and parking areas with the FDOT Project Manager. Special attention should be given to provide adequate visual control including elimination of potential concealed spaces near public pedestrian areas.

Show point-of-entry for water service to handle potable and fire service requirements. Show location of site fire-service facilities (hydrants, standpipes, etc.)

#### Parking Area Lighting:



- An illumination diagram shall be provided for the parking areas and all major public walkways adjacent to the building showing illumination levels in foot-candles for each area.
- Style, Materials and Finish: Potential vandalism problems should be reviewed with Project Manager and, if conditions dictate, specify vandal-resistant materials and finishes for fixture enclosures and lenses.

### 3.4.5 Exterior Signs

Designs for site signs shall be reviewed by the Project Manager. Assure sign configuration and location does not interfere with driver sightlines for traffic along adjacent roadway(s) or entering the site.

Steel or aluminum finished with 2-part catalyzed urethane paint is the preferred material for outdoor signage. The catalyzed paint finish is preferred over anodizing for aluminum. Note: Catalyzed paint contains lead products and must not be used at playgrounds, Rest Area facilities, or where the presence of children is likely.

Outdoor dimensional letters shall be cast aluminum, bronze, or stainless steel. Aluminum should be painted rather than anodized.

The sign shall be clearly legible from a distance of at least 100'. Minimum height of the letters shall be 6".

Building Identification Signs should be located at or next to the main entrance walk of the building.

### 3.4.6 Traffic Signs

Traffic signs shall meet the roadway signing requirements of Florida DOT and the ***Manual on Uniform Traffic Control Devices*** (MUTCD).

### 3.4.7 Solid Waste

The dumpsters shall be sized to hold 3 pounds of solid waste per employee per day. Coordinate the location of solid waste dumpsters with the Project Manager.

LEED requires recycling of paper, plastic, metals, corrugated cardboard and glass. Coordinate space for recycling dumpsters with the FDOT Project Manager.

Locate dumpsters on reinforced concrete slabs.

Waste receptacles should be placed along walkways near building entrances.

Waste receptacles shall include covers, domes, etc., to shed rainwater.

Waste receptacles made with recycled materials are encouraged.

### **3.4.8 Benches (Exterior)**

Bench design should be compatible with the building design and compliant with the **ADA Standards**.

Consider future maintenance costs when designing or selecting benches.

Benches should be freestanding and anchored to be immovable by the public.  
Benches made with recycled materials are encouraged.

### **3.4.9 Light Bollards**

Bollards with lights are encouraged along entry walkways and plazas at the main entrance (to substitute for other low-level lighting fixtures).

Bollards without lights may be used elsewhere to separate pedestrian areas from vehicular areas or to protect against vehicle encroachment that may cause damage.

### **3.4.10 Walls and Screen Fences**

Walls or screen fences shall be placed around all service areas and all large above-grade utility equipment such as central boilers, or sewer package treatment facilities. Walls or fences may also be placed along the property perimeter if adjacent to residential or industrial land uses, or if required by local ordinances.

Screen fences or walls should be of a material compatible with the main building.

If the fence is made of Fir or Pine, the wood shall be specified as pressure treated with preservative suitable for ground contact.

Wood fences shall be stained or painted rather than remaining unfinished or weathered.

### **3.4.11 Planters**

Planters are defined as planting areas, either raised or at grade, in sidewalks and pedestrian plazas. If the planters are raised, use planters with seating edges.

If the planter is to contain shrubs and ground covers, the planter should have a minimum planting area of 10 sq. ft. with a minimum soil depth of 18".

If the planter is to contain a minor tree, the minimum planting area should be no less than 16 sq. ft., with a minimum soil depth of 3'.

If the planter is to contain a shade tree, the minimum planting area shall be no less than 64 sq. ft., with a minimum soil depth of 4'.

Planters shall not be installed over any building areas that could possibly sustain water damage whether occupied or not.

Special care shall be given to control efflorescence and moisture deterioration of the planter.

### **3.4.12 Bicycle Racks**

Bicycle racks are desired. Coordinate with Project Manager and local ordinances for location and number of bike racks.

### **3.4.13 Bus Shelters**

Coordinate shelter locations and design with the Project Manager and local transit authority.

Shelters shall be accessible to persons with disabilities and compatible with the overall building design concept.

The shelter shall be anchored to a concrete pad that is built adjacent to and accessible from the sidewalk.

## **3.5 BUILDING CORE**

### **3.5.1 Toilet Rooms**

Toilet rooms shall meet all requirements of the ***ADA Standards*** and the ***Florida Accessibility Code***.

In assembly occupancies and assembly-use buildings, provide toilet rooms and fixtures meeting the requirements of 'potty parity' (three women's toilets for each two men's toilets and urinals.)

In general, lavatories shall have cold water only except where required by the Florida Building Code- Plumbing. Hot water is typically used only in areas requiring level of hygiene provided by hot water (food service areas, kitchens, etc.) Faucets shall have lever controls or infrared auto turn on and off type.

Counter-tops and back-splashes shall be solid polymer surfaces.

Provide a tamper proof hose bib with vacuum breaker located under at least one lavatory in each toilet room.

Provide at least one (1) floor drain with trap primer in each restroom.

Provide a shut-off valve for the supply water for each toilet room in the plumbing chase (where provided) or above ceiling.

Provide high-back urinal units with elongated bowls on heavy-duty carriers.

Provide elongated wall hung water closets on heavy-duty carrier frames.

Provide lever handles for toilet and urinal flush. Consider the use of infrared auto flushing devices on urinals and toilets in major toilet areas.

Toilet and urinal plumbing shall be in an accessible plumbing chase with a minimum clearance of 48" between opposite wall surfaces. Provide floor drains with trap primers in all plumbing chases.

Toilet partitions shall be floor supported. Jamb sections, not anchored to walls, shall be a minimum width of 8". Partitions should be 3/4" solid surface panels.

Toilet partitions shall have a maximum clearance of 12" between the floor and partition.

Attach toilet partitions to adequate structural support including backing in walls in accordance with the manufacturer's performance requirements. Toilet room walls may be masonry or 1/2" cement board over water resistant gypsum board with acoustical insulation, with ceramic tile finish.

Floor surface shall be sloped to floor drains, so no ponding occurs. Floor drains shall be located under toilet partitions or under lavatory in individual toilet room. Ensure the

location and slopes do not conflict with accessibility requirements.

#### Tile Considerations:

- Floors shall be unglazed ceramic or non-slip porcelain floor tile in 8" x 8" or larger sizes with a maximum of 2 tile colors.
- Separate color schemes may be developed for the Men's and Women's toilet rooms or on a floor-by-floor basis.
- Base shall be coved sanitary tile.
- Walls in stalls shall be 8" x 8" gloss finish ceramic or porcelain tile to 7'-4" AFF minimum with a maximum of 3 tile colors. Walls above tile work shall be a multi-colored epoxy paint system.
- Coordinate all grout joints in the wall, base, and floor tiles so they are aligned.
- Dark grout is preferred (avoid light colors).
- Thresholds shall be marble, maximum height of 1/2" with a 30-degree beveled edge and meet accessibility requirements.

Ceilings shall be water resistant gypsum board painted with semi-gloss latex paint. Ceiling height to be 9' AFF minimum.

Doors shall be painted or stained solid core wood, painted hollow metal, or stainless steel, 3'-0" x 7'-0" minimum. Frames shall be painted hollow metal or stainless steel.

All toilet accessories shall be stainless steel. Recessed type units shall be used where practical. Toilet stall accessories shall be through-partition type. Provide a 4" wide stainless-steel shelf over wall-hung lavatories and water closets.

### **3.5.2 Water fountains**

Water fountains and electric water coolers shall be recessed to avoid obstructing corridors – meet ADA requirements for Knee and Toe Clearance, Operable Parts and Protruding Objects.

Exterior drinking fountains may be surface-mounted – meet ADA requirements for Knee

and Toe Clearance, Operable Parts and Protruding Objects.

### **3.5.3 Janitor Closets**

Rooms shall meet applicable fire safety codes.

Floors shall be stained/sealed concrete. Base shall be covered vinyl or rubber. Wall finish shall be epoxy paint on water-resistant gypsum board or concrete masonry unit (CMU.)

Provide a precast mop sink and a floor drain with the floor sloped-to-drain. Fixture with vacuum breaker shall have bucket hook and hose connection.

Ceilings shall be water resistant gypsum board painted with semi-gloss enamel.

Provide a stainless-steel mop rack and shelf.

Doors shall be painted or stained solid core wood or painted or stained hollow metal, 3'0" x 7'-0" minimum. Frames shall be painted hollow metal.

Size janitor closet to provide storage space for cleaning supplies. Consult with FDOT Project Manager.

### **3.5.4 Electrical and Communications Rooms**

Provide separate electrical and communication rooms.

Mechanical ventilation or air conditioning is required for all equipment rooms containing transformers totaling 30 KVA or more, or over 4,000 Btu/Hr. heat dissipations.

Walls shall be painted CMU or gypsum wallboard.

Ceilings shall be the exposed structure.

Floors shall be hardened and stained/sealed concrete.

Doors shall be 3'-0" x 7'-0" min. solid core wood, painted or stained; or painted hollow metal. Frames shall be painted hollow metal.

Electrical rooms shall be sized to allow adequate ventilation and servicing space around the equipment. Meet code clearance requirement but not provide less than:

- 4'-0" minimum clearance around electrical cabinets.
- 4'-0" minimum clearance in front of main circuit breaker cabinets.
- 4'-0" minimum clearance in front of electrical distribution panels.

Electrical and Communications rooms shall not be located next to elevator shafts, stairwells, pipe chases or other spaces that would prevent conduits from entering from all sides.

### **3.5.5 Communications Rooms**

Consult with the Project Manager and the Department's Office of Information Systems (OIS), and refer to the DMS "**General Facility Requirements for Telecommunications Systems**" for design criteria for the communications room and the overall system.

These rooms shall not provide access to any other space or room.

Communications rooms shall be equipped with receptacles, surge suppression and grounding as required by the communications program. Provide all circuits in communication rooms with isolated grounds.

Communications rooms shall have walls covered with 4" x 8" x 3/4" fire retardant plywood painted with semi-gloss enamel finish.

Communications rooms shall not be used to house building controls, security equipment or other such uses unless expressly approved by the Project Manager.

Communications rooms may be required to have 24-hour stand-alone HVAC on emergency power. Coordinate with Project Manager.

### **3.5.6 Mechanical Rooms**

Floors shall be hardened and stained/sealed concrete sloped to floor drain(s). Mechanical room will not be used as a return air plenum.

Ceiling shall be exposed structure.

Walls shall be painted concrete masonry or water-resistant gypsum board.

Ground-level mechanical equipment rooms shall be located on exterior walls with

exterior doors when practical.

Exposed piping shall be painted and color-coded.

Provide adequate ventilation.

Provide acoustic separation of mechanical rooms from adjacent spaces.

Interior doors shall be solid core wood, painted or stained; or painted hollow metal; 3'-0" x 7'-0" or larger as may be dictated by service requirements of equipment. Exterior doors shall be painted, hollow metal and sized for equipment width and height. Frames shall be painted hollow metal.

Intake louvers in exterior doors or walls shall have insect screens, which are removable for access or cleaning.

Overhead coiling doors or removable wall sections may be provided for removal and replacement of large equipment items such as boilers, air handlers, chillers and water tanks. Knockout walls are acceptable if they can be removed and replaced with minimal disruption or damage to other areas of the building and maintain required fire resistance ratings.

Servicing requirements require an adequate clearance with a minimum clearance of 3' from any wall around mechanical equipment. Increase space as required by manufacturer.

Provide clear space at one end of all boilers and chillers to allow rod cleaning and replacement of the internal tubing (show on Plans).

At air handlers, provide clearance for removal and replacement of filters, fan shafts and coils (show on Plans).

### **3.5.7 Stairs**

Walls shall be CMU or shaft wall, with high traffic, washable latex, two-color paint system.

Treads, risers, and landings shall be steel with concrete filled pans or reinforced concrete. The floors, stairs (tread and risers) and all landings of interior stairs may be vinyl tile, ceramic tile, or sealed concrete.

Doors shall be fire-rated, solid core wood, painted or stained; or hollow metal painted,



3'-0" x 7'-0" minimum. Frames shall be painted hollow metal, and fire rated as required by code.

Light fixtures shall be located 7'-0" minimum above landing in explosion-proof housings.

Light fixtures shall be accessible with a 6-foot ladder.

To encourage use of stairs in lieu of elevator, provide at least one stair in multi-story buildings conveniently located near main pedestrian traffic flows, i.e., adjacent to elevator lobby. Provide sufficient width, 5'-0" minimum so two adults can pass each other comfortably while traveling in opposite directions.

Guard railings shall be designed with vertical pickets or in-fill panels.

Provide vision panels in all stair doors.

### **3.5.8 Corridors**

Walls shall be painted, fire-rated gypsum board painted with eggshell high traffic/washable latex type wall paint. Vinyl wall covering is permitted at the discretion of the Project Manager.

Floors shall have glue-down carpet with a minimum 10-year warranty, ceramic tile or VCT. Carpet shall be a tufted textured graphics loop with a minimum pile face weight of 26 ounces per square yard. Base shall be covered vinyl/rubber, 4" high, minimum 1/8" thick.

Ceiling shall be 2' x 2' suspended acoustical ceiling tile with square edge.

Indirect lighting may be used provided access is not unduly restricted.

### **3.5.9 Main Lobby**

Floors:

- Floor finish and base shall be slip resistant hard tile (ceramic, quarry, or stone), thin-set.
- Dark grout is preferred.

- Expansion joints shall be located under sidewalls where possible or as shown on plans.
- Coordinate location of construction joints in concrete floors with location of tile joints.
- A metal edge strip shall be installed where tile abuts carpet or other floor materials.

Walls shall be gypsum board with appropriate fire rating. Finishes shall be durable and washable such as paint, plaster, or vinyl wall covering.

Ceiling finish shall be acoustic ceiling panel, painted gypsum board, or metal.

At building entry doors for the public and staff, use vestibules or revolving doors to control wind flushing. Coordinate the use of automatic or power-operated openers with the Project Manager.

Limit public access into building to the lobby and the loading area. Building emergency exits shall be used as exits only and shall not to be used for normal access.

Coordinate location of building directories with Project Manager.

No mail chute shall be provided in any Department building.

Provide "Reception" or "Security" station, unless indicated otherwise in the program. Coordinate with Project Manager.

### **3.5.10 Card Readers or Keypads**

Card readers or keypads shall be provided at all applicable entries (to be determined during project Design phases). Devices shall meet the ADA requirements for Clear Floor Space, Reach Ranges and Operable Parts.

### **3.5.11 Office Spaces**

Walls shall be painted gypsum board and terminate 6" above the ceiling except that walls of offices for Select Exempt Service and Senior Management Service personnel shall extend to the deck above. Conference rooms, training rooms, and those spaces requiring confidentiality should also extend to the deck above. Walls are not to be acoustically insulated except as required by the Facility Program. Provide return air transfer boots in walls extended to deck.

Ceilings shall be flat lay-in 2' x 2' acoustic panels with square edge, generally 9'-0" above finished floor (A.F.F.).

Doors shall be solid core wood, painted or stained, 3'-0" x 7'-0" minimum.

Frames shall be painted hollow metal. Knock down frames are permitted.

### **3.5.12 Conference Rooms**

Accessories such as tack boards, marker boards, and projection screens shall be provided and located as required by Facility Program.

### **3.5.13 Computer Room**

Floors shall be static free resilient sheet vinyl or raised access flooring as required by program. Base shall be coved vinyl/rubber.

Walls shall be painted gypsum board with acoustic insulation extending to the underside of the deck above and with acoustical sealant at the top and bottom of the wall.

Ceilings shall be 2' x 2' lay-in flat acoustic panels with square edge.

Coordinate with Project Manager and OIS to determine the need for 24-hour, stand-alone HVAC on emergency power.

### **3.5.14 Files/Storage**

Floors shall be vinyl composition.

Bases shall be coved vinyl/rubber.

### **3.5.15 Copy/Break/Vending Rooms**

Coordinate flooring for copy/break/vending rooms with file/storage rooms.

Counters and back splashes shall be plastic laminate. Sinks shall be stainless steel. Base and wall cabinets shall be plastic laminate with flush overlay. Protect splash area behind sinks.

Coordinate requirements for appliances including coffee makers, refrigerators, and

microwaves with the Project Manager.

Coordinate requirements for seating areas with the Project Manager.

Walls shall be high traffic/washable latex type wall paint.

Ceilings shall be suspended 2" x 2" acoustical tile with square edge.

## **3.6 BUILDING ENVELOPE**

The building shall be designed to ensure weather tightness, minimize maintenance and energy use and maximize building longevity and architecturally compatible with the environment. Life-cycle cost analysis shall be used.

### **3.6.1 Roof System**

Metal hipped, standing seam roof systems are preferred and shall have the following characteristics:

- Aluminum Material:
  - 0.032" minimum for roof panels, trim and flashing unless otherwise determined by the Architect.
  - 0.032" minimum for soffit panels, pre-manufactured soffit venting.
  - 0.080" minimum for gutter and downspout covers.
  - Finish: Polyvinylidene fluoride, Kynar 500, Hylar 5000 resin based coating.
  - Seam Height: 2" minimum
  - Pan width: 16" maximum
- Underlayment: Continuous full rubberized self-adhering asphaltic membrane.
- Roof Deck: Continuous structural metal deck.
- Warranty:

- Roofing panel manufacturer shall warranty for minimum period of 20 years against perforation or structural failure of metal roofing panels and accessories.
  - Roofing panel manufacturer shall warranty for minimum period of 5 years that the finish color will not change more than 5 NBS units in accordance with **ASTM D 2244-16** and will not crack, peel or lose adhesion with the substrate for a period of 20 years.
  - Roofing panel manufacturer shall warranty for minimum period of 20 years specifying the metal panel system will be watertight. Warranty will state if repairs are necessary, guarantor will provide materials and labor to make repairs at no cost to Owner.
- Specify a single subcontractor is responsible for the entire roof system.

### 3.6.2 Exterior Wall System:

The exterior walls shall be:

- CMU
- Brick Veneer
- ICF
- Other, as approved by Project Manager

### 3.6.3 Exterior Glazing Systems.

All exterior glazing shall be insulated double-pane. One-story, full-height glazed opening shall be a center glazed storefront system. Two-story high lobby areas shall have a curtain-wall type system. Glazing protections shall meet the impact-resistance requirements of the **Florida Building Code** for the location of the project.

The following are the major glazing system components:

- 1" thick unit:
  - Outer pane 1/4" tinted, tempered glass
  - 1/2" air space

- Inner pane 1/4" clear, tempered glass

### 3.7 GENERAL STRUCTURAL DESIGN DATA

Minimum acceptable office floor live load is 100 psf.

Confirm all load criteria and any special design program requirements with Project Manager within 30 days of receipt of authority to proceed with Schematic Design.

Design to the requirements of the **Florida Building Code** for structural wind-load and wind-borne debris calculations.

Exterior slabs on grade and paving outside the building enclosure shall be sloped away from the building structure to prevent water build-up at the building perimeter. Specify that all such areas shall be hose-tested prior to acceptance of work to identify slope and drainage problems that may exist.

### 3.8 DIVISION 3 - CONCRETE

Design reinforced concrete in accordance with **ACI 318**.

Specify steel reinforcement in accordance with applicable ASTM standards listed in **ACI 318**.

Specify admixtures to comply with **ACI 318** and subject to prior approval by the project manager. Fly ash shall conform to **ASTM C 618**.

Specify epoxy coated or galvanized rebar supports where supports may be exposed to weathering. Provide flat sheet wire reinforcing mesh in floor slabs and slabs on grade and support with chairs. Use sandplate supports that will not puncture the vapor barrier at slabs on grade.

Provide pre-molded expansion joint material where slab is placed around columns and against walls.

Contraction or construction joints shall be placed on column lines and at intermediate spacing not to exceed 15'.

Provide water-stops at below grade construction joints in foundation walls to prevent water penetration.

### 3.9 DIVISION 4 - MASONRY

Design clay and concrete masonry to comply with **ACI 530/ASCE 5**.

Specify concrete masonry units to comply with **ASTM C90 and ASTM C140**.

Specify facing brick to be in accordance with **ASTM C216, Grade SW**.

Specify masonry reinforcement and accessories in accordance with applicable standards: **ASTM A-36, ASTM A153, ASTM A641 ASTM A653, ACI 530/ACSE 5**.

Cavity wall designs are desired. Cavity wall designs based on pressure equalized rain screen walls are preferred.

Design weep-holes and flashing to evacuate moisture entering the masonry wall. Weeps in brick cavity/veneer construction shall be open head joints. Prefabricated screens may be utilized at weeps to prevent insect infestation. The use of cotton rope wicks or tubes for weeps is not allowed.

Provide a 2" minimum width air cavity (exclusive of any cavity insulation). Utilize pull-up boards to prevent the build-up of mortar droppings and bridging in the cavity. There should be no obstructions within the cavity that may allow water to backup and drain into the back-up wall.

Detail flashing against parapets, under copings, gravel stops, over shelf angles, windows, doors, horizontal relief joints and at changes from horizontal to vertical plane. Show three-dimensional flashing intersections in isometric detail.

Specify brick masonry with low moisture absorbency.

Brick masonry accessories:

- Specify the type of tie design that will allow for vertical and horizontal differential movement between face brick and backup wall or structure without allowing water to bridge gaps.
- Specify non-corroding hot-dipped galvanized anchors, ties, angles, and reinforcement. Design vertical and horizontal expansion and control joints in masonry wall. Follow BIA recommendations for placement.

For multi-story masonry construction, design steel shelf support angles, which will allow for building movement and wall deflection.

### 3.10 DIVISION 5 - METALS

Protect dissimilar metals against galvanic action.

Steel for structural applications shall conform to **ASTM A 36**.

Steel bolts for joints and connections shall conform to **ASTM A 325 or A 490**.

Structural steel and welding shall comply with the following applicable standards:

- AISC Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design
- AISC LRFD Specification for Structural Steel Buildings
- AISC Specification for the Design of Steel Hollow Structural Sections
- AISC Seismic Provisions for Structural Steel Buildings
- ASCE 8 Specification for the Design of Cold-Formed Stainless Steel Structural Members
- ANSI/AWS D1.1 Structural Welding Code – Steel

Steel Joist shall comply with the following applicable standards:

- SJI Standard Specifications for Open Web Steel Joists, K-Series
- SJI Standard Specifications for Longspan Steel Joists, LH-Series
- SJI Standard Specifications for Deep Longspan Steel Joists, DLH-Series
- SJI Standard Specifications for Joist Girders

### 3.11 DIVISION 6 – WOOD, PLASTICS AND COMPOSITES

The quality and design of wood members and fastenings used for load supporting purposes shall conform to the following applicable standards:

- American Forest & Paper Association AFPA/ASCE 16 Standard for LRFD for Engineered Wood Construction



- National Design Specification for Wood Construction (NDS)
- American Institute of Timber Construction (AITC)
- American Plywood Association (APA)
- Truss Plate Institute (TPI)
- American Wood Preservatives Association (AWPA)
- National Particleboard Association (NPA)

All wood in direct contact with soil, water, masonry and concrete shall be naturally durable wood or preservative-treated. Treatments and condition of use shall comply with the applicable standards of the AWPA.

Particleboard shall not be used in roof deck, wall sheathing or any exterior or main wind force resisting system.

## **3.12 DIVISION 7 - THERMAL AND MOISTURE PROTECTION**

### **3.12.1 Roofing Design Information**

Preferred roofing system is standing seam metal.

Mechanical/Maintenance:

- Provide for access to the roof.
- Provide walk pads around maintenance items along the route from roof access points to the maintenance items.
- Limit mechanical ventilation and plumbing penetrations through the roof wherever possible.
- HVAC units or equipment are not permitted on the roof, except exhaust fans, vents, and outside air intakes.
- Through-the-roof penetrations should be round pipe or round sleeve. Avoid square or rectangular shapes where possible.

- Maintain a minimum spacing of 4'-6" between penetrating pipes and equipment to allow for proper detailing work of the roofing application

Drainage considerations:

- Emergency overflow drains are preferred over through-wall scuppers on low-slope roofs. Provide minimum 4" high leaf guards on drains.
- Expansion joints shall be elevated upon a solid tapered base; drainage shall be positive and away from the joint at every side.
- Drainage pieces: These should be kept a sufficient distance from parapets and up-stands to allow the installer to work from all sides.

Detailing:

- Limit the use of pitch pockets. Uncapped pitch pockets are not permitted.
- Detail roof flashing at all types of roof penetrations.
- Detail every flashing condition required for type of building designed. Show three-dimensional flashing intersections in isometric detail.
- Show all penetrations through the roof-on-Roof Plan.
- Show all roof ventilators, and any other types of FDOT approved equipment to scale on Roof Plan.
- Specify and locate roof walk protection pads on Roof Plan.
- Show roof drains and overflow drains or scuppers on Roof Plan.
- Provide details of all applicable primary drain installations.
- Provide metal coping on parapet tops. Terminate roof membrane under coping.

Quality Assurance:

- Provide Roofing from single-source manufacturer.
- Provide Non-Prorated Weather-tight, single-source 20-year warranty.

- Provide third party, RCI/IRWC certified inspections.

### **3.12.2 Thermal Insulation**

Ceiling/Roof insulation shall be R-30 minimum.

