

GENERAL

THE INSTALLATION DESIGN GUIDE WILL BE PROVIDED VIA CD-ROM UPON REQUEST.

SPECIFICATIONS:

1) SECTION 01011 - DESIGN CRITERIA:

a) Chapter 4 - Architectural: Delete as originally issued and substitute therefore the attached revised same like-numbered chapter.

b) Chapter 6 - Electrical: Delete as originally issued and substitute therefore the attached revised same like-numbered chapter.

c) Chapter 7 - HVAC: Delete as originally issued and substitute therefore the attached revised same like-numbered chapter.

d) Chapter 8 - Plumbing: Paragraph 8.4, revised reference from "Chapter 4" to "Chapter 2".

2) SECTION 01012 - DESIGN AFTER AWARD: Delete this section in its entirety as originally issued and substitute therefore the attached revised same like-numbered section.

ATTACHMENTS:

- 1) CHAPTER 4
- 2) CHAPTER 6
- 3) CHAPTER 7
- 4) SECTION 01012 - DESIGN AFTER AWARD

CHAPTER 4
ARCHITECTURAL

4.0 ARCHITECTURAL

4.1 GENERAL

4.1.1 Design and Construction of the K-9 Kennel Facility shall be based on the information contained in this RFP and the attached diagram showing major adjacencies and organizational structure. The diagram is attached at the end of this section as Attachment 1.

4.1.2 Verification of information gathered during Site visits and the pre-design conference meeting with the users and Directorate of Installation Support (DIS) personnel were used to develop adjacencies and functional requirements.

4.1.3 Architectural features of this facility shall be designed in accordance with the Fort Belvoir Installation Design Guide. The exterior shall be designed to incorporate the style, color and materials of other recent facilities in the area. All materials will be chosen for durability and low maintenance. Materials and finishes noted in this RFP should be considered as minimum requirements. Improved finishes or betterments are encouraged.

4.1.4 This facility shall be constructed in accordance with Military Handbook 1008C and the Unified Facilities Criteria (UFC) UFC 1-200-01, Design: General Building Requirements. MIL HDBK 1008C currently requires new buildings to be either Type I or Type II construction as determined by the Uniform Building Code (UBC). Where there is a case of conflicting requirements the most stringent requirement shall apply. Military Handbook 1008C references: a) applicable portions of the Uniform Building Code for the following: type of construction, fire resistance requirements, allowable floor area, building height limitations, and building separation distance requirements; and b) building construction related to egress and safety to life shall comply with NFPA 101. Type of occupancy shall be in accordance with UBC and NFPA. Fire Resistant plywood is not permitted as a roof sheathing material. Finishes shall be Class A or B except that smoke spread rating cannot exceed 100 for Class B.

4.1.5 Antiterrorism/Force Protection: The facility shall be designed in accordance with 1999 Interim Department of Defense Antiterrorism/Force Protection Construction Standards. A copy of this document will be made available to the Contractor.

4.1.5.1 Antiterrorism/Force Protection for this facility shall be designed for the minimum requirements set forth in the Interim Department of Defense Antiterrorism/Force Protection Construction Standards and shall include but not be limited to controlling access to roofs, laminated glass (use a minimum of 1/4" annealed laminated glass for the inner pane, exterior doors shall use a minimum 1/4" annealed laminated glass, and attaching interior ceiling mounted fixtures to the supporting structural system which includes suspended ceilings, light fixtures, and mechanical and electrical ducting and pipes, etc. See the Interim Department of Defense Antiterrorism/Force Protection Construction Standards, December 16, 1999 for additional requirements.

K-9 Kennel
Fort Belvoir, Virginia

4.1.6 Adjacencies and Organizational Structure: The following is a discussion of the organizational structure and adjacencies of the K-9 Kennel Facility.

4.1.6.1 The K-9 Kennel Facility shall be designed to incorporate all the requirements of this RFP and with the Kennel Support and Kennel Portions physically connected (as opposed to what is shown in DA PAM 190-12, as separated facilities).

4.1.6.2 The K-9 Kennel organization consist of a staff of 14 people tasked with providing training and shelter for 13 canines in support of narcotics and explosive missions on the installation, within the National Capitol Region, and to provide support of missions throughout the United States.

4.1.6.3 The kitchen shall be directly adjacent to kennels. The drug room shall not be located on an exterior wall. The kennel storage room and break areas shall be located adjacent to the kennel runs. The food storage room shall be located adjacent to the kitchen area.

4.1.6.4 See Table I below for a detailed listing of all rooms, spaces, areas, and equipment and Attachment 1 for "Diagram Showing Major Adjacencies and Organizational Structure".

4.2 REFERENCES:

Design shall meet the latest edition of the following criteria unless otherwise noted herein:

DA Pam 190-12, "Military Working Dog Program", attached to Chapter 1 as Attachment 1.

MIL-HDBK-1008C, "Fire Protection for Facilities, Engineering, Design, and Construction" http://www.efdlant.navfac.navy.mil/lantops_15/documents/MH/1008C.PDF.

UFC 1-200-01, Design: General Building Requirements, Dated 31 July 2002, <http://www.ecodes.biz/dod.cfm>.

EC 1110-1-94, Dated 31 July 2001, Modifying MIL-HDBK-1008C, <http://www.usace.army.mil/inet/usace-docs/eng-circulars/ec-all.html>.

MIL-HDBK-1190, "Facility Planning and Design Guide", http://www.lantdiv.navfac.navy.mil/servlet/page?_pageid=6,14&_dad=lantdiv&_schema=LANTDIV.

Fort Belvoir Installation Design Guide, Attached to this RFP.

Uniform Federal Accessibility Standards (UFAS), 49 CFR 31528.

Americans With Disabilities Act (ADA), Public Law 101-336.

Americans with Disabilities Act Accessibility Guidelines (ADAAG), 36 CFR Part 1191.

Uniform Building Code (UBC).

NFPA-101, Life Safety Code.

Antiterrorism/Force Protection Standards are available for viewing from the Baltimore District Office or the Fort Belvoir Directorate of Installation Support.

1. Department of Defense Antiterrorism/Force Protection Construction Standards (with Army Supplemental Guidance) Interim Standards, 16 Dec. 99.
2. Army TM 5-853-1, Security Engineering Project Development, May 1994.
3. Army TM 5-853-2, Security Engineering Concept Design, May 1994.
4. Army TM 5-853-3, Security Engineering Final Design, May 1994.
5. Army TM 5-853-4, Security Engineering Electronic Security Systems, May 1994.

Army Technical Letter 1110-3-491, Sustainable Design for Military Facilities, <http://www.usace.army.mil/inet/usace-docs/eng-tech-trs/etl1110-3-91/toc.htm>.

Sustainable Project Rating Tool for military facilities, available at <http://www.usace.army.mil/inet/usace-docs/eng-tech-ltrs/etl1110-3-491/a-c.pdf>

Army Regulations -
http://www.army.mil/usapa/epubs/190_Series_Collection_1.html

AR 190-12 dated 30 September 93, Army Regulation, Military Working Dogs.

AR 190-51 dated 30 September 93, Army Regulation, Security OF Unclassified Army Property (Sensitive And Non-sensitive).

Army Technical Instructions TI 809-04, Seismic Design for Buildings,
<http://www.hnd.usace.army.mil/techinfo/ti.htm>.

TM 5-807-10, Signage, <http://www.usace.army.mil/inet/usace-docs/armytm/tm5-807-10/>

4.3 BUILDING AREAS

4.3.1 Gross Area: The gross floor area of the K-9 Kennel Facility shall equal but not exceed 3,616 square feet. The gross area is the floor area measured from the outer surfaces of the exterior walls.

4.3.2 Half Space: One-half of the area will be included in the gross area for covered areas such as canopies, passageways, breezeways, or walks.

4.3.3 Excluded Space: Attic areas where clear height ~~does not average~~ **averages** less than 6'-11"; crawl spaces; roof overhangs and soffit for weather protection; uncovered ramps; uncovered stoops; and utility tunnels and raceways will be excluded from the gross area.

4.3.4 Net Floor Areas: Net floor area is that space within the interior faces of exterior walls and/or interior walls. The following required rooms/spaces are shown in Table I with approximate areas in square feet (SF). Actual amount on space required for each area will be determined by the Design-Build Contractor to accommodate personnel, equipment and furniture requirements and space clearances for equipment service. Mechanical and Electrical Rooms shall be sized to accommodate efficient layout of mechanical and electrical equipment.

K-9 Kennel
Fort Belvoir, Virginia

Areas and Spaces	Gross Area (SF)	
	Private	Open
Kennel Support Building		
Corridor	AR (485)	
Kennel Master Office	120	
NCO Office	80	
Multipurpose Room		600
Food Preparation Room	100	
Food Storage Room	20	
Tack Room	170	
Grooming Room	50	
Isolation Room	50	
Toilet Room(s) with Shower	150	
Janitor Supply Closet	50	
Drug Room	150	
Vending Area	40	
Mechanical Room	AR (237)	
Electrical Room	AR (50)	
Sub Total	1752	600
Kennel		
Kennel Runs (13 @ 88sf. Ea.)	1144	*
Kennel Storage Room	120	
Break Area(3), Exterior Fenced-in Areas (300)	0	
Sub Total	1264	600
Total (Private)	3016	
Total (Open)		600
Grand Total		3616
(AR)	(-) 786	2830
Corridors, Mechanical Room, Electrical Room		W/O AR

Abbreviation: AR - As Required

* **Square footage represented for the kennel runs includes exterior portion of run, which is considered in the "open" category.**

Table I - Room/Space Tabulation

4.3.5 Outdoor equipment is to be located on the ground. Equipment located on the ground shall be minimum 30 feet from the building wall **in accordance with the AT/FP requirements**. Equipment shall be placed on concrete pads and surrounded by a fence with a lockable gate in accordance with the Fort Belvoir Installation Design Guide and the Interim Antiterrorism/Force Protection requirements. Noise from outdoor equipment must be considered when locating equipment. Airflow to and from outdoor units must not be obstructed.

4.4 INTERIOR BUILDING SPACES

4.4.1 The following building spaces are required. **All furniture/furnishings/equipment stated in this section is to be part of the CID package. All furniture/furnishings/equipment stated below shall be provided and installed by the contractor under the base bid except items indicated to be provided and installed under Option No. 2. Items indicated to be purchased and installed under Option No. 2 shall be purchased and installed by the contractor under that option.** Special requirements for these areas are as follows:

4.4.2 Kennel Support Area

4.4.2.1 Corridors: Corridors shall be minimum 6'-0" net clear width and shall be constructed, as a minimum, with glazed concrete masonry unit wainscot, 4'-0" minimum in height.

4.4.2.1.1 Private Offices: Private offices shall include the Kennel Masters Office and the NCO Office. Each office shall accommodate a desk, credenza, desk chair, 2 side chairs, and one file cabinet as well as a storage locker for A & B Bags as described below in Multipurpose Room. **Office furniture shall be provided and installed under Option No. 2.**

4.4.2.2 Multipurpose Room: Shall include workstations, storage room, briefing/training area, and lounge.

4.4.2.2.1 Four workstations with chairs shall be provided and shall include desktop (min. 30" deep x 60" wide, grommets in desktop for wiring penetration, integral divider and surround partitions, overhead enclosed shelf with light below, and lockable wheeled cabinet under desk to accommodate two pencil drawers and one file drawer. Workstations shall have an integral chase for electrical/communications wiring and electrical outlets in base of partitions. Room shall accommodate four standard size file cabinets.

4.4.2.2.2 Storage Room: A storage room shall be provided to house storage lockers and shelves. Room shall have 2 shelves. Shelves shall be wire vinyl coated 24" deep @ 30" O.C. horizontally, rated at 400 PSI capacity, ten feet long, mounted at 30 inches and 60 inches above finish floor. Room shall also include fourteen lockable, vented lockers for A & B Bags. A Bags are approximately 18 inch wide x 18 inch deep x 18 inch high back packs and B Bags are approximately 22 inches in diameter by 30 inches high. Storage lockers shall be 24" deep x 24" wide x 7'-0" high and include a base approximately 6 inches off the floor, one interior solid shelf at 36 inches above the floor at the middle of the unit and one shelf one foot from the top, all rated at 400 PSI capacity.

4.4.2.2.3 Briefing/Training Area: The multipurpose room shall accommodate 16 people for briefings and training. Specific furnishings are not required for this item.

4.4.2.2.4 Lounge Area: The lounge area shall include a sofa and two side chairs, TV/VCR/CD viewing cabinet, and coffee table. Lounge furniture will be provided and installed under Option No. 2.

4.4.2.2.5 Food Preparation Area: A kitchen shall be provided containing stainless steel base and wall cabinets with stainless steel counter top, double bowl (each bowl being minimum 18-inch wide by 10-inch deep) stainless steel sink, stainless steel electric range with exhaust hood, stainless steel refrigerator, stainless steel ice machine (Flake Type, 400 pound capacity), garbage disposal, and stainless steel microwave. Approximately ten linear feet of continuous cabinet top counter space shall be provided for food preparation. Sink shall be under counter mounted.

4.4.2.3 Food Storage Room: A food storage room shall be provided for storage of bags of dry dog food. Room shall be either in or adjacent to food preparation room and capable of storing a 30-day supply of dog food. The Food Storage Room shall be rodent proof. Bags of dog food will be stored on 4 foot x 4 foot x 6 inch high pallet. The pallet shall be sectional, 2 feet x 2 feet sections, constructed of stainless steel and shall be removable for cleaning. Door to storage shall be minimum 3 feet wide. **The pallets will be provided and installed under Option No. 2.**

4.4.2.4 Tack Room: A tack room shall be provided for the storage of canine gear (leashes, chains, collars), attack suits, and training equipment. Tack room shall be constructed with sealed concrete floors and glazed concrete masonry unit walls. Storage hooks shall be provided complete with 30 stainless steel hooks in two rows of 15, one mounted 36" above finish floor and the other mounted 60 inches above finished floor mounted on a 1-inch thick, 6-inch high solid plastic board. Hooks shall be mounted on 8-inch centers. Three Storage racks shall also be provided in the Tack Room. Storage racks shall be commercial kitchen type stainless steel (24 inches deep x 48 inches wide x 60 inches high) with lockable wheels, and 5 shelves including top and bottom shelves.

4.4.2.5 Grooming Room: A grooming room shall be provided to accommodate a stainless steel sink. Sink shall be commercial kitchen type, 5 feet wide x 30-inch deep x 3'-6" high with an integral 18-inch backsplash where the faucet, with commercial spray nozzle, will be mounted. Bottom of the sink bowl shall be approximately 18 inches above finished floor and shall be 18 inches deep and approximately 5 feet wide, standing on legs. A wall-mounted shelf (5'-0" wide by 12" deep) shall be provided at 5'-0" above finish floor. The shelf shall not be located over the sink. **The sink and shelf will be provided and installed under Option No. 2.**

4.4.2.6 Isolation Room: The isolation room shall have sealed concrete floors with glazed concrete masonry unit walls with a 3'-0" stainless steel door.

4.4.2.7 Women's and Men's Toilet Rooms: Toilet rooms shall be provided with floor drains and toilet accessories as indicated below. One men's and one woman's toilet room shall be provided each with a toilet, lavatory, and shower. Shower rooms can be separate rooms. The toilet rooms shall be handicap accessible.

4.4.2.7.1 Toilets: Toilets shall be provided in accordance with the National Standard Plumbing Code. Provide handicap accessible toilet in each toilet room with grab bars in accordance with ADA and UFAS requirements. Toilets shall be vitreous china. Grab bars shall be stainless steel with hidden fasteners.

4.4.2.7.2 Lavatories: Lavatories shall be provided in accordance with the National Standard Plumbing Code. Provide at least one handicapped accessible lavatory in each toilet room. Lavatories shall be vitreous china mounted under counter. Counter shall be, wall mounted, solid surface polymer as described below in "Solid Surfaces", or other nonporous, hard surface, easily maintained product at least 1 inch thick with side panels, intermediate supports, with 4 inch back splash and 4" end splashes at walls. Counters shall be sealed to walls.

