

**Appendix III**  
**Administration Building Study**

**APPENDIX III  
DESIGN NARRATIVE FOR THE  
CARLYLE LAKE ADMINISTRATION BUILDING**

DESIGN NARRATIVE FOR THE CARLYLE LAKE ADMINISTRATION BUILDING

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## **DESIGN NARRATIVE FOR THE CARLYLE LAKE ADMINISTRATION BUILDING**

### **PART 1 - GENERAL**

**1.1 Introduction.** Carlyle Lake is a federal flood control, conservation and recreation area, located near the city of Carlyle, Illinois, 50 miles east of St. Louis, Missouri. The facility is administered by the St. Louis District of the Corps of Engineers. Carlyle Lake encompasses 26,000 acres of water surface area and 11,000 acres of public land area. Recreational activities include camping, swimming, boating, fishing, hunting and hiking. The lake, formed by construction of an earthfill dam across the Kaskaskia River, was completed in 1967 at a cost of \$41 million.

**1.2 Description of Existing Administrative Facilities.** Lake administrative functions are currently housed in four separate buildings. The scattered location of administrative personnel has created inefficiencies in operations at the facility, requiring staff and visitors to traverse between buildings in order to coordinate routine activities. The present administration building, constructed in 1962, contains 2780 square feet. A temporary office trailer contains 910 square feet. A building in the center of the maintenance yard, called the Necessary Building, contains 800 square feet, and a portion of an existing maintenance building has been converted to offices containing 760 square feet. Total square footage allocated to administrative functions is 5250 square feet. The present condition of the existing administration facilities may be described as mediocre, at best. The buildings do not comply with current energy conservation and handicapped accessibility standards. The present administration building has two floor levels with a 3'-6" differential. Steps connect the two levels. The trailer office building is raised above grade, with steps up to its floor level. Wall and roof insulation is minimal on all buildings. A detailed description of the current state of the existing lake administration facility is included in a 1995 report (see Appendix III-A). Based on this study, the Carlyle Lake Project is in need of a consolidated, energy efficient, fully accessible administration facility.

### **PART 2 - ANALYSIS OF DESIGN ALTERNATIVES**

**2.1 General.** The design of the new administration facility is intended to consolidate all administrative functions under one roof in an energy efficient, fully accessible environment. Three alternatives have been studied for achieving this goal. One involves rehabbing the existing administration building, with an addition for the balance of the required area. The second alternative involves renting space in the City of Carlyle. The third alternative involves all-new construction at the lakesite. The floor area of all alternatives will exceed the combined floor

area of the existing administration facility. This is due to enlarged toilet/shower facilities conforming to handicapped accessibility guidelines, inclusion of a staff break room, conference room, and kitchen/vending area, inclusion of a copy/mail room, and inclusion of sufficient internal storage space.

**2.2 Rehab/Addition Alternative.** The existing building can provide approximately 2780 square feet of floor area; an addition of approximately 3700 square feet is required to meet programmed space requirements. A floor plan for this alternative was developed and is shown in Appendix III-B. The existing building will be gutted, leaving only bearing walls, floor slabs and roof framing. All interior partitions, ceilings, finishes, plumbing fixtures, mechanical equipment and piping, and electrical wiring, panels and light fixtures, will be removed. All windows will be removed. New windows will be glazed with insulating glass set in aluminum, thermally broken window frames. A new EPDM roof will be installed on tapered rigid insulation (R-30 average). The existing exterior masonry walls will be covered by stud framing filled with batt insulation (R-15), and covered with gypsum board. To provide full accessibility, the lower level will be filled with grade and a new floor slab poured at the same elevation as the upper floor level. The floor at the Mech./Elect. Room will remain at the present lower floor level and be accessed from the exterior at the existing grade. Where openings through existing bearing walls are shown on the plan, the existing lintels over window openings will be raised to provide adequate headroom. All programmed space requirements can be met with the proposed floor plan. A major concern, however, is that the existing bearing walls are of unreinforced masonry construction and do not comply with current seismic criteria. Extensive modifications will be required to bring the existing building up to code compliance. Per a memorandum dated July 9, 1996, a preliminary cost estimate of \$210,000 is projected to accomplish these seismic modifications (see Appendix III-C).

**2.3 Rental Alternative.** This alternative, involving rental of space in the City of Carlyle, was reviewed by the Lake Office and determined to be impractical for their needs. A primary goal for the new facility is to consolidate all administration functions in one area at the lakesite. Placing administrative functions at a remote location in the city of Carlyle, even if consolidated in one structure (assuming such a structure were available and met all of the program requirements), would not provide the strong visible presence at the Lake that the Project Office believes necessary for effective control and administration.

**2.4 All-New Construction Alternative.** Three sites were considered for the all-new construction alternative. A primary requirement for selecting a site is ease of access to the maintenance yard. The first site studied is adjacent to and east of the maintenance yard. This site allows minimal walking

distance to the maintenance facilities, but requires a new visitor parking lot and entry drive, and demolition of the existing visitor lot. The second site is to the north of the existing administration building. This site provides a somewhat longer walking distance to the maintenance yard, but allows use of the existing visitor parking lot for the new facility, and requires minimal new paving. This site is on a knoll, and allows a clear view of the new building from the public roadway. Of all the sites studied, this site requires the least in utility runs and disruptions. The third site studied is located in the grass area between the existing visitor lot and the public roadway. This site provides the most visible location for the new building, but also the greatest walking distance to the maintenance yard. This site also requires a new visitor lot and entry drives. The second site, to the north of the existing administration building, was selected as the best compromise between travel distance, visibility and economy. The selected site is shown in Appendix III-D, Drawing A-1.

Several floor plans were developed for the all-new construction alternative. Early layouts, based on preliminary program requirements, encompassed more than 8000 square feet of floor area, and were estimated to exceed the anticipated project budget. To meet a \$1.0 million total project budget (in 1996 dollars), the design program, and the floor plan, were reduced, and construction detailing simplified. The final scheme has a gross floor area of 6346 square feet (see Appendix III-D, Drawing A-2). Exterior wall construction is brick veneer (public side only) on wood stud framing. The rear, non-public side, is clad with siding. Roof construction is standard fiberglass shingles. Roof framing is conventional manufactured wood trusses (see Appendix III-D, Drawing A-3, for building elevations and section). The intent was to design a "residential" solution in order to encourage participation of local, smaller contractors in the bidding process, thereby controlling costs through increased competition.

**2.5 Conclusion.** Because of the total rehab required of the existing building, and the extensive modifications necessary to comply with current seismic criteria, it is concluded that the rehab/addition alternative will entail considerably more cost than proceeding with all new construction. The rental alternative does not satisfy the primary goal of consolidating all administrative functions in one structure at the lakesite. All-new construction is the recommended alternative for this project.

### **PART 3 - ADMINISTRATION STAFFING**

#### **3.1 Year-Round Employees: 19 Total**

Year-round employees will be provided individual work stations or offices.

### 3.2. Special Program Employees:

SCEPS (Student Career Employment Program):	5 SCEPS
STEPS (Student Training Employment Program):	10 STEPS
Total Special Program Employees =	<u>15 Total</u>

SCEPS employees are employed for a one year tenure and will be provided individual work stations. STEPS employees are employed from April through November and will be stationed primarily out-of-doors; STEPS will not require individual work areas but may share a multi-use work station; STEPS will be provided lockers for the storage of personal items.

3.3 Seasonal Employees (April-November):	6 Rangers
	4 Maintenance
	<u>10 Total Seasonal</u>

Seasonal ranger employees will share one work station. Seasonal maintenance employees will also share one work station. One locker will be provided for each seasonal employee for the storage of personal items.

## PART 4 - ADMINISTRATION FUNCTIONAL REQUIREMENTS

The four primary administration functions within the building are General Administration, Resource Group, Facilities Group, and Interpretation Group.

**4.1 General Administration.** The General Administration Group provides overall management of the Carlyle Lake Project, including oversight of the Resource, Facilities, and Interpretation Groups.

Project Manager: Provide private office with floor to ceiling walls. Office should be near Assistant Project Manager's Office, Conference Room, and Reception/Administrative work areas.

Assistant Project Manager: Provide private office with floor to ceiling walls. Office should be near Project Manager's Office, Conference Room, and Reception/Administrative work areas.

Reception/Administrative Area: Locate near the Copy/Mail Room and as follows:

Procurement Assistant: Provide office workstation. Locate near the Project Managers' offices.

Budget Assistant: Provide office workstation. Locate near the Project Managers' offices.

Reservoir Assistant: Provide office workstation. Locate near the Project Managers' offices and the SCEPS Receptionist. The Reservoir Assistant will greet visitors when the SCEPS Receptionist is absent. The Reservoir Assistant also disburses cash and should be located near the secured area where the safes are placed.

SCEPS Receptionist: Provide work area at the information desk. Locate near the Reservoir Assistant and the Entrance Lobby. The SCEPS Receptionist is responsible for greeting visitors, and performing other tasks as needed.

Safe Closet: Secure room for placement of safes. Locate near the Reservoir Assistant.

Entrance Lobby: Provide seating space for four visitors to wait while their contact is being paged. Provide space for information bulletins and wall displays.

**4.2 Resource Group.** This group manages water and land resources at Carlyle Lake.

Resource Group Supervisor: Provide office workstation; height of office partitions should be higher than Resource Group employees. Locate adjacent to Resource Group employees.

Resource Group Employees:

Year-round Employees: Provide office workstations for 3 permanent employees. Locate near supervisor.

Special Program Employees:

SCEPS employee: Provide office workstation for 1 SCEPS employee. Locate near supervisor.

STEPS employees: Provide multi-use work area for STEPS employees assigned to Resource Group. Locate near supervisor.

**4.3 Facilities Group.** This group manages maintenance and contracting at Carlyle Lake.

Facilities Group Supervisor: Provide office workstation; height of office partitions should be higher than Facilities Group employees. Locate adjacent to Facilities Group employees.

Facilities Group Employees:

Year-round Employees: Provide office workstations for 5 permanent employees. Locate near supervisor.

Special Program Employees:

SCEPS Employee: Provide office workstation for 1 SCEPS employee. Locate near supervisor.

STEPS employees: Provide multi-use work area for STEPS employees assigned to Facilities Group. Locate near supervisor.

Seasonal Maintenance Employees: Provide one workstation for all 4 seasonal maintenance employees assigned to this group. Provide a locker for each seasonal maintenance employee for the storage of personal items.