Wall Construction shall have the following minimum R-values:

- Concrete R-19
- Wood Frame R-19
- Metal Frame R-21

Coordinate with Life-Cycle Cost Analysis and the Florida Building Code, Energy Conservation.

### **3.12.3 Air Barriers**

Air barriers shall be made of durable, non-porous materials and shall be sealed to adjoining wall, ceiling or floor surfaces with a suitable long-life mastic and tape. Taped and sealed drywall may constitute an air barrier but lay-in acoustical tile ceilings (T-bar ceilings) may not. Batt insulation facings and asphalt-impregnated fiberboard and felt paper are not considered air barriers.

Where vented-to-the-outside, dropped ceiling cavities occur over conditioned spaces, the ceiling shall be considered both the upper thermal envelope and pressure envelope of the building and shall contain a continuous air barrier between the conditioned space and the vented unconditioned space that is also sealed to the air barrier of the walls.

Where unvented dropped ceiling cavities occur over conditioned spaces that do not have an air barrier between the conditioned and unconditioned space (such as T-bar ceilings), they shall be completely sealed from the exterior environment (at the roof plane) and adjacent spaces by a continuous air barrier that is sealed to the air barrier of the walls. In that case, the roof assembly shall constitute both the upper thermal envelope and pressure envelope (air barrier) of the building.

Exterior Joints in the Envelope: All exterior joints cracks and holes in the building envelope shall be caulked, gasketed, weather-stripped or otherwise sealed. Such joints shall include, but not be limited to the following:

- Around windows or door frames

- Between walls and foundations
- Between walls and roof/ceilings
- Through wall panels and top and bottom plates in exterior walls
- At penetrations of utility or other services through walls, floors and roofs
- Between wall and floor where the floor penetrates the wall
- Between wall panels, particularly at corners and changes in orientation
- Around penetrations of flue vents, or attic hatches, and walls with building cavities between floor/ceilings and ceilings/roof decks

#### **3.12.4 Membrane Systems**

Roof membrane type shall be a proven system with a minimum ten (10) year successful track record on buildings in the geographic area of intended use.

Roofing membrane system selected shall meet Factory Mutual (FM) Requirements I-90 for wind uplift or Underwriters Laboratories (UL) Class 90.

Membrane Roof Warranties:

- Specify roof warranty to be fifteen years minimum. Twenty years is preferred.
- Warranty shall be non-prorated, non-penal sum type and shall include the total roofing system consisting membrane, flashing, connections, insulation and deck.
- Specify the Contractor shall submit roof warranty documents, including conditions for Owner-provided maintenance, prior to final project closeout.

Specify that a single subcontractor is responsible for the entire roof system.

#### **3.12.5 Sheet Metal Flashing and Trim**

Use the latest edition of the "***Architectural Sheet Metal Manual***" published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) as a design guide.

Preferred flashing materials includes: Copper, Aluminum.

Verify substrate materials and joint compounds are compatible with flashing and will not cause:

- Corrosion of flashing material
- Staining of face veneers
- Flashing details to include:
  - Roof Flashing:
    - Against parapets
    - At all penetrations through roof
    - Expansion joints
    - Corner conditions
  - Wall Flashing:
    - Flashing under copings
    - Thru-wall flashing
    - At windows and doors
    - Expansion joints
    - Corner conditions
    - Non-typical design features

Design metal flashing and coping caps to eliminate or minimize the use of sealants. Do not rely on sealants as the primary barrier to water penetration.

Where sealant joints are required, utilize sealants that are designed to accommodate the movement characteristics of, and are compatible with, the flashing material and the substrate.

Protect dissimilar metals against galvanic action.

Base flashing should have an 8" minimum upstand from roof, and be a minimum of 4" above a 4" cant. Metal counterflashing should lap base flashing at least 4".

Counter-flashing shall be removable and replaceable or renewable. Wall system shall have a permanent sill or seating.

### 3.12.6 Joint Sealants

Specify sealant type to compensate for amount of anticipated joint movement and environmental conditions to be encountered.

Specify bond breakers to prevent three-sided adhesion.

Specify sealants that are compatible with substrates. Verify that all sealants:

- **Will** bond to substrate.
- **Will not** bleed onto or stain building exterior skin.

Specify sealant primer if required for adhesion to substrate. Consult with sealant manufacturer to verify performance applicability expected.

Do not use custom color sealants.

If coatings or waterproofing compounds are specified on exterior building skin, verify that they are compatible with sealants and will allow for desired sealant adhesion.

Specify that the contractor shall have sealant manufacturers perform adhesion and compatibility tests for each type of sealant, using actual samples of sealant specified and substrate materials and coatings to be adhered to by sealant.

Use caulking only for interior joints that do not require waterproofing or movement capabilities.

Use acrylic latex caulk conforming to **ASTM C 834**.

Limit caulking joints to 1/4" in width or less.

## 3.13 DIVISION 8 – OPENINGS

### 3.13.1 Steel Doors and Frames

Specify fire rating 'label' for steel doors required to meet separation. Fire ratings shall apply to door assembly: door, frame and hardware.

Recess exit doors serving exterior stairs.

### 3.13.2 Flush Wood Doors

Wood doors required to meet separation requirements shall have appropriate label describing fire rating. Fire ratings shall apply to door assembly: door, frame and hardware.

### 3.13.3 Aluminum-framed Entrances and Storefronts

Storefront: 4" nominal width, center glazed, with thermal break construction.

Entrance Doors: 4<sup>1</sup>/<sub>2</sub>" stile heavy-duty aluminum doors, fully glazed with tempered single glazing, pivot hinges and concealed overhead closers that are adjustable to 8.5 lbs. closing force.

Optional: Provide power door operators with hard-wired switches at main employee and visitor entrances. Coordinate with Project Manager.

### 3.13.4 Aluminum Windows

Detail windows to prevent air infiltration. Testing to **AAMA/NWWDA 101/I.s.2-97 or ASTM E283-91** shall determine compliance with the criteria of air leakage, as appropriate. Air Leakage shall not exceed 0.3 cfm / lin. ft.

Provide windows with thermal break construction. Provide units that have been tested for thermal performance in accordance with **AAMA 15003.1**.

Design window sections to accommodate expected wind pressure and turbulence. The contractor is to submit signed and sealed calculations.

Design window sections to accommodate code-required wind-borne debris, missile impact loads. The Contractor shall submit signed and sealed calculations and test reports to verify code compliance.

Components:

- Windows shall be fabricated with non-corrosive fasteners.
- Window frames should be designed with baffled weep holes. Do not allow weep holes to be blocked by sealant.
- Air pressure equalizer holes should be provided wherever some portion of a window frame or curtain wall assembly will have a lower pressure than the outside atmosphere.
- Compatibility testing should be specified for all setting materials that make contact, such as sealants or setting blocks, gaskets, and edge shim material.
- Specify that setting block locations will be verified in the field to not seal off weep holes.

### **3.13.5 Door Hardware**

Use passage sets as a default configuration for all doors. Provide grade 2 hardware with lever handles that do not have rough edges or casting imperfections.

Provide locking hardware configuration at suite entrances, storage areas, building support spaces (such as telephone and electrical closets, and mechanical rooms), and where specifically required in building program.

Use a standard unit-type (non-mortise) lock cutout.

Hardware configuration at exit stairs is lockable after hours from outside into stairwell (electromagnetic locks).

All doors opening to outside (e.g., exit doors) shall have non-removable hinge pins. Provide latch guards at exterior doors to deter unauthorized entry protection.

All hardware specifications, finishes and schedules shall be submitted for approval to FDOT prior to finalizing bid documents.

Locks shall have heavy wrought steel cases and armored fronts, adjustable to suit door bevel.

Latch bolts shall be "true" anti-friction hinged type with minimum throw of  $\frac{3}{4}$ ".

Deadbolts shall have a minimum throw of 1" and be equipped with hardened steel roller inserts.



Locksets/latchsets levers on doors leading into hazardous areas shall have a tactile warning finish.

Interior and exterior hardware shall be Satin Stainless Steel [630(32D)].

Cylinders, Keys and Keying: Coordinate with Project Manager.

- Cylinders shall be keyed to the FDOT key system, and are subject to the Great Grand Master (GGMK), Grand Master (GMK), Master (MK) and Change (CK) key system. Locksets must accommodate the FDOT standard cylinder.
- Construction cylinders shall be "Construction Master keyed".
- Permanent cylinders shall be factory keyed as directed by FDOT.
- Keys shall be stamped "State of Florida" - "Do Not Duplicate".
- The following keys and equipment shall be furnished:
  - 3 each GMK
  - 6 each MK
  - 3 per lock CK
  - One lockable key cabinet to suit job requirements with 100% expansion space.

### 3.13.6 Glazing

Glazing systems shall be designed to accommodate expected building movement.

Verify that glass selected can accommodate expected thermal expansion and contractions.

Glass shall meet State of **Florida Energy Efficiency Code** requirements and **FlaCom and Energy Gauge (Summit)** as a part of the exterior building envelope.

Provide non-operable windows with a shade coefficient of 0.32 - 0.45. The ratio of visible light transmittance to the shading coefficient should be equal to or greater than 1.

Verify that glass meets U-value and shading coefficients required by mechanical equipment design and ***FlaCom and Energy Gauge (Summit)***.

Window sections shall conform to American Architectural Manufacturers Association (AAMA) standards for commercial or heavy commercial windows.

Insulated glass shall conform to Sealed Insulating Glass Manufacturers Association (SIGMA) guidelines for vertical and sloped glazing.

Provide Project Manager a "washability" design statement applicable for all glass surfaces, external and internal that describes how glass is accessed for routine cleaning.

Coordinate maintenance design criteria with Project Manager prior to inclusion in the specifications:

- Washability of all exterior and interior glass surfaces.
- Location of glass windows adjacent to gravel ballasted roofs subject to wind breakage.
- Potential for vandalism and glass breakage.
- Window mullions should be coordinated and compatible with structural and ceiling grids.
- Consider providing attic stock glass for future replacement as part of base bid. Confirm requirement with Project Manager.

Specify that the General Contractor will provide certification that units installed meet the specified requirements.

Coordinate glass colors for project with the Project Manager prior to submitting the Schematic Design documents.

Reflective glass, if approved by Project Manager, shall not exceed 35% reflectivity.

Require warranty on insulated units covering seal and against build-up of condensation.

## **3.14 DIVISION 9 - FINISHES**

### **3.14.1 Non-Structural Metal Framing**

Maximum spacing of partition studs and wall furring: 16" o.c.

Metal stud gauge shall be:

- 25 ga. min. for studs <10' long
- 22 ga. min. for studs ≥10' long

### **3.14.2 Gypsum Board**

Gypsum wallboard thickness shall be 5/8" minimum when used in single layer applications.

### **3.14.3 Tile**

Floor tile shall be unglazed ceramic or non-slip porcelain floor tile in 8" x 8" or larger sizes with a maximum of 2 tile colors.

Wall tile shall be glazed ceramic or porcelain wall tile in 4" x 4" or larger sizes with a maximum of 3 tile colors.

### **3.14.4 Acoustical Tile Ceilings**

The standard system is to be 2' x 2' flat, non-regular lay-in system with exposed metal grid.

Coordinate grid with overall building module. Minimize grid conflicts with major architectural design features.

Provide to Project Manager alternatives for style, pattern, and color of components from manufacturer's standard list without requiring special ordering or fabrication.

Concealed-spline ceilings or fiberglass batt-scrim-vinyl face ceiling tiles must be approved by Project Manager.

### **3.14.5 Resilient Flooring and Base**

Sheet vinyl or vinyl tile floor finishes may be used for support spaces.

Resilient stair treads and nosings are not required in exit stairs. A brushed concrete finish is preferred.

Studded rubber flooring or 1/8" thick floor tiles are preferred for use in high-traffic areas.

Flooring shall be non-slip.

Base shall be a minimum of coved 4" rubber/vinyl.

### **3.14.6 Sheet Carpeting**

Provide transition strips for carpet to tile, or any dissimilar materials.

Use level loop for corridors, public spaces, heavy traffic areas, and exit stairs in buildings four stories or less to encourage the use of stairs instead of elevators.

Minimum fiber shall be 100% 3rd generation, continuous filament nylon with static control and 26-ounce minimum yarn weight.

Primary backing shall be polypropylene and secondary shall be unitary or synthetic with a minimum of 15 lbs. tuft bind.

### **3.14.7 Interior Painting**

All interior gypsum wallboard walls and ceilings to be painted with washable latex paint (except epoxy in janitor closet and restrooms).

Interior partition paint finish shall be eggshell.

Doorframes and trim finishes shall be semi-gloss alkyd enamel.

The interior of all exterior walls shall be painted with latex (permeable) paint. The use of non-permeable finishes on exterior walls is prohibited.

## **3.15 DIVISION 10 - SPECIALTIES**

### **3.15.1 Toilet Compartments**

Solid-surface partitions are preferable.

When specifying clad partitions, use marine-grade plywood for partition cores.

Avoid dark colors.

### **3.15.2 Toilet, Bath and Laundry Accessories**

Toilet accessories include:

- Grab bars with concealed mounting.
- Dual roll toilet tissue dispensers.
- C-fold or Z-fold paper towel dispensers with integral disposals; surface or semi-recessed mounting.
- Surface mounted feminine napkin disposals.
- Soap dispensers.

Toilet accessory finishes shall be brushed stainless steel. Finishes shall be coordinated with each other, door hardware, and plumbing hardware.

Mirrors shall be full width of counter at floating counters or individual over wall mounted lavatories. Provide warranty against silver spoilage.

## **3.16 DIVISION 11 - EQUIPMENT**

(Reserved) (Obtain through State Contract)

## **3.17 DIVISION 12 – FURNISHINGS**

(Reserved) (Obtain through State Contract)

## **3.18 DIVISION 13 - SPECIAL CONSTRUCTION**

(Reserved) (May be included in Project Facility Program.)

## **3.19 DIVISION 14 - CONVEYING SYSTEMS**

### **3.19.1 Section 142100 and Section 142400- Elevators**

Elevators shall be hydraulic in buildings 4 stories or less.

Hydraulic Passenger elevator minimum requirements:

- A minimum capacity of 2500 lbs.
- 150 FPM cab speed
- Drop ceiling height shall be 9'-0" minimum. One elevator must have 10'-0" minimum if separate Service elevator is not provided
- Accessible emergency hatch
- Doors and frames shall be 36" wide center opening with No. 4 satin stainless steel finish
- Side and rear wall finish shall be plastic laminate with stainless steel handrails
- Front wall finish shall be No. 4 satin stainless steel
- Walls shall have stainless steel hooks for protection pads

Hydraulic Service elevator minimum requirements:

- A minimum capacity of 4000 lbs.
- 125 FPM cab speed
- Cab height shall be 10'-0" with a 2" x 2" silver anodized aluminum suspended ceiling grid with satin stainless-steel T-bars at 9'-6"
- Doors and frames shall be 48" wide center opening with No. 4 satin stainless steel finish
- Wall and floor finishes must match passenger elevators if in visible proximity of passenger elevators

- Walls shall have stainless steel hooks for protection pads
- The service elevator shall serve all floors including mechanical or penthouse floors

Elevator equipment room walls shall be acoustically insulated and fire-separated from surrounding spaces.

Refer to Division 23 for HVAC requirements in equipment rooms.

### **3.19.2 Vibration and Seismic Controls for HVAC Piping and Equipment**

Pumps, fans and other equipment subject to vibration shall be checked and tested at the full set of speed ranges available from the controls. Maximum acceptable vibration levels shall be specified.

Specify spring-isolated inertia bases for pumps located in off-grade mechanical rooms and direct mount pump bases on housekeeping pads when located at grade level.

## **3.20 DIVISION 21 FIRE SUPPRESSION**

### **3.20.1 Sprinkler Systems**

Fire sprinkler systems shall be designed and installed in accordance with NFPA 13.

Locate sprinkler heads away from switchgear and/or cable racks.

In computer, communications, and other rooms with expensive switchgear or electrical components, provide automatically operating on/off flow control sprinkler heads. These heads feature dual-thermal elements with on/off control to minimize water damage.

### **3.20.2 Vibration and Seismic Controls for Fire-Suppression Piping and Equipment**

Fire-suppression piping and equipment subject to vibration shall be checked and tested at the full set of speed ranges available from the controls. Maximum acceptable vibration levels shall be specified.

## **3.21 DIVISION 22 - PLUMBING**

### **3.21.1 Basic Plumbing Requirements**

Design the plumbing systems in accordance with the Florida Building Code. (NOTE: Apply 'potty parity' (ratio of toilet facilities for men and women) for Assembly Occupancies in accordance with requirements of **s. 553.86 F.S.**)

No domestic water or sanitary piping shall pass through electrical, computer or communication rooms.

Specify floor drains with trap primers in all plumbing chases.

Domestic cold and hot water mains and risers, and horizontal roof drainage piping shall be insulated with 1-inch thick preformed fiberglass insulation with all-service jacket and PVC fitting covers.

### **3.21.2 Facility Water Distribution Piping**

Specify U.S. manufactured pipe, valves, and fittings.

Domestic water piping shall be copper in accordance with the applicable ASTM standards for below grade (Type K) and above grade (Type L) use.

Specify backflow preventers that are reduced-pressure type that meet requirements of local authorities having jurisdiction. Conceal or screen the unit from view by the public. An indoor location is preferred. Provide an enclosure when the unit is located outdoors and specify bolting the enclosure to the concrete pad.

### **3.21.3 Roof Drain Piping**

Roof drain material shall be the same as sanitary waste and vent.

Provide back-flow preventers at condensate-to-storm sewer connections per the Florida Building Code. Do not combine roof drains from different roof elevations. Vent roof drains to open catch basins next to building. Run condensate lines separately to catch basin.

### **3.21.4 Sanitary Waste Piping**



Specify cleanouts as required by code. Keep cleanouts away from walkways, doorways, and public and tenant use areas.

Locate cleanouts on lavatory walls inside the toilet rooms.

Specify trap primers on floor drains.

Exposed condensate piping from air handler units, fan coils, etc. shall be piped with Type L copper pipe with DWV fittings. Exposed PVC condensate piping is prohibited.

Schedule 40 PVC sanitary waste and vent piping may be used in buildings with ducted air returns. Use no-hub or bell and spigot standard weight cast iron meeting applicable CISPI Standard 301 in existing buildings with return-air plenums, and for sanitary waste and vent piping above and below grade. In new construction allow adequate height between top of ceiling and bottom of structure to accommodate return air ducting.

### **3.21.5 Plumbing Fixtures**

Specify like plumbing fixtures throughout the buildings at each campus unless otherwise directed or authorized in writing.

Specify a double-unit drinking fountain mounted in a high/low position. Electric water coolers shall be wall mounted and provide a minimum of 5 GPH of 50°F drinking water at 70°F ambient air temperature.

Lavatories shall be vitreous china (preferred) or integral solid surface bowls in solid surface counters. A 4" minimum height backsplash is required at lavatories.

Lavatories will have cold water only in restrooms and hot and cold water in kitchens, break room areas and janitor closets.

Water closets shall be wall hung, white vitreous china, elongated, lever handle flush valve, with open-front seat, and suitable heavy-duty carriers.

Urinals shall be wall hung, white-vitreous china, elongated bowls, and lever-handle flush valve, with suitable wall hangers, high-back design.

Specify cast brass adjustable P-trap.

Specify angle stops and supplies.

Service sinks shall be floor mounted either molded stone or terrazzo.

Specify washerless faucets.

Water heaters (serving service sinks and food-service sinks) shall be high efficiency gas-fired or electric, storage type, with glass-lined tank of minimal capacity.

Hose bibs shall be chrome-plated with a  $\frac{3}{4}$ " hose connection, vacuum breaker, and key-handle operator. Specify exterior hose bibs with vacuum breakers located on each side of the building spaced no farther than 150' apart. Provide frost-free units where applicable.

P-trap and supply lines on accessible lavatories shall be insulated.

### **3.22 DIVISION 23 – HEATING, VENTILATION, AND AIR-CONDITIONING (HVAC)**

Evaluate equipment selection block loads and life-cycle cost analyses during the schematic development stage of the project. Perform Life-cycle analyses in accordance with the ***Florida Energy Efficiency Code*** procedures.

Proposed architectural features shall be the basis of design. Provide an updated HVAC load and life-cycle cost analyses for any architectural changes that affect the thermal performance of the building (i.e., changes to wall insulation, site orientation, area of fenestration, etc).

Design the HVAC system to maintain relative humidity at less than 60%.

Cooling and heating loads shall be based upon the actual intended occupancy and internal loads as defined during the schematic design phase. Miscellaneous loads shall be based upon actual number of computers and other heat-producing appliances such as refrigerators, copiers, computers, servers, etc. For office space, the occupant density shall be 250 sq. ft. per person, unless otherwise directed. Consult with the Project Manager and document the design load parameters on the plans.

Provide HVAC design parameters schedule in the plans at the design development phase. Specify outdoor design temperatures, indoor temperatures, design humidity level, occupant density, and any other pertinent data or assumptions that affect design.

Provide a ventilation schedule on the plans to demonstrate compliance with **ASHRAE Standard 62.2004 - Ventilation for Acceptable Indoor Air Quality**. A schedule is required for each building/floor and shall include room number, function, number of occupants, ventilation rate, ventilation methodology, subtotals, and/or totals, and any related notes or assumptions. The ventilation design shall utilize the intermittent or variable occupancy rate, or indoor air quality procedures where allowed in accordance with the standard. The design shall minimize or eliminate outside air during unoccupied periods. Utilize CO<sub>2</sub> controls or demand-controlled ventilation approaches where cost effective.

Provide air balance schedule on the plans to demonstrate proper building pressurization. The HVAC systems shall be designed and controlled to maintain the building and/or each floor at a slight positive pressure of 3 to 5 percent. The schedule shall include the room number or name, function, supply, exhaust, transfer and return air flow rates; and subtotals for each air handler unit and/or floor.

Large conference rooms shall be designed to compensate for the shift in loads in outside air needs during occupied and unoccupied periods. Use a building energy management system, switching, or other means to determine occupancy. Do not use constant-volume systems.

Equipment rooms with transformers totaling 30 KVA or more, or over 4,000 BTU/hr. heat dissipations shall be indirectly air conditioned by one of the following methods, listed according to preference:

- Ducted, parallel-fan variable air volume (VAV) terminal unit to circulate air into the equipment room from the return air plenum (this method uses the building as a heat sink)
- Exhaust fan which exhausts relief air from an adjacent space, or
- Dedicated chilled water or DX fan coil unit

Show all equipment servicing requirements on the drawings; provide a minimum clearance of 2'-6" from any wall adjacent to mechanical equipment.

Design chilled water systems with a 14°F minimum temperature differential.

Do not place temperature/humidity sensitive equipment in elevator equipment rooms.

Do not place exposed ductwork on the roof or exterior of building.

Locate major HVAC and refrigeration equipment such as chillers, pumps, expansion tanks, etc. in accessible mechanical rooms, preferably located on an exterior wall with exterior access. Do not locate HVAC equipment on the roof except necessary exhaust fans, vents, and outside air intakes.

Where ductwork crosses on plans, indicate which duct is below with broken lines. Ensure ducts, with insulation intact, will penetrate joist webs, roof trusses, and other structural members.

Specify on the plans that HVAC equipment, such as fan terminal units, installed above the ceiling shall be mounted as low as possible, e.g., not over tall spaces such as entrance lobbies, for ease of maintenance. Avoid such equipment in or close to critical noise areas such as conference rooms.

Air conditioning for communication or telephone switch rooms with expensive heat sensitive switchgear shall be designed to operate in accordance with the equipment manufacturer's temperature/humidity requirements. Consult with the Project Manager to determine other special air conditioning requirements in these areas. Where feasible, indirectly condition the room like equipment rooms mentioned above. If full-time year around air conditioning is required and chilled water is available, provide a chilled water fan coil unit located outside the room with ductwork into the room. The unit shall have only a primary condensate drain unless the location of other equipment and/or potential water damage concerns dictate otherwise. The unit should maintain the room temperature and humidity within the equipment manufacturer's requirements without the main building air system in operation.

For new construction, open air plenums will not be used, all return air will be ducted back to air handlers.

Design mechanical rooms with ducted returns. Mechanical rooms that serve as return-air plenums are prohibited.

Design ventilation systems in accordance with the latest edition of the "***Industrial Ventilation - a Manual of Recommended Practice***", by the American Conference of Governmental Industrial Hygienists.

Elevator equipment rooms shall have stand-alone HVAC systems on emergency power.

### **3.22.1 HVAC Insulation**

All chilled and hot water piping through walls shall be sleeved, continuously insulated,

and fire-sealed when passing through fire-rated walls.

Specify only exterior insulated ductwork. Specify flexible blanket with exterior vapor barrier for concealed and inaccessible exposed ducts and semi-rigid board-type insulation with exterior vapor barrier in exposed areas, such as in mechanical rooms, up to 10'-0" elevation.

Chilled water insulation shall be foam glass, except cellular foam is permitted on runouts.

### **3.22.2 Hydronic Piping**

Delete bypass valves and piping on chilled-water systems that utilize 2-way control valves.

Specify a ball valve and a pipe plug on coil maintenance drains of future pipe connections.

HVAC equipment, components, etc. shall be consistently identified on the plans and in the field after installation. Only one identification scheme shall be used throughout the project.