4.4.2.7.3 Shower/Shower Room: Provide at least one shower in each toilet room or adjacent to each toilet room in separate room with door. Shower unit shall be one-piece acrylic with built-in soap dish, shower curtain rod, and shower curtain. Shower curtain rod shall be stainless steel. Shower shall be provided with a recessed low-voltage, recessed ceiling mounted light fixture, switched from outside the shower compartment. Shower units shall be provided with a full soffit to the ceiling with an access panel for the shower light transformer. Shower rooms shall be provided with floor drains. Shower room shall be provided with one 3-foot long bench, with door and privacy lockset.

4.4.2.7.4 Toilet Accessories: All toilet accessories shall be satin finish stainless steel. All toilet accessories shall be blocked in walls. Toilet accessory finishes shall be compatible with one another and shall be coordinated.

4.4.2.7.4.1 Grab Bars: Grab bars shall be provided in all handicapped accessible toilet rooms in accordance with ADA and Uniform Federal Accessibility Standards and in conformance with FS WW-P-541.

4.4.2.7.4.2 Glass Mirrors: Shall be provided in conformance with FS DD-M-411. Provide mirrors in each toilet and shower room. Provide one 18 inch x 30 inch tilt mirror above each handicap lavatory.

4.4.2.7.4.3 Toilet Seat Cover Dispenser: Provide one toilet seat cover dispenser with a capacity of 200 seat covers in each toilet room. Dispenser shall be stainless steel.

4.4.2.7.4.4 Toilet Tissue Dispenser: Provide a wall mounted, stainless steel toilet tissue dispenser in each toilet compartment. Toilet tissue dispensers shall have two rolls of tissue stacked vertically and shall be roller mounted on two support brackets. Brackets shall be stainless steel.

4.4.2.7.4.5 Soap Dispenser: Provide one soap dispenser for each lavatory. Soap dispensers shall be liquid type consisting of Type 304 stainless steel tank with holding capacity of 32 fluid ounces with a corrosion-resistant all-purpose valve that dispenses liquid soaps, provided in combination with a wall mounted glass mirror over each lavatory. All toilet rooms shall be handicapped accessible per ADA and UFAS requirements.

4.4.2.7.4.6 Paper Towel Dispenser/Disposer: Provide semi-recessed, wall mounted, stainless steel, combination paper towel dispenser and disposal near lavatory in each toilet room. Dispenser/receptacle shall have a capacity of 400 sheets of C-fold, single-fold, or quarter-fold paper towels. Waste receptacle shall be designed to be locked in unit and removable for service. Locking mechanism shall be tumbler key lock. Waste receptacle shall have a

capacity of 12 gallons. Unit shall be fabricated of not less than 0.030-inch stainless steel welded construction with all exposed surfaces having a satin finish. Waste receptacle that accepts reusable liner standard for unit manufacturer shall be provided.

4.4.2.8 Janitor Supply Closet: The Janitor Supply Closet shall be constructed with ceramic tile floor and glazed concrete masonry unit walls. The Janitor Supply Closet shall be provided for storage of janitor supplies kennel cleaning supplies. This room shall have a minimum of 40 linear feet of fixed, wall-mounted stainless steel shelves and a floor mounted mop sink with mop rack. Mop sink shall be provided with a back/side splashes. Shelving shall be 3 high, 12 inches deep, and mounted horizontally at 16 inches on center starting 3 feet above finish floor.

4.4.2.9 Drug Room: Provide a drug storage room. The drug room shall have an independent security system monitored by the military police to be provided by the contractor. The drug room will house two 4-foot wide x 4 feet high x 30-inch deep safes, two standard type file cabinets, 2 feet x 3 feet desk with chair. All equipment and furniture will be provided and installed by the government. The Drug Room shall be designed in accordance with AR 190-12, AR 190-51 and AR 195-5. Features such as a security door and a separate independent security system shall be a requirement for the drug room.

4.4.2.10 Vending Area: Provide area approximately 42' deep x 7' wide for two vending machines. Provide electrical outlets. Vending machine to be provided and installed by others.

4.4.2.11 Mechanical Room: Doors shall open directly to the exterior and shall be minimum (2) 3'-0" wide x 7'-0" high steel doors with steel frames. Provide room size required for facility.

4.4.2.12 Electrical/communications Room: Provide room size required for facility.

4.4.3 Kennel Area

4.4.3.1 Kennel Runs: Provide 13 kennel runs (partially interior and partially exterior) with sealed concrete floors, gates, full height non-abrasive durable side and rear walls, acoustically insulated ceiling (baffles), and guillotine doors. Square footage for this area shall be calculated as 88 square feet within the building footprint. No square footage shall be counted for the exterior run or the overhang. A concrete walkway shall be provided around the exterior of the runs to the entrance door. The Kennel Run Area shall be designed to accommodate future expansion of the kennel runs to a total 20.

4.4.3.1.1 Guillotine Doors: Guillotine doors shall be located on the exterior walls of every kennel run. Guillotine doors shall have individual operators located on the interior of the building operated outside each kennel run. Guillotine doors shall be minimum 30-inch square, 1/4-inch aluminum diamond plate with aluminum sidetracks and aluminum top track. Door operator shall be provided with mechanism to prevent free falling of the door while in the open position or while being opened or closed and to prevent the door from being pulled off track while opening door.

4.4.3.1.2 Floors: Floors for the kennel run shall slope from the guillotine door sills to the central corridor on the interior and from the guillotine door sills to the end of the run on the exterior.

4.4.3.1.3 Walls: Sidewalls between runs and back walls (building wall) shall be constructed of full height, glazed CMU (Concrete Masonry Units).

4.4.3.1.4 Overhang: A 4-foot soffit overhang shall be provided from the exterior walls over the exterior portion of the kennel runs to provide a shade area for the canines. Location for a K9 pallet, 32-inch square shall be provided. **Pallets will not be provided by the contractor.**

4.4.3.2 Kennel Storage Room: Kennel storage room shall be provided to accommodate cleaning supplies, mops and brooms, steam cleaner, etc. Vinyl covered wire shelves shall be provided along one wall of the room. Three shelves shall provided 16" deep x room width located at 16" O.C. horizontally starting 3'-6" above floor. Shelves shall have 400 PSI capacity. Ten stainless clips, mounted on 1-inch thick, 6-inch high, solid plastic backboard shall be provided for storage of mops and brooms.

4.4.3.3 Kennel Break Area: Provide three kennel break areas adjacent to the kennel runs. Break areas shall be uncovered, 8' high fenced areas, with gates as described above, and grass floors. Fence bottoms shall be buried 12" into the ground.

4.5 GENERAL REQUIREMENTS:

4.5.1 See Table I - Room/Space/Equipment Tabulation above and Attachment 1, "Diagram Showing Adjacencies and Organizational Structure" required by this RFP.

4.5.2 Minimum Ceiling Height: The minimum finish ceiling height shall be 8'-0".

4.5.3 Vision Panels: Doors to all enclosed offices shall have vision panels.

4.5.4 Accessibility: All areas and rooms, except mechanical, electrical rooms shall be handicapped accessible per the Uniform Federal Accessibility Standards and ADAAG. Access walks, ramps and public ways shall also be accessible per the above stated criteria.

4.5.5 Acoustical Design: The designers must address isolation of noise from a variety of sources, including but not limited to; office to office, corridors to work offices/training areas, mechanical/electrical equipment and kennel area. Acoustical treatment of the walls and ceiling must be designed to provide an STC rating that isolates the noises from the sources listed above. Walls between rooms and corridors must have a sound transmission class (STC) of at least 50. Doors in those walls must have an STC of at least 45. Ceiling assemblies must have an STC of at least 55. Sufficient insulating material shall be provided in the attic space to meet both the thermal and acoustical requirements specified herein.

4.5.6 Comprehensive Interior Design (CID) - Procurement and installation of freestanding furniture is included as Option No. 2 under this RFP. The spaces

shall be configured to accommodate the furniture indicated. The Contractor is required to provide/procure the freestanding or conventional furniture/furnishings of the CID package under Option No. 2. If Option No. 2 is not exercised, the Government will procure, warehouse, and install the furniture/furnishings specified in the CID package.

4.5.6.1 Interior Finishes:

4.5.6.2 Floors

4.5.6.2.1 Carpets: Carpets shall not be provided in this facility.

4.5.6.2.2 Vinyl Composition Tile: Vinyl Composition Tile shall be provided in the Storage Rooms and Drug Room.

4.5.6.2.3 Sealed Concrete Floors: Sealed Concrete Floors shall be provided in the Kennel Runs, Kennel Room Corridor, Mechanical/Electrical Rooms, and Isolation Room.

4.5.6.2.4 Ceramic/Porcelain Tile: Tile shall be provided in toilet rooms, shower rooms, and the Entry Vestibule.

4.5.6.2.5 Sheet Vinyl Flooring: Sheet vinyl flooring shall be provided in all other areas unless indicated otherwise.

4.5.6.3 Walls

4.5.6.3.1 Vinyl Wall Coverings: Unless indicated in other sections of this RFP, Vinyl Wall Coverings shall be provided in individual offices.

4.5.6.3.2 Ceramic Tile Walls: Unless indicated in other sections of this RFP, ceramic tile shall be provided in toilet rooms, shower rooms, and janitor closet on walls and floors.

4.5.6.3.3 Painted Walls: Unless indicated in other sections of this RFP, paint shall be provided on all walls except where vinyl wall covering, glazed CMU, or Ceramic/Porcelain Tile is being provided. Paint shall be Low Luster Type.

4.5.6.3.4 Durable Interior Walls: The entry vestibule shall be provided with any acceptable durable surface.

4.5.6.4 Ceilings

4.5.6.4.1 Acoustical Ceiling Tile: Unless indicated in other sections of this RFP, acoustical ceiling tile shall be provided in individual and open offices, and corridor.

4.5.6.4.2 The entry vestibule shall be provided with a painted plaster ceiling or any comparable acceptable durable surface.

4.5.6.4.3 Paint: Painted gypsum board shall be provided on all ceilings not listed for other finishes.

4.6 BUILDING SHELL

4.6.1 Foundation & Floor Construction: The building will be permanent construction of concrete foundation and floor slab.

4.6.2 Steel Doors and Frames: Exterior doors shall be heavy-duty 1 3/4" thick steel, heavy duty, commercial style steel doors and steel frames, except for aluminum/glass storefront-type doors at entrances. Exterior doors shall be insulated and weather-stripped.

4.6.3 Aluminum Store-Front Type Doors and Exterior Windows: Doors and windows shall be glazed with laminated insulated glass in accordance with the Interim Department of Defense Antiterrorism/Force Protection Construction Standards and shall conform to ASTM E 773 and ASTM E 74. Glazing shall be bronze tinted. Glazing shall have a maximum condensation factor of 48% in accordance with AAMA 1502.7. Frame shall have bronze anodized finish with a minimum of 0.4-mil thick. Organic coating shall be manufacturer's standard acrylic or polyester, bake-on, electrostatically applied enamel coating of 1.0 +.2 mils dry film thickness minimum. All coatings shall be factory applied.

4.6.4 Windows bronze tinted glass and bronze anodized finished frames. All windows shall be heavy commercial class 40 (HC-40) grade. All window frames shall have laminated glazing units in accordance with the Interim Department of Defense Antiterrorism/Force Protection Construction Standards. All window frames shall be constructed with a thermal break feature. All window frames shall be designed to withstand a 90 mile per hour wind velocity. Windowsills shall be solid surface polymer or other nonporous, hard surface, easily maintained product.

4.6.5 Interior Glazing: Glass shall conform to the requirements of ASTM C1036. Glass in doors and adjacent to doors shall conform to the requirements of CFR 16 Part 1201. Glazing of interior vision panels shall conform to CFR 16 Part 1201.

4.6.6 Roof for the building shall be a asphalt shingle with minimum slope of 3 on 12. Provide continuous roof slope to the perimeter of the building. Do not design interior valleys or depressions that will form ponds. The roof shall have no roof drains but shall dispose of water by gutters and downspouts. See Section 01011, Chapter 2 for gutter and downspout design, gutter screening and downspout connection requirements.

4.6.6.1 Roof Shingles: Shingles shall be three tab type, 30 year warranty, over 15# building paper, and plywood sheathing.

4.6.6.2 Sheet Metalwork: Flashing shall be installed in conformance with the SMACNA Architectural Sheet Metal Manual.

4.6.6.3 Insulation

4.6.6.3.1 Provide the minimum insulation values as follows:

	RSI Value	"U" Value Equivalent
Gross Wall	19	.052
Roof	30	.033

TABLE II - Minimum Insulation Values

4.6.6.3.2 Gross Wall U-factor is the U-factor sum of each wall component (opaque wall, windows, doors, openings, etc.) times the area of that wall component, the sum divided by the total wall area.

4.6.6.3.3 Thermal and sound insulation shall have a flame spread rating of 25 or less and a smoke development rating of 50 or less exclusive of the barrier when tested in accordance with ASTM E-84. A vapor barrier shall be provided on the warm side of exterior and ceiling/roof insulation where occurs. Insulation shall have a facing providing permeability of 0.1 perm or less when tested in accordance with ASTM E 96.

4.6.6.4 Mechanical room shall have direct exterior access. Doorway for mechanical room shall be sized to permit maintenance and replacement of equipment located inside. Any mechanical/electrical equipment put on the exterior of these rooms shall be located adjacent to the mechanical room in an appropriate enclosure. This enclosure shall be of the same material as the exterior wall and shall extend to a height that conceals the equipment (wall height shall be not less than 6 feet tall). See also paragraph 4.3.3. for further requirements for exterior equipment. Equipment in this enclosure shall have a minimum 36" clearance on all sides.

4.6.6.4.1 As a minimum, exterior wall construction for the K-9 Kennel Facility shall be architectural CMU and the Installation Design Guide. Vertical expansion joints in masonry walls shall be placed between wall openings and pilasters, not adjacent to pilasters or at the end of lintels.

4.6.6.4.2 Concrete Masonry Units: Hollow and solid concrete masonry units shall conform to ASTM C 90, Type I, Normal weight. Cement shall have low alkali content and be of one brand. Units shall be modular in size and shall include closer, jamb, header, lintel, and bond beam units and special shapes and sizes to complete the work. Units used in exposed masonry surfaces shall have a uniform fine to medium texture and a uniform color. Concrete masonry units used in fire-rated construction shall be of minimum equivalent thickness for the fire rating indicated.

4.6.6.4.3 Glazed Concrete Masonry Units: Glazed hollow and solid concrete masonry units shall conform to ASTM 126, Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units. Cement shall have low alkali content and be of one brand. Units shall be modular in size and shall include closer, jamb, header, lintel, and bond beam units and special shapes and sizes to complete the work. Units shall have a uniform smooth texture and color. Concrete masonry units used in fire-rated construction shall be of minimum equivalent thickness for the fire rating indicated.

4.6.6.5 Caulking and Sealants: Caulking and sealants shall be selected according to materials it is being applied to for compatibility. These sealants and caulks shall be of either a two-component, rubber base; chemical-curing compound based on polysulfide and/or polyurethane; or a single-component, rubber base, chemical curing compound such as polysulfides, polyurethanes, and silicones. Caulking shall occur around all door frames, all window frames, and at all material changes. The minimum joint width shall be 1/4 inch, and joint widths in excess of 1/4 inch shall have a backstop

material provided in the joint, and the depth of all joints shall be equal to the width. Color to match adjacent materials.

4.7 INTERIOR CONSTRUCTION

4.7.1 Interior Partitions: Heights shall be minimum 8 feet 0 inch. Interior partitions shall either be steel stud with gypsum wallboard finish or a combination CMU/steel stud with gypsum wallboard finish as indicated in Chapter 4.4.

