

AF PAMPHLET 88-55



Facility Design

**DESIGN CRITERIA FOR RELIGIOUS
FACILITIES**



28 FEBRUARY 1991

D E P A R T M E N T O F T H E A I R F O R C E

Executive Summary

Religious facilities are very significant to the Air Force community. They are the spiritual well-spring for thousands of worshipping Air Force families.

Special attention is required in the planning, programming, and design of each facility to ensure that the final product is an architecturally-excellent structure that conveys a sense of welcome and spirituality to its users regardless of their faith. This design guide has been developed to aid in accomplishing this objective.

It is important to remember that high quality religious facility projects occur when senior installation and congregation leaders, chaplains, and architects-engineers team-up to define their collective requirements and standards. Quality is the fulfillment of these requirements and standards.

Through a committed team effort we can provide facilities which will nurture and enhance the spiritual well-being of Air Force personnel throughout the world.

Facility Design

DESIGN CRITERIA FOR RELIGIOUS FACILITIES

This pamphlet outlines standards for renovating and building new religious facilities. Renovation projects should provide the same architectural and program congruency as new projects. All designs must respond to diverse liturgical requirements and architectural themes. This pamphlet is to be used by major command deputy chiefs of staff for engineering and services, base civil engineers (BCE), command chaplains, installation staff chaplains (ISC), chiefs of chapel support activities (CCSA) and other involved personnel, and consultant architects and engineers involved in building facilities in support of the Air Force religious program. It will help all participants understand religious facilities requirements and criteria so they can effectively participate in the project development process.

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Chapter 1

OVERVIEW AND APPLICATION OF THIS PUBLICATION

Section A—Purpose of the Publication

1-1. Pamphlet Scope and Use. This pamphlet provides the basic criteria to evaluate, plan, program, and design Air Force religious facilities. It presents guidance for developing these facilities to conform to local program operations and requirements.

a. This document is not intended to provide all the information needed to identify project requirements or to prepare project designs. Use it with other Air Force and Department of Defense documents. Obtain additional information on unique program and design requirements for each project at the installation level. This pamphlet:

(1) Provides data and criteria needed at each stage of project development for religious facilities at Air Force bases in the continental United States and overseas.

(2) Refers to five types of facilities: chapels, chapel activities centers, chapel centers, hospital chapels, and rectories.

(3) Applies to all types of projects, new construction, major and minor renovation, and self-help projects.

(4) Provides criteria for determining program requirements, site evaluation and planning, overall facility design, and design of specific spaces.

b. The base civil engineer appoints a project manager for all military construction (MILCON) projects approved and funded by Congress. One of the first tasks is to develop a project book which is required for all design and construction projects. The project book defines the design program and includes functional requirements, design criteria, and cost information. Chapters 2 and 3 provide information required for project book tabs. Additional information required for project book tabs should include any unique local requirements concerning building program, design criteria, and technical systems. See AFR 89-1 for preparation instructions.

c. Chapter 2 provides information required for preparing DD Form 1391, FY 19__ Military Construction Project Data, which initiates project development. This information includes program area requirements and overall build-

ing size, site evaluation criteria, and special factors to be included in cost estimates.

d. Site selection generally is part of the comprehensive planning process, completed before preparing DD Form 1391 for an individual project. Site selection decisions should be reviewed and revised, however, based on the specific program developed in the DD Form 1391 phase. Chapter 2, section D, Site Evaluation, describes important issues for site selection of religious facilities.

e. Architects typically submit design drawings and data in stages beginning with concepts, followed by early and regular preliminaries, and then final working drawings. Refer to chapters 2, 3, and 4 for guidance during the design phase (concepts, early preliminaries). Concept designs should conform to overall project design considerations identified in chapters 2 and 3. For guidance on technical requirements, see chapters 3 and 4. Chapter 5 contains illustrative designs that provide examples of facilities that meet the program and design requirements of this pamphlet.

f. Paragraphs 2-9, Accommodating Multi-faith Use, and 4-4, Religious Requirements, discuss the program implications of multifaith use and strategies for incorporating the requirements of all faith groups. Paragraphs 3-7, Exterior Architectural Character, and 3-8, Interior Design Character, discuss the design implications of multifaith use. Paragraph 3-10, Operations and Maintenance, and chapter 3, section C, Building Systems, discuss issues affecting the building operations.

g. For projects overseas, consult host-nation agreements and standards. Designers of projects on overseas bases must adhere to either the US or host-nation standard, whichever is higher.

Section B—Description of Facility Use

1-2. Overview of General Functions. Religious facilities play an important role on Air Force bases in the United States and overseas. They provide spaces for community worship, individual meditation, religious education, and pastoral counseling. Air Force personnel and their families from all faith groups can find,

through these facilities, spiritual support, interpersonal relationships, and guidance.

1-3. Religious Activities. Important life-cycle events—particularly weddings—are held here. Holy day services and activities are important focal events for base populations who are far from both their homes and their extended families. All these must be celebrated in spaces whose character implies the reverence, peace, and comfort of religious worship. The special character of military religious facilities centers on their multifaith use and religious neutrality in design, as well as flexibility in programming. The worship spaces must be appropriate for the use of all faith groups. Liturgical furnishings specific to individual faith groups should be movable; architectural form, images, and permanent ornamentation must be acceptable to all users.

1-4. Religious Support Activities. The building must also accommodate other uses. These include religious education, administration, study, and counseling. The building is also used by the various other community activities that center on religious associations: choirs, charitable activities, interpersonal and expression groups, etc. These facilities must function well for all users: for worship in various, but always appropriate, settings; for counseling in comfort and privacy; for teaching of children and adults in well designed classrooms; and for administration of all these functions in a building which allows for ease of operation and maintenance. Additionally, the complex mix of uses and users requires that the building functions easily and smoothly. Control of systems, such as light and sound, is particularly important in worship. Adequate storage assures that transitions from one use to another, or from one group to another, can be managed without program disruptions.

Section C—References

1-5. Related Publications and Reference Material:

a. Publications:

- (1) AFM 86-2, Standard Facility Requirements
- (2) AFR 86-4, Base Comprehensive Planning
- (3) AFP 86-7, Land Use Planning

(4) AFP 86-10, Landscape Planning and Design

(5) AFM 88-9, Chapter 1, Electric Power Supply and Distribution

(6) AFM 88-9, Chapter 2, Electrical Design, Interior Electrical Systems

(7) AFM 88-9, Chapter 3, Lighting and Static Electricity Protection

(8) AFM 88-15, Air Force Design Manual, Criteria and Standards for Air Force Construction

(9) AFM 88-29, Engineering Weather Data

(10) AFP 88-40, Sign Standards

(11) AFP 88-41, Interior Design

(12) AFR 89-1, Design and Construction Management

(13) AFR 125-37, The Installation and Resources Protection Program

(14) AFR 265-1, The Chaplain Service

(15) AFR 265-2, Religious Facilities, Funds, and Materiel

(16) AFR 265-3, Digital and Electronic Organs

b. Reference Material:

(1) Annual Air Force Pricing Guide — For copies, contact HQ USAF/LEEDM, Wash DC 20330.

(2) ASHRAE (American Society of Heating Refrigeration & Air Conditioning Engineers) Standard 62, Ventilation for Acceptable Indoor Air Quality — For copies, contact ASHRAE, 1791 Tullie Circle NE, Atlanta GA 30329.

(3) Base Comprehensive Planning Bulletins (Handbooks) — For copies, contact HQ USAF/LEEDX, Bolling AFB DC 20332.

- Transportation Planning
- AICUZ Handbook
- Architectural Compatibility
- Planning Airbases for Combat Effectiveness
- Utility Systems Planning
- Fire Protection Planning
- Long Range Facility Development Planning/Short Range Capital Improvement Program
- BCP Approach and Process
- BCP Databases, Information Sources
- Environmental Protection Planning
- Communications Systems Planning
- Quality of Life Programs
- Passive Solar Energy Planning

(4) Engineering Technical Letters (ETL)—For copies of ETLs, see AFR 8-7.

- ETL 83-1, Design of Control Systems for HVAC
- ETL 87-5, Utility Meters in New and Renovated Facilities
- ETL 87-9, Prewiring
- ETL 88-10, Prewired Workstations Guide Specification

(5) Military Traffic Management Command (MTMC) Report TE 78-7a-17, Parking Requirements of Military Chapels (dtd April 1979)

- For copies, contact Military Traffic Management Command, Transportation Engineering Agency, PO Box 6276, Newport News VA 23606, Attn: MTTE-SEH.

(6) National Fire Protection Association (NFPA) Publications

- For copies, contact NFPA, 1 Batterymarch Place, PO Box 9101, Quincy MA 02269-9101.
- NFPA 70, National Electric Code
- NFPA 78, Lighting Protection Code
- NFPA 101, Life Safety Code

(7) Passive Solar Handbook — For copies, contact HQ USAF/LEEDE, Bolling AFB DC 20332.

(8) Uniform Federal Accessibility Standards — For copies, contact Naval Publications and Forms Center, 5801 Tabor Ave, Philadelphia PA 19120.

Chapter 2

AIR FORCE RELIGIOUS FACILITY PROGRAMS

Section A—Religious Functions

2-1. Activity Categories. Space in Air Force religious facilities support various types of activities. Although the specific program for any facility may vary, based on facility type and base needs, Air Force religious facility programs include functions from the following categories:

a. **Worship:** Daily, weekly, holiday, and holy day services; life-cycle events; music, prayer, meditation, and other forms of community and individual religious liturgy.

b. **Counseling:** Individual and group counseling and other meetings with chaplains.

c. **Administration:** Staff activities, including overall facility operations and management.

d. **Community:** Expressional, social, and community activities, often including food and drink.

e. **Religious Education:** Child, youth, and adult value and religious instruction classes, daily and weekly.

f. **Support:** Circulation for all users; toilets, storage, maintenance, and mechanical systems.

g. **Residential:** Housing needs for an individual chaplain and his or her family, if required

Section B—Facility Categories

2-2. Facility Types. The five types of religious facilities that the Air Force may build are:

- a. Chapel.
- b. Chapel Activities Center.
- c. Chapel Center.
- d. Hospital Chapel.
- e. Rectory.

2-3. Facility Definitions. A **chapel** will include worship spaces and those spaces related to serving the spiritual needs of the religious community—including counseling functions. A **chapel activities center** consists of the functions relating to religious education and community activities. A **chapel center** combines functions of a chapel and a chapel activities center. **Hospital chapel** functions include worship and counseling. A **rectory** is a residence for a

chaplain with areas for conducting counseling and customary social functions associated with counseling ministry. Rectories are presently authorized only at the US Air Force Academy. Figures 2-1, 2-2, and 2-3 indicate the functional spaces within the various types of religious facilities.

2-4. Support Functions Planning. Table 2-1 indicates the spaces normally associated with each function and type of facility. Consideration of separate and shared support needs for chapels and chapel activities centers is critical to program planning for any religious facility. When planning and designing support areas for a chapel, consider the long-range possibility of expanding that facility to a chapel center. See paragraph 2-5 for additional discussion of this issue.

Section C—Space Program

2-5. Planning Considerations:

a. When developing the facility space program, consider:

(1) Existing base religious facilities and their adequacies and inadequacies for current and future needs.

(2) The potential for retaining and renovating existing facilities or the need for additions or new construction projects.

(3) The current and projected user populations to be served by the proposed facility.

b. When developing the program for a new facility, consider existing and future spaces. This is particularly important in planning for facilities that will eventually be part of a chapel center since the development of a chapel center is often a phased process. Often, the Air Force will first build a chapel and later add a chapel activities center to complete the chapel center. While chapels and chapel activities centers have different programs, both require similar support spaces (for example, toilets, general storage, maintenance, and mechanical and electrical rooms). The program for a chapel should consider the support needs of a possible chapel activities center in the future. Likewise, the program for a chapel activities center must consider the support facilities already in place in an existing chapel. When support areas for both of

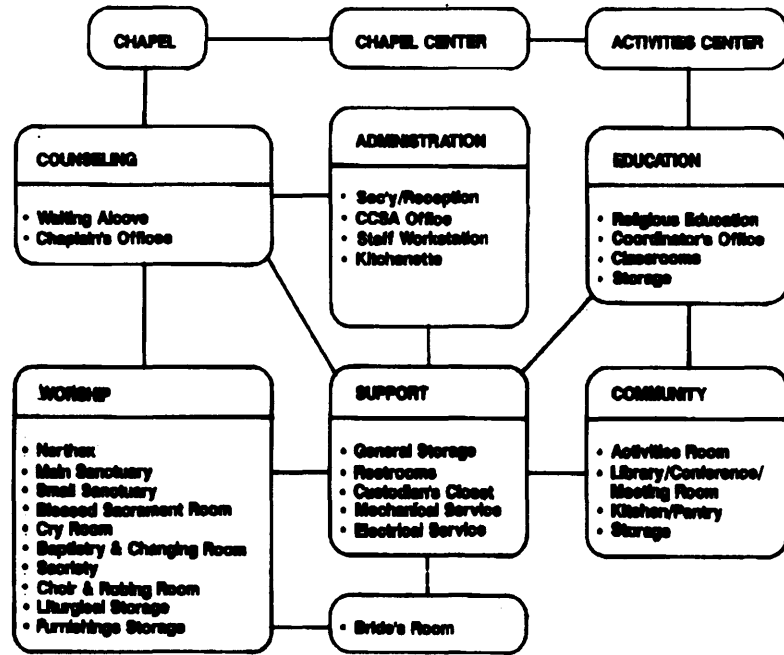


Figure 2-1 Religious Facilities Concept.

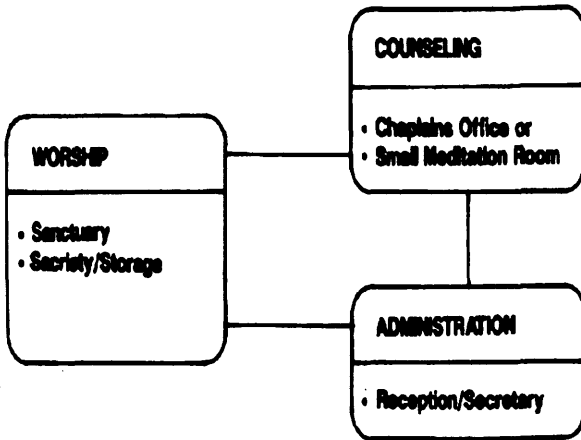


Figure 2-2. Hospital Chapel Concept.

these facilities can be shared, the resulting efficiency of use will increase the amount of allowable space available for religious and counseling activities and programs.

c. In planning hospital chapels, base the area allocated on the total number of beds in the hospital. Accommodate all program requirements, including worship spaces, the chaplain's office,

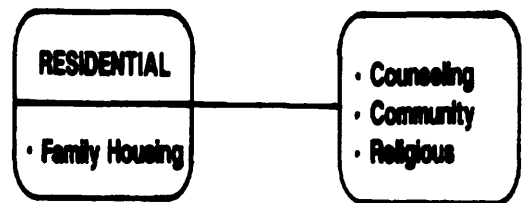


Figure 2-3. Rectory Concept.

and administrative spaces, where needed, within this allowable area unless a decision is made locally to assign additional hospital space for the chapel functions. Clarify the actual space required and available for any hospital chapel during its planning and programming phases. Space for a hospital chapel is specifically assigned to a medical facility.

Table 2-1. Spaces Associated With Facility Types.

| | CHAPEL | CHAPEL ACTIVITIES CENTER | CHAPEL CENTER | HOSPITAL CHAPEL |
|----------------------------|--------|--------------------------|---------------|-----------------|
| WORSHIP | | | | |
| Sanctuary | ● | | ● | ● |
| Small Sanctuary | ● | | ● | |
| Narthex | ● | | ● | |
| Secretory | ● | | ● | |
| Blessed Sacrament Room | ● | | ● | |
| Baptistry | ● | | ● | |
| Baptistry Changing Rooms | ● | | ● | |
| Cry Room | ● | | ● | |
| Choir Robing Room | ● | | ● | |
| Storage (Furnishings) | ● | | ● | |
| Storage (Liturgical Items) | ● | | ● | ● |
| COUNSELING | | | | |
| Chaplain's Offices | ● | | ● | ● |
| Waiting Area | ● | | ● | |
| Meditation Room | | | | ● |
| ADMINISTRATION | | | | |
| Reception | ● | | ● | |
| CCSA Office | ● | | ● | |
| Staff Work Spaces | ● | | ● | |
| Kitchenette | ● | | | |
| COMMUNITY | | | | |
| Activities Room | | ● | ● | |
| Kitchen/Pantry | | ● | ● | |
| Library/Conference/Meeting | | ● | ● | |
| Storage (Activities Room) | | ● | ● | |
| RELIGIOUS EDUCATION | | | | |
| Classrooms | | ● | ● | |
| Office | | ● | ● | |
| Storage | | ● | ● | |
| SUPPORT | | | | |
| Toilets | ● | ● | ● | ● |
| Bride's Room | ● | | ● | |
| General Storage | ● | | ● | |
| Custodial | ● | | ● | |
| Mechanical Room | ● | ● | ● | |
| Electrical Room | ● | ● | ● | |

WHEN BUILT AS AN ADDITION TO A CHAPEL,
THE CHAPEL ACTIVITIES CENTER WILL NOT HAVE
SEPARATE SUPPORT SPACES

PROVIDE EITHER CHAPLAIN OFFICE OR MEDITATION ROOM
FOR HOSPITAL CHAPEL

2-6. Standard Facility Requirements.

See AFM 86-2 for space allowances for the following:

- a. Chapel: category code 730-771.
- b. Chapel Activities Center: category code 730-772.
- c. Chapel Center: category code 730-773.
- d. Hospital Chapel: category code 730-774.
- e. Rectory: category code 730-775.

2-7. Recommended Spaces and Sizes. Tables 2-2, 2-3, 2-4, 2-5, and 2-6 show recommended areas (net square feet) for chapels, chapel activities centers, chapel centers, hospital chapels, and rectories. The tables for chapels, chapel activities centers, and chapel centers each show areas for three different sized facilities: large (seating 400 people in a main sanctuary); medium (seating 300 people in a main sanctuary—the most common size); and small (seating 200 people in a main sanctuary). These tables list all spaces that may be included in the five types of religious facilities to support base programs. The tables do not provide definite space programs but serve as a guide to determine functional area requirements recommended for the given-sized facilities. Installation staff chaplains (ISC) and base civil engineers (BCE) must determine which spaces are needed to support the base programs and must make adjustments accordingly. Modify the set of spaces and sizes, as appropriate, to fit individual project needs within the criteria established in this pamphlet. The total areas listed in tables 2-2 through 2-6 in some cases may exceed the allowable square footage listed in AFM 86-2.

2-8. Options. Chapter 4 includes criteria for all possible spaces that might be included in an Air Force religious facility. For each project, however, programmers must assess the specific needs of the base where the facility will be built. How these spaces are affected and the impact of the base's character on the program are described in the space criteria for those affected spaces. For example, outerwear storage is an important concern for the narthex concept and design in the northern tier (cold climates) and in the tropics (wet climates), but is less significant elsewhere. A chapel at a training base which has many young families requires a cry room. On other bases, the cry room may be omitted

and its space allocated to other uses. See chapter 4 for discussion of options.

2-9. Accommodating Multifaith Use:

a. An important part of the religious facilities program is its multifaith character. Although the general functions of all faith groups are similar (worship, counseling, community, and religious education), the sensitive accommodation of the specific liturgical requirements of all worshipers is crucial to the success of an Air Force religious facility. In addition to the various Christian groups, including Eastern Orthodox, Protestant, and Roman Catholic faiths, design space for the other religions including Judaism, Islam, and Buddhism (see chapter 4 for specific facility requirements that pertain to individual faiths).

b. Because the large sanctuary space may be inappropriately scaled for the smaller services of minority faith groups as well as for services such as daily Mass and small weddings, the program includes a small sanctuary. The size of this small worship area is proportional to the size of the larger worship area. Therefore, the small sanctuary associated with a 400-seat sanctuary will accommodate 100 persons; that associated with a 300-seat sanctuary will accommodate 75 persons; and that associated with a 200-seat sanctuary will accommodate 40 persons.

c. Paragraphs 3-7, Exterior Architectural Character, and 3-8, Interior Design Character, describe in detail the symbols and design elements that contribute to a spiritual sense of place while respecting the religious values of all users.

Section D—Site Evaluation**2-10. Location of Religious Facilities:**

a. Religious facilities should be located in areas:

(1) That increase their accessibility, provide space for adequate parking, and that are visible to both passing automobile and pedestrian traffic. Ensure that locations conform to the Long-Range Facilities Development Plan Component of the Base Comprehensive Plan.

(2) Near base community centers or base housing. When available land is scarce near community centers, sites near base residential or dormitory areas should be considered. Siting in areas other than these is to be discouraged

Table 2-2. Chapel Area Allocations.

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|---------------------------------|---------------------|---------------------|--------------------|
| WORSHIP | | | |
| Sanctuary | 5,200 ¹ | 3,600 ¹ | 2,200 ² |
| Small Sanctuary | 1,200 ³ | 900 ⁴ | 400 ⁵ |
| Narthex ⁶ | 1,040 | 740 | 440 |
| Sacristy ⁷ | 300 | 270 | 200 |
| Blessed Sacrament Room | 250 | 250 | 150 |
| Baptistry | 100 | 100 | 100 |
| Baptistry Changing Rooms | 225 | 225 | 225 |
| Cry Room | 200 | 200 | 150 |
| Choir Robing Room | 225 | 225 | 160 |
| Storage (Furnishings) | 200 | 200 | 150 |
| Storage (Liturgical Items) | 125 | 125 | 120 |
| Mikvah ⁸ | — | — | — |
| SUBTOTALS | 9,065 | 6,835 | 4,295 |
| COUNSELING | | | |
| Chaplains' Offices ⁹ | 1,110 (6 Offices) | 740 (4 Offices) | 555 (3 Offices) |
| Waiting Area | <u>75</u> | <u>60</u> | <u>50</u> |
| SUBTOTALS | 1,185 | 800 | 605 |
| ADMINISTRATION | | | |
| Reception | 90 | 90 | 90 |
| CCSA Office | 80 | 80 | — |
| Staff Work Spaces ¹⁰ | 300 | 240 | 180 |
| Kitchenette | <u>60</u> | <u>60</u> | <u>60</u> |
| SUBTOTALS | 530 | 470 | 330 |
| SUPPORT | | | |
| Toilets | 400 | 350 | 250 |
| Bride's Room | 80 | 80 | 80 |
| General Storage | 350 | 300 | 200 |
| Custodial | 50 | 40 | 30 |
| Mechanical Room ¹¹ | (400) | (300) | (200) |
| Electrical Room ¹¹ | <u>(50)</u> | <u>(50)</u> | <u>(50)</u> |
| SUBTOTALS | 880 | 770 | 620 |
| TOTAL NET AREAS | 11,660 | 8,875 | 5,850 |
| CIRCULATION & WALLS | <u>1,749</u> | <u>1,331</u> | <u>852</u> |
| TOTAL GROSS AREAS | 13,409 | 10,206 | 6,702 |

NOTES:

- ¹ 13 SF/seat
- ² 11 SF/seat
- ³ 100 seats
- ⁴ 75 seats
- ⁵ 40 seats
- ⁶ 20% of net area of Sanctuary
- ⁷ 150 SF base figure, plus 25 SF per Chaplain
- ⁸ If a Mikvah is required, allocate 100 SF and subtract that from other space area allocations.
- ⁹ 185 SF each
- ¹⁰ 60 SF each
- ¹¹ Mechanical and Electrical not included in Totals.

Table 2-3. Chapel Activities Center Area Allocations.

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|--------------------------------|--------------------|--------------------|--------------------|
| COMMUNITY | | | |
| Activities Room ¹ | 1,820 | 1,285 | 1025 |
| Kitchen/Pantry | 200 | 175 | 150 |
| Library/Conference/Meeting | 150 | 150 | 150 |
| Storage (Activities Room) | <u>225</u> | <u>200</u> | <u>200</u> |
| SUBTOTALS | 2,395 | 1,810 | 1,525 |
| RELIGIOUS EDUCATION | | | |
| Classrooms ² | 1,575 (7 Classrms) | 1,350 (6 Classrms) | 1,125 (5 Classrms) |
| Office | 120 | 120 | 120 |
| Storage | <u>150</u> | <u>125</u> | <u>125</u> |
| SUBTOTALS | 1,845 | 1,595 | 1,370 |
| SUPPORT³ | | | |
| Toilets | 250 | 200 | 180 |
| Custodial | 20 | 20 | 20 |
| Mechanical Room ⁴ | (150) | (125) | (100) |
| Electrical Room ⁴ | <u>(25)</u> | <u>(25)</u> | <u>(25)</u> |
| SUBTOTALS | 270 | 220 | 200 |
| TOTAL NET AREAS | 4,510 | 3,625 | 3,095 |
| CIRCULATION & WALLS | <u>677</u> | <u>544</u> | <u>464</u> |
| TOTAL GROSS AREAS | 5,187 | 4,169 | 3,559 |

NOTES:

¹ 40% of Sanctuary. It is assumed that these spaces would be dividable for classroom use as needed in program (See Chapter 4 for discussion).

² 225 SF each.

³ This Table assumes the CAC to be an expansion of the Chapel. If CAC is built separately from a Chapel, allocate additional space to all Support functions and subtract those areas from Religious Education and Community allocations.

⁴ Not included in Totals.

unless there are exceptional circumstances. Alternatively, the religious facility may have to be housed in a multistory structure.

(3) That do not require extensive grading or long utility runs.

(4) That consider the overall base mission and anticipated changes to the base mission. Changes in the base mission can affect the number of personnel and dependents on a base and residential patterns of base personnel. Changes also may limit the land available for religious facilities. Where personnel are dispersed off base or are scattered on many different parts of the base, a more centralized religious facility can help to create a greater sense of community.

b. Religious facilities should not be located in areas:

- (1) That are secluded or isolated.
- (2) With excessive amounts of noise, odor, smoke, dust, and industrial pollution. Do not site religious facilities near these areas:
 - (a) Aircraft runways.
 - (b) Flight lines.
 - (c) Maintenance areas.
 - (d) Railroads.
 - (e) Security areas.
 - (f) Areas where explosives are used or stored.
 - (g) Other hazardous zones.

Table 2-4. Chapel Center Area Allocations.

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|--------------------------------|----------------------|----------------------|----------------------|
| WORSHIP | | | |
| Sanctuary | 5,200 | 3,600 | 2,200 |
| Small Sanctuary | 1,200 | 900 | 400 |
| Narthex | 1,040 | 740 | 440 |
| Sacristy | 300 | 270 | 200 |
| Blessed Sacrament Room | 250 | 250 | 150 |
| Baptistry | 100 | 100 | 100 |
| Baptistry Changing Rooms | 225 | 225 | 200 |
| Cry Room | 200 | 200 | 150 |
| Choir Robing Room | 225 | 225 | 160 |
| Storage for Small Sanctuary | 200 | 200 | 150 |
| Storage (Liturgical Items) | 125 | 125 | 120 |
| Mikvah | -- | -- | -- |
| SUBTOTALS | 9,065 | 6,835 | 4,295 |
| COUNSELING | | | |
| Chaplains' Offices | 1,110 (8 Offices) | 740 (4 Offices) | 555 (3 Offices) |
| Waiting Area | <u>75</u> | <u>60</u> | <u>50</u> |
| SUBTOTALS | 1,185 | 800 | 605 |
| ADMINISTRATION | | | |
| Reception | 90 | 90 | 90 |
| CCSA Office | 80 | 80 | -- |
| Staff Work Spaces | <u>300</u> | <u>240</u> | <u>180</u> |
| SUBTOTALS | 470 | 410 | 270 |
| COMMUNITY | | | |
| Activities Room | 1,820 | 1,285 | 1,025 |
| Kitchen/Pantry | 200 | 175 | 150 |
| Library/Conference/Meeting | 150 | 150 | 150 |
| Storage (Activities Room) | <u>225</u> | <u>200</u> | <u>200</u> |
| SUBTOTALS | 2,395 | 1,810 | 1,520 |
| RELIGIOUS EDUCATION | | | |
| Classrooms | 1,575 (7 Classrooms) | 1,350 (6 Classrooms) | 1,125 (5 Classrooms) |
| Office | 120 | 120 | 120 |
| Storage | <u>150</u> | <u>125</u> | <u>125</u> |
| SUBTOTALS | 1,845 | 1,595 | 1,370 |
| SUPPORT | | | |
| Toilets | 650 | 550 | 425 |
| Bride's Room | 80 | 80 | 80 |
| General Storage | 350 | 350 | 300 |
| Custodial | 50 | 40 | 30 |
| Mechanical Room ¹ | (550) | (425) | (300) |
| Electrical Room ¹ | <u>(75)</u> | <u>(75)</u> | <u>(75)</u> |
| SUBTOTALS | 1,130 | 1,020 | 835 |
| TOTAL NET AREAS | 16,090 | 12,470 | 8,895 |
| CIRCULATION & WALLS | <u>2,414</u> | <u>1,871</u> | <u>1,319</u> |
| TOTAL GROSS AREAS | 18,504 | 14,341 | 10,214 |

¹ Not included in Totals.

NOTE: Refer to footnotes for Tables 2-2 and 2-3.

Table 2-5. Hospital Chapel Area Allocations.

| | Base Hospital (Under 100 Beds)³ | Regional Hospital (100-199 Beds)³ | Medical Center (200+ Beds)³ |
|---|---|---|---|
| WORSHIP | | | |
| Sanctuary ¹ | 288 (18 Seats) | 576 (36 Seats) | 864 (54 Seats) |
| Handicapped Seating ² | 50 (2 Seats) | 100 (4 Seats) | 150 (6 Seats) |
| Altar | 100 | 100 | 150 |
| Sacristy/Storage | <u>100</u> | <u>150</u> | <u>150</u> |
| SUBTOTALS | 538 | 926 | 1,314 |
| COUNSELING | | | |
| Chaplains' Office or Small Meditation Room | <u>120</u> | <u>120</u> | <u>120</u> |
| SUBTOTALS | 120 | 120 | 120 |
| ADMINISTRATION | | | |
| Reception/Secretary | <u>--</u> | <u>--</u> | <u>120</u> |
| SUBTOTALS | -- | -- | 120 |
| TOTAL NET AREAS | 658 | 1,046 | 1,554 |

NOTES:¹ 16 SF/seat; 1 seat/5 beds; 20 seat minimum² 10% fixed seats; 25 SF/seat³ For hospitals which vary greatly from these sizes refer to DOD Medical Space Planning Criteria.

Table 2-6. Rectory Area Allocations.

| <u>RECTORY</u> | |
|---|----------------------|
| RESIDENTIAL | |
| Family Housing ¹ | 1,200-1,550 |
| COUNSELING, COMMUNITY, AND RELIGIOUS EDUCATION | |
| | 1,200-1,600 |
| SUPPORT | <u>50</u> |
| TOTAL NET AREA | 2,450 - 3,200 |

NOTE:¹ Protestant Rectory requires a larger area for family housing than does Rectory for Roman Catholic Chaplains.

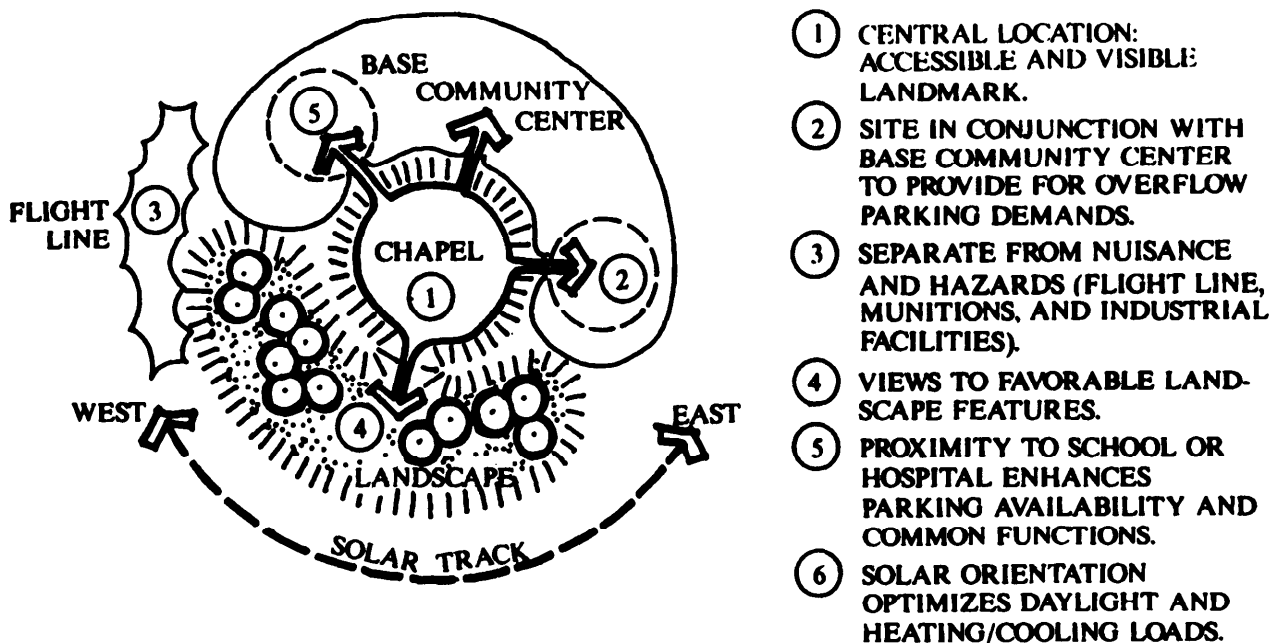


Figure 2-4. Site Evaluation Criteria.

c. Figure 2-4 provides site evaluation criteria.