Cooling towers with below-grade sumps shall be provided with high and low-level alarms. The low-level alarm shall sound prior to the pump cavitating, but well after makeup water should have been supplied.

Review controls for pumps with variable speed drives (VSD) to assure that proper cooling and lubrication takes place at all speeds. Lowest VSD speed should be shown in the drawings.

Controls for central energy plant systems, pumps and chilled water shall be the same on multiple buildings.

Require pipe welder certification to be current, within 3 months, and that it covers the type and position of welds required for the project.

Require hydrostatic tests for hydronic piping systems. Prohibit the use of air or any other compressible gas as a testing medium.

Include specifications for cleaning and treating hydronic piping systems including chilled water and hot water systems.

### **3.22.3 Hydronic Pumps**

Provide separate and distinct set of controls, starters, etc., for pumps and other items of equipment intended as backup or provide an AFD/Starter with A/B switch, as appropriate; to assure full backup.

Review pumps with speed control to assure that proper cooling and lubrication takes place at all speeds. Specify the lowest speed on the drawings and/or in the project manual.

Test pumps and other equipment subject to vibration at the full set of speed ranges available from the controls. Maximum acceptable vibration levels shall be specified on the plans.

### **3.22.4 Metal Ductwork**

Design ducts to handle the water column pressure available from the fan motor(s) with the speed controls, dampers and other pressure controlling devices operating in peak-load condition.

Ducts shall be constructed of G-90 galvanized steel sheet.

Specify sealing transverse and longitudinal seams regardless of pressure class.

Specify duct pressure test procedures and duct-pressure testing prior to installing insulation.

Duct insulation shall be R-10 minimum.

### **3.22.5 Cooling Towers**

Use Life-Cycle Cost Analysis to determine the use and type of cooling tower based upon actual site conditions. Include the following:

- tower elevation relative to chiller
- hours of operation
- wet-bulb temperature

- cost of make-up water
- operation and maintenance costs

### **3.22.6 Modular Indoor Central – Station Air Handling Units**

VAV air handler units shall utilize VSD in lieu of Inlet Guide Vanes (IGV).

Review published turndown data for AHU's to ensure acceptable vibration and noise levels are maintained throughout the required operating range. Specify the maximum acceptable noise and vibration levels on the plans in accordance with ASHRAE *Handbook of Fundamentals* guidelines.

### **3.22.7 Energy-Management and Control System**

Unless directed otherwise in writing by the Project Manager, specify and design a Direct Digital Control (DDC) Energy Management and Control System (EMCS) for the HVAC system, security, lighting, and fire alarm systems. Coordinate the design with the controls system contractor.

Provide power energy-management and control system through an uninterruptible power supply (UPS) to avoid outages.

Provide a schedule of DDC points, control diagram, and comprehensive sequence of operations for each type, piece, and configuration of HVAC equipment (e.g. fans, air handler units, fan terminal units, chillers, etc.). Specify only points necessary to operate the system in accordance with the design intent. The sequence of operations should address occupied, unoccupied, winter, summer, and Test & Balance (T & B) operating modes.

The EMCS shall minimize or shut off outside air and eliminate reheat during unoccupied periods and control humidity during both occupied and unoccupied periods.

Where air flow metering does not exist or other design requirements dictate, provide CO<sub>2</sub> sensing in return-air plenums or ducts on large office buildings and trend this point to monitor (indirectly) air quality and to activate additional ventilation as required.

Unless specified otherwise, the EMCS shall be fully integrated and include a personal computer (PC) interface for HVAC systems with 150 tons or more cooling capacity.

Systems with less than 150 tons, or where a budget deficit exists, shall utilize time clocks and/or programmable unitary controllers. In all installations, the EMCS shall incorporate stand-alone module system architecture and not be dependent on the Central Processing Unit (CPU) for routine operations.

The EMCS shall maintain the controlled variables at their set points within the following tolerances:

- Space temperature: 2.00 F
- Duct temperature: 2.00 F
- Relative humidity: 5%
- Pressure differential: 5%
- Air flow rate: 5%
- Water flow rate: 5%

The CPU, PC and related peripheral equipment shall meet industry standards at the time the controls system contract is executed and be adequate to operate the system in accordance with the design intent.

Assure the equipment/component I.D. numbers, the building management system I.D. numbers, and the control systems are the same.

Assure controls for central energy plant systems such as chilled water match and/or standardized throughout the facility. Pumps and chilled water controls shall be the same for multiple buildings, etc.

### **3.22.8 Axial HVAC Fans**

Size and specify fans to provide low noise and vibration levels.

Specify the maximum-acceptable noise and vibration levels on the plans for fans over five motor horsepower.

### **3.22.9 Centrifugal HVAC Fans**

Fans shall be sized and specified to provide low noise and vibration levels.



Specify the maximum-acceptable noise and vibration levels on the plans for fans over five motor horsepower.

### **3.22.10 Air Terminal Units**

Specify parallel fan powered VAV boxes with heating type of electric resistance or hydronic type per LCCA for exterior zones and straight VAV units for interior zones in office facilities.

## **3.23 DIVISION 26 - ELECTRICAL**

### **3.23.1 Basic Requirements**

Provide complete, safe, efficient and cost-effective operations systems for lighting, power, security, fire safety, and communications.

Plans and specifications shall be adapted to local conditions, including salt air near oceans or acidic soils.

Clean power systems for computers shall be provided only in raised floor, mainframe computer rooms. Convenience outlets for offices, which may be used for desktop computers, shall be limited to four receptacles per circuit.

### **3.23.2 Quality Control Items**

Tighten bolted or screwed electrical connections to specified torque with a torque wrench or torque screwdriver.

Test each duplex receptacle for polarity grounding and GFI protection with a plug-in tester.

Provide an electrical system testing specification. Describe tests to be performed and acceptance criteria. Provide timely notice to the owner to witness tests and furnish test results to owner.

Provide maintenance schedules incorporating manufacturer's recommendations. Maintenance schedules shall address status information on switchgear, replacement of indicator light bulbs, resetting of targets and testing of relays and controls.

Provide a list of over-current relay settings, ground fault relay settings and settings for adjustable circuit breakers. Relays shall be tested and the settings verified. Provide

detailed operational parameters and protection with manufacturer's acceptance. At completion of building construction, verify that the differentiation between normal power, emergency power, and optional standby power has been maintained at all levels. Emergency power shall be limited to those devices essential to the operation of the building under emergency.

Coordinate testing of circuit breakers in the emergency power system and optional standby system to assure a fault on the optional standby system will trip the correct circuit breaker and leave emergency power functioning.

Provide comprehensive on-site and factory training on electrical equipment operation and safety concerns for personnel who will operate the buildings (3 or 4 individuals).

### **3.23.3 Raceway and Boxes for Electrical Systems**

Minimum conduit sizes shall be 3/4" diameter for runs with up to five No. 12 AWG conductors and 1/2" diameter for flexible conduit to connect light fixtures.

Metal conduit connections shall be tight to ensure electrical continuity. PVC conduit connections shall be solvent welded.

Underground high voltage circuits, over 600 volts shall be installed in concrete encased PVC conduit, type DB, 4" diameter or greater. The top of the concrete envelope shall be more than 24" below grade.

Rigid galvanized steel conduit or IMC may be direct buried, exposed to damage, exposed to weather, or cast in concrete.

Conduits concealed in walls or ceilings shall be EMT.

Plastic conduit may be used in lieu of rigid steel conduit in unexposed locations. Rigid galvanized steel ells and RGS turn-ups above the slab shall be used.

Flexible conduit and liquid-tight in wet locations may be used for connections to light fixtures, dry-type transformers, and equipment with noise, vibration, or motion problems.

Wireways shall be galvanized steel with hinged cover.

Cable trays or J hooks shall be provided for telecommunications systems with 2 or more entries into communications rooms spaced to prevent crowding. Details on the plans shall clearly depict the method of installation and a coordinated path for the tray

to follow.

### 3.23.4 Low-Voltage Electrical Power Conductors and Cables

Conductors shall be stranded copper wire sizes No. 12 AWG and larger.

600-volt insulation for wires and cables shall be type THHN / TWHN.

Insulation for primary voltages over 600 volts shall be type XLP.

Neutrals or equipment grounding conductors #4 AWG and larger may be black insulated wire identified by white or green tape in lieu of white or green insulation, per NEC. Phase conductors #8 AWG may be color coded with tape. Apply 3 bands of colored tape, 3/4" wide and 1" apart with four wraps of tape in each band, at each end of each wire.

Use the following wire insulation colors, by Voltage:

	<u>480/277 volts</u>	<u>208/120 volts</u>
Phase Conductors	brown, orange, yellow	black, red, blue
Neutral	natural gray	white
Ground	green	green

### 3.23.5 Structured Cabling

Telephone and data communications wiring shall be Category 5 type.

### 3.23.6 Raceways and Boxes

Boxes for concealed work shall be minimum 4" square steel, 1-2" deep.

Boxes for exposed or exterior work shall be aluminum with threaded hubs. EMT fittings shall be compression type steel fittings.

### 3.23.7 Wiring Devices

Receptacles shall be commercial grade, NEMA 5-20R, side wired, grounding type.

All branch circuits shall be electrically continuous when any receptacle is removed.

Switches shall be specification grade 125/277volt 20 ampere, poles as required.

Cover plates shall be standard size plastic with smooth finish.

Color for switches, receptacles, and cover plates shall be selected by the owner.

Special purpose receptacles shall be provided to suit equipment requirements.

### **3.23.8 Electrical Cabinets and Enclosures**

Enclosures and cabinets for electrical equipment shall be welded construction.

### **3.23.9 Electric Motors**

Specify high-efficiency type electric motors.

Motors for VFD service shall be inverter-duty type.

### **3.23.10 Enclosed Controllers**

Specify starters with an H-O-A switch, horsepower rated, with melting alloy thermal overloads for each pole and auxiliary contacts.

All motor starters in one project shall be products of one manufacturer. When adding to existing facilities, new motor starters shall match the existing, if possible.

### **3.23.11 Variable Frequency Motor Controllers**

Adjustable Speed Controllers for AC motors may be used in lieu of throttling for control of airflow or fluid flow. Motors for VFD service shall be inverter-duty type.

Surge suppressors for control loops for adjustable speed drives shall be provided to prevent damage from lightning and transferred potentials if the loop extends to another building or is over 100' long.

### **3.23.12 Hangers and Supports for Electrical Systems**

Use UL approved pillows of fire stop material which can be removed and re-stacked to allow reuse of the fire stop materials when cables are added to or removed from penetrations of fire walls.

Conduits, cable trays, boxes and fittings shall be hung from the building structure with metal supports. No electrical item shall be hung from pipes or ductwork.

### **3.23.13 Identification for Electrical Systems**

Electric panel identifiers shall include the number of the room in which they are located.

Electrical Panels shall have an engraved laminated plastic label attached with glue and screws with the panel identifier in 1" letters and voltage rating in 2" letters.

Embossed plastic tape labels are not to be used.

Panels shall have typewritten directories.

### **3.23.14 Emergency Power**

Emergency generators, when provided, shall be driven by a diesel or natural gas engine. The generator shall be a brushless design with solid-state exciter.

If an emergency power system is provided, overcurrent coordination shall prevent a short circuit on any branch circuit from disabling any other emergency branch circuit.

### **3.23.15 Medium Voltage Electrical Distribution**

Medium-voltage equipment (over 600 volts and less than 40,000 volts), if installed indoors, shall be in a separate, dedicated, locked medium-voltage equipment room. Outdoor, medium-voltage equipment shall be installed in a pad-mounted, weatherproof, locked metal cabinet complying with the ***National Electrical Safety Code*** that completely encloses all terminals and equipment.

Provide landscaping to shield outdoor, medium-voltage installations from view.

### **3.23.16 Low-Voltage Transformers**

Coordinate location of transformers with HVAC equipment.

Dry Type Transformers shall be UL labeled, manufactured with 220° C insulation and designed for a maximum of 150° C rise above a 40° C ambient temperature.

Provide sound isolation including a neoprene pad under transformer sized for the weight of the transformer installed and flexible metal conduit for electrical connections.

Aluminum transformer windings may be used.

Autotransformers may be used where appropriate.

Transformers 30 KVA and larger shall be floor mounted.

Ground-bonding jumper, required by NEC 250-28, shall be connected directly to the "X0" terminal at the transformer.

K-13 Rating transformer shall be used for computers.

### **3.23.17 Power Factor Correction Equipment**

Power factor correcting capacitors shall not cause more than 10% overvoltage during light load periods.

Automatic switching may be provided to prevent overvoltage.

### **3.23.18 Grounding and Bonding for Electrical Systems**

Each building shall have a copper No. 2 AWG minimum ground ring per **NEC 250-81**. The ground ring may be installed in footings or grade beams as a concrete encased electrode encircling the building. Splices and connection to the ground ring shall be cadwelded.

Structural foundation drawings shall include ground rings and details if conductors penetrate concrete.

Provide a detailed grounding plan showing all ground electrodes, grounding electrode conductors, bonding to other grounded systems, grounding for separately derived systems and ground connections for communications equipment.

An equipment-grounding conductor shall be installed in every feeder and branch circuit conduit and raceway.

Equipment grounding conductors installed in metal conduits or raceways shall be

bonded to that conduit or raceway at both ends of the run, to minimize ground impedance.

A separate grounding bus, a "ground source," shall be installed on the wall of a communications room but not in an electrical room. (An electrical room has the equipment grounding bus inside the panelboards to comply with NEC.)

Medium-voltage, outdoor, pad-mounted equipment shall be grounded to a ground ring 3' from the pad and 3' below grade with 20' x 5/8" copperweld ground rods at each corner of the ground ring with 2 ground electrode conductors going to opposite sides of the ring. The ground ring shall be the same size as the grounding electrode conductor and No. 2 min. PVC conduits may be cast into the pad for the ground electrode conductor.

Main ground shall be bonded to main coldwater pipe and building reinforcing steel.

### **3.23.19 Low-Voltage Electrical Distribution**

Short circuit currents for the service entrance, including motor contributions, shall be listed on the electrical 1-line diagram showing the service entrance.

A load calculation complying with NEC Article 220 shall be included on the single-line diagram showing the service entrance and shall be used to size the service entrance equipment. Service entrance equipment shall not exceed NEC by more than 50%.

The "six switch" rule for service disconnects may be used to avoid 480-volt breakers with GFI protection.

Buses shall be copper.

Spare fuses mounted in a wall cabinet shall be provided for fusible devices.

Analog voltmeters and ammeters shall not be installed in service equipment.

Instrumentation for building automation systems may be installed on service entrances.

Service entrances for 600 volts or less shall have surge suppressors with shunt type protection and high-energy metal oxide varistors as the primary suppression element.

The metering systems used for the electrical distribution equipment may include phase voltage, phase amperes, KW demand peak retained and current value, KWH totalizing.

**NOTE:** The meter accuracy is for billing purposes on KWH and 0.5% on all others for the full range of the CT and PT ratings. The metering shall be electronic with the capability to be hot linked via FCN/WWW. These meters may be connected to the building management system, depending on the size of the building.

### **3.23.20 Low-Voltage Circuit Protective Devices**

Safety switches shall be heavy duty, quick-make, quick-break, horsepower-rated in an appropriate NEMA enclosure.

### **3.23.21 Panelboards**

Panelboards shall be dead-front with bolt-on thermal magnetic circuit breakers with copper buses.

A panelboard shall have a main breaker if it is fed from a panel in another room or if a main breaker is required by code.

All panel boards on one project shall be the product of one manufacturer. When adding to an existing facility, new panels shall match the existing.

Provide 25% spares in 120/208-volt and in 277/480-volt panelboards.

Switchboard is to be service entrance labeled, dead-front, metal enclosed, front connected, free standing with ground fault protection for all devices rated 480 volts and 1,000 amperes or greater.

Main device shall be circuit breaker or fusible bolted pressure contact switch. Distribution devices shall be group mounted fusible switches or molded case circuit breakers.

Fusible devices shall have spare fuses mounted in a wall cabinet.

Panelboards servicing computers shall have the neutral service conductor oversized by 200%.

All branch circuits serving computers shall have a separate neutral.



### 3.23.22 Interior Lighting

Lighting loads shall not exceed 1.5 watts per square foot in any room. The owner may approve exceptions for rooms with ceiling heights above 12' and other special applications.

A life cycle cost analysis shall be submitted if occupancy sensors, photocells, or other energy conservation devices are specified.

Interior lighting levels shall be the lesser of the average maintained levels listed in the IES Handbook or the levels listed below:

- General office space            50 foot-candles
- Conference rooms                30 foot-candles
- Corridors                            10 foot-candles
- Toilet rooms                        20 foot-candles
- Storage rooms                      20 foot-candles

General office space shall be lighted via standard 2' x 4' 2 or 3-lamp fluorescent parabolic lighting fixtures. Indirect lighting shall be provided for PC screens, training rooms, conference rooms and offices for visual comfort.

Use single-lamp 1' x 4' fluorescent fixtures in corridors with long axis of fixture aligned with the long dimension of the corridor.

Toilet rooms may be lighted with a combination of any or all the following:

- Recessed 2' x 4', two-lamp fluorescent troffer with 0.125" acrylic prismatic lens.
- Cove mounted single-lamp fluorescent strips with parabolic-louver shielding.
- Extruded aluminum wall mounted single-lamp fluorescent lighting fixture with up and down light components.

Ballasts shall be electronic, operating at 20-megahertz min., with less than 10% total harmonic distortion, with 5-year warranty.

Semi-specular louvers and reflectors shall have fingerprint and dust-resistant finish.

The Project Manager shall approve use of 2' x 4' fluorescent fixtures.

Exit lights shall have white poly carbonate, easy snap housing with 6" stroke red letters and LED lamps with a 25-year warranty.

Energy efficient lamps shall be installed where economically feasible.

Incandescent lamps, including tungsten halogen lamps, shall only be used for seldom-visited areas like elevator pits and attics, and in explosion proof fixtures. The use of compact fluorescent lamps in lieu of incandescent lamps is encouraged.

Fluorescent lamps shall be energy efficient types and all fluorescent lamps of one size shall be the same color. The preferred lamp is T8 32watt 800 series CRI of 80 to 85 and color temperature 4100 Kelvin.

### **3.23.23 Roadway and Parking Lighting**

Coordinate selection of light poles style, color, and luminaries with the Project Manager.

Provide a foot-candle illumination plan for the parking areas and all major public walkways adjacent to the building.

The maximum variation of exterior lighting from maximum to minimum is ten to one (10:1). The minimum allowable exterior light levels are:

- Building entrances            4.0 foot-candles
- Arterial roads                 1.2 foot-candles
- Local roads                    1.0 foot-candle
- Parking areas                 1.0 foot-candle
- Sidewalks                     1.0 foot-candle

Site lighting and signage shall be controlled by a photocell and timer located within the buildings, or by the Building Management System.

The site lighting design for roadways, parking and sidewalks shall have light poles of the type, height and the number of fixtures that yield the lowest life cycle cost.

Entry doors shall be illuminated by a light fixture in the soffit above the door.

Coordinate the use of bollards with lights or other low level lighting fixtures with the Project Manager.

### **3.23.24 Emergency Lighting**

Battery pack lighting and emergency standby are not acceptable unless pre-approved. Emergency generators/distribution systems are the preferred method.

### **3.23.25 Classified Location Lighting**

Explosion proof fluorescent light fixtures using 48" T8 or T12 lamps are not acceptable. Use halogen, high-intensity discharge (HID), or compact fluorescent (CFL) lamps as indicated by life cycle cost analysis.

Vandal-resistance light fixtures shall be supplied as required by the program.

### **3.23.26 Transient Voltage Suppression for Low-Voltage Electrical Power Circuits**

Transient voltage surge suppression (TVSS) system shall be provided at all branch circuit panelboards. The surge suppression system shall start at the main distribution panelboards and improve in quality and class at each point. The state will provide the suppression devices at the point of use.

TVSS mounting and wiring shall conform to the manufacturer's instructions. Provide a suitable circuit breaker. Wiring shall take the most direct route from TVSS to ground bus.

Class "C" surge protection on the primary panel and class "B" surge protection on breaker panel may be provided for both convenience power as well as lighting power circuits. Also, Class "A" surge protection may be used on actual loads.

Secondary service entrance shall be provided with a surge suppressor with shunt type protection circuitry, and high energy metal oxide varistors as the primary suppression element.

The TVSS system shall be designed, manufactured, tested and installed in accordance with current adopted editions of the following:

- ANSI / IEEE
- NEMA Standards
- National Electric Code (NEC)
- Underwriters Laboratories UL 1449 – Safety Standard
- UL 1283 – Standard for EMI / RFI

### **3.23.27 Lightning Protection for Structures**

Only UL listed lightning protection systems complying with NFPA 780, Lightning Protection Code may be installed.

Provide a Class B UL master label lightning protection system using copper air terminals and conductor.

Structural steel roof framing and steel columns shall be used as roof conductor and down conductors per NFPA 780 3-19.1.

Down conductors shall be provided at all exterior corners of a building with additional down conductors to satisfy code requirements. (An "L" shaped building has five exterior corners.)

Flag poles shall be aluminum and shall be grounded with a No. 2 bare copper cable electrically continuous from the pole grounding lug to a 20' x 5/8" copperweld ground rod driven until the top of the rod is 24" below grade.

Underground circuits installed in PVC conduit or direct buried, may be protected from lightning by installing a bare copper counterpoise, solid No. 4 wire or larger, laid 6" above the PVC conduits or 6" above direct buried cable or on top of the concrete envelope, if used, with one counterpoise per duct bank. Bond the counterpoise to a building ground electrode or a driven ground rod at each end.

Provide surge protection for any wiring that connects to building.

### **3.23.28 Communications**

Provide a premise distribution system to serve as a vehicle for transport of data and voice telephone signals throughout the building from designated demarcation points to outlets located at various desks, workstations and other locations.

Each office location shall contain the following systems outlets minimum:

- 2 data ports and 2 communications ports mounted in an extra-deep 2-gang box.
- 2 duplex 20-ampere outlets mounted in a double-gang box. This outlet to be located directly adjacent to the data/communications outlets described herein.
- 2 additional duplex outlets mounted on other walls in the same room.
- Separate cables will be used for data and communication.

Coordinate outlet locations for best use in each area. Portable or open space furnishings shall use outlet drop systems designed for use therewith.

### **3.23.29 Communications Horizontal Cabling**

Use the following standards for Telecommunications:

- TIA/EIA 568 Commercial Building Telecommunications Wiring Standard.
- TIA/EIA 569 Commercial Building Standard for Telecommunications Pathways and Spaces.
- TIA/EIA 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
- TIA/EIA 607 Commercial Building Grounding and Bonding Requirements for Telecommunications.
- TSB67 Transmission Performance Specifications for Field Testing of Unshielded Twisted-Pair Cabling Systems.
- TSB72 Centralized Optical Fiber Cabling Guidelines.

- IEEE 802.3 LAN Standard for Ethernet.
- IEEE 802.3i LAN Standard for Ethernet 10-Base-T.
- UL Underwriter's Laboratories.
- BICSI Telecommunications Distribution Methods Manual.
- ISO/IEC 11801 the International Organization for Standardization/the International Electrotechnical Commission-Generic Cabling for Customer Premises.
- Communications Outlets:
  - CT faceplates
  - CT4-FP-(XX) - Single gang plastic faceplate for one coupler
  - CT8-FP-(XX) - Double gang plastic faceplate for four couplers
  - CT-MFP-(XX) - Modular furniture adapter

### **3.23.30 Digital, Addressable Fire-Alarm System**

Provide a complete combination manual automatic, zoned, supervised fire alarms system capable of interfacing with the existing Capitol Security Office Fire Command Center and connected to the local fire department.

### **3.23.31 Zoned (DC Loop) Fire-Alarm System**

Provide a complete combination manual automatic, zoned, supervised fire alarms system capable of interfacing with the existing Capitol Security Office Fire Command Center and connected to the local fire department.

## **3.24 DIVISION 32 – EXTERIOR IMPROVEMENTS**

### 3.24.1 Planting Irrigation

- The source of irrigation water shall be determined by the Landscape Architect of Record after considering the use of well water, pumping from surface ponds or cisterns, treated effluent, or potable water from local utilities.
- If water from a local utility is used for the irrigation system, separate irrigation water meters shall be installed to avoid sewer charges for water used.
- Provide backflow preventers that comply with local regulations. Backflow valves shall be screened from public view. Verify that the use of backflow preventers in conjunction with pop-up style sprinkler heads conforms with local ordinances.
- Three design levels of irrigation quantity should be planned:
  - High coverage areas: Provide regular irrigation for landscaped areas near buildings.
  - Moderate coverage areas: Landscaped areas in parking lots and along local and arterial roads require less irrigation.
  - Low coverage areas: Open spaces preserved in a natural condition require little or no supplemental water.
- Irrigation systems shall be designed so that plants with similar water requirements are zoned together. Lawn areas shall be zoned separately from shrub or groundcover areas.
- Automatic irrigation controllers are required for all irrigation systems.
- Use ground moisture sensors and thermostatic sensors to conserve water.
- All irrigation piping shall be PVC. Main lines and lateral lines shall be schedule 40 PVC piping with solvent welds.
- Sleeving under pavement shall be schedule 80 PVC piping.
- Experienced irrigation designers or landscape architects shall design all irrigation systems.

- Provide a tracer wire system which is electrically continuous, insulated and suitable for underground use.
- Use pop-up style heads in lawns and riser mounted heads in shrubbery.