4.7.1.1 Steel Framing: Cold-formed framing shall consist of steel studs, top and bottom tracks, runners, horizontal bridging, and other cold-formed members and other accessories. All members and components made of sheet steel shall be hot-dip galvanized in accordance with ASTM A 653/A 653M with a minimum coating thickness of G40. Studs shall conform to ASTM C 645. Studs shall be C-shaped, roll formed steel with minimum uncoated design thickness of 0.0284 inch.

4.7.1.2 Gypsum Wallboard: Gypsum wallboard shall conform to the requirements of ASTM C36 and be 48" wide, 5/8" thick and tapered edged. Steel framing, furring, and related items shall conform to the requirements of ASTM C645 and C955 where applicable. Joint treatment materials shall conform to the requirements of ASTM C475. Screws shall conform to the requirements of ASTM C 1002 and C 954 where applicable. Corner beads, edge trim, and control (expansion) joints shall conform to the requirements of ASTM C1047, and shall be corrosion protective-coated steel design 11 for its intended use. Flanges shall be free of dirt, grease, and other materials that may adversely affect the bond of joint treatment.

4.7.1.3 Acoustical Ceilings: Acoustical ceiling tile shall conform to ASTM E1264; Class A. Panel size shall be 2 feet by 2 feet. The suspension system shall conform to ASTM C635. Compression struts shall be provided at 12'-0" intervals in both directions and shall be provided 4'-0" from each wall. Hanger wires shall be provided, splayed in four directions from each compression strut and through the compression strut to the structure above per TI 809-04, Seismic Design for Buildings. Size and diameter of strut shall be derived from a standard table or arrived at by engineering calculations.

4.7.1.4 Steel Doors: Interior doors shall be heavy weight 1 3/4" hollow core flush doors, painted. Door lites on interior doors shall be sized in accordance with building codes and positioned at a height above finished floor to allow vision on both sides. Exterior doors shall be heavy weight 1-3/4" insulated core steel doors and shall be sized in accordance with building codes and positioned at a height above finished floor to allow vision on both sides. Interior or exterior wood doors will not be permitted.

4.7.1.4.1 Hardware: All interior hardware in this building shall be consistent and shall have a brushed aluminum finish.

4.7.1.4.2 Hinges: Exterior hinges shall have non-removable pins and be stainless steel; Grade 1 (except at doors to Michele rooms, which may be Grade 3); anti-friction or ball bearing; and 3 each of 4-1/2" x 4-1/2" per leaf up to 3' wide door 5" x 5" for doors 3' to 4' wide. Interior hinges shall be Grade 1; antifriction or ball bearing; and 3 each of 4-1/2" x 4-1/2" Per leaf up to 3' wide door 5" x 5" for doors 3' to 4' wide Hinges for

labeled fire doors must be either steel or stainless steel. Exterior hinges for aluminum/glass storefront type doors shall be pivot hinges or offset pivot hinges (3 per leaf). Hinges shall conform to ANSI/BHMA A156.1 and A156.7.

4.7.1.4.3 Locksets, Latchets, Exit Devices, and Push and Pull Plates: Exterior doors shall have mortise locks conforming to ANSI/BHMA A156.13 for metal doors and conforming to ANSI/BHMA A156.5 for aluminum/glass storefront-type doors, Grade 1. Emergency exit devices shall be Grade 1, flush-mounted type. Interior doors shall have mortise locksets conforming to ANSI/BHMA A156.13, Series 1000, Grade 1. All locks and latch sets shall be the product of the same manufacturer. Locksets and latch sets shall be provided, as required, with lever handles on each side.

4.7.1.4.4 Cylinders: Lock cylinders shall comply with BHMA A156.5 and be compatible with BEST. Lock cylinder shall have seven pins. Cylinders shall have key removable type cores. Provide an extension of the existing keying system. The existing locks were manufactured by BEST (seven pin with "D" keyway) and have interchangeable cores. Construction cores shall be provided. All locksets, exit devices, and padlocks shall accept same interchangeable cores.

4.7.1.4.5 Closers: Closers shall be provided on all exterior doors and fire-rated doors. Closers shall conform to ANSI/BHMA A156.4, Grade 1. Closers shall be surface-mounted, modern type, with cover. Closers shall be provided with options PT-4F and PT-4H (delayed action and barrier free).

4.7.1.4.6 Keying: Keying shall be similar to BEST Series with seven-pin tumbler removable core locks. All keying shall be done at the-factory. All locks shall be furnished with removable core cylinders. Replacement cores shall be BEST removable cores. Keys and permanent cores shall be shipped directly to the Directorate of Installation Support, Ft Belvoir, VA. All exterior doors shall be keyed alike in one group. All interior doors shall be keyed as specified by the facility user. All submittals/shop drawings referring to keys and keying shall be submitted to the Directorate of Installation Support for coordination and approval. A key cabinet shall be provided with a capacity 50% greater than the number of key changes used for door locks. Location of Key cabinet shall as directed by user.

4.7.1.4.7 Thresholds: All exterior doors (except Mech/Elec rooms) shall be provided with aluminum thresholds conforming to ANSI/BHMA A156.21 and are handicapped accessible; color to be bronze. Doors at ceramic tile flooring shall be provided with marble thresholds that are handicapped accessible.

4.7.1.4.8 Kick Plates and Mop Plates: Metal Kick plates or mop plates shall be provided on all doors. Match metal finish with door hardware finish as specified in this section. Kick plates and mop plates shall comply with ANSI/BHMA A156.6, shall be 16" high by 2" less than width of door. Edges shall be beveled.

4.7.1.4.9 Door Stops: Doorstops shall be provided on all exterior and interior doors. Doorstops shall comply with ANSI/BHMA A156.16 and shall be bronze, Grade 1.

4.7.1.5 Glazing: Glass shall conform to the requirements of ASTM C1036. Glass in doors and adjacent to doors shall conform to the requirements of CFR 16 Part 1201. Glazing of interior vision panels shall conform to CFR 16 Part 1201.

4.7.1.6 Ceramic Tile: Tile shall be standard grade conforming to ANSI A137.1. Tile shall be impact resistant with a minimum breaking strength for wall tile of 90 lbs and 250 lbs for floor tile in accordance with ASTM C 648. Water absorption shall be 0.5 maximum percent in accordance with ASTM C 373. Floor tile shall have a minimum static coefficient of friction of 0.5 in accordance with ASTM C 1028. Tile shall be Class III as rated by the manufacturer when tested in accordance with ASTM C 1027 for abrasion resistance as related to foot traffic. Ceramic mosaic tile and trim shall be unglazed natural clay with cushion edges. Tile size shall be 2 x 2 inches. Glazed wall tile and trim shall be cushion edged with matte glaze. Tile shall be 4-1/4 x 4-1/4 or 6 x 6 inches.

4.7.1.6.1 Tile setting Bed: The setting-bed shall be composed of portland cement, sand, water, and hydrated lime. Portland cement shall conform to ASTM C 150, Type I, white for wall mortar and gray for other uses. Sand shall conform to ASTM C 144. Hydrated lime shall conform to ASTM C 206, Type S or ASTM C 207, Type S. Water shall be potable.

4.7.1.6.2 Tile Backer Board: All ceramic wall tile shall be backed with cementitious backer board.

4.7.1.6.3 Mortar and Grout: Dry-set portland cement Mortar shall conform to ANSI A118.1. Latex portland cement Mortar shall conform to ANSI A118.4. Ceramic tile Grout shall conform to ANSI A118.6. Tile Backer Board shall comply with ANSI A118.9. Tile adhesives shall not be used for this project.

4.7.1.6.4 Marble Thresholds: Marble shall be Group A as classified by MIA-01. Marble shall have a fine sand-rubbed finish and shall be white in color as approved by the Contracting Officer. Marble abrasion shall be not less than 12.0 when tested in accordance with ASTM C 241.

4.7.1.6.5 Porcelain Paver Tiles: Porcelain paver tiles shall be of standard grade quality and shall conform to requirements of ANSI A137.1, ASTM C373, ASTM C501, and ASTM C648. Coefficient of friction shall be minimum 0.5. Unglazed porcelain tile shall be unpolished. Porcelain tile shall be furnished in nominal 12" x 12" size. Base shall be cove type with inside and outside corners.

4.7.1.6.6 Resilient Flooring: Sheet vinyl shall conform to FS LF 475A (3) Type II; Grade A. Static load limit according to ASTM F 970 shall be not less than 12.5 psi. Sheet vinyl flooring shall be not less than 72 inches wide and shall have an alkali and moisture resistant backing. Color and pattern shall be dispensed uniformly throughout the thickness of the wear layer. Integral (flash) cove is created by extending the sheet vinyl 4 inches up the wall supported by a cove stick having a minimum radius of 7/8 inch and adhering to the wall with manufacturer's suggested adhesive and heat welding the seams. The integral coving shall be capped with an approved cap strip installed in accordance with the manufacturer's recommendations. Wall base shall conform to FS SS-W-40, Type I or Type II; Style B. Base shall be 4-inches high, minimum 0.080-inch thick. Edge strips of vinyl plastic, 1 inch wide and of

thickness to match flooring. Adhesive for flooring', integral coving and wall base shall be as recommended by the flooring manufacturer. To create seams that provide a strong barrier against dirt and moisture penetration, the seams shall be heat welded per manufacturer's recommendations. Polish shall conform to FS 2F 430 or FS PW 155.

4.7.1.7 Fire stopping: Material shall have a flame spread of 25 or less, a smoke developed rating of 50 or less, and a fuel contribution of 50 or less when tested in accordance with ASTM E 84 or UL 723. The materials shall be nontoxic to human beings at all stages of applications and during fire conditions. Fire stopping materials for through penetrations of fire resistance rated construction shall provide fire resistance rating in accordance to ASTM E 814 or UL 1479. Fire stopping materials for construction joints in fire resistance rated construction shall provide a fire resistance rating in accordance to ASTM E 119 or UL 263. Construction joints include those joints used to accommodate expansion, contraction, wind or seismic movement of the building. Material shall be non-combustible when tested in accordance with ASTM E 136.

4.7.1.8 Painting: Interior surfaces, except factory prefinished material or interior surfaces receiving acoustical wall covering or vinyl wall covering, shall be painted a minimum of two prime coats and one finish coat. The prime coats for concrete masonry units shall be TT-F-1098. All spaces shall have satin or eggshell or semi-gloss finish on walls, semi-gloss finish on trim and eggshell or semi-gloss finish on ceilings. Multi-colored paint systems shall be applied according to manufacturer's installation instructions and warranty. All exterior surfaces to be painted, including all utility appendages shall receive a minimum of one prime coat and two finish coats of paint. Water repellent sealer shall be clear, water repellent solution designed to protect vertical concrete masonry surfaces from water penetration. Application of paint. Paint shall be applied by brush or roller. Spray painting method shall be used only under approved conditions. Before start of spraying, all surfaces that do not require painting shall be completely masked and protected. Adequate drop cloths shall be provided over floors that may be stained or damaged from the spray work. The Contractor shall be liable for all damage resulting from the spray painting operation. All such damages shall be satisfactorily repaired and resolved at no additional cost to the Government. Adequate ventilation shall be provided during paint application. All persons engaged in spray painting shall wear respirators. Adjacent areas shall be protected by approved precautionary measures. Paints shall comply with State Regulations and the following Federal and Military Specifications. No lead paints are acceptable. Interior latex paints are not permitted in toilet rooms. Colors shall be as approved from schemes submitted with proposal. Each proposal shall include one basic exterior and interior color coordinated schemes and color samples. Pipes in exposed areas and in accessible pipe spaces shall be provided with color band and titles in accordance with Mil-Std. Coat floor of mechanical room with a polyurethane coating to resist oil and chemical spillage and stains.

4.7.1.9 Fire Extinguishers: Fire extinguisher cabinets shall be provided complete with 10-pound ABC fire extinguishers. Cabinets shall be located in accordance with NFPA standards. Fire extinguisher cabinets shall be recessed and cabinet is to have factory-finished color to match adjacent wall with a clear, break glass door. Cabinet box shall be 18 gauge steel with baked enamel finish. Steel door and trim shall be one-piece construction with a

continuous hinge and door shall be lockable. Trim shall be rolled edge and finished in white baked enamel. Door shall be 5/8-inch thick, one-piece hollow steel, full glazed steel frame with rubber roller catch and satin finish door handle, and white baked enamel finish. As a minimum, provide fire extinguisher cabinets in the following quantities: one each in Mechanical/Electrical room(s) and in each corridor. Cabinets shall be located in accordance with the provisions of NFPA 10, which may require more than those listed here due to travel distance.

4.7.1.10 Casework: All casework shall meet the requirements of the Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program as set forth by the Architectural Woodwork Institute for architectural cabinets with high-pressure decorative laminate (HPDL) Quality shall be custom grade. See section below for solid surface countertops and solid surface countertops with integral sinks.

4.7.1.11 Blinds shall be provided at all exterior windows with the exception of entrance. Horizontal blinds shall conform to FS AA-V-00200, Type 11, 1 inch slats, except as modified below. Blind units shall be capable of nominally 190-degree partial tilting operation and full-height raising. Blinds shall be inside mount. Head Channel and Slats: Head channel shall be steel not less than 0.024 inch for Type II. Slats shall be aluminum, not less than 0.0080 inch thick, and of sufficient strength to prevent sag or bow in the finished blind. A sufficient amount of slats shall be provided to assure proper control, uniform spacing, and adequate overlap. Controls: The slats shall be tilted by a transparent tilting wand, hung vertically by its own weight, and shall swivel for easy operation. The □tilter control shall be of enclosed construction. All moving parts and mechanical drive shall be made of compatible materials, which do not require lubrication during normal expected life. The tilter shall tilt the slats to any desired angle and hold them at that angle so that any vibration or movement of ladders and slats will not drive the tilter and change the angle of slats. A mechanism shall be included to prevent over tightening. The wand shall be of sufficient length to reach to within 5 feet of the floor. Cord Manager shall be installed 54 inches above the finished floor. Intermediate Brackets: Intermediate brackets shall be provided for installation of blinds over 84 inches wide or over 100 inches long and shall be installed as recommended by the manufacturer.

4.7.1.12 Signage

4.7.1.12.1 Interior signs are to be provided as follows:

4.7.1.12.1.1 Identification Signs. Signs in this category consist of office, module room identification and service identification. Office identification signs consist of a permanent header panel with the room number and an insert panel that identifies the occupant. The insert panel is a clear sleeve, which will accept a plastic insert with the name of the occupant. Permanent header panel dimensions: 9 inch x 3 inch. The insert panel dimensions: 9 inch X 3 inch overall sign dimensions: 9 inch x 6 inch. Room number shall be Helvetica medium, 1-1/2 inch numbers, flush left. Occupant name shall be upper and lower case Helvetica medium, 1/2 inch capital letter height, flush left. Insert area will accommodate two lines with a maximum of 21 tiles or characters per line.

4.7.1.12.1.1.1 Service identification signs are used to identify toilet rooms, shower rooms, and other like services. Service signs dimensions: 6 inch x 9 inch. The standard pictograph symbols shall be used. Service name shall be Helvetica medium upper and lower case, 1-inch capital letter height, centered. Identification signs shall consist of a permanent header panel with the room number. There will be one insert panel. The panel will contain the room name. Overall sign dimension shall be 6 inch x 6 inch. Room number shall be Helvetica medium, 1-1/2 inch numbers, flush left.

4.7.1.12.2 Interior Signage Products: Interior signage shall be ADA compliant. Aluminum extrusions shall be at least 1/16 inch thick, and aluminum plate or sheet shall be at least 16 gauge, .051 inch thick. Extrusions shall conform to ASTM B 221; plate and sheet shall conform to ASTM B 209. Vinyl sheeting for graphics shall conform to MS MIL-M-43719, minimum 3 mil film thickness. Film shall include a precoated pressure sensitive adhesive backing (Class 3). Acrylic sheet shall conform to ASTM D 702, Type III. Changeable message strip plaque signs shall consist of acrylic or plexiglas back laminated to matte finish acrylic plastic face with message slots as detailed for insertion of changeable message strips. Individual .062 inch thick message strips to permit removal, change and reinsertion shall be provided. Signage that provides emergency information, general circulation directions or identification of rooms and spaces shall be tactile (perceptible to touch) and shall comply with ANSI A117.1, paragraph 4.27. Characters, symbols or pictographs on tactile signs shall be recessed or raised .032 inch minimum. Tactile letters and numbers shall be sans serif upper case. Tactile characters or symbols shall be at least 5/8 inch high, but no higher than a nominal 2 inches. Characters and symbols shall contrast with their background. Signage vendor shall provide lettering machine so user can change signage as needed.