**4.4 Interpretation Group.** This group manages programs related to public understanding of the Carlyle Lake mission and activities.

Interpretation Group Supervisor: Provide office workstation; height of office partitions should be higher than Interpretation Group employees. Locate adjacent to Interpretation Group employees.

Interpretation Group Employees:

Year-round Employees: Provide office workstations for 3 permanent employees. Locate near supervisor.

SCEPS Employees: Provide office workstations for 2 SCEPS employees. Locate near supervisor.

Seasonal Ranger Employees: Provide one workstation for all 6 seasonal ranger employees assigned to this group. Locate near supervisor. Provide a locker for each seasonal ranger employee for the storage of personal items.

**4.5 Ancillary Room Requirements.**

Conference Room: Size of room should accommodate a conference table with seating for 12 people. Provide floor to ceiling partitions for acoustical privacy. Provide a roll-up projection screen on one wall. A/V equipment will be portable type; neither a separate projection room nor a ceiling mounted video projector will be required. Conference room should be near the Project Managers' Offices, Break Room, and Kitchen/Vending. An operable partition will be placed between the Conference Room and the Break Room to allow creation of a larger meeting space for banquets, award ceremonies and other events. The operable partition should have acoustical sound attenuating capabilities, but does not need to be "sound proof".

Break Room: Provide table seating for 20 people. Locate near the Kitchen/Vending area. An operable partition will be placed between the Conference Room and the Break Room to allow creation of a larger meeting space for banquets, award ceremonies and other events. The operable partition should have acoustical sound attenuating capabilities, but does not need to be "sound proof".

Kitchen/Vending: Provide area with hot/cold running water, sink, microwave, range, dishwasher, ice maker, full size refrigerator, base and wall cabinets, counter space for a coffee maker, and floor space for two vending machines. Kitchen/Vending area should be near the Break Room and Conference Room.

Copy/Mail Room: Provide space for a copy machine, fax machine and a computer network server. The room may also contain a computer printer and equipment for the building security system. Provide table space for sorting mail. Locate the Copy/Mail Room near the Reception/ Administrative Area.

Storage: Provide secure areas for the storage of files, supplies and equipment.

Reference: Shared by and located near the Resource, Facilities and Interpretation Groups. This area may also function as an informal conference room. Provide space for books and other reference materials, files, and a table.

Lockers: Locate adjacent to the employee entrance (rear, or secondary entrance) and near the Toilet/Shower Rooms. Lockers are for storage of employee coats, boots, and personal items. Lockers will be double tier type, 12" wide, 18" deep, and 42" high, set on a 4" high concrete base.

Toilet/Shower Room: Toilet facilities will conform to handicapped accessibility guidelines. The Men's room will be provided one lavatory, one urinal, one water closet, and one shower. The Women's room will be provided one lavatory, two water closets, and one shower.

Janitor: Provide space for janitor sink.

Mechanical/Electrical Room: Provide space for locating mechanical equipment and power panels.

## **PART 5 - BUILDING AREA**

The following net areas were developed through discussions with Lake Office personel, as well as through analysis of similar Corps facilities. The net areas have been reviewed by the SLD Logistics Management Office, and are in accordance with

established square footage allocations for this type facility. A memorandum from LM is included in Appendix III-E.

General Administration:

Project Manager .....	183	sf
Assistant Project Manager .....	141	sf
Procurement Assistant .....	80	sf
Budget Assistant .....	80	sf
Reservoir Assistant .....	80	sf
SCEPS Receptionist .....	80	sf
Safe .....	23	sf
Entrance Lobby .....	294	sf
Subtotal General Administration Net SF .....	961	sf

Resource Group:

Supervisor .....	100	sf
Year-round Employees (3 at 80 sf) .....	240	sf
SCEPS .....	80	sf
STEPS (Multi-Use) .....	80	sf
Subtotal Resource Net SF .....	500	sf

Facilities Group:

Supervisor .....	100	sf
Year-round (5 at 80 sf) .....	400	sf
SCEPS .....	80	sf
STEPS (Multi-Use) .....	80	sf
Seasonal Maintenance (Multi-Use) .....	80	sf
Subtotal Facilities Net SF .....	740	sf

Interpretation Group:

Supervisor .....	100	sf
Year-round (3 at 80 sf) .....	240	sf
SCEPS (2 at 80 sf) .....	160	sf
Seasonal Rangers (Multi-Use) .....	80	sf
Subtotal Interpretation Net SF .....	580	sf

Ancillary Spaces:

Conference Room .....	291	sf
Break Room .....	291	sf
Kitchen/Vending .....	112	sf
Copy/Mail Room .....	181	sf
Storage (Total) .....	322	sf
Reference .....	192	sf

Lockers .....	112 sf
Toilet/Shower Room (2 at 138 sf) .....	276 sf
Janitor .....	7 sf
Mechanical/Electrical Room .....	256 sf
Subtotal Ancillary Spaces Net SF .....	2040 sf
	=====
Subtotal Building Net SF .....	4821 sf
Walls, Chases, Circulation .....	1525 sf
	=====
Total Building Gross SF .....	6346 sf

**PART 6 - DESIGN REQUIREMENTS**

**6.1 Civil.**

6.1.1 Building Site: The proposed building site is to the east of the existing maintenance yard and to the north of the existing administration building. A site survey will be required prior to proceeding into final plans and specifications. A small weather monitoring station is within the building site and will require removal or relocation. The existing administration building has experienced some termite problems; the new site will receive an appropriate chemical treatment for termite prevention.

6.1.2 Disposition of Existing Structures: The existing Administration Building, Trailer Office Building and Necessary Building will be demolished as part of this project. The existing Maintenance/Garage/Office building within the maintenance yard will remain for a future use as determined by the Lake Office; renovation/modification of this building will not be part of this project. Other buildings in the maintenance yard will remain as is. Asbestos abatement will be required before proceeding with building demolition (see paragraph 6.1.9).

6.1.3 Fencing: Sections of chainlink fencing around the maintenance yard have deteriorated and will be replaced. Additional chainlink fencing will be required at the north side of the existing secured parking lot following demolition of the Administration Building.

6.1.4 Grading: The north end of the new building will require fill, and areas of existing building demolition will require fill up to the elevation of existing adjacent grades.

6.1.5 Parking: Provide parking for 10 visitor vehicles and 35 employee vehicles; the number of accessible spaces will be per ADA, UFAS and the Illinois Accessibility Code. Existing parking will be utilized to the greatest extent possible. Parking of

Government vehicles will be in a secure, fenced lot. Per discussions with the Lake Office, the existing fenced lot south of the present administration building is adequate for this purpose. Following demolition of the existing administration building, this secured lot will be expanded to the north, requiring additional pavement and fencing. The area in the maintenance yard where the Necessary Building is removed will be paved. New parking pavement, where required, will be constructed of materials to match the existing adjacent parking lot pavement.

6.1.6 Landscaping: Provide seed, sod, trees and shrubs.

6.1.7 Site Utilities:

6.1.7.1 Water Service: Water service is provided by the City of Carlyle. Per discussions with the Lake Office, the city water line runs to a meter in a manhole east of the existing administration building (between the building and the parking lot). A 3 inch water line runs from this manhole to the existing administration building, entering on the south side. This line should be adequate for domestic service to the new building. However, adequacy for both domestic and fire protection service is a question that will require verification early in the design development phase. The record drawings also show a 1-1/2 inch water line running through the proposed building site to the existing maintenance yard. Relocation of this line will be required. The lake facility has experienced problems with low water pressure in recent years. In an effort to correct the problem, the city water company removed a malfunctioning pump from the system last year. Since removal, water demand at the lake has been unusually low due to flooding, and it is not known at this time if the low pressure problem has been corrected.

6.1.7.2 Sanitary Sewer: Sanitary sewer service is provided by the City of Carlyle. Per record drawing K-C 90/25, a 6 inch sanitary sewer line runs to the existing administration building. The 6 inch line should be adequate for the sanitary sewer requirements of the new building, but will need to be verified during the design development phase. The record drawing also shows a 4 inch sanitary sewer line running through the proposed building site to the existing maintenance yard. Relocation of this line will be required.

6.1.7.3 Electric Service: Electric service to the site is provided by the Clinton County Coop. Power service to the existing administration building is brought in overhead, from the west, to a utility pole near to and northwest of the existing building. Mounted on this pole is the electric meter; the transformer is mounted on the next pole up the line, nearer the trailer office building. The power line enters the building through a weatherhead on the north side of the building. Existing service is 120/240 volts, open-delta, 3-phase, 4-wire,

4-300 MCM cables. This service will be changed to 120/208 volt, delta-grounded wye, 3-phase, 4-wire. The overhead service may be changed to underground from the utility power pole. Power to other existing structures will be distributed underground as before from a main panel in the new building. It is anticipated that present electrical service will be adequate for the needs of the new building; this will be verified during the design development phase.

6.1.7.4 Telephone: Telephone service to the site is provided by Ameritech. The telephone line is brought to the existing administration building underground, from a terminal located near the entrance to the maintenance yard. The line enters the existing administration building on the north side, and runs to a master telephone panel. This panel board serves the phone system for the entire site, with the exception of a dedicated line running to the visitor center. Lightning strikes have caused recurring problems with telephone service at the project site.

6.1.8 Site Archaeology: Per a preliminary review by PD-A, the area surrounding the Carlyle Lake administration building has been previously surveyed for archaeological significance. One potential archaeological site was found approximately 100 meters south of the present administration building. Subsequent testing at this location, however, was negative. Because of construction on and near the proposed building site over the years, it is highly unlikely that intact archaeological deposits remain buried at this location. Construction of the new administration building at the proposed site is not expected to negatively impact significant cultural or historic properties.

6.1.9 Hazardous Materials: Per a review by ED-HQ, an asbestos survey was performed on the buildings at Carlyle Lake in 1988. The results of this survey are as follows:

a. Two pipe joints in the existing Administration Building were found to contain friable asbestos. ED-HQ could find no records indicating subsequent removal of this asbestos. Sampling of these joints will be necessary during the design development phase. If asbestos is found, it will need to be removed by a qualified asbestos abatement contractor prior to building demolition.

b. The Necessary Building has approximately 702 square feet of floor tile containing asbestos. This tile will need to be removed by a qualified asbestos abatement contractor prior to building demolition.

c. ED-HQ could find no records that the existing office trailer had been surveyed. The trailer will need to be surveyed for asbestos during the design development phase. If asbestos is

found, it will need to be removed by a qualified asbestos abatement contractor prior to trailer removal.