### 3.24.2 Turf and Grasses

- Provide additional shrub and groundcover planting in the area between the parking lot curb and the sidewalk, rather than a single row of shrubs to meet the landscape screen requirement.
- Preserve existing landscape and natural vegetation where possible.
- Have barriers erected around protected trees before construction activity begins.
- Sod will be flush with the finish elevation of the sidewalks and concrete curbs, to avoid water ponding on walks.
- All plant material used in landscaping shall be healthy, disease free and pest-free. Use Florida #1 or better plant material, as described in "**Grades and Standards for Nursery Plants**" published by the Florida Department of Agriculture.
- Specify plant materials appropriate for their location on the site.
- Use no invasive or exotic plants.
- Establish a guarantee period of 365 days after the warranty maintenance period ends in which the Contractor will guarantee free replacement (labor and materials) of any plant material that does not survive. Interim 90-day inspections by the Construction Engineer shall take note of all vegetation, materials and methods.
- Establish a routine landscape maintenance schedule setting forth criteria and timing for fertilizing, pruning, etc. as a mandatory submittal in the project close out documents.

### 3.24.3 Plants



- The Landscape Architect is encouraged to provide additional shrub and groundcover planting in the area between the parking lot curb and the sidewalk, rather than a single row of shrubs to meet the landscape screen requirement.
- Preservation of existing landscape and natural vegetation shall be accomplished whenever possible.
- Have barriers erected around protected trees before construction activity begins.
- Mulch, applied at the time of planting, should have a minimum depth of 3".
- No visible plastic surface covers are permitted.
- Specify plant material used in landscaping to be healthy, disease free and pest-free. Use Florida #1 or better plant material, as described in "**Grades and Standards for Nursery Plants**" published by the Florida Department of Agriculture.
- Specify plant materials appropriate for their location on the site.
- Use no invasive or exotic plants.
- Specify drought-tolerant plants as much as possible (xeriscape.)
- Do not use poisonous plants or plants with sharp thorns or foliage.
- Wildflower mixes should be of low growing varieties, generally less than 16" height.
- Establish a guarantee period of 365 days after the warranty maintenance period ends in which the Contractor will guarantee free replacement (labor and materials) of any plant material that does not survive. Interim 90-day inspections by the Construction Engineer shall take note of all vegetation, materials and methods.
- Establish a routine landscape maintenance schedule setting forth criteria and timing for fertilizing, pruning, etc. as a mandatory submittal in the project close out documents.

### END OF CHAPTER 3

# CHAPTER 4

## FACILITY-SPECIFIC GUIDELINES

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## 4-1 AUTO SHOPS

Auto Shops are facilities where Department vehicles are serviced and repaired. They generally have service bays with vehicle lifts and/or service pits. Mechanical systems included in most Shops are: high-pressure pneumatic systems for operating air-powered tools, high-pressure hydraulic systems for operating the lifts, low-pressure hydraulic systems for dispensing vehicle lubricants, vehicle exhaust evacuation systems, etc. Each of these will have its own power distribution system, compressor, generator, piping system, etc. Generally, not mechanically cooled, auto shops will usually have passive and power ventilation, and radiant heating systems.

The Auto Shops are business and industrial occupancies and may be comprised of a large vehicle service area (separate facilities with capability to service/repair small vehicles (cars, pickups, vans, etc.) and large vehicles (dump trucks, tractors, bulldozers, etc.) with adjacent offices and storage facilities.

Some Auto Shops may have refueling facilities as a part of the building function. Others may be a part of a Shop and Warehouse building. The building structure is generally either concrete masonry unit or pre-engineered rigid-frame metal construction.

While some Auto Shops may have underground hydraulic lifts, it is recommended that new facilities be designed with aboveground vehicle lifts.

## 4-2 CREW BUILDINGS

### 4-2.1 Modular facilities design

- Ease of expansion
- Design utilities infrastructure to allow for future expansion:
  - Water supply lines stub-ups, capped off
  - Sanitary sewer piping stub-ups, capped off
  - Electrical panels sized to allow additional circuits / fixtures

### 4-2.2 Structure

- Structural systems shall be designed for structural conditions, wind loads, soil conditions, etc. specific to the project location.
- In coastal areas/corrosive environments, consider using non-corrosive materials (i.e., concrete, CMU, epoxy-coated reinforcing, etc.) where feasible.
- Foundation and Floors shall be slab on grade w/monolithic or strip footings.
- Walls and columns shall be concrete masonry unit (CMU), reinforced concrete, or pre-engineered metal building as appropriate for location. Coordinate with FDOT Project Manager.

### 4-2.3 Roof

- Common structural systems (recyclable materials)
- Light-gauge metal trusses
- Pre-engineered metal building
- Designed for 20-year life with warranty
- Metal roofing system over substrate
- Few penetrations
- Well ventilated
- Avoid roof slopes of less than 3" to 12"

### 4-2.4 Finishes

- Floors in crew rooms and offices shall be vinyl tile or approved equal. All other floors shall be designed for durability and low maintenance (i.e., epoxy coatings or hardened concrete). Coordinate with FDOT Project Manager.
- Walls separating interior crew storage areas shall be chain link fencing or CMU.
- Exterior walls shall be designed for durability, vandal-resistance and low maintenance (i.e., CMU, stucco, metal panels).
- Interior walls of crew rooms, and offices shall be 3<sup>1</sup>/<sub>2</sub>" metal studs with 5/8" gypsum wallboard and satin finish latex paint or approved equal wall assembly.
- Interior walls of restrooms and dressing rooms to be ceramic tile over 1/2" cement board or epoxy coated CMU or approved equal. Coordinate with FDOT Project Manager.

#### **4-2.5 Ceilings**

- Ceilings in storage areas shall be open to roof structure, insulation to be installed under roof deck and encapsulated.
- Ceilings in restrooms, crew rooms and offices shall be 2' x 2' acoustical tile or gypsum board with a ceiling height of 8' or as approved by the FDOT Project Manager.

#### **4-2.6 Office space**

- Offices shall be approximately 140s.f. with provisions for mechanical, electrical, and data rooms or as approved by the FDOT Project Manager.

#### **4-2.7 Crew rooms**

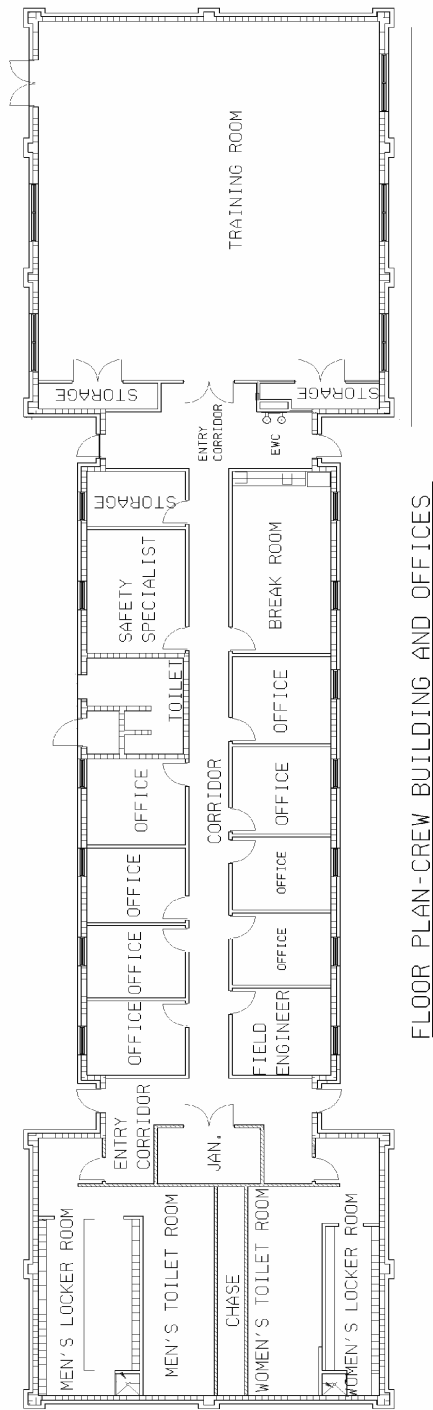
- Provide a crew room for each crew. Room shall include one locker for each anticipated crew member. Room should be twice as large as corresponding crew storage area.

#### **4-2.8 Crew storage**

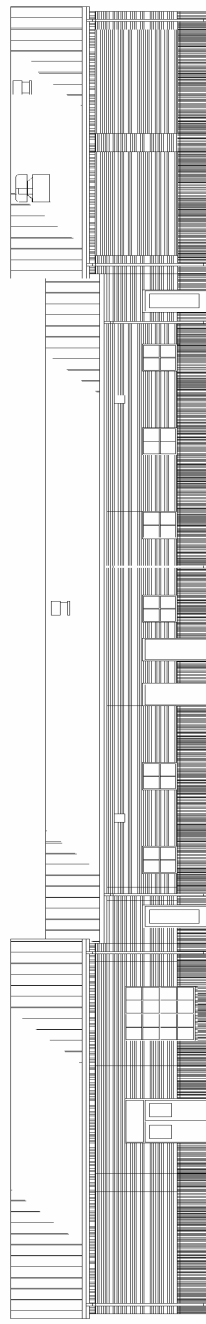
- Each crew storage area is to open to the exterior of building and be located on ground floor. Provide long overhang at exterior doors to facilitate loading/unloading of vehicles in inclement weather.

#### **4-2.9 Rest rooms/dressing rooms**

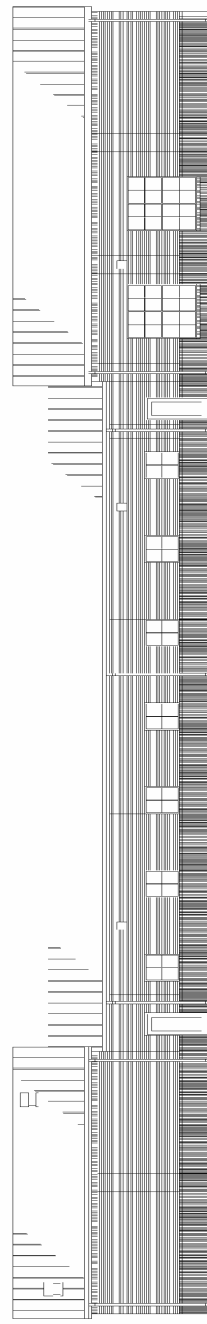
- Provide male and female dressing rooms including a locker for each anticipated crew member. Include two or three showers in each rest room/dressing room consistent with the Building Code- Plumbing.



FLOOR PLAN-CREW BUILDING AND OFFICES



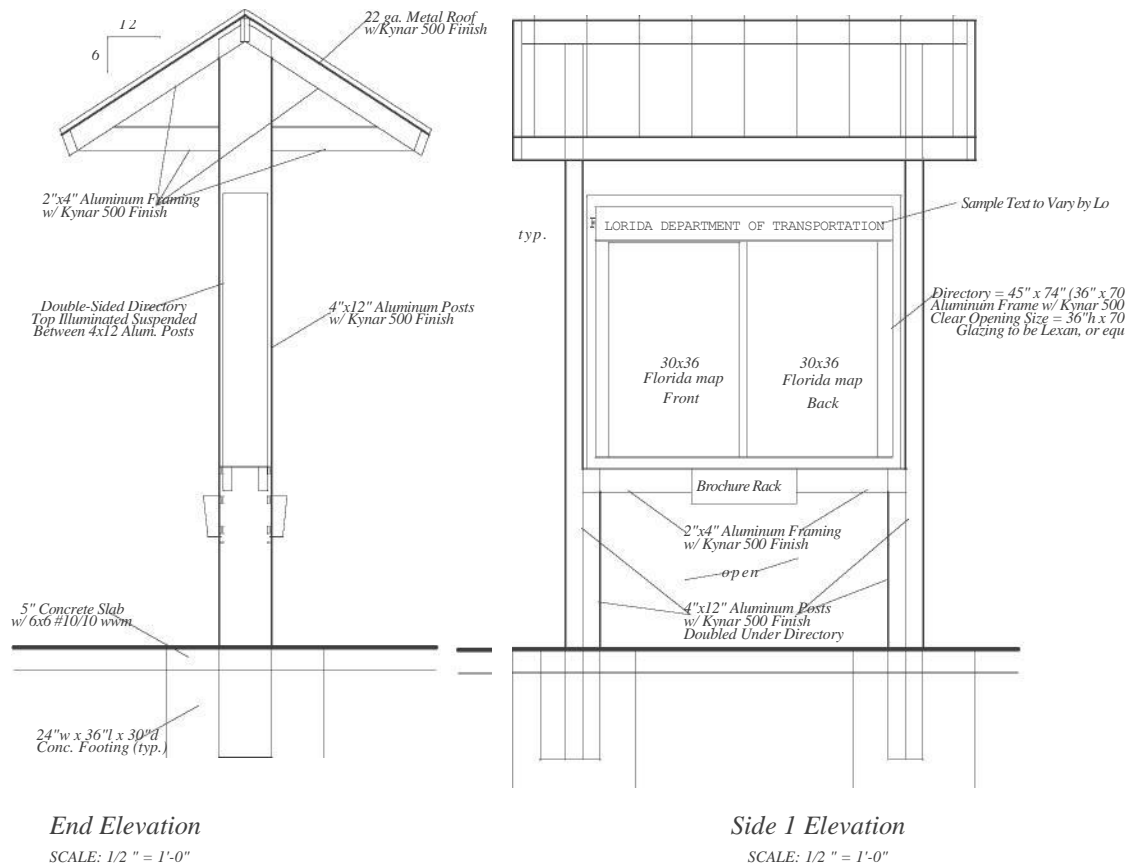
FRONT ELEVATION - CREW BUILDING



REAR ELEVATION - CREW BUILDING

### 4-3 INFORMATION KIOSKS (at Rest Areas)

The Information Kiosk is a standardized, freestanding double-sided directory case with cover that allows the Department to place public information at rest areas. The kiosk contains traveler aid information such as the state map, roadway construction information (where traffic delays might be expected); as well as other items of interest such as state wildflower program, runaway or lost children, etc.





## 4-4 OPERATIONS CENTERS

Operations Centers are comprised of facilities to house the field operation functions of the Department. There are “main yards” and “sub-yards”. They may include such facilities as: offices, storage facilities, laboratories, shops (carpenter, metal, and vehicle), warehouses, crew buildings, Emergency Operations Centers (EOC), fuel facilities and are usually considered critical facilities.

- Office buildings
  - Maintenance offices
  - Construction offices
  - EOCs
- Vehicle and equipment storage
- Materials storage
  - open bins
  - covered sheds
- Testing labs
- Mini-service buildings
  - vehicle repair
  - fuel station
- Open canopies
  - fuel dispensing
- Fuel storage facilities (tanks)
  - above-ground
  - in-ground
- Hazardous materials storage buildings
  - site-built
  - pre-engineered
- Vehicle wash facilities
  - vehicle pad
  - water supply
  - drainage/filtration

### 4-4.1 Modular Facilities Design

- Ease of expansion.
- Design utilities infrastructure to allow for future expansion:
  - Water supply lines stub-ups, capped off.
  - Sanitary sewer piping stub-ups, capped off.  
Electrical panels sized to allow additional circuits/fixtures.

#### 4-4.2 Structure

- Structural systems shall be designed for structural conditions, wind loads, soil conditions, etc. specific to the project location.
- In coastal areas/corrosive environments, consider using non-corrosive materials (i.e., concrete, CMU, epoxy-coated reinforcing, etc.), where feasible.
- Foundation and Floors shall be slab on grade w/monolithic or strip footings.
- Walls and columns shall be concrete masonry unit (CMU), reinforced concrete, or pre-engineered metal building as appropriate for location. Coordinate with the FDOT Project Manager.

#### 4-4.3 Roof

- Common structural systems (recyclable materials).
- Light-gauge metal trusses
- Pre-engineered metal building
- Designed for 20-year life with warranty
- Metal roofing system over substrate
- Few penetrations
- Well ventilated
- Avoid roof slopes of less than 3" to 12"

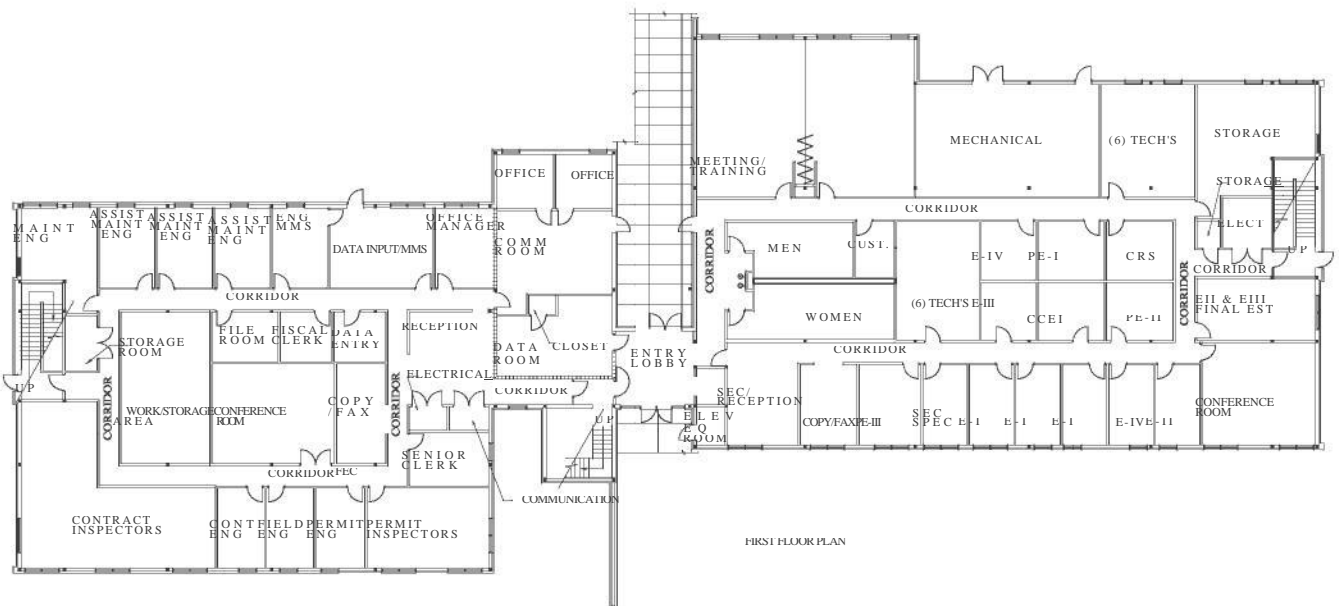
#### 4-4.4 Finishes

- Floors in crew rooms and offices shall be vinyl tile. All other floors shall be designed for durability and low maintenance (i.e., epoxy coatings or hardened concrete).
- Walls separating interior crew storage areas shall be chain link fencing or CMU.
- Exterior walls shall be designed for durability, vandal-resistance and low maintenance (i.e., CMU, stucco, metal panels).
- Interior walls of crew rooms and offices shall be 3-1/2" metal studs with 5/8" gypsum wallboard and satin finish latex paint or approved equal wall assembly.
- Interior walls of restrooms and dressing rooms to be ceramic tile over 1/2" cement board or epoxy coated CMU.

#### 4-4.5 Ceilings

Ceilings in storage and vehicular areas to be open to the roof structure, insulation to be installed under roof deck and encapsulated. Ceilings in restrooms offices and other occupied spaces to be 2 'x 2' acoustical tile with a ceiling height of 8 feet.





## 4-5 MATERIALS LABS

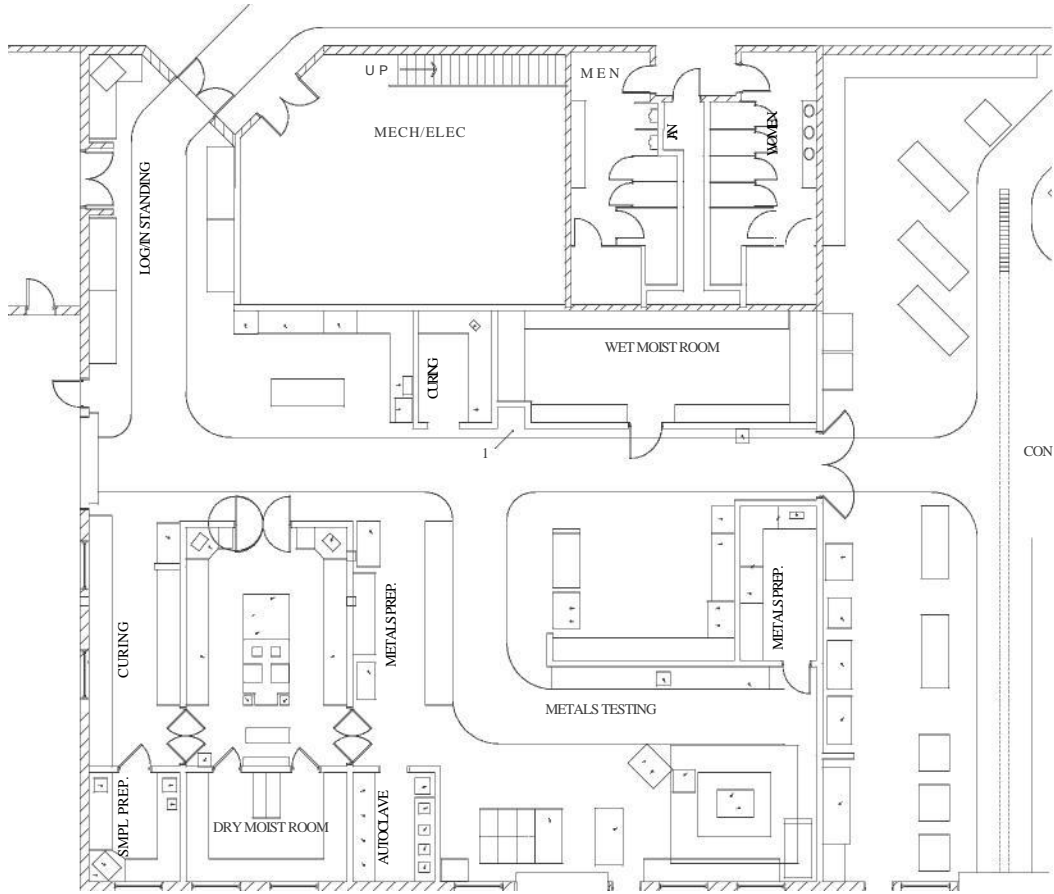
Materials laboratories consist of Major labs (i.e., the State Materials Office in Gainesville, which researches and tests a wide variety of materials used on Department projects) and Minor labs (i.e., District Materials Labs, which may conduct testing on materials used on specific projects).

Laboratories include complex and comprehensive facilities and systems to test physical, chemical and environmental qualities of a wide range of materials.

For Example: The State Materials Laboratory in Gainesville includes:

- soils lab
- bituminous lab
- corrosion lab
- nuclear equipment
- accelerated pavement testing facility
- administrative offices

### Partial Laboratory Plan



## 4-6 OFFICE BUILDINGS

Office buildings house the administrative functions of the Department at multiple levels. Some are stand-alone facilities and others may be part of a campus of buildings serving multiple functions.

- Large
  - Central office
  - District headquarters
  - Urban offices
  
- Small
  - Regional planning offices
  - Operations Centers
  - Maintenance offices
  - Construction offices
  - Portable offices

For large office buildings, staff areas shall be developed with offices along the exterior wall and around the interior core. This leaves an open area for modular workstations/systems furniture. The following are the components of the user area interior space plan. Coordinate structural bay sizes and layouts with office sizes and layouts.

- Systems furniture: 8' x 8' (64 SF), 10'x10' (100 SF), etc.
- Standard Office: 10' x 12' (120 SF)
- Supervisor Office: 12' x 14' (168 SF)
- Conference Room: 14' x 24' (336 SF)

### **12' x 14' (168 sq. ft.) Office**

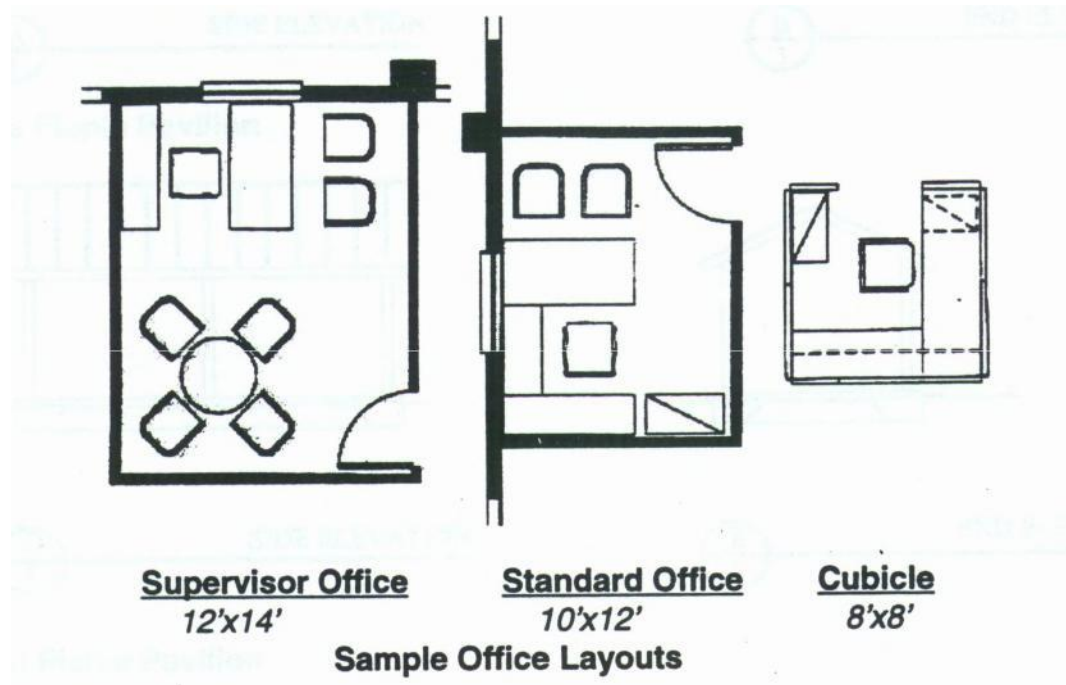
This office is the largest and is intended to accommodate division directors and other senior managers. The office is generally located on an exterior window wall.