4.7.1.12.3 Exterior Signs: Provide signs that comply with the Installation Design Guide and comply with sign standards provided in TM 5-807-10; "Signage". The contracting officer shall approve exterior signage.

4.7.1.13 Freestanding Furniture: The Contractor is required to coordinate the interior finish selections with the furnishings that will be specified in the CID package. Option No. 2 of this RFP requires the purchase and installation of all furnishings that are included in the CID package by the contractor. Included as Attachment 2, is a description of the furniture quality requirements. Furniture shall be designed to accommodate the functions and requirements of the building. The Contractor shall make recommendations on use of freestanding/conventional furniture. Submittal and drawing requirements to be included in CID package are listed below.

4.7.1.14 Recessed Foot Grille: Recessed foot grille shall be carpet tread, mechanically secured in tread rails. Carpet shall be 100 percent nylon. Tread rails shall be spaced 1-1/2" inches on center running perpendicular to traffic flow. Tread rails, key lock bars, and framing shall be extruded aluminum. Framing shall have standard mill finish. All grille and framing sections when installed shall be designed to support a minimum uniform load of 200 pounds per square foot. Drain pan application shall include a 16-gauge aluminum waterproof pan with a 2-inch drain and strainer; pan shall be securely attached to the bottom surface of the frame. Recessed floor grid shall be as manufactured by Arden Architectural Specialties, Inc., Balco Inc., Construction" Specialties Inc. or approved equal.

4.7.1.15 Solid Surfaces: Solid surface components shall be solid, non-porous polymer, not coated, laminated or of composite construction similar to "Santana" or approved equal. Materials shall have minimum physical and performance properties specified. Superficial damage to a depth of 1/10th inch shall be repairable by sanding or polishing. Material for toilet partitions shall be standard 1 inch thick. Material for Counter tops and windowsills shall be standard 1/2 inch thick. Lavatory/sinks shall be an integral part of the counter top. Lavatory/sinks shall be attached by a seamed under mount method. Material shall be a small scale, variegated pattern to the extent possible. Solid color solid surface shall not be used. Color should be in light to medium tones as dark colors tend to show scratches and water spots more readily. Lavatory counters and toilet partitions shall be of a color to accent the finish colors in the room in which the solid surfacing material is scheduled. Sheen shall be matte satin. Edge treatment shall be eased, rounded edges.

4.7.1.16 Vinyl Wall Covering: Vinyl wall covering shall be a vinyl coated woven or nonwoven fabric with mildew and germicidal additives and shall conform to FS CCC-W-408, Type 11, 13.1 to 24 ounces total weight per yard and width of 54 inches. Pattern and color of vinyl wall covering shall be as selected from manufacturer's standard colors and patterns.

4.8 INTERIOR FINISHES

4.8.1 Interior finishes and materials shall be specified with durability, maintenance, function, life cycle costs, code requirements and aesthetics being considered. Finishes and materials shall support the architectural elements and reflect the image and style of the using agency.

4.8.2 One species of wood and/or stain to represent one species of wood shall be specified throughout the entire facility. This encompasses doors, casework, chair rails, trim etc.

4.8.3 Submittal requirements for finishes and approvals are listed in Attachment Structural Interior Design, Submittal Requirements.

4.8.4 Upon the completion of construction, the Contractor shall provide and deliver at no additional cost, to the Contracting Officer, one percent extra of each color and texture of paver tile, ceramic tile, base, acoustical ceiling tile, wall covering and sheet vinyl of each total amount of each item used on the project.

4.8.5 Interior finishes shall be selected to meet the Federal Procurement Policy guidelines to comply with Section 6002 of the Resource Conservation and Recovery Act (RCRA), "Federal Procurement"; and Executive Order (EO) 12873, "Federal Acquisition Recycling and Waste Prevention, 1 May 1996 as well as ETL 1110-3-491, Sustainable Design for Military Facilities. (ETLs may be accessed at <http://www.usace.army.mil/inet/usace-docs/ena-tech~ltrs/>). Within parameter of performance, cost, aesthetics and availability, carefully select and specify building materials that limit impacts on the environment and occupant health. Building shall be free of asbestos containing material pursuant to OSHA asbestos regulations governing building owners, 29 CFR Part 1926, including Section 1926 (k). Limit VOC content in adhesives. At a minimum all adhesives must meet the Air Quality Management rules. Limit the

VOC content in architectural sealants (material with "adhesive" characteristics used as filler; not material used as a "coating") At a minimum, all sealants must meet the limits of Regulation 8, Rule 51 of the Bay Area Air Resources Board. Limit the VOC content in paints and coatings. At a minimum all paints and coatings must meet the requirements of Rule 1113, Mojave Desert Air Quality Management District. Consider using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Building Rating System as an outline of environmental performance targets for the project. (U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Building Rating System can be accessed at: <http://www.usgbc.org/programs>.)

4.8.5.1 Elimination of virgin material requirements

4.8.5.2 Use of recovered materials

4.8.5.3 Reuse of products

4.8.5.4 Life cycle costs

Recyclability

Environmental preferability

Waste prevention, including toxicity reduction

Disposal

Buy locally to minimize impact of transporting

4.9 INTERIOR COLORS

4.9.1 Finish and color selection shall be appropriate to the interior design intent to support the occupants, their activities and their customers.

4.9.2 Permanent finishes include paver tile, ceramic tile, plastic laminates, solid surface materials, sheet vinyl, vinyl composition tile, and horizontal blinds.

4.9.3 Non-permanent finishes include paint and other items that are relatively easy and inexpensive to replace.

4.9.4 Colors and finishes shall be selected based on durability, maintenance, life cycle costs, code requirements, appearance and functional considerations. Variegated finishes and patterns are recommended to be implemented to the maximum extent possible as solids show wear and tear. Integral color and color through finishes shall be specified where applicable.

4.9.5 The colors and textures specified shall not date the facility and shall create an interior that will remain aesthetically pleasing over time. Finishes and materials shall support the architectural elements and reflect the image and style of the using agency.

4.10 PROCUREMENT

4.10.1 Federal Procurement: In order for the furniture package to be successful, the contractor/designer must have a working knowledge of the Federal procurement system. The furniture package must be designed around

items that will be available through allowable procurement sources at the time of procurement.

4.10.2 Government Sources: Priorities for the use of Government supply sources shall be in accordance with Title 48 Federal Acquisition Regulations System (FARS), Part 8.00. All furniture selections shall attempt to utilize Federal Prison Industries, Inc. or Federal Supply Service (GSA contracts with commercial manufacturers) items. (UNICOR - <http://www.unicor.gov/schedule/index.htm>. GSA Federal Supply Schedules - <http://www.fss.gsa.gov/>)

4.10.3 When it is determined that such items procured through UNICOR sources will not serve the required purposes, a request for a waiver will be prepared according to the standards set out in the UNICOR waiver policy. The Contractor, acting as the Government Agent, shall prepare and apply for the waiver. Information shall be obtained electronically through <http://www.unicor.gov/customer/wavierform.htm>.

4.10.4 After the Contractor obtains a waiver from UNICOR, furniture selections may then be selected from GSA Federal Supply Schedules. Note: A waiver shall be obtained for all furniture items requiring a waiver from UNICOR.

4.10.5 Maximum order of Limitation (MOL) - In accordance with FAR 8.404 (b) (3) orders will no longer be restricted by the MOL. Once the order amount exceeds the MOL listed on the Federal Supply Schedule Contract, customers shall seek a price reduction from the schedule (FSSC) contractor to provide a price that will provide the best value. (Considering price and other factors)

4.10.6 Procurement/Installation - It is the responsible of the Contractor to: Be responsible for all furniture/furnishings design, selection, and coordination with furniture vendors. Provide furniture schedule indicating purchaser, product, etc. It is the responsibility of the Contractor to provide necessary preparation, i.e. electrical systems for all furniture.

4.10.7 It is the responsibility of the government if Option No. 2 is not exercised to purchase, receive, warehouse, and install furniture/furnishings.

4.10.8 Cost Estimate - Itemized
Cost Estimate - Itemized list of furniture/furnishings with amounts, unit cost, and subtotal cost for that item. The total cost for furniture package shall include the price of the furniture items, delivery/shipping costs, and installation.

CHAPTER 6 ELECTRICAL

6.0 ELECTRICAL

6.1 Demolition

Demolition of the existing electric, communications and fire protection systems is a part of this contract. The three pole mounted power transformers are presumed to contain PCB's and proper disposition is the responsibility of the contractor. All other equipment such as panelboards, motors, fire alarm components, communication equipment and associated wiring or wiring devices shall be carefully removed and collected for inspection by Base personnel. Items deemed to be of value to the government shall be turned over to the Base and the balance shall be removed from the site by the contractor.

6.2 GENERAL REQUIREMENTS

6.2.1 Design Standards

Design and installation of electrical, and other systems listed herein, for the facility shall comply with the applicable requirements of the latest following standards listed in the reference standards paragraphs of this proposal:

a. MIL-HDBK-1008C, Fire Protection for Facilities Engineering, Design, and Construction

The web site for 1008C is:

http://www.efdlant.navfac.navy.mil/lantops_15/documents/MH/1008C.PDF

b. NFPA 70, National Electrical Code

c. NFPA 101, Code for Safety to Life from Fire in Building and Structures

d. NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces

e. TM 5-811-1, Electrical Power Supply and Distribution,

<http://www.usace.army.mil/inet/usace-docs/armytm/>

f. TM 5-811-2, Electrical Design, Interior Electrical Systems,

<http://www.usace.army.mil/inet/usace-docs/armytm/>

g. TI 800-01, Design Criteria, <http://www.usace.army.mil/inet/usace-docs/armytm/>

h. Illuminating Engineering Society Application and Reference Handbooks

i. Insulated Power Cable Engineers Association Standards

- j. National Electrical Manufacturer's Association Standards
- k. Underwriters' Laboratories Inc. Standards
- l. American National Standards Institute Standards
- m. Americans with Disabilities Act
- n. American Society for Testing and Materials Standards
- o. Telecommunications Industry Association/Electronic Industries Association Standards
- p. TIA/EIA 568-A, Cabling Standard
- q. TIA/EIA 569, Telecommunications Pathways and Spaces
- r. TIA/EIA 606, Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- s. TIA/EIA 607, Commercial Building Grounding and Bonding Requirements for Telecommunications
- t. EIA TSB 67, Cable Testing Procedures
- u. Insulated Cable Engineers Association Standards
- v. ICEA S-80-576, Communications Wire and Cable for Premises Wiring
- w. ICEA S-83-596, Fiber Optic Premises Distribution Cable
- x. I3A - Design and Implementation Guide

6.2.2 PCB Standards

All new electrical equipment shall be supplied with no detectable PCB's. New fluorescent lighting fixture ballasts shall be clearly marked "NO PCB". Certified PCB tests from an independent laboratory with the serial number of test results on the unit, shall be obtained by the Contractor.

6.2.3 Corrosion Control

Provide cathodic protection for any buried/submerged metallic utility system (piping or tanks). A soil resistivity test shall be conducted. The cathodic protection survey and design must be performed by a National Association of Corrosion Engineers (NACE) Accredited Corrosion Specialist, NACE Certified Cathodic Protection Specialist, or a Registered Professional Corrosion Engineer. This accreditation and/or registration must have been obtained in the field of cathodic protection. Cathodic protection system shall be in accordance with NACE RP-01-69, NACE RP-01, TM 5-811-7, and ETL 1110-3-474. Design anodes for a 20 year life minimum.

6.2.4 Seismic Protection

The electrical equipment and systems listed below shall be seismically protected:

Control Panels

Air Handling Units

Pumps with Motors
Light Fixtures
Storage Racks

Power Panels
Transformers

6.3 POWER AND LIGHTING REQUIREMENTS

6.3.1 Tie-In

The replacement of overhead/aerial distribution and the installation of the primary conductors and service transformer will be accomplished by Washington Electric & Gas Public Utility under another contract in conjunction with this project. The Contractor shall coordinate with the utility company by providing design facility information necessary to size and locate the service transformer. Transformer will be installed (by W E & G) on a concrete pad provided by this project, and be located in accordance with MIL-HDBK-1008C. Transformer pad design shall be in accordance with W. E. & G requirements and the government's standard pad and grounding installation details (See attached sketch E1 of standard pad and grounding details). Contractor shall provide concrete encased underground secondary service feeder from the secondary section of the pad-mounted transformer (Pri: 34.5KV Sec: 240/120 Volt single phase if demand load is 50KVA or less. 208/120v three phase if above 50KVA) 30 feet from the building, to the distribution panel.

6.3.2 Secondary Distribution

Demand load calculations shall be based on 2.5 watts/square foot for interior lighting, 1.0 watts/square foot for receptacles, and 0.1 watts/square foot for exterior area lighting. Electrical distribution system shall be designed to have a minimum 25 percent spare capacity for all loads, including circuit breaker expansion capability in all panelboards. If 208v three phase service is provided use three phase power for mechanical equipment and motor loads of ½ HP and larger, 208Y/120V 3Ph 4W distribution inside the facility. If single phase power is used, a three wire system shall be provided. All circuits are to have individual 100% neutrals and a separate grounding conductor. Protection against external/internal generated transient surge voltage spikes shall be provided by a Transient Voltage Surge Suppression (TVSS) unit.

6.3.3 Equipment Interrupting Capacity

Perform short circuit calculations to determine fault current available at service switchboard equipment, panelboards, motor control centers, safety switches, and enclosed circuit breakers. Provide equipment with sufficient short circuit interrupting capacity to withstand calculated fault current levels.

6.3.4 Interior Power Distribution

Electrical distribution panelboards shall be of the circuit breaker type. Voltage drop shall be limited to 3% for branch circuits, 1% for feeders, and 2% for service entrance conductors, with a 5% overall voltage drop limitation. Tapping of service entrance conductors and feeders will not be allowed.

6.3.4.1 Motors

Motors greater than 1/2-horsepower (HP) shall be provided in 3-phase configuration (if available) with phase failure relay protection. Power factor correction capacitor(s) shall be provided for motors larger than 3HP. Motors

efficiencies shall be as specified in the table "MINIMUM NOMINAL EFFICIENCIES" below.

MINIMUM NOMINAL MOTOR EFFICIENCIES
OPEN DRIP PROOF MOTORS

<u>HP</u>	<u>1200 RPM</u>	<u>1800 RPM</u>	<u>3600 RPM</u>
1	82.5	85.5	80.0
1.5	86.5	86.5	85.5
2	87.5	86.5	86.5
3	89.5	89.5	86.5
5	89.5	89.5	89.5
7.5	91.7	91.0	89.5
10	91.7	91.7	90.2
15	92.4	93.0	91.0
20	92.4	93.0	92.4
25	93.0	93.6	93.0
30	93.6	93.6	93.0
40	94.1	94.1	93.6
50	94.1	94.5	93.6
60	95.0	95.0	94.1
75	95.0	95.0	94.5
100	95.0	95.4	94.5
125	95.4	95.4	95.0
150	95.8	95.8	95.4
200	95.4	95.8	95.4
250	95.4	96.2	95.8

6.3.4.2 Transformers

Transformers shall have 220 degrees C insulation system for transformers 15 kVA and greater, and shall have 180 degrees C insulation with temperature rise not exceeding 150 degrees C under full-rated load in maximum ambient temperature of 40 degrees C.