2-11. Security of Religious Facilities:

a. The security of religious facilities is an extremely important issue, particularly on overseas bases. Religious facilities may be especially vulnerable to security threats because of the large numbers of people using them on a predictable schedule. Nonetheless, it would be inappropriate for these buildings to be designed and built as military fortifications.

b. Sensitivity in siting and appearance may help to protect religious facilities from terrorist groups and from other persons who object to the presence and purpose of these facilities. Locations accessible to base personnel but not to local populations can provide additional protection.

c. The personal safety of all people using the religious facility is extremely important. Parking areas and walkways to the building entrance must be well-lighted. Planting must not obscure the visibility of people going to and from the building.

2-12. Parking at Religious Facilities:

a. Ensure that the site chosen for a religious facility can accommodate adequate parking during peak hours of use. Planners should survey local transportation to and from the site as

proposed in Parking Requirements of Military Chapels (MTMC Report TE 78-7a-17). An analysis of this data will provide detailed information about the specific parking needs for any site. This analysis allows the parking program for a specific facility to consider the possible use of public transportation, proximity of base housing, availability of sharing parking with other base facilities, etc. Where possible, locate the facility so it may easily share parking with other base facilities, such as commissaries, etc. Since activities at these facilities might, at times, be concurrent with the peak hours of religious facility use, calculate the need for parking spaces accordingly. Generally, provide one parking space for every three seats in the small and large sanctuaries.

b. As one religious service often follows immediately on another, ensure parking areas allow for some overlap in parking from both services, as well as automobile traffic generated by leaving one service and arriving for the next service.

c. Provide on-site parking for chaplains, staff, and visitors. Provide handicapped parking space according to the Uniform Federal Accessibility Standards. See Parking Requirements of Military Chapels (MTMC Report TE 78-7a-17). for the number of spaces required for various types and sizes of facilities.

2-13. Site Size. The site should be large enough to accommodate the building program and all outdoor space requirements, including on-site parking. Prepare a preliminary site design to verify that the basic building and site criteria can be accommodated. The site chosen for a chapel must be large enough to accommodate a future addition of a chapel activities center.

2-14. Utility Supply Requirements. Locate facilities near major utilities including water, sewage, electricity, telephone, and gas lines to avoid expensive utility extension costs. See chapter 3, section C, for specific service requirements.

Section E—Special Project Costs

2-15. Special Factors. Consider the following special factors, in addition to the usual cost-estimating considerations, when establishing initial estimates of project costs.

a. **Design Features.** Special design features are needed to define the character of the facility as a religious center and to create in the worship spaces a sense of awe, reverence, and peace. Some of these design features may be stained glass windows, a high room height-to-width ratio, or unusual building forms.

b. **Finishes.** The quality of the finishes also contributes to the special, spiritual character of the worship space. Natural materials, such as wood or stone, are important in visually communicating spatial character. Additionally, do not underestimate the importance of careful workmanship in contributing to the special character of a religious facility.

c. **Furnishings:**

(1) These include, but are not limited to, special items such as pews, chancel furniture, choir equipment, organ, piano, ark, special sacristsy cabinets, baptismal fonts, and mihrab. See

chapter 4 and attachment 1 for a partial list of items to be provided with the facility. Attachment 1 also provides some general notes which pertain to furnishings acquisition. These notes are applicable to most situations; however, there may be variations in some overseas locations. Therefore, the ISC and BCE must determine local rules and regulations when developing their furnishings procurement requirements and when preparing project cost estimates.

(2) Because furnishings function as important parts of worship services, their design must be in harmony with the architectural character of the sanctuary. These furnishings also must reflect the important and symbolic roles they play in community religious activities. They must be carefully designed, of natural or very special manmade materials, with outstanding craftsmanship. Provisions must be also implemented to properly maintain the quality of furnishings and equipment.

d. **Specialized Mechanical and Electrical Requirements.** Provide a sound amplification system and special acoustical treatment in the sanctuary. Provide dimmers for lights; programmable lighting controls are desirable. Experts in both fields must be consulted in the design stages. In addition, during the programming phase, consider the use of audiovisual equipment in the sanctuary (for example, a projection space, a hidden screen, etc.). Where feasible, in terms of overall design, consider a rear-view projection screen for installation in the chancel area.

e. **Signs.** Chapels and chapel activities centers normally will need an outside schedule board designed to be harmonious with the overall design of the building. Consider using large lettering on the exterior to identify the building since the use of the facility is not likely to be altered.

Chapter 3

OVERALL PROJECT DESIGN

Section A—Site Design

3-1. Site Organization:

a. Locate the building on the site to provide the most convenient access and to take advantage of desirable views and natural site features.

b. Locate the building and any outdoor spaces to reflect local climate and microclimate conditions. Examples may include providing protection from undesirable winds and glare; shading the building, especially glazed areas, from excessive sun in warm climates; and exposing classrooms and offices to sun in cold climates.

c. Plan building orientation and window placement to avoid glare, especially in worship areas during peak use periods.

d. Consider liturgical requirements (the east, Mecca) in orienting the building on the site and planning the sanctuary layout. The small sanctuary may be more critical since groups with strict directional orientation requirements will, in most locations, prefer using this space.

e. Provide outdoor terraces or patios in all climatic regions with the possible exception of Region 1 (as defined in AFM 88-29) where local base personnel should consider the use of such outdoor spaces. Outdoor spaces are used for informal gathering, for events such as weddings, for special worship services, and for constructing the sukkah (a temporary structure associated with the holiday of Sukkoth worship). Courtyards, gardens, or tree-lined paths around the religious facility also offer worshipers an opportunity to reflect on the beauty of nature. Where weather is less extreme, these spaces should be larger.

f. Use landscape elements to provide definition, screening, and focus for the outdoor space and for the building itself. Landscape elements also can provide some acoustical insulation at sites near objectionable noises. Preserve and use natural site features—for example, foliage, rock outcroppings, and topography—to help define the site and to present an attractive setting for the facility.

g. Locate the entrance so it will be clearly visible to people approaching the site by car or on foot, and when entering from the parking lot. Use lighting to highlight the entry after dark.

Although the entrance must be convenient to parking, the building must not appear surrounded by cars; parking areas should not visually dominate. Consider the climate when providing protection, such as awnings, vestibule, etc., at the building entry.

h. See figure 3-1 for site design criteria.

3-2. Access Design:

a. Ensure the design of the building and parking areas enhances the simultaneous flow of people and cars. Even before one service ends, people begin to arrive for the next service. Parking entries and exits, traffic patterns, building entrances, and signage must accommodate this two-way movement.

b. Provide clearly identified pedestrian and handicapped access from parking areas to the main entrance.

c. Reinforce connections to related base facilities with clear direct pathways.

d. Provide separate vehicular access for a main entrance drop-off area.

e. Provide handicapped parking spaces according to Uniform Federal Accessibility standards.

f. Provide access for firefighting equipment, including access for aerial apparatus.

g. Develop an interior and exterior signage system following guidelines in AFP 88-40 and base signage standards. Coordinate this with both interior and exterior building design. Signs should identify the building (for example, "Chapel No. 2"), parking area, service area, and facilities for the handicapped. Provide an exterior schedule of services board that is readily legible from the street and is compatible with the facility design.

h. Separate the service entrance or area from the main entrance. Provide signs clearly identifying it as the service entrance.

3-3. Site Utilities:

a. Provide water, sanitary, and storm systems, plus natural gas, steam service, or fuel oil system (whichever is used) according to design criteria in AFM 88-15 and Air Force Engineering Technical Letters (ETL), as well as local services procedures.

b. Provide electric and telephone service to the building according to AFM 88-15, ETLs, and

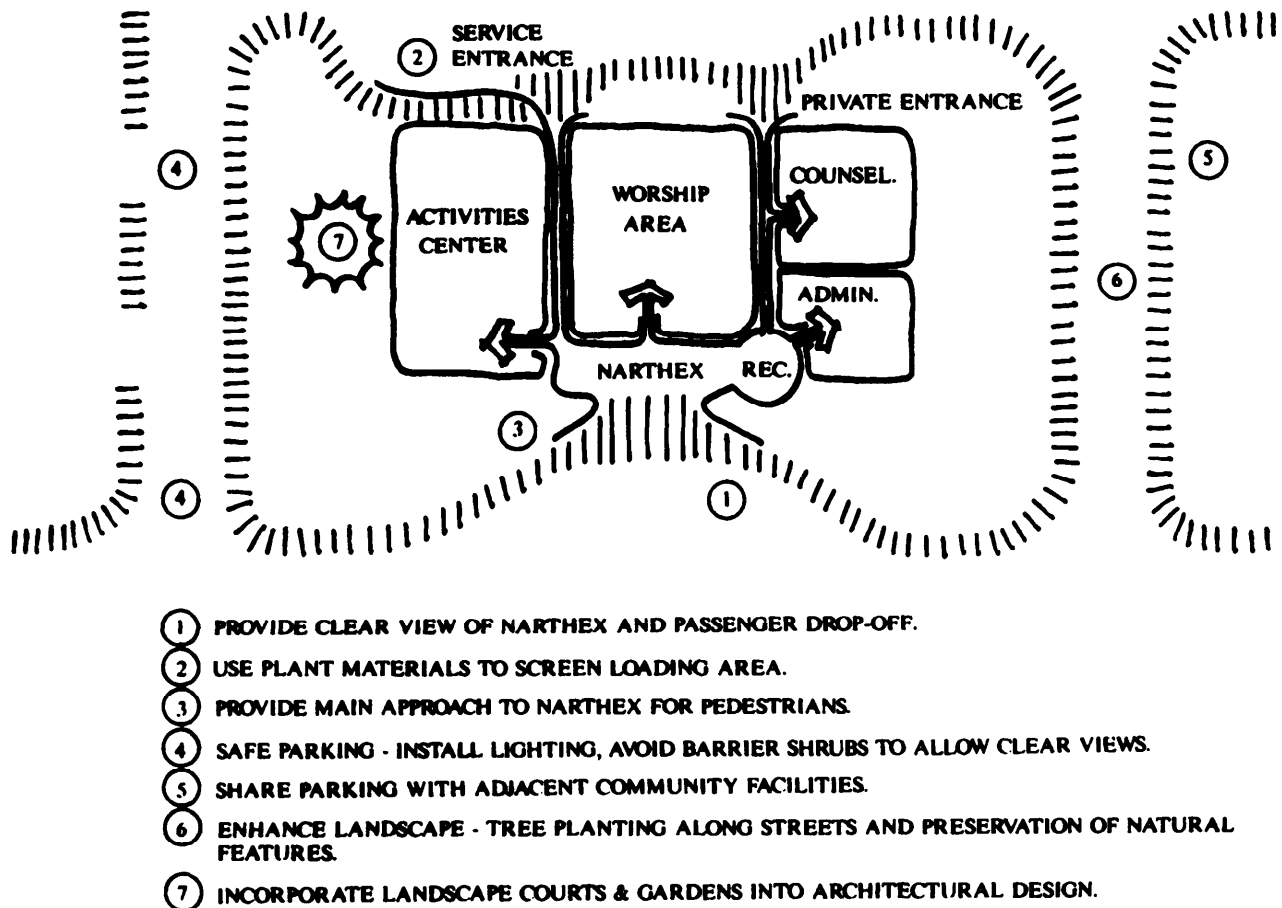


Figure 3-1. Site Design Criteria.

local services procedures. Exterior telephones and cables are not provided as part of the construction contract.

c. Provide coaxial television connections to base-wide transmissions. Also provide local area network (LAN) connections for base-wide operations management (paragraph 3-19).

d. Bury utilities underground when possible.

3-4. Landscaping. Landscaping provides important elements for site design (paragraph 3-1). Landscape design can contribute to the inspirational setting of the facility.

a. Include beautiful natural materials and provide a clear view of the nearby landscape, when possible.

b. Select plant and paving materials to provide color and patterns. Consider features such as shade trellises, fencing, treelined pathways, garden fountains, paved courts, and ornamental ponds.

c. Select low-maintenance plantings, including plants that are indigenous to the region. Provide adequate grading and site drainage to avoid problems associated with heavy rainfall or melting snow.

d. Provide irrigation systems where required. Evaluate available irrigation systems (sprinkler, drip, etc.) based on cost, installation requirements, effectiveness, conservation, ease of operation and maintenance, durability, and appearance.

e. See paragraph 3-16 for hose bibb requirements.

Section B—Building Design

3-5. General Information. Form and symbol are among the means of expression for religion. Religious neutrality directs form and symbolism toward a shared set of inspirational values: integrity, eternity, dignity, truth, self-

restraint, and self-sacrifice among them. To evoke these meanings, the building design presents a series of experiences:

a. Approach views traditionally display a profile that is highly visible as a beacon or landmark.

b. The building's entrance invites worshipers in and gathers them together; it must be readily accessible and must express the human scale of the congregation.

c. The worship space encloses worshipers and enables them to meditate free from distraction; it provides an area which transcends mundane experience through its spiritual character. Accomplish this by manipulating space, ceiling heights, lighting, and materials to create open, elevated, and dramatic spaces.

d. The community area is open to all users and supports their interpersonal relationships. This space accommodates a variety of flexible, interconnected spaces for group meetings, instruction, dining, and celebration.

3-6. Building Organization and Circulation:

a. The worship spaces should function as the central focus of the religious facility. The worship spaces should be identified by their form and prominence; other parts of the building should esthetically support and complement these focal areas.

b. Religious facilities require a clear organizational structure and a clustering of similar functions (figures 3-2 and 3-3). The circulation system should be apparent at the building entry and should provide easy access, orientation, and some visibility to the various functional areas. The main building entry must allow visitors to move easily into the worship spaces, classroom area, or administrative area as they arrive. The main entry must be visible from the administration and reception areas for building supervision and control.

c. Circulation must allow certain parts of the building to remain open when other parts are closed. For example, religious education and administrative entrances are locked after staff working hours. The activities center, blessed sacrament room, sanctuaries, restrooms, and reception or narthex remain open after working hours. Also, design the circulation to enhance the building's program and use—for example, alcoves for waiting, conversation, or coat-hanging can make corridors and hallways pleasant, lively places.

d. The Worship area should be entered through the narthex. This is the main building entrance. It should flow freely into the worship area and should serve as overflow space for holy days and celebrations. Double doors are necessary for processional and recessional activities.

e. Access to counseling and administrative areas should be monitored through the reception area. Respect the privacy of those seeking counsel and preserve the confidential role of the clergy by providing a discrete, inconspicuous waiting area off the entrance to counseling and administrative areas. Access the chaplain's offices through this entrance and provide a secondary exit route.

f. Entrance to the activities center should be monitored from the reception area as well. Address potential conflicts between the need for privacy during counseling, while performing administrative work, or during public functions of worship.

g. Service entrances must be marked clearly. These must be screened and separated from main entrance views.

h. Spaces associated with community functions should be connected to worship spaces and to the classroom area. Associate the building administrative and reception areas with the chaplains' offices. Provide outdoor space combined with terraces, patios etc, in association with indoor community space, particularly with the activities room or with the small sanctuary. Terraces, patios, and courtyards can serve as extensions of the spaces within the building.

i. Toilet facilities and coat rooms should be located so they are easily available to users in various parts of the building. They must remain accessible when some parts of the building are closed.

j. Building organization should consider local climate conditions. A cold climate requires tight clustering of functions, reduced entrance points, and minimal exterior exposures to frigid wind, ice, and snow. Warm climates should use an open organization that promotes ventilation in extreme humidity or aridity, yet screens the extreme conditions of that climate (figure 3-4).

k. The Functional Adjacency Matrix (table 3-1) describes the desired and required relationships between individual program spaces in chapel, chapel activities centers, and chapel centers. Some activities require spaces that are immediately adjacent: for example, connect the sacristy to the sanctuary; connect the kitchen to the activities room. Other spaces must be near

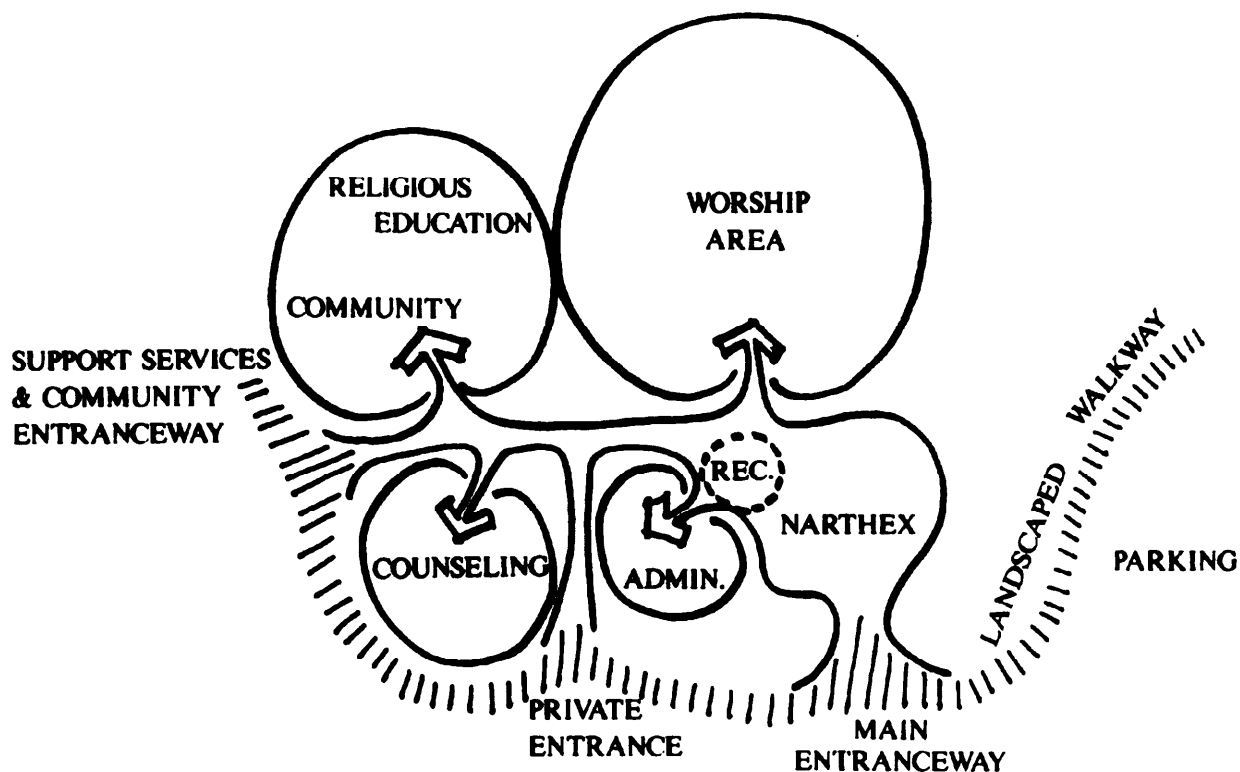


Figure 3-2. Circulation and Access.

each other for ease of access or for the clustering of functionally related spaces: for example, the classrooms should be near the library-conference-meeting room. The matrix shows the hierarchy of adjacencies for all functional spaces.

3-7. Exterior Architectural Character:

a. The exterior of a religious facility should convey its special function by means of its architectural character. Historically, this function has been identified by the traditional use of specific design features, such as high, steeply pitched roofs over the primary worship spaces; steeples, bell towers, and minarets that tower high above other buildings and are used for calling people to worship; stained glass windows that reflect religious doctrine and modify the character of light; and dominate religious symbols, such as crosses, etc.. Equally important, many churches traditionally have conveyed a sense of importance and permanence by using elaborate detailing and durable materials, such as stone and brick.

b. These architectural design features are used to identify the function of the building and to imbue the building with special meaning. Many of these features can and should be used

in the design of Air Force religious facilities for the same reasons. However, these features can be used only if they are religiously neutral for all faiths to be served by these buildings and there is no need to minimize the presence of a religious facility such as at some overseas locations. In this context, consider the following principles in developing the design of religious facilities:

(1) **Massing.** Design that portion of the building enclosing the main sanctuary to be the dominant element of the building or complex of buildings. Use the large space requirements for the main sanctuary, which are greater than any other single functional area of a chapel or chapel center, as an opportunity to create a taller and more massive "building block" than adjacent areas.

(2) **Form, Profile, and Shape.** Enclose the main sanctuary with steeply pitched roofs or other architecturally significant shapes that recall the images of traditional religious buildings and suggest an uplifting of the spirit. Consider using design elements such as steeples, bell towers, and similar traditional forms to increase the height of the complex and to emphasize that this is a religious facility. Consider the

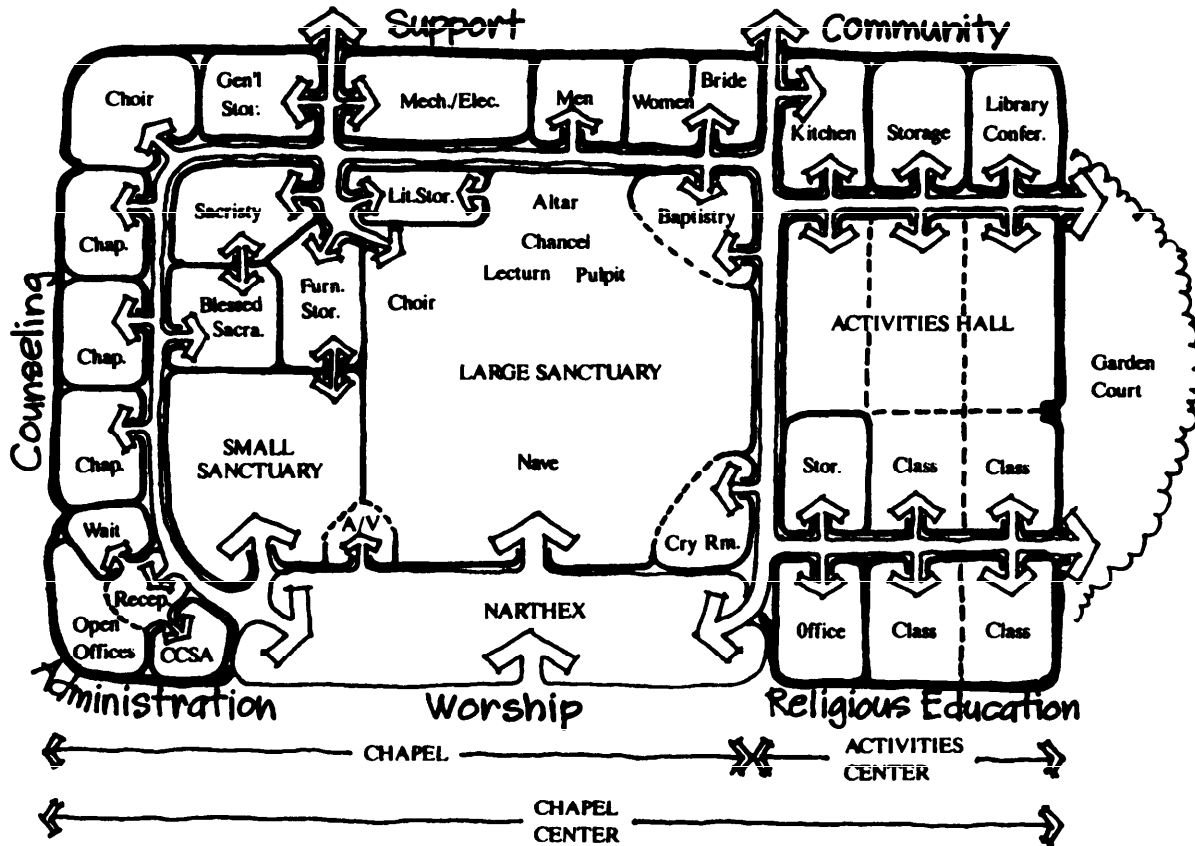


Figure 3-3. Chapel Center Organization.

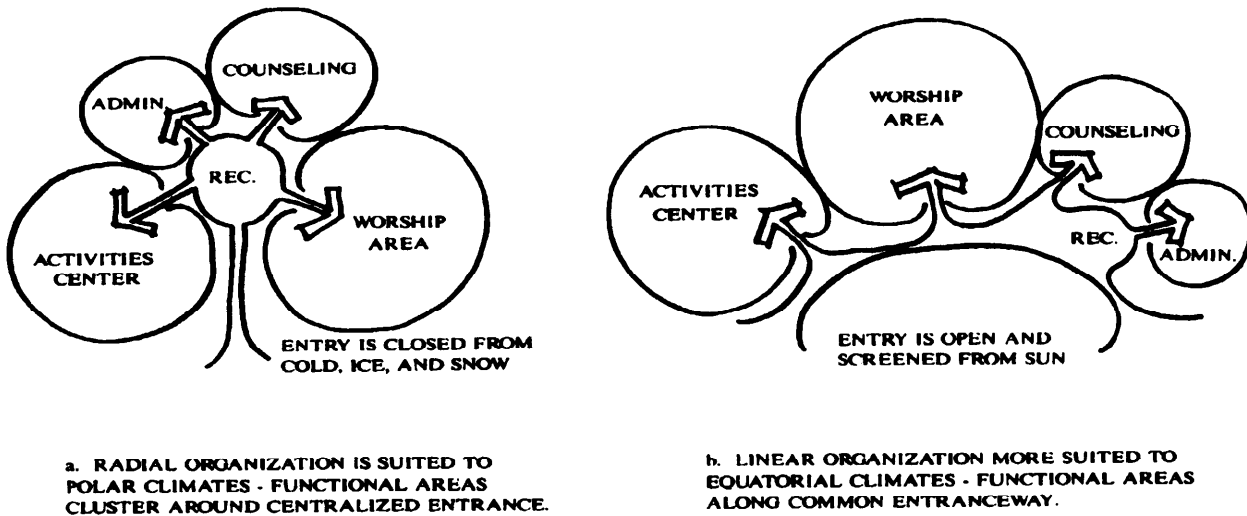


Figure 3-4. Chapel Center Organization Alternatives.

economic impact of such design elements, however, and ensure that these elements are not added to the facility at the expense of reducing or eliminating critical functional requirements. The worship area should be the dominant aspect of the building in form and profile. The large

amount of open space in the sanctuary allows this area to be taller than adjacent areas used for other functions.

(3) **Structure.** A unity of form and materials should be clear in both exterior and interior design of the building. The structure should

Table 3-1. Functional Adjacency Matrix.

| | WORSHIP Sanctuary Small Sanctuary Narthex Sacristy Blessed Sacrament Room Baptistry Baptistry Changing Rooms Cry Room Choir Robing Room Storage (Furnishings) Storage (Liturgical Items) | COUNSELING Chaplain's Offices Waiting Area Meditation Room | ADMINISTRATION Reception CCSA Office Staff Work Spaces Kitchenette | COMMUNITY Activities Room Kitchen/Pantry Library/Conference/Meeting Storage (Activities Room) | RELIGIOUS EDUCATION Classrooms Office Storage | SUPPORT Toilets Bride's Room General Storage Custodial Mechanical Room Electrical Room | OUTDOOR SPACE SERVICE ACCESS |
|----------------------------|---|---|--|---|--|--|---------------------------------|
| WORSHIP | | | | | | | |
| Sanctuary | ● | | | | | | ○ |
| Small Sanctuary | ○ | | | | | | |
| Narthex | ○ | | ● | | | | |
| Sacristy | ○ | | | | | | |
| Blessed Sacrament Room | ○ | | | | | | |
| Baptistry | ○ | | | | | | |
| Baptistry Changing Rooms | ○ | | | | | | |
| Cry Room | ○ | | | | | | |
| Choir Robing Room | ○ | | | | | | |
| Storage (Furnishings) | ○ | | | | | | |
| Storage (Liturgical Items) | ○ | | | | | | |
| COUNSELING | | | | | | | |
| Chaplain's Offices | | ● | | | | | |
| Waiting Area | | ○ | | | | | |
| Meditation Room | | ○ | | | | | |
| ADMINISTRATION | | | | | | | |
| Reception | | | ● | | | | |
| CCSA Office | | | ○ | | | | |
| Staff Work Spaces | | | ○ | | | | |
| Kitchenette | | | ○ | | | | |
| COMMUNITY | | | | | | | |
| Activities Room | ○ | | | ○ | | | ○ |
| Kitchen/Pantry | | | | ○ | | | ○ |
| Library/Conference/Meeting | | | | ○ | | | |
| Storage (Activities Room) | | | | ○ | | | |
| RELIGIOUS EDUCATION | | | | | | | |
| Classrooms | | | | ○ | ○ | | |
| Office | | | | ○ | ○ | | |
| Storage | | | | ○ | ○ | | |
| SUPPORT | | | | | | | |
| Toilets | ○ | | | | | | |
| Bride's Room | ○ | | | | | | |
| General Storage | | | | | | ○ | |
| Custodial | | | | | | ○ | |
| Mechanical Room | | | | | | | ○ |
| Electrical Room | | | | | | | ○ |
| OUTDOOR SPACE | | | | | | | |
| SERVICE ACCESS | ○ | | | | | | ○ |

● SPACES SHOULD BE IMMEDIATELY ADJACENT

○ SPACES SHOULD BE NEARBY

also harmonize with the architecture of the surrounding area, if appropriate. Use column-free support within small and large sanctuaries to allow open uncluttered views to the chancel areas. Long-span concrete, laminated wood, or steel-trussed framing will provide a rich interplay of pattern and light throughout the worship areas.

(4) **Entrance.** The approach to the building should reflect its function; therefore, this design element can be used to draw people visually and spiritually into the building. Historically, larger than normal entrance doors have been used to create a sense of invitation and welcome. Although it may be difficult to use this architectural element in most Air Force religious facilities, consider the selective use of glass at the narthex (main entrance) to the building. Design the narthex as a hospitable gathering place in which a formal procession into the sanctuary may begin.

(5) **Light.** Light can create a variety of moods through manipulation of wall openings and electrical fixtures. See paragraph 3-8g for more specific information.

(6) **Building Detail.** Establish the architectural character of simplicity and serenity through the careful coordination and repetition of design elements, such as finish materials, window openings, trim details, light fixtures, paving patterns, and landscaping. Larger gathering spaces (e.g., the narthex, sanctuary, and activities center) may be enhanced by using elements which define space, such as high clerestory glazing, floor-to-ceiling wall openings, and skylight forms.

(7) **Materials.** Select exterior materials that suggest permanence, are warm and inviting, and that are compatible with the base architecture. Use these materials in a manner that creates a sense of simplicity and serenity rather than busy or garish. Avoid industrial, commercial, and institutional appearances. Consider using stained glass for windows in the worship spaces if this can be done within the construction budget. If stained glass windows are used, ensure that the design is not objectionable to any faith group and that colors harmonize with the facility decor. Religious symbols and specific objects designed to be focal points of devotion can be difficult to justify in a pluralistic environment.

3-8. Interior Design Character:

a. Religious facilities should be designed with a setting conducive to meditation and prayer, and that stirs feelings of awe, reverence, humility, inspiration, warmth, hope, comfort, and peace.

b. Traditionally, religious buildings have used various means to nurture these feelings. Certain denominations have always provided elaborate worship settings filled with paintings, sculptures, and dramatic music. Others have believed these feelings are most aptly supported in very simple worship settings. Rather than emphasize their differences or favor one approach over another, identify and design those characteristics in religious facilities that divergent approaches share.

c. Although the flexibility of the space is important as is its ability to adapt to the requirements of the various faith groups, the space must not seem impermanent or temporary to any of its users.

d. The interior ambience of the sanctuary worship spaces must be nonsectarian. It must support ceremonial, educational, and social activities which are interdenominational. However, architectural qualities must imply a religious intention. Use form, material, colors, and illumination in a manner that exceeds the conventional to communicate this intention.

e. Spatial Form and Size:

(1) The form of the worship space, its height, shape, and proportions must elevate the spirit. The space must convey an attitude of reverence, meditation, serenity, and community.

(2) The height and width of the narthex should allow an easy flow of congregation traffic into both the sanctuary and the small sanctuary.

(3) Chapel activities center spaces must be flexibly partitioned for multiple groups of small to moderate size.

(4) Administrative counseling areas should be furnished as small semi-private spaces used for close and confidential communication.

f. Materials:

(1) Certain nonreligious symbols which recall the spiritual quality of life may be used. They include, for example, moving water, flames, birds, flowers, and other growing things.

(2) Interior finishes can suggest light and the qualities it symbolizes.

(3) Surface materials and furnishing may be selected through use of comprehensive interior design services. When making selections, consider anticipated use, maintenance characteristics, life-cycle cost, and fire rating and other life safety requirements.