### **10' x 12' (120 sq. ft.) Office**

This office is intended for professional staff and managers requiring privacy and/or security. It is located on both an exterior window wall and the interior.

### 8' x 8' (64 sq. ft.) Systems furnishings/modular workstation (cubicle)

Standard workstations are designed to improve space efficiency and employee productivity. Advanced connectivity and computers have reduced the need for storage space within individual workstations. The workstations are tall (standing height) with modular panels on four sides to provide visual privacy. Each 8' x 8' workstation has over 31 sq. ft. of work surface.





## 4-7 PRE-ENGINEERED METAL BUILDINGS

### 4-7.1 References

- AISC - Specification for Structural Steel for Buildings -Allowable Stress Design and Plastic Design.
- AISC - Quality Certification Program, Category MB.
- ASTM A36/A36M - Structural Steel.
- ASTM 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- ASTM 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- ASTM A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile strength.
- ASTM A325/A325M - High Strength Bolts for Structural Steel Joints.
- ASTM A446/A446M - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- ASTM A490/A490M - Heat Treated Steel Structural Bolts, Classes 150 ksi Tensile Strength.
- ASTM A500 - Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Tubing.
- ASTM A525/A525M - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- ASTM A529/A529M - Structural Steel with 42 ksi Minimum Yield Point (1/2" maximum thickness).
- ASTM A572/A572M - High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.
- ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- ASTM A792/A792M - Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
- ASTM C991 - Flexible Glass Fiber Insulation for Pre-Engineered Metal Buildings.
- ASTM C1107 - Packaged, Dry, Hydraulic-Cement Grout (Non-shrink).
- AWS A2.0 Standard Welding Symbols.
- AWS D1.1 - Structural Welding Code - Steel.
- MBMA (Metal Building Manufacturers Association) - Metal Building Systems Manual.
- SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.
- SSPC - Paint 20 Zinc Rich Coating.
- Building Materials Directory - Roof Deck Construction.

#### 4-7.2 System Description

- Design members to withstand dead load, and design loads due to pressure, suction and uplift of wind calculated in accordance with the **Florida Building Code**. At a minimum, design load shall be I-90 (110 mph wind speed).
- Design exterior wall and roof system to withstand imposed loads with no more than 1/180 deflection of span.
- Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature variations of 60° F.
- Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

#### 4-7.3 Quality Assurance

- Perform work in accordance with manufacturer's recommendations.
- Manufacturer Qualifications: Company specializing in manufacturing products of this section with 10 minimum years documented experience.
- Erector Qualifications: Company specializing in performing the work of this section with 5 minimum years documented experience.
- Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Engineer experienced in structural design of this work and licensed in the State of Florida.

#### 4-7.4 Warranty

- Provide a five-year warranty to include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include ten-year warranty to include coverage for weather tightness of building enclosure elements after installation.

#### 4-7.5 Fabrication – Framing

- Fabricate members in accordance with **AISC Specification** for plate, bar, tube, or rolled steel shapes.
- Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- Provide framing for openings.

#### 4-7.6 Wall and Roof Systems

- Siding: Minimum 0.015” metal thickness, flat profile, 2” deep, lapped V edges, fitted with continuous gaskets.
- Roofing: Minimum 0.02” metal thickness, flat profile, batten edges
- Liner: Minimum 0.015” metal thickness, flat, perforated profile, lapped V edges (fitted with continuous gaskets).
- Soffit Panels: Minimum 0.015” metal thickness, perforated for ventilation.
- Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
- Internal and External Corners: Same material, thickness and finish as adjacent material, profile brake formed to required angles.
- Expansion Joints: Same material and finish as adjacent material.
- Flashing, Closure Pieces, Fascia, Infills, Caps: Same material and finish as adjacent material, profile to suit system.
- Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive finish.

#### 4-7.7 Gutters and Downspouts

- Fabricate of same material and finish as roofing system.

- Form gutters, downspouts and scuppers to collect and remove water. Fabricate with connection pieces.
- Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints. Fabricate support straps of same material and finish as roofing metal, color as selected.

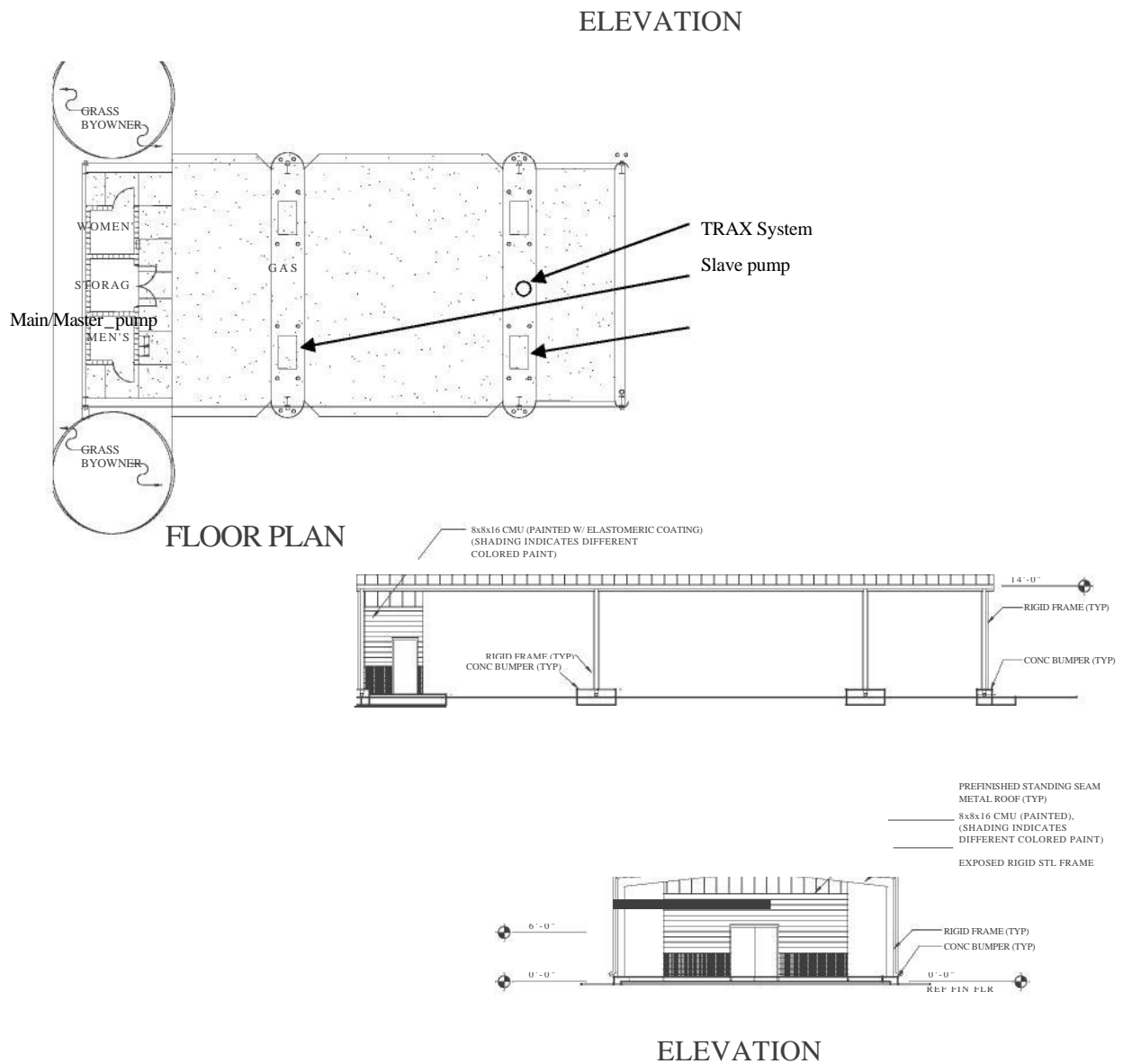
#### **4-7.8 Finishes**

- Framing Members: Clean, prepare, and shop prime to ***SSPC Manual*** requirements.
- Exterior surfaces of wall and roof components: Pre-coated enamel on steel of finish, color as selected from manufacturer's standard range.
- Interior surfaces of wall and roof components and accessories: Pre-coated enamel on steel of finish, color as selected from manufacturer's standard range.

## 4-8 REFUELING STATION

The Department's Operations Centers usually have facilities to refuel state vehicles. These refueling stations are mini-gas stations that may also offer limited vehicle service to state vehicles. Below is a sample layout for a facility that offers self-service fuel only.

Slave pumps may be used to allow personnel to fill saddle tanks without moving vehicle and re-entering TRAX system information.



## 4-9 REST AREAS

### 4-9.1 Intent

To provide standardized guidelines for interstate rest area facility siting, grounds, landscaping, traffic and pedestrian circulation, building layout, systems, structure, and number of car, RV and truck parking spaces which will produce system-wide consistency of facilities and services with capacity for future expansion. This will provide visitors to the State of Florida easily recognizable rest areas with state-of-the-art facilities. The interstate rest areas constitute the 'front door' to the State and a first impression. It is essential these facilities present the best possible image in terms of aesthetics, safety, functionality, sustainability, reliability, accessibility, and quality of services.

These guidelines are based on 2 typical site layouts and 2 typical building facility sizes. These will be designed to accommodate projected traffic on rural interstate highways and state roads. The Small Building is intended to be used as a basic facility 'module' that can be expanded as capacity needs increase. It has been determined that existing rest area sites will accommodate these prototypes with little or no additional right-of-way required.

Each rest area facility restroom structure includes 2 toilet rooms each for men and women. With this configuration, restrooms will continuously remain available, even while one of the toilet rooms is closed for cleaning.

Refer to Appendix A-1 for determining the number of car, RV and truck parking spaces.

### 4-9.2 Prototype facilities

- **Site Prototypes:** Two concepts are described. Amenities for both include restroom structure, vending area, auto, RV, and truck parking; site lighting; landscaping, fencing, picnic areas, on-site or off-site (preferred) water and wastewater utilities; site drainage and stormwater management, open layout and unobstructed sight lines for security; expansion capabilities; residential scale; pet areas (walks and parks); Truck Parking Availability System (TPAS) technology with CCTV Cameras for monitoring ramps and parking lots; informational monitors; windshield wash; air compressor; dumpster storage enclosures; grounds equipment storage; emergency backup power systems, etc.

**Concept 1:** - Automobile parking in front  
- Truck / RV parking in rear  
- Building between parking

**Concept 2:** - All parking in rear  
- Building closest to roadway

- **Site Concept 1:** Similar to how existing rest area facilities have been planned in Florida, except the auto and truck parking have been switched. The reasoning for switching the parking is to provide a more inviting residential scale to the site. Large trucks reduce visibility of the rest area from the roadway, so placing truck parking in the rear improves the image of the rest area.
  - Auto parking in 'front' of building, closest to roadway.
  - Truck and RV parking behind building, will share parking area:
    - Both have similar space requirements (15' wide x 80' long).
    - Mostly trucks at night.
    - Mostly RV's during the day.
    - Signs for trucks furthest from buildings.
    - Signs for RV's closest to buildings.
  - Building required to have two 'fronts' -- two approaches.
  - Retention areas may be located within the limits of construction.
  
- **Site Concept 2:** This concept further minimizes the impact of the parking on the building image as seen from the roadway. All parking is in the rear. The building is closest to the roadway, so it is the first part of the rest area to be seen upon approach.
  - Building at 'front' of facility, closest to roadway.
    - Better visibility of building facilities from roadway, more inviting.
  - All parking behind buildings: autos closest, RV's next, trucks furthest from buildings.
  - Trucks and RV's will share parking area:
    - Both have similar space requirements (15' wide x 80' long, approx.).
    - Mostly trucks at night.
    - Mostly RV's during day.
    - Signs for trucks furthest from buildings.
    - Signs for RV's next closest to buildings.
    - Signs for autos closest to buildings.
  - Building will need only one 'front', 1 approach.
  - Retention areas may be located outside the limits of construction.

There are advantages to using **Site Concept 2** when compared to **Site Concept 1**: some operational, some related to design and construction.

- Operational:
  - Easier for security staff to patrol.
  - 'Unidirectional' view to/from buildings.
  - Single-sided approaches to buildings.
  
- Design/construction:

- 20-30% less pavement
  - 20-40% less ROW depth
  - 50% less pedestrian facilities
  - Simpler drainage system
- **Building Prototypes:** Two sizes are described. Amenities include Flexibility in sizing; accessible design; potty parity; vending w/storage; security/information office; 4 family restrooms; ease of maintenance/repair; expansion capability; picnic pavilions.
    - 1     **Small:**         Men - 16 fixtures (toilets & urinals)  
          (basic)         Women - 24 fixtures (toilets)  
                          Family - 2 restrooms
    - 2     **Large:**         Men - 32 fixtures  
          (common)     Women - 48 fixtures  
                          Family - 4 restrooms

#### 4-9.3 Facility Planning

- **Building Capacity:** The building sizes were determined in consultation with the Department Statistics Office. We reviewed the 20-year traffic projections - Average Daily Traffic, (ADT's) for I-4, I-10, I-75, and I-95. We estimated the 40-year ADT's based on projections of past and present growth. Using the Department's **Rest Area Facilities Computation Form**, we calculated the number of toilet fixtures needed for the men's and the women's restrooms. This process considers the State's 'potty parity' requirements for Assembly Occupancies (due to occupant load, rest areas are classified as "Assembly Use" Business Occupancies.)

It has been projected that, within 20-40 years, interstate traffic will dictate a large facility for all rest area sites. The large prototype is sized to accommodate up to 70,000 vehicles ADT. By comparison, the small facility will accommodate up to 35,000 vehicles ADT. It has been further determined that if the traffic is greater than this, the region around the rest area would be so urbanized, (i.e., local traffic that would not normally use a rest area), as to probably not require the presence of a rest area (potential for future closures?). Private facilities in the area could accommodate the needs of the traveling public, eliminating the need for a public rest facility.

- **Picnic Pavilions:** Place prefabricated picnic pavilions around the building to allow for closer proximity to amenities and security. Prefabricated units are available in a variety of sizes to accommodate small and large groups. Standard sizes include 10'x15', 12'x24', 16'x28' etc. It is recommended to plan for several small picnic shelters and several large picnic shelters depending on the usage of



a particular project site. Consult FDOT project manager for number, location, sizing, and preferred manufacturer.

#### 4-9.4 Facility Programming

- The following describes the basic requirements of each of the facility types: small and large. The module of expansion is equivalent to the heated and cooled area of the small facility, less the vending and security office - approx. 6,800s.f. If a facility is planned and constructed using the modular growth precepts (i.e., infrastructure for expansion already in place), the cost to expand a small facility into a large facility could be greatly reduced. It should cost 1/3 to 1/2 less to construct an addition to an in-place infrastructure than to construct a full addition.
  - **Small Building:** With a total of 16 men's and 24 women's fixtures, plus 4 family restrooms, the small building would be suitable for low to medium capacity highways.
  - **Large Building:** With a total of 32 men's and 48 women's fixtures, plus 8 family restrooms, the large building would be used for the high-capacity highways or as an ultimate expansion capability in the future.

The building construction costs would be approximately the same whether the picnic pavilions are attached to the buildings or are detached and scattered around the site. Either way, we would likely construct picnic facilities of essentially the same area at about the same cost.

#### 4-9.5 Rest Area Facility Standards

- **Building Facilities:**
  - Equal accessibility for men and women
    - similar proximity to restroom facilities from all approaches
  - Facilities to be model of accessibility for person with disabilities
    - family restrooms
    - primary accessible stalls
    - alternate accessible stalls
    - adaptable standard stalls
    - one family restroom with hydraulic adult changing table (stainless steel hardware) (No shower)
    - access to buildings and picnic pavilions
    - access within buildings
    - communications systems
    - informational display monitors
    - signage
  - Provisions for 'potty parity'
    - business occupancy - assembly use

- 3 women's toilets for 2 men's toilets/urinals
- Modular facilities design
  - small facility is 'module' of expansion
  - utilities infrastructure in place for expansion
  - water supply lines stub-ups, capped off
  - sanitary sewer piping stub-ups, capped off
  - electrical panels sized to allow additional circuits/fixtures
- **Structure:**
  - Structural systems shall be designed for structural conditions, wind loads, soil conditions, etc. for specific location.
  - In coastal areas/corrosive environments, consider using non-corrosive materials (i.e., laminate, concrete or concrete masonry unit CMU vs. stainless steel), where feasible.
  - Foundation and Floors shall be slab on grade w/monolithic or strip footings.
  - Walls and columns shall be concrete masonry unit (CMU) or reinforced concrete with brick veneer. Coordinate with the Project Manager.
- **Roof:**
  - 'Common' structural systems (recyclable materials)
    - light-gauge metal trusses
    - wood trusses
    - fire ratings
  - Decorative metal or wood structure at courts and picnic pavilions
- **Finishes:**
  - Floors designed for durability and ease of maintenance
    - floor tile, brick pavers, epoxy coatings, etc.
    - non-slip surfaces
  - Walls designed for durability and vandal-resistance requiring minimal maintenance.
    - exterior walls of brick, CMU, stucco, etc. w/graffiti-resistant coatings
    - interior walls of tile, brick, CMU, plaster, etc.
    - epoxy coatings on exposed CMU, plaster, etc.
      - graffiti resistance
      - ease of cleaning
    - fire ratings
  - Ceilings designed for durability and minimal maintenance
    - plaster, epoxy coatings, etc.
    - fire ratings
  - Roof designed for 20-year life and warranty
    - metal roofing system over substrate

- few penetrations
- well ventilated

#### 4-9.6 Facilities, Fixtures & Equipment

##### • Restrooms General:

- Hands free entry doors or doorless entry.
- Water closet number determined by 20-year projected ADT's.
- Toilet fixtures to be commercial elongated ceramic w/1.6 gal/flush-valves.
- Urinals to be commercial elongated ceramic w/1.0 gal/flush-valves.
- Lavatories to be accessible commercial ceramic (**not** extended hospital type).
- Automatic sensors/hands-free operation for ALL references to urinals, lavatories, faucets, soap dispensers, and hand-dryers.
- Direct access to staff areas for maintenance/cleaning.
- Standard toilet stalls and urinals w/screens.
  - Standard stalls sized to be adaptable to alternate accessible stall
  - Solid phenolic or textured stainless-steel partitions
  - Open tops and bottoms for safety and ease of cleaning
  - Solid core doors w/textured stainless-steel finish
  - Stainless steel commercial lever door hardware, w/'occupied' indicators
  - Hollow metal door frames w/epoxy finish
- Accessible stalls
  - Primary stalls for wheelchair users
    - Raised toilet seat
    - Grab bars at side and rear of toilet
    - Lavatory in stall
    - Flush-valve levers on 'open' side nearest lavatory
    - Automatic sensor/hands free paper towel dispenser
    - Waste receptacle
    - Hand dryer in stall
  - Alternate stalls for users of other mobility aids
    - Raised toilet seat
    - Grab bars each side of toilet
- Urinal screens
  - 4" CMU or reinforced concrete partitions w/tile finish
  - open tops and bottoms for safety & ease of cleaning
- Hand Dryers: ADA compliant, energy efficient, high-velocity hand dryers that feature changeable HEPA filters and comply with the following:
  - Maximum Noise Level: 80 dba
  - Maximum Drying Time: 12 seconds

##### • Men's Restroom:

- Toilets in stalls described above
- Urinals to make-up 2 of required fixtures
- Primary accessible stalls located closest to the entry
- Accessible stalls included in required fixture count
- Automatic sensor/ hands-free operation of urinals, lavatories, faucets, soap dispensers and hand dryers
- Diaper changing table (stainless steel hardware)
- Waste receptacle (closed top)
- Lavatories w/ mirrors (1 accessible)
- Automatic sensor/ hand dryers (1 for each 2 lavatories, at least 1 accessible)

• **Women's Restroom:**

- Toilets in stalls described above
- 3 toilets for each 2 men's toilets and urinals combined (potty parity)
- Primary accessible stalls located closest to the entry
- Accessible stalls included in required fixture count
- Hands-free operation of lavatories, faucets, soap dispensers and hand dryers
- Sanitary napkin receptacle in each stall
- Diaper changing table (stainless steel hardware)
- Waste receptacle (closed top)
- Lavatories w/mirrors (1 accessible)
- Automatic sensor/ hand dryers (1 for each 2 lavatories, at least 1 accessible)

• **Family Restroom:**

- Raised toilet seat (accessible height)
- Lavatory w/mirror (NOT elongated 'hospital' type)
- Flush valve levers on 'open' side nearest lavatory
- Automatic hand drier and paper towel dispenser
- Waste receptacle (reach ranges)
- Grab bars at side and rear of toilet
- Sanitary napkin receptacle
- Diaper changing table (stainless steel hardware)
- Waste receptacle (closed top)
- Bench / seat for resting / changing clothing
- Hydraulic Adult changing table (stainless steel hardware) (No shower)

• **Rest Area Attendant Features:**

- (To be coordinated with the respective district and other shareholders.)
- Service area for custodial / maintenance staff
  - Break room w/tables and chairs,
  - Storage area for cleaning products, equipment, and supplies (no hazardous chemicals)

- **Public Service and Safety Message Monitors and Network Connectivity:**

- Monitors with cases for display of public service announcements and emergency notifications with oversight camera for monitoring displays.
- Connectivity equipment: Video encoder, media converter, and video decoder for monitor messages.
- Fiber optic connection for display of information (preferred).
- (Connectivity and equipment to be coordinated with the respective district's Transportation Systems Management and Operations Office.)

- **Traffic Monitoring System:**

(To be coordinated with the respective district's Transportation Systems Management and Operations Office.)

- CCTV Cameras
- Network connectivity for CCTV Cameras

- **Public Wi-Fi Services** (where deemed appropriate by District):

- Network connectivity for public access

Coordinate with the district's Transportation Systems Management and Operations ITS contact person.