## 6.2 Architectural.

### 6.2.1 Building Description:

6.2.1.1 Exterior Materials: To compliment existing structures at the Lake site, the predominant exterior building material will be brick. Other complementary materials may be used.

6.2.1.2 Roof: The roofing material will be standard fiberglass shingles on roofing felts on plywood sheathing on wood roof trusses. Skylights will be provided above the open office area to allow natural light into the center work stations.

6.2.1.3 Framing: Exterior wall framing will be 2 x 6 load bearing studs at 24" on-center. Roof framing will be manufactured wood trusses at 24" on-center (3.5:12 slope). Framing for interior load and non-load bearing walls will be 2 x 4 studs at 24" on-center. Stud framing at walls receiving ceramic tile will be spaced at 16" on-center maximum.

6.2.1.4 Building Envelope: The building envelope should promote energy efficiency. Exterior walls will receive 6" batt insulation (R-21); ceiling insulation will be 8" batt insulation (R-30). Windows will be glazed with 1" insulating glass set in thermally-broken aluminum frames.

6.2.1.5 Acoustical Insulation: Walls around the Project Manager's office, Assistant Project Manager's office, Conference Room, Break Room, and Men and Women's Room will be provided with sound attenuating blanket insulation.

6.2.1.6 Public Entry Doors: Public entry doors will be automatic opening type to enhance handicapped accessibility.

### 6.2.1.7 Finishes:

6.2.1.7.1 Walls: Typical finish for walls will be regular gypsum board, painted. Walls at Entry Lobby will be vinyl wall covering on regular gypsum board. Walls at Toilet Rooms will be ceramic tile on moisture resistant gypsum board. Walls at shower stalls will be ceramic tile on cementitious board.

6.2.1.7.2 Ceilings: Typical finish for ceilings will be regular gypsum board, texture painted. Ceilings at Toilet Rooms (including shower stalls) will be either epoxy painted regular gypsum board or coated cementitious board.

6.2.1.7.3 Floors: Typical floor finish will be vinyl composition tile. Floors at Project Manager's Office and

Assistant Project Manager's Office will be carpeted. Floors at Toilet Rooms (including shower stalls) will be ceramic tile. Floor at Mechanical/Electrical Room will be sealed concrete.

6.2.2 Furniture: Office furniture and equipment (including workstations) are procurement items and cannot be included in the construction package. Built-in furniture, such as the reception counter, will be included.

6.2.3 Flexibility: The floor plan must allow maximum flexibility to accommodate changing staffing requirements within the Resource/Facilities/Interpretation groups.

6.2.4 Codes/Standards: The building design will conform to the current edition of the BOCA Building Code, NFPA 101 Life Safety Code, ADA, UFAS, and the Illinois Accessibility Code. A preliminary building code analysis has been completed (see Appendix III-F).

### 6.3 GeoTechnical.

6.3.1 Foundation Requirements: The proposed site is close to the site of the visitor center constructed in 1993, and data from the visitor center soil borings may be utilized for the design of the administration building wall footings. New soil borings are not required. Based on data from these earlier soil borings, an allowable soil pressure of 1100 psf may be conservatively used for design of the wall footings. This assumes a 3 foot wide wall footing set 3 feet below grade; should the assumed width or depth change, the allowable soil pressure will require adjustment.

### 6.4 Structural.

6.4.1 Foundations: The building foundation will be continuous wall footings at bearing walls and isolated column footings at the columns supporting the roof above the exterior terrace. Based on soil borings taken at the visitor center site in 1993, allowable soil pressure for wall footing design may be conservatively assumed to be 1100 psf.

6.4.2 Framing: Exterior wall framing will be 2 x 6 load bearing studs at 24" on-center. Roof framing will be manufactured wood trusses at 24" on-center. Framing for interior load and non-load bearing walls will be 2 x 4 studs at 24" on-center.

#### 6.4.3 Codes/Standards:

TM 5-809-1 Structural Design Criteria - Loads, 5/92  
TM 5-809-2 Structural Design Criteria for Buildings, 5/92  
TM 5-809-10 Seismic Design for Buildings, 10/92

## 6.5 Mechanical.

6.5.1 Plumbing: Water closets, urinals, lavatories, and electric water coolers will be wall hung type. Valves and faucets will be standard lever type. Mop service sink in janitor closet will be floor set unit, 24" x 24".

6.5.1.1 Plumbing Codes: The plumbing design will conform to the current edition of the National Standard Plumbing Code.

6.5.2 Fire Protection: Preliminary building code analysis indicates that an automatic sprinkler system is not required. However, per discussions with the SLD Safety Office, a fully sprinklered building is highly recommended, and will be incorporated into the building design. As the piping will be within an unheated attic space, a dry pipe sprinkler system will be required. It is not known at this time if sufficient water service is available at the site to accommodate both the automatic fire protection system and domestic water service. This will require investigation early in the design development phase. If available water service is not sufficient for a fully sprinklered building and the cost of a dedicated water source is cost prohibitive, the issue of a fully sprinklered building may need to be revisited.

6.5.2.1 Fire Protection Codes: The fire protection system design will conform to the current edition of applicable NFPA standards.

6.5.3 HVAC: The preferred method of heating and cooling the building is by a ground source system. The new Carylyle Lake visitor center utilizes this system and the Lake Office is pleased with its performance. Other systems may be considered if found to be equally efficient.

6.5.3.1 HVAC Codes: The HVAC system design will conform to the current edition of ASHRAE and the BOCA Mechanical Code.

## 6.6 Electrical.

6.6.1 Power Distribution: For site electrical service, see paragraph 6.1.7.3. Power to other existing structures will be distributed underground as before from a main panel in the new building. Power will be distributed inside the new building at 120/208 volts.

6.6.2 Lighting: Lighting for general illumination inside will be surface-mounted fluorescent fixtures, 2' x 4' and 1' x 4'. Recessed fluorescent can lights or surface mounted track lights will be provided at the Entrance Lobby and at other areas where spotlights are required. Exit lights with battery backup will be provided at all exterior exits. General outdoor lighting will

consist of pole-mounted high pressure sodium fixtures. Building perimeter lighting will be illuminated with high pressure sodium wall packs. Building main entrances will be illuminated with high pressure sodium lights. All illumination levels will be in accordance with CEGS and IES standards.

6.6.3 Computers: A local area computer network will be provided for the building. All of the workstations and each of the offices will be provided with combination telephone/data outlets which will connect back to a local network hub. The hub will provide 56KB data communication back to the district office in St. Louis. A contract for installation of the 56KB line is in progress and will be completed before construction of the new administration building begins.

6.6.4 Communication System: Location of telephone outlets will be coordinated with IM-C and the Lake Office. Wall space will be reserved for a 4' x 8' telephone company backboard.

6.6.5 Fire Alarm System: An addressable fire alarm system will be provided which consists of pull stations near exits and smoke detectors in air handling units and on ceilings to indicate general fire alarm. If a sprinkler system is provided, waterflow switches will also initiate general fire alarm on waterflow. Fire alarm flashing lights and horn/strobes will be located to provide general fire alarm evacuation signals. Fire alarm will be transmitted to a dispatching station over standard telephone lines.

6.6.6 Security: Per discussions with the SLD Security Office, the following requirements should be incorporated into the design of the building:

a. Provide magnetic switches at all exterior doors, with a key switch on/off system enabler located at the primary after-hours staff entry door(s).

b. Provide motion detectors at the following locations: at the south end of the aisle between the Facilities and Resource Groups (locate on the corridor wall, looking north); at the north end of the aisle east of the Interpretation Group (looking south); and above the door into the Assistant Project Manager's Office (looking west down the aisle between the Procurement Assistant and the Reservoir Assistant).

c. Provide glass breakage detectors at the following locations: at the Entry Vestibule; at the Entry Lobby (covering both the north and east glazing); at the Project and Assistant Project Managers' Offices; at the Copy/Mail Room; at the Conference Room; and at the Break Room. The above assumes fixed windows. If operable windows are specified for all or part of the building, motion detectors may be required in lieu of or in

addition to glass breakage detectors in order to address situations where locked windows are pried open without glass breakage, or where windows may be inadvertently left open afterhours.

d. Provide a duress push button alarm at the Reception Counter (connected to a local audio alarm).

e. Provide a door between the Entrance Lobby and the corridor leading to the staff areas. The door will have standard hardware and will be lockable from the lobby side. The door will always be operable from the staff side for emergency egress.

f. The skylights over the Resource Group work area will be glazed with plastic. It is not anticipated that these units will create any special security concerns. In the unlikely event that someone would gain entry through one of the skylights, the work areas below will have motion detector surveillance as noted in paragraph "b" above.

6.6.7 Lightning Protection: Recurring lightning strikes have caused damage to computer and other electrical equipment at the existing administration facility. Investigate the use of an early streamer emission lightning conductor system similar to the "Prevector" series as manufactured by National Lightning Protection Corporation.

6.6.8 Electrical Codes: The electrical design will be in accordance with the latest IEEE, IES, LPI, NEC (NFPA 70), NEMA, NFPA, UL, and other standards, as applicable.

6.6.9 Other: Provide sufficient electrical outlets on the building exterior walls for outdoor maintenance.

## **PART 7 - PRELIMINARY COST ESTIMATE**

### **7.1 General.**

A preliminary cost estimate has been developed by the SLD Cost Engineering Section. The total project cost, in 1996 dollars, is estimated to be \$988,000. This estimate includes construction costs as well as planning, engineering, design and construction management costs. An estimate for the years 1999 through 2003 is provided below. These outyear estimates are based on a year-to-year inflation rate of 3.1% in accordance with EM 1110-2-1304. Appendix III-G includes the Basis of Cost Estimate, the detailed breakdown of the estimate, and Table 5-1 from EM 1110-2-1304. Funding for this project will be from the Carylyle Lake O & M General Funds.