6.3.4.3 Cables and Wires

Conductors No. 8 AWG and larger diameter shall be stranded. Conductors No. 10 AWG and smaller diameter shall be solid, except that conductors for remote control, alarm, and signal circuits, classes 1 (No. 14 AWG, Nom), 2 (No. 16 AWG, Nom), and 3 (No. 22 AWG, Nom), shall be stranded. All conductors shall be copper, 12 awg minimum for power and 18 awg for communications. Aluminum conductors are not acceptable.

6.3.4.4 Conduits and Tubing System

Minimum size of raceways shall be 3/4 inch. Electrical metallic tubing (EMT) may be installed only within the building. EMT may be installed in concrete and grout in dry locations. EMT installed in concrete or grout shall be provided with concrete tight fittings. EMT shall not be installed in damp or wet locations, or the air space of exterior masonry cavity walls. Aluminum conduit may be used only where installed exposed in dry locations. Penetrations of above grade floor slabs, time-rated partitions and fire walls shall be firestopped. IMC may be used as an option for rigid steel conduit. Raceways shall be kept 6 inches away from parallel runs of flues, steam pipes and hot-water pipes.

6.3.4.4.1 Raceways shall be concealed within finished walls, ceilings, and floors. Raceways crossing structural expansion joints or seismic joints shall be provided with suitable expansion fittings or other suitable means to compensate for the building expansion and contraction and to provide for continuity of grounding. Conduit installed in slabs-on-grade shall be rigid steel or IMC. Changes in direction of runs shall be made with symmetrical bends or cast-metal fittings. Metallic conduits and tubing, and the support system to which they are attached, shall be securely and rigidly fastened in place to prevent vertical and horizontal movement. Exposed raceways shall be installed parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings.

6.3.4.5 Circuit Breakers

Circuit breakers shall be installed in panelboards, switchboards, enclosures, motor control centers, or combination motor controllers. Circuit breakers shall be fully rated type.

6.3.4.5.1 Circuit breakers rated 15 amperes and intended to switch 240 volts or less fluorescent lighting loads shall be marked "SWD."

6.3.4.5.2 Circuit breakers 60 amperes or below, 240 volts, 1-pole or 2-pole, intended to protect multi-motor and combination-load installations involved in heating, air conditioning, and refrigerating equipment shall be marked "Listed HACR Type."

6.3.4.6 Receptacles

Non-linear loads in administrative areas and offices, shall be furnished with NEMA 5-20R duplex receptacles. Each circuit shall be provided with an insulated ground and a dedicated neutral conductor. Convenience receptacles in administrative areas shall be provided at 10 feet on centers along perimeter walls and within 5 feet from doors. Outlets along perimeter wall of corridors, lobby, and circulation areas for use of janitorial or other equipment, shall be installed at 30 feet (max) on centers. Where counters are provided in rooms, receptacles shall be provided above the counter top back splash at 18 inches from counter-ends. Outlets to motor driven office equipment (printers, shredders, fax machines, etc) shall be connected to power sources not supporting sensitive electronic equipment. In the kitchenette and staff lounge counter tops and island-type counter tops, the minimum number of receptacles and small appliance branch circuits as required by NFPA 70 Article 210-52(b)(2) and (c), shall be provided, except that the countertop small appliance circuits shall not be limited to two and the circuits shall be dedicated to just the kitchen area. At least one receptacle shall be provided in storage rooms, janitor closets, and bathrooms. In bathrooms, one additional receptacle shall be provided above the countertop back splash and adjacent to each basin area. Bathroom receptacle outlets shall be supplied by at least one 20-ampere branch circuit. All receptacles (inside and out) will be 20 ampere all weather type with a spring cover.

6.3.4.6.1 Ground-fault circuit-interrupter (GFCI) receptacles shall be provided where receptacles are located within 6 feet of sinks such as in the toilets, janitor's closets and other wet areas. Weatherproof GFCI receptacles shall be provided outside the mechanical room and 6 feet from the nearest outside mechanical equipment. Receptacles circuits in areas to be washed down or subject to spraying will be provided with ground fault circuit interrupters. Dedicated receptacle outlets shall be provided at the telephone backboard.

6.3.4.6.2 Maximum of six convenience receptacles shall be circuited to a 20-ampere branch circuit. Each administrative area workstation shall be circuited to a 20-ampere branch circuit. In accordance with UBC 4304, outlets in the same stud space and on opposite sides of fire rated walls or partitions must be separated by a minimum of 2 feet horizontal distance. Device face plates inside the building shall be nylon impact resistant type and ivory colored.

6.3.5 Lighting

6.3.5.1 Interior Lighting

Lighting intensity levels in general shall be provided in accordance with DOD 4270.1-M and IES Lighting Handbook. The majority of rooms shall be provided with recessed fluorescent fixtures equipped with energy saving 4 foot, 32-watt T8 lamps and energy efficient electronic ballasts. Parabolic fluorescent fixtures shall be provided for office and administration area and other areas with computer monitors. General occupancy areas shall be provided with prismatic troffers, and mechanical/electrical room or similar spaces shall be provided with industrial grade fluorescent luminaires. Open type fluorescent luminaires shall be provided with tube guards. Training room 4 foot lighting system shall be provided with dimmable compact fluorescent fixtures. Showers shall be provided with wet listed lighting fixtures, and bathroom areas with damp listed luminaires. Design footcandle levels and other lighting requirements shall be provided according to Table 3-6 in AFP 88-38 as shown below:

<u>Space</u>	<u>Footcandle Level</u>	<u>Multiple Switching</u>	<u>Dimming Capability</u>
Kennel Area	10	yes	no
Corridors	20	yes	no
Isolation Rm.	70	no	yes
Kennel Masters Office	70	no	no
Multipurpose/ Admin/Staff	70	yes	no
Drug Room	30	no	no
Food Prep	30	no	no
Toilets	30	no	no
Food/Tack Storage	20	no	no
Vending Area	20	no	no
Closets	20	no	no
Mech/Elec	20	no	no
Outdoors/ General	0.5	auto with manual override	no
Outdoors/training Area	3	Manual only	no

Each room lighting system shall be switched locally. Multi egressed/accessed areas will be provided with three-way/four-way switching accordingly. Devices wall mounted in accordance with the ADA applicable standards. The minimum rating of all switching devices shall be 20 ampere. 15 ampere devices are not acceptable.

6.3.5.2 Exterior Lighting

Perimeter and parking area lighting shall be provided with High Pressure Sodium (HPS) fixtures. Parking lot luminaires shall be mounted on 30' aluminum

poles cast-in-place, reinforced concrete foundation. All exterior light fixtures shall be controlled by combination photocell/time clocks except that the portion of the lights in the training area needed to achieve the 3 footcandles illumination level are to be manually controlled. The existing exterior lights may be supplemented or replaced entirely. The lights beyond the work site that are currently supplied from the transformers in the existing kennel area are to remain and are to be supplied from the new installation.

6.3.5.3 Exit and Emergency Lighting

Egress, exit and emergency lighting shall be provided. Exit and emergency lighting shall be provided with self contained emergency backup units. Red LED type exit lighting shall be provided. Night lighting shall be provided in general purpose area. Exit signs, emergency lights and night lights shall be connected to a section of the source panel supported by the portable generator outlet outside of the electrical/mechanical room.

6.3.6 Emergency Power

Emergency standby generator is not required and shall not be provided. A disconnect switch to connect a mobile 10-KW portable generator shall be provided on the outside of the mechanical/electrical room. The disconnect switch shall be connected to a manual transfer switch (MTS) that serves a panelboard or section of the panelboard (Split Bus) dedicated to emergency building loads like the illuminated exit signs, emergency lights, fire alarm system, the public address (PA) system and the intrusion detection system (IDS), etc.

6.4 DATA/COMMUNICATIONS

6.4.1 Scope

Contractor shall provide premises distribution system consisting of inside-plant horizontal cables and connecting hardware to transport telephone and data (including LAN) signals between equipment in the building. The Government will provide the jumper wire between the 110 connector blocks and the incoming 50-pair telephone cable and tie-in at the manhole.

6.4.1.1 Building Communication Requirements

6.4.2.1 Materials and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products and shall be the manufacturer's latest standard design that has been in satisfactory use for at least 1 year prior to installation. Materials and equipment shall conform to respective publications of Telecommunications Industry Association/Electronic Industries Association TIA/EIA 568-A, TIA/EIA 569, TIA/EIA 607, EIA TSB 67, Insulated Cable Engineers Association ICEA S-80-576, and ICEA S-83-596, and other requirements specified below and to the applicable requirements of NFPA 70.

6.4.2.2 Coordinate with the local Director of Information Management (DOIM) or equivalent personnel to determine existing telecommunication capability and whether or not the existing facilities will need to be upgraded to support any new telecommunications equipment and distribution systems associated with this project. Involve the DOIM during the design process. Contractor shall coordinate communication requirements with Mr. Mike Groeneveld (703) 806-0045.

6.4.3 Installer Qualifications

Installer shall have a minimum of three years experience in the application, installation, and testing of communications system and equipment, including the installation of copper and fiber optic cable and components.

6.4.4 Inside Plant

Telephone and Local Area Network (LAN) systems shall be pre-wired in accordance with ETL 1110-3-502 to include at the typical duplex communications outlet two 8-pin RJ-45 voice/data jacks. One RJ-45 jack shall be for Voice (upper) and the other RJ-45 jack will be for data (lower). Wiring to each RJ45 jacks shall consist of Category 6e UTP cables. All RJ45 jacks, 110 blocks and UTP horizontal cable shall be Category 6e. Wall-mounted outlets shall be wired by running conduit overhead and down to the outlets. UTP voice and data cables shall be terminated on 110 connector blocks mounted on plywood backboards (TTB's) in the electrical/mechanical room.

6.4.5 Outside Plant

The outside plant telephone cable shall be brought into the TTB of this facility in a new 4 inch ductbank system that shall be run from the existing 300 pair of copper telephone cable in a communications manhole at 16th and Theote Streets. Three 4 inch ducts (1-telephone, 1- fiber optic and 1-spare) shall be brought up to the TTB in the electrical/mechanical room (See attached sketch E2 for installation requirements). A fifty (50) twisted pair 24 AWG copper cable shall be provided for telephone and a fifty (50) twisted pair 24 AWG copper cable shall be provided for data. Fiber optic LAN/WAN cable service can be obtained 3000 feet from the project site at Building 193, intersection of 16th Street and Gunston Road. Twelve strands of single mode fiber optic cable shall be installed from the manhole to the new building. Telephone and data cables will be connected to the existing telephone and data cables in the manhole by the Government. Handholes/manholes shall be included as required to facilitate wire pulling and to avoid over-tensioning of cable during installation. No less than five (5) manholes shall be provided.

6.4.6 Quantities

Number of data/comm outlets shall be in accordance with the table shown below.

<u>Area Description</u>	<u>No. of jacks</u>
Kennel Master Office	2
Handlers Work Station	1 (Each)
Multipurpose Room	2

6.5 GROUNDING

6.5.1 A Lightning protection system is not required and shall not be provided.

6.5.2 An insulated green grounding conductor shall be installed to each receptacle. Grounding shall be provided as specified NFPA 70 for grounding panels, transformers, separately derived systems and telephone terminal backboards. All ground rods which include the service entrance panelboard, Telephone Terminal Backboard, the fire alarm transceiver, and the pad-mounted transformer shall be bonded below grade to a 4/0 bare copper counterpoise (See standard transformer pad grounding detail). Telecommunications backboards shall be grounded with a dedicated direct buried PVC duct and cable bonded to the pad mounted transformer power grounding electrode system, in compliance with TIA/EIA 607. The 4/0 counterpoise and earth electrode system shall be designed to obtain a resistance to ground of 25 ohms or less.

6.6 INTRUSION DETECTION SYSTEM

An IDS shall be installed to monitor the building and the indoor drug room separately. Audible warning device (different from fire alarm system) shall be provided at each exterior door. The remote station shall have an integral video camera. The master station shall have an integral TV monitor and handset. The alarm signal shall be transmitted to the local security office. The contractor shall provide as a minimum a dedicated twenty ampere circuit to supply power to the system and a dedicated pair of telephone wires for sending and receiving communications (signals) from this system. The Contractor shall install conduit and junction boxes for this system. System power, alarm, and signal cable runs shall be installed in conduit. Discuss any requirements for connection to the installation electronic security system. The Contractor shall coordinate IDS requirements with POC Mr. Ed Zimmerlee (703) 806-4026.

6.7 INTERIOR CABLE TELEVISION

Contractor shall provide cable system premises distribution system (coaxial cable and connecting hardware) to transport television signals to specific end user locations in the building from the patch panel in the electrical/mechanical room. Contractor is responsible for providing the patch panel, wire, conduit and jacks for future use. The kennel masters office and the multipurpose room shall be provided with female connector to accept the connecting coaxial cable from the user's television set. Local agreements for CATV already exist for Fort Belvoir. The Contractor shall coordinate CATV requirements with POC Mr Ed Zimmerlee (703) 806-4026.

CHAPTER 7 HVAC

7.0 HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

7.1 GENERAL REQUIREMENTS

7.1.1 Design Standards

Heating, ventilation and air conditioning systems shall comply with the latest provisions, unless other indicated, of the following standards and specifications:

- a. TI 800-01, Technical Instructions - Design Criteria
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- b. TI 800-03, Technical Requirements for Design-Build
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- c. TI 809-04, Technical Instructions - Seismic Design for Buildings
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- d. TI 810-10, Mechanical Design - HVAC
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- e. TI 810-11, HVAC Control Systems
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- f. TM 5-785, Weather Data
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- g. TM 5-802-1, Economic Studies
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- h. TM 5-805-4, Noise and Vibration
<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>
- i. **AR 190-12, Military Working Dogs**
http://www.army.mil/usapa/epubs/190_Series_Collection_1.html
- j. AR 190-12, dated 30 September 93, Military Working Dogs
http://www.army.mil/usapa/epubs/190_Series_Collection_1.html
- k. **AR 190-51, dated 30 September 93, Security of Unclassified Army Property (Sensitive and Nonsensitive)**
http://www.army.mil/usapa/epubs/190_Series_Collection_1.html
- l. AP 190-12, Military Working Dogs Program
http://www.army.mil/usapa/epubs/190_Series_Collection_1.html
- m. Department of Defense Antiterrorism/Force Protection Construction Standards (with Army Supplemental Guidance) Interim Standards, 16 Dec. 99.
- n. ANSI Standards

- o. ASHRAE Handbooks
- p. **ASHRAE Standard 62-2001, Ventilation**
- q. ASME Standards
- r. ASTM Standards
- s. Ft. Belvoir Installation Design Guidelines
- t. UL Standards
- u. NFPA Standards
- v. NFPA 90A, Air Conditioning and Ventilation Systems
- w. OSHA Safety and Health Standards
- x. SMACNA Manuals and Guides

7.1.2 Equipment

All equipment shall be factory packaged and tested. Use products of one manufacturer where two or more items of the same kind of equipment are required. Equipment efficiencies shall meet the minimum efficiency requirements indicated for 10/29/2001 from **ASHRAE 90.1-2001**, unless indicated otherwise in this RFP. Roof-mounted equipment, except for exhaust fans, shall not be used for the project.

7.1.3 Year 2000 Compliance

Equipment and materials shall be Year-2000 compliant. Where equipment contains computer based information technology, the equipment shall be certified to be Year-2000 compliant.

7.2 Design Criteria

Outdoor Conditions (Temperatures indicated are dry bulb unless otherwise indicated.)

