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Improved Space Criteria
To Be Developed By The
Department Of Defense
For General Academic Classrooms

B-133316

*UNITED STATES
GENERAL ACCOUNTING OFFICE*

SEPT. 13, 1971

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UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

DEFENSE DIVISION

B-133316

Dear Mr. Secretary:

This is our report on improved space criteria to be developed by the Department of Defense for general academic classrooms.

This report contains recommendations for developing improved space criteria, which are subject to the provisions of Section 236 of the Legislative Reorganization Act of 1970. We will appreciate receiving copies of the statements you furnish the specified committees in accordance with these provisions.

Copies of this report are being sent to the Chairmen of the House and Senate Committees on Appropriations and to the Chairmen of the House and Senate Committees on Government Operations. Copies are being sent also to the Director, Office of Management and Budget, and to the Secretaries of the Army, Navy, and Air Force.

Sincerely yours,

A handwritten signature in cursive script that reads "E. M. Bailey".

Director, Defense Division

The Honorable
The Secretary of Defense

D I G E S T

WHY THE REVIEW WAS MADE

Because significant amounts are appropriated yearly for construction of military training facilities, the General Accounting Office (GAO) examined into the effectiveness of the criteria used by the military departments in planning space requirements for general academic classrooms.

FINDINGS AND CONCLUSIONS

The use of criteria established by the military departments for planning general academic classrooms can result in the construction of excessive classroom space.

Space allowances of 15 to 18 square feet for each student were used widely in planning and constructing general academic classrooms in civilian colleges and universities. Army regulations, however, allow up to 35 square feet and Navy regulations allow 30 square feet for each student for such classrooms. Neither department has issued instructions for applying information on planned student load and training curriculums to these criteria in determining the number and sizes of classrooms to be built.

At several Army and Navy installations, classrooms which provided about 18 square feet of space for each student had been constructed. These classrooms were considered adequate by local officials. (See pp. 5 to 9.)

Air Force instructions allow 12 square feet of general academic classroom space for each student included in the total student load. In determining the number and sizes of individual classrooms, however, there is no requirement that consideration be given to the number of students to be seated in class at any one time or to the expected number of hours of classroom instruction. Thus, unless all students attend classes simultaneously, the criterion will result in providing more than 12 square feet of space for each student.

This criterion had been followed in constructing classrooms at Lackland Air Force Base, Texas. Excessive classroom space costing about \$300,000 had been constructed but has been converted since then to other uses.

Using the same criterion, construction of additional classrooms containing about \$750,000 worth of unneeded space had been planned at Lackland. The Air Force informed GAO that the plans would be changed in line with the reduced needs for classroom space. (See pp. 10 to 12.)

RECOMMENDATIONS OR SUGGESTIONS

The Secretary of Defense should see that improved space-planning criteria are developed for general academic classrooms. These criteria should provide reasonably uniform space allowances for each student and should require that the number of classrooms constructed be based on efficient scheduling and classroom usage. (See p. 13.)

The military departments should review their classroom construction projects to determine whether it is possible to reduce or eliminate proposed construction. (See p. 14.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

The Department of Defense concurred with GAO's recommendations. A Tri-Service Ad Hoc Committee to develop improved space criteria for general academic classrooms has been established.

The military departments are reviewing classroom construction projects to ensure that the requirements are valid. (See p. 19.)

GAO believes that the corrective actions being taken are responsive to its recommendations and is requesting that the Secretary of Defense advise GAO of the results of such actions.

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CHAPTER 1

INTRODUCTION

Commanders of military installations are responsible for developing facility requirements for their installations on the basis of assigned missions and personnel strengths. The sizes and quantities of facilities generally are computed by using standard facility criteria or allowance manuals issued by the individual military departments. Space criteria or allowances for some facilities are established by the Office of the Secretary of Defense.

The Office of the Secretary of Defense has not established space criteria for use in planning and constructing general academic classrooms. Such criteria have been established by the military departments.