## 7.2 Estimated Project Cost Summary:

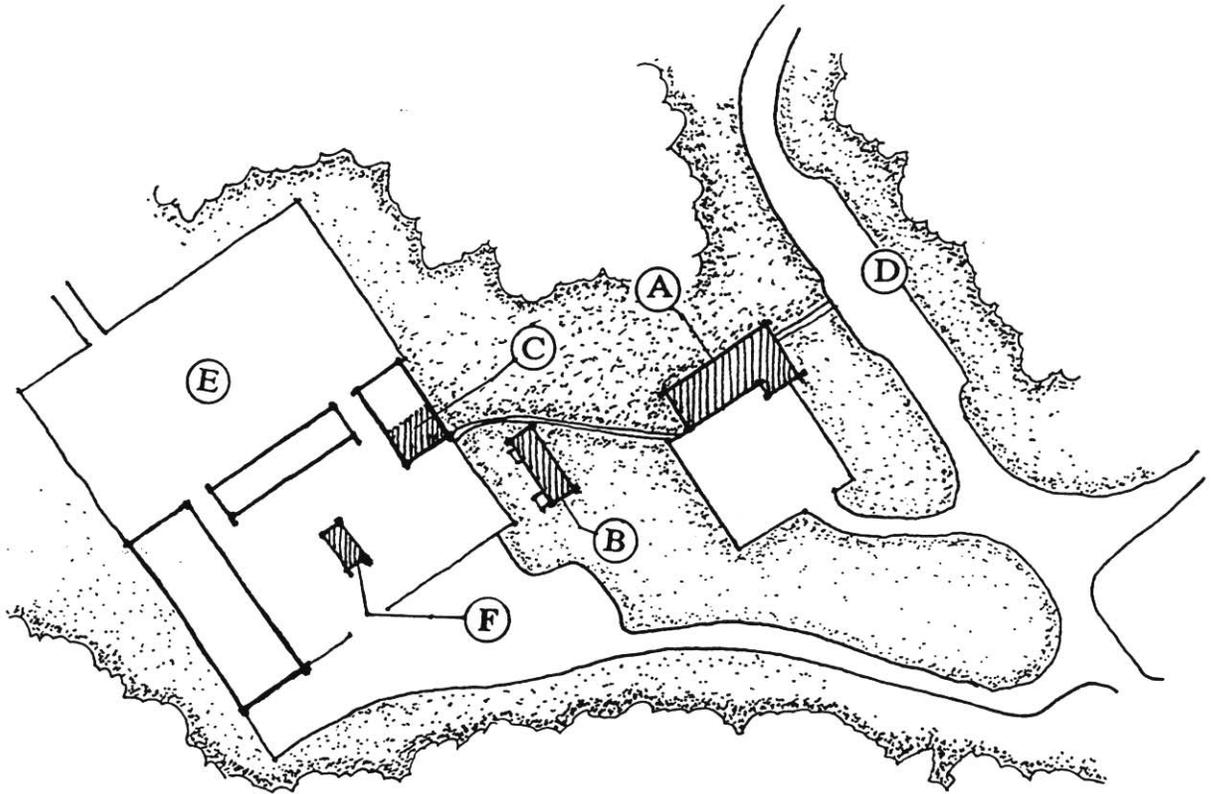
Total 1996 Project Cost Estimate =	\$988,000
Total 1999 Project Cost Estimate = \$988,000 x 1.031 x 1.031 x 1.031 =	\$1,082,762
Total 2000 Project Cost Estimate = \$1,082,762 x 1.031 =	\$1,116,328
Total 2001 Project Cost Estimate = \$1,116,328 x 1.031 =	\$1,150,935
Total 2002 Estimated Project Cost = \$1,150,935 x 1.031 =	\$1,186,614
Total 2003 Estimated Project Cost = \$1,186,614 x 1.031 =	\$1,223,400

## PART 8 - CONCLUSION

The administration facility is critical to effective oversight of the Carlyle Lake project. Consolidating all administration functions within one building will allow the most efficient management of the project, and will be a great improvement over the present, disjointed four building complex. The selected site provides a visible lakesite presence, maintains close proximity to the maintenance yard, and requires minimal new paving and utility runs. The building design provides a relatively compact, straight forward, cost effective solution to the user's program requirements. It is therefore recommended that the proposed design for the new administration building at Carlyle Lake be approved as herein presented.

**APPENDIX III-A**  
**REPORT ON EXISTING ADMINISTRATION FACILITIES**

# CARLYLE ADMINISTRATION BUILDING



## OFFICE FACILITIES



### Legend

- Ⓐ Administration Building
- Ⓑ Trailer
- Ⓒ Maintenance/Garage Building (Partial Office)
- Ⓓ Entrance Road & Parking
- Ⓔ Fenced Yard
- Ⓕ Necessary Building

## CARLYLE ADMINISTRATION BUILDING

Background. The existing office facilities at Carlyle Lake consist of an administration building, a trailer, part of an old maintenance/garage building, and a smaller, old and prefabricated structure referred to as the necessary building. The administration building was constructed in 1962 and its purpose was twofold: First, as the office of the Resident Engineer during the construction of the dam and reservoir (a temporary use) and second, as a permanent administration office building for the project. The building served its original purpose well however, as a permanent administration office for the lake management staff it is inadequate.

The original administration office building is now supplemented by a rehabilitated trailer a portion of an old maintenance/garage building (part of the building has been converted to office space), and the necessary building. These four structures comprise the existing office facilities at Carlyle Lake.

The administration building consists of approximately 1,400 sq. ft. of office space and 1,380 sq. ft. originally designated as motor vehicle storage (garage). The garage area finish floor is approximately 3 feet lower than the floor of the office area and is accessed on the interior by a flight of stairs which joins the two areas. Subsequent to the dam completion the resident engineer vacated the building and it has since been used as the lake management headquarters. The original garage area, of this building, has been modified by removing the overhead doors, filling in the openings, adding a drop ceiling, lighting, electrical convenience outlets, telephones and carpeting.

Existing Condition. The existing office facilities are inadequate as a lake headquarters. Over the years a number of changes have been made to the facilities in an attempt to accommodate the changing functions and responsibilities of the lake management staff. Nevertheless, the complex is still inefficient as the lake headquarters, for the following reasons:

1. Size. The existing administration building is far too small to accommodate the entire administration staff. (19 permanent employees and 25 part time and seasonal employees) Even after modifying the garage area and converting it to office use, all employees cannot be accommodated in one building. As a result, some of the staff are housed in two additional structures, neither of which were initially constructed for the purpose of an office facility. The three structures now comprise the Carlyle Lake Administration Office headquarters. The individual structures and the area available for office use in each is as follows:

Administration building	2,780 sq. ft.
A trailer	910 " "
A portion of a maintenance building	760 " "
Necessary Building	800 " "
<b>TOTAL Administration Space</b>	<b>5,250 " "</b>

2. Inefficiency. Because four structures are used for the administration functions an awkward employee working environment exists at the lake headquarters. For example, a face to face meeting often requires walking to another building. At times this is an annoyance and detracts from efficient office protocol. This condition is particularly noticeable during the cold winter months when staff members must don a hat and coat before attending a meeting, which is being held in a building other than the one they normally work in.

At other times, such as an unannounced and unscheduled public inquiry at the front office area of the administration building, an employee must be summoned from the trailer or maintenance area, to the administration building, for a brief meeting with the inquiring visitor.

3. Inadequate Meeting Space. The original use for the administration building (then a resident engineer's office) called for a large open area adjacent to the main entrance, two enclosed offices, and a men's and women's restroom. At the present time the open area near the entrance is used as a reception and clerical space. The building is without an enclosed conference room and the only available space in this building for group meetings is the original garage area, at the lower level. However, because of a severe shortage of office space and because the area is not needed full time for conference functions, two employee work areas are located in this area. Consequently, when a meeting is held the employees who normally work in the area are interrupted by meeting participants. In some circumstances, the employees leave their desk and temporarily work elsewhere until the meeting has adjourned. At other times they just do the best they can at their desk areas because there are no other unoccupied and available areas to move to. During times of bid openings and meetings between lake managers and contractors, non government visitors use this area. Unfortunately, this space is not accessible because there are steps in the corridor and the restrooms are at the higher level.

4. Accessibility. None of the four structures meet the current ADA (Americans with Disabilities Act) criteria for accessibility. The vestibule and restrooms at the main building are too small for maneuvering when the doors are in the open position and the corridor from the original building to the enclosed garage area has a flight of steps. Although the vestibule at the main entrance could be replaced for a reasonable cost the restrooms and the stairs would require extensive architectural, structural, and plumbing renovation before the building would meet current accessibility criteria. In addition, renovation to accommodate movement and circulation would require more floor area, and if done, would reduce the existing space now needed for office and administration functions.

The floor of the trailer sits approximately 36 inches above the ground line and adjacent sidewalks. Access into the trailer requires climbing steps located just outside each of the two entrance doors at either ends of the trailer. (See photograph) The trailer has one restroom and is designated for unisex use. The width dimension of the restroom

and its door are both 30 inches. For these reasons the trailer is physically incapable of serving disabled users.

A portion of the old maintenance/garage building has been partitioned off to form small shared office space. The building is without running water, restrooms, and normal services for office workers.

The spaces in the necessary building consist of an open area in the front, inaccessible shower stalls and restroom, and a mechanical room. The open space is used as a lunch room and occasionally as a meeting space by lake personnel.

5. Utility Systems. Each structure has its own heating/cooling systems, and electrical systems. A separate system for each structure is inefficient and necessitates a duplication of operational and maintenance time, expense, and a need for different replacement parts for each system. The resources currently being used to keep four administrative structures operational can be more effectively used elsewhere at the lake. The incoming electrical service panel boxes and telephone switchboard for the main administration building are located in the lower level meeting area. This location for electrical and telephone connections is a hazard for office staff and an obstacle for electrical maintenance personnel.

6. Heating/Cooling and Utilities. The main administration building is not energy efficient. It is heated and cooled by an electro-hydraulic boiler system with individual registers under windows. This system does not circulate air and as a result ceiling fans are heavily relied on for air movement. The walls have minimal insulation. The original building was without vestibules at the front and rear entrance points, and the original windows were steel frames with single pane glazing. Over the years attempts have been made to balance the heating and cooling temperatures in this building but to no avail. It is not possible to establish a comfortable temperature and controlled relative humidity level environment in the original administration space and the old garage area simultaneously. Efforts to improve the interior environmental conditions have consisted of adding vestibules to the front and rear entrances, replacing the original steel frame/single pane windows with insulated units, and adding insulation above the ceiling. These measures have reduced the amount of air infiltration but have not made a noticeable effect on the ability to establish and maintain a comfortable interior environment throughout the building.

The trailer is a prefabricated structure with little insulation in the floor, walls and ceiling. Some interior improvements have been made over the years, but because six sides of its perimeter are exposed to the environment it is less than efficient.

The maintenance/garage building office space has recently undergone some interior remodeling. This building was not originally intended to house office workers and the utility service consists of electric for lights and convenience outlets and telephone service only. Heating is fueled with propane. Water and sewer service is not available and workers walk to another building to use the restrooms.