7.2.1 Heating Season

Design Temperature - 12 degrees F
Design Temperature for Outside Air Coils - -5 degrees F

7.2.2 Cooling Season

Design Temperature - 90 degrees F
Wet Bulb - 75 degrees F

7.2.3 Indoor Heating and Cooling Conditions

7.2.3.1 Kennel Support Area

a. Offices Areas, Multipurpose Room, Food Preparation Room, Veterinary Room and Isolation Room:

Summer - 75 degrees F, 50 percent RH maximum

Winter - 70 degrees F, 30 percent RH minimum (Humidification shall be provided)

b. Mechanical/Electrical Rooms:

Summer - ventilate only, 10 degrees F above ambient

Winter - 55 degrees F

c. Toilet Rooms and Janitor Closet:

Summer - None (Indirect Cooling from adjacent spaces)

Winter - 68 degrees F

d. Food Storage Room, Tack Room, Drug Room, and Storage at Admin Area:

Summer - not to exceed 85 degrees F

Winter - 55 degrees F

e. Corridors:

Summer - 75 degrees F.

Winter - 68 degrees F.

7.2.3.2 Kennel

a. Kennel Runs:

Summer - 75 degrees F, 50 percent RH maximum

Winter - 70 degrees F, 30 percent RH minimum (Humidification shall be provided)

b. Kennel Storage Room

Summer - not to exceed 85 degrees F

Winter - 55 degrees F

7.2.4 Ventilation

7.2.4.1 General

The following definitions apply: recirculated air is room air that can be returned for reuse. Non-recirculated air is room air that cannot be returned for reuse. All areas located on the exterior wall shall be provided with positive pressure to prevent infiltration. All areas except toilet rooms, janitors closet, isolation room and kennel runs shall have recirculated air.

7.2.4.2 Minimum outside air quantities

a. Offices Areas, Multipurpose Room, Food Preparation Room, Veterinary Room and Isolation Room: - 20 cfm per occupant

- b. Mechanical/Electrical Room - No outside air requirements, except for ventilation
- c. Toilet Rooms - 50 cfm per water closet, air exhausted through toilet rooms to be made up from adjacent space.
- d. Janitor closet - 50 cfm
- e. Food Storage Room, Tack Room, Drug Room, and Storage at Admin Area - 0.15 cfm per square foot
- f. Corridors - 0.1 cfm per square foot
- g. Isolation Room, Kennel Runs - 6 air changes per hour, 100 percent outdoor air.

7.2.5 Filtration of Circulated Air

7.2.5.1 General

Dry type filtration of air is to be used. The percent efficiency refers to ASHRAE Dust Spot Method of rating filters.

7.2.5.2 Offices and other areas served by AHUs. - 25 percent efficient prefilter(s) and 85 percent efficient final filter(s) as determined by the dust spot standard specified in ASHRAE Standard 52.

7.2.6 Heating and Cooling Loads

Submit computer program generated heating and cooling loads including building air balance (positive pressure to be provided to preclude any infiltration in the office areas) to substantiate design guidelines were met and to size the necessary HVAC equipment. Use a nationally recognized heating and cooling load program such as Trane Trace 600, DOE-2.1E or other program that performs 8760 hourly calculations.

7.2.7 Special Equipment Loads

Obtain heat gain information from the manufacturer for the equipment. Where no information is available, use ASHRAE Fundamentals. The following is, but not limited to, a list of possible equipment (refer to room description for location of equipment):

- a. Copiers
- b. Faxes
- c. Laser Printers
- d. Computers/Monitors
- e. Televisions
- f. VCRs/DVDs
- g. Communication Equipment

7.2.8 **General Criteria**

7.2.8.1 General

ASHRAE Applications Handbook and TM 5-805-4 shall be used for selecting heating and air conditioning equipment, ductwork and air supply devices.

7.2.8.1.1 Noise from outdoor equipment shall be considered when locating equipment. Outdoor equipment is to be located on the ground. Equipment located on the ground shall be minimum 30 feet from the building wall. Equipment shall be placed on concrete pads and surrounded by a fence with a lockable gate in accordance with the Installation Design Guidelines and the Interim Antiterrorism/ Force Protection requirements.

7.2.8.1.2 Airflow to and from outdoor units shall not be obstructed.

7.2.8.1.3 Air handling units shall have dedicated trapped condensate drain lines that terminate outside of the structure. Secondary drain pans shall be placed under all air handler units located in attic areas (over ceilings). Each secondary drain pan shall have a dedicated drain line, independent of the air handler unit condensate drain. This drain must also terminate outside of the structure.

7.2.8.1.4 System controls shall be direct digital control (DDC), and shall be designed to operate the systems automatically, safely, and to maintain even temperatures.

7.2.8.1.5 System design shall meet the parameters set forth in ASHRAE Standard 55, "Thermal Environmental Conditions for Human Occupancy".

7.2.8.1.6 Indoor air quality (IAQ) shall meet the parameters set forth in ASHRAE Standard 62, "Ventilation for Acceptable Indoor Air Quality".

7.2.8.1.7 Ductwork shall be insulated, securely mounted and relatively free of leaks (not to exceed 1 percent of total air flow volume). Care shall be taken to otherwise seal all joints, take-offs, transitions, etc. as necessary to minimize leakage of all duct systems. Sealing materials shall have a projected life of 20 to 30 years.

7.2.8.1.8 Low velocity ductwork systems shall generally be designed to have pressure losses of less than 0.15 in wg per 100 ft. The method used to layout and size (low velocity) must result in a reasonably quiet system and must not require unusual adjustments to activate proper distribution of air to each conditioned space.

7.2.8.1.9 The return air system shall be designed so that air filters are located in a way that allows for convenient replacement, or cleaning. Filters shall be of the type that is disposable or cleanable.

7.2.8.2 Room Requirements

The following NC requirements apply:

All Areas, Except Corridors	NC-30
Corridors	NC-35

7.3 Source of Heating and Cooling

7.3.1 Heating - Heating shall be provided by a natural gas. See Plumbing Chapter.

7.3.2 Cooling - Direct Expansion (Dx) systems shall be used for the areas requiring 24-hour cooling.

7.4 Occupancy

Refer to the Chapter 1, Introduction, for occupancy and hours of operations, and Chapter 4, Architectural for equipment to be included, etc. No reduction in the heating load shall be taken for the internal heat gain due to lighting, equipment and occupancy. People sensible and latent loads for all areas shall be based on light office work conditions as indicated in ASHRAE. Sensible and latent loads for dogs shall be in accordance with ASHRAE Fundamentals Handbook, Chapt. 10 (2001).

7.5 Antiterrorist and Security Measures

7.5.1 A shutoff switch for the air handler units shall be located in the multipurpose area for easy access by personnel in the building.

7.5.2 Utilities shall not be located on external walls.

7.5.3 All outside air intake louvers shall be at least 10 feet above grade.

7.5.4 Ducts larger than 96 square inches that penetrate walls, ceilings or floors of the drug room shall have steel bars in accordance with AR 190-51.

7.6 Testing, Adjusting and Balancing (TAB)

TAB of HVAC systems shall meet the requirements of the UFGS specification 15990A.

7.7 Commissioning

The commissioning of the HVAC system shall meet the requirements of UFGS specification 15995.

7.8 Seismic

All equipment shall be seismically protected in accordance with UFGS 13080, Seismic Protection for Miscellaneous Equipment, TI 809-04, Seismic Design for buildings, and UFGS 15070A, Seismic Protection for Mechanical Equipment.

7.9 Description of Systems

7.9.1 General Heating and Humidification

Heating shall be provided by a gas fired hot water boiler with a distribution pump, which shall be installed in the mechanical room. The boiler shall be sized for 110 percent of the maximum winter design heating load. Supplemental heat from people, light, equipment, etc., shall not be considered when sizing the boilers. Hot water shall be circulated to the hot water coils located in the air terminal units, the outside air preheat coils (sized for outside air

temperature of -5 degrees F), and to the separate air handling system for the Kennel area and isolation room.

7.9.2 General Cooling (Chiller) (if used)

Air-cooled chiller shall be located in a screened area outside the mechanical room. The chilled water pump and expansion tank will be located in the mechanical room. Chilled water system shall be charged with 30 percent propylene glycol. All equipment shall be derated accordingly.

7.9.3 General Cooling (Direct Expansion)

Air-cooled condensing units shall be located in a screened area outside the mechanical room. All DX systems shall have evaporator hot gas bypass.

7.9.4 Room Systems

7.9.4.1 Air Handler Units (AHU)

Air conditioning, heating and ventilation shall be provided by a variable volume air handler with a chilled water coil, and supply and return air fans with variable speed motors, with variable frequency drive. Return fan may be provided in the air handler or located in the return air ductwork. The air handler shall be located in the mechanical room. A hot water coil shall be provided in the outside air intake; a coil circulation pump shall be provided for freeze protection. Coil circulation pump shall be located in the mechanical room.

Each zone will be provided a variable air volume (VAV) box with a hot water reheat coil, an individual thermostat, a duct mounted humidifier and a humidistat. A plenum return will be utilized with return air passing through ceiling grilles. The maximum distance between a return duct and the air handling return grilles shall be 65 feet.

7.9.4.2 Mechanical Room

A hot water unit heater will be provided in the mechanical room. The mechanical room will be cooled with mechanical ventilation only. An exhaust fan and intake louver/damper shall be thermostatically controlled to maintain a maximum of 10 degrees F above ambient. Combustion louvers shall be provided in accordance with NFPA 54.

7.9.4.3 Kennel Run and Isolation Rooms

Separate systems - heating and cooling, shall be provided for each of the following areas: 1) kennel run area and 2) Isolation Room. These areas shall be completely separate from the rest of the building, and shall be provided with 100 percent outdoor air as specified in Paragraph "Ventilation".

7.10 Equipment and Materials

Final specification to be developed in accordance with the UFGS specifications and as indicated in this RFP.

7.11 Operation and Maintenance (O&M) Manuals

Complete O&M manuals and training for all HVAC equipment shall be provided as indicated in each technical section of the UFGS specifications.

SECTION 01012

DESIGN AFTER AWARD

PART 1 GENERAL

The Contractor shall schedule the number and composition of the design submittal phases. All design submittals shall be in english units. Design submittals are required at the concept (10%), preliminary (50%) and final (95%) design stages and at the design complete stage (100%). The requirements of each design stage are listed hereinafter. The Contractor shall reflect the number and contents of the design submittals phases in the progress charts. As a maximum, the 10%, 50%, 95% and 100% complete design submittals shall be made in only one package for each of the fifteen (15) major categories listed in Paragraph, "Contents of Design Submittals," except the foundation design, utilities under the slab (all utilities together as one submittal), the Comprehensive Interior Design (CID), and long lead item submittals. These exceptions may be in addition to the 15 major submittals. More than one category may be combined in a submittal.

1.1 NATIONAL CAPITAL PLANNING COMMISSION

The DB Contractor is responsible for obtaining NCPC approval. Submittal shall be coordinated with the Baltimore District Corps of Engineers.

1.2 DESIGNER OF RECORD

The Contractor shall identify a Designer of Record ("DOR") for each area of design. All design disciplines shall be accounted for by listed, registered Designer(s) of Record. Each DOR shall be responsible for ensuring integrity of their design and design integration in all construction submittals and extensions to design developed by others, such as the constructor, subcontractors or suppliers. The DOR shall review and approve all construction submittals and extensions to design, in accordance with the procedures, described in Section 01330 SUBMITTALS PROCEDURES FOR DESIGN BUILD. Each DOR shall be responsible for the responses to "Requests for Information" ("RFI's"), applicable to their area of design responsibility. Each DOR shall stamp, sign, and date all design drawings under their responsible discipline at each design submittal stage and all submittals under their responsible discipline, in accordance with the submittal review procedures. The DOR shall sign-off on all applicable RFI responses.

1.3 CONSTRUCTOR'S ROLE DURING DESIGN

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical required construction activities, the constructor's involvement includes, but is not limited to actions such as: integrating the design schedule into the Master Schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules,

effectively interfacing the construction QC program with the design QC program, and maintaining and providing the design team with accurate, up-to-date redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities, as appropriate, if subcontracts have been awarded.

1.4 STAGES OF DESIGN SUBMITTALS

1.4.1 Concept Design Review Submittal (10%)

The review of this submittal is primarily to ensure that the Contractor is working towards a site layout that is acceptable to the Government and meets the site constraints imposed. The submittal shall consist of the following:

- a. Architectural Floor Plan.
- b. Architectural Elevations.
- c. Site Layout Plan: Show the proposed building footprint, proposed roads, and parking lots containing the required spaces; drawing shall be shown to scale on the provided survey drawing.

1.4.2 Preliminary Design Review Submittal (50%)

The review of this submittal is primarily to insure that the contract documents and design analysis are proceeding in a timely manner and that the design criteria is being correctly interpreted. The submittal shall consist of the following:

Design analysis, developed to 50%

50% complete drawings

CADD files of all drawings (2 copies)

Comprehensive Interior Design (CID) Package

Environmental permits, as required. When environmental permits are not required, the Contractor shall provide a statement with justification to that effect.

1.4.3 Final Design Review Submittal (95%)

The review of this submittal is to insure that the design is in accordance with directions provided the Contractor during the design process. The Contractor shall submit the following documents for Final Design Review:

Applicable design analysis, developed to 95%

95% complete drawings

Draft specifications

Annotated 50% review comments

The Design Analysis submitted for Final Design Review shall be in its final form. The Design Analysis shall include all backup material previously submitted and revised as necessary. All design calculations shall be

included. The Design Analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the Final Drawings and Specifications.

The Contract Drawings submitted for Final Design Review shall include the drawings previously submitted which have been revised and completed as necessary. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be complete at this time including the incorporation of any design review comments generated by the Preliminary design review. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction. Shop drawings will not be considered as design drawings. All design shall be shown on design drawings prior to submittal of shop drawings.

The Draft Specifications on all items of work submitted for Final Design Review shall consist of legible marked-up specification sections.

The Contractor may begin construction on portions of the work for which the Government has reviewed the Final Design Submission and has determined satisfactory for purposes of beginning construction. The Contracting Officer Representative (COR) will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the COR, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.

1.4.4 Design Complete Submittal

After the Final Design Review, the Contractor shall revise the Contract Documents by incorporating any comments generated during the Final Design Review and shall prepare final hard copy Contract Specifications. The Contractor shall submit the following documents for the design complete submittal:

Design analysis, in final 100% complete form

100% complete drawings

Final specifications

Annotated 95% review comments

CADD files of all drawings (2 copies)

Comprehensive Interior Design (CID) Package

Cals Files

The Contractor shall submit the Design Complete Submittal not later than 14 calendar days after the Government returns the annotated Final Design Review Submittal.

If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted with the Design Complete Submittal and are satisfactory to the Government.

1.5 QUANTITY OF DESIGN SUBMITTALS

1.5.1 General

The documents which the Contractor shall submit to the Government for each submittal are listed and generally described hereinafter. Unless otherwise indicated, the Contractor shall submit five (5) copies of each item to each address required to be submitted at the Preliminary and Final Design Review Submittal stages. The quantities of this item are indicated with the description of the item. All drawings for review submittals shall be half-size blue lines. At the Design Complete Submittal, the Contractor shall also submit five (5) complete full size sets of drawings, five (5) complete half size sets and two copies of CADD files in AutoCADD Release 2000 format, five (5) sets of the specifications and two (2) copies on floppy disks in word.

1.6 MAILING OF DESIGN SUBMITTALS

Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract. The submittals shall be mailed to four (4) different addresses as directed by the Government.

Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

1.7 COORDINATION

1.1.7.1 Written Records

Provide a written record of each design site visit, meeting, or conference, either telephonic or personal, and furnish within five (5) working days copies to the Contracting Officer and all parties involved. The written record shall include subject, names of participants, outline of discussion, and recommendation or conclusions. Number each written record for the particular project under design in consecutive order.

1.7.2 Design Needs List

Throughout the life of his contract the Contractor shall furnish the COR a biweekly "needs" list for design related items. This list shall itemize in an orderly fashion design data required by the Contractor to advance the design in a timely manner. Each list shall include a sequence number, description of action item, name of the individual or agency responsible for satisfying the action item and remarks. The list will be maintained on a continuous basis with satisfied action items checked off and new action items added as required. Once a request for information is initiated, that item shall remain on the list until the requested information has been furnished or otherwise resolved. Copies of the list will be mailed to the Contracting Officer (COR).