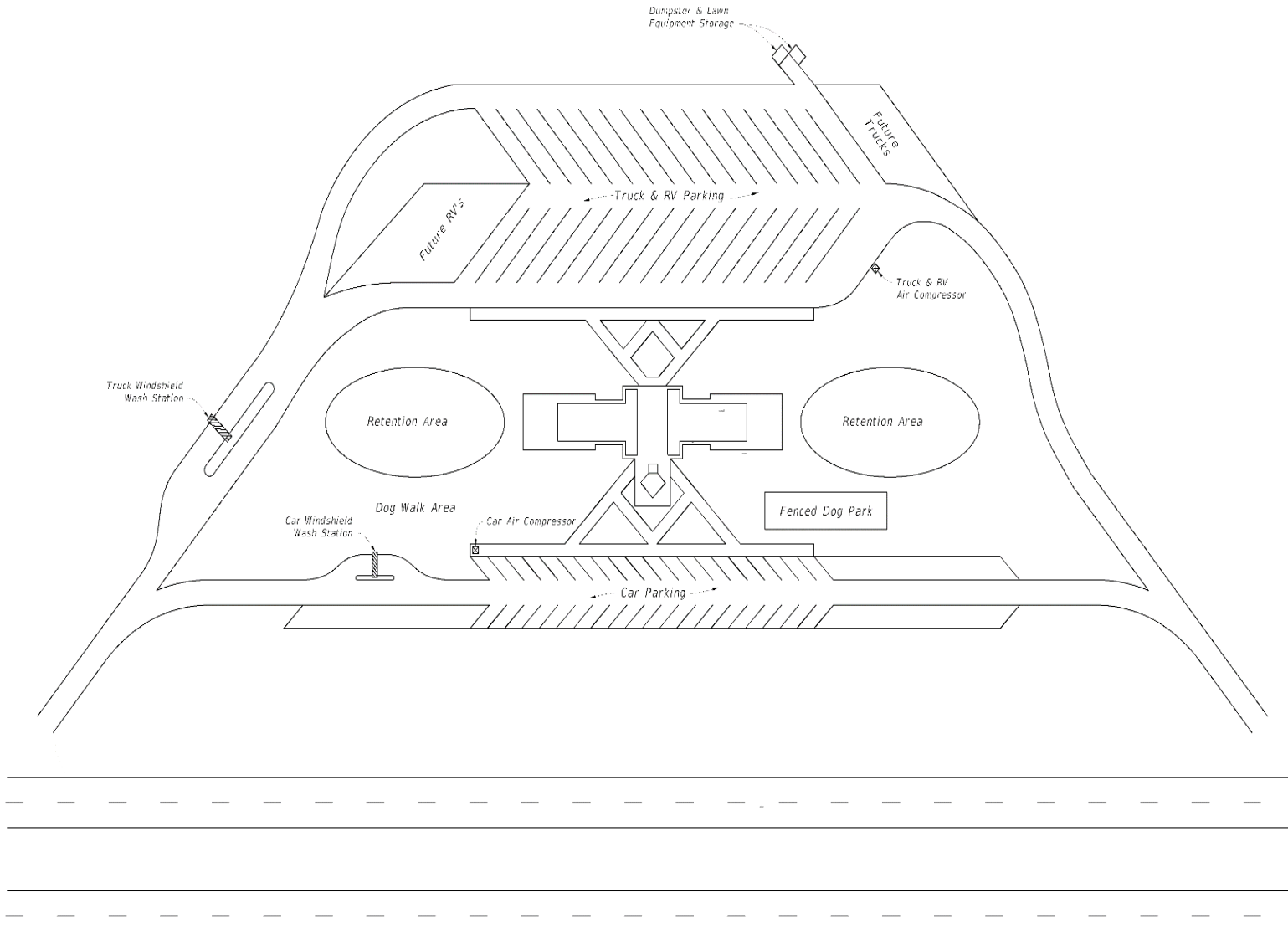
- **Vending Facilities:** (to be coordinated with Blind Services)

- Up to 8 vending machines
- Overhead doors for secure servicing of machines (optional, coordinate with Blind Services vendor)
- Up to 240 square feet climate-controlled storage area,
- Utilities: power, water (hot and cold), sewer
- Ease of access from parking and building vestibule/courtyard
- Separate meter for utilities

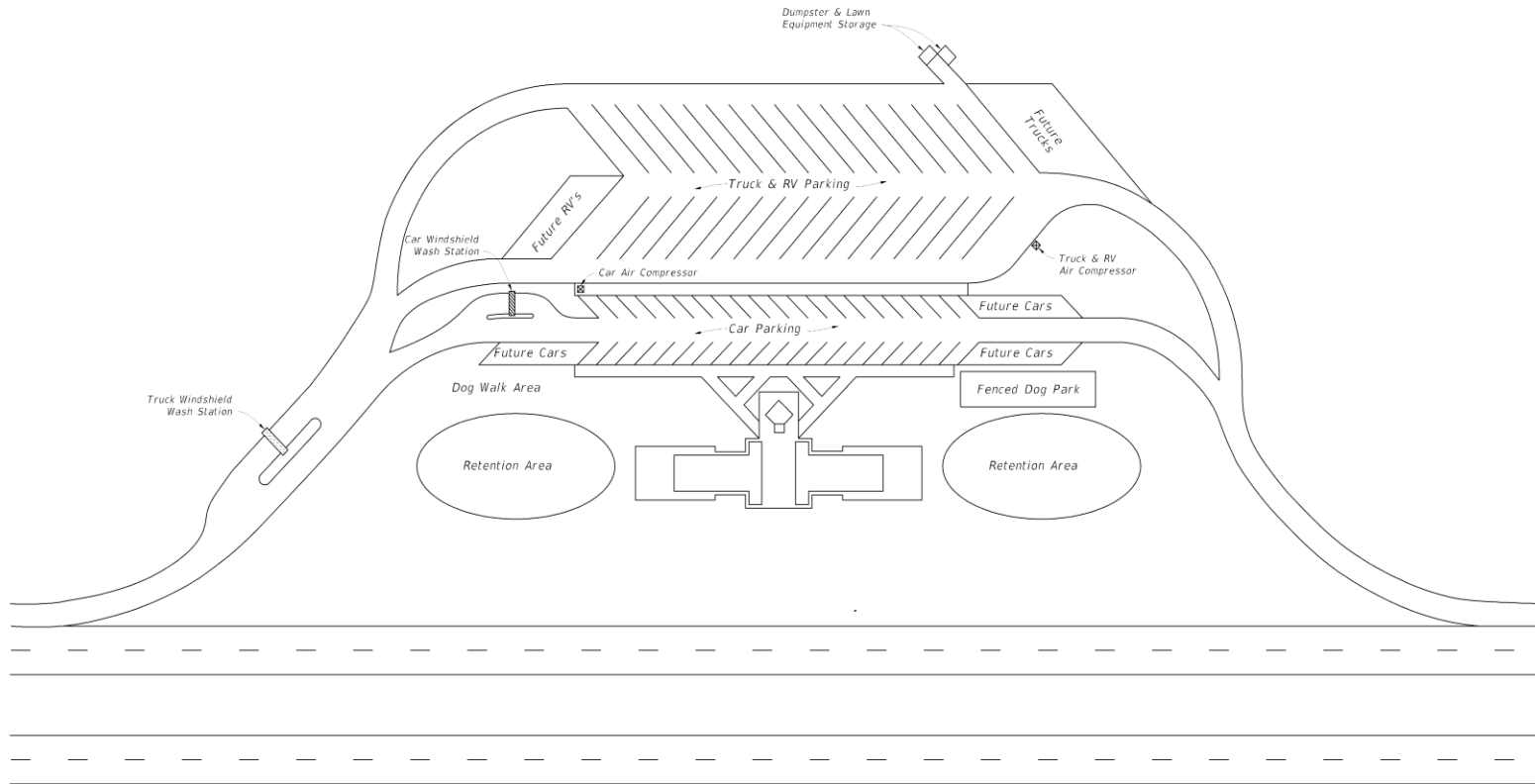
- **Security Office:**

- 'Home base' for security guard
- Desk / counter
- Central location
- Visibility of approaches to building
- Visibility of entrances to restrooms
- Visibility of vending areas

- **Pet Areas (Walks/Parks):**
  - Designated dog walk area
  - Fenced in dog park with double gate entry and water spigot
  - Sign to identify dog walk and dog park areas
  - Pet waste bag dispenser
  - Waste receptacle
  
- **Safety Amenities (where deemed appropriate by District):**
  - Air compressor
  - Windshield washer

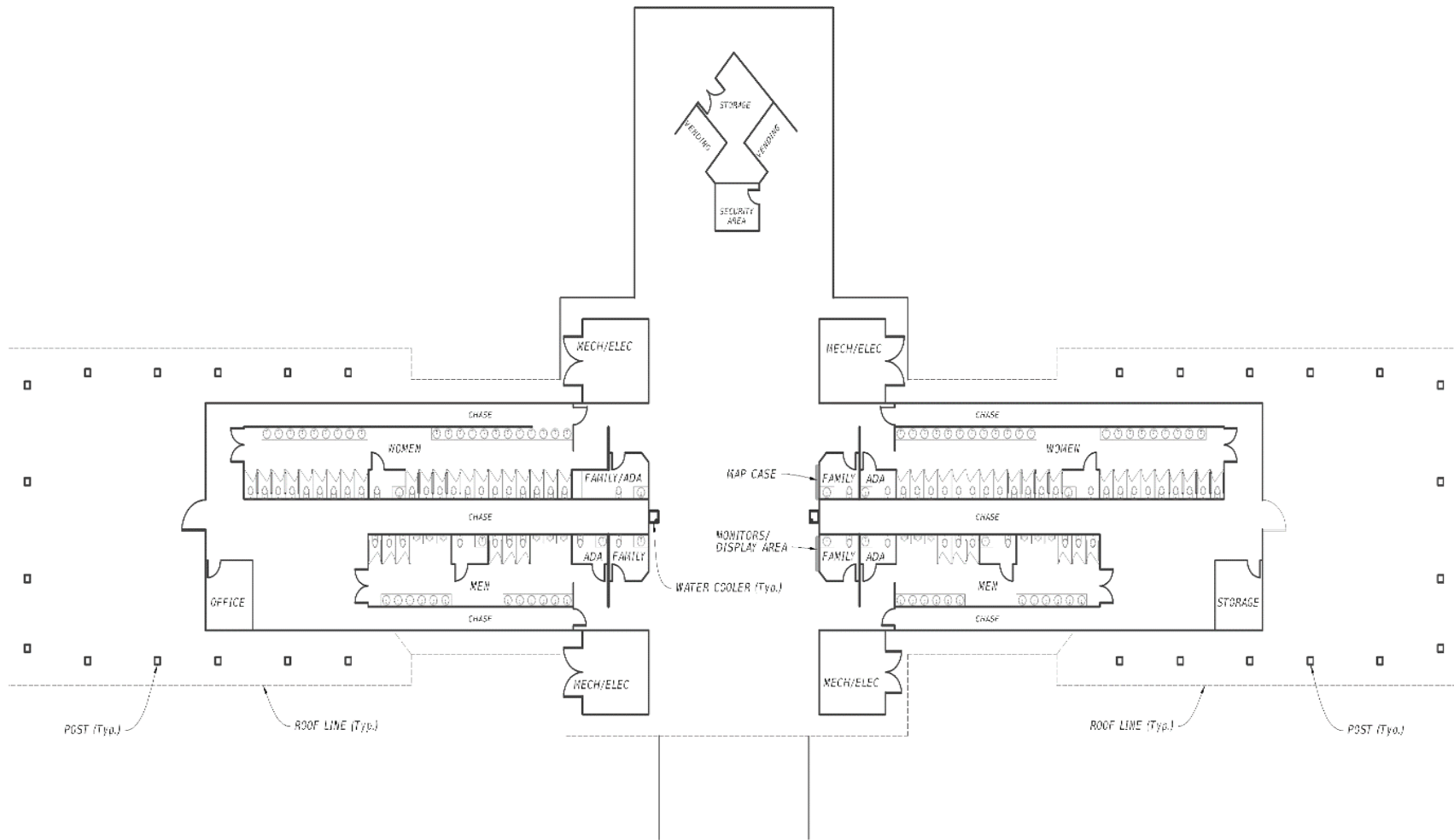


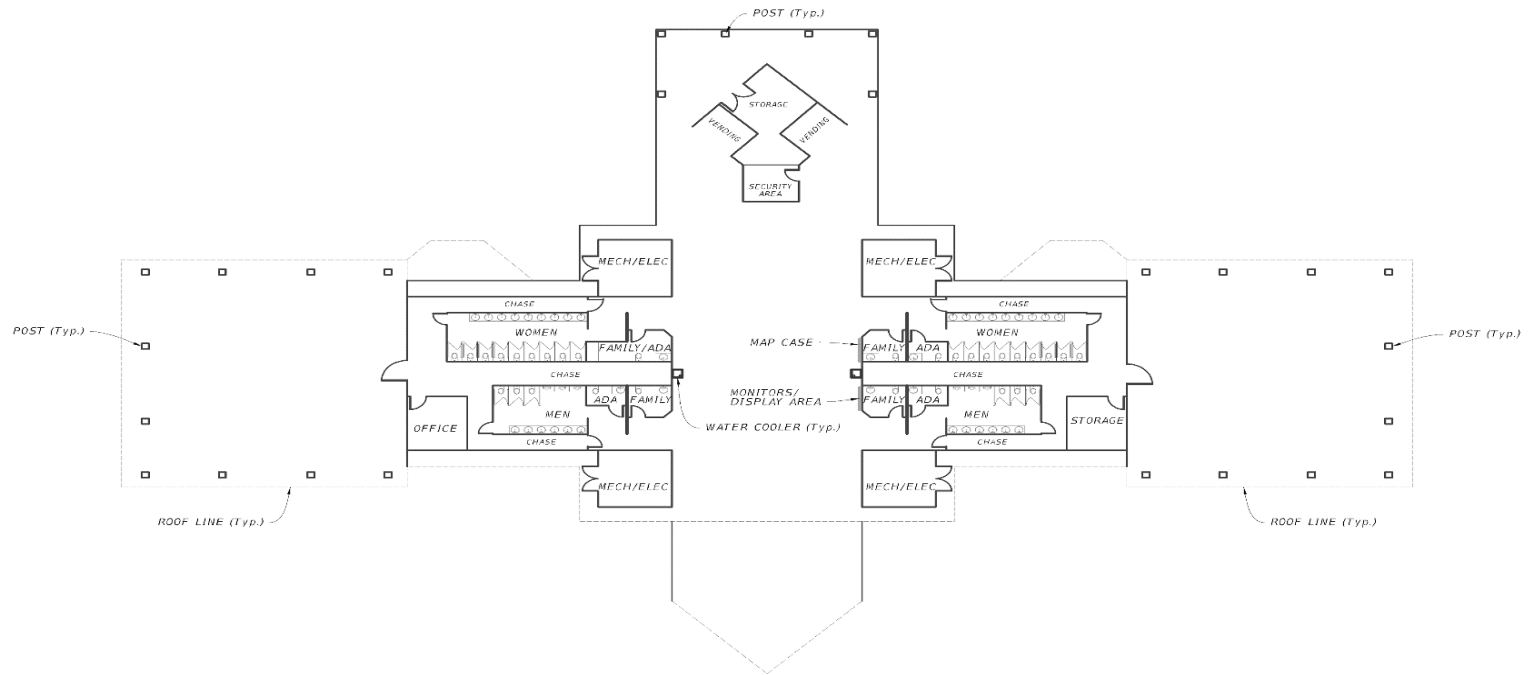
*Rest Area Site Concept 1*

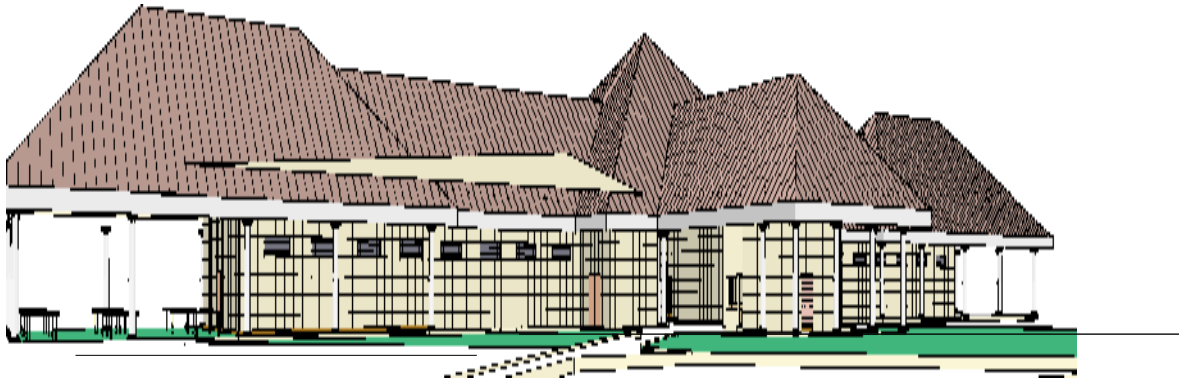


*Rest Area Site Concept 2*



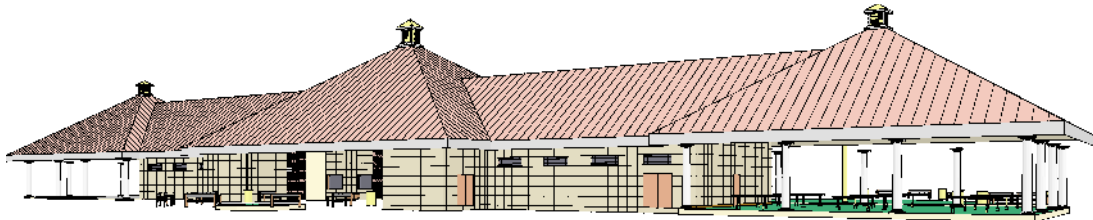






**Large Building - Perspective**

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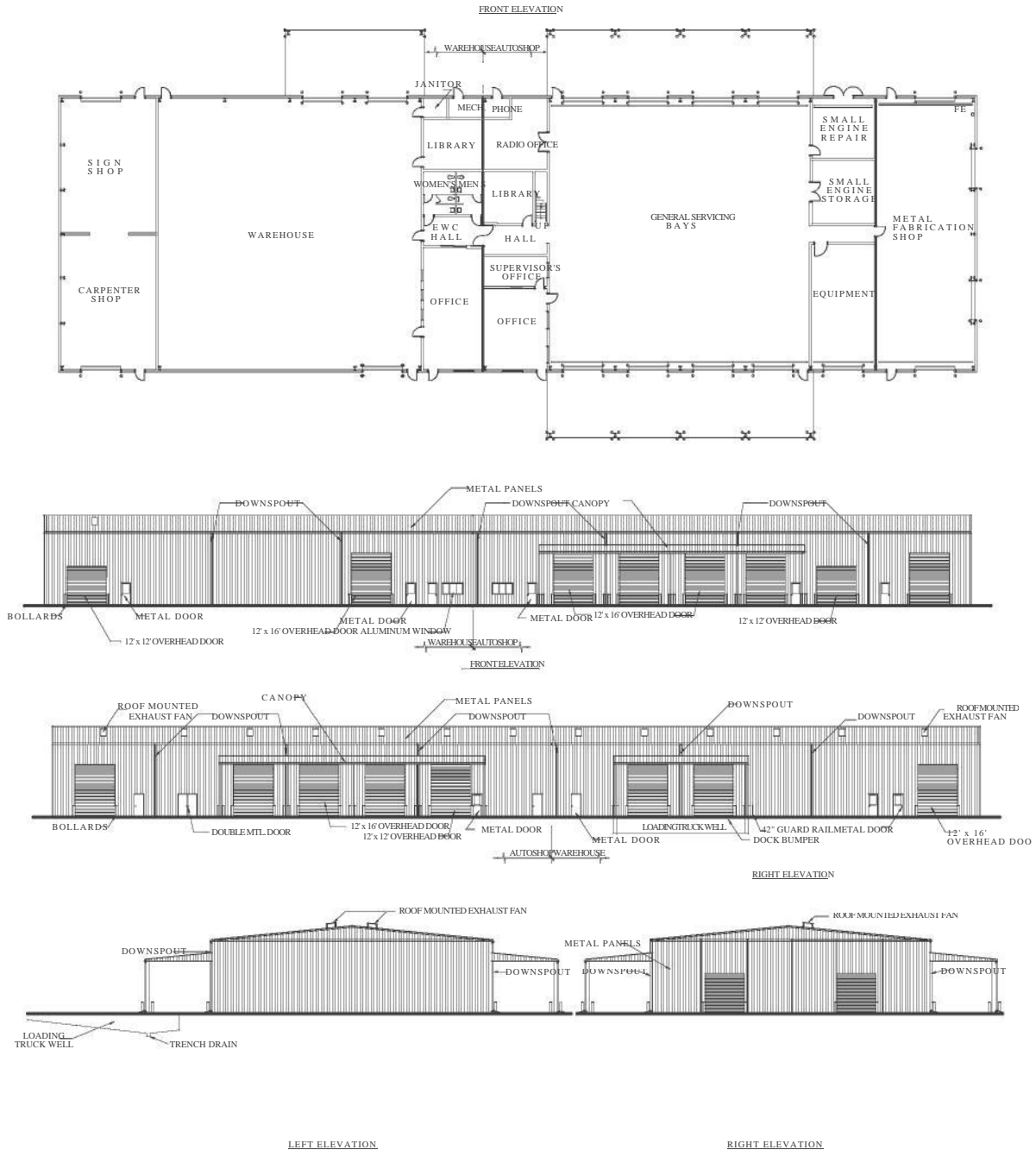


**Small Building - Perspective**

These sample drawings illustrate the desired layout and character of new rest areas.

## 4-10 SHOP & WAREHOUSE

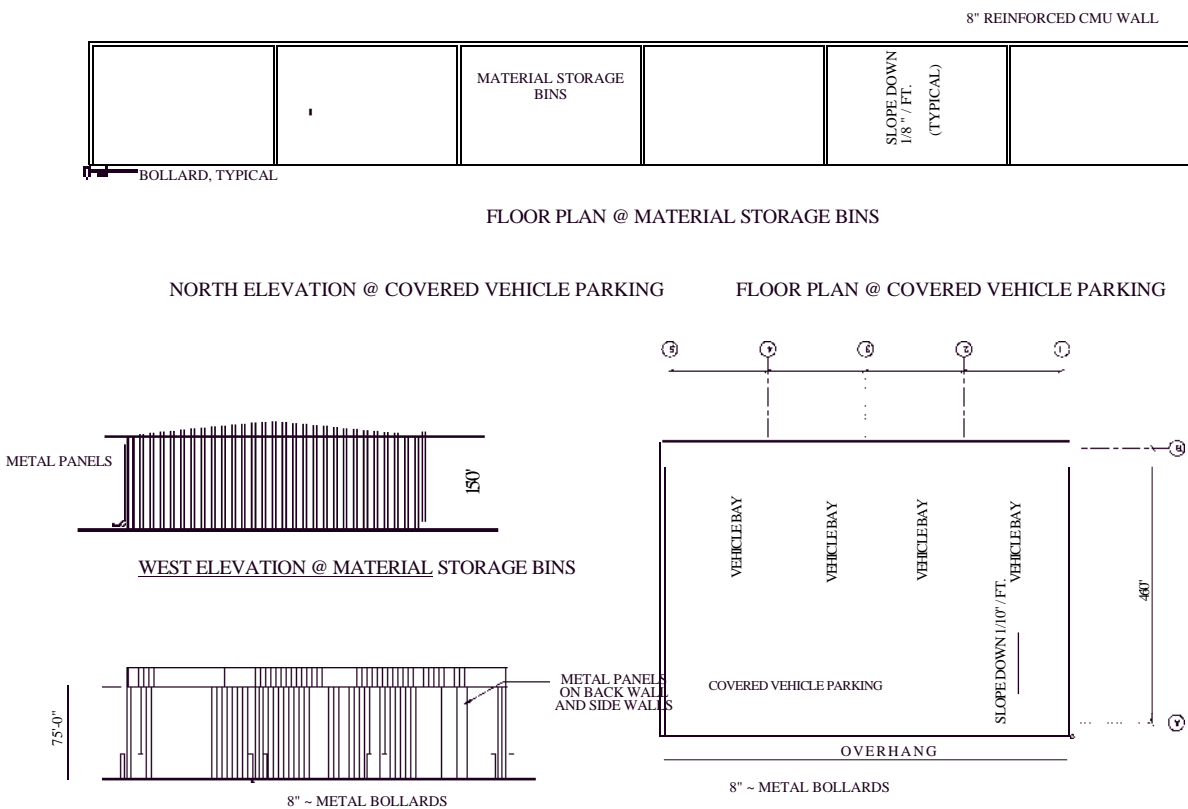
At many Operations Centers, vehicle repair shops and district warehouse facilities are constructed as a single building. The shop is used for routine maintenance and repair of Department vehicles. The warehouse portion of the building would be used to store materials and archive documents.



## 4-11 STORAGE FACILITIES

Open storage bins constructed of reinforced CMU walls are used to store materials that are not susceptible to weather damage: typically sand and gravel. Covered (and enclosed) storage facilities are used to protect vehicles and equipment which may be damaged by the weather or require additional security.

When required, provide facilities for storage of hazardous materials per Florida Fire Prevention Code and Life-Safety Code requirements.



## 4-12 VEHICLE WASHES

### 4-12.1 Modular Facilities Design

- Ease of expansion.
- Utilities infrastructure in place for expansion.
- Water supply lines / stub-ups, capped off.
- Sanitary sewer/Waste-water piping / stub-ups, capped off.
- Provide wastewater treatment per local requirements.
- Electrical panels sized to allow additional circuits / fixtures.
- Excessive use of corrosion resistant materials on structure.

### 4-12.2 Slab

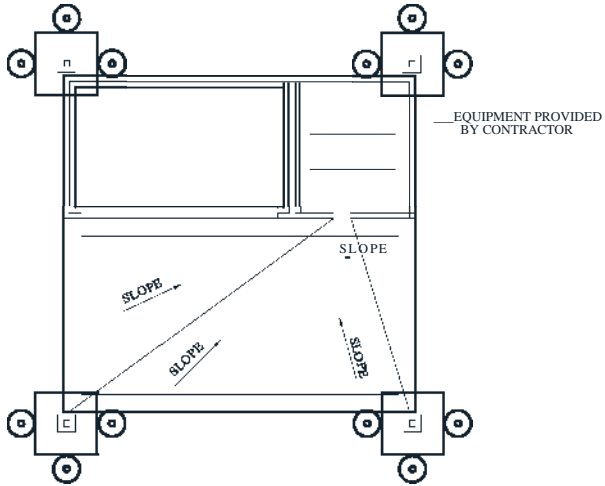
Design concrete slab to support heavy truck loads. Slope slab to catch basin in slab to carry water, via grease trap, to sewer treatment system or to wastewater treatment system.

### 4-12.3 Structure

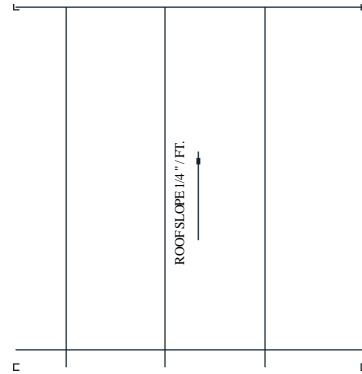
- Coastal areas/corrosive environments should consider non-corrosive materials. Extremely durable / designed for 'worst-case' structural conditions wind loads, soil conditions, etc.
- Foundation / Floors slab on grade w/ monolithic and/or strip footings.
- Walls / columns concrete masonry units (CMU's) Reinforced concrete as appropriate, metal buildings, or pre-engineered metal building.