The necessary building has single pane windows and the heating system is fueled by the same propane supply as that used for maintenance/garage structure.

7. Roof and Floor Drains. The roof on the administration building leaks and water enters the office areas through the ceiling tiles and occasionally penetrates the fluorescent light fixtures mounted to the ceiling. The floor drains at the lower level back up during a heavy rain, flooding the floor and damaging the floor covering. The roof has been replaced at least once and patched a few times since installation. Unfortunately, the roof was constructed dead level and water ponds, does not flow positively toward the roof drains, and has leaked through seams in the membrane. When water on the roof does drain, it is due to the siphoning effect occurring after ponding during a heavy downpour. The internal roof drains are connected to the house sewer line and add to the sewer backup at the lower level floor.

8. Windows. Although replacement windows have been installed the staff reports air and water still infiltrate the interior spaces. The joints between the window frames and the wall have been caulked so it possible that water is migrating through the wall, rather than the window, and entering at the window head. The windows are partially operable and worn seals are likely the cause for air infiltration.

9. Termites. Termites have infested the administration building for years. During the spring months they penetrate the concrete floor joints and appear on the front corridor floor. The partitions are constructed of steel studs so some question and concerns exist regarding just what the pests are feeding on. It is possible that wood forms or debris were left under the floor slab from original construction and these serve as an attraction. Nevertheless, in 1992 and 1993 \$250.00 and \$940.00 respectively was spent for termite extermination services.

10 Recommendations. The administration office headquarters at Carlyle Lake, which now consists of four separate structures, should be consolidated into one building. A new building should be administratively and economically efficient, accessible, and designed to be consistent with the aesthetic qualities of the lake area.

## CARLYLE ADMINISTRATION BUILDING



ADMINISTRATION BUILDING - East Side. The vestibule is approximately 8 feet wide by 4 feet deep. When the 3'-0" interior door is in the open position there is only 12 inches of clearance remaining between the end of the door and the outer wall. In addition, the two doors are offset.



ADMINISTRATION BUILDING - South Side. Administration area at the right and original garage to the left. Note change in the ground line. The same elevation change occurs inside the building and the corridor is connected by a stair.

CARLYLE ADMINISTRATION BUILDING

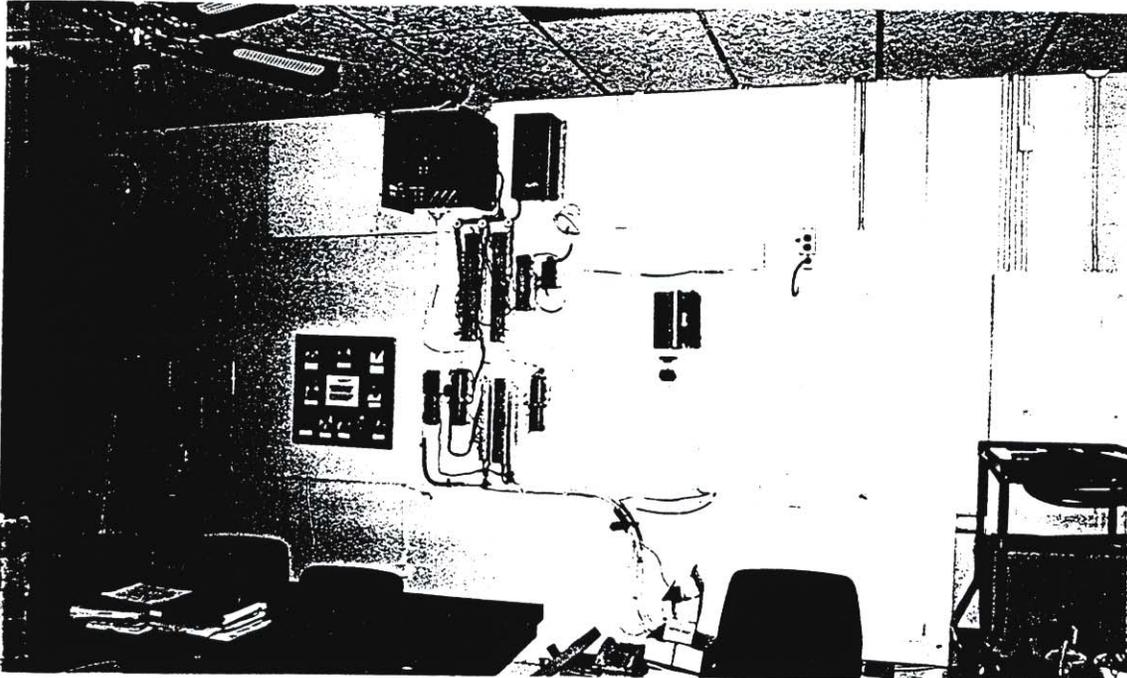


ADMINISTRATION BUILDING - Roof. Note ponding in the right hand corner.



ADMINISTRATION BUILDING - Roof. Loose seams contribute to water penetrating the interior.

## CARLYLE ADMINISTRATION BUILDING



ADMINISTRATION BUILDING - Lower Level Meeting Area. Note the exposed telephone switches and the incoming electrical service panels on the wall behind the table. The meeting room is shared with two employee work areas. Note the ceiling fan for air circulation.



ADMINISTRATION BUILDING - North Side. Window head is a source of water penetration into the building.

## CARLYLE ADMINISTRATION BUILDING

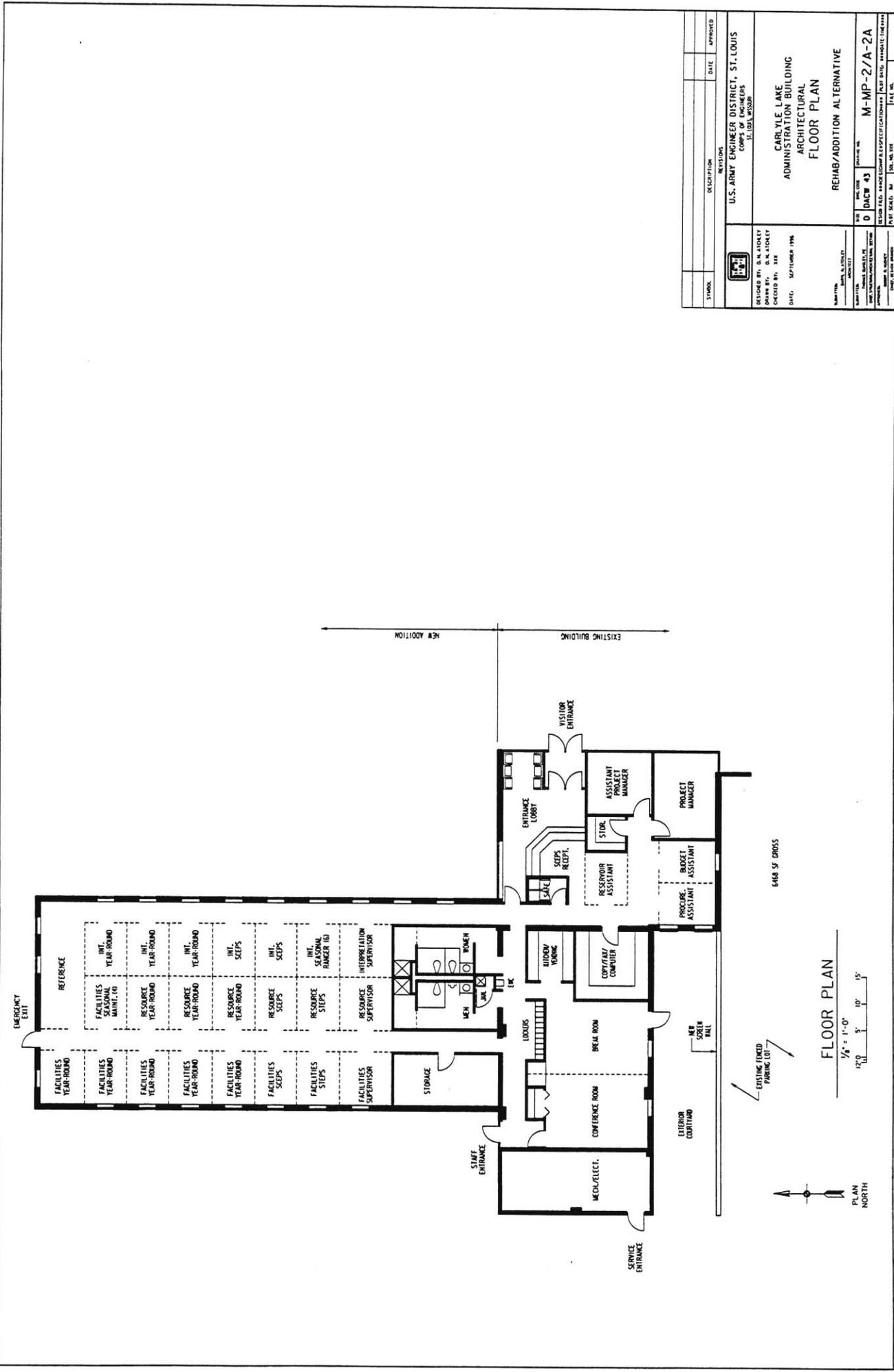


TRAILER - South Side. The floor of the trailer sits approximately 3 feet above the ground sidewalk. The elevated location requires one to climb steps. The unisex restroom inside is inaccessible.



MAINTENANCE/GARAGE BUILDING - Office Area South Side. Overcrowded conditions at the administration headquarters require some office workers to be located in the Southern part of the building. The building does not have running water or toilet facilities.

**APPENDIX III-B  
REHAB/ADDITION ALTERNATIVE**



SYMBOL	DESCRIPTION	DATE	APPROVED

U.S. ARMY ENGINEER DISTRICT, ST. LOUIS CORPS OF ENGINEERS ST. LOUIS, MISSOURI	
PROJECT NO. <b>0 DACEW 43</b>	DRAWING NO. <b>M-MP-2/A-2A</b>
CHECKED BY: <b>SEE</b> DATE: <b>SEPTEMBER 1966</b>	PROJECT TITLE <b>REHAB/ADDITION ALTERNATIVE</b>
DESIGNER <b>ARCHITECT</b>	CONTRACT NO. <b>6468 SF GROSS</b>

FLOOR PLAN

1/8" = 1'-0"  
 0' 1' 2' 3' 4' 5'



EXISTING PAVED PARKING LOT

6468 SF GROSS

EXISTING BUILDING  
 NEW ADDITION

**APPENDIX III-C**  
**MEMORANDUM ON SEISMIC REHABILITATION**

MEMORANDUM FOR RECORD

SUBJECT: Proposed Carlyle Lake Administration Building  
Rehabilitation and Expansion of Existing Building Alternative  
Estimated Cost of Seismic Rehabilitation

1. Reference:

a. "NEHRP Handbook for the Seismic Evaluation of Existing Buildings", FEMA-178, dated June 1992.

b. "Minimum Design Loads for Buildings and Other Structures", ASCE 7-93.

c. "Second Edition, Typical Costs for Seismic Rehabilitation of Existing Buildings, Volume 1 - Summary", FEMA-156, dated December 1994.