(4) Sound absorbing panels, wall coverings, and carpeting in the sanctuary, small sanctuary, classrooms, library, and office areas help "soften" the acoustic environment.

(5) Natural materials for floors, walls, and ceilings of worship areas should be used to the greatest extent possible. Accent stones can include fieldstone, granite, marble, and slate. Various woods can be appropriate for wood paneling, window framing, and liturgical furnishings. Use more economical materials, such as quarry tile, ceramic tile, carpeting, and fabric wall coverings, in the activities center and the administrative and counseling areas.

(6) Material finish, color, and texture should be coordinated to complement the overall architectural design and facility image.

(7) Insulated glass may be used, where appropriate.

g. Illumination:

(1) Dramatic use of illumination may enable worshipers to envision the spiritual world

beyond the building's physical limits (figure 3-5).

(2) Natural and artificial lighting may be used to provide a variety of moods in a space.

(3) General downlighting may be used throughout to reduce contrast and provide a sense of drama.

(4) Low voltage spot-lighting may be used on key chancel areas and other architectural features to create contrast when needed.

(5) Uplighting may be used to eliminate shadows from downlight sources. When used exclusively, uplighting can create ideal illumination for reading or working. However, this lighting technique is not proper for spaces where strong highlights are required.

(6) Color temperature ratings should be considered in lamp selection. The illumination design should balance a variety of lamp types to maintain a natural ambiance in the sanctuary.

(a) Fluorescent lights must not be used for low levels of illumination; they tend to project "cool" blue color rendering.

(b) Tungsten and halogen incandescents are very efficient in low-level illumination; they offer good color rendering.

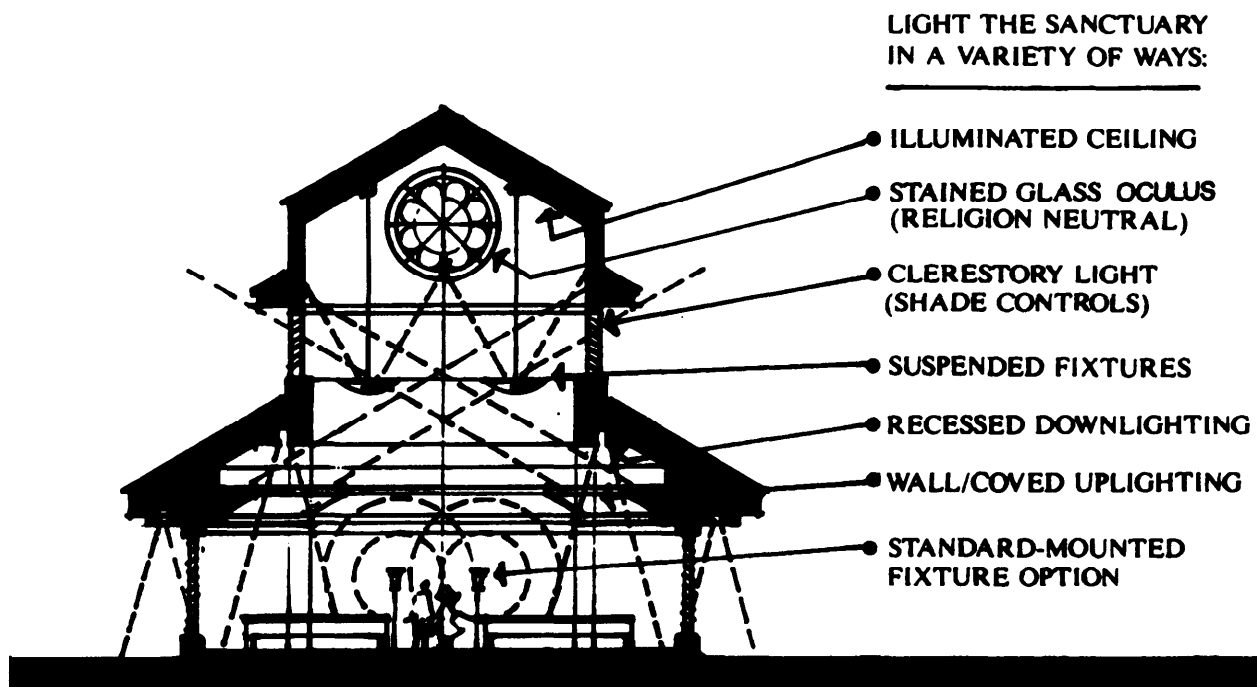


Figure 3-5. Character of Light in the Sanctuary.

(c) High Intensity Discharge (HID) fixtures must not be used for low height levels; they offer unacceptable color rendering. Use HID only as a pencil beam for highlighting special objects.

(7) Daylight, controlled for glare by building orientation and form and by interior coverings, is an important element in the sanctuary worship space.

(8) Natural light in the worship area should be controlled to permit use of audiovisual aids.

(9) Stained glass, clerestory glazing, and skylights should be used when dramatic daylight sources are needed.

(10) When planning a chapel's lighting scheme, future maintenance should be considered, such as replacing bulbs in ceiling fixtures or cleaning high windows. Avoid hard to replace bulbs or fixture placements which require elaborate equipment to reach.

h. Acoustics:

(1) Providing adequate acoustics and the ability to change sound levels help to create the proper atmosphere for prayer, music, and speech.

(2) An acoustic engineer should be consulted for design of the sanctuaries, activities center, classroom partitioning, and the counseling areas. Acoustic design considerations include sound reverberation, wave frequency, clarity, amplification, and noise isolation. General acoustic design requirements are listed below. See chapter 4 for specific requirements in areas where these are of critical concern.

(a) Sound should fill the sanctuaries so worshipers feel they are singing as part of the whole congregation, not alone or with only their immediate neighbors.

(b) Sound amplification in the sanctuaries is best accomplished by the use of a single location of speakers in the general area of the chancel. Do not scatter or array speakers throughout the worship space. Speakers should be an integral part of sanctuary design.

(c) Since the sound system is often funded as a separate user-furnished item, the designer should only rough in locations for speakers and power sources. Conduit and/or wiring may be provided by the construction contract according to guidelines in ETL 87-9.

(d) Wafer-type microphones or similar technology may be used at the altar and at the pulpit and lectern. Wireless microphone and

speaker technology ensures proper concealment of sound system fixtures and connections. The design of this wireless system should be coordinated with the base frequency manager.

(e) Sound reduction through various glass construction may be necessary in areas of proximity to air traffic. Glazing with 7/8-inch material will reduce loudness by about 45 percent, compared to typical 1/4-inch float glass. Two lites of glass separated by an air space (1/2-inch glass:2-inch air space: - 1/4-inch glass) will reduce loudness by 55 percent, compared to 1/4-inch glass. Laminated glass (five-eighths of an inch thick with four pieces one-eighth of an inch thick) will reduce loudness by 50 percent, compared to 1/4-inch glass.

i. Interior Elements:

(1) The architectural character of classrooms, activity spaces, and administrative and chaplains' offices should be an extension of the character of the worship space, in simplified and appropriate ways. For example, elements such as similar materials, colors, or proportions of windows might be chosen to harmonize with those elements in the sanctuary.

(2) The chaplains' offices should be warm and inviting. The rooms should provide visual and acoustical privacy. The character of these offices should suggest a residential rather than a work or institutional environment. Finish materials, such as carpet, gypsum board or other finished walls, and wooden furnishings, can communicate this character.

(3) Chapter 4 contains additional comments regarding the character of spaces.

3-9. Flexibility and Expansion Potential:

a. Often, the Air Force builds a chapel. Later, a chapel activities center is built; these two facilities combine to form a chapel center (see paragraph 2-5 for additional discussion). Once built at a certain size, the specific functional capacity for a facility cannot easily be increased. For example, a 300-seat sanctuary is not usually expanded to 600 seats.

b. Often, a chapel center is not built as a single-phase project. Each of the parts is programmed, planned, and designed separately. However, it is important to consider the completed chapel center when planning either the chapel or the chapel activities center. The site chosen for the first increment must be large enough to accommodate possible later additions. If the program for the first facility in-

cludes adequately sized and properly located support spaces (such as janitorial closets, toilets, mechanical and electrical rooms, etc.), these must be omitted in calculating program area for the second facility. Design building systems to combine easily with those of a future facility.

c. Religious facilities themselves should not be used for purposes other than those for which they are built. However, the spaces that make up these facilities should be as flexible as possible to accommodate the various activities that occur in these buildings. The worship spaces must be as flexible in character as their multi-faith use requires. The activities room should be usable as overflow space for worship, social functions, and educational activities. It should be divisible. Conference rooms and libraries can be used as classrooms. At least one classroom should be large enough to be divided, allowing for flexibility in accommodating the needs of religious education.

3-10. Operations and Maintenance:

a. Investigate the use of computer-aided energy management for possible fuel economy. Building design should incorporate energy conservation techniques to the fullest extent possible. The use of daylight in the building reduces power demand. Insulated glass reduces heating and cooling costs. Building orientation which permits the use of passive solar features further reduces heating costs. Water storage systems reduce domestic hot water costs.

b. Design mechanical systems for easy access and ease of maintenance. Ensure control rooms for light and sound are accessible to facility staff. They must also be connected to the sanctuary, both visually and aurally, to monitor light and sound systems during services. Mechanical rooms must have outside service access.

c. Ensure finish materials are durable and easy to maintain, but consistent with the special character of a religious facility.

d. Provide a system for easy replacement of hard-to-reach lamps where lights are placed on high ceilings and walls. Difficulty in changing lamps has been a consistent problem in Air Force religious facilities. This requirement must be adequately addressed in all facility designs.

3-11. Access for the Handicapped. Although active Air Force personnel are pre-

sumed to be without mobility handicaps, religious facilities must serve dependents, inactive personnel, retirees, and others who may be physically disabled. Design all functional areas to be barrier-free and accessible to all users with physical disabilities. Provide access according to Uniform Federal Accessibility Standards. Design the site and the building to permit physically handicapped persons to participate fully in all programs. Provide special places for wheelchairs in the congregation seating areas in the main sanctuary.

3-12. Renovations. All design criteria and recommended relationships discussed in this document apply to renovation projects, including self-help projects.

Section C—Building Systems

3-13. Structural Systems:

a. Select an economical structural system based on facility size; projected load requirements; local availability of materials and labor; wind, snow, seismic, geologic, and permafrost conditions.

b. Select and design the structural system based on analysis of projected future needs to easily and economically accommodate future expansion requirements. However, do not over design the initial construction.

c. Design building structural modules to reflect space requirements, economy, and subsystem dimensions (for example, ceiling grid, masonry units, framing members, etc.).

d. Keep the worship area free of columns.

3-14. Heating, Ventilation, and Air Conditioning (HVAC) Systems:

a. See figure 3-6 for system types and options.

b. Identify all special considerations for specific climatic conditions, such as temperature and humidity extremes.

c. Perform a life-cycle cost analysis of available energy sources. Design the HVAC system for energy efficiency and conservation and for passive solar design where applicable.

d. Provide heating, ventilation, humidity control, and air conditioning to maintain criteria specified below and to conform to design requirements established in AFM 88-15. Temperature and relative humidity levels must conform to criteria in AFM 88-15. Maintain a minimum relative humidity of 40 percent.

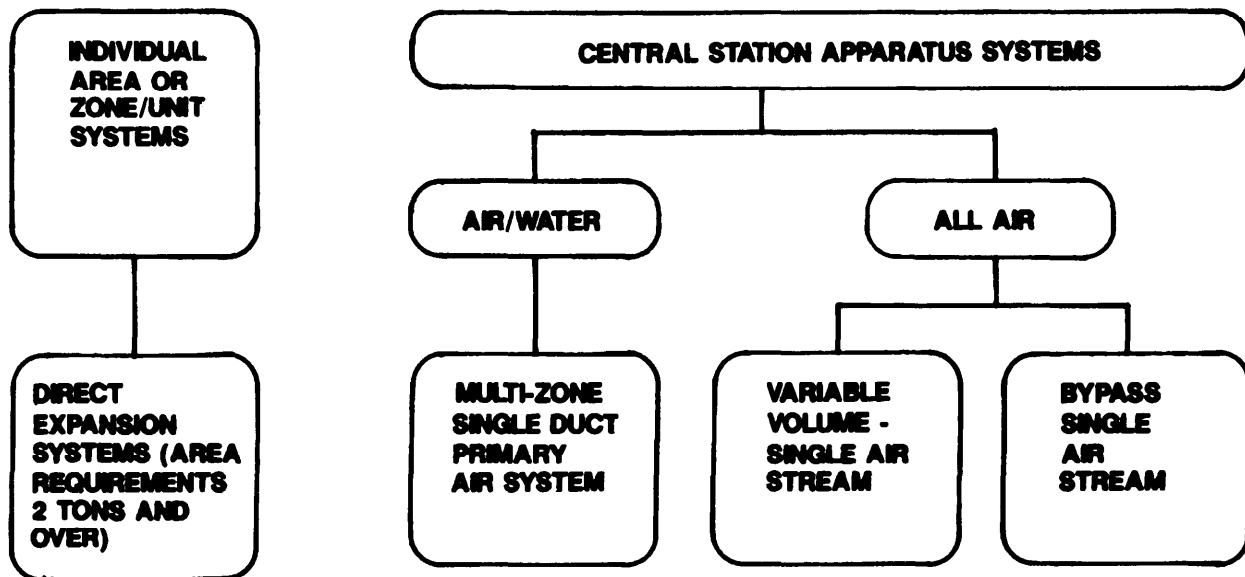


Figure 3-6. Religious Facilities HVAC Systems Chart (Options).

e. Provide separate zone controls for maintaining different environmental conditions in all functional areas, and for operating systems for parts of the facility when other areas are closed. Thermostats for zoned temperature control and other controls should be accessible to facility staff, but located away from public access and provided with lockable (tamper-proof) covers.

f. Provide exhaust ventilation in the restrooms, kitchen, cry room, and baptistry changing rooms. Provide outside air rates for occupants, as specified in the American Society of Heating Refrigeration & Air Conditioning Engineers (ASHRAE) Ventilation Standard 62.

g. Design the HVAC system to minimize mechanical and air circulation noises. Preliminary HVAC design documents should adequately address this requirement. The designer must provide a list of anticipated sound ratings for the entire system.

h. Design and construct the HVAC system for ease of maintenance. All controls, except thermostats, should be on one panel in the mechanical room. Use the current ETL on HVAC controls.

i. Provide for hook-ups to base Energy Management Control Systems (EMCS), where applicable.

j. Conceal mechanical systems, including duct work. Grilles and diffusers should be inconspicuous.

k. Locate and screen external mechanical equipment so it is not conspicuous.

l. Design all facilities so they conform to energy budget standards outlined in table 3-2.

3-15. Passive Solar Design. Use of building design techniques, as referenced in USAF Passive Solar Handbook, September 1989, provides effective cost savings in all regions through proper use of atriums, skylights, sawtoothed roofs, windows, monitors, etc.

3-16. Plumbing Systems:

a. Ensure the chapel center accommodates simultaneous use of worship, administrative, counseling, community, and education functions.

b. Provide domestic hot and cold water, sanitary and storm drainage, plus propane or natural gas systems if required, according to design requirements in AFM 88-15.

c. Provide hot and cold water to all toilet rooms, sinks, custodial closets, kitchen, immersion baptistry, and other equipment as required.

d. Ensure the hot water temperature does not exceed 100°F for general use and 180°F for kitchen use. Ensure the hot water temperature

Table 3-2. Air Force Energy Budgets.

DEPARTMENT OF DEFENSE
ENERGY BUDGET FIGURES (EBF'S) - (000) BTU/90 FT/YR
APPLIES ONLY TO ENERGY CONSUMED WITHIN THE BUILDING FIVE FOOT LINE
BASED ON THE DOE AND DOD BUILDING CATEGORIES AND WEATHER ZONES

REGIONS

| | REGION 1 | REGION 2 | REGION 3 | REGION 4 | REGION 5 | REGION 6 | REGION 7 | REGION 8 |
|-----|----------|------------------|------------------|-----------------|----------------|----------------|----------------|----------------|
| CDD | 0 | 0 | 0 | <500 | <1000 | <2000 | <2000 | <2000 |
| HDD | >15000 | >15000 <15000 | >11000 <15000 | >9000 <11000 | >7000 <9000 | >5500 <7000 | >4000 <5500 | >2000 <4000 |

BUILDING CATEGORIES

COMMUNITY FACILITIES

| | 80 | 70 | 65 | 60 | 55 | 55 | 45 | 40 |
|-----------------------------|----|----|----|----|----|----|----|----|
| 730-771 CHAPEL | | | | | | | | |
| -772 CHAPEL CENTER | | | | | | | | |
| -773 CHAPEL ACTIVITY CENTER | | | | | | | | |
| -774 HOSPITAL CHAPEL | | | | | | | | |

This Table should be used in conjunction with energy efficiency guidelines published in the latest Engineering Technical Letter "Energy Budget Figures for Facilities in the Military Construction Program".

does not exceed 110°F for showers, if provided for the use of staff personnel alternating between physical labor and ceremonial participation and if it is reasonable to include three separate water systems.

e. Where an immersion baptistry is included, provide means of furnishing hot water.

f. Provide floor drains in toilets, custodial closets, kitchens, and baptistry changing rooms. The immersion baptistry must have a 4-inch drain to the sanitary sewer.

g. Provide shut-off valves at all fixtures.

h. Provide frost-free hose bibbs on all exterior walls if justified by local climatic conditions.

i. Ensure total restroom requirements are the sum of requirements for each function. Plumbing fixtures will be as specified in the National Standard Plumbing Code (NAPHCC) and AFM 88-8, chapter 4. AFM 88-8, chapter 4, takes precedence if there are any conflicts.

(1) Provide one drinking fountain per 400 persons.

(2) In the **worship area** (based on one person per 15 square feet net area):

(a) Water closets: 1:300 male and 1:150 female.

(b) Urinals: 1:300 males.

(c) Lavatories: 1:150 persons.

(d) Service Sinks: 1.

(3) In **administrative and counseling areas** (based on one person per 100 square feet net area):

(a) Water closets: 1:15 persons; 2:16-35 persons; and 3:36-55 persons.

(b) Urinals: Provide instead of water closets, but not more than 1/3 of total fixtures.

(c) Lavatories: 1:15 persons; 2:16-35 persons; and 3:36-60 persons.

(4) In the **community (activities) assembly area** (based on one person per 15 square feet net area):

(a) Water closets: 2:100 persons; 3:101-200 persons; and 4:201-300 persons.

(b) Urinals: 1:150 males.

(c) Lavatories: 1:300 persons.

(5) In **educational area** (based on one person per 20 square feet net area):

(a) Water closets: 1:40 males and 1:25 females.

(b) Urinals: 1:40 males.

(c) Lavatories: 1:25 persons.

j. Determine occupancy loads based on the net square footage of each function, which is 80 percent of the actual gross floor area programmed.

k. Assume distribution of total occupancy load is one-half males and one-half females.

l. Provide for one child-size water closet in male and female toilets in 400 seat chapel designs.

3-17. Electrical Systems. Provide electric service and systems, distribution equipment, wiring, receptacles and grounding, interior and exterior lighting, telephone, fire alarm, and intrusion systems according to design requirements of AFM 88-15 and ETLs. Accommodate special requirements for overseas bases.

a. Base ampere capacity on the following minimum criteria for the building:

(1) Interior lighting and convenience receptacles: 10.0 watts per square foot.

(2) Mechanical systems: 5.0 watts per square foot.

(3) Exterior area lighting: 0.1 watt per square foot.

b. Evaluate and include the following power needs to determine the electric service capacity:

(1) HVAC systems.

(2) Water heating equipment.

(3) Computers or computer terminals.

(4) Photocopiers.

(5) Typewriters.

(6) Audiovisual equipment.

(7) Telephones.

(8) Speaker amplification and wireless communication equipment.

(9) Organ.

c. Ensure all service equipment is Underwriters Laboratory (UL) listed. Alternatively, provide published proof from a bona fide independent testing laboratory.

d. Provide metering for electric power according to guidelines in ETL 87-5.

e. Install underground service to the buildings when conditions permit. Secondary underground service raceways may be Polyvinyl Chloride (PVC) Schedule 40. Refer to AFM 88-9, chapter 1.

f. Ensure the service grounding system and all wiring methods meet National Electric Code (NEC) requirements.

g. Ensure all exterior electric equipment is inconspicuous.

h. Ensure general convenience receptacles and special power outlets are specification grade. General spacing of convenience receptacles will be minimum 12 feet on center. Provide special power outlets and circuits for all owner-

furnished equipment, as required. Do not use surface-mounted conduit in finished walls.

i. Ensure outlets in areas accessible to children are of a child safety type similar to those that require twisting the inner portion of the device to activate current and, at the same time, prevent a child from inserting any foreign object. Removable caps or plugs do not meet this requirement.

j. Contact the Illuminating Engineering Society for criteria and established standards for illumination levels. The quality of lighting in religious facilities is important.

k. Provide 50 footcandles for most activity spaces. Chapter 4 identifies special conditions and requirements for individual spaces. Use the most efficient light source with characteristics suitable for the individual space (figure 3-7).

l. Provide dimmer controls for worship areas, to provide overall low levels of light which can be raised to 30 footcandles for reading. When determining the proper number of luminaires, keep the number of lumens per lamp relatively low and use multiple lamps to eliminate glare. Glare impedes visibility and causes fatigue. Light the sanctuary in a variety of ways to provide effective, controllable general illumination (figure 3-5). Figure 3-7 provides a diagram for sanctuary lighting control.

m. Where natural light is available, provide convenient control systems to reduce light and glare when appropriate. Include ambient light dimmers to reduce intensity levels of artificial light.

n. Ensure counseling areas provide residential quality lighting. Use of dimmers and liberal numbers of incandescent task lights, such as table lamps and wall sconces, will give a welcome mood of intimacy for clergy-client counseling.

o. Provide a blend of fluorescent and incandescent light for control of intensity, color quality, and illuminance and reflectance values in the activities room, the library-conference-meeting room, and classroom areas.

p. Ensure narthex and circulation illumination are at a lower level than other interior areas. Use accent lighting to highlight and feature aspects of transition to worship areas and architectural details. However, avoid exotic types of fixtures which will be difficult to service due to fixture height or availability of replacement units. Fixtures which require scaffolding for lamp replacement are unacceptable. Avoid bayonet type bulbs when lights fixtures are not easily accessible.

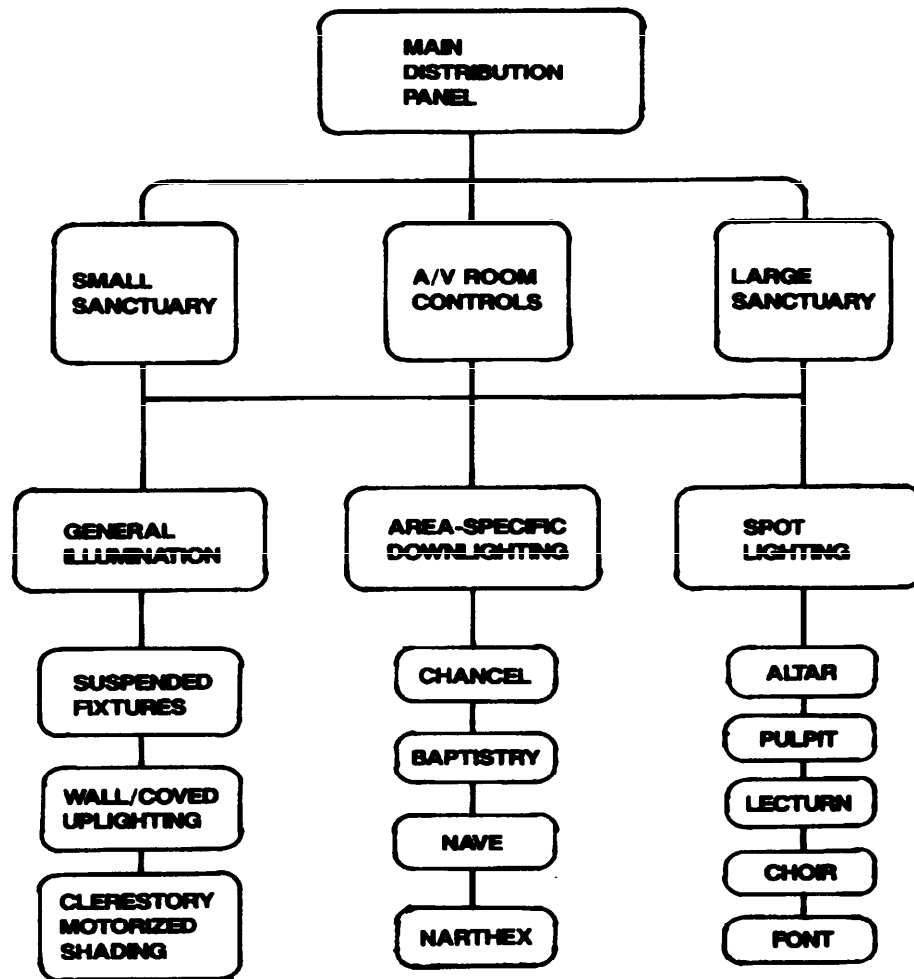


Figure 3-7. Sanctuary Lighting Control Diagram.

q. Provide adequate amperage and voltage for personal computer stations.

r. Provide exterior lighting for the entrance, parking, and walkway areas. Exterior illumination also may be used to highlight landscaping and architectural details. Consider using high density discharge light sources and timers or photoelectric controls.

3-18. Fire Protection:

a. Site plans must provide access to fire hydrants and allow adequate turning radii for emergency vehicles.

b. Allowable square footage shall comply with the Uniform Building Code, occupancy class A (subclass 2, 2.1.,3 as appropriate) and exceptions in AFM 88-15.

c. Structural fire resistive requirements shall fully comply with the Uniform Building Code (UBC) for Type I or Type II construction.

d. The facility shall comply fully with the requirements for life safety in NFPA 101, "Life Safety Code."

e. Emergency exitway lighting shall be according to guidelines in NFPA 101. Integrate the fixtures into the normal lighting system where possible, instead of separate lesser-quality battery-pack system.

f. A complete fire detection and alarm system should be provided throughout the facility unless a sprinkler system is required by either NFPA 101 or the UBC. The installed system shall comply with the applicable NFPA Code.

g. A kitchen hood with a duct and cooking surface fire suppression system must be provided in the kitchen.

h. Interconnection must be provided to base fire alarm receiving system.

i. Lightning protection will be provided, if necessary, according to guidelines in AFM 88-9, chapter 3, AFM 88-15, and NFPA 78.

3-19. Special Accessories and Communication Systems:

a. Provide wiring systems for official and unofficial telephone service; local area network (LAN) and Defense Data Network (DDN) computer systems; and intercom and public address systems according to guidelines in ETL 87-9, Prewiring. Provide a dedicated space and necessary environmental control for this equipment.

b. Locate an audiovisual control booth with direct view of the main sanctuary for use during services. The room shall provide space and wire

management for equipment options such as speaker amplification; light fixture dimmer controls; phonograph, tape, and/ or compact disk players or recorders; and slide, videotape, overhead and/or motion picture projection.

c. Provide an intrusion alarm and detection system as required by AFM 88-15 and AFR 125-37.

d. Prewire clocks for areas such as the activities center, administrative areas and classrooms.

e. Design audio amplification system specifications to meet special requirements in which worship, choral and dramatic presentation needs are considered.

Chapter 4

FUNCTION AND SPACE CRITERIA

Section A—General Information

4-1. Scope of This Chapter. This chapter presents criteria specifically applicable to the design of each space that may be included in an Air Force religious facility. Use, character, and specific design requirements are identified for each functional area. Criteria for each space also include size; critical dimensions, where important; necessary storage; furnishing and equipment; and any special technical requirements. Also, chapter 3, section C, provides general criteria that should be applied to mechanical and electrical systems.

4-2. Applicability of This Chapter. Criteria in this chapter apply to all facility sizes and to all five types of facilities covered in this document. The tables showing area allocations provide guidance on recommended space sizes. These recommendations may be modified in the design of an individual project to reflect local program requirements.

Section B—Worship Spaces

4-3. General Information. Worship spaces encompass the following:

a. The **sanctuary**: the primary worship space accommodating congregation, clergy, choir, and all related liturgical furnishings. The sanctuary includes the nave, the chancel, and the choir.

b. The **small sanctuary**: used by smaller groups.

c. The **narthex**: the entry to all of the worship spaces and the main entry to the building.

d. The **Blessed Sacrament room**: a small worship space dedicated to the Roman Catholic rite of Reconciliation and to Reservation of the Sacrament.

e. The **baptistry**: includes the immersion pool and the adjacent changing rooms.

f. The **sacristy**: used for storage of ritual items and the vesting of clergy for worship.

g. **Choir robing room**: provides storage for choir robes as well as a place for the choir to robe and to practice.

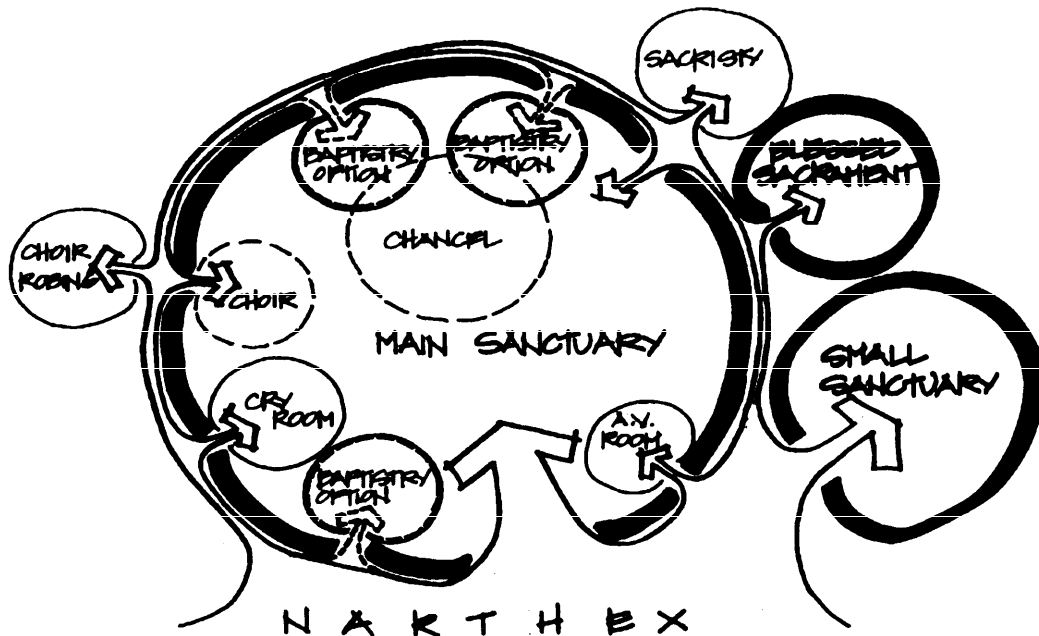


Figure 4-1. Worship Area Concept Diagram.

h. **The cry room:** allows parents of young children to observe worship services without their children disturbing services.

i. **Storage:** areas which contain seating, other furniture, and other liturgical items.

j. Figure 4-1 defines the functional relationship of these worship spaces.

4-4. Religious Requirements:

a. **Christian Worship.** In most Air Force chapels, the predominant users of the facilities will be members of the Christian faith. Services are most heavily attended on Sundays for most denominations. Liturgical furniture required for Christian worship varies somewhat between denominations (for example, see Eastern Orthodox Worship below). General elements, however, include:

(1) **Altar or Table** which is located in the chancel. It is generally made of wood. The table is often covered by an altar cloth. The height of the table should be about 38 inches above the floor and should not obscure a person standing behind it.

(2) The **pulpit** functions as a bookstand. It is the place from which the Scriptures are read and sermons are delivered. The pulpit usually has a sloping surface with a lip at its lower edge to provide a convenient reading position. Height adjustability of the sloping surface is desirable. The gestures of the person standing at the pulpit must be clearly visible to the congregation. Therefore, in larger spaces the pulpit should be at least slightly elevated above the floor on which the altar or table stands. If microphones are attached to the pulpit, they should not be visible to the congregation. The pulpit also contains a shelf for book and paper storage, as well as a light for reading. Locate the pulpit so the congregation is predominately in front of the speaker. Placement of the pulpit should not interfere with view or access to the altar.

(3) A **lectern** is required. In some services, it serves as the area from which the Scriptures are read. In other services, it is used primarily for nonliturgical purposes. The lectern should have a sloping, adjustable height surface.

(4) **Presider's Chair.** The leader of the worship service is generally given a special chair. It may be distinguished from other seating in the chancel by the design of its arms, its color, weight, or material.

(5) A small table, the **credence**, is used for placement of communion vessels and objects

when they are not on the altar or table. The credence also may serve as an Offertory table or as a place for liturgical books.

(6) **Baptisteries and changing rooms** are required by groups who immerse. Baptisms also may be performed for other groups using portable fonts or basins.

(7) **Eastern Orthodox services** are held primarily on Sundays. Requirements include:

(a) **Holy Altar or altar table** that is centrally located and oriented toward the east in the chancel. The Holy Altar is covered by the Antimins, a silk or linen cloth of about 12 inches by 10 inches, with a relic sewn into it. A cross, the Book of Gospels, and the Tabernacle (a chest containing the Blessed Sacrament) also are placed on the Holy Altar. The chancel area must be large enough and arranged to allow the priest to stand at all four sides of the Holy Altar to offer incense.