### 4-12.4 Roof

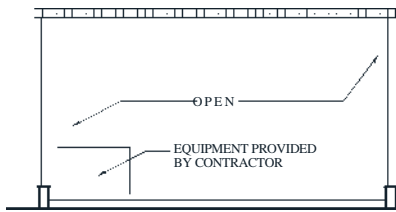
- 'Common' structural systems (recyclable materials)
- Light-gauge metal trusses
- Pre-engineered metal building
- Designed for 20-year life / warranty
- Metal roofing system over substrate
- Few penetrations
- Well ventilated
- Avoid roof slopes of less than 3" to 12"



FLOOR PLAN

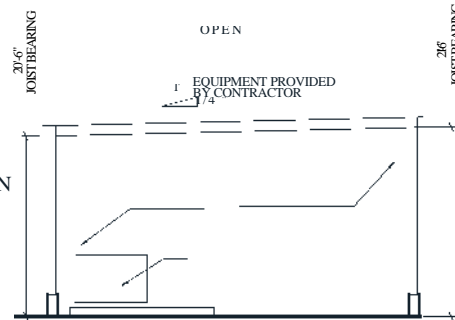


ALUMINUM CANOPY



WEST ELEVATION

SOUTH ELEVATION



## **4-13 VENDING PAVILION (stand-alone)**

(In coordination with the Division of Blind Services)

This may be used to retrofit vending facilities at existing rest areas. The layout incorporates the requirements of the Division of Blind Services and Department of Education. This agency contracts the operation of these facilities to vendors who are persons with vision impairments.

Generally, vending facilities will be included in the designs for new and renovated rest areas.

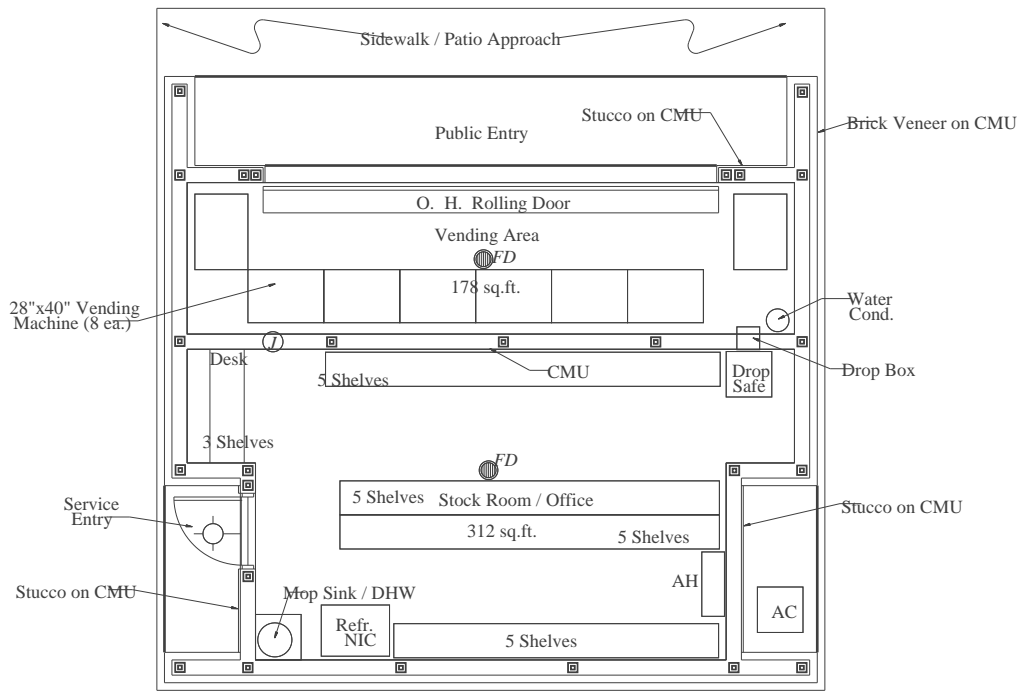
The vending pavilions consist of two primary areas:

- Vending machine/service area: Intended to house up to eight snack/drink vending machines. This area requires power, lighting and plumbing services. This area must be able to be secured for the vendor to stock the machines and remove the money from them. A pass-thru/drop safe to the office area must be provided in this area.
- Stock room/office area: Contains shelves for the snacks, drinks and supplies and a work area for the blind services vendor. This area requires power, lighting, telephone, plumbing, and drainage. The vendor also sorts the money from the machines here.

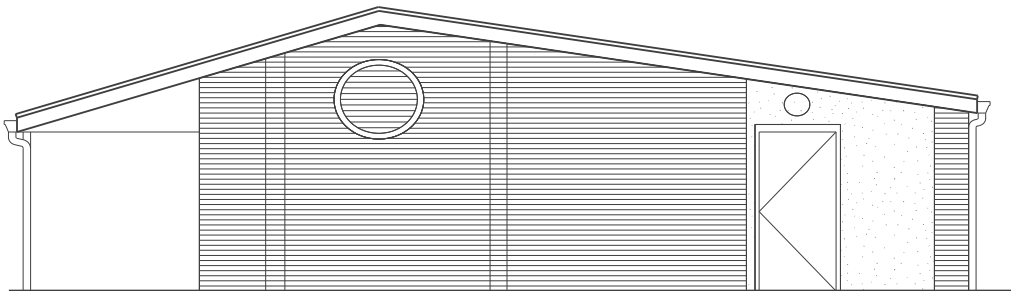
### **4-13.1 Vending Facilities:** (to be verified with Blind Services)

- Up to 8 vending machines
- Overhead rolling/coiling door for secure servicing of machines
- Up to 240s.f. product storage/office, heated and cooled
- Utilities: power, water, sewer, phone
- Ease of access from parking and building vestibule/courtyard
- Separate meter for utilities

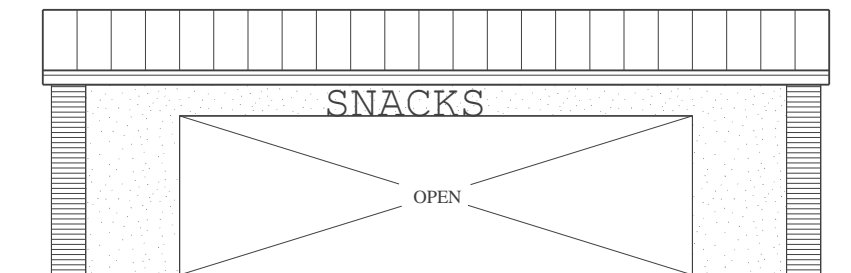




FLOOR PLAN-VENDING PAVILION



SIDE ELEVATION-VENDING PAVILION



FRONT ELEVATION-VENDING PAVILION

## 4-14 WAREHOUSES

### 4-14.1 Modular Facilities Design

- Ease of expansion
- Utilities infrastructure in place for expansion
- Water supply lines stub-ups, capped off
- Sanitary sewer piping stub-ups, capped off
- Electrical panels sized to allow additional circuits and fixtures

### 4-14.2 Structure

- Coastal areas/corrosive environments should consider non-corrosive materials, concrete, CMU where feasible. Extremely durable: designed for 'worst-case' structural conditions wind loads, soil conditions, etc.
- Foundation and floors: slab on grade w/monolithic and or strip footings, incorporate loading truck well (loading dock) to avoid raising building floor. Use dock lifts/leveler as required to accommodate various expected truck deck heights.
- Walls and columns: concrete masonry units (CMU's), reinforced concrete, metal buildings, or pre-engineered metal building.

### 4-14.3 Roof

- Common structural systems (recyclable materials)
- Light-gauge metal trusses
- Pre-engineered metal building
- Designed for 20-year life/warranty
- Metal roofing system over substrate
- Few penetrations
- Well ventilated
- Roof slopes must be greater than 3" to 12"

### 4-14.4 Finishes

- Floors in parts counter area, and offices to be vinyl tile all others to be designed for durability and ease of maintenance: epoxy coatings or hardened concrete.
- Exterior walls to be designed for durability, vandal-resistance and low-maintenance.
- Exterior walls of CMU, stucco or metal panels.
- Interior walls of rest rooms, offices, and parts counter shall be 3-1/2" metal studs with 5/8" sheet rock and latex paint interior. Walls of restrooms shall be ceramic tile wainscoting over 1/2" cement board or epoxy coated CMU.

#### **4-14.5 Ceilings**

- No ceiling in warehouse; insulation to be installed along roof structure and encapsulated.
- Ceilings in office and parts counter area and restrooms shall be 2' x 2' acoustical tile with a ceiling height of 8'.

#### **4-14.6 Restrooms**

- Provide both Male and Female restrooms.
- Provide accessible restrooms.

#### **4-14.7 Office Space**

- Office space with laminate parts counter.
- Provisions for mechanical, electrical, and data areas.

#### **4-14.8 Doors**

- Provide a minimum of one 12' x 16' overhead door at truck well and one 12' x 12' overhead door to allow forklift access to and from warehouse.
- Provide a minimum one 3-0 x 7-0 metal door allowing entry/exit to warehouse and to parts counter.

#### **4-14.9 Warehouse Area**

- Provide shelves with a capacity of 100 lbs./s.f. for bulk storage, seed bins/small parts, tire storage racks, also provide area for palletized items and sign storage.
- Provide emergency eye wash station.
- Provide vents for the removal of hot air, and to provide air circulation in building.

## 4-15 WASTEWATER TREATMENT PLANTS

Many facilities require on-site sewage treatment facilities. Performance-based systems and alternate designs may be considered. Some rest areas and remote yards may use package plants to avoid running long lines to municipal utilities or if the local facilities do not have the capacity to treat wastewater from the proposed facility.

### 4-15.1 Wastewater Collection Systems

- The collection/transmission system shall be designed to preclude deliberate introduction of storm water runoff, air conditioning system condensate water, closed system cooling water, and other sources of uncontaminated water.
- See water treatment section for minimum separation requirements between water lines and sewer lines.
- Branches of intersecting force mains shall be provided with appropriate valves such that branches may be shut down individually without interrupting the flow in other branches.
- Piping under paved area shall be cast iron pipe, or PVC pipe encased in cast iron sleeve.

### 4-15.2 Wastewater Treatment Plants

- It is important to remember that the derived flow is a twenty-year projection and the initial flow will be significantly lower. Experience has shown that initial flow may not provide sufficient Bio-Oxygen Demand (BOD) loading to support the twenty-year sizes; therefore, the plant must be designed to treat initial flow with future expansion up to the projected capacity. This may be accomplished by providing a 20-year plant that can be brought on-line in stages or by providing a 10-year plant that can be expanded (through additional contracts) as needed. Coordinate with Project Manager to determine a preferable alternative.
- Unless directed otherwise, FDOT plants will be 'extended aeration' package type. Submit calculations showing plant component size requirements.
- Provide automatic tablet chlorination.

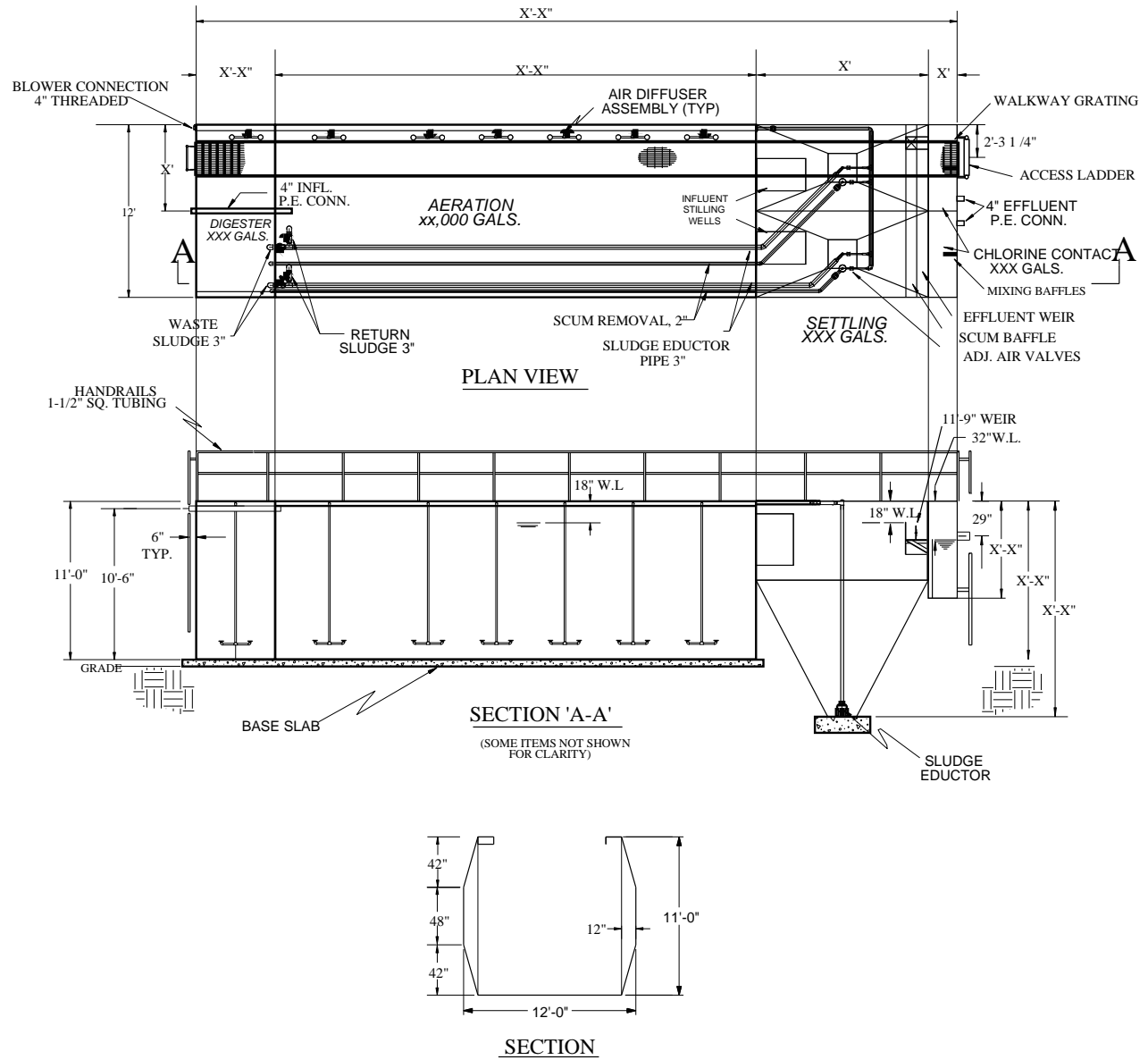
### 4-15.3 Surge Tanks

Design and detail a surge tank to accommodate holiday spikes (2 to 3 times average daily flow) in rest area use. The tank must be capable of holding and regulating spikes so that surges do not overload the plant. Specify and detail a duplex blower, duplex alternating pumps, a control panel, float switches, and a flow regulator box with an adjustable overflow weir.

### 4-15.4 Lift-Stations

- Locate lift-stations to minimize adverse effects such as odors, noise and lighting. Provide fenced enclosures. Ensure that truck-mounted hoist can pull pumps without removal of fencing. Lift-stations shall be fully operational and accessible during a 25-year flood and the mechanical and electrical equipment shall be protected from physical damage by a 100-year flood.
- Design lift-stations to withstand flotation forces when empty. Specify and detail easily accessible aluminum filter baskets at the inlet.
- Specify encapsulated, mercury float switches to provide lead pump on, lag pump on, pumps off and alarm. Specify high-quality submersible pumps in full detail to prevent substitution of cheaper pumps. Pumps shall alternate in operation. Submit pump calculations and curves during the review process.
- Specify stainless guide rails, lifting chain and discharge connection bolted to the sump floor. Force mains shall be at least 4" in diameter.
- Provide NEMA 4 aluminum control panel to control duplex alternating pump.
- Provide protection from lightning and transient voltage surges. Provide a standard receptacle for connecting portable power generating equipment. Provide a riser with appropriate coupling device and valving to the discharge pipe to connect portable pumps and appurtenances.

**WASTEWATER TREATMENT PLANT - Package Plant**



## **4-16 WEIGH STATIONS**

These facilities shall be developed in coordination with the Facilities Manager at the Motor Carrier Compliance Office:

- Interstate Weigh-in-Motion (WIM) Stations
- Interstate Static Stations
- Off-interstate Static Stations
- Administration building
- Inspection/Comfort building
- Scale facilities

### **4-16.1 Interstate Weigh-in-Motion (WIM) Stations**

Weigh stations are facilities that the Department uses to enforce federal and state commercial motor vehicle operation regulations. These facilities are used to weigh trucks, conduct safety inspections, and provide a place for drivers of commercial vehicles to take a short break.

The Department has determined that WIM stations are in the best interest of the traveling public on our interstate highways. They are intended to minimize the inconvenience to commercial vehicle operators and to minimize conflicts between vehicles on the interstate by reducing the speed differentials between cars and trucks near the weigh stations. These facilities use state-of-the-art electronic equipment to dynamically weigh trucks at speeds up to 45 miles per hour. The dynamic scales allow trucks that are within tolerances to continue without needing to stop on the static scales.

### **4-16.2 Static Weigh Station**

The traditional method of weighing trucks is to have them drive across and stop on an in-ground scale. Until all interstate weigh stations are developed into WIM stations, the Department will continue to operate static weigh stations, both on and off the interstate highway system.

### **4-16.3 Administration building**

The Administration Building is the business location for the commercial motor vehicle operations of the Motor Carrier Compliance Office. This facility is where the officers and inspectors weigh the trucks, review driver logs, and initiate safety inspections. The Administration building is immediately adjacent to the scales.

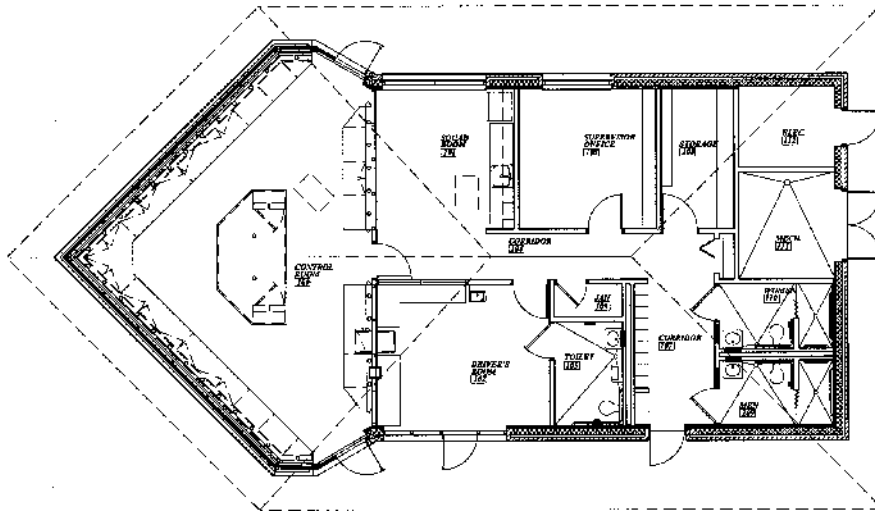
#### 4-16.4 Inspection / Comfort Station

This is a combination facility that provides a 'mini-rest area' intended to offer commercial drivers a location to get some rest, in conformance with federal requirements, to use a telephone, visit the restroom, get a snack, etc. It is also the location that houses the commercial vehicle safety inspection operations of the weigh station. Components housed in this facility include:

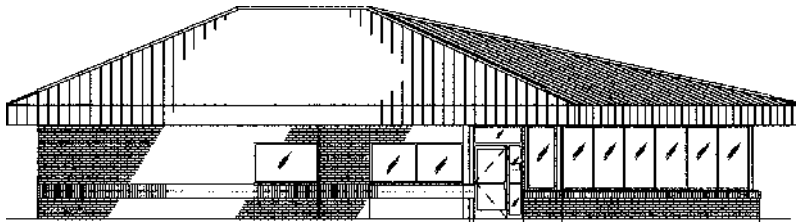
- Comfort Station: This portion of the facility provides a Men's restroom, a Women's restroom and a Family (unisex) restroom (which allows access to someone who needs the assistance of a companion.) It also has vending machines and pay telephones.
- Inspection 'Barn': This is an open-air (roof and partial walls) building that covers an inspection pit allowing inspectors to conduct commercial vehicle inspection operations up to 24 hours per day in relatively protected environment. The inspection pit is about 90' long. Trucks straddle the pit to allow inspectors access under the vehicle to conduct safety inspections of the truck's undercarriage systems and suspension. The pit contains mechanical systems to aide in the evacuation of oils or grease that may drop from trucks; and noxious fumes or other heavier-than-air gases, which may collect in the pit.
- Weight Inspector's Office: This space houses the administrative activities for inspectors (desk, communications, file storage, etc.). It is located immediately adjacent and accessible to the Inspection Barn.



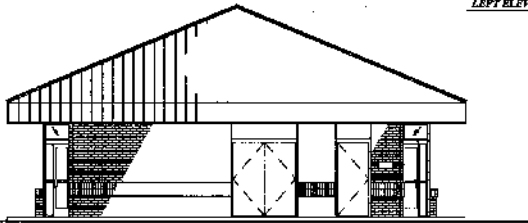
**WIM Administration Building:**  
(at Scale facilities)



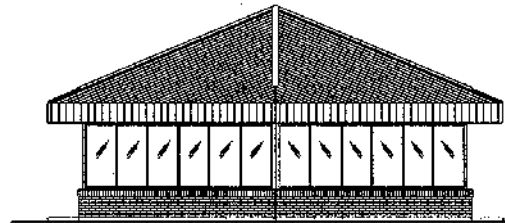
WIM Administration Building Floor Plan



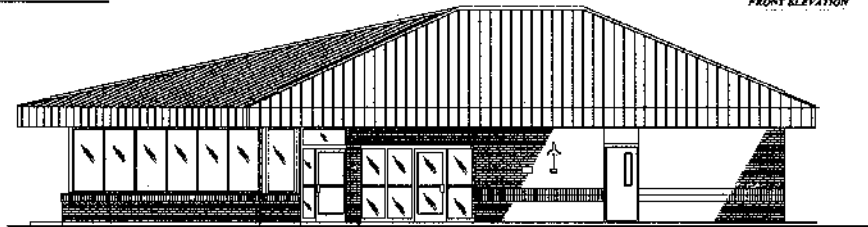
LEFT ELEVATION



REAR ELEVATION



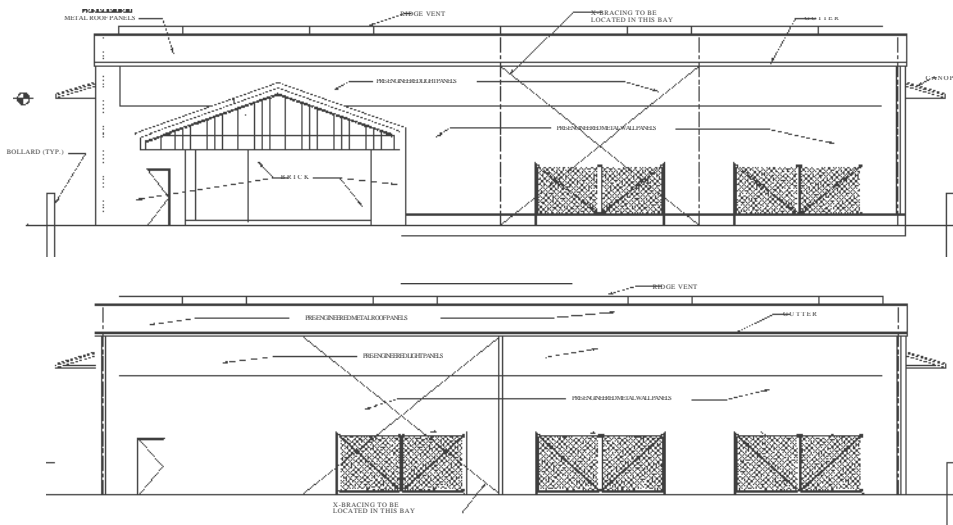
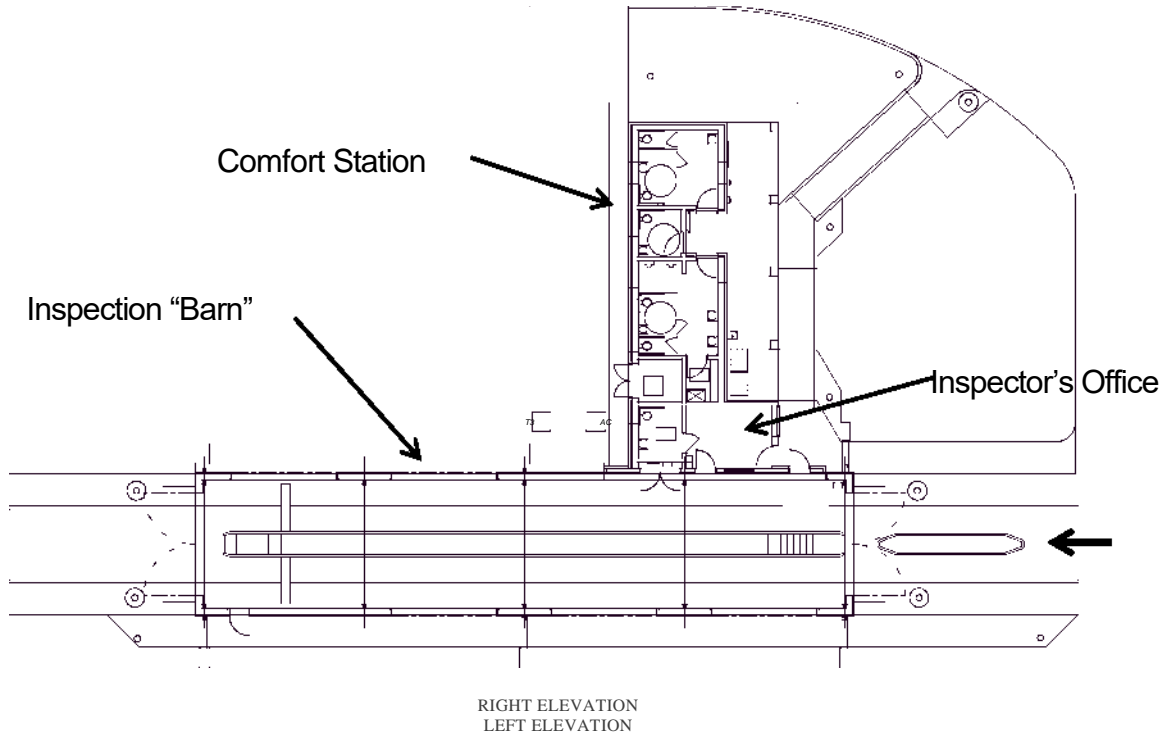
FRONT ELEVATION



WIM Administration Building Elevations

### WIM Inspection / Comfort Station:

WIM Inspection / Comfort Station Plan



WIM Inspection / Comfort Station Elevations

## 4-17 WELLS & WATER TREATMENT PLANTS

### 4-17.1 General

The water and wastewater infrastructure for a rest area may include a well, a drinking water plant, lift stations, and wastewater treatment plant with surge tank and treated water disposal system.