2. A preliminary seismic evaluation and derivation of estimated costs of seismic rehabilitation have been completed for the subject project.

3. After review of the existing drawings for the subject building, a preliminary seismic evaluation was conducted using procedures identified in FEMA-178, including quick checks on unreinforced masonry wall shear stresses. In addition, the existing walls were evaluated for out-of-plane loads resulting from wind forces determined in accordance with ASCE 7-93.

4. The results of the preliminary evaluation indicate numerous potential deficiencies including apparent lack of adequate diaphragm chord and collector elements, apparent lack of positive connection between the roof structure and the top of the masonry walls, and apparent overstress of the walls for in-plane seismic and out-of-plane wind forces. Based on the preliminary evaluation results, rehabilitation of the building to resist prescribed seismic and wind loadings is considered likely should the subject alternative be pursued.

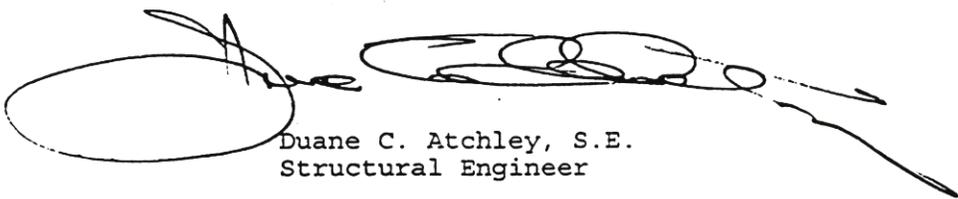
5. Using procedures indicated in FEMA-156, an estimated construction cost for seismic rehabilitation was determined. Costs for rehabilitation for out-of-plane considerations, and design and testing associated with the rehabilitation work were estimated as percentages of the seismic construction cost. The estimated costs for the above items, adjusted for anticipated construction in FY98 are as follows.

- a. Seismic Rehabilitation Construction Cost - \$140,000
- b. Out-of-Plane Considerations @ 20% - \$ 28,000
- c. Design and Testing @ 30% - \$ 42,000

TOTAL ESTIMATED SEISMIC REHABILITATION COST - \$210,000

6. The above costs only cover work to retrofit the existing structural system for seismic and out-of-plane wind considerations. These costs are in addition to appropriate costs for non-seismic related rehabilitation, such as removal and replacement of architectural finishes, and replacement of mechanical and electrical systems.

7. POC for this action is the undersigned at x8222.



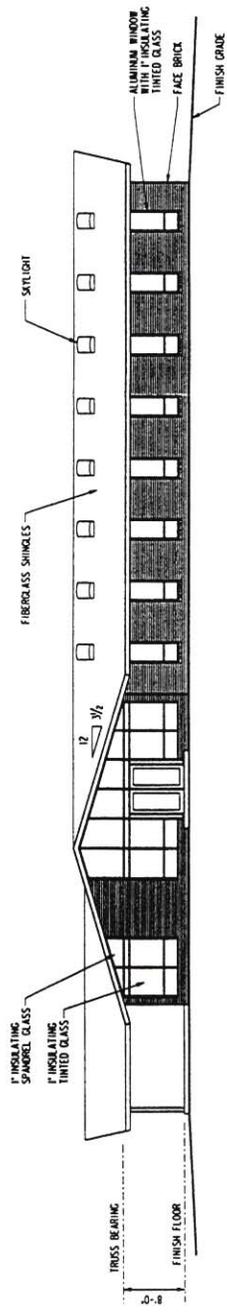
Duane C. Atchley, S.E.  
Structural Engineer

CF: ED-DA (D.N. Atchley)

**APPENDIX III-D**  
**ALL-NEW CONSTRUCTION ALTERNATIVE**

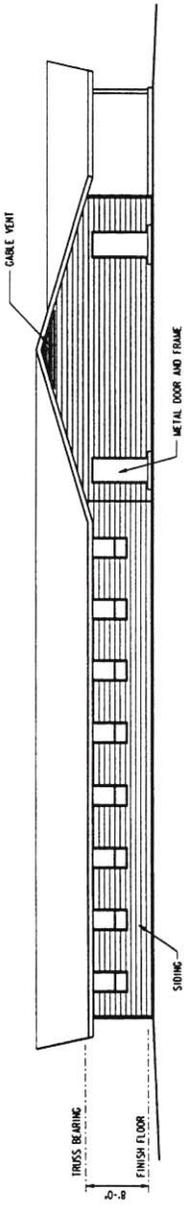






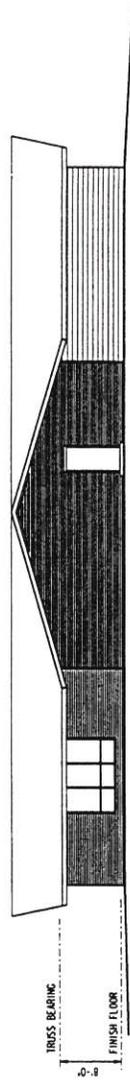
**EAST ELEVATION**

1/8" = 1'-0"



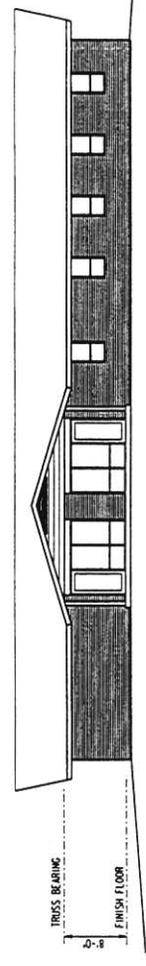
**WEST ELEVATION**

1/8" = 1'-0"



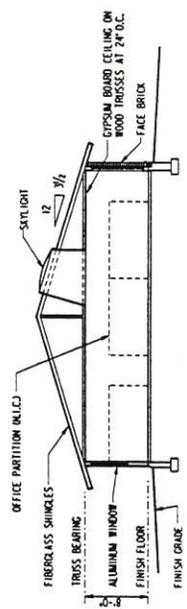
**NORTH ELEVATION**

1/8" = 1'-0"



**SOUTH ELEVATION**

1/8" = 1'-0"



**BUILDING SECTION A-A**

1/8" = 1'-0"

SYMBOL	DESCRIPTION	REVISIONS	DATE	APPROVED
<b>U.S. ARMY ENGINEER DISTRICT, ST. LOUIS</b> CORPS OF ENGINEERS ST. LOUIS, MISSOURI				
<b>CARLYLE LAKE</b> ADMINISTRATION BUILDING ARCHITECTURAL ELEVATIONS/SECTIONS ALL-NEW CONSTRUCTION ALTERNATIVE				
PREPARED BY: D. N. ATCOLEY CHECKED BY: D. N. ATCOLEY DATE: SEPTEMBER 1956		DRAWING NO. <b>M-MP-2/A-3</b> SHEET NO. <b>43</b>		
CHECK FILED: ARCHITECTURE & CONSTRUCTION DIVISION, DISTRICT ENGINEER'S OFFICE, ST. LOUIS, MISSOURI				
DRAWING SCALE: AS SHOWN				

**APPENDIX III-E**  
**MEMORANDUM FROM LOGISTICS MANAGEMENT**

## SPACE ANALYSIS FOR CARLYLE LAKE ADMINISTRATION BUILDING

It is the determination of the Logistics Management Office that the Carlyle Lake Administration Building meets the standards established and set by AR 405-70 and the FPMR 41.

The space was classified in accordance with CFR, FPMR 41 and AR 405-70, and the Policy Letter for Logistics Management from HQUSACE, date January 1996.

Administrative Space requirements are the sum of required office space, storage space and special space.

Total Space =	6346 sf
Allowable Exemptions =	1816 sf
Net Space =	<u>4530 sf</u>

Allowable Average Yearly Personnel = 30

Net Space/Average Yearly Personnel =  $4530/30 = 151$

**APPENDIX III-F  
PRELIMINARY BUILDING CODE ANALYSIS**



NOTES: N.R. — Not required  
N.A. — Not applicable

## ADMINISTRATION (Chapter 1)

Complete construction documents  
(107.5, 107.6, 107.7)

Signed/sealed construction documents  
(107.7, 114.1)

## BUILDING PLANNING (Chapters 3, 4, 5, 6)

### USE OR OCCUPANCY CLASSIFICATION (302.0-313.0)

B (Business) Single Use Group

STORAGE ROOMS

FURNACE ROOMS (IF FUEL FIRED)  
Specific occupancy areas (302.1.1)

Mixed Use Groups

Accessory areas (302.1.2)

### GENERAL BUILDING LIMITATIONS (Chapters 5 & 6)

Building height 1 ST. / 13'  
(CONST. TYPE SB)  
Story, feet (502.0)

Allowable building height 2 ST. / 30'  
Story, feet (Table 503, 504.0)  
OK!

#### AREA MODIFICATIONS TO TABLE 503

% of Allowable tabular area (Table 503)	<u>100%</u>
% Reduction for height (Table 506.4)	<u>- 0 %</u>
% Increase for open perimeter (506.2)	<u>+ 0 %</u>
% Increase for automatic sprinklers (506.3)	<u>+ 0 %</u>
Total percentage factor	<u>= 100 %</u>
Conversion factor <u>1.0</u>	<u>(Total percentage factor/100%)</u>

Open perimeter (506.2)	North	East	South	West
Open perim. _____ ft.	Perimeter _____ ft.			
% Open perimeter = $\frac{\text{Open perim.}}{\text{Perim.}} \times 100\%$				
% Tab. area increase = $2 \times (\% \text{ Open perim.} - 25\%)$ (506.2)				

Determine whether the building is a single occupancy building or a mixed occupancy building. If a single occupancy or mixed occupancy with nonseparated use groups (313.1.1), fill in Case I worksheet (below). If a mixed occupancy with separated use groups (313.1.2), fill in Case II worksheet (next page).