General academic classrooms as discussed in this report are those classrooms in which students receiving instruction usually are seated at armchair-type desks. Such classrooms generally contain an elevated podium with sufficient space on at least one side of the podium for portable training aids, such as models and charts. Also such classrooms may contain television receivers or motion picture screens and sound systems. This report excludes commentary on all classrooms which are specially equipped with large stationary training aids, such as automotive models or installed X-ray machines, or those classrooms in which students are seated at seminar tables.

Funds appropriated to the Department of Defense (DOD) for the construction of training facilities for fiscal years 1968, 1969, and 1970 amounted to \$102.4 million, \$43.7 million, and \$62.6 million, respectively. Information was not available on the part of these funds applying to general academic classrooms. We estimate that the training facilities we visited, costing about \$28 million, included general academic classroom space costing about \$4.2 million.

CHAPTER 2

NEED FOR ESTABLISHING IMPROVED SPACE CRITERIA

We believe that there is a need for the military departments to establish improved space criteria for use by military installations to plan and construct general academic classrooms. Our review showed that use of existing criteria can result in overbuilding.

In discussions with college and university officials and campus architects, we found general agreement that space allowances of 15 to 18 square feet for each student were adequate for general academic classrooms of most sizes and arrangements. The director of facilities planning for a state college and university system coordinating board informed us that data which had been compiled on existing college and university classroom space in 21 States and which covered 566 educational institutions, revealed that students were provided with an average 15 square feet for each student in general classrooms.

Army space criteria are contained in standard plans allowing 17.5 to 18.5 square feet for each student for general academic classrooms constructed in training centers and in a recently issued technical manual specifying 25 to 35 net square feet for each student for general academic classrooms constructed in service schools.

Navy regulations specify that a planning figure of 30 square feet of gross space for each student for each classroom will be used and that the planning criteria are based on the maximum number of students to be accommodated at one time.

Air Force instructions state that 12 square feet of gross space will be provided for each student to be trained in facilities designed for general academic training. No guidance is given on how the 12-foot criterion is to be applied to the planned student load and training curriculums to determine the specific sizes and number of individual classrooms to be constructed.

Indications that use of the existing departmental criteria can result in the military departments' overstating space requirements for general academic classrooms are discussed below.

ARMY PROCEDURES AND PRACTICES

The Department of the Army has issued two distinct sets of space criteria to be followed when planning general academic classrooms. One set of criteria is to be used when the general academic classroom is to be constructed in a training center, and the other set of criteria is to be used when the classroom is to be constructed in a service school.

The criteria for training centers have been issued in the form of two standard plans, one for company-size classrooms and one for battalion-size classrooms. We have been advised that the space allowance in these plans varies from 17.5 to 18.5 square feet for each student.

The classroom-space criteria for service schools are contained in a technical manual issued in July 1970. The manual specifies that 25 to 35 square feet of floor space for each student be allowed for general lecture classrooms. According to the manual, the lower limit of 25 square feet is applicable to a classroom where only chairs (without tablet arms) are required and the upper limit of 35 square feet is applicable when there is a continuous need for audiovisual presentations and the additional requirement for a working surface for writing, use of reference material, etc. No additional guidance is given on how to determine the sizes and number of individual classrooms to be constructed to correspond to the planned student load and the planned training curriculums.

We believe that the space requirements for general academic classrooms as defined on page 3 of this report should be reasonably uniform for both the Army training centers and the Army service schools. Furthermore, on the basis of our observations at two Army training centers and on the basis of opinions of military officials at these centers, we believe that 15 to 18 square feet of space for each student is a reasonable space criterion for general academic classrooms.

At Fort Sam Houston, Texas, the Army Medical Training Center teaches enlisted personnel basic medical training to

qualify as medical corpsmen. Our review of nine training buildings constructed in 1967 at a cost of about \$390,000 revealed that these buildings contained 15 academic classrooms each measuring approximately 1,860 square feet. We have been advised by school officials that each classroom provides space for an average 100 students, or 18.6 square feet for each student.

At Fort Polk, Louisiana, the Army conducts basic combat training, advanced infantry training, and combat support training for five training brigades. Although much of Fort Polk's real property dates back to early World War II, four classroom buildings were constructed in 1967 at a cost of about \$1 million, two were completed in June 1970 at an estimated cost of about \$607,000, and two additional classroom buildings were planned for inclusion in the 1972 Military Construction Program at an estimated cost of \$961,000.