- Bi-directional facilities may:
- Share a common water and waste-water system, or
- Be served with individual water supply and waste systems, or
- Have individual wells and drinking water plants and share a common waste treatment and disposal system
- For new systems, these considerations are usually determined by the roadway design. Close coordination and planning between the various design disciplines during early planning or project phases would result in more optimized and better engineered facilities.
- Availability of water from a local utility must be considered as an alternative to constructing dedicated wells and water supply system for the facility. Provide economic justification for the chosen alternative.
- Provide details for jacking and boring under roadways.
- For bi-directional facilities, show both facilities on an overall site plan.

### 4-17.2 Determining Daily Water and Waste Water Flow

- A daily flow must be determined in order to size equipment. Over the years, FDOT has derived a daily flow based on the 20-year ADT (Average Daily Traffic).
- Adjust toilet and urinal gal/use to reflect specified equipment. BOD value is required for wastewater treatment plant design. Adjust values if actual data is available.
- The number for “Total Processed Water” is the projected flow in 20 years. If windshield-washing facilities are planned, this flow must also be accounted for in the water supply system.

### 4-17.3 WELLS

Size the well and pump to accommodate future expansion. Calculate the demand flow based on an engineering analysis; supply fixture unit calculations may not be adequate to estimate the peak demand.

The Engineer must visit and evaluate the site before locating the well. Do not site well in areas subject to flooding or ponding. Provide the required setback distances from potential sanitary hazards. Provide at least two wells. Protect the wells and pumps from tampering and vandalism. Ensure that vertical clearances permit driving and pulling the well casing and the pump.

Provide auxiliary power with automatic switch over for the well pumps and the water treatment plant.

Provide a concrete apron minimum 6' x 6' x 4" thick, with the well at its center and the surface sloping away from the wellhead. Provide a sanitary seal and a vent at wellhead. A raw water sampling tap, a check valve and a gate valve shall also be provided at the discharge.

Obtain **Consumptive Use Permit** from local Water Management District.

### 4-17.4 DRINKING WATER PLANTS

Develop from 20-year ADT. If future facilities are planned, the drinking water plant should be sized to accommodate the future expansion. Allowances must also be made for windshield washing facilities.

Locate the plant as close to the well as practical. If the rest area design has provisions for future expansion, the plant should be sited to facilitate the planned expansion.

Specify hypo-chlorinators to achieve the required level of disinfection. Do not use gas chlorinators. Specify all pressure vessels as ASME code vessels.

Design the chlorination system to maintain a minimum free chlorine residual of 0.2 mg/liter throughout the distribution system at all times.

### 4-17.5 WATER DISTRIBUTION SYSTEMS

PVC pipes smaller than 4" shall be **ASTM D2241 PVC 1120 SDR 21** minimum. Pipes 4" and larger shall be **AWWA/ANSI C900 PVC DR 18** minimum. All PVC pipes shall bear the National Sanitation Foundation (NSF) seal of approval for potable water use. Design the system to maintain a minimum pressure of 20 psi at the outlets at all times. Provide a flow meter, thrust blocks as required and blow-off assemblies at ends of water lines. Testing, flushing and disinfection are required per AWWA guidelines.

Water piping crossing above sewer or storm drainage piping shall have a minimum separation of 18" between the bottom of the water piping and the top of the sewer or drainage piping. Maintain a minimum horizontal separation of 10' between water and sewer lines.

#### **4-17.6 FIXTURE CALCULATIONS**

Perform fixture unit calculations per the FBC-P. Use these calculations to size all water supply piping.

#### **END OF CHAPTER 4**

# APPENDIX

## TABLE OF CONTENTS

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## APPENDIX A.1

### Standard Method of Area Calculation and Space Measurement

The purpose of this section is to standardize the communication and computation of building areas and space measurement; to allow comparison of values on the basis of generally agreed upon standard units of measurement. (The Florida Department of Management Services developed this standard.)

This standard shall be used to measure floor space in existing and new buildings, lease space and state owned buildings. It is applicable to any type of construction, being based on the premise that the net area is that which the agency may occupy and use for its employees and furnishings.

The following space types shall be used for calculating building area and estimating costs:

- 1. Net Usable Areas** shall be the sum of all occupiable space in a building. The area shall be measured from the inside finish of permanent outer building walls to the office side of permanent corridors and other permanent partitions, and to the center of partitions that separate the premises from adjoining usable areas. This usable area shall include ALL spaces located within the perimeter of the subject area. No deductions shall be made for columns and other projections into the building. For glass walls, measure from the inside face of the glass.
- 2. Public Convenience Area** shall be the sum of all areas devoted to the welfare of the general public, such as lobbies, corridors, toilet rooms, telephone booths, etc.
- 3. Utility Area** shall be the sum of all areas devoted to the mechanical operation of the building such as mechanical rooms, electrical rooms, telephone equipment rooms, elevator shafts, equipment and machinery rooms, pipe and duct shafts and chases, penthouses, etc.
- 4. Building Service and Storage Area** shall be the sum of all areas devoted to janitor closets, maintenance areas, receiving areas, loading docks, etc.
- 5. General Circulation** areas shall be the sum of all areas devoted to horizontal and vertical circulation of occupants between the several areas of the building. (i.e., corridors and stairs)

6. **Exterior Sheltered Area** shall be the sum of all covered walkways, patios, and similar spaces. These areas shall be calculated using a factor of 0.50.
7. **Structural Area** shall be the sum of all areas devoted to the building structure such as columns, bearing walls, etc.
8. **Gross Building Area** shall be the sum of all areas described above.
9. **Exterior Developed Area** shall be the sum of all specific purpose areas such as plazas, fountains, walkways, landscaping, etc. These areas shall be calculated using a factor of 0.25.
10. **Gross Project Area** shall be the sum of the gross building area and the exterior developed area.
11. **Net Maintainable Area** shall be the gross project area less the structural area.

## REST AREA FACILITIES COMPUTATION FORM

The **Rest Area Facilities Computation Form** on the next pages is used to calculate the quantities of facilities provided at rest areas. This Form helps to establish the numbers of plumbing fixtures (toilets and urinals) and parking spaces (cars, trucks & RV's) at each site. The building square footage and site layouts are determined based on these values.

The form is based on the Average Daily Traffic (ADT) of the roadway served. Department Transportation Statistics Office establishes the ADT using the average of the 30th highest volume daily traffic. This allows the facilities to accommodate traffic for all except the busiest 12 days of the year.

Since rest area building facilities are assumed to be Assembly Use facilities, the form provides for the calculation of differences in quantities of men's and women's toilet fixtures to accommodate required ratio of toilet facilities in accordance with **F.A.C. Chapter 9B-56** (potty parity.)

Page 4-5 shows an example completed **Comp Form**. Page 4-6 is a blank **Comp Form** that may be duplicated for each project.



### Rest Area Facilities Computation Form

A = 40,000 = 20 Year ADT (Allow for local commuter traffic)  
 K = 0.135 = Ratio of Design Hourly Volume to ADT (Generally 0.135)  
 D = 0.6 = Directional distribution of Design Hourly Volume (Generally 0.6)  
 T = 0.25 = Percent of overall traffic represented by Trucks & Recreational Vehicles (RV's) (Generally 0.25)

		Insert Factor	Total
B =	<b>Peak Hourly Directional Traffic (Design Hourly Volume, DHV)</b>	$B = A \times K \times D =$	B = <u>3240</u>
C =	<b>Traffic Composition, Peak Hourly Volume</b>		
	C1 = Cars (100% - T = 75%)	75 % x B =	C1 = 2430
	C2 = Trucks & RV's (T = 25%)	25 % x B =	C2 = 810
	TOTAL of Cars, Trucks & RV's	$C1 + C2 = C =$	C = 3240
D0 =	<b>Vehicles stopping at Rest Area, Peak Hourly Volume</b>		
	D1 = Cars	10% x C1 =	D1 = 243
	(a) At rest area near commercial or recreational facilities - 5%		
	(b) At rest area on typical rural route - 10%		
	(c) At welcome centers - 15%	15% x C2 =	D2 = 122
	D2 = Trucks & RV's - 15%	$D1 + D2 = D0 =$	D0 = 365
	TOTAL of Cars, Trucks & RV's		
E =	<b>Parking Spaces, Peak Hourly Volume</b>		
	E1 = Cars	0.33 x D1 =	E1 = 81
	(a) At rest areas - 15 to 20 minutes average stop (0.25 - 0.33 hr.)		
	(b) At welcome centers - 20 to 30 minutes average stop (0.33 - 0.5 hr.)	0.5 x D2 =	E2 = 61
	E2 = Trucks & RV's - 30 minutes average stop (0.5 hr.)		
F =	<b>Persons per hour using comfort facilities, Peak Hourly Volume</b>	$2.25 \times D0 =$	F = <u>821</u>
G =	<b>Toilet and Urinal Fixtures</b>	$0.04 \times F =$	G = <u>32</u> *
	(a) Men, Each Direction (2.5 minutes average use)	$0.5 \times G =$	Men = 16
	(b) Women, Each Direction (3.25 minutes average use)	$0.75 \times G =$	Women = 24

\* If G is uneven, reduce to next lower even number

### Rest Area Facilities Computation Form

A = \_\_\_\_\_ = 20 Year ADT  
 (Allow for local commuter traffic)  
 K = \_\_\_\_\_ = Ratio of Design Hourly Volume to ADT  
 (Generally 0.135)  
 D = \_\_\_\_\_ = Directional distribution of Design Hourly Volume  
 (Generally 0.6)

T = \_\_\_\_\_ = Percent of  
 overall traffic represented by Trucks  
 & Recreational Vehicles (RV's)  
 (Generally 0.25)

		Insert Factor	Total
B =	<b>Peak Hourly Directional Traffic (Design Hourly Volume, DHV)</b>	$B = A \times K \times D =$	B = _____
C =	<b>Traffic Composition, Peak Hourly Volume</b>		
	C1 = Cars (100% - T = _____ %)	_____ % x B =	C1 = _____
	C2 = Trucks & RV's (T = _____ %)	_____ % x B =	C2 = _____
	TOTAL of Cars, Trucks & RV's	$C1 + C2 = C =$	C = _____
D <sub>0</sub> =	<b>Vehicles stopping at Rest Area, Peak Hourly Volume</b>		
	D1 = Cars	_____ x C1 =	D1 = _____
	(a) At rest area near commercial or recreational facilities - 5% (b) At rest area on typical rural route - 10% (c) At welcome centers - 15%		
	D2 = Trucks & RV's - 15%	_____ x C1 =	D2 = _____
	TOTAL of Cars, Trucks & RV's	$D1 + D2 = D_0 =$	D <sub>0</sub> = _____
E =	<b>Parking Spaces, Peak Hourly Volume</b>		
	E1 = Cars	_____ x D1 =	E1 = _____
	(a) At rest areas - 15 to 20 minutes average stop (0.25 - 0.33 hr.) (b) At welcome centers - 20 to 30 minutes average stop (0.33 - 0.5 hr.) E2 = Trucks & RV's - 30 minutes average stop (0.5 hr.)	_____ 0.5 x D1 =	E2 = _____
F =	<b>Persons per hour using comfort facilities, Peak Hourly Volume</b>	$2.25 \times D_0 =$	F = _____
G =	<b>Toilet and Urinal Fixtures</b>		
	(a) Men, Each Direction (2.5 minutes average use)	_____ 0.04 x F =	G = _____ *
	(b) Women, Each Direction (3.25 minutes average use)	_____ 0.5 x G =	Men = _____
		_____ 0.75 x G =	Women = _____

\* If this number is uneven, reduce to next lower even number

## APPENDIX A.2

### Applicable Codes, Standards, and Regulations

The following list of codes, standards, rules, and regulations are required for the design and construction of state buildings by **Florida Statutes (F.S.)** as implemented by various departmental rules in accordance with Florida Administrative Code as described below. In cases of conflict between these documents, the more stringent requirements shall apply.

**Building Codes:**

Florida Building Code

**Accessibility for Persons with Disabilities:**

Florida Building Code, Accessibility Section 255.21 and Chapter 553, Part V, F.S.

Titles II and III, Americans With Disabilities Act (ADA), Public Law 101-336; and the ADA Standards for Accessible Design (ADAS)

**Fire Codes and Rules:**

NFPA 70	National Electrical Code
NFPA 101	Life Safety Code
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 11	Standard for Low-Expansion Foam Systems
NFPA 11	A Standard for High-and Medium-Expansion Foam Systems
NFPA 12	Standard for Carbon Dioxide Extinguishing Systems
NFPA 13	Installation of Sprinkler Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 54	National Gas Fuel Code
NFPA 58	LP-Gas Code

Consult with the Florida State Fire Marshal's office for other frequently used codes.

**Energy Conservation:**

Rule 13D-10, F.A.C., Rules for construction and leases of State Owned Buildings to ensure energy conservation

Section 255.251, F.S., "Florida Energy Conservation and Sustainable Buildings Act".

Section 255.255, F.S., Life-cycle costs

**Glass:**

Chapter 553, F.S., Part III, Glass

**Elevators:**

Chapter 7C-5, Florida Elevator Code  
Chapter 399, F.S., Elevators

**Flood Plain Management Criteria:**

Section 255.25, F.S., Approval required prior to construction or lease of buildings.  
Rules of the Federal Emergency Management Agency (FEMA)

**Extinguishing Systems**

NFPA 10	Fire Extinguishers
NFPA 13	Sprinkler
NFPA 14	Standpipe & Hose System
NFPA 17	Dry Chemical
NFPA 20	Centrifugal Fire Pump
NFPA 24	Private Fire Service Mains
NFPA 2001	Standard on Clean Agent Fire Extinguishing Systems

**Detection & Fire Alarm Systems**

NFPA 70	Electrical Code
NFPA 72	Standard for the installation, maintenance and use of local protective signaling systems
NFPA 72E	Automatic Fire Detectors
NFPA 72H	Testing procedures for remote station and proprietary systems
NFPA 72G	Installation, Maintenance and Use of Notification Appliances
NFPA 74	Household Fire Warning Equipment
NFPA 75	Protection of Electronic Computer Equipment

**Mechanical Systems**

NFPA 90A	Air Conditioning and ventilating systems
NFPA 92A	Smoke Control Systems
NFPA 96	Removal of Smoke & Grease-Laden Vapors from Commercial Cooking Equipment
NFPA 204M	Smoke and Heating Venting

**Miscellaneous Systems**

NFPA 45	Laboratories Using Chemicals
NFPA 80	Fire Doors and Windows
NFPA 88A	Parking Structures
NFPA 105	Smoke and draft-control door assemblies
NFPA 110	Emergency and standby power systems
NFPA 220	Types of building construction
NFPA 241	Safeguard construction, alteration and operations
SFM Rule 4A-47	Elevators

SFM 4A-51            Boilers

**Other:**

- Chapter 10D-6 F.A.C.    On Site Sewage Disposal Systems (septic tanks)
- Chapter 17-6.070 F.A.C.    Wastewater Facilities (treatment plants)
- Chapter 17-761 F.A.C.    Underground Storage Tank Rules

These documents are revised periodically by the responsible agencies and adopted by authorities having jurisdiction on building projects. The design consultant and the project manager are advised to obtain applicable versions of these documents from the responsible agency prior to use.

## APPENDIX A.3

# State Fire Marshal Plans Review Submittal Requirements, Fee Schedule and Submittal Checklist

The plans for all construction of any new, renovation, or alteration of any existing state owned or state leased building are subject to review and approval of the Division of State Fire Marshal for compliance with the **Uniform Fire Safety Standards** prior to commencement of construction or change of occupancy. The Division of State Fire Marshal may inspect state owned and state leased spaces as necessary prior to occupancy or during construction, renovation, or alteration to ascertain compliance with the uniform fire safety standards, **Section 633.085, F.S. and Chapter 4A-52, F.A.C.**

### PLANS REVIEW FEES State Owned Buildings:

For Plans Review: The Consultant shall send two (2) complete sets of signed and sealed contract documents including one set of specifications and completed form DFS-K3-1973 to:

Division of State Fire Marshal  
Plans Review Section  
200 East Gaines Street  
Tallahassee, Florida 32399-0342

The fee for plans review of all construction documents for new construction or alterations to existing facilities shall be invoiced after plans are received at which time payment can be made by check, money order.

The fee for plans review is determined by multiplying the estimated construction cost of the building project, less the real estate, by the constant .0025.

Example: \$2,000,000 x .0025 ~ \$5,000 fee (There is a minimum fee of \$100.)

In situations where the user state agency, through its own facilities prepares the construction documents, then the user agency is responsible for paying the fee in advance by FLAIR Journal Transfer. A copy of the journal transfer (voucher) is to accompany the plans.

Complete the attached **Review Request Form**, in its entirety, and include it with the plan submittal to the State Fire Marshal's Office.

### **State Leased Buildings:**

The fee for plans review of all contract documents, new construction or renovation to existing, shall be invoiced once the plans are received.

For Plans Review: The Lessor shall send two (2) complete sets of signed and sealed plans, and one set of specifications along with form DFS-K3-1973 with a cover letter stating the facility's name, lease number to:

Division of State Fire Marshal  
Plans Review Section  
200 East Gaines Street  
Tallahassee, Florida 32399-0342

A copy of the cover letter shall be sent to:

Chief  
Facilities Management

The fee for plans review is determined by multiplying the estimated replacement cost of the building or portion of the building (based on net square footage) to be leased to the State by the constant .0025.

*Example: The total building is valued at \$400,000 and the state is leasing 25% of the NET building square footage. The fee would be calculated by multiplying \$400,000 by 25% = \$100,000.00 (cost of leased space) multiplied by .0025 ~ \$250.00.*

When plans are approved and the approval letter issued, that approval is good for one (1) year from date of issue. After that, the plans must be re-submitted and another review fee paid.

### **Plans Disposition:**

The Division of State Fire Marshal will require submitter to furnish two (2) sets of signed and sealed contract documents including one set of specifications and form DFS-K3-1973 or approval to the Plans Review Section for review.

When the documents are approved for construction, one (1) set will be stamped with the Fire Marshal's stamp of approval and returned to the submitter.

The stamped set of plans must be kept on the job site for the fire safety inspector's use at the time of inspection. It shall be the responsibility of the submitter to see that the

"approved" set of plans is on the construction site before work begins and remains there until final inspection and approval has been issued.

### **S.F.M. Plans Review Submittal Checklist:**

The review process allows 30 calendar days for review of all state-owned property and 10 calendar days for review of state leased property. The process seldom takes the entire required time; however, this time can be reduced even further by simply reviewing the set of plans you are submitting with the following questions in mind: Do the plans show the use of each room, i.e., office, conference, laboratory, closet, storage, etc.?

1. Do the plans show the number of floors in this building and the location of the project under consideration in comparison to the entire floor and building?
2. Is the building sprinklered and, if so, do the plans show the location of the sprinkler heads in the area(s) under consideration?
3. Do the plans show the exit marking(s), location(s), and direction of travel?
4. Is there emergency lighting and, if so, what is the type and location?
5. What is the type and location(s) of the fire extinguisher(s)?
6. Are there any special fire extinguishing systems (such as Halon 1301 or dry chemical hood system)?
7. If applicable, do the plans show the type and location(s) of smoke and/or heat detector(s) (including duct detectors)?
8. Are there any manual fire alarm pull stations and, if so, where are they located and what is their elevation above floor?
9. Are there any smoke dampers and, if so, what are their type and location(s)? Access panels?
10. Do the documents show the door fire rating on the schedule?
11. Do the plans show a nationally tested wall assembly detail for rated walls?
12. Do the plans show the exits and their exit discharge i.e., top of structure to the level of exit discharge?
13. If applicable, do the plans show the stair and handrail detail?
14. What are the interior finishes i.e., paneling, drywall, wallpaper and its flame spread rating?

While answering these few questions will expedite the process, they are not the complete set of questions that could be asked. If there are any special circumstances, or hazards that require further clarification, the reviewer will attempt to contact you; therefore, include the name and telephone number of a contact person with your plan submission. Please, remember that if you are called and asked for additional information or clarification, the reviewer needs this information in writing before he can approve the project. If the statutory time (10 days on a lease or 30 days on state owned) expires he must disapprove the project and a resubmittal process may add further delay to the project.



The following items are areas where your assistance is required. Please ensure that all submittals address these necessary items where applicable and help prevent lost time due to disapprovals based on lack of information.

1. **Renovations or Alteration** - Any alteration, or any installation of new equipment shall be installed under requirement of new construction. The areas shall be identified clearly and shall show the area of concern in relation to the total building. This will ensure that the proposed renovation or alteration will not diminish the life safety components of the building.
2. **Equivalency Concepts** - Any requirement of the code that a designer wishes to modify by alternative arrangements shall in no case afford less safety to life than the code presently requires. Any request to use equivalency concepts will only be considered when technical documentation is submitted.
3. **Classification of Occupancy** - Plans shall indicate type of occupancy based on N.F.P.A. 101, Chapter 4.
4. **Change of Occupancy** - Designer shall identify the existing type occupancy and clearly identify the new occupancy use and areas.
5. **Floor Area** - The gross square feet of the building shall be indicated on the plans. All assembly rooms shall have net floor area given.
6. **High Hazard Area** - Any areas of a building, structure, or parts thereof, containing highly combustible, flammable, explosive products or materials likely to burn rapidly shall be identified on submittal. The designers all identify amounts and types of hazardous materials used throughout the facility.
7. **Means of Egress** - All three components of the means of egress (exit access, exit and exit discharge) shall be clearly identified on submittal. Travel distance to exits shall be detailed.
8. **Occupancy load**- The occupant load for each floor and calculations showing how load was obtained "shall be shown". All assembly rooms, spaces, or areas will be identified and calculated with calculations shown on plans.
9. **Construction Type** - The type of construction shall be identified as it may qualify per N.F.P.A. 220.
10. **Atrium** - Any building in which the designer has incorporated an atrium shall have the atrium area clearly defined on the contract document.

**11. Penetration of Smoke or Fire Barriers** - Passage of pipes, conduits, bus ducts, cables, wires, air ducts, pneumatic ducts and similar service equipment shall be detailed as close to installation as the submitter can reasonably do so.

**12. Fire Detection, Alarm and Communications Systems** - All existing or new systems shall be clearly identified on plans. The type system and the appropriate N.F.P.A. standard that was used for design and installation shall be indicated on the plans signed and sealed by the Designer of Record.

**13. Automatic Sprinkler System, Standpipes and Fire Pumps** - All existing or new systems shall be clearly identified on plans. The type system and appropriate N.F.P.A. standard that was used for design and installation shall be indicated on plans signed and sealed by the Designer of Record. Hydraulic calculations, also signed and sealed by the Designer of Record, shall accompany the plans.

**14.** All sheets shall have the correct name of the facility, i.e.- Building Name, Building Number, Office Complex Name, Street Address, City, County, and Zip code and assigned lease number noted on the document.

If there are any questions concerning this notice, please contact the State Fire Marshal's Plans Review Section.

## **APPENDIX A.4**

### **FDOT Publications**

The following publications are adopted as a part of this Manual by reference.

1. ADA Requirements for Access to Department Facilities (Topic No. 625-020-015)
2. Fixed Capital Outlay Program (Topic No. 425-000-001)
3. Building Code Compliance-Plans Review, Permits and Inspections  
(Topic No. 425-020-001)
4. Design-Build Procurement & Administration (Topic No. 625-020-010)
5. Manual of Uniform Minimum Standards for Design, Construction, and  
Maintenance (Florida Greenbook) (Topic No. 625-000-015)
6. FDOT Design Manual (Topic No. 625-000-002)
7. Standard Plans for Road and Bridge Construction (Topic No. 625-010-003)
8. CADD Manual (Topic No. 625-050-001)

**END OF APPENDICES**

**END OF BUILDING FACILITIES DESIGN MANUAL**