#### CASE I — SINGLE USE OR MIXED USE NONSEPARATED USE GROUPS

Enter Table 503 with the single use group or most restrictive use group of the mixed use classification and find the minimum construction classification providing a tabular area equal to or greater than the adjusted tabular area.

Actual floor area <u>6340</u> ft. <sup>2</sup>	Minimum type of construction required <u>SB</u> (313.1.1, 503.1)
Adjusted tabular area* <u>6340</u> ft. <sup>2</sup>	Type of construction assumed for review <u>SB</u> (602.2, 602.3)

\* Actual floor area/conversion factor

OTHER SPECIAL USE AND OCCUPANCY

_____	Underground structures (405.0)	_____	Stages and platforms (412.0)
_____	Open parking structures (406.0)	_____	Special amusement buildings (413.0)
_____	Private garages (407.0)	_____	HPM facilities (416.0)
_____	Public garages (408.0)	_____	Hazardous materials (417.0)
_____	Use Group I-2 (409.0)	_____	Use Groups H-1, H-2, H-3 and H-4 (418.0)
_____	Use Group I-3 (410.0)	_____	Swimming pools (421.0)

**FIRE PROTECTION (Chapters 6, 7, 8, 9)**

**FIRERESISTANT MATERIALS AND CONSTRUCTION (Chapter 7 and Table 602)**

Note: Entry in  indicates required rating in hours. NC indicates noncombustible construction.

EXTERIOR WALLS (705.0, 715.5)

ASSUME > 10' SEPARATION

	North	East	South	West
Fire separation distance	>10'	>10'	>10'	>10'
Loadbearing	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0
Nonloadbearing	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0

- NA Exterior opening protectives (705.3, 706.0)
- NA Parapet walls (705.6)

FIRE SEPARATION ASSEMBLIES

- NA Exit enclosures (1014.11, 709.0)
- NA Other shafts (709.0, 710.0)
- NA Mixed use and fire area separations (313.1.2)
- 1 STORAGE 50-100 SF Other separation assemblies (Table 302.1.1) (Table 602)

FIRE PARTITIONS

- 0 IF < 30 OCCUPANCIES Exit access corridors (1011.4)
- NA Tenant separations (711.0)
- NA Dwelling unit separations (711.0)

OTHER FIRERESISTANT CONSTRUCTION

- NA Fire and party walls (707.0 and Table 707.1)
- NA Smoke barriers (712.0)
- \_\_\_\_\_ Nonloadbearing partitions (Table 602)
- \_\_\_\_\_ Interior loadbearing walls, columns, girders, trusses (715.0)
- \_\_\_\_\_ Structural wall supports (715.0)
- \_\_\_\_\_ Floor construction (713.0, 1006.3.1)
- \_\_\_\_\_ Roof construction (713.0, 714.0)
- \_\_\_\_\_ Opening protectives (716.0, 717.0, 718.0, 719.0)
- ATTIC DRAFTSTOPPING REQUIRED FOR ATTIC > 3000 SF (IF NO SPRINKLER) Firestopping/draftstopping (720.0)
- EXPOSED INSUL FLAME SPREAD < 25 Thermal and sound-insulating materials (722.0)

INTERIOR FINISHES

- 7450 Smoke development (803.3.2)
- CORRIDORS: CLASS II (26-75) Flame spread (803.4)
- OTHER: CLASS III (76-200)
- Application (804.0)

STANDPIPE SYSTEMS

- NR Building height (914.2.1)
- NR Building area (914.2.2)
- \_\_\_\_\_ Malls (914.2.3)
- \_\_\_\_\_ Stages (412.7)
- \_\_\_\_\_ Approved system (914.3, 914.3.1)
- \_\_\_\_\_ Piping design (914.4)
- \_\_\_\_\_ Water supply (914.5)
- \_\_\_\_\_ Control valves (914.6)
- \_\_\_\_\_ Hose connection (914.7)

FIRE DEPARTMENT CONNECTIONS

- REVIEW Required (915.1)
- \_\_\_\_\_ Connections (915.2)

YARD HYDRANTS

- REVIEW Fire hydrants (916.1)

FIRE PROTECTIVE SIGNALING SYSTEMS

- \_\_\_\_\_ Approval (917.3)
- \_\_\_\_\_ Assembly (A-4), Educational (E) (917.4.1)
- NR Business (B)(917.4.2)
- \_\_\_\_\_ High-hazard (H) (917.4.3)
- \_\_\_\_\_ Institutional (I) (917.4.4)
- \_\_\_\_\_ Residential (R-1) (917.4.5)
- \_\_\_\_\_ Residential (R-2) (917.4.6)
- \_\_\_\_\_ Location/details (917.5)
- \_\_\_\_\_ Power supply/wiring (917.6, 917.7)
- \_\_\_\_\_ Alarm-indicating appliances (917.8)
- \_\_\_\_\_ Voice/alarm signaling system (917.9)

AUTOMATIC FIRE DETECTION SYSTEMS

- NR Approval (918.3)
- \_\_\_\_\_ Institutional (I) (918.4.1, 918.4.2, 918.4.3)
- \_\_\_\_\_ Residential (R-1) (918.4.4)
- \_\_\_\_\_ Sprinklered buildings exception (918.5)
- \_\_\_\_\_ Zones (918.6)

SINGLE- AND MULTIPLE-STATION SMOKE DETECTORS

- \_\_\_\_\_ Residential (R-1) (919.3.1)
- \_\_\_\_\_ Residential (R-2, R-3) (919.3.2)
- \_\_\_\_\_ Institutional (I-1) (919.3.3)
- \_\_\_\_\_ Interconnection (919.4)
- \_\_\_\_\_ Battery backup (919.5)

FIRE EXTINGUISHERS

- REVIEW Approval (920.1)
- \_\_\_\_\_ Required (920.2)

SMOKE CONTROL SYSTEMS

- REVIEW Passive system (921.2.1)
- \_\_\_\_\_ Mechanical system (921.2.2)
- \_\_\_\_\_ Activation (921.4)
- \_\_\_\_\_ Standby power (921.5)

SMOKE AND HEAT VENTS

- NR Size and spacing (922.2)

SUPERVISION

- REQ'D FOR AUTOMATIC SPRINKLER SYSTEMS. Fire suppression systems (923.1)
- \_\_\_\_\_ Fire protective signaling systems (923.2)

# OCCUPANT NEEDS (Chapters 10, 11, 12)

1-6

2-6

4-6

## MEANS OF EGRESS (Chapter 10)

### OCCUPANT LOAD (1008.0 and Table 1008.1.2)

Location	Floor Area	Sq. ft./person (Table 1008.1.2)	Occt. load (1008.1.2)	Other occt. loads (1008.1.1, 1008.1.3, 1008.1.4, 1008.1.6)	Total
TOTAL	6346	100	64		64
CONF.	291	15	20		19
PREMISE	291	15	20	20	20
OPEN OFF	2912	100	29		29

General limitations (1005.0)	REVIEW
Types and location of egress (1006.0)	
Exit access travel distance (1006.5 and Table 1006.5)	200' 250' (w/ SPRINKLER)
Accessible means of egress (1007.0)	REVIEW
Emergency escape (1010.4)	NA
Exit access corridors (1011.0)	48" min. width with occupant load > 50 36" min. width with occupant load < 50
Aisles and accessways (1012.0)	NA
Grandstands (1013.0)	NA
Interior stairways (1014.1 - 1014.11)	NA
Exterior stairways (1014.1 - 1014.10, 1014.12)	NA
Smokeproof enclosures (1015.0)	NA

### CAPACITY OF EGRESS COMPONENT (1009.0 and Table 1009.2)

#### Egress width (inch/occupant)

Location	Stairways	Doors/ramps corridors
TOTAL	NA	0.2
CONF.		0.2
PREMISE		0.2
OPEN OFF		0.2

Ramps (1016.0)	REVIEW
Means of egress doorways (1017.0)	32" min. width
Revolving doors (1018.0)	NA
Horizontal exits (1019.0)	NA
Level of exit discharge passageway (1020.0)	NA
Guards (1021.0)	NA
Handrails (1022.0)	NA

### NUMBER OF EXITS (1010.0)

Location	Required	Shown
TOTAL	2	6 ✓
CONF.	1 / 75'	2 < 75' ✓
PREMISE	1 / 75'	2 ✓
OPEN OFF	1 / 75'	3 ✓

Exit signs and lights (1023.0)	REVIEW
Means of egress lighting (1024.0)	REVIEW
Access to roof (1027.0)	NA

## ACCESSIBILITY (Chapter 11)

<u>✓</u>	Required (1103.0)	<u>✓</u>	Accessible entrances (1106.0)
<u>✓</u>	Accessible route (1104.0)	<u>✓</u>	Special use groups (1107.0)
<u>✓</u>	Parking facilities (1105.0)	<u>✓</u>	Features and facilities (1108.0)

## INTERIOR ENVIRONMENT (Chapter 12)

	Room dimensions (1204.0)		Air-borne noise (STC) (1214.2)
<u>✓</u>	Roof spaces (1210.1) <small>VERTICATE (HORIZONTAL OR VERT.)</small>	<u>      </u>	Structure-borne sound (IIC) (1214.3)
<u>NA</u>	Crawl spaces (1210.2)	<u>      </u>	Ratproofing (1215.0)

*Handwritten notes:*  
 7'-6" CUB HT HABITABLES  
 7'-0" " " CORRIDORS  
 7'-0" MIN WIDTH HABITABLES

## BUILDING ENVELOPE (Chapters 14, 15)

### EXTERIOR WALL COVERINGS (Chapter 14)

	Wall sidings and veneers (1404.0, 1405.0)		Combustible material restrictions (1406.0)
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### ROOFS AND ROOF STRUCTURES (Chapter 15)

	Roof coverings (1505.0, 1506.0, 1507.0)		Roof structures (1510.0)
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*Handwritten notes:*  
 NON-CLASSIFIED ROOF COVERING OK

## STRUCTURAL SYSTEMS (Chapters 16, 17, 18)

### STRUCTURAL LOADS (Chapter 16)

<p>DESIGN LOADS ON CONSTRUCTION DOCUMENTS (1603.1)</p> <p><u>      </u> Uniformly distributed floor live loads (1603.2, 1606.0)</p> <p><u>      </u> Live load reduction (1603.2, 1608.0)</p> <p><u>      </u> Roof live loads (1603.3, 1609.0)</p>	<p>Roof snow loads (1603.4, 1610.0)</p> <p><u>      </u> Ground snow load, <math>P_g</math> (1603.4, 1610.3)</p> <p><u>      </u> If <math>P_g &gt; 10</math> psf, flat-roof snow load, <math>P_f</math> (1603.4, 1610.4)</p> <p><u>      </u> If <math>P_g &gt; 10</math> psf, snow exposure factor, <math>C_e</math> (1603.4, Table 1610.4)</p> <p><u>      </u> If <math>P_g &gt; 10</math> psf, snow load importance factor, <math>I</math> (1603.4, Table 1611.5)</p>
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**APPENDIX III-G  
PRELIMINARY COST ESTIMATE**

BASIS OF COST ESTIMATE  
CARLYLE LAKE ADMINISTRATION BUILDING

01. GENERAL.

The design of the new administration facility is intended to consolidate all administrative functions under one roof, in an energy efficient, fully accessible environment. The final scheme has a gross floor area of 6346 square feet. Wall construction is brick veneer on wood stud framing. The back side will be siding. Roof construction is standard fiberglass shingles. The intent was to design a "residential" solution in order to encourage participation of local and smaller contractors in the bidding process. This project is assumed to be constructed in one contract. The unit price cost estimate was based on the current design with quantity take-offs, and recent bid abstracts for similar federal building projects in the St. Louis district area. An appropriate contingency was applied to the construction cost based on the level of design. The Price Level for this estimate is October 1996.