(b) The chancel also has a small altar, called the **Oblation Table**, which is placed against the northeastern wall, on the left side of the Holy Altar. The bread and wine used for the celebration of Holy Communion are prepared here.

(c) Space must be provided for placement of two **icons**, one of Christ and one of the Virgin Mary with Christ Child at the front of the chancel. These icons may be placed on tripods during services and stored when services are not in session. Space also is required for a vigil stand, comprised of about 30 votive candles each, which must be placed in front of each Icon. These stands may be portable.

b. **Jewish Worship.** Jewish services generally take place on Friday evenings and Saturday mornings. Other holidays will require services to be held at additional times. On High Holy Days, the Jewish assembly may be large. Specific space requirements include:

(1) **Ark:**

(a) The ark contains the Torah scrolls. The height of the ark should enable the Torah to be removed easily. The Ark is usually made of wood, and is carefully designed to reflect that it contains a treasure, the Torah. A required "Eternal Light" or lamp is usually hung above the ark. The ark also might be lighted by interior lamps.

(b) The ark can be carried by worshipers and may have handles on each side for this purpose. Generally, however, the pedestal should

have casters with which to roll it into the place of worship.

(c) The Torah scrolls are composed of calligraphy on parchment or vellum. They are expensive and are generally lent or donated to military congregations. One source of such loans may be the Commission on Jewish Chaplaincy, National Jewish Welfare Board, 15 E. 26th Street, New York NY 10010.

(2) **Torah Reading Table.** When the Torah is removed from the ark, it is placed on a table to be unrolled and read. The table must be wide enough to accommodate the unrolled width of the Torah (about 36 inches). The table top should be sloped, if possible. The reading table must be covered by a cloth before the Torah is placed on it.

(3) **Garment Bin.** The men who attend Jewish worship may wear kipot (caps) and tallit (shawls). These garments must be stored in a portable unit which should be accessible for worship services. A storage container with a box-like area for caps and a rod on which the shawls can be draped is needed. This may be mounted on casters so it can be rolled into the worship area.

(4) **Mikvah.** On bases with a large concentration of Jewish personnel, consider programming for a mikvah or ritual immersion bath facility. This area must be plumbed and must have an adjoining changing or dressing room. Design of the mikvah must conform to Orthodox Jewish requirements.

c. Islamic Worship:

(1) Islamic worshipers are required to pray five times each day. Whether this prayer occurs within the chapel will depend on the proximity of that facility to work and housing locations. Congregational prayer occurs on Fridays, usually between the hours of noon and 2:00 p.m.

(2) The room used for Islamic services requires no seating and must be without representational art. It is not required that the eastern-facing wall be windowless, but this may be desirable to reduce potential distractions during worship.

(3) Other specific requirements include:

(a) The most important need for Islamic worship is a **clean rug or mat**, brought in for services and placed on the floor. A single large rug is preferred, but individual rugs are permissible. The worshipers prostrate themselves on the rug during worship services. Provide a rack for holding and storing the rugs or a place in which to store a large rolled rug.

(b) The **pulpit** required is simply an elevated platform. This requirement responds to the tradition that Mohammed spoke on the first of three steps.

(c) Space should be designed to allow placement of the **Mihrab** which is a beautifully crafted arched niche. It houses a device for indicating the direction of Mecca. No standard size has been established for the Mihrab. Relate its size to the scale of the space and to the need for portability. The Mihrab is brought into each service and placed behind the pulpit.

(d) **Garments and Fabrics.** Shoes are removed for Islamic worship. Provide a rack for shoes at the room's entrance. Male worshipers wear skull caps; provide a portable bin for these caps at the entrance.

(e) **Ablutions.** Before entering the room to pray, a ritual of washing of the mouth, hands, and feet is required. When water is not available, ritual gestures are used to symbolize this activity. If the program includes provisions for a large number of Islamic groups, provide either a separate enclosed washing area or additional basins and taps in the main chapel restrooms.

d. **Buddhist Worship.** Buddhist services occur primarily on weekends. The room must be unadorned. The items needed for Buddhist services include a portable altar of no standard size and a stand on which the altar is placed. The stand may be either a table or a raised dais, about 4? feet wide by 5 feet long by 2 feet high. A cloth is placed on the stand and the altar placed on the cloth. Provide storage for the altar and the stand, as well as for the cloth, candles, and any other articles of worship.

4-5. Space Criteria:

a. Sanctuary:

(1) **Use and Character.** Provides space for community worship. It is comprised of three areas in the following general proportions: the nave (about 75 percent of the total area); the chancel (about 15 percent of the total area); and the choir (about 10 percent of the total area). The nave is the area for congregational seating. The chancel is where clergy or lay leaders perform liturgical rituals. The choir is the space set aside for choir members and the piano and/or organ in those traditions where live music is part of the service. Although separate and specific activities define these three areas, all are part of the sanctuary and their individual requirements must be integrated into the design of the

space. This space must create a sense of religious place for its users as discussed in chapter 3. Here is where the sense of awe, reverence, peace, and comfort must be communicated. Here is where the quality of design, material, and craftsmanship underscore the special use of the building.

(2) Size. See table 4-1 for net allowable square feet for each area and figure 4-2 for a typical layout.

(3) Design Requirements:

(a) The design of the nave must provide good sight lines between the congregation and the chancel. Minimum end aisle widths should be 48 inches. Minimum clear width between pews should be 12 inches from seat edge to the back of the preceding row of pews. Nave seating should promote an intimacy with the liturgical action that occurs in the chancel. Row lengths should not exceed 14 seats; 10-seat lengths are preferred. Provide a center main aisle with a minimum width of 6 feet to accommodate weddings, processions etc. Provide a designated area for wheelchairs at the front of the nave. Provide a control room for light and sound control.

(b) As the focal point of the sanctuary, the chancel (a platform for altar and clergy) may be located at one end of the space or closer

to the middle. The chancel should be raised two or three steps for visibility. Chancel size must accommodate altar furnishings and clergy seating. Provide movable communion rails where desired.

(c) The choir area must accommodate 15 to 30 persons or more. Integrate piano and organ consoles, tone chambers, if any, and speakers into the design of the sanctuary. Provide direct sight lines between the choir and nave seating and between the choir and the piano or organ. Do not locate the choir behind either the congregation or the chancel area. Provide processional passage to the choir from an entrance which is near the chancel and separate from the worshipers' entrance. Provide optional choir areas at either side of the chancel as required by the program.

(4) Furnishings and Equipment:

(a) Nave. Provide either fixed padded pews or comfortable, interlocking chairs, both with kneelers and book racks. Length of pews may vary, but should not exceed 14 persons per pew. Fixed pews are recommended for reasons of management and appearance. Chairs sometimes are preferred for the flexibility they provide. Seat cushions for the pews should be provided, when feasible. Seat cushion material must be durable, stain and water resistant.

Table 4-1 Worship Area Requirements (Space Requirements in Net Square Feet.)

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|----------------------------|------------------|------------------|------------------|
| WORSHIP | | | |
| Sanctuary | 5,200 | 3,600 | 2,200 |
| Small Sanctuary | 1,200 | 900 | 400 |
| Narthex | 1,040 | 740 | 440 |
| Sacristy | 300 | 270 | 200 |
| Blessed Sacrament Room | 250 | 250 | 150 |
| Baptistry | 100 | 100 | 100 |
| Baptistry Changing Rooms | 225 | 225 | 225 |
| Cry Room | 200 | 200 | 150 |
| Choir Robing Room | 225 | 225 | 160 |
| Storage (Furnishings) | 200 | 200 | 150 |
| Storage (Liturgical Items) | 125 | 125 | 120 |
| Mikvah | -- | -- | -- |
| TOTALS | <u>9,085</u> | <u>6,835</u> | <u>4,295</u> |

(b) Chancel. Provide a movable altar, pulpit, lectern, and upholstered seating or chairs with seat cushions for presiding clergy, assistants, speakers, etc. . This furniture must be easy to move and store.

(c) Choir. Provide space for both an organ and a piano. Provide movable choir seating.

(5) Technical Requirements:

(a) Lighting. Provide an overall lighting intensity in the nave of 15 to 30 footcandles. Provide spot lights for the altar and the pulpit at 100 footcandles; control these by dimmer switches. Locate the spotlights to minimize facial shadows. Normally, use only incandescent lighting in the sanctuary to produce the necessary atmosphere, accents, and relationships of light to architecture. Provide a variety of lighting sources to accommodate different times of

the day and different tasks. Provide lighting for function (to read music and text and to see other people; for highlighting important areas, such as the altars, the pulpit, the liturgical objects; and for illuminating the space to reveal volume, dimensions, textures, and colors).

(b) Acoustics. See paragraph 3-8.

(c) Sound. Provide microphone jacks at choir and pulpit, lectern and altar areas of the chancel. See paragraph 3-8.

(d) Piano and Organ. Provide a separate 110 to 115 volt circuit and outlet for organ console location. Piano location must have an outlet for a reading lamp. Design to accommodate tone chambers for the organ; these chambers normally are located at the front of the chancel. The chambers are covered with acoustically transparent cloth grillwork. Provide empty (hidden)

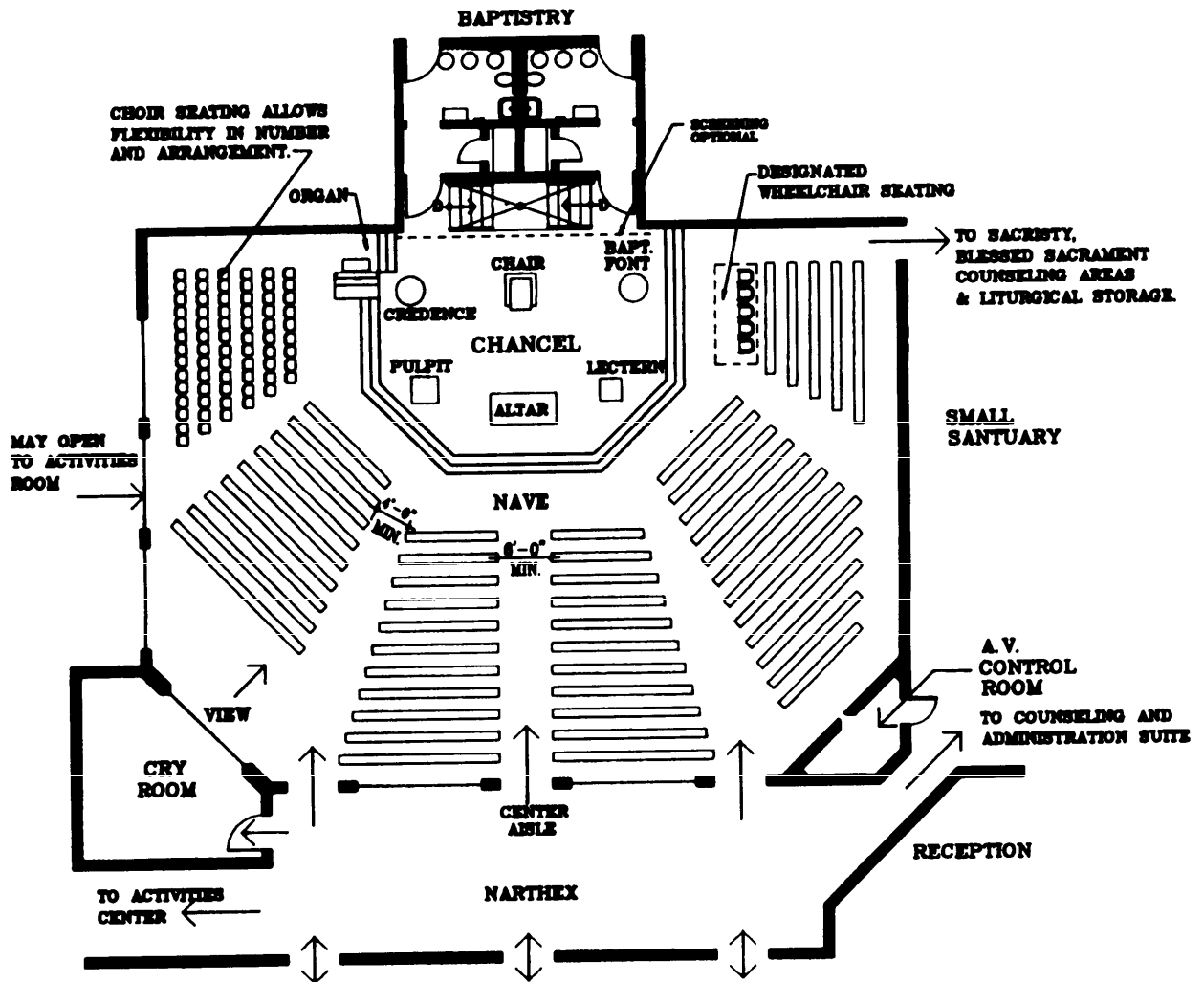


Figure 4-2. Main Sanctuary.

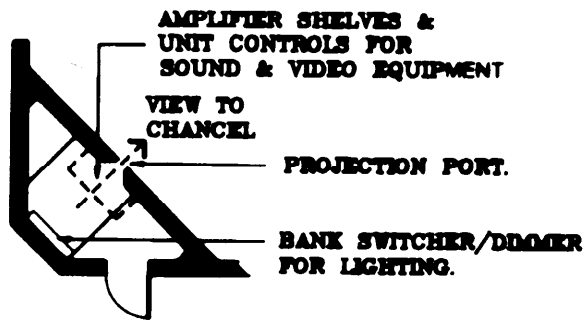


Figure 4-3. Audiovisual Control Room.

conduit from organ console to the tone chambers and to the audiovisual (AV) room as part of the construction contract. The user will provide the organ, wiring, and tone chambers as part of the furnishings. Seek design guidance on organ requirements from HQ AFLC/HCB for manufacturers input as to placement requirements of the organ and speakers during the concept design phase. For overseas bases, provide separate circuit and outlet at the standard voltage of the country.

(e) Audiovisual (AV) Control Room. Provide an enclosed AV control room to control lighting and sound in the worship space at the side or rear of the sanctuary. This room must be unobtrusive. Activities in the sanctuary and the chancel area must be visible and audible in the control room and must be accessible from outside the sanctuary during services by either ushers or the chapel manager. See figure 4-3 for a typical AV control room layout. Provide a desk by a small vision port to station an audio mixer control panel. Control sanctuary lighting from this location. Locate the AV control room to serve as a projection port behind the congregation.

(6) Storage Requirements. Provide easily accessible storage for liturgical items not stored in the sacristy, for choir seating, and for portable furnishings, such as the altar, pulpit, seating, lectern, and communion rail. Subparagraphs j and k below identify and describe these areas; space is allocated separately for each category.

b. Small Sanctuary:

(1) Use and Character:

(a) Provides space for services when the size of the large sanctuary is inappropriate for a smaller number of worshipers, for worship of small religious gatherings, for daily Mass, for

small weddings, etc. Design it for use for smaller groups at the same time the larger sanctuary is used by larger groups. The space may be used for overflow only on days when the church population is extremely high, such as Holy Days. This is the only time this secondary use of the space should be considered. When developing a program, the primary use of the space must be considered first and foremost, not the secondary use. When used for overflow, consider the level of separation and plan for closed-circuit television, etc., if needed.

(b) Provide sufficient acoustical and circulation isolation to minimize interference. It may also be used for social activities after worship in the large sanctuary if no activities room is available. Like the larger worship space, design, materials, and craftsmanship should define the spiritual character and use of this space. Its architectural character must be in harmony with that of the large sanctuary. An outdoor patio may appropriately be associated with this space.

(c) Design both sanctuaries to accommodate users from all faith groups. Directly link to the small sanctuary storage for the liturgical objects of all faith groups, as well as access to special spaces such as those for ritual washing. This space is a worship space, not a multipurpose room. It must be designed as carefully as the larger sanctuary, with equal attention to provision for a sense of the spiritual.

(2) Size. See table 4-1.

(3) Design Requirements:

(a) Design this space to accommodate the special needs of all faith groups. The room must be free of representational ornament and ideally should have no windows or other openings on the chancel wall.

(b) The chancel end of the room must face east.

(4) Furnishings and Equipment. Provide a portable altar, a portable pulpit, a portable ark, and all necessary liturgical items. These must be easy to move and store. Consider using a rotating display cabinet for Islamic, Buddhist, and Jewish items to simplify storage. Design space and power outlets for either a piano or small organ. Provide stackable chairs. (They may be either upholstered or with pads.)

(5) Technical Requirements:

(a) Lighting. Normally, use only incandescent lighting in the sanctuary to produce the necessary atmosphere, accents, and relation-

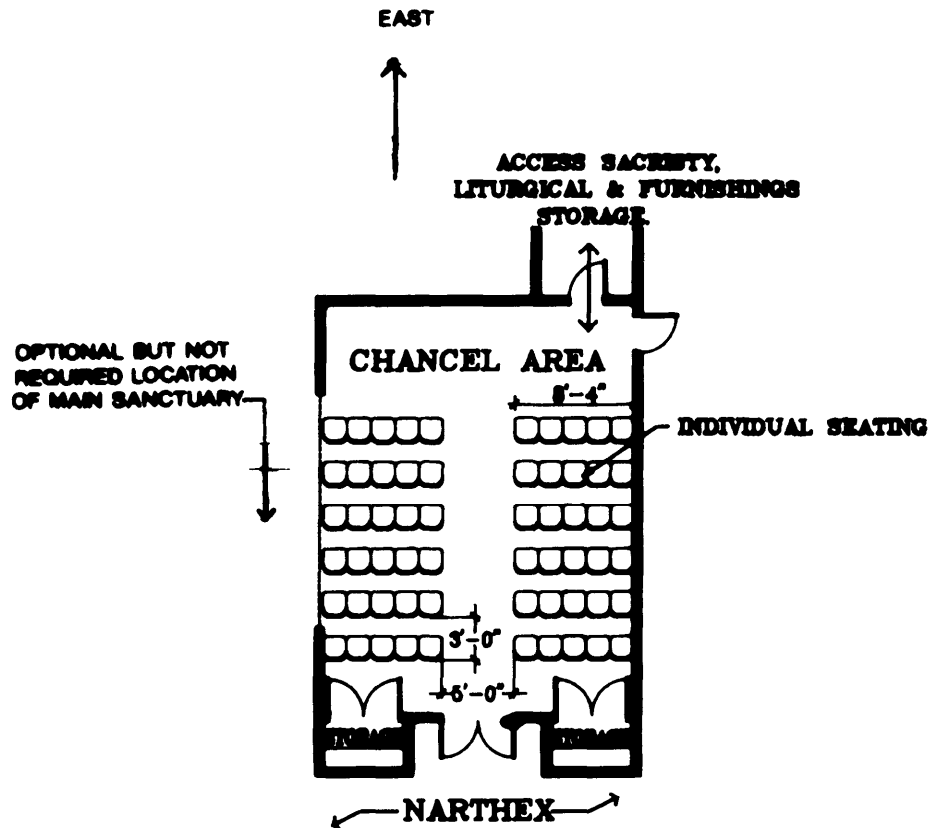


Figure 4-4. Small Sanctuary.

ship of light to architecture. Provide a range of intensity at a reading level from 15 to 30 footcandles. Provide spotlights for the altar and the pulpit at 100 footcandles; control these by dimmer switches. Locate spotlights to reduce facial shadows.

(b) Acoustics. See paragraph 3-8.

(c) Sound Amplification. Provide microphone jacks at the chancel area (paragraph 3-8).

(6) Storage Requirements. See subparagraphs j and k below.

(7) Small Sanctuary Layout. See figure 4-4 for a typical small sanctuary layout.

c. Narthex:

(1) Use and Character. Provides the main entrance to the building, in general, and to the sanctuary specifically. The design of the narthex should enhance the sense of entry to a place of worship. The narthex orients people to the building and prepares the congregation for the mood and attitude of worship. It encourages the gathering of people and may include space for coat storage and storage of tropical or outer garments, particularly in northern tier or tropical

bases. Its architectural character must be in harmony with that of the sanctuary.

(2) Size and Critical Dimensions. See table 4-1 for size and figure 4-5 for critical dimensions and a typical layout.

(3) Design Requirements:

(a) Where the narthex leads directly to the sanctuary, provide clear and direct access from the narthex to other parts of the building. The small sanctuary and the Blessed Sacrament Room should be easily accessible. Provide a vestibule as a transition area for cold, wet, and hot weather conditions.

(b) Where coat storage is needed, provide coat rooms that are separate from the narthex or provide hanging space in alcoves open to the narthex. In either case, provide built-in hooks, rods, and shelves. Free-standing coat racks are not acceptable.

(c) Consider using stone, abrasive ceramic tiles, or terrazzo floor finishes in high traffic areas.

(4) Furnishings and Equipment. Provide bulletin board, literature rack, and comfortable

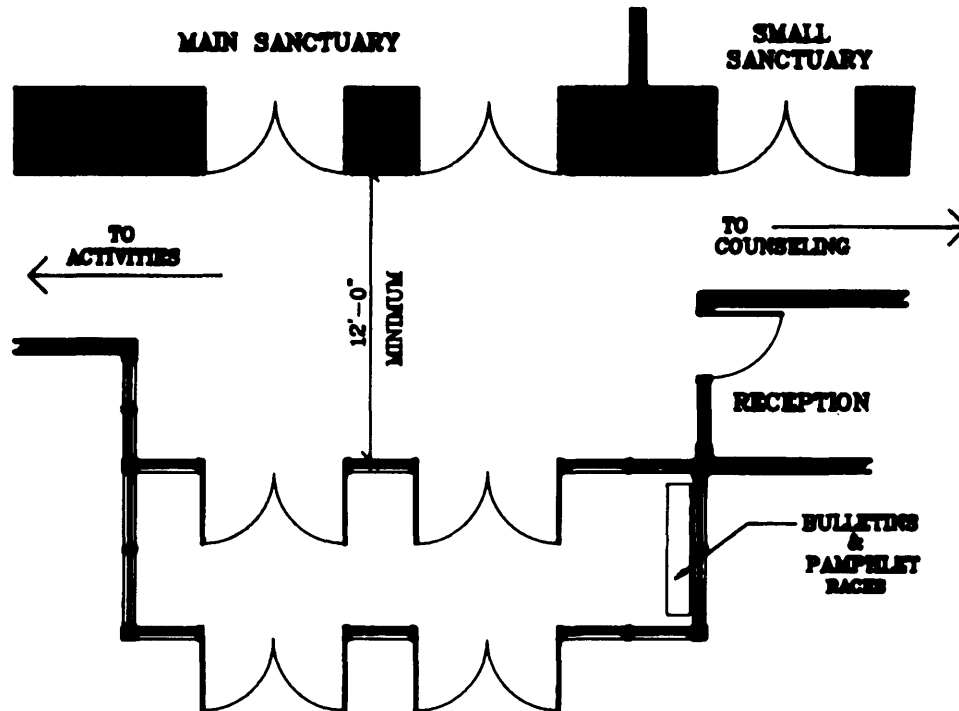


Figure 4-5. Narthex.

seating if the narthex is to be used for other social activities.

(5) Technical Requirements:

(a) Lighting. Provide dimmer controls to allow variable illumination levels.

(b) Acoustics. Use sound-absorptive materials in the narthex to control noise (e.g., carpeting, fabric-covered glass fiber paneling, acoustical glass fiber batting, spray-on fire resistant cellulose fiber, and textured acoustical tiles) to provide noise reduction and promote comfortable conversation.

(c) Sound. Provide speakers connected to the sanctuary so the narthex may be used as overflow space.

d. Blessed Sacrament and Reconciliation Room:

(1) Use and Character. Provides space for the Roman Catholic community to use for Reservation of the Blessed Sacrament in the Tabernacle, for prayer and meditation, and for administering the Sacrament of Reconciliation. Occasionally, this room is used for daily Mass. This is a worship space and its character must reflect this fact. Materials, craftsmanship, and ornament should be selected to achieve the sense of peace and reverence associated with a place of worship.

(2) Size. See table 4-1.

(3) Design Requirements. Locate the Blessed Sacrament room away from the more active parts of the building. However, the space should be easily accessible from the narthex. This is particularly important since the Blessed Sacrament room will remain open even when the administrative and activities areas have been locked. Consider providing separate access for priests, preferably from the sacristy.

(4) Furnishings and Equipment. Provide a tabernacle on the altar, an eternal light, one or more foldable confessional screens with kneelers, movable chairs for services and reconciliation. Screens may be designed to fold against the wall when not in service. Windows and stained glass features are recommended. Where possible, rear-illuminated stained glass panels may be designed into the walls.

(5) Lighting. Provide dimmer controls for all light fixtures. Allow directional accent lighting at the Tabernacle.

(6) Storage Requirements. Provide storage for chairs and for confessional screens, if required. Use nearby liturgical storage and furniture storage rooms.

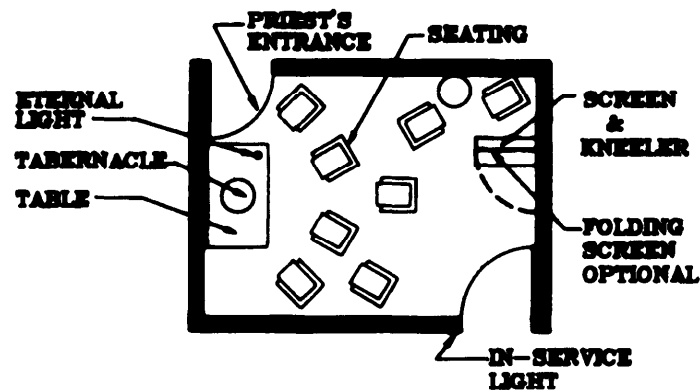


Figure 4-6. Blessed Sacrament Room.

(7) Blessed Sacrament Room Layout. See figure 4-6 for a typical Blessed Sacrament Room layout.

e. Baptistry — Pool and Font:

(1) Use and Character:

(a) Baptism is an important religious ceremony shared by many Christian faiths. It may involve the effusion of holy water from a baptismal font or immersion in a baptismal pool. Although the immersion ritual varies, candidates generally are baptized wearing white robes.

(b) The proper location of the baptistry is a significant design element within the Sanctuary. The installation staff chaplain (ISC) must determine all faiths that will use the baptistry. The ISC gives this information to the designer who must design the baptistry to accommodate different baptismal rites and provide for the active participation of the congregation.

(2) Size and Critical Dimensions. See table 4-1 for size and figure 4-7 for critical dimensions and a typical functional layout. The capacity of the pool can vary from 350 to 700 gallons of water. The size may vary from 10 to 14 feet long and 4 to 6 feet wide. It is 42 inches deep.

(3) Design Requirements:

(a) The baptismal pool usually is located in the chancel area of the nave. The chancel location will require screening when the baptistry is not in use. The pool must be next to changing rooms (see f below), to allow easy, private, and convenient access by people in wet robes. Provide safety precautions, such as ornamental grillwork at water level, since many small children use Air Force religious facilities. In addition, use nonskid floor and stair finishes since surfaces will become wet. If custom built, ce-

ramic or stone tile finishes are preferred. Prefabricated pools with integral steps are available.

(b) If the immersion pool is raised above the sanctuary floor, a window of 1/2-inch plexiglass and 10 to 15 inches in depth may be installed facing the congregation.

(c) The baptismal font can be located either at the baptismal pool area or at the chancel.

(4) Furnishings and Equipment. The baptismal font is a free-standing liturgical element. It is usually set on a stand or on a credence (i.e., a small table).

(5) Technical Requirements. An automatic electric water heater with pump and thermostat should be provided. Consider using a solar-heated hot water storage system, if practical. Provide a slightly pitched floor surface and a floor drain leading directly to sewer outfall. An "overvent" trap that assures silent operation of the overflow drain is recommended. Prefabricated baptistry pool assemblies may simplify construction and installation.

f. Baptistry — Changing Rooms:

(1) Use and Character. Use baptistry changing rooms before and after immersion baptisms. Additionally, these rooms may be used for the required ablutions before Islamic worship or as dressing or changing rooms for users of a mikvah if one is provided.

(2) Size and Critical Dimensions. See table 4-1 for size and figure 4-7 for critical dimensions and a typical changing room layout. Also, see paragraph 4-14a for specific dimensional requirements.

(3) Design Requirements. Place the changing rooms next to the baptistry and convenient to the rest of the facility, since the rooms may be

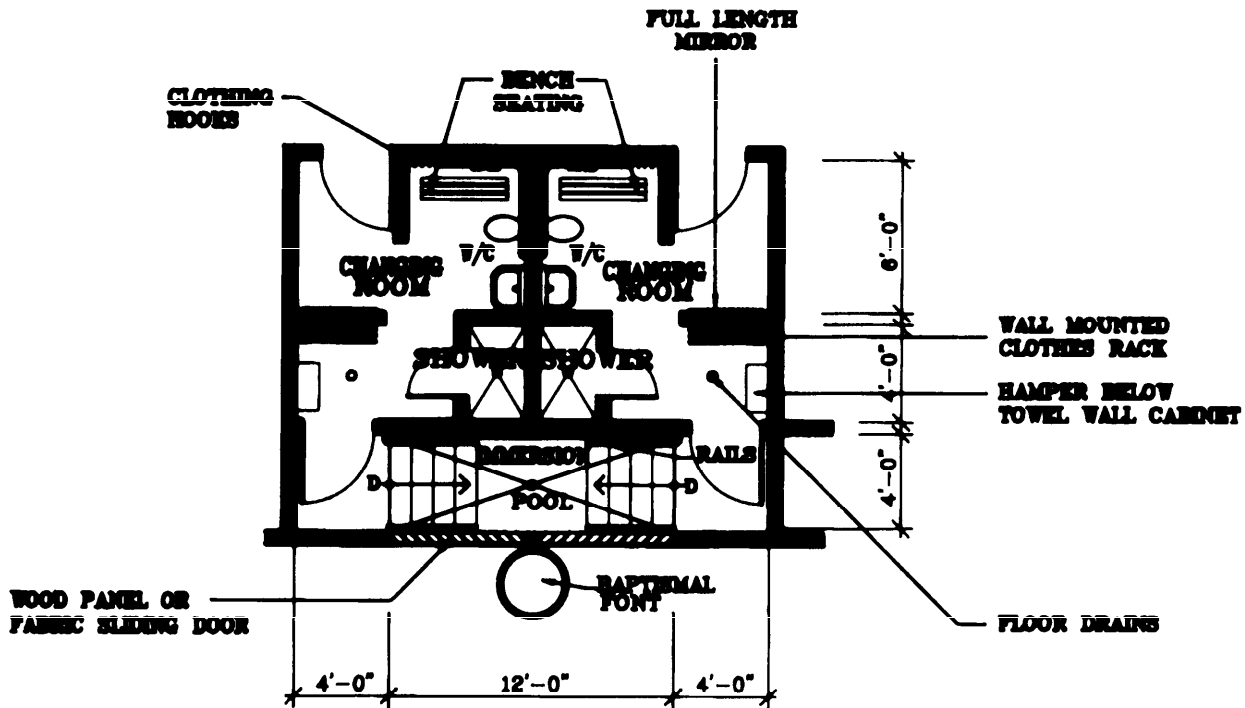


Figure 4-7. Baptistry.

used at times other than during baptisms. Provide two changing rooms: one each for men and women. Provide changing stalls, a clothes hanging area, lockers for securing valuables, lavatories, and a handicapped-accessible water closet at each changing room. The areas allocated are based on providing changing stalls, a cloth hanging area, a locker to secure valuables, two or more sinks, and one handicapped-accessible toilet stall for each changing room. Provide a mirror above each sink; electric outlets for hair dryers or wall mounted hair dryers; towel racks and hanging space for wet robes. Changing stalls require benches, as well as hooks and shelves for clothing. Provide floor drains and use nonslip abrasive floor finishes. Wall finishes may be ceramic tile, vinyl, or a washable alkyd enamel. Use moisture-resistant gypsum sheeting throughout. Provide a feathered transitional threshold at the entrances to all changing rooms.

(4) **Furnishings and Equipment.** Provide privacy locks on all entrance doors. Also, see paragraph 4-14a for specific furnishing and equipment requirements.

(5) **Technical Requirements.** Provide a ceiling exhaust fan in each changing room.

(6) **Storage Requirements.** In the storage area, provide shelving for robes, towels, paper towels, and soap supplies.

g. Sacristy:

(1) **Use and Character.** Provides space for use by clergy and other service participants for robing and preparing for worship. Vestments and liturgical items are stored here.

(2) **Size and Critical Dimensions.** See table 4-1 for size and figure 4-8 for critical dimensions and a typical sacristy layout.

(3) **Design Requirements:**

(a) The sacristy requires built-in storage cabinets for linens and altar hangings; a secure cabinet for appointments and wardrobe storage; counter space, including a sink; and, if required, a sacarium. A sacarium may be required for the Roman Catholic and Eastern Orthodox disposal of remaining wines distributed during communion. Tradition may require the direct return of the wine to the earth rather than into sanitary sewer lines.