Our tests of the classroom buildings constructed in 1967 revealed that each building contained about 15,600 square feet of classroom space divided into four classrooms. Each classroom was intended to accommodate a maximum 250 trainees and to provide about 15.6 square feet of classroom space for each. We noted, however, that current training classes averaged only 220 trainees and that this arrangement was resulting in providing about 17.7 square feet for each.

We have been advised by school officials at Fort Polk and Fort Sam Houston that the classroom space averaging about 18 square feet for each student is entirely adequate for training purposes.

Regarding the space allowances of 25 to 35 square feet for each student for general academic classrooms in Army service schools, the Army, in comments attached to a letter dated March 15, 1971, from the Deputy Assistant Secretary of Defense (Installations and Logistics) (see app. I), pointed out that Fort Polk and Fort Sam Houston were considered training activities and, as such, did not qualify for the classroom space allowances prescribed for Army service schools.

The Army advised us that the difference between its training centers and its service schools is in the academic

environment, i.e., service schools provide appropriate research staffs, laboratories, and libraries, whereas training centers do not.

A service school is defined in Army regulations as a school which presents a curriculum developed and approved by a service to meet a military education and training requirement of that service. A training center is defined in Army regulations as a center either where non-prior-service enlisted personnel are qualified in their basic weapons and drilled in the fundamentals of soldiery or where basic soldiers are taught those military occupational specialities which can best be taught to large classes at regular intervals in a less than academic environment.

We understand that there are 25 Army service schools and 13 Army training centers. We have been advised by the Army that the Military Academy at West Point is not classified as either a service school or a training center.

We did not visit Army service schools to attempt to determine what effect the cited differences between such schools and Army training activities would have on the space to be provided to each student in general academic classrooms of the nature described on page 3 of this report. However, since civilian colleges and universities, which have an academic environment, provide 15 to 18 square feet of space for each student, the need for the Army to provide 25 to 35 square feet of space for each student in classrooms in its service schools is questionable.

NAVY PROCEDURES AND PRACTICES

The Department of the Navy has issued regulations to be followed at Navy installations in planning for the construction of training facilities. Such training facilities include buildings and other facilities, such as training courses, ranges, and maneuver areas. Training buildings are divided by the Navy into two categories: (1) buildings for academic instruction, composed basically of classrooms, and (2) buildings for instruction in the applied use of technical equipment.

The Navy regulations state that planning criteria for an academic or a general instruction building are based on

the maximum number of students to be in class at any one time. The space-planning figure established for academic or general instruction classrooms is 30 square feet of gross classroom space for each student. This 30-square-foot criterion is to provide space for students, instructor stations, and aisles.

The regulations state also that the gross building area will be 75 square feet for each student. In addition to providing classroom space, the 75 square feet provide space for administration offices, assembly rooms, conference rooms, libraries, and lounges. The regulations state further that, normally, a classroom will not exceed 900 square feet. No additional guidance is provided to determine the sizes and number of individual classrooms to be constructed to correspond to the planned student load and curriculums. Navy officials told us, however, that those factors were considered in the determination of quantitative requirements for classrooms on a case-by-case basis. In this connection, we found that, at the Naval Training Center, Orlando, Florida, classrooms providing less space than the space provided for by Navy criteria had been built and that these classrooms, which are currently in use, were considered adequate by Navy officials there.

At the Orlando Training Center, the Navy is in the process of constructing a number of training facilities to provide recruit training and primary and advanced and/or specialized training for both officers and enlisted personnel. The facilities already occupied include the first increment to a recruit training school which was completed in 1968 at a cost of about \$1.4 million and which contains about 89,000 square feet of space. The Navy is planning to build a second increment to the recruit training school of about the same size as the first one.

The Bureau of Naval Personnel planned the construction of all training facilities at the training center. During our review we were told by Bureau representatives that the first increment of the recruit training school had been planned on the basis of 60 students for each classroom and 30 square feet for each student. In the comments attached to the Deputy Assistant Secretary of Defense's letter dated March 15, 1971, however, the Navy informed us that the recruit training school had been planned on the basis of

60 students for each classroom and 24.6 square feet for each student but that the classrooms as actually constructed contain 1,314 square feet for 60 students for each classroom, or about 22 square feet for each student.

By reviewing as-built drawings, we found that the classrooms in the first increment of the recruit training school averaged 1,257 square feet. During our visit to the training center, we observed that the number of students in the classrooms averaged 74 rather than the planned 60. This resulted in about 17 square feet of space being provided for each student.

During our review we were told by a Navy official that a cutback in funds had caused the classrooms to be constructed in scope smaller than was originally planned; the Navy informed us in its comments, however, that the reduction in space for each student had been a result of normal planning and design procedures rather than of a lack of funds.

In the opinion of officials at the recruit training school, the space provided for each student in the classrooms is entirely adequate to meet training needs. We believe from our observations of classes in session that the facilities are adequate for the presentation of the programmed material. The Navy commented that 15.5 square feet for each student was considered an acceptable minimum.

AIR FORCE PROCEDURES AND PRACTICES

The Department of the Air Force has issued instructions on procedures to be followed by Air Force bases in computing space requirements and other quantitative requirements for facilities. Included in these instructions are space-planning criteria for three types of training facilities, i.e., flying training, technical training, and basic military and general academic training.

For basic military and general academic training facilities, a criterion of 12 square feet for each student is specified for planning space requirements. Although the instructions do not explain how this 12-square-foot criterion is to be used in determining classroom space to be constructed in the training facilities, our tests of the use of the criterion at one Air Force base and our discussions with Air Force officials indicate that the 12-square-foot criterion is intended to be applied to the total planned student load in determining total classroom space requirements. In determining the number and sizes of individual classrooms, there is no requirement that consideration be given to the number of students to be seated in the room at any one time or to the expected number of hours of classroom instruction. Thus unless all students attend classes simultaneously, the criterion will result in providing more than 12 square feet of space for each student.

As discussed below our test of the use of this space criterion in the planning and construction of general academic classrooms at Lackland Air Force Base, Texas, revealed that excessive classroom space estimated to cost about \$300,000 had been constructed.

At Lackland the Air Force is in the process of constructing composite recruit training and housing facilities to replace World War II facilities that were used formerly. At the time of our review at the installation, new composite facilities for approximately 8,000 trainees had been constructed and were in use and similar facilities for an additional 10,900 trainees were planned.

The Air Force included 10 classrooms of about 1,200 square feet in each of the composite facilities. Air Force officials told us that the requirement for total classroom

space in each facility had been computed by multiplying the Air Force criterion of 12 square feet by the number of trainees (about 1,000) to be housed and trained in each composite facility.

According to an installation school official, the optimum number of students to be seated in each classroom was 50. Under such a seating arrangement, each student would be allowed 24 square feet of space in the classrooms constructed at Lackland. We observed, however, that most of the classes being held at Lackland contained 100 men (two training groups of 50 students each), each student being allowed about 12 square feet of floor space. We observed also that the classrooms were being used to train a substantial number of trainees still housed in World War II facilities. As more new composite facilities are constructed, these trainees will be trained in the newer classrooms and thus the number of students for each classroom will be lessened.

The basic training curriculum at Lackland consisted of 6 weeks of intensive training which included a total of 64 hours of classroom instruction. On the basis of each recruit's receiving 64 hours of classroom instruction over a 6-week period, each of the 10 classrooms in the composites would be used an average 2.13 hours each day (exclusive of breaktime) if the classes had 100 students and an average 4.26 hours each day (exclusive of breaktime) if the classes had only 50 men. It appears to us that, if computations of this type had been made before construction of the facilities and if classes had been scheduled in such a way as to attain maximum daily utilization of each room, the Air Force might have determined that fewer than 10 classrooms for each composite facility was needed.

Our review of classroom utilization in the four most recently constructed and occupied composite facilities revealed that 14 of the 40 classrooms had been converted to other uses, such as officer-briefing rooms, mail rooms, instructor dayrooms, and laundry concession shops. We estimate that the 14 converted classrooms had cost about \$300,000 to construct. We believe that, if, in the opinion of Air Force officials, the composite facilities should contain space for the functions being provided in converted classrooms, then such space should be justified on its own

merits and should not be planned and constructed in the composites on the basis of classroom criteria.