02. RELIABILITY OF DESIGNS, QUANTITIES, AND UNIT PRICES.

The cost of the administration building is based on a preliminary design of floor plan and sketches to construct a new replacement facility. The quantities were developed in house by the building architect based on the floor plans.

03. DISCUSSION OF SENSITIVE ITEMS.

The activity that may contribute significantly to the sensitivity of the cost estimate is associated with the site work activity. This item has been developed as a sum job item with no supporting quantities. The cost shown is based on a similar building at a lake project.

a. Further foundation investigation will be necessary prior to plans and specifications to ensure footings are placed on suitable material. Some borrow material may be needed to provide a level footprint for the new admin building.

b. The fire protection water supply system requires further evaluation during the plans and specifications phase.

04. VARIABLE CONTINGENCIES.

The cost estimate for this administration building project includes an average overall contingency on the construction items of 25 percent. The contingency used for this project was based on the districts previous experience on preliminary designs of buildings at lake projects.



\_\_\_\_\_  
Ronald E. Rauh  
Acting Chief, Cost Engineering Branch

Project: CARLYLE LAKE, ADMINISTRATION BUILDING  
CARLYLE, ILLINOIS

ITEM	Description	Quantity	Unit	Unit Price	Amount
1.	Mobilization and Demobilization	SUM	JOB		\$47,000
2.	Site Work	SUM	JOB		100,000
3.	Building Concrete	185	CY	300.00	55,500
4.	Brick Veneer	1,747	SF	9.00	15,723
5.	Plywood Sheathing - 1/2"	14,192	SF	.95	13,482
6.	Felt Building Paper - 15 #	12,983	SF	.10	1,298
7.	Cedar Eave Board - 1"x8"	500	LF	3.00	1,500
8.	Cedar Trim - 1"x3"	500	LF	1.50	750
9.	Soffit Vent - 3" wide	500	LF	2.50	1,250
10.	Gable End Louver	3	EACH	30.00	90
11.	Wood Beam - 6"x16"	50	Lin Ft	16.00	800
12.	Wood Truss - 40 ft span	98	EACH	240.00	23,520
13.	Wood Truss - 26 ft span	15	EACH	200.00	3,000
14.	Studs at 24" O.C., 2"x6"	1,465	LF	2.50	3,663
15.	Studs at 24" O.C., 2"x4"	1,920	LF	2.05	3,936
16.	Reception Counter	1	each	2,500.00	2,500
17.	Insulation - 8" Batt	6,346	SF	.80	5,077
18.	Insulation - 6" Batt	2,927	SF	.60	1,756
19.	Insulation - 3 1/2" Batt	1,224	SF	.50	612
20.	Insulation - 2" Rigid Perimeter x 48"	409	SF	1.00	409
21.	Fiberglass Shingles	8,400	SF	4.50	37,800
22.	Cedar Siding	1,060	SF	10.00	10,600
23.	Skylight - 2'x8'	8	EACH	500.00	4,000
24.	HM Doors and Frames, Galvanized - 3'x7'	3	EACH	240.00	720
25.	Wood Doors and Frames, 3'x7', Interior	12	EACH	130.00	1,560
26.	Aluminum Doors and Frames, Entry, 3'x7'	6	EACH	1,100.00	6,600
27.	Aluminum Windows	16	EACH	410.00	6,560
28.	Glazing, 1" Insul, Tinted	926	SF	17.00	15,742

Project: CARLYLE LAKE, ADMINISTRATION BUILDING  
CARLYLE, ILLINOIS

ITEM	Description	Quantity	Unit	Unit Price	Amount
29.	Gypsum Board	14,900	SF	1.00	14,900
30.	Ceramic Tile	900	SF	5.00	4,500
31.	Resilient Flooring	5,500	SF	1.75	9,625
32.	Carpet	326	SF	3.50	1,141
33.	Painting	13,640	SF	.50	6,820
34.	Vinyl Wallcovering	570	SF	1.80	1,026
35.	Marker Board	1	EACH	250.00	250
36.	Toilet Partitions	3	EACH	650.00	1,950
37.	Flagpole - 30 ft high	1	EACH	1,900.00	1,900
38.	Storage Lockers	36	EACH	125.00	4,500
39.	Fire Extinguisher Cabinet	6	EACH	350.00	2,100
40.	Operable Partition	208	SF	25.00	5,200
41.	Toilet Accessories	SUM	JOB		8,000
42.	Projection Screen	1	EACH	1,200.00	1,200
43.	Unit Kitchen	1	EACH	5,000.00	5,000
44.	Window Mini-Blinds	17	EACH	200.00	3,400
45.	Window Curtains	5	EACH	100.00	500
46.	Recessed Floor Mat	49	SF	15.00	735
47.	Plumbing	6,350	SF	5.00	31,750
48.	Fire Protection	6,350	SF	3.00	19,050
49.	HVAC	6,350	SF	12.00	76,200
50.	Electrical	6,350	SF	9.00	57,150
	<b>Subtotal:</b>				<b>\$622,345</b>
	<b>Contingencies: 25%</b>				<b>155,586</b>
	<b>Total Construction Cost:</b>				<b>\$777,932</b>
	<b>Planning, Engineering and Design: 15%</b>				<b>116,690</b>
	<b>Construction Management: 12%</b>				<b>93,352</b>
	<b>TOTAL PROJECT COST:</b>				<b>\$988,000</b>

TABLE 5-1  
CIVIL WORKS CONSTRUCTION COST by FEATURE CODE (YEARLY)  
1967 = 100.00  
Jan 95

Sheet 3 of 3

CODE OF PERMANENT FEATURES	P R O J E C T E D												
	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
02 RELOCATIONS	457.35	470.61	484.73	499.75	515.25	531.22	547.69	564.66	582.17	600.22	618.82	638.01	
03 RESERVOIRS	478.16	492.03	506.79	522.50	538.70	555.40	572.61	590.37	608.67	627.54	646.99	667.05	
04 DAMS	438.49	451.21	464.74	479.15	494.00	509.32	525.10	541.38	558.17	575.47	593.31	611.70	
05 LOCKS	435.29	447.91	461.35	475.65	490.39	505.60	521.27	537.43	554.09	571.27	588.97	607.23	
06 FISH & WILDLIFE FACILITIES	433.64	446.22	459.61	473.85	488.54	503.69	519.30	535.40	552.00	569.11	586.75	604.94	
07 POWER PLANT	431.83	444.36	457.69	471.88	486.50	501.59	517.13	533.17	549.69	566.73	584.30	602.42	
08 ROADS, RAILROADS & BRIDGES	457.35	470.61	484.73	499.75	515.25	531.22	547.69	564.66	582.17	600.22	618.82	638.01	
09 CHANNELS & CANALS	460.26	473.61	487.82	502.94	518.53	534.61	551.18	568.27	585.88	604.05	622.77	642.08	
10 BREAKWATER & SEAWALLS	467.95	481.52	495.96	511.34	527.19	543.53	560.38	577.75	595.66	614.13	633.17	652.80	
11 LEVEES & FLOODWALLS	454.95	468.14	482.19	497.13	512.55	528.43	544.82	561.71	579.12	597.07	615.58	634.66	
12 NAVIGATION PORTS & HARBORS	420.96	433.17	446.16	459.99	474.25	488.96	504.11	519.74	535.85	552.46	569.59	587.25	
13 PUMPING PLANT	433.17	445.73	459.11	473.34	488.01	503.14	518.74	534.82	551.40	568.49	586.11	604.28	
14 RECREATION FACILITIES	433.17	445.73	459.11	473.34	488.01	503.14	518.74	534.82	551.40	568.49	586.11	604.28	
FLOODWAY CONTROL & DIVERSION													
15 STRUCTURE	433.64	446.22	459.61	473.85	488.54	503.69	519.30	535.40	552.00	569.11	586.75	604.94	
16 BANK STABILIZATION	434.39	446.99	460.40	474.67	489.39	504.56	520.20	536.32	552.95	570.09	587.76	605.98	
17 BEACH REPLENISHMENT	461.42	474.81	489.05	504.21	519.84	535.96	552.57	569.70	587.36	605.57	624.34	643.70	
18 CULTURAL RESOURCE PRESERVATION	433.17	445.73	459.11	473.34	488.01	503.14	518.74	534.82	551.40	568.49	586.11	604.28	
19 BUILDINGS, GROUNDS & UTILITIES	433.17	445.73	459.11	473.34	488.01	503.14	518.74	534.82	551.40	568.49	586.11	604.28	
20 PERMANENT OPERATING EQUIPMENT	433.17	445.73	459.11	473.34	488.01	503.14	518.74	534.82	551.40	568.49	586.11	604.28	

COMPOSITE INDEX  
(WEIGHTED AVERAGE)

442.80 455.64 469.31 483.85 498.85 514.32 530.26 546.70 563.65 581.12 599.14 617.71

NOTE: 1) FY 94, 4TH QTR IS PROJECTED.  
2) OMB FACTORS ARE USED FOR PROJECTION.