1.8 GOVERNMENT REVIEW COMMENTS

Within 21 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly.

After receipt, the Government will be allowed thirty (30) days to review and comment on each 10% and 50% design submittal and twenty-one (21) days to review and comment on each 95% design submittal, except as noted below. For each design review submittal comments from the various design sections and from other concerned agencies involved in the review process will be provided using the on-line DrChecks Review Management System. The contractor shall respond to the comments using the same system. The DrChecks Review Management System is available at the internet address "65.204.17.188". The contractor shall call Jean Swalley at 1-410-962-4153 for instructions for registering and using the system. The review will be for conformance with the technical requirements of the solicitation and the Successful Officer's (Contractor's) RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. The Contractor shall furnish disposition of all comments, in writing, with the next scheduled submittal. The Contractor is cautioned in that if he believes the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the COR in writing immediately. Review conferences will be held for each design submittal at Ft. Belvoir, VA. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences will take place the week after the twenty-one (21) day review period.

If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period will be extended 7 days. The review conference will be held the week after the review new period. Submittals date revisions must be made in writing at least five (5) days prior to the effect submittal.

1.9 DESIGN ANALYSIS

1.9.1 Media and Format

Present the design analysis on 8-1/2-inch by 11-inch paper except that larger sheets may be used when required for graphs or other special calculation forms. All sheets shall be in reproducible form. The material may be typewritten, hand lettered, handwritten, or a combination thereof, provided it is legible. Side margins shall be 1-inch minimum to permit side binding and head to head printing. Bottom margins shall be 1-1/4-inches, with page numbers centered 1 inch from the bottom.

1.9.2 Organization

Assign the several parts and sheets of the design analysis a sequential binding number and bind them under a cover indicating the name of the facility and project number, if applicable. The title page shall carry the designation of the submittal being made. The complete design analysis presented for final review with the final drawings and specifications shall carry the designation "FINAL DESIGN ANALYSIS" on the title page.

1.9.3 Design Calculations

Design calculations are a part of the design analysis. When they are voluminous, bind them separately from the narrative part of the design analysis. Present the design calculations in a clean and legible form incorporating a title page and index for each volume. Furnish a table of

contents, which shall be an index of the indices, when there is more than one volume. Identify the source of loading conditions, supplementary sketches, graphs, formulas, and references. Explain all assumptions and conclusions. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

1.9.4 Automatic Data Processing Systems (ADPS)

When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points. Precede each set of computer printouts by an index and by a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices. Preparation of the description which must accompany each set of ADPS printouts shall include the following:

Explain the design method, including assumptions, theories, and formulas.

Include applicable diagrams, adequately identified.

State exactly the computation performed by the computer.

Provide all necessary explanations of the computer printout format, symbols, and abbreviations.

Use adequate and consistent notation.

Provide sufficient information to permit manual checks of the results.

1.10 DRAWINGS

Prepare all drawings on Computer-Aided Design and Drafting (CADD) so that they are well-arranged and placed for ready reference and so that they present complete information. The Contractor shall prepare the drawings with the expectation that the Corps of Engineers, in the role of supervision, will be able to construct the facility without any additional assistance from the Contractor. Drawings shall be complete, unnecessary work such as duplicate views, notes and lettering, and repetition of details shall not be permitted. Do not show standard details not applicable to the project, and minimize unnecessary wasted space. Do not include details of standard products or items which are adequately covered by specifications on the drawings. Detail the drawings such that conformance with the RFP can be checked and to the extent that shop drawings can be checked. Do not use shop drawings as design drawings. The Contractor shall use standard Corps of Engineers title blocks and borders on all drawings. An index of drawings shall be included with each submittal. The COE will furnish the Contractor drawing numbers for inclusion in the title blocks of the drawings.

All CADD drawings shall be prepared in accordance with the applicable provisions of the "CENABEN Contract Clauses for CADD Deliverables".

The Contract Clauses, Standard border sheets, etc. are available at the NABEN web page: <http://www.en.nab.usace.army.mil/> or by request on CD ROM.

All drawings, specifications, notes, and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design without additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared". With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights or to establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in the contract, the Contractor shall have the right to retain copies of all works beyond such period.

1.11 SPECIFICATIONS

The Contractor shall submit marked-up and final specifications as required. The specifications shall be edited in SPECS-IN-TACT available from "<http://si.ksc.nasa.gov/specsintact>" and shall use Uniform Facilities Guide Specifications available from CCB at "<http://www.ccb.org/ufgs/ufgs.htm>". Edit the specifications for this project and submit in marked-up or redlined draft version at the Final Review submittal stage. If the design is based on a specific product, the specification shall consist of the important features of the product. The specification shall be detailed enough such that another product meeting the specification could be substituted and it would not adversely impact the project. After incorporation of comments, submit a final, design complete specification package. Submit one (1) original hard copy set of the specifications and a copy on floppy disks in pdf format (via Adobe Acrobat software - see <http://www.adobe.com/products/acrobat/>). Delete all marked-out or redlined text and type in all inserted text.

1.11.1 Submittal Register

Develop the submittal requirements during the design phase of the contract, by producing a Contractor Submittal Register during design. Attach a submittal register to each section of the specifications for the submittal requirements of that section. Prepare the Submittal Register on ENG Form 4288. Proper tagging of SPECS-IN-TACT prepared specifications allows this form to be generated at printing. The Contractor shall maintain a submittal register for the project in accordance with Section 01312 RESIDENT MANAGEMENT SYSTEM (RMS-W). The Contractor shall be responsible for listing all required submittals necessary to insure the project requirements are complied with. The Register shall identify submittal items such as shop drawings, manufacturer's literature, certificates of compliance, material samples, guarantees, test results, etc. that the Contractor shall submit for review and/or approval action during the life of the construction contract. The Contractor shall place all the Submittal Register pages in an appendix of the final specifications.

1.12 CONTENTS OF DESIGN SUBMITTALS

1.12.1 10% Submittals

The 10% design submittals shall contain as a minimum, the following:

1.12.1.1 Site Layout Plan

The Contractor shall provide a site layout plan showing the proposed layout of the building, roads, parking areas and retaining walls, etc. The plan

shall be provided to scale with the survey provided to the Contractor. While a grading plan is not required at this stage, the submittal should as a minimum demonstrate the intended drainage patterns and the requirements for major cut and fill or retaining structures. The intent of this submission will be to sufficiently demonstrate that the required functions of the site can be met within the site constraints given, in a layout that is acceptable to the government. The submittal will include an explanation of objectives and factors influencing siting decisions and a general overview of major site features planned, such as building orientation, drainage patterns, parking provisions, traffic circulation including delivery access, provisions for the handicapped and security requirements, etc.

1.12.1.2 Architectural Floor Plan

The Contractor shall provide a floorplan of the building showing the proposed room locations and entrances, including any required for delivery, etc.

1.12.1.3 Architectural Elevations

The Contractor shall provide building elevations showing the proposed finish materials, roof, windows and doors, unique architectural features, etc.

1.12.2 50% Design Submittals

The 50% design submittals shall contain as a minimum, the following:

1.12.2.1 Site Development

A. Design Analysis: A narrative description of siting requirements for roads, streets, parking facilities, earthwork, utilities and other related site aspects and how you plan to comply with the requirements. This is an excellent way for the designer to explain the rationale for the designs shown on the drawings. The submission of this document, prepared in accordance with ER 1110-345-700, usually eliminates numerous review comments. The design analysis should address all site aspects, and in particular storm water management and erosion and sedimentation control (designer should contact the State and local governments for their requirements) and the following:

1. Storm Drainage: Present the design of all new storm drainage and an analysis of the existing storm drainage to which the new system will be connected, if applicable. The storm drain design shall be based on the 10-year frequency event. Bioretention basin(s) are designed to capture the first 0.5 inches of runoff.
2. Roof Drainage: Design the roof drainage system in accordance with the National Plumbing Code. Collection of all roof drain downspouts which discharge on to paved areas in an underground piping system is preferred in order to avoid icing problems for pedestrians in winter weather. Coordinate the interior roof drainage system with all other design disciplines so as to avoid conflict of piping with the HVAC, sprinkler, and structural components.
3. Sanitary Sewers: Provide a description of existing and proposed sanitary sewer facilities and supporting design computations.

4. Water Service: Provide a description of existing and proposed water service for the proposed facility. Adequacy of existing system and additions required to properly service and provide fire protection for the new facility should be included.
5. Erosion and Sedimentation Control and Stormwater Management: Include a description of erosion and sediment control and storm water management requirements and how they will be designed.

B. Drawings should include:

1. Survey Plan
2. Demolition Plan: Clearly indicate with a legend items to be removed, abandoned and relocated. An asbestos and lead paint survey should be conducted where demolition work is required.
3. Grading Plan: Information shown on this plan should include:
 - a. Existing topography including contours with sufficient spot elevations to establish existing ground surface in high and low areas. Existing buildings, roads, streets, parking areas, storm drains, sanitary sewers, water lines, gas lines, steam lines, etc., to remain from the survey. In addition, show and identify the survey base line and bench mark information.
 - b. New buildings, roads, parking facilities, etc.
 - c. New grading including the finish floor elevations for all new buildings and other structures with contours and/or spot elevations in sufficient detail to develop the drainage pattern as well as earthwork quantities.
 - d. Indicate locations of all inlets, storm and sanitary manholes, water valves, electric manholes and other utility structures visible at grade on the plan. Do not show any new utility lines serving the utilities.
 - e. Show storm water management detention areas.
4. Utilities Plan: This plan should show all existing and new utilities including but not limited to sanitary sewers, force mains, water lines, storm drainage, roof drains, gas lines, subdrainage, and foundation drains. All electrical and telephone lines are usually shown on the electrical utility plan. Show all new and existing buildings, roads, parking areas etc., but not contours or spot elevations. The plan should clearly present:
 - a. Existing and new sanitary sewers and force mains including manhole and cleanout locations. The size of all sanitary sewers and force mains should be shown. See TM 5-814-1 for technical guidance.
 - b. Existing and new water distribution and service lines with valves and fire hydrants indicated. Show sizes of all service and distribution lines. See TM-813-5 and TM 5-813-6 for technical guidance.

c. Existing and new storm drainage system and roof drainage with inlets, manholes, and headwalls indicated. The size of storm drains should be shown. See TM 5-820-4 for storm drainage technical guidance and the National Plumbing Code for roof drainage.

d. Show existing and new steam lines or gas line distribution and service lines with valves.

e. All utilities which are to be abandoned, relocated, or removed and sanitary, water and storm drainage piping to be abandoned shall be capped or plugged with a minimum of 1 foot of concrete. If a demolition plan is included, demolition of utilities does not have to be shown on the utility plan.

5. Layout Plan: This plan should show all layout dimensions for all new features. Clearly identify all construction base lines used to layout and space the new work. The use of coordinates for locating new features is acceptable but not preferred over base line layouts. Depending upon the size of the project the layout data may be shown on the Utilities Plan. If the project has numerous utilities then prepare a separate layout plan to avoid congested drawings.

6. Erosion and Sedimentation Control Plan: This plan should show all temporary erosion and sediment control measures for the construction activity. The plan shall be developed in accordance with paragraph 6 of this document.

C. Outline Specifications: Appropriate guide specifications should be selected and listed for the aspects of the project. A complete list of current Corps of Engineers Guide Specifications is available from the Specification Section through the Design Team Leader.

1.12.2.2 Geotechnical

A geotechnical report and design analysis.

Anticipated permit requirements for water and wastewater features.

1.12.2.3 Landscape, Planting and Turfing

The landscape planting design narrative shall describe the analysis of existing site conditions, including an indication of existing plant materials that are to remain on the site. The statement of concept shall indicate specific site problems related to proposed development and the rationale for proposed plant locations. The narrative shall also include a list of suggested types and sizes of plant materials which are to be used, based upon the designated functional and visual criteria.

The concept drawings shall be prepared at a scale which corresponds with the site layout and grading plans and, likewise, shall include reference coordinates, north arrows, graphic scales and appropriate legends. An overall planting layout shall be developed and shall include enlarged detail plans of specific areas, as needed, to clarify requirements. The proposed layout shall indicate shade trees, evergreen trees, flowering trees, shrub masses, etc., according to designated functional and visual locations of planting. A legend which also indicates sizes of plants recommended for each of the above categories shall be included. The

drawings and all subsequent plans shall indicate existing and proposed buildings, paved areas, signs, light standards, transformers, dumpster areas, storm drainage system, and other structures and utilities. Bioretention basins will be landscaped per typical detail standards presented in Virginia Stormwater Management Handbook.

1.12.2.4 Architectural

Design narrative shall provide a summary of functional space relationships, as well as circulation. There shall also be a general statement for the rationale behind the major design decisions.

Plans shall indicate dimensions, columns lines, and detail references. Toilets and other specialized areas shall be drawn to 1/4" scale and shall show any needed interior features.

Finish schedule shall indicate material, finishes, colors and any special interior design features such as soffits, fascias, and lighting troughs, etc.

All required furniture and equipment shall be shown on the drawings with an equipment list.

List any special graphics requirements that will be provided.

Schedules shall be provided for both doors and windows. These schedules shall indicate sizes, types, and details for all items shown on floor plans.

Hardware sets using Builder's Hardware Manufacture's Association (BHMA) designations.

Composite floor plan showing all prewired work stations. Also show typical elevations of each type of work station.

Fire protection plans and analysis.

1.12.2.5 Structural Design

State the live loads to be used for design. Include roof and floor loads; wind loads, lateral earth pressure loads, seismic loads, etc., as applicable.

Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

Furnish calculations for all principal roof, floor, and foundation members.

This submittal shall include drawings showing roof and floor framing plans as applicable. Principal members will be shown on the plans. A foundation plan shall also be furnished showing main footings and grade beams where applicable. Where beam, column, and footing schedules are used, show schedules and fill in sufficient items to indicate method to be used. Show typical bar bending diagram if applicable. Typical sections shall be furnished for roof, floor, and foundation conditions. Structural drawings for proposals and submittals shall be separate from architectural drawings.

Provide the results of any computer used for structural design. All programs shall be widely accepted and commercially available. Complete

documentation is required.

1.12.2.6 Plumbing

List all references used in the design including Government design documents and industry standards.

Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

Prepare detail calculations for systems such as sizing of waste and water piping; water heaters and pumps.

Indicate locations and general arrangement of plumbing fixtures and major equipment.

Include plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Piping layouts and risers should also include natural gas, and radon piping (as required).

Include equipment and fixture schedules with descriptions, capacities, locations, connection sizes and other information as required.

1.12.2.7 Fire Protection System

List all references used in the design including Government design documents and industry standards.

Classify each building in accordance with fire zone, building floor areas, and height and number of stories.

Discuss and provide description of required fire protection including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.

Hydraulic calculations based on water flow test shall be prepared for each sprinkler system to ensure that flow and pressure requirements can be met with current water supply. See Water Supply and Sanitary Sewage.

Prepare a plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Provide the following types of information:

- a. The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.
- b. The location and coverage of any fire detection systems.
- c. The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.).
- d. The location of any other major fire protection equipment.
- e. Indicate any hazardous areas and their classification.
- f. Prepare a schedule describing the system with the following information: fire hazard and occupancy classifications, building

construction type, GPM/ square foot sprinkler density, area of operation and other as required.

1.12.2.8 Heating, Ventilating, and Air Conditioning (HVAC)

Design analysis including 50% design calculations and psychometric.

Preliminary temperature control drawings and sequence of operation.

Preliminary equipment sizing, drawings, selections and schedules for major items, including equipment, ductwork, and piping plans and details.

HVAC system drawings for 50% design.

1.12.2.9 Interior Electrical System

A. Exterior, Electrical Site Drawings: Indicate all new and existing above ground and underground electrical, and telecommunication systems. This shall include cables, ducts, manholes, poles, exterior lighting fixtures and utility points of connection. Also, show primary and secondary electrical lines and all communication lines, transformer types and ratings, exterior lighting for streets, parking areas, and walks, and circuits to exterior mechanical equipment.