At the time of our review, the Air Force planned to construct 10 more such composite facilities which would include 100 academic classrooms. On the basis of the classroom conversion in the four composites that recently had been constructed, we estimate that excess classrooms costing about \$750,000 would have been included in the proposed composite facilities if the same design had been used.

In the comments attached to the Deputy Assistant Secretary of Defense's letter dated March 15, 1971, the Air Force advised us that the reduction in classroom requirements at Lackland Air Force Base was being recognized in a new definitive drawing which probably would prescribe seven or eight classrooms for each composite building. Also we were advised that the definitive drawing would incorporate space requirements for support activities of the types now housed in existing converted classrooms.

SPACE CRITERIA OF CIVILIAN EDUCATIONAL INSTITUTIONS

To compare space criteria for general academic classrooms as used by the military departments with such criteria used by civilian educational institutions, we interviewed officials of a State college and university system coordinating board, a university system coordinating board, a State university, a junior college district, and a church-affiliated college. We also obtained comments on required classroom space from a designer of junior college campuses and from instructors at three college campuses. In addition, we reviewed studies which pertained to classroom space and which covered about 100 colleges and universities, and we visited campuses to determine the sizes and student-seating capacities of classrooms.

From discussions with the above officials and our review of pertinent studies, we concluded that 15 to 18 square feet of net classroom space for each student was the generally accepted requirement in civilian educational institutions. For example, an official of a university system coordinating board stated that the maximum space needed for each student for tiered classrooms with tablet-armchairs was 16 square feet. A junior college educational consultant who

had designed campus facilities in five States told us that 17 square feet of classroom space for each student was provided for classrooms to accommodate 25 students and that 16 square feet for each student was provided in classrooms for 30 to 50 students. The director of facilities planning for a State college and university system coordinating board stated that data which had been compiled on existing college and university classroom space in 21 States and which covered 566 educational institutions revealed that an average 15 square feet for each student was the general rule.

CONCLUSIONS

We believe that there is a need for the military departments to formulate and issue improved space criteria for planning and constructing general academic classrooms. We believe that the use of existing departmental criteria can result in military installations' overstating classroom space requirements and thereby constructing unneeded classroom space.

In our opinion general academic classrooms at military installations of the three military departments are similar in nature and should be planned on the basis of reasonably uniform space criteria for each student.

On the basis of our observations, opinions of military officials at the installations visited, and evidence on space criteria of civilian universities, we believe that 15 to 18 square feet for each student is a reasonable space allowance for general academic classrooms. We believe also that, to avoid construction of unneeded classroom space, the number and sizes of classrooms should be planned with the intent that each classroom receive maximum utilization.

RECOMMENDATIONS

We recommend that the Secretary of Defense have improved space-planning criteria developed for use by military installations in planning and constructing general academic classrooms. Such criteria should (1) provide reasonably uniform space allowances for each student and (2) require that the number of classrooms constructed be based on scheduling training courses and the corresponding number of hours of classroom use in an efficient manner.

We recommend also that the Secretary of Defense have the military departments review their planned and approved general academic classroom projects to determine whether it is desirable and feasible to reduce or eliminate programmed classroom construction.

AGENCY COMMENTS

In a letter dated March 15, 1971, the Deputy Assistant Secretary of Defense (Installations and Logistics) indicated agreement with our conclusions and recommendations and advised us that DOD had established a Tri-Service Ad Hoc Committee to develop improved space criteria for general academic classrooms as we had recommended. We have been advised that such criteria, when developed, are to be included in the Department of Defense Construction Criteria Manual, DOD Instruction 4270.1-M.

The Deputy Assistant Secretary advised us that the military departments had informed his office that they were reviewing their planned and approved general academic classroom projects to ensure that the requirements are valid.

We believe that the corrective actions being taken are responsive to our findings and recommendations.

We are requesting the Secretary of Defense to advise us of the results of the corrective actions in process.

CHAPTER 3

SCOPE OF REVIEW

We examined the military departments' policies, procedures, and practices relating to space criteria used in planning and constructing general academic classrooms and compared them with criteria used by civilian educational institutions.

We interviewed installation officials responsible for initiating requirements for military construction projects and officials of the organizations using the facilities. We also examined pertinent documents, records, and reports relating to specific classroom facilities that have been constructed, were under construction, or had been planned for construction at the following installations visited.

Army Infantry Training Center, Fort Polk, Louisiana
Army Medical Training Center, Fort Sam Houston, Texas
Naval Training Center, Orlando, Florida
Lackland Military Training Center, Lackland Air Force
Base, Texas

In addition, we interviewed officials of civilian educational institutions responsible for planning and utilizing classroom space, as well as instructors, and a consultant who had designed several college campuses (including classrooms). Also, we visited campuses to determine the sizes and student-seating capacities of classrooms and we reviewed and extracted pertinent data from reports which pertained to classroom space and which covered institutions of higher education throughout the United States.

We conferred with internal review and audit groups at the four military installations visited to determine the extent of their reviews of the military construction program requirements for academic classroom facilities. No such reviews had been made or were being planned at the installations we visited.

APPENDIX



ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

15 MAR 1971

INSTALLATIONS AND LOGISTICS

Mr. C. M. Bailey
Director, Defense Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Bailey:

Your letter of January 11, 1971 enclosed for review and comments copies of draft report (OSD Case 3229) on the need for establishing improved space criteria for use in planning and constructing general academic classrooms. Your report points out the divergence in the space criteria used by the Military Departments in planning classroom space and recommends that the Secretary of Defense initiate action to establish improved space planning criteria that provides for reasonably uniform per student space allowances that reflect proper consideration of course scheduling and efficient usage of classrooms. The report further proposes that the Military Departments review current projects to insure their size and need are justified.

This office agrees with the need for reasonably uniform space criteria that reflects proper consideration of course scheduling and efficient use of classroom space. We have therefore established a Tri-Service Ad Hoc Committee to develop such criteria as recommended by the draft report. When the work of this Committee is complete, the resulting criteria will be included in the Department of Defense Construction Criteria Manual, DoD Instruction 4270.1-M. The Military Departments have informed this office that they are reviewing their planned and approved, but incomplete, general academic classroom projects to insure that the requirements are valid.

With regard to your findings at the military installations visited, the enclosed comments received from the Military Departments will clarify the points raised in the draft report. You may wish to modify the draft report to reflect these clarifying points.

APPENDIX I

If we may be of further assistance in this matter, please let us know.

Sincerely,

A handwritten signature in cursive script that reads "Glenn V. Gibson".

Glenn V. Gibson
Deputy Assistant Secretary of Defense

Enclosure

Military Departments' Comments on GAO Draft Report, "Need for Establishing Improved Space Criteria for Use in Planning and Constructing General Academic Classrooms" dated January 11, 1971 (OSD Case No. 3229)

Army Comments

The GAO survey covered classrooms at Fort Polk and Fort Sam Houston. The activities surveyed are considered training activities as opposed to Service schools and as such do not qualify for the space allowances published in TM 5-843-1. In actuality the space allowances for general academic classrooms for training centers vary from 17.5 to 18.5 square feet per student for standard classrooms, and reduces to 15 square feet per student for large classrooms.

Navy Comments

The actual history of planning to eventual construction of the Recruit Training Building at NTC Orlando is delineated in Tab I (attached). Contrary to the statement contained in the GAO draft report, the reduction to 22 square feet per student station was a result of the normal planning and design procedures rather than a lack of funds. In the case of recruits, they are berthed and trained by companies and because of the fluctuating loads, the size of the recruit company varies from 60 men to 85 men. Therefore, both the berthing and training spaces must provide at least minimum acceptable space per recruit when the company reaches its maximum size. At NTC Orlando recruit facilities have been designed and constructed to accomplish this requirement. The 22 square foot allowance selected for recruits at NTC Orlando also was based on furniture requirements of only chairs with small tablet arms. There would be limited class participation requiring the recruits to circulate within the classroom. The only storage problem per recruit would be for their rifles which are stacked in gun