(b) The sacristy should be designed so that clergy can change into vestments and still provide seating for at least two people. It should provide direct access from the sacristy to the chancel area of the main sanctuary, if possible,

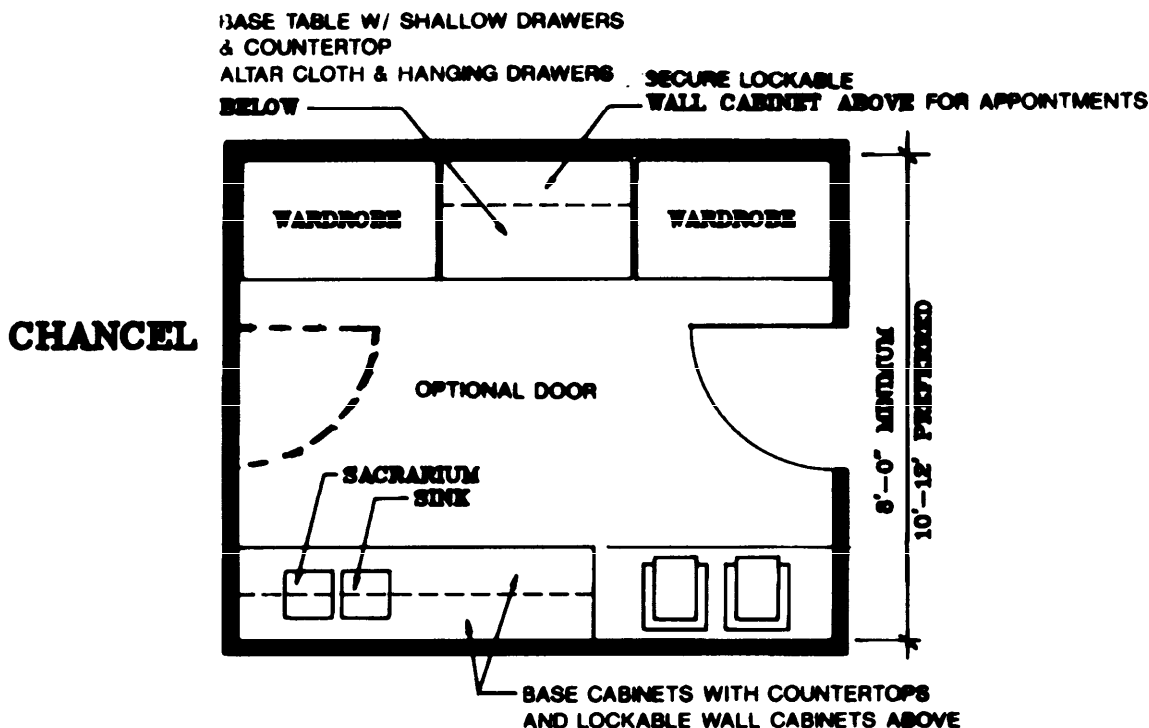


Figure 4-8. Sacristy.

and secondary access convenient to chaplain offices and to the small sanctuary.

(4) **Furnishings and Equipment.** Built-in cabinets and wardrobes must be lockable. Provide enough wardrobes for the assigned clergy who will regularly use this space. Provide a full-length mirror. Design wardrobes to hold three to four robes for each assigned and auxiliary chaplain.

(5) **Technical Requirements:**

(a) **Lighting.** Provide both ceiling and under cabinet lighting at 50 footcandles overall.

(b) **Sound.** Provide speakers connected to the sanctuary sound system.

h. Choir Room:

(1) **Use and Character.** Provides a sound-proofed room for use by the choir for warm up and practice. It is also a robing room for choir members before services. Provide storage for choir robes and sheet music.

(2) **Size and Critical Dimensions.** See table 4-1 for size and figure 4-9 for critical dimensions and a typical choir room functional layout.

(3) **Design Requirements.** Locate the choir room near the choir entrance to the main sanctuary. The choir will generally enter the sanctuary by a main aisle procession. However, en-

trance might also occur through a chancel door. Door should be wide enough to accommodate a piano (minimum 42 inches wide).

(4) **Furnishings and Equipment.** Provide a piano, music stands, a full-length mirror (to be used for adjusting robes), and a secure (lockable) cabinet for personal belongings (purses) and valuables.

(5) **Storage Requirements.** Provide lockable closets for choir robe storage and file cabinet storage for sheet music.

i. Cry Room:

(1) **Use and Character.** Permits families with babies and toddlers to observe and hear worship services without the children disturbing the congregation. The design of the space should be warm, inviting, and in harmony with the sanctuary.

(2) **Size and Critical Dimensions.** See table 4-1 for size and figure 4-10 for critical dimensions and a typical cry room functional layout.

(3) **Design Requirements.** Size cry rooms to provide space proper for base needs. The cry room must be acoustically isolated from the sanctuary. However, the sanctuary must be visible from the cry room through a window or

one-way glass in at least one wall. Entry should be from the narthex.

(4) Furnishings and Equipment. Provide movable chairs, table or shelf for changing diapers, and playpen.

(5) Technical Requirements:

(a) Lighting. Provide variable intensity 25 to 50 footcandles with lamp-type sources. Lighting levels must not exceed light levels in the sanctuary.

(b) Acoustics. Soundproof the cry room so others are not disturbed by children's' play noises during services. Double pane or laminated glass is recommended for the visual panel.

(c) Sound. Provide speakers with volume control so the service, including music, can be heard in this room.

(d) Other. A sink with hot and cold water and a valve closet is optional. If these items are not provided, toilets should be located nearby.

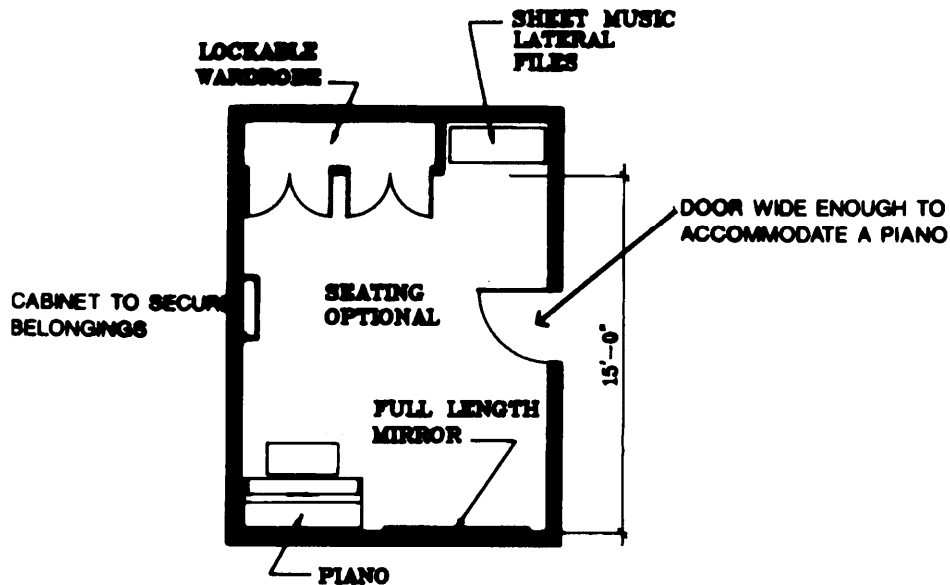


Figure 4-9. Choir Room.

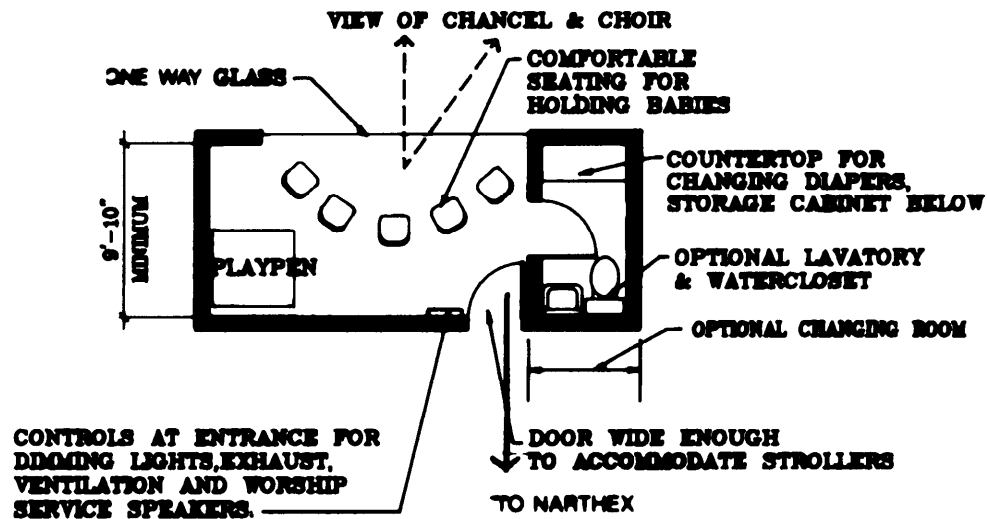


Figure 4-10. Cry Room.

Table 4-2. Counseling Area Requirements (Space Requirements in Net Square Feet).

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|--------------------|------------------|------------------|------------------|
| COUNSELING | | | |
| Chaplains' Offices | 1,110 (6) | 740 (4) | 555 (3) |
| Waiting Area | <u>75</u> | <u>60</u> | <u>50</u> |
| TOTALS | 1,185 | 800 | 605 |

j. Storage—Liturgical:

(1) Use and Character. Accommodate all fixtures and appurtenances used by the various faith groups in worship services. These include stations of the cross, processional crosses, eternal lamps, etc.

(2) Size and Critical Dimensions. See table 4-1. Doorway should be 36 inches to 42 inches wide. Minimum width of the total area should be 6 feet.

(3) Design Requirements. Locate liturgical storage with convenient access to the sacristy and both sanctuaries. Arrange the space with shelves, hooks, etc., as required. Provide lockable cabinets for valuable religious objects.

k. Storage—Furnishings:

(1) Use and Character. Accommodates storing furnishings and other large liturgical items used by the various faith groups. Such items include stackable chairs from the small sanctuary (during Islamic worship), the ark, a pulpit, prayer rugs, presider chairs, audiovisual (AV) equipment, etc. Consider stacking the chairs on carts for ease of movement and storage.

(2) Size and Critical Dimensions. See table 4-1. Doorway should be at least 42 inches wide to accommodate chairs and carts. A minimum dimension of 5 feet is recommended for the total area. Room size may be affected if a large rolled carpet must be stored.

(3) Design Requirements. Furnishings storage must be next to both sanctuaries and easily accessible to it. Provide double doors to accommodate chairs on dollies. Provide shelves, hooks, etc., as required. Provide lockable cabinets for valuable liturgical items, as required.

Section C—Counseling and Administrative Spaces

4-6. General Information. The counseling functions of the chaplains are extremely important. At times, chaplains serve as the primary

source of advice, comfort, and solace for Air Force personnel and their dependents. The chaplain offices and waiting areas must provide private settings for individual and family counseling.

4-7. Space Criteria. See figures 5-1, 5-2, and 5-3 for counseling and administrative space functional relationships.

a. Chaplain's Office:

(1) Use and Character. Provides space for use by chaplains for counseling, for study, and for administrative duties. The character of the office should be residential, warm, and inviting rather than institutional. For these offices, avoid such elements as grid ceilings, block walls, and institutional finishes.

(2) Size and Critical Dimensions. See table 4-2 for size and figure 4-11 for critical dimensions and a typical chaplain's office functional layout.

(3) Design Requirements. Design the office to allow for furniture arrangements that permit comfortable conversation. Provide built-in bookshelves, storage cabinets, and coat closet. Recommended finishes include wood paneling or trim detail, fabric wall coverings, and premium grade ceiling assemblies. If acoustical tile ceilings are provided, use 2- by 2-foot grids with either textured tiles or tiles with edge reveals.

(4) Furnishings and Equipment. Provide a desk and chair, wardrobe storage for coats and vestments (may be built in), visitor chairs and sofa, one or more file cabinets, and furniture to accommodate a personal computer and or a typewriter.

(5) Technical Requirements:

(a) Lighting. Use incandescent table lamps with recessed incandescent lights on dimmer controls.

(b) Acoustics. Provide acoustical isolation for each room to ensure conversational privacy. Avoid any sound transfer between rooms, including that through heating, ventilating,

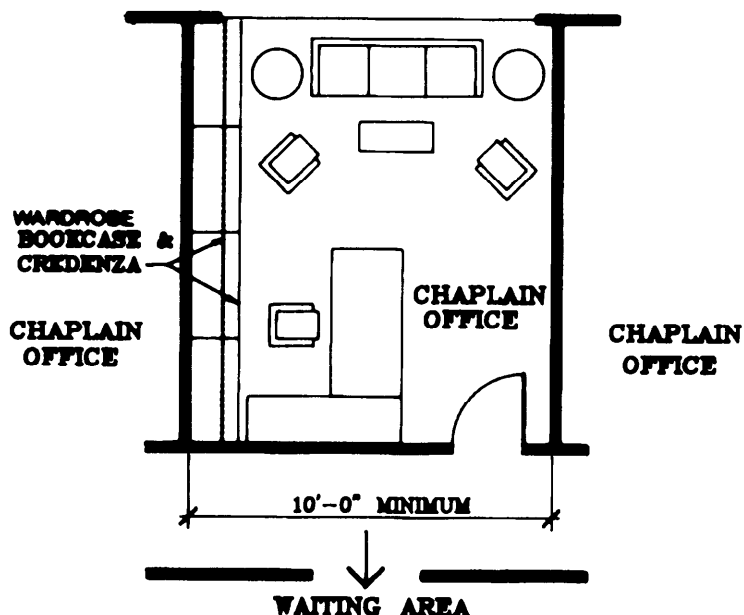


Figure 4-11. Chaplain's Office.

and air-conditioning (HVAC) ducts, dropped ceilings, and doors.

(c) Other. Provide power for personal computers, and communication wiring for local area networks (LAN), if preferred.

(6) Chaplains Offices Layout. See figure 4-12 for a typical layout of a suite of chaplains offices.

b. Counseling Waiting Area:

(1) Use and Character. Provides a private area for individuals waiting to see the chaplains, because of the sensitive and confidential nature of pastoral counseling in the Air Force. People must feel free to visit chaplain without lengthy explanations or exposure to many passersby.

(2) Size and Critical Dimensions. See table 4-2 for size and figure 4-13 for critical dimensions and several configurations of waiting area layouts. Provide five seats in a waiting area for three chaplain offices; seven seats for four offices; and eight seats for five offices.

(3) Design Requirements. Provide sufficient space for persons waiting to speak to the chaplains. The space should provide comfort and a sense of privacy. Locate the waiting area away from the main building entry and from other circulation spaces and staffed areas. Provide this area either as an enclosed room or in alcoves near the chaplains' offices.

(4) Furnishings and Equipment. Provide the proper number of chairs per size of counseling area (see Size and Critical Dimensions above). Provide several tables.

(5) Lighting. Use dimmer-controlled recessed incandescent lights and table lamps. Fluorescent lights are not recommended for these small, private areas.

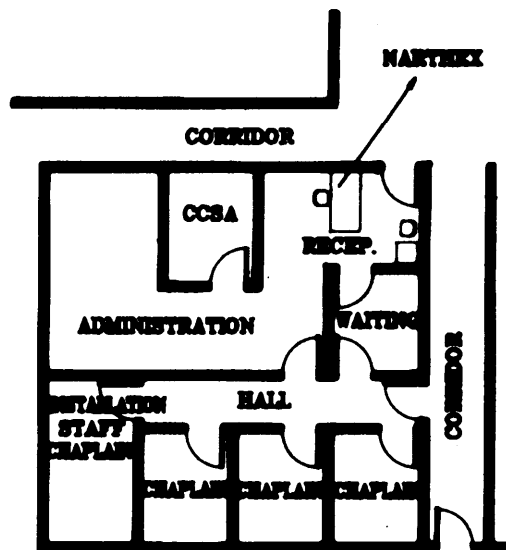


Figure 4-12. Counseling and Administrative.

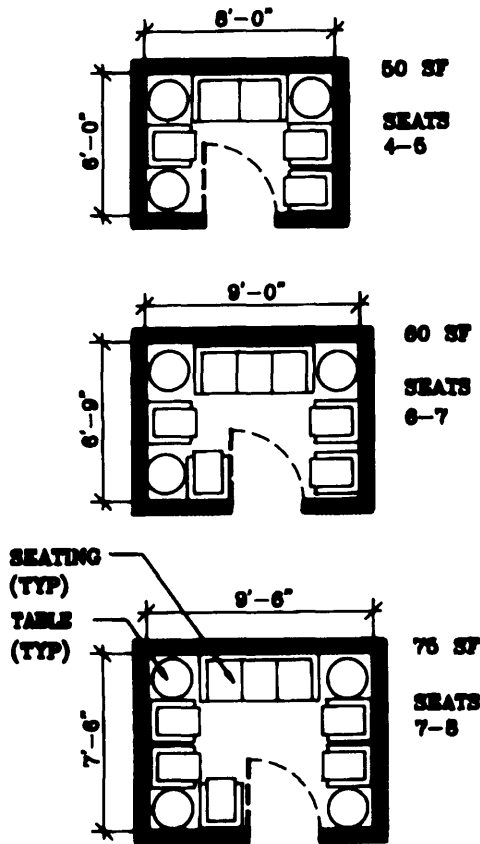


Figure 4-13. Waiting Area Configurations.

Section D—Administrative Spaces

4-8. General Information. The administration of religious facilities requires a reception area, staff work spaces, and an office for the chief of chapel support activities (CCSA). Staff work includes planning, scheduling, and preparing newsletters; record keeping; visitor orientation; clerical tasks; etc.

4-9. Space Criteria:

a. Staff Work Space:

(1) Use and Character. Accommodates the enlisted staff and civilians who operate the facility, manage the building, and provide support for the chaplains. The staff area is an open office environment, using systems or modular furniture work stations.

(2) Size and Critical Dimensions. See table 4-3 for size and figure 4-14 for critical dimensions and a typical administrative area functional layout.

(3) Design Requirements. Provide staff workspaces in an open office arrangement according to guidelines in the Engineering Technical Letter (ETL) 88-10. Allow sufficient circulation space.

(4) Furnishings and Equipment. Provide desks and chairs for administrative staff, as well as computer workstations. Provide file and storage cabinets, as required, and space for a bulletin-folding machine, photocopier, and other reproduction equipment, as required.

(5) Technical Requirements:

(a) Lighting. Provide task lighting at 80 footcandles for individual work surfaces and ambient light at 25 footcandles overall.

(b) Acoustics. Provide sound absorptive surfaces on movable partitions, ceiling tile, and carpeting to minimize noise within the room.

(c) Other. Provide power outlets for computers and telephone outlets at all workstations. The number and arrangement of these outlets should be sufficient to permit relocation or rearrangement of workstations without modifications to the building wiring systems. LANs signal receptacles will be provided for base-wide data and operations management. See ETL 87-9 and 88-10 for all other technical requirements.

Table 4-3. Administrative Area Requirements (Space Requirements in Net Square Feet).

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|-----------------------|------------------|------------------|------------------|
| ADMINISTRATION | | | |
| Reception | 90 | 90 | 90 |
| CCSA Office | 80 | 80 | — |
| Staff Work Area | 300 | 240 | 180 |
| Kitchenette | <u>60</u> | <u>60</u> | <u>60</u> |
| TOTALS | 530 | 470 | 330 |

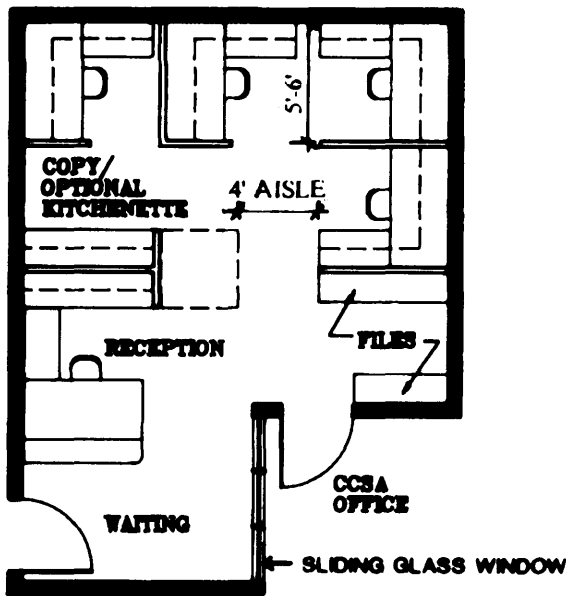


Figure 4-14. Staff Work Area.

(6) Storage Requirements. Provide shelving, file cabinets, general office supply storage, and coat storage, as required.

b. Reception:

(1) Use and Character. Provides space for the receptionist to serve as the primary information source and guide for the facility.

(2) Size and Critical Dimensions. See table 4-3 for size and figure 4-15 for critical dimensions and a typical reception area functional layout.

(3) Design Requirements:

(a) Locate the reception counter so it is visible from the narthex.

(b) Have the receptionist sit within the staff work area. However, the receptionist must be visible from, and have visual control of, the narthex, the counseling entrance, the CCSA office, and the activities center entrance. The reception area should not be far from the installation staff chaplain's (ISC) office (figure 4-12).

(c) Ensure the receptionist's area accommodates a telephone console and a computer workstation.

(4) Furnishings and Equipment. Provide either a reception counter or desk and one chair; provide comfortable seating for several people in a small waiting area.

(5) Lighting Requirements. Provide 10 to 20 footcandles of ambient lighting and a mini-

mum 20 footcandles task lighting for the receptionist.

c. Chief of Chapel Support Activities Office (CCSA):

(1) Use and Character. Provides a private office for the CCSA, the senior nonclergy staff position. This office is used as a work space and for small meetings.

(2) Size and Critical Dimensions. See table 4-3 for size and figure 4-16 for critical dimensions and a typical CCSA functional layout.

(3) Design Requirements. Provide the CCSA office with visual control over the receptionist's area either by a small window or by the door location. Provide space for both desk work and small staff discussions of two to four people.

(4) Furnishings and Equipment. Provide a desk, desk chair, file storage, shelving, wardrobes, two guest chairs, and lamps as necessary.

(5) Technical Requirements;

(a) Lighting. Provide ambient lighting at 25 footcandles, with task lighting adjustable to 80 footcandles at work surfaces.

(b) Other. Provide dedicated power for personal computer and receptacle connection for LAN.

d. Kitchenette:

(1) Use and Character. Provides a kitchenette for the counseling and administrative area only. This can be used to serve simple refreshments for gatherings.

(2) Size and Critical Dimensions. See table 4-3 for size and figure 4-17 for critical dimensions and a typical functional layout.

(3) Design Requirements:

(a) Locate the kitchenette:

1. In a separate room, as a part of the staff work area, as shown in figure 4-14, or in an alcove off the corridor.

2. Near chapel administrative spaces.

3. In an area being considered for absorption into the larger kitchen when adding the chapel activities center.

4. Near the small sanctuary, but not as a part of that space.

(b) Provide wall and base cabinets, as appropriate; countertop with sink; electrical outlets above countertops according to applicable building codes; and if an alcove kitchenette is used, sufficient visual shielding from surrounding areas.

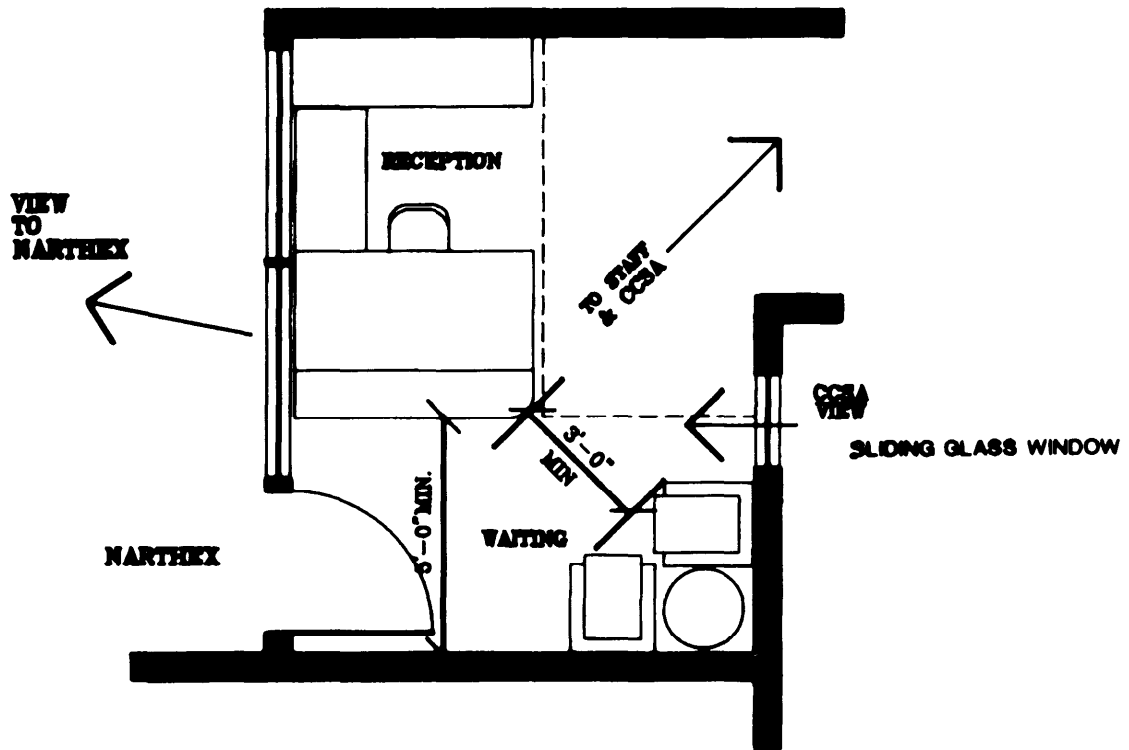


Figure 4-15. Reception Area

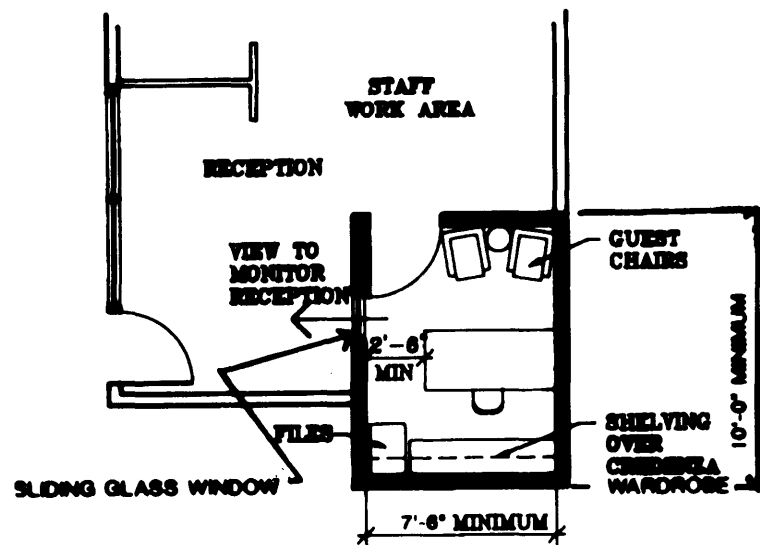


Figure 4-16. CCSA Office.

(4) **Furnishings and Equipment.** Provide single bowl sink with disposal, dishwasher, range with oven, over-the-counter cabinets, microwave, and refrigerator. Provide a sufficient number of power outlets to accommodate kitchen equipment. Electric ranges will normally re-

quire a special (50 ampere) receptacle. An ice machine may be included if specific use can justify it.

(5) **Technical Requirements.** Provide under cabinet task lighting and 15 footcandle ambient lighting.

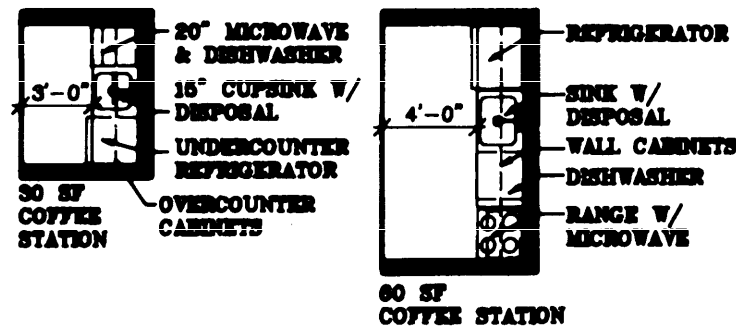


Figure 4-17. Administrative Kitchenette.

Section E—Community Spaces

4-10. General Information. Air Force religious facilities provide spaces for community religious events. The identity of the community is reinforced by activities held in the activities room and in the library-conference-meeting room. Eating together is an important element of community life: include kitchens or kitchenettes in these buildings to support this activity. Community spaces have multiple uses. Subdivide the activities room into several classrooms; use the library for private study or parish council meetings. All of these spaces provide for shared activities associated with the religious community.

4-11. Space Criteria. Refer to figures 5-1, 5-2, and 5-3 for community space functional relationships.

a. Activities Room:

(1) **Use and Character.** Provides an activities room for meetings, dining, and gatherings of the religious community. It also is used as a general assembly for religious education students. Divide the room into two or three smaller spaces to provide additional classroom space. The activities room also may serve as overflow space for the sanctuary on holidays or during other crowded services. When used as overflow, consider use of closed-circuit television or some other device to provide access to services being conducted. Current trends indicate this happens at memorials, special occasions, and Holy Days. The character of the space should be related to the sanctuary, but should be more informal.

(2) **Size and Critical Dimensions.** See table 4-4 for size and figure 4-18 for critical dimensions and a typical activities room functional layout.

(3) **Design Requirements.** Provide movable partitions, to divide the space into classrooms of about 300 square feet each; access to the corridor from all spaces when divided by partitions; electrical outlets for AV equipment in all partitioned areas; and direct access to the kitchen. The activities room should open to an outdoor space if possible. Use floor finishes that satisfy high traffic and maintenance requirements, such as quarry tile, composition tile, terrazzo, and stone.

(4) **Furnishings and Equipment.** Provide folding tables and stackable chairs; carts for storing and moving chairs and tables; one chalkboard per "room," six 8-foot tables per "room," and eight chairs per table. The number of "rooms" is defined by the number of spaces into which the activities room can be partitioned (for example, if the activities room can be partitioned into three smaller spaces, provide furnishings for three "rooms.")

(5) Technical Requirements:

(a) **Lighting.** Provide variable intensity lighting of 20 to 50 footcandles with independent controls for each partitioned section.

(b) **Acoustics.** Glazing should be 3/4-inch laminated panels or 1/4-inch double pane with 1-inch air space for acoustic separation of activities room from the sanctuary corridor.

(c) **Sound.** Provide speakers so the sanctuary service can be heard in the activities room, and outlets, microphone jacks, projection screens, and other AV equipment, as required (ETL 87-9).

Table 4-4. Community Area Requirements (Space Requirements in Net Square Feet).

| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
|----------------------------|------------------|------------------|------------------|
| COMMUNITY | | | |
| Activities Room | 1,820 | 1,285 | 1,025 |
| Kitchen/Pantry | 200 | 175 | 150 |
| Library/Conference/Meeting | 150 | 150 | 150 |
| Storage (Activities Room) | <u>225</u> | <u>200</u> | <u>200</u> |
| TOTALS | 2,395 | 1,810 | 1,525 |

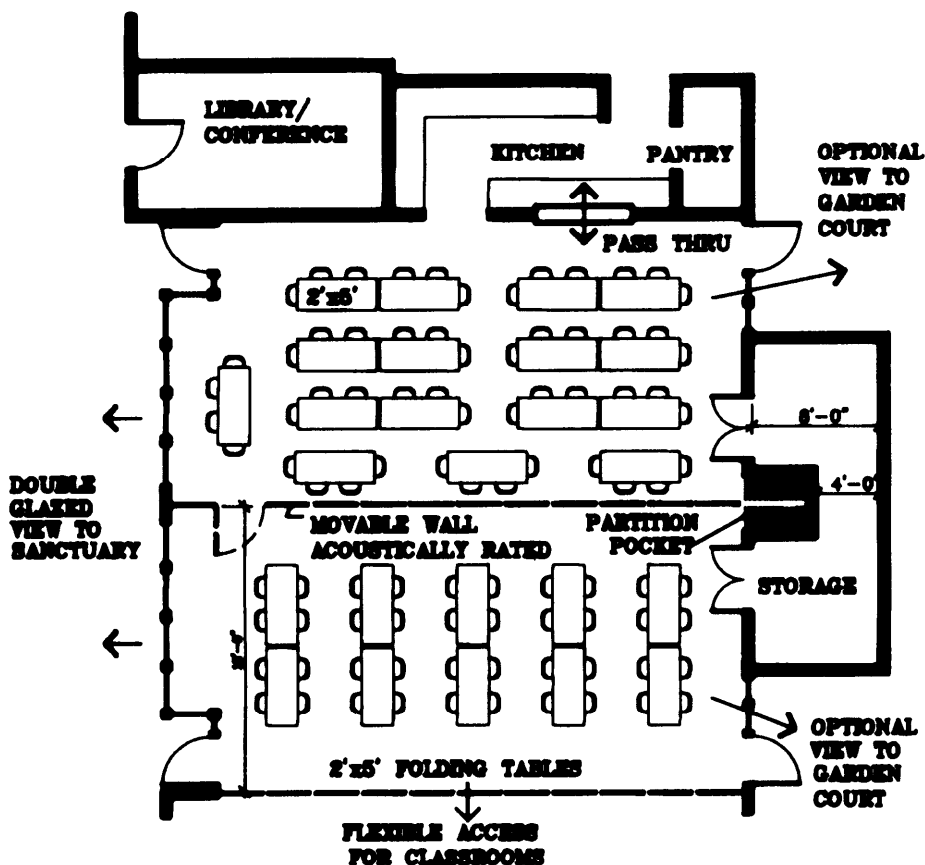


Figure 4-18. Activities Room.

b. Activities Room Storage:

(1) Use and Character. Provides storage space for storing movable equipment and furnishings used in the activities room.

(2) Size and Critical Dimensions. See table 4-4 for size and figure 4-18 for critical dimensions.

(3) Design Requirements. Design the storage area to accommodate portable chalkboards, tables, and chairs on carts. Provide double doors for ease of access. Locate storage immediately next to the activities room. Provide lockable storage for television monitors, screens, chemical warfare gear, mobility and disaster preparedness kits, and chaplain kits.

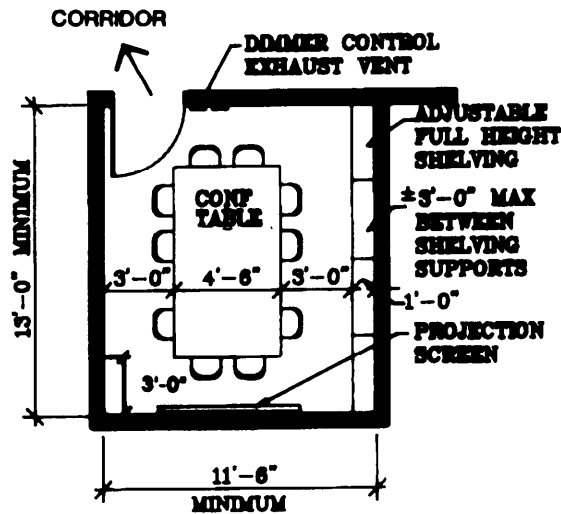


Figure 4-19. Library-Conference-Meeting Room.

(4) Lighting Requirements. Provide 15 footcandles overall.

c. Library-Conference-Meeting Room:

(1) Use and Character. Provides space to serve multiple purposes: as a repository of religious books; as a place for private study; as a meeting room for teachers, and fund and parish councils; as a classroom for adult religious education; and as a room for discussions after Services.

(2) Size and Critical Dimensions. See table 4-4 for size and figure 4-19 for critical dimensions.

(3) Design Requirements:

(a) Locate this area to be convenient to the religious education area, chaplains' offices, and the other community spaces.

(b) Provide:

1. Seating for 6 to 12 people around a conference table with additional seating along the walls, if needed.
2. Built-in adjustable bookshelves.
3. One wall suitable for AV projection.
4. Carpet and paneling or wall covering upgrade finishes.

(4) Furnishings and Equipment. Provide conference table and chairs, periodical racks and catalog file or microfiche reader for library functions, and chalk or tackboards.

(5) Lighting Requirements. Use incandescent lights with dimmer controls which adjust from 20 to 80 footcandles over the table.

d. Kitchen:

(1) Use and Character. Provides a kitchen to perform food services for the various activities held in the religious facility. The kitchen supports such functions as meetings, covered-dish dinners, general gatherings, etc. Complete meals are not prepared in the kitchen. The kitchen has a residential rather than commercial character and typically will be used by several people at the same time.

(2) Size and Critical Dimensions. See table 4-4 for size and figure 4-20 for critical dimensions and a typical kitchen layout.

(3) Design Requirements. Provide:

(a) Access to an interior corridor.
 (b) A pass-through, with overhead roll down shutter door, to the activity room.

(c) Access to exterior delivery and trash areas.

(d) Built-in wall and base cabinets, drawers, and as much as possible counter space, with a double bowl stainless steel sink.

(e) Ceramic or quarry tile floors with abrasive surfaces, walls with ceramic tile or alkyd enamel paint, and ceilings with alkyd enamel or vinyl-faced lay-in tiles when the program requires heavy usage. Partitions may be drywall either painted or with ceramic tile. Ceilings may be either drywall with alkyd enamel paint or lay-in ceiling with vinyl faced tiles.

(4) Furnishings and Equipment. Provide residential quality appliances (e.g., disposal, dishwasher, range with oven, microwave, and refrigerator) unless the budget and the program can support use of commercial appliances. Ice makers may be justified by a complex and very active program. All food preparation equipment, if commercial, should be National Sanitary Foundation approved and must comply with local health department regulations.

(5) Technical Requirements. Provide:

(a) Ceiling and under cabinet lighting. Ceiling illumination shall be 50 to 75 footcandles.

(b) A sufficient number of power outlets to accommodate kitchen equipment and appliances. Electric ranges normally will require a special (50 ampere) receptacle.

(c) Electrical outlets above countertops according to the applicable building code. Provide one telephone outlet for a wall mounted phone.

(d) Range hood with exhaust ventilation to the exterior.

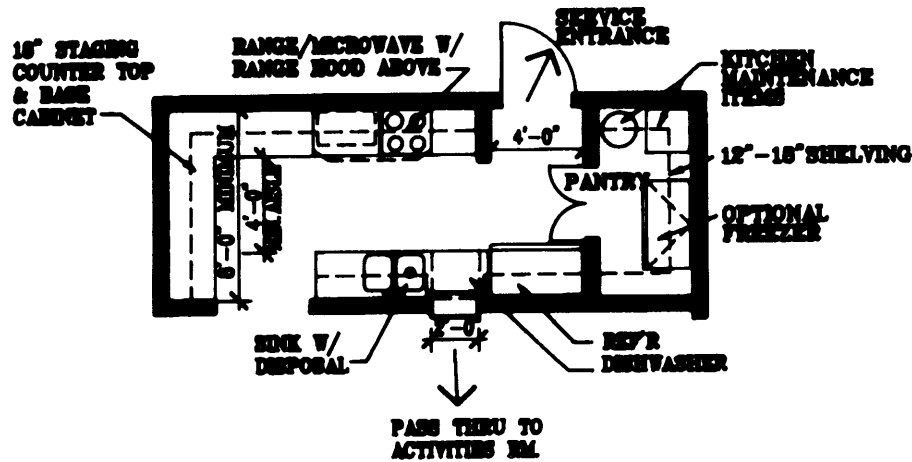


Figure 4-20. Kitchen.

(e) Hot water, 180°F, for the dishwasher.

(6) Storage Requirements. Provide wall and base cabinets to store typical kitchen cleaning and maintenance supplies, paper products, some cooking equipment, dishes, utensils, and food staples, such as coffee, sugar, salt, etc.

Section F—Religious Education Spaces

4-12. General Information. The religious education spaces include classrooms, an office and dedicated storage. Chapel activity centers (CAC) are allocated classrooms. The CAC provides additional classrooms through the subdivision of the activities room. See paragraph 4-10a for space criteria for activities room.

4-13. Space Criteria:

a. Classroom:

(1) Use and Character. Provides space for religious instruction by volunteer teachers. Classrooms also may be used for meetings, training, and service groups associated with the

religious facility. The classrooms are used most frequently on weekday evenings and Sunday mornings.

(2) Size and Critical Dimensions. See table 4-5 for size and figure 4-21 for critical dimensions and a typical classroom functional layout.

(3) Design Requirements:

(a) Consider locating classrooms near the activities room for possible use of the latter for additional classroom space. (Classrooms typically seat 7 to 15 people, but on occasion may seat up to 30.)

(b) Provide:

1. Movable room dividers to make multiple-sized classrooms.
2. At least one wall of each classroom suitable for AV projection.
3. Either carpeting or tile (local option), acoustic ceiling tile, dimmers, and power exhaust ventilation.
4. Operable insulating-type windows.

(4) Furnishings and Equipment. Provide tables, chairs, chalkboards, and tackboards for

Table 4-5. Religious Education Area Requirements (Space Requirements in Net Square Feet).

| | 400 SEATS | 300 SEATS | 200 SEATS |
|----------------------------|------------------|------------------|------------------|
| RELIGIOUS EDUCATION | | | |
| Classrooms | 1,575 (7) | 1,350 (6) | 1,125 (5) |
| Office | 120 | 120 | 120 |
| Storage | <u>150</u> | <u>125</u> | <u>125</u> |
| TOTALS | 1,845 | 1,595 | 1,370 |

each classroom. A 24- by 60-inch table will seat 4 to 5 persons. Provide furniture for small children in at least one classroom. Folding chairs and folding tables aid storage. Classroom sizes and shapes must be designed to accommodate flexible furniture layouts.

(5) Technical Requirements:

(a) Lighting. Provide 75 to 100 footcandles with a controllable dimmer switch for AV presentations. Provide incandescent lighting controls for each classroom.

(b) Locate electrical outlets for easy use of AV equipment.

(c) In areas accessible to children, provide child safety type outlets similar to those that require twisting the inner portion of the device to activate current and at the same time prevent children from inserting any foreign object. Removable caps or plugs do not meet this requirement.

(6) Storage Requirements. Provide one lockable or built-in cabinet for teaching aids and materials for each religious group that uses the classroom.

b. Office:

(1) Use and Character. For occupants of this administrative space, provide an office un-

der a 592 contract Therefore, only the actual space would be provided under a given design.

(2) Size. See table 4-5.

(3) Technical Requirements. Provide:

(a) Adjustable illumination levels of 10 footcandles for computer screen work, and 30 to 50 footcandles for reading and writing.

(b) A sufficient number of power and telephone outlets to permit rearranging of furnishings and equipment without wiring system modifications. Provide data connection to LANs and dedicated power for personal computers.

c. Religious Education Storage:

(1) Use and Character. Provides storage for educational materials and teaching aids: books, papers, films, videos, records, tapes, arts and crafts materials, etc. Seasonally used materials also will be stored here.

(2) Size and Critical Dimensions. See table 4-5 for size and figure 4-22 for critical dimensions.

(3) Design Requirements. Locate storage to be convenient to classrooms and the office for religious education coordinators. This storage space requires shelving and space for bulky items, such as carts with AV equipment. The storage area should have lockable double doors and must be large enough to accommodate the

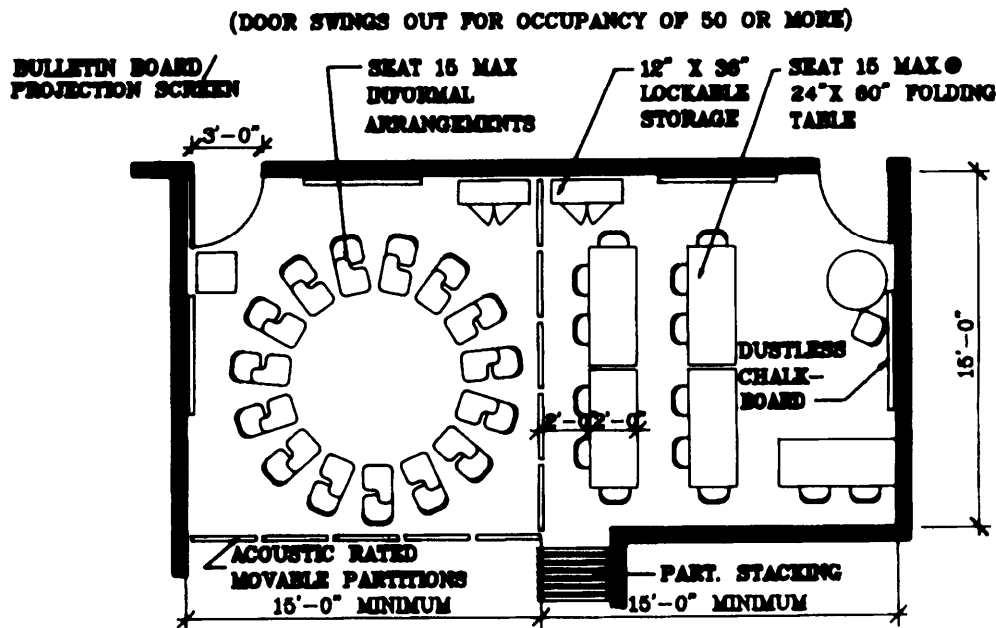


Figure 4-21. Religious Education Classrooms.

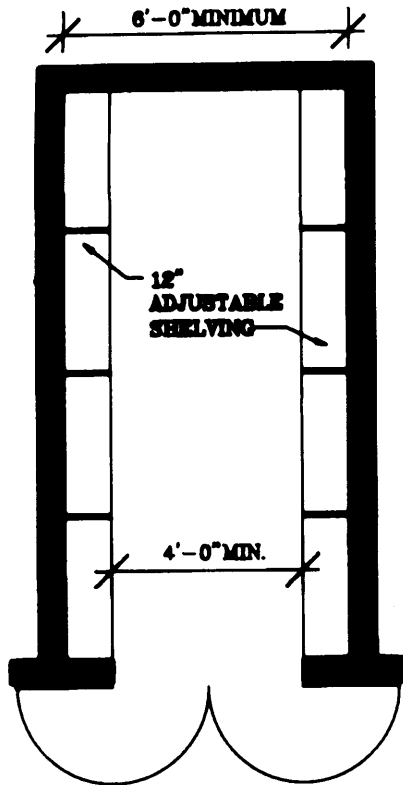


Figure 4-22. Religious Education Storage.

storage needs of different religious groups. The room must be lockable.

Section G—Support Spaces

4-14. General Information. These spaces include the toilet rooms (with bride's room near a women's toilet), mechanical and electrical rooms, the custodial room, and general storage.

4-15. Space Criteria:

a. Toilets:

(1) **Size and Critical Dimensions.** See table 4-6 for size and figure 4-23 for critical dimensions. Also, see chapter 3, section C, for specific requirements.

(2) **Design Requirements.** Locate toilets for convenient access by the various users of the building. Shield public views into the toilets. Provide for handicapped use as required by Uniform Federal Accessibility Standards. The women's toilet has a connected bride's room. Provide entry to bride's room from the interior of the women's toilet. Provide additional lava-

tories to accommodate the requirement for ablutions in Islamic worship in both men's and women's toilets if this requirement has been identified. If possible, provide two sets of toilets for a chapel center—one set near the narthex and sanctuary and one set near the classrooms and community spaces. Handicapped and small children units should be included in the equipment (paragraph 3-16).

(3) **Furnishings and Equipment.** Provide water closets, urinals, lavatories, mirrors, paper towels dispensers, and bathroom accessories.

(4) **Technical Requirements.** Provide:

(a) **Task Lighting** (30 footcandles) at the mirrors. Elsewhere, provide 10 footcandles ambient lighting.

(b) **Wall finishes** of easily cleaned, water-resistant material, installed full-height or as a wainscot. Use ceramic tile or plastic laminate on lavatory countertops. Floors shall be nonskid ceramic tile.

(c) **Mechanical exhaust ventilation** to the exterior.

b. Bride's Room:

(1) **Use and Character.** Provides a bride's room for use by the bride and bridal party to prepare before a wedding ceremony. When not being used by brides, this room functions as a lounge associated with the women's toilet.

(2) **Size.** See table 4-6.

(3) **Design Requirements.** Locate the bride's room as part of the women's toilet. Provide separation from the toilet area that can remain open or may be closed for privacy of the bridal party.

(4) **Furnishings and Equipment.** Provide dressing table with mirror and make up lights, a full-length mirror, chairs, and full-length clothes hanging space.

(5) **Technical Requirements.** Provide:

(a) **At the mirror and vanity,** ambient lighting (10 footcandles) and task lighting (30 to 50 footcandles). Use incandescent lighting throughout.

(b) **Mechanical exhaust ventilation.**

(c) **A lavatory.**

(6) **Storage Requirements.** Provide a garment rack and lockable drawers for storing valuables.

(7) **Bride's Room Functional Layout.** See figure 4-24 for a typical bride's room functional layout.

Table 4-6. Support Area Requirements (Space Requirements in Net Square Feet).

| A. CHAPEL REQUIREMENTS: | | | |
|--|-------------------------|-------------------------|-------------------------|
| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
| SUPPORT | | | |
| Toilets | 400 | 350 | 250 |
| Bride's Room | 80 | 80 | 80 |
| General Storage | 350 | 300 | 200 |
| Custodial | 50 | 40 | 30 |
| Mechanical Room | (400) | (300) | (200) |
| Electrical Room | <u>(50)</u> | <u>(50)</u> | <u>(50)</u> |
| TOTALS | 880 | 770 | 560 |
| B. CHAPEL ACTIVITIES CENTER REQUIREMENTS: | | | |
| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
| SUPPORT | | | |
| Toilets | 250 | 200 | 180 |
| Custodial | 20 | 20 | 20 |
| Mechanical Room | (150) | (125) | (100) |
| Electrical Room | <u>(25)</u> | <u>(25)</u> | <u>(25)</u> |
| TOTALS | 270 | 220 | 200 |
| C. CHAPEL CENTER REQUIREMENTS: | | | |
| | <u>400 SEATS</u> | <u>300 SEATS</u> | <u>200 SEATS</u> |
| SUPPORT | | | |
| Toilets | 650 | 550 | 425 |
| Bride's Room | 80 | 80 | 80 |
| General Storage | 350 | 350 | 300 |
| Custodial | 50 | 40 | 30 |
| Mechanical Room | (550) | (425) | (300) |
| Electrical Room | <u>(75)</u> | <u>(75)</u> | <u>(75)</u> |
| TOTALS | 1,130 | 1,020 | 835 |

c. General Storage:

(1) Use and Character. Provides storage for items seasonally used, such as Christmas decorations and the sukkah. Bulk paper supplies, maintenance equipment, tables, chairs, and other items also are stored here. Programmers for each facility must identify the specific items required for storage in this space.

(2) Size and Critical Dimensions. See table 4-6 for size and figure 4-25 for critical dimensions.

(3) Technical Requirements. Provide mechanical ventilation with tempered air.

d. Custodial Closet:

(1) Use and Character. Provides storage space for maintenance equipment and supplies.

(2) Size and Critical Dimensions. See table 4-6 for size and figure 4-26 for critical dimensions. At each facility, identify maintenance supplies and equipment to be stored to determine specific dimensional requirements.

(3) Design Requirements. Locate in association with toilet facilities. Provide shelving and service sink. Stainless steel fixtures are preferable to minimize rust. Use moisture-resistant gypsum board or a water-resistant finish for partitions. Floors and base must be sealed.

(4) Furnishings and Equipment. Provide a minimum of five tiers of shelving as well as hooks for the storage of cleaning and maintenance equipment. Adjustable shelving should be either plastic laminate or stainless steel; the latter is preferable.

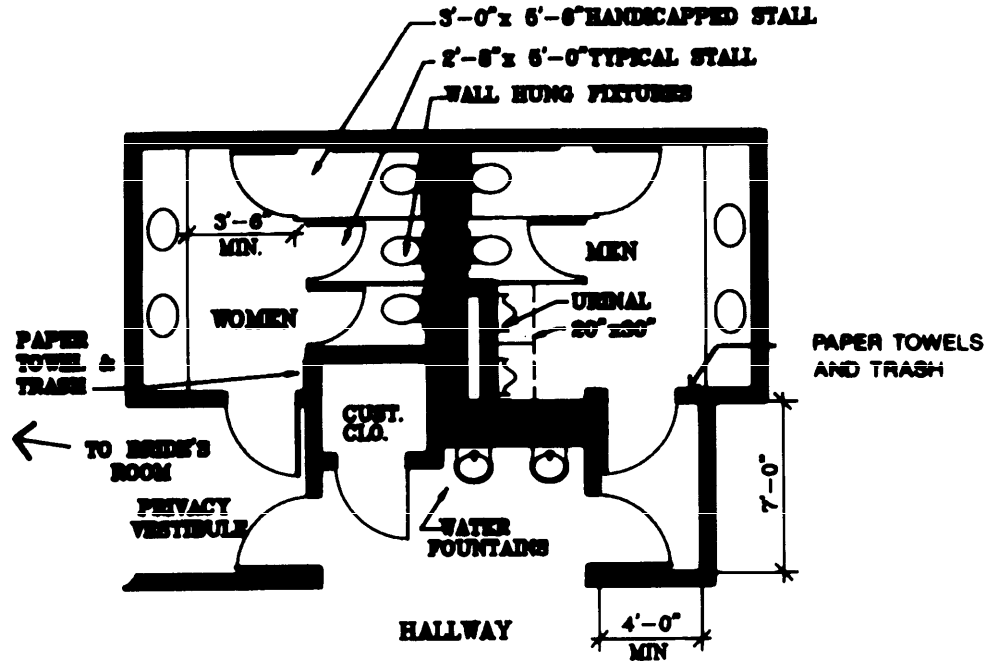


Figure 4-23. Restrooms.

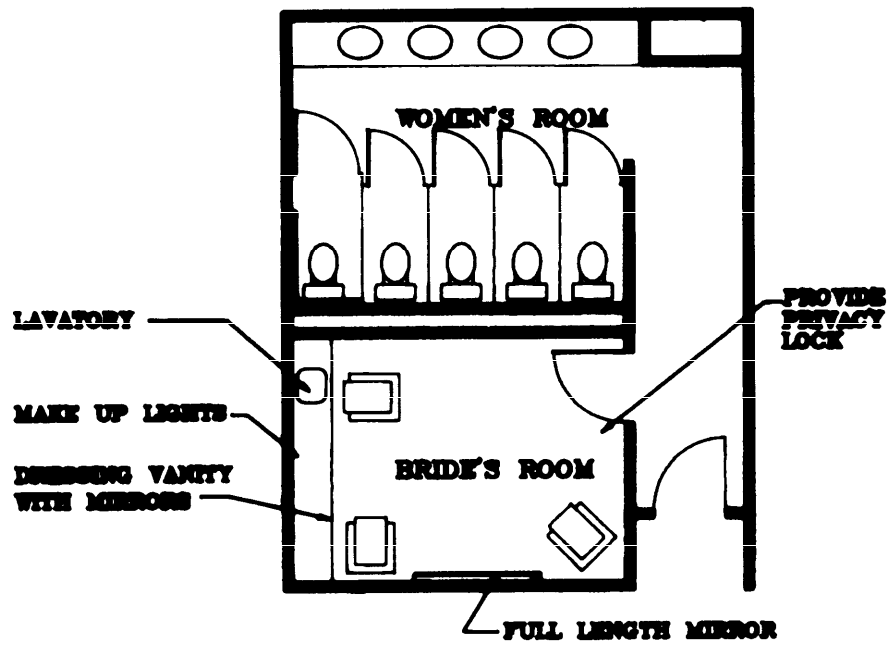


Figure 4-24. Bride's Room.

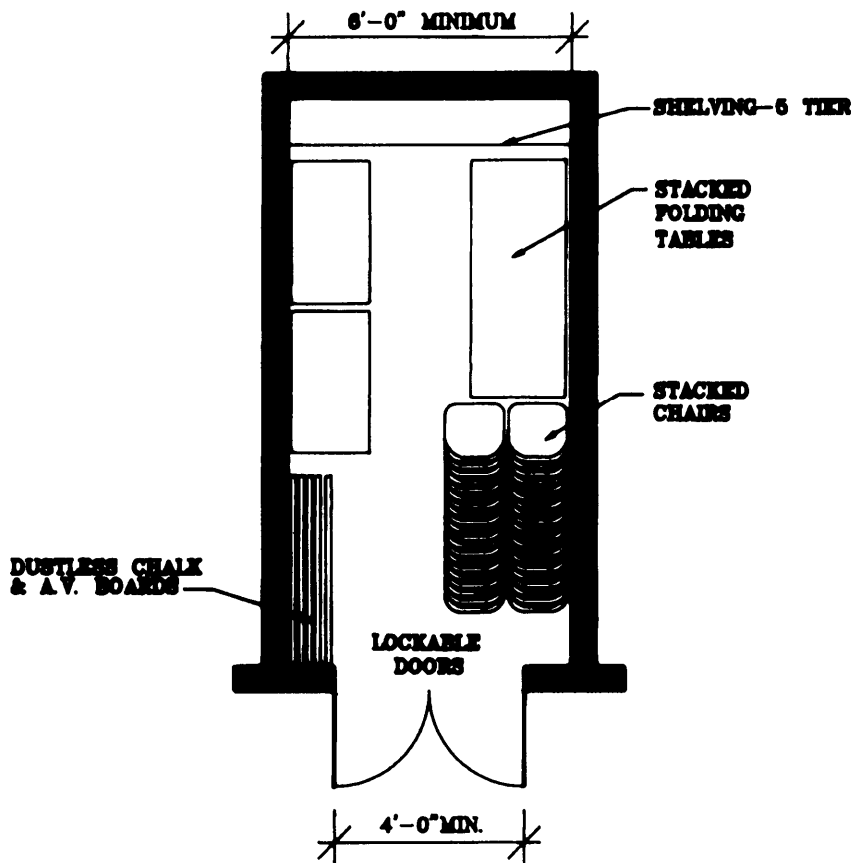


Figure 4-25. General Storage.

(5) Technical Requirements:

(a) Lighting. Provide 20 footcandles overall.

(b) Other. Provide floor-mounted mop sink with hot and cold water. Provide a water-resistant, easily maintained floor material sloped to a floor drain.

e. Mechanical Room:

(1) Use and Character. Provides space for all heating, air-conditioning, and central plumbing equipment for the facility.

(2) Size. See table 4-6. These will vary with building system requirements and climatic conditions. Space is not included in net or gross square footage requirements.

(3) Design Requirements. Provide direct access to the exterior through lockable double doors. Locate exterior heating, ventilating, and air-conditioning (HVAC) equipment so it will not be a visual, vibration, or sound nuisance. Provide single door (lockable) interior direct access.

(4) Furnishings and Equipment. Provide HVAC system; hot water system; fire suppression system controls.

(5) Technical Requirements:

(a) Sound. Isolate this room so noise and vibrations are not heard or felt in the rest of the facility.

(b) Other. Ventilate with mechanical exhaust vent. Provide 1-hour fire-rated enclosure if mechanical equipment is subject to explosion. Slope floor toward a floor drain.

f. Electrical Room:

(1) Use and Character. Provides space for all electrical equipment and service for the building. This space also may be used for telephone service entry and equipment, LAN entry, if electrical switch equipment and associated environmental control are not required.

(2) Size. See table 4-6.

(3) Design Requirements. Determine need for electrical power service by HVAC system, lighting, food service, and equipment use in offices and classrooms. Provide lockable door.

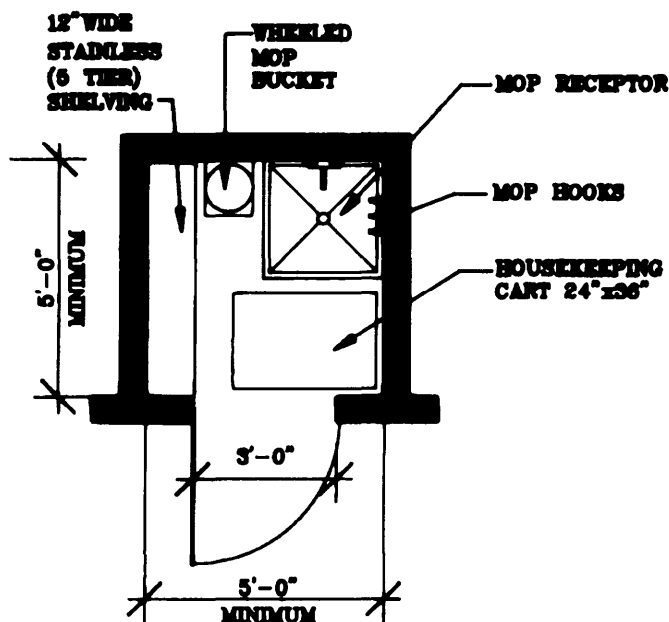


Figure 4-26. Custodial Closet.

(4) **Furnishings and Equipment.** Provide all equipment necessary for distributing electrical services in the facility. Locate telephone service switching equipment and LAN cable in the electrical room or in a dedicated closet; the latter is preferable.

(5) **Technical Requirements.** Provide mechanical ventilation and cooling, if required. Service grounding system and all wiring must conform to National Electrical Code requirements. Select service and distribution equipment listed by the Underwriters Laboratories (UL) or provide published proof from a bona fide testing laboratory.

Section H—Residential Spaces

4-16. General Information. Rectories presently are authorized only at the Air Force Academy.

4-17. Space Criteria for Rectories:

a. **Use and Character.** Provides housing for chaplains and their families, as well as space for community activities, counseling, and religious education. The two existing rectories are located at the Air Force Academy. Each consists of a large housing unit, part of which has been dedicated to rectory use. Assigned living space includes bedrooms, baths, and kitchen. Program

spaces for the rectory itself include the living room, dining room, a study and/or office, basement social hall, and a bathroom.

b. **Size.** See table 4-7.

c. **Design Requirements.** In a Protestant Rectory, provide a larger assigned living space to accommodate the chaplain's family. In a Catholic Rectory, provide a housekeeper's bedroom, sitting room, and private bath.

d. **Lighting Requirements.** Provide general illumination of 5 to 10 footcandles and illumination in the following areas as indicated: dining, 10 to 20 footcandles; bathrooms, 20 to 50 footcandles; kitchens, 20 to 50 footcandles; study or office, 20 to 50 footcandles; and social hall, 20 to 50 footcandles.

e. **Storage Requirements.** Provide storage areas for tables, chairs, dishes, and other equipment for social events, etc.

Section I—Hospital Chapels

4-18. General Information. Provide hospital chapels as places of worship and meditation for patients, their family members, and hospital staff. Services are conducted in hospital chapels. Chaplains, not usually assigned full-time to the hospital chapel, provide counseling and offer support. Religious services often are broadcast to patients' rooms. Provide handicapped

Table 4-7. Rectory Requirements (Space Requirements in Net Square Feet).

| | |
|---|-----------------------|
| | <u>RECTORY</u> |
| RESIDENTIAL | |
| Family Housing | 1,200-1,550 |
| COUNSELING, COMMUNITY, AND RELIGIOUS EDUCATION | 1,200-1,600 |
| SUPPORT | <u>50</u> |
| TOTALS | 2,400- 3,200 |

seating and space for portable medical equipment (for example, intravenous (IV) stands) as hospital chapels are used by patients. Only the largest hospital chapels at Air Force medical centers have a full-time staff chaplain and an administrative staff person who acts as receptionist and secretary. In these chapels, the chaplain meets with patients and families in his or her office. In all other hospitals, a small meditation room provides space for counseling or private conversation.

4-19. Space Criteria for Chapel and Chaplain's Office or Meditation Room:

a. Chapel:

(1) Use and Character. Provides a religious place with a sense of comfort and peace.

(2) Size and Critical Dimensions. See table 4-8 for size and figure 4-27 for critical dimensions and a typical hospital chapel functional layout. The size of the hospital chapel depends on the number of beds in the hospital. Generally, a base hospital with 100 beds or fewer would have a chapel of 500 to 700 net square feet; a regional hospital of 100 to 199 beds would have a chapel no larger than 1,100 net square feet; and a medical center with 300 beds would have a chapel of 1,604 net square feet. For hospitals that vary greatly from these sizes, see DOD Medical Space Planning Criteria. For copies of this criteria, contact Defense Medical Facilities Office (DMFO), Skyline #6, Suite 817, 5109 Leesburg Pike, Falls Church VA 22041.

(3) Design Requirements. Locate the chapel next to the meditation area. Provide interior

design elements that are warm, comforting, and reassuring. Use of natural materials, such as stone and wood for floors, is preferred. However, use of carpet, fabric wall coverings, and acoustic ceiling assemblies may be necessary to provide adequate sound insulation.

(4) Furnishings and Equipment. Provide portable chancel furnishings, as required by each of the faith groups. Where space is limited, storage may be provided inside the altar. Provide movable seating for worshipers.

(5) Technical Requirements:

(a) Lighting. Normally, use only incandescent lighting to produce the necessary atmosphere, accents, and relationship of light to architecture. Provide a range of intensity at reading level from 15 to 30 footcandles. Provide spotlights for the altar and for the pulpit at 100 footcandles, with dimmer controls. Locate spotlights to reduce facial shadows.

(b) Acoustics. Design the space to enhance both speech and music.

(c) Sound. Provide sound system wiring and equipment enclosure at chancel area.

(d) Other. Provide space and technical service for a small organ. Provide all necessary equipment for closed-circuit broadcasts of religious services where closed-circuit capability is present in the hospital or likely to be installed in the foreseeable future.

(6) Storage Requirements. Provide a sacristy storage space for clergy robing as well as for storage of liturgical items for each of the faith groups.

Table 4-8. Hospital Chapel Requirements (Space Requirements in Net Square Feet).

| | Base Hospital (Under 100 Beds) | Regional Hospital (100-199 Beds) | Medical Center (200+ Beds) |
|---|---|---|---|
| WORSHIP | | | |
| Sanctuary | 288 (18 Seats) | 576 (36 Seats) | 864 (54 Seats) |
| Handicapped Seating | 50 (2 Seats) | 100 (4 Seats) | 150 (6 Seats) |
| Altar | 100 | 100 | 150 |
| Sacristy/Storage | <u>100</u> | <u>150</u> | <u>150</u> |
| TOTALS | 538 | 926 | 1,314 |
| COUNSELING | | | |
| Chaplains' Office or Small Meditation Room | <u>120</u> | <u>120</u> | <u>120</u> |
| TOTALS | 120 | 120 | 120 |
| ADMINISTRATION | | | |
| Reception/Secretary/CMP | <u>--</u> | <u>--</u> | <u>120</u> |
| TOTALS | -- | -- | 120 |
| TOTALS | 658 | 1,046 | 1,554 |

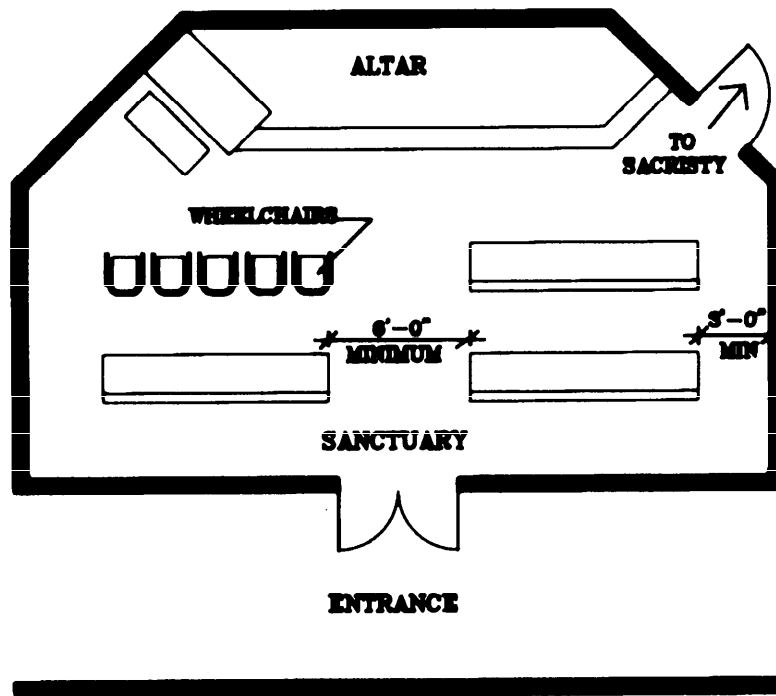


Figure 4-27. Hospital Chapel.

b. **Chaplain's Office or Meditation Room:**
 (1) Use and Character. In larger medical facilities where one or more chaplains are as-

signed on a full-time basis, provides spaces for a separate chaplain's office and reception area, as required. In smaller facilities, chaplains can

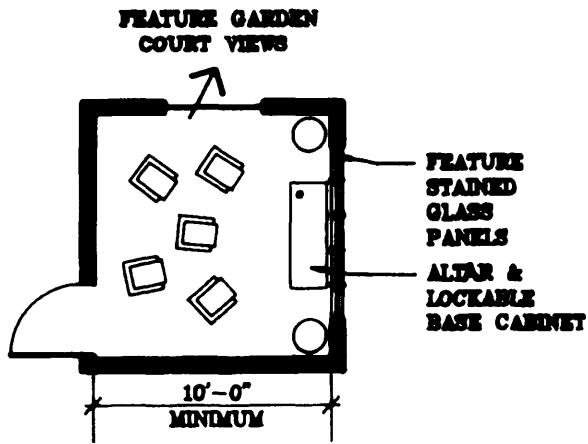


Figure 4-28. Hospital Chapel Meditation Area.

fulfill their counseling functions in the meditation room.

(2) Size and Critical Dimensions. See table 4-8 for size and figure 4-28 for critical dimensions.

(3) Design Requirements. See section C for design requirements for the chaplain's office. A meditation room must reflect the spiritual, comforting feeling of the hospital chapel. Provide carpeting; consider using wall finishes of wood or fabric.

(4) Furnishings and Equipment. For the chaplain's office, see section C. In a meditation room, provide chair seating for five to six persons.

(5) Lighting Requirements. Provide from 15 to 30 footcandles illumination in the meditation room. See paragraph 4-7a(5) for chaplains office lighting requirements.

(6) Storage Requirements. Provide a lockable cabinet for storing candles, candle holders, and other furnishings or provide storage under the altar.

Chapter 5

ILLUSTRATIVE DESIGNS

Section A—Introduction to This Chapter

5-1. General Information. The designs presented in this chapter provide examples for the base civil engineer and project architect-engineer of program solutions that are responsive to criteria developed in chapters 2 through 4.

Table 5-1. Chapel Center, 200 Seat Design Program (Net Areas in Square Feet).

| | Net Area |
|--------------------------------------|---------------|
| WORSHIP | |
| Sanctuary (includes AV room @ 35 SF) | 2,340 |
| Small Sanctuary | 420 |
| Narthex | 518 |
| Secristy | 180 |
| Blessed Sacrament | 185 |
| Baptistry | 94 |
| Changing Rooms | 112 |
| Cry Room | 135 |
| Choir Robing | 210 |
| Furnishing Storage | 160 |
| Liturgical Storage | 125 |
| SUBTOTAL | 4,477 |
| COUNSELING | |
| Chaplain's Offices (2 @ 185 SF) | 370 |
| Waiting Area | 50 |
| Base Chaplain | 195 |
| SUBTOTAL | 615 |
| ADMINISTRATION | |
| Reception | 116 |
| CCSA Office | - |
| Staff Work | 120 |
| SUBTOTAL | 236 |
| COMMUNITY | |
| Activities Room | 1060 |
| Kitchen/Pantry | 170 |
| Library/Conference | 140 |
| Storage | 120 |
| SUBTOTAL | 1,490 |
| RELIGIOUS EDUCATION | |
| Classrooms (4 @ 225 SF) | 900 |
| Office | 110 |
| Storage | 75 |
| SUBTOTAL | 1,085 |
| SUPPORT | |
| Restrooms | 415 |
| Bride's Room | 70 |
| General Storage | 150 |
| Custodial | 35 |
| Mechanical/Electrical (not Included) | (350) |
| SUBTOTAL | 670 |
| TOTAL NET AREA | 8,563 |
| CIRCULATION & WALLS | 1,957 |
| TOTAL GROSS AREA | 10,520 |

5-2. Scope of This Chapter. This chapter contains prototypical plans for the design of chapel centers. These designs are not intended to be definitive, but are to be used only to help the designer better understand the in-

ter-relationships of various elements of religious facilities. Although specific layouts are presented for 200-, 300-, and 400-seat chapels, the general ideas in each solution apply to any size facility. Each illustrative design outlines the functional organization of worship areas, support services, and activities centers. The drawings at the end of this chapter outline several building form variations applicable to religious facility designs.

a. The 200-seat design shows support and administrative functions in the center, and counseling and worship functions at opposite ends. The activities center can be added to the chapel in phased construction.

b. The 300-seat design shows worship functions with activities at one end, and administrative and counseling functions at the other end. This allows for phased improvement of the facility from chapel to chapel center.

c. The 400-seat design shows a progression of smaller to larger functions leading to the worship areas. The narthex becomes an atrium wrapped by the worship spaces. The activities center is integral to worship and support functions.

5-3. Illustrative Drawings. Each design is illustrated with massing, axonometric, and sectional sketches. See chapter 3 for further discussion of architectural character; chapter 4 for specific functional requirements.

Section B—Chapel Center, 200 Seat

5-4. Program Description:

a. This chapel center meets the needs generated by the smallest program, within AFM 86-2 provisions, for base installations with populations of 501 to 1000. Table 5-1 indicates functional areas and space sizes in this facility. The chapel component is 5,998 net square feet. The activities center contains 2,565 net square feet. Circulation and walls account for 1,957 square feet, or 18.6 percent of the gross floor area.

b. Site conditions should place the main entrance at one side, with the service and private entrances on the opposite side. A garden court feature enables the activities center and chapel to interconnect.

5-5. Design Solution:

a. **Plan and Circulation.** The building organization focuses on administrative and support functions as central components. Worship functions are located on the right, with community and education functions along the left (figures 5-1 and 5-2).

b. **Access.** Narthex and reception areas form the beginning of a simple central spine that interconnects counseling at the right, behind worship components, and education at the left, behind community components. At the end of the central spine leading from the narthex

and reception areas are the service entrance and support components (figures 5-1 and 5-2).

c. **Massing Relationships.** The building's form is comprised of three massing volumes. The worship and counseling components at one end contain the building's major height (50 feet) and mass. At the opposite end of the building, a secondary (30 feet) massing of community and education components is provided. The low end of the building (20 feet) encompasses support and administrative components which serve to interconnect these volumes. Figures 5-3 and 5-4 illustrate the massing techniques used in this design. See figure 5-5 for a section view.

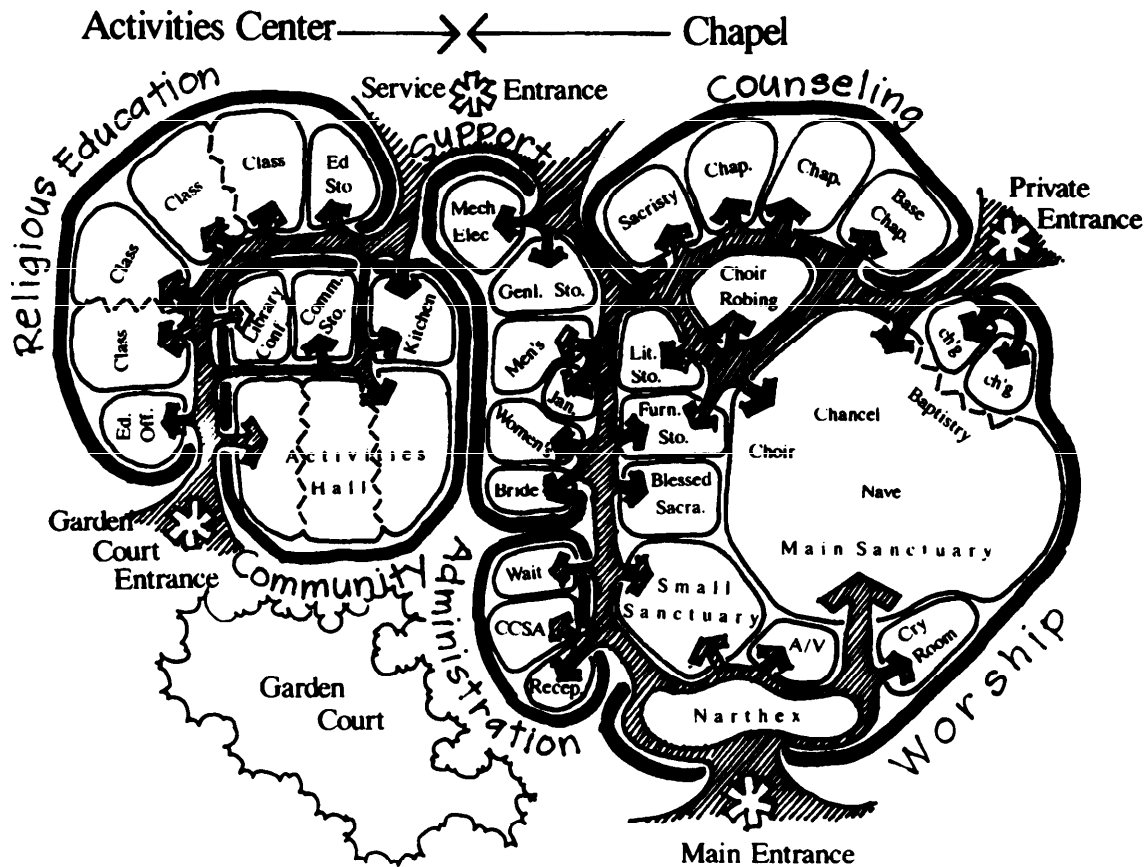


Figure 5-1. Chapel Center, 200 Seat Concept Diagram.

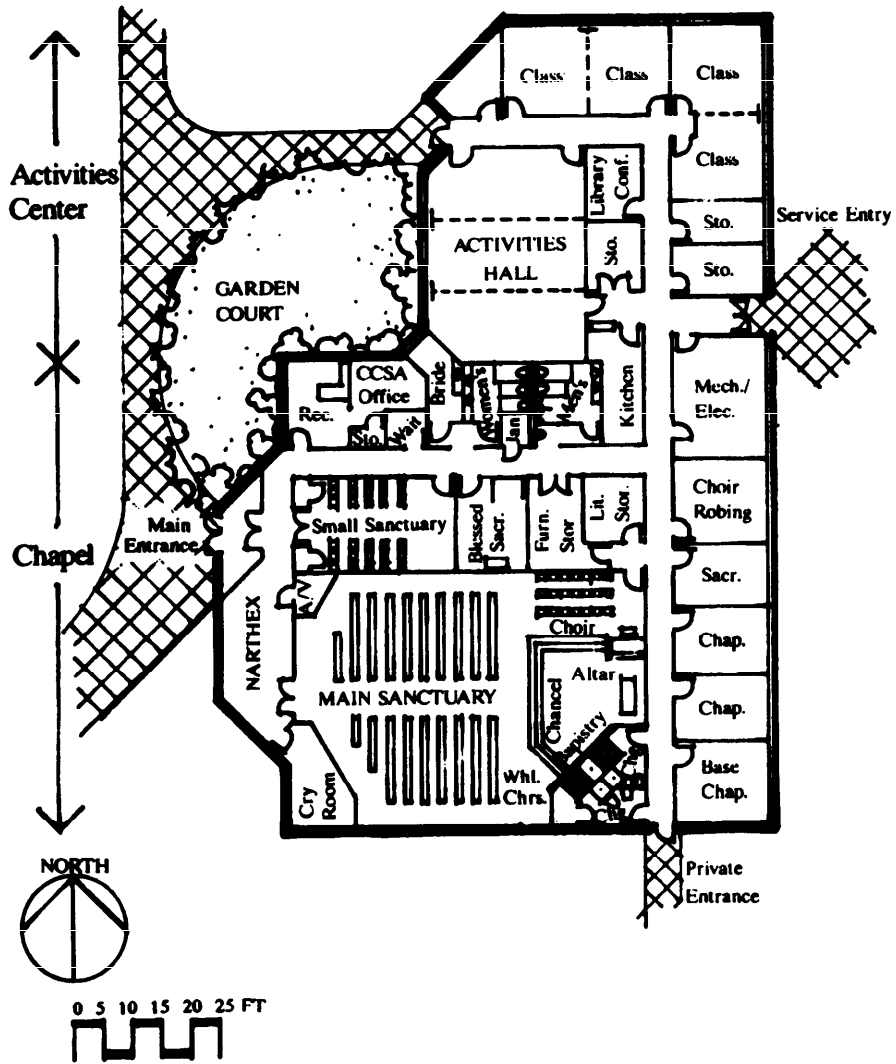


Figure 5-2. Chapel Center, 200 Seat.

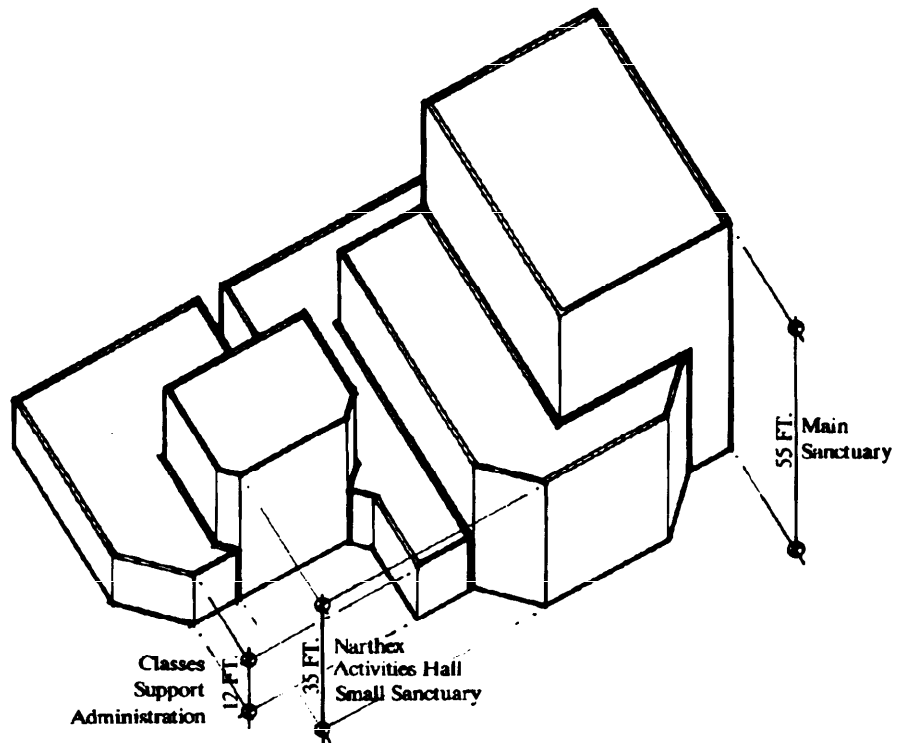


Figure 5-3. Massing Relationships, 200 Seat Chapel.

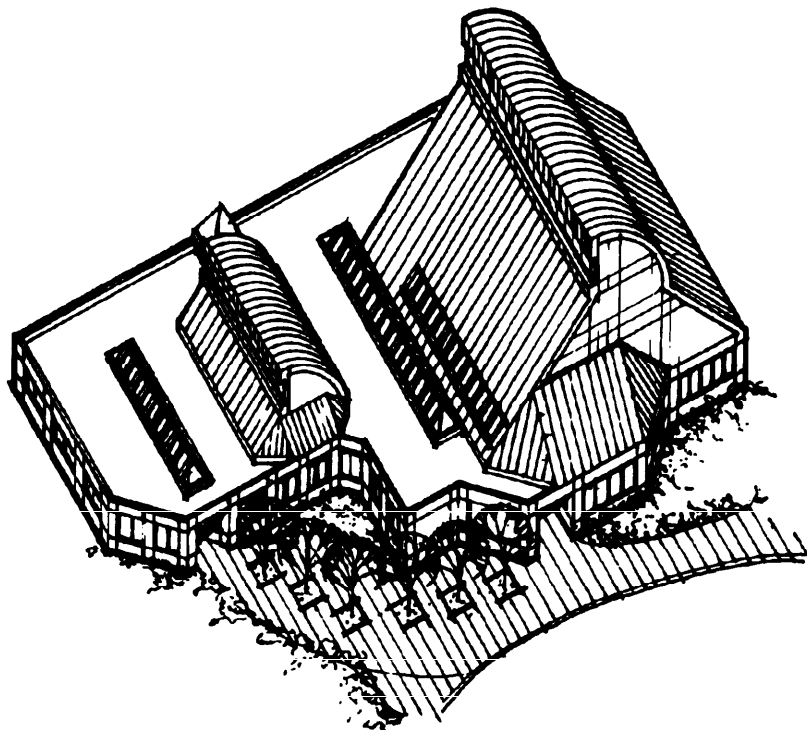


Figure 5-4. Illustrative Axonometric, 200 Seat Chapel Center.

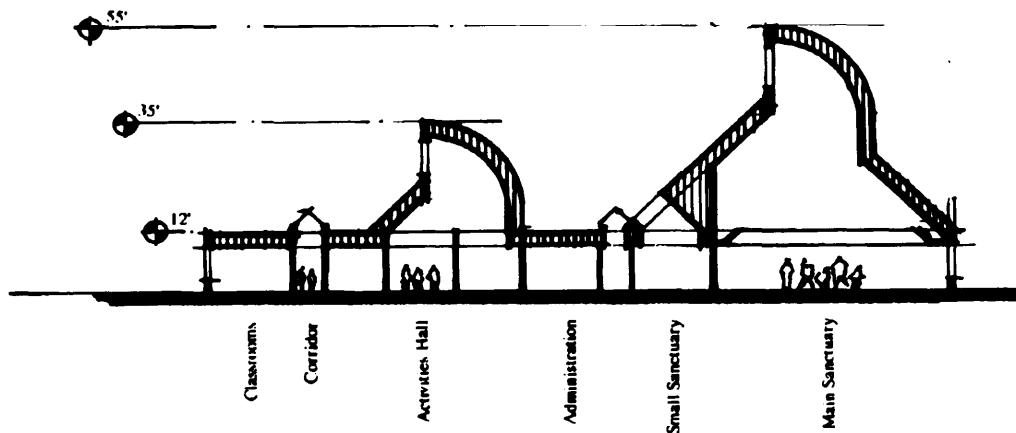


Figure 5-5. Building Section, 200 Seat Chapel.

Table 5-2. Chapel Center, 300 Seat Design Program (Net Areas in Square Feet).

| | Net Area |
|--------------------------------------|---------------|
| WORSHIP | |
| Sanctuary (Includes AV room @ 45 SF) | 3,480 |
| Small Sanctuary | 900 |
| Narthex | 740 |
| Sanctuary | 270 |
| Blessed Sacrament | 200 |
| Baptistry | 95 |
| Changing Rooms | 200 |
| Cry Room | 200 |
| Choir Robing | 200 |
| Furnishing Storage | 200 |
| Liturgical Storage | 125 |
| SUBTOTAL | 6,610 |
| COUNSELING | |
| Chaplain Offices (3 @ 185 SF) | 555 |
| Waiting Area | 100 |
| Base Chaplain | 200 |
| SUBTOTAL | 855 |
| ADMINISTRATION | |
| Reception | 150 |
| CCSA Office | 80 |
| Staff Work | 230 |
| SUBTOTAL | 460 |
| COMMUNITY | |
| Activities Room | 1,285 |
| Kitchen/Pantry | 195 |
| Library/Conference | 165 |
| Storage | 195 |
| SUBTOTAL | 1,840 |
| RELIGIOUS EDUCATION | |
| Classrooms (6 @ 225 SF) | 1,350 |
| Office | 120 |
| Storage | 125 |
| SUBTOTAL | 1,595 |
| SUPPORT | |
| Restrooms | 415 |
| Bride's Room | 130 |
| General Storage | 220 |
| Custodial | 50 |
| Mechanical/Electrical (not included) | (500) |
| SUBTOTAL | 815 |
| TOTAL NET AREA | 12,175 |
| CIRCULATION & WALLS | 2,780 |
| TOTAL GROSS AREA | 14,955 |

Section C—Chapel Center, 300-Seat

5-6. Program Description:

a. The 300-seat chapel center is the most common size facility built in the Air Force. Table 5-2 indicates functional areas and space sizes.

b. The chapel component in this design is 8,740 net square feet. The activities center is 3,435 net square feet. Walls and circulation comprise 2,780 square feet, or 18.6 percent of the gross floor area of 14,955 square feet.

c. The site is relatively flat and is located next to base community functions. This location provides shared parking.

5-7. Design Solution:

a. **Plan and Circulation (Figures 5-6 and 5-7):**

(1) A perimeter hallway encircles the sanctuaries. Administrative, counseling, support, and activities centers are clustered on the other side of this hallway.

(2) This design could be built as a chapel first, with phased addition of the activities center to follow. (To implement phased construction, new restrooms would be built as part of the activities center and the chapel restrooms would then be replaced by classrooms.)

b. **Access (Figures 5-6 and 5-7).** The narthex entry leads to the activities center on the left, sanctuaries in the middle, and administrative counseling to the right. A separate waiting room for counseling is attached to the reception area for control. The chaplains have a private entrance next to the support functions. The kitchen has its own service entrance. A garden court is the outside link from activities center to worship areas.

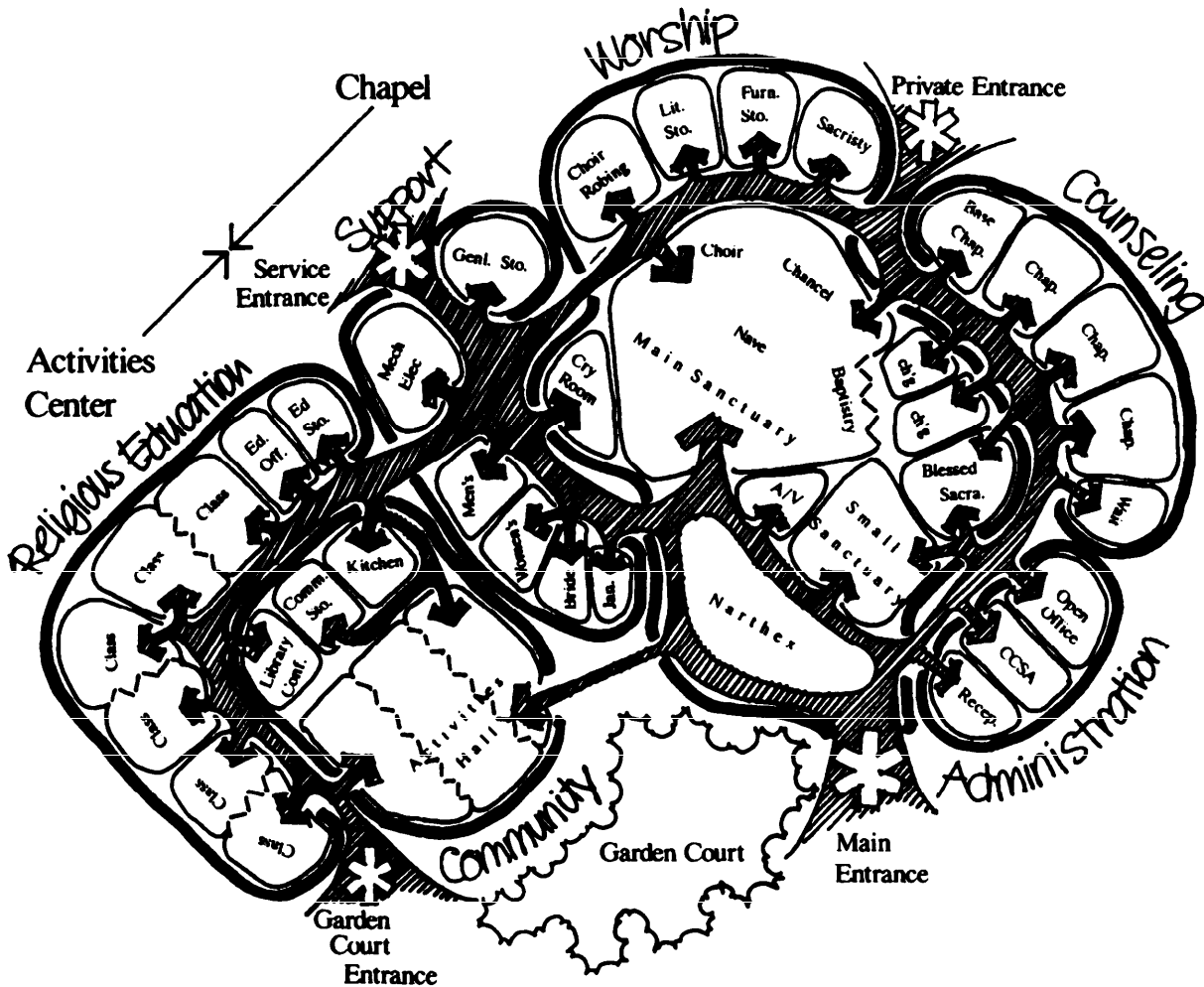


Figure 5-6. Chapel Center, 300 Seat Concept Diagram.

c. Massing Relationships:

(1) The centered main sanctuary is flanked by the lower volumes of the activities room and small sanctuary. The narthex, administrative, counseling, support, and education spaces provide a continuous low base to the larger main spaces.

(2) The structural motif is a peaked roof with gables. These forms are traditional and refer to the civic architecture of small towns. Natural light is introduced to the large spaces and hallways by means of tall glazed gables.

(3) Figures 5-8 and 5-9 illustrate the massing techniques used in this design. See figure 5-10 for a section view.

Section D—Chapel Center, 400 Seat

5-8. Program Description:

a. This 400-seat illustrative design serves a base population of 2,000 to 2,500. Table 5-3 indicates functional areas and space sizes. The chapel component has an area of 11,365 net square feet. The activities center includes 4,915 net square feet. Circulation and walls are 2,626 square feet, or 13.8 percent of the total 18,905 square feet gross area.

b. The site is flat and is next to the base community center. It fits into a grid framework of streets and shares parking with other neighboring community functions.

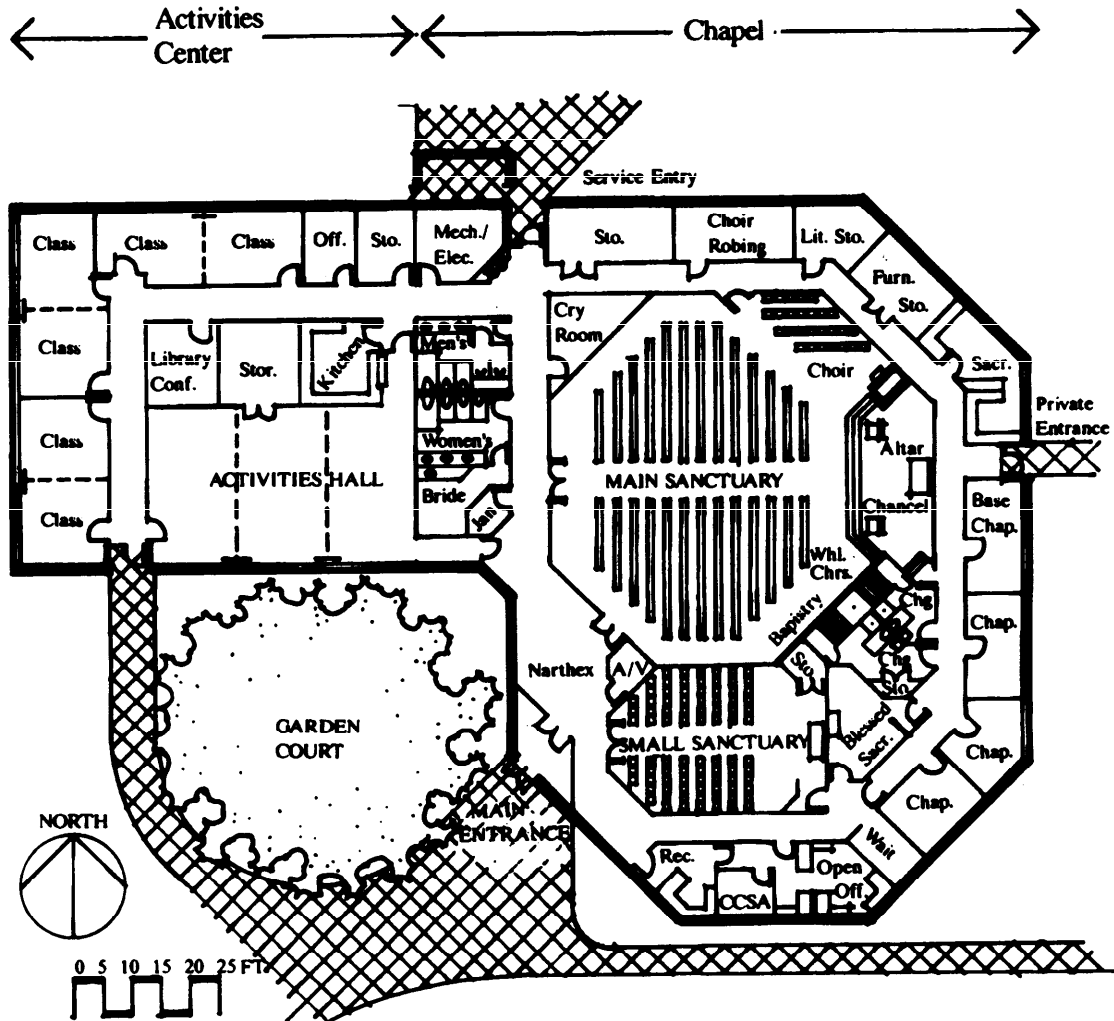


Figure 5-7. Chapel Center, 300 Seat.

5-9. Design Solution:

a. Plan and Circulation (Figures 5-11 and 5-12):

(1) The sanctuaries are placed at one end of the facility. The narthex leads to a central hallway where the administrative, counseling, and activities centers are clustered.

(2) Phased construction of the activities center is possible due to the separation of the activities functions from the sacristy, Blessed Sacrament, and support areas. Restroom fixture count would be preplanned with chapel construction accommodate the future activities center.

b. Access (Figures 5-11 and 5-12):

(1) The counseling and administrative functions share a separate entrance. The receptionist controls the chaplain's waiting room.

(2) Visitors to the activities center can access it by an entrance and vestibule; an exitway to a garden court is also provided.

c. Massing Relationships:

(1) The largest volume is the main sanctuary. Next are the lower volumes which enclose the narthex, small sanctuary, and activities center. Counseling, administrative and support services, and religious education areas are located in the lowest volumes which form two individual flanks.

(2) A tall sweeping asymmetric form is the primary element in the main sanctuary. It per-

mits daylight to enter through clerestory windows and skylights.

(3) The central narthex and connecting hallway are expressed as one continuous sloped roof. Two ridged rooflines intersect over the central hallway.

(4) Figures 5-13 and 5-14 illustrate the massing techniques used in this design. See figure 5-15 for a section view.

Section E—Building Forms.

5-10. Variations of Religious Facility

Shapes. Figures 5-16 and 5-17 outline sev-

eral building form variations that apply to reli-

gious facility designs.

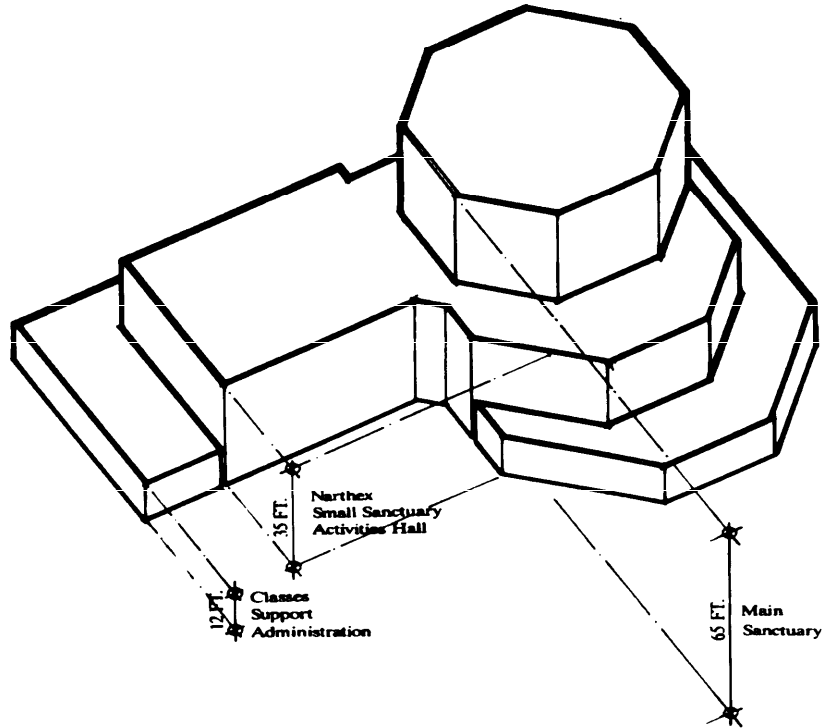


Figure 5-8. Massing Relationships, 300 Seat Chapel.

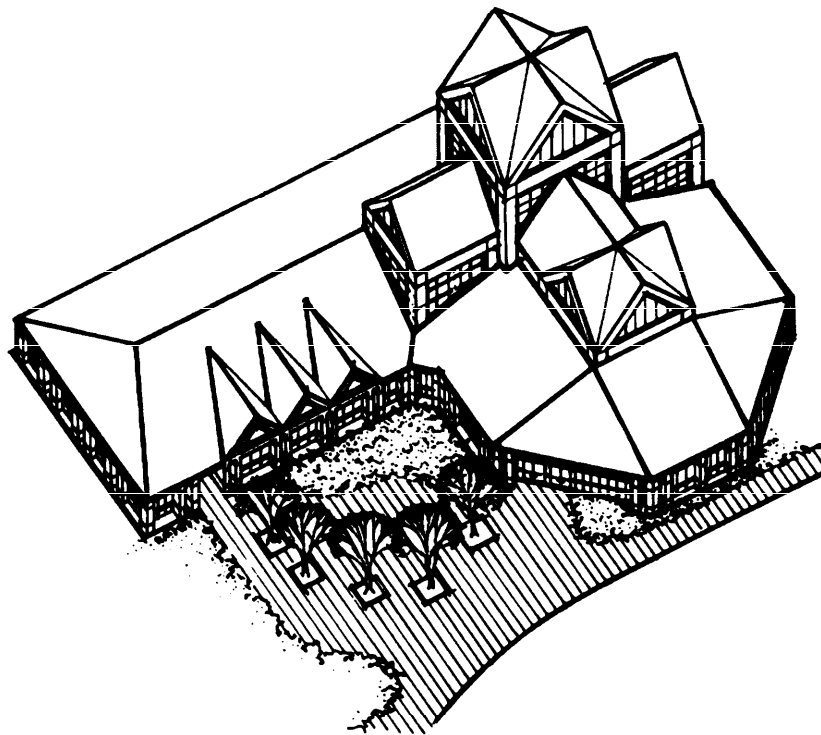


Figure 5-9. Illustrative Axonometric—300 Seat Chapel Center.

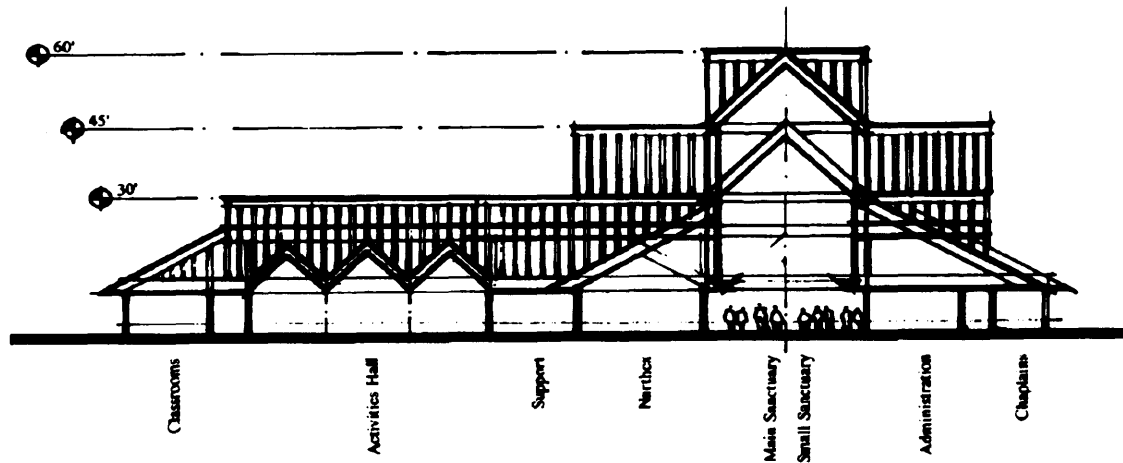


Figure 5-10. Building Section—300 Seat Chapel.

Table 5-3. Chapel Center, 400 Seat Design Program.

| | Net Area |
|--------------------------------------|---------------|
| WORSHIP | |
| Sanctuary (include AV room @ 30 SF) | 4,900 |
| Small Sanctuary | 1,200 |
| Narthex | 1,156 |
| Society | 290 |
| Blessed Sacrament | 225 |
| Baptistry | 180 |
| Changing Rooms | 184 |
| Cry Room | 200 |
| Choir Robing | 250 |
| Furnishing Storage | 240 |
| Liturgical Storage | 180 |
| SUBTOTAL | 8,945 |
| COUNSELING | |
| Chaplains Offices (5 @ 185 SF) | 925 |
| Waiting Area | 100 |
| Base Chaplain | 200 |
| SUBTOTAL | 1,225 |
| ADMINISTRATION | |
| Reception | 90 |
| CCSA Office | 80 |
| Staff Work | 315 |
| SUBTOTAL | 485 |
| COMMUNITY | |
| Activities Room | 1,806 |
| Kitchen/Pantry | 240 |
| Library/Conference | 150 |
| Storage | 250 |
| SUBTOTAL | 2,446 |
| RELIGIOUS EDUCATION | |
| Classrooms (8 @ 225 SF) | 1,800 |
| Office | 120 |
| Storage | 170 |
| SUBTOTAL | 2,090 |
| SUPPORT | |
| Restrooms | 610 |
| Bride's Room | 80 |
| General Storage | 350 |
| Custodial | 50 |
| Mechanical/Electrical (not included) | (825) |
| SUBTOTAL | 1,090 |
| TOTAL NET AREA | 16,281 |
| CIRCULATION & WALLS | 2,626 |
| TOTAL GROSS AREA | 18,907 |

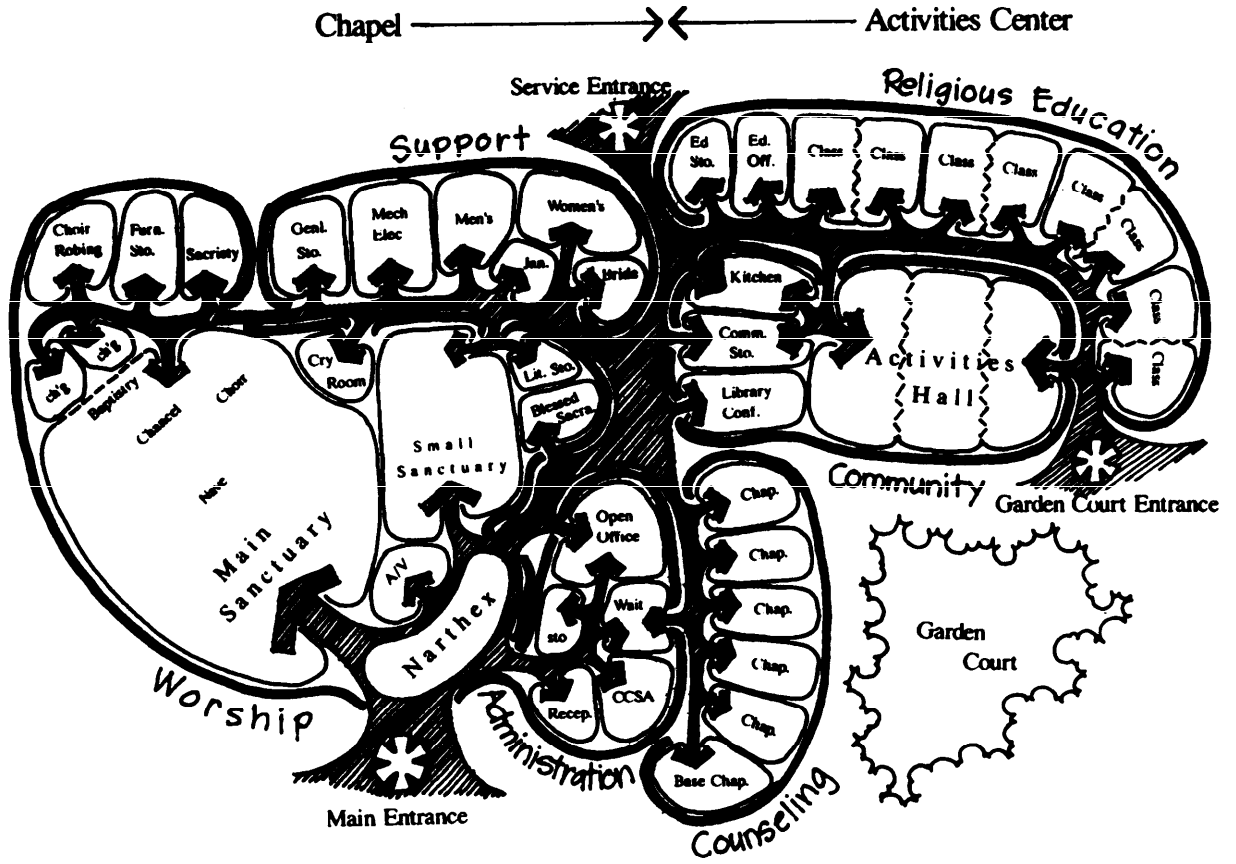


Figure 5-11. Chapel Center, 400 Seat Concept Diagram.

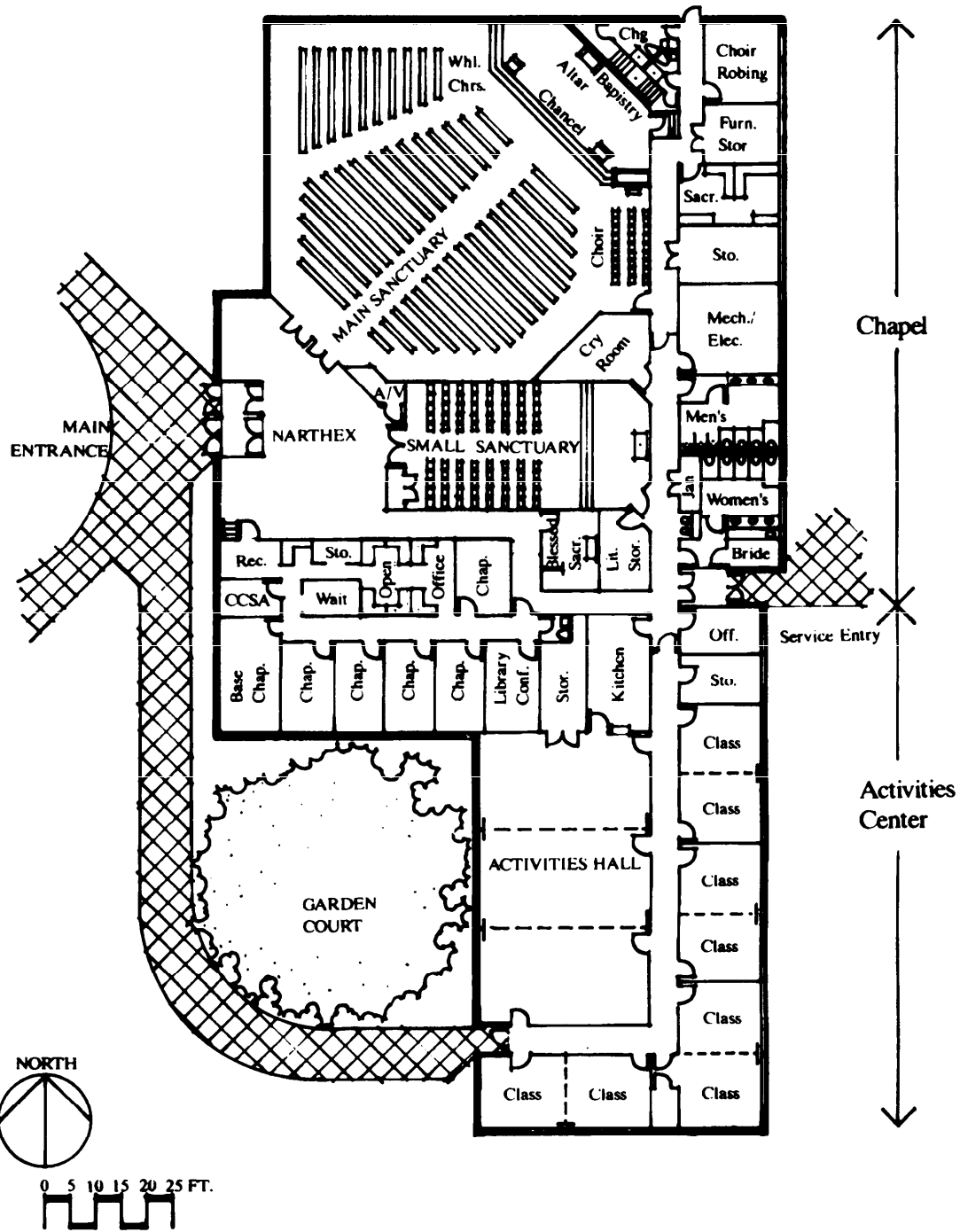


Figure 5-12. Chapel Center, 400 Seat.

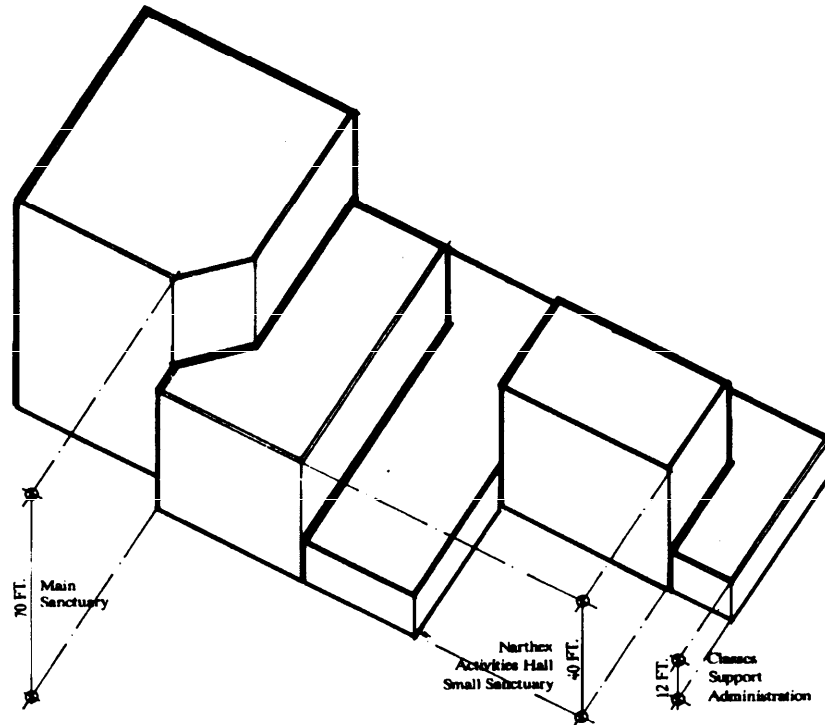


Figure 5-13. Massing Relationships, 400 Seat Chapel.

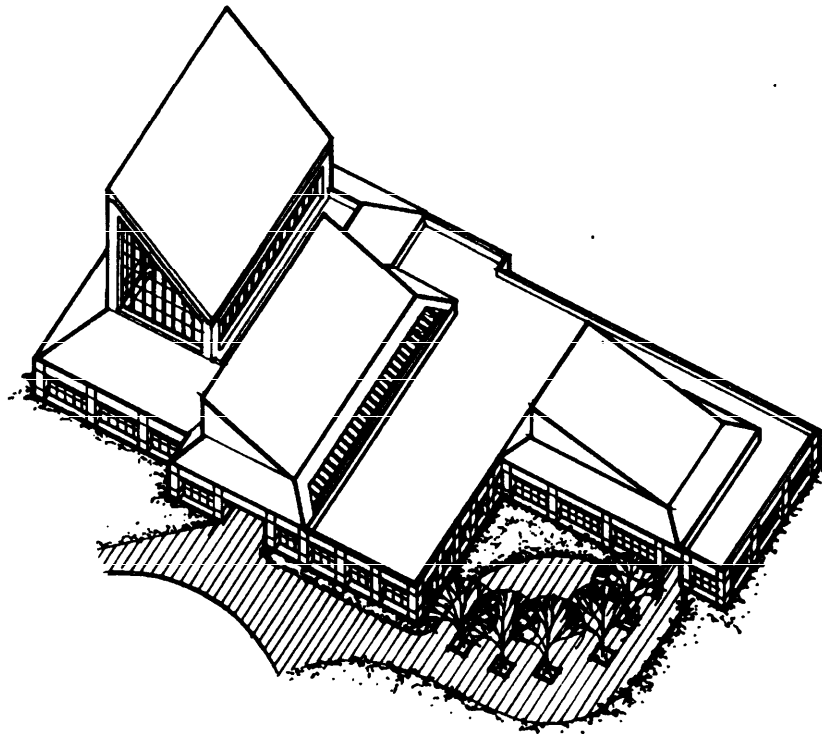


Figure 5-14. Illustrative Axonometric, 400 Seat Chapel.

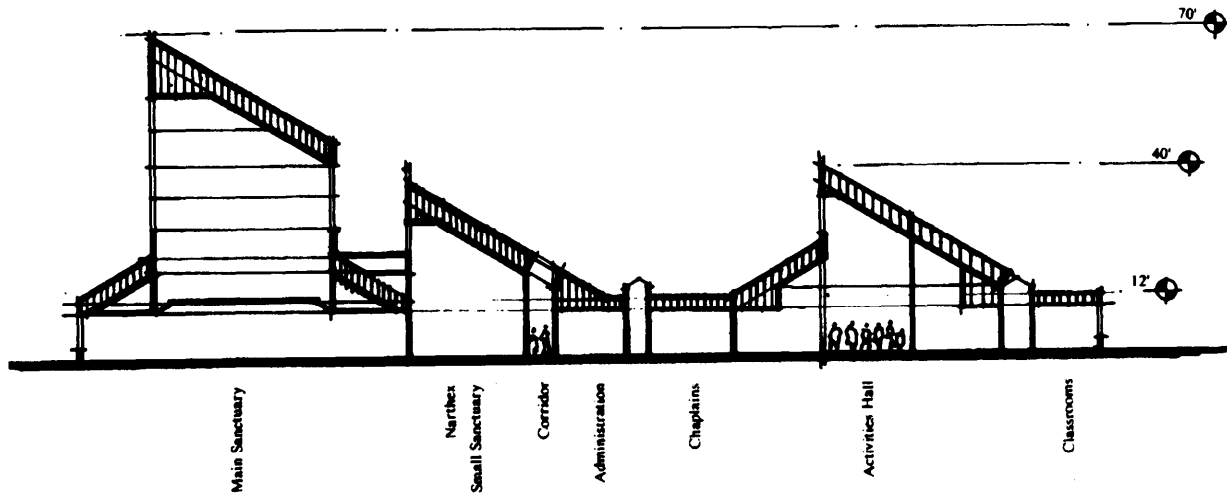
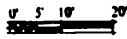
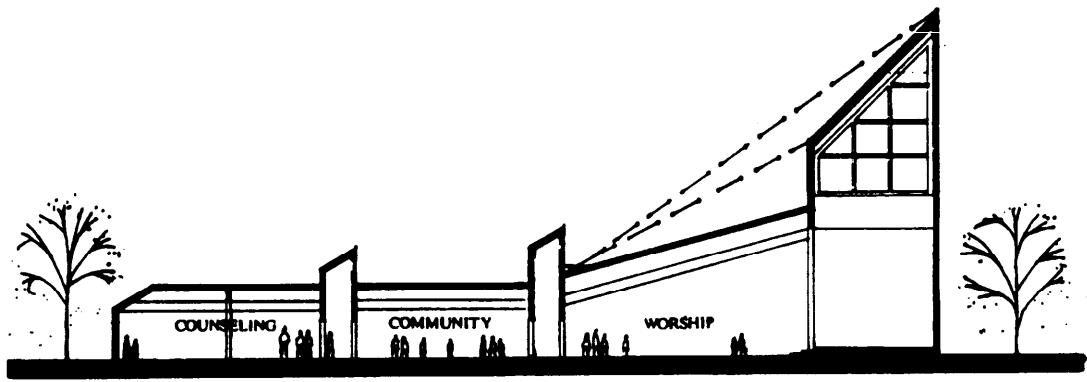


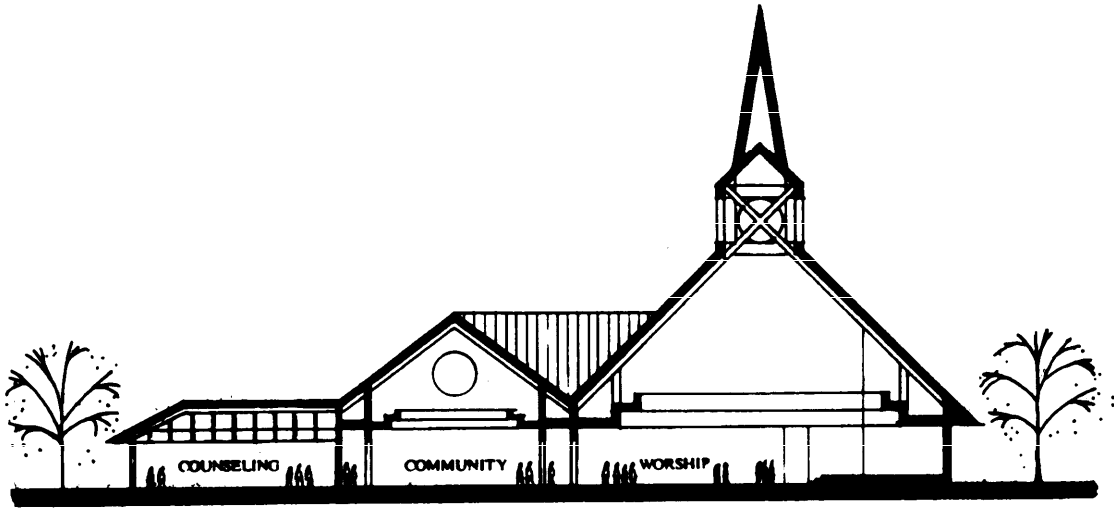
Figure 5-15. Building Section, 400 Seat Chapel.



Domed or Barrel-Vaulted Worship Space



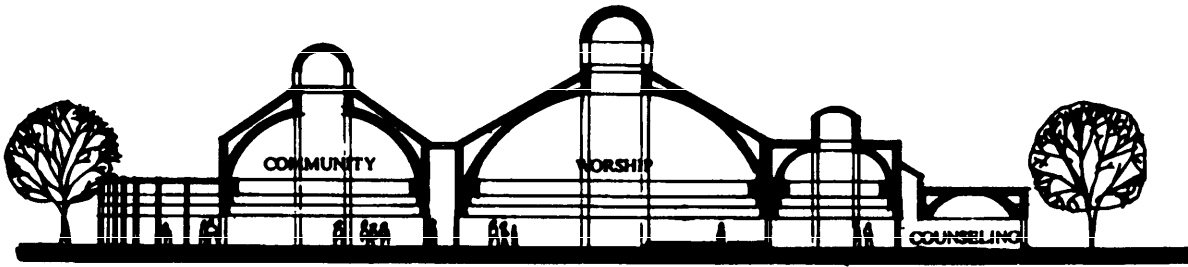
Asymmetric, Sweepled Worship Space



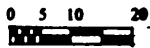
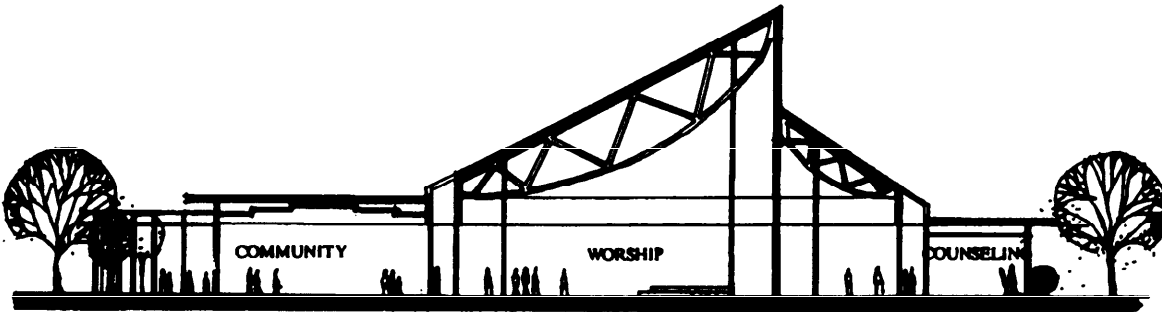
Peaked Roof Worship Space

Figure 5-16. Building Form Variations— Linear Concept.

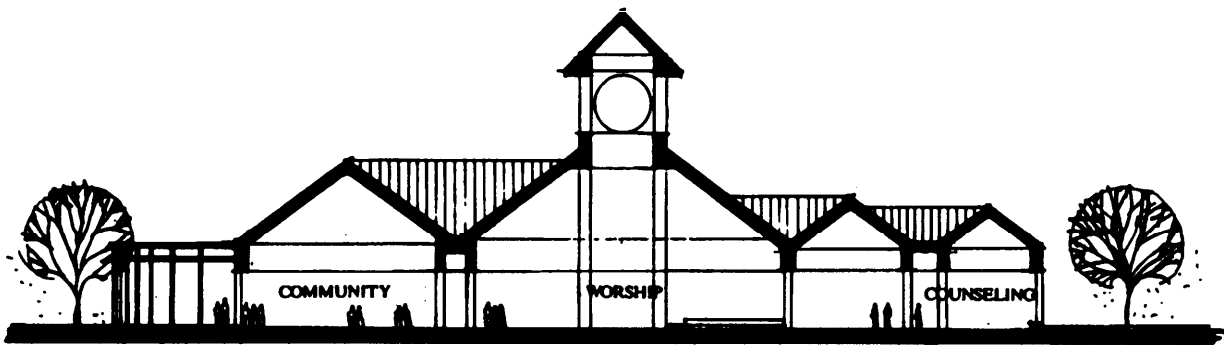
Linear Concept



Domed or Barrel-Vaulted Worship Space



Asymmetric, Sweepled Worship Space



Peaked Roof Worship Space

Central Concept

Figure 5-17. Building Form Variations— Central Concept.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

MERRILL A. McPEAK, General, USAF
Chief of Staff

EDWARD A. PARDINI, Colonel, USAF
Director of Information Management

FUNDING SOURCE FOR MAJOR RELIGIOUS FURNITURE ELEMENTS 1,2,3,4,5

| <u>Room, Space, or Area</u> | <u>Construction Funds</u> | <u>Other</u> |
|---|---------------------------|--------------|
| 1. Sanctuary | | |
| a. Christian Worship | | |
| (1) Altar Table | X | |
| (2) Pulpit | X | |
| (3) Lectern | X | |
| (4) Presider's Chair | X | |
| (5) Credence | X | |
| (6) Baptistry | X | |
| (7) Choir Chairs | X | |
| b. Jewish Worship | | |
| (1) Ark | | X |
| (2) Torah Scrolls | | X |
| (3) Torah Reading Table | | X |
| (4) Garment Bin | | X |
| (5) Mikvah | X | |
| c. Eastern Orthodox | | |
| (1) Holy Altar | | X |
| (2) Oblation Table | | X |
| (3) Icons | | X |
| d. Islamic | | |
| (1) Islamic Rugs | | X |
| (2) Islamic Pulpit | | X |
| (3) Mihrab | | X |
| (4) Shoe Rack | | X |
| (5) Portable Bin With Skull Caps | | X |
| e. Buddhist: Portable Altar & Stand | X | |
| f. All Faiths | | |
| (1) Organ Consoles & Speakers | X ⁶ | X |
| (2) Piano | | X |
| (3) Pews With Padded Kneelers and Hymnal Racks | X | |
| (4) Movable Communion Rail | X | |
| 2. Blessed Sacrament Room | | |
| a. Portable Altar | | X |
| b. Tabernacle on an Altar | | X |
| c. Foldable Confessional Screens w/Kneelers | X ⁷ | |
| d. Movable Chairs | | X |
| 3. Sacristy: Built-In Cabinets and Wardrobes | X | |
| 4. Choir Room | | |
| a. Piano | | X |
| b. Music Stands | | X |
| c. File Cabinets | X ⁸ | |
| d. Storage Cabinets for Personal Belongings | X ⁸ | |
| 5. Cry Room | | |
| a. Movable Seating | | X |
| b. Diaper Table | X ⁸ | X |
| c. Playpen | | X |
| 6. Hospital Chapel | | |
| a. Portable Furnishings | | X |
| b. Movable Seating | | X |
| 7. Small Sanctuary | | |
| a. Portable Altar | | X |
| b. Portable Pulpit | | X |
| c. Portable Ark | | X |
| d. Movable Seating | | X |

1. All other aspects of outfitting religious facilities follows the normal furniture procurement process.
2. Such items as tackboards and chalkboards (optional), built-in cabinetry in offices and kitchens, etc., are provided as they are under normal conditions; that is, with construction funds.
3. A comprehensive interior design (CID) package should be developed following MAJCOM guidelines.
4. Administrative type office areas should follow guidelines set forth in various engineering technical letters (ETL) on administrative facilities.
5. Additional furnishings and equipment, such as sound amplification, audiovisual, etc., that are standard requirements for religious facilities will be provided with other funds.
6. Provide conduit for wiring only with construction funds.
7. If wall attached; if not, provide with other funds.
8. If built-in, then provide with construction funds.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

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|---|--|
| ADMIN –Administrative, Administration | HVAC –Heating, Ventilating and Air Conditioning |
| AFLC –Air Force Logistics Command | ISC –Installation Staff Chaplain |
| AFCS –Air Force Communication Service | IV –Intravenous |
| AFM –Air Force Manual | LAN –Local Area Network |
| AFP –Air Force Pamphlet | LIT –Liturgical |
| AFR –Air Force Regulation | MECH/ELEC –Mechanical & Electrical |
| ASHRAE –American Society of Heating Refrigeration & Air Conditioning Engineers | MILCON –Military Construction |
| AV –Audiovisual | MTMC –Military Traffic Management Command |
| BCE –Base Civil Engineer | NAPHCC –National Standard Plumbing Code |
| CAC –Chapel Activities Center | NEC –National Electric Code |
| CCSA –Chief Chapel Support Activities | NFPA –National Fire Protection Association |
| CLASSRMS –Classrooms | PVC –Polyvinyl Chloride |
| CMP –Chapel Management Personnel | REC –Recreation |
| CONF –Conference | REFR –Refrigerator |
| DD –Defense Department | RM –Room |
| DDN –Defense Data Network | SECY –Secretary |
| EMCS –Energy Management Control Systems | STOR –Storage |
| EQUIP –Equipment | STC –Sound Transmission Coefficient |
| ETL –Engineering Technical Letter | UBC –Uniform Building Code |
| FURN –Furniture | UL –Underwriters Laboratory |
| GEN STOR –General Storage | W/- –With |
| HCB –Headquarters Chaplain Budget Office | |
| HID –High Intensity Discharge | |