B. Interior: Provide the following interior electrical drawings.

1. Lighting Plan: Indicate the location and type of luminaires including exit signs and emergency lighting units.

2. Power Plan: Indicate the location and type of receptacles, panelboards, and other power related equipment.

3. Signal Plan: Indicate the location and type of telephone equipment, cable television equipment, public address system components, intrusion detection system and closed circuit television system components.

4. Grounding Plan: Provide a preliminary grounding plan.

5. Schedules: Provide lighting fixture schedules.

C. Design Analysis: Provide descriptions of all systems intended to be utilized as well as preliminary calculations for power, lighting, signal and other systems.

D. Specifications: Provide outline specifications for all systems.

1.12.3 95% DESIGN SUBMITTALS

The 95% Design Submittals shall contain, as a minimum, the following items for all submittals:

- a. A complete set of construction documents plans and specifications at the same level of detail as if the project were to be bid including a complete list of equipment, fixtures and materials to be used. The final drawings are an extension of the reviewed 50% drawings and are to include the 50% comments. The additional 5% is to complete the drawings due to the final design review comments. All details shall be shown on the drawings.

- b. The design analysis is an extension of the reviewed 50% design analysis and supports and verifies that the design complies with the requirements of the project.
- c. Submit marked-up specifications. The specifications shall be coordinated with the drawings and describe in detail all items shown on the drawings.

1.12.3.1 Site Development

In addition to the items listed in the 50% submittal requirements, the following items should be addressed:

a. Design Analysis: Indicate all references and guidance used to develop the project such as data from Using Agency and Corps of Engineers technical manuals. The final design analysis should address all site aspects and in particular the following:

1. Storm Drainage: Describe storm drainage system and give basis for design referencing all criteria used. Include layout sketch of storm drainage areas with inlets and storm drainage piping shown. Calculate capacities of the various inlets selected for the project. Prepare storm drainage calculations indicating flow and velocity computations and include in the design analysis. Prepare and include roof drain computations. Draw a sketch of the roof areas showing drainage areas with locations and sizes of gutters, downspouts, and the roof drainage collector system. Include design calculations for the storm water management.
2. Water Service and Fire Protection: TM 5-812-1, TM 5-813-5 and TM 5-813-6. Describe proposed work, cite references, show all calculations including sketch of water system in vicinity of project. Be sure to note existing water storage facilities and capacities on Post and results of hydrant flow test.
3. Sanitary Sewers and Force Mains: TM 5-814-1. Describe proposed work, cite references, sketch of sanitary system, show all calculations including size of pumps, pump curves and strength of pipe selected.

b. Drawings: The final drawings are a continuation of the ones prepared for the concept submission.

1. Survey Plan.
2. Demolition: Indicate all items to be removed, abandoned, capped, plugged and relocated utilities.
3. Grading Plan: This plan must show new and existing contours and spot elevations in such detail that there will be no question regarding grading to provide positive drainage and indicated stormwater management facilities. Show inlets with top of frame elevations indicated, manholes, valves, hydrants, headwalls and all existing underground utilities. Do not show any new utility lines. Also, show any other features of work which will appear on the new ground surface.
4. Utilities Plan: Each existing and new utility must be clearly

shown including building service connections and connections to existing lines. In addition, the locations of all new and existing fire hydrants, valves, manholes, inlets, etc., are required. Show the sizes of existing and new lines with new inlet and manhole numbers but elevations are not shown. A complete legend is required. All new piping, inlets, manholes, hydrants, etc., must be located by dimension from buildings, streets, etc. All roof drain piping to storm drains must also be shown. All storm drain piping for stormwater management must be included. In addition, subdrain piping for paved areas must be shown if required.

5. Layout Plan: This is a complete layout showing existing and new buildings, roads, streets, walks, parking and service areas, etc. Do not show any new or existing contours or spot elevations. Clearly identify the baseline information from which all new facilities are to be located. Layout must be complete with all dimensions in feet and decimals of a foot. Stationing and curve data are required for road or street layout where applicable. Include a complete legend. The layout information may be combined with the utilities plan in those instances where the end result will not be too cluttered.
6. Profiles:
 - a. Profiles for storm drains, sanitary sewers, and force mains are always required in those instances where each utility crosses numerous new or existing utilities and the possibility for conflicts are likely to occur. Profiles for water lines may be required if there are many utility crossings along its alignment. Utility profiles must show:
 1. Existing and finished grade.
 2. Manholes, inlets, headwalls, etc., with numeric designations (corresponding to those shown on utility plan).
 3. Top and invert elevations.
 4. Size, length, and slopes of all lines.
 5. All existing and new utility crossings.
 6. Type of structures (i.e., Type "E" inlet, Std. MH, etc.) required at each junction.
 - b. Profiles for roads, streets, etc., must show:
 1. Existing and finished grade with all vertical alignment geometric data shown.
 2. All new and existing utility crossings.
 - c. All profiles should be drawn on compatible scales. 1" = 30', 40', or 50' horizontal corresponding to 1" = 3', 4' or 5' vertical. The vertical scale may vary where profiles traverse very steep topography.
7. Details: Standard details for storm drainage, water, sanitary sewer, and miscellaneous site features shall comply with the Department of Public Work's criteria such as Installation Design

Guides or, if none are available, use the respective State highway and drainage standard details. The designer has the option to develop any or all details for the project. Special details for specific situations will have to be prepared by the designer.

c. Specifications: Final technical specifications are prepared by editing Corps of Engineers Guide Specifications to reflect the specific features of the particular project being designed. Where Corps of Engineers specifications are not available, the AE shall prepare specifications to reflect required features.

1.12.3.2 EROSION AND SEDIMENTATION CONTROL, STORM WATER MANAGEMENT, AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT:

a. The Architect-Engineer is responsible for preparing both erosion and sedimentation control plans and stormwater management plans during design. Each shall be in accordance with the criteria of the governing agency at the project site. The Architect-Engineer shall, in the early stages of design, contact the state, county, or local authorities as to their particular requirements for each item. The Baltimore District's policy is to incorporate erosion and sedimentation control in all projects and stormwater management where required.

b. The Architect-Engineer shall submit the erosion and sedimentation control and stormwater management documentation to the Fort Belvoir Environmental Office, DPW.

c. It is the responsibility of the Architect-Engineer to make all submissions for review in a timely manner. Each should be scheduled to allow the reviewing authority to make comments and request resubmission.

d. The Architect-Engineer shall place all erosion and sedimentation control notes, directions, details, etc., on the design drawings. Specification NAB 01561, ENVIRONMENTAL PROTECTION, will refer to the plans and will provide any additional guidance or direction.

1.12.3.3 Water Supply and Sanitary Sewage

The designer is required to contact the Commonwealth of Virginia Department of Environmental Protection to verify the correct procedure to follow to obtain construction permits. The designer shall prepare all permit applications required to a "READY FOR SIGNATURE" condition and forward them to the Contracting Officer for appropriate signatures and submittal to the state. All contacts with state agencies shall be documented in writing and furnished to the Corps of Engineers at the 95% submittal.

1.12.3.4 Landscape, Planting and Turfing

Final design drawing(s) shall include a complete schedule of plant materials which indicates their botanical and common names, plan symbols, quantities, sizes, condition furnished, and pertinent remarks. Scale of drawing shall be prepared at 1" = 30'. Drawing shall correspond with the site layout and grading plans and reference coordinates, north arrows, graphic scales and appropriate legends. An overall planting layout shall be developed and shall include enlarged detail plans of specific areas as needed, to clarify requirements. Final design drawings, indicating proposed plants by a (+) mark for the plant location and a circle which is scaled at approximately 2/3 the ultimate growth spread (diameter) of plants, shall also include a complete schedule of plant materials which

indicates botanical and common names, plan symbols, quantities, sizes, condition furnished, and pertinent remarks. Final drawings shall also include the basic details for installation of tree, shrub, and ground cover planting, as well as any other applicable details for clarification of specific project requirements.

1.12.3.5 Geotechnical

A final geotechnical report and design analysis.

1.12.3.6 Architectural

All architectural drawings shall be coordinated with the other engineering disciplines. Ensure that the plans are in compliance with the applicable codes. It will be the Contractor's responsibility to implement the comments generated from any design review submittal as well as verify the consistency between plans and specification. The evaluation of the Contractor's submittals shall be based on degree to which the submittal meet the requirements set forth in this document and the specifications.

Completed working drawings shall include plans, elevations, schedules, sections, and all other drawings needed to identify the materials and assembly for this project.

Prewired work station composite floor plans. Prewired work station typical elevations and component inventory. Prewired work station panel identification plan with electrical outlet placement including base feed.

Fire protection plans and analysis.

1.12.3.7 Structural Design

Furnish complete checked calculations for all structural members. Incorporate any changes required by comments on 50% Design Submittal.

Prior to this submittal, structural drawings shall be coordinated with all other design disciplines.

The final structural drawings shall contain the following information as a set of general notes:

- a. The allowable soil bearing value.
- b. The design stresses of structural materials used.
- c. The design live loads used in the design of various portions of the structures.
- d. The design wind speed.
- e. The seismic site classification " S_s ", " S_1 ", and "R" values used in design.

1.12.3.8 Final Plumbing Design Analysis

Final plumbing system drawings.

1.12.3.9 Fire Suppression System

Final fire suppression system design analysis including a file of the input data used in the computer program to design the fire suppression system.

1.12.3.10 Heating, Ventilating and Air Conditioning (HVAC)

Final design analysis of HVAC systems including final load calculations and psychometric analysis..

Final temperature control design drawings.

Final HVAC system drawings including sections of the mechanical room and congested areas where equipment, ductwork, piping is to be located.

Final equipment sizing/selections for major items.

1.12.3.11 Electrical

a. Exterior:

1. Electrical Site Plan: Indicate all new and existing above ground and underground electrical, and telecommunication systems. This shall include cables, ducts, manholes, poles, exterior lighting fixtures and utility points of connection. Also, show primary and secondary electrical lines and all communication lines, transformer types and ratings, exterior lighting for streets, parking areas, and walks, and circuits to exterior mechanical equipment.

2. Electrical Details: Provide details to clarify the above plan and to indicate the installation requirements.

b. Interior:

1. Lighting Plan: Indicate the location and type of luminaries including exit signs and emergency lighting units, switching and control devices, and wiring. Indicate circuit numbers adjacent to homeruns. Indicate the size of all grounding conductors.

2. Power Plan: Indicate the location and type of receptacles, panelboards, and other electrical equipment. Indicate circuit numbers adjacent to homeruns. Indicate the size of all grounding conductors.

3. Signal plan: Indicate the location and type of all outlets, backboards, public address components, intrusion detection components, and closed circuit television components.

4. Grounding plan: Provide a plan of the grounding system showing all points of connections, conductor sizes, burial depth and other information necessary to clearly delineate the system.

5. One Line Diagram: Provide a one-line diagram for the power distribution system.

6. Riser Diagrams: Provide riser diagrams for the telephone, cable television, public address, intrusion detection and closed circuit television systems. All conduits and enclosures shall be sized and indicated on these diagrams.

7. Schedules: Provide panelboard and lighting fixture schedules. Panelboard schedules shall include the designation, location, mounting (flush or surface), number of phases and wires, voltage, ampacity and total connected load. Indicate the trip rating, frame size, interrupting rating and number of poles for each circuit breaker in the panelboards. List the circuit number, circuit description and load for each branch circuit.

8. Electrical Details: Provide details to clarify the above plans and to indicate the installation requirements.

c. Design Analysis:

1. Narrative: Provide a complete narrative of all systems to be utilized and describe any features that may not be readily apparent on the drawings and specifications.

2. Calculations: Calculations shall include short circuit analysis to indicate available short circuit at the transformer, panelboards, and circuit breakers; interior lighting; exterior lighting via point-to-point analysis; load analysis for justifying conductor and circuit breaker sizes; voltage drop analysis for all feeders and sub-feeders; and grounding calculations.

Specifications: All specifications shall be fully edited for all systems that will be utilized in the project.

1.13 Comprehensive INTERIOR DESIGN

1.13.1 Definition

The Comprehensive Interior Design (CID) shall involve the selection and sampling of all applied finishes and furnishings including material, color, texture and patterns necessary to complete the building's interior architectural features. The CID shall also include all prewired work station finishes and required drawings for prewired work stations. This information shall be submitted in 3" D-ring binders, 8-1/2" x 11" format.

Present architectural finish samples in an orderly arrangements according to like rooms/areas receiving like finishes. Each like room receiving like finishes will be noted as a Color Scheme. Each Color Scheme shall have a written description of material used. This written description shall use the same material abbreviations and notes that appear on the Room Finish Schedule and Legend in the contract drawings. Present prewired work station finishes on a color board separate from the architectural finishes.

Submit the **CID** binders concurrently with the architectural design submittals.

1.13.2 Preliminary Submittals

The Contractor shall submit three complete sets of the initial **CID** package at the 50% submittal stage. The design philosophy shall use a warm neutral background color with appropriate accent colors. All **CID** proposals shall be reviewed and approved by the Government. The Interior Designer shall revise the **CID** binders after each review and update the **CID** to satisfy review comments. Each submittal will follow this method of review until the Government approves the completed **CID** package.

1.13.3 Final Submittal

After approval of the Preliminary Submittal, the Contractor shall submit three (3) complete sets of the approved and final Comprehensive Interior Design package. Once the Contractor has submitted the **CID** and the Government has approved the submittal, all materials, finishes, colors, textures and pattern submitted and approved for this project are then considered as part of the contract and the Contractor shall furnish all approved **CID** finishes. No deviations will be considered.

1.13.4 Format

Submit all **CID** information and samples on 8 1/2"x 11" modules with only one foldout. The maximum foldout width shall be approximately 25 inches. No foldouts are permitted on the top or bottom of the pages. Place the project title, base, architectural firm, page number and date on the bottom of each page or module.

The module shall support and anchor all samples. Anchor large or heavy samples with mechanical fasteners, velcro or double sided foam tape. Rubber cement or glue will not be acceptable.

Assemble the 8 1/2" x 11" pages and modules in a 3" D-ring binder. Holes for placement of the modules in the binder shall be 3/8" in diameter. Each binder shall be identified on the outside spine and front cover by title, project number, percentage phase and date.

Material and finish samples shall indicate true pattern, color and texture. Carpet samples shall be large enough to indicate a complete pattern or design.

Where paint manufacturers color names and numbers are used, indicate the finish of the paint such as gloss, semi-gloss, flat and so on.

Signage may include emblems, striping, letters, numbers and logos. The interior designer shall consider visual appearance, organization, location, structural supports (if required) and relation to other base graphics. Indicate on a separate signage sheet the location and message for all signage. Submit a sample of the signage material finish and color with the structural finishes.

No photographs or colored photocopies of materials will be accepted or approved.

The **CID** Binder shall include the following information at each design submittal in this order:

SEQUENCE OF **CID** SUBMITTAL

- a. Title page
- b. Table of contents
- c. Design objectives - A statement of design objectives explaining the interior design philosophy of the facility shall be provided in the **CID**. Design objectives and the proposed method of accomplishing the objectives. Shall cover, when applicable, energy efficiency, safety, health, maintenance, image, personal performance of occupants and functional flexibility.

SEQUENCE OF **CID** SUBMITTAL

- d. Interior floor plan
- e. Interior sample finish boards
 - Scheme A
 - Scheme B
 - Scheme C

Example: All restrooms could be noted as color scheme "A", all general open office finishes could be noted as color scheme "B" and the main lobby could be noted as color scheme "C".
- f. Room finish schedule
- g. Signage
- h. Signage plan
- i. Prewired work station composite floor plans
- j. Prewired work station typical - elevations and component inventory.
- k. Prewired work station panel identification plan with electrical outlet placement including base feed

-- End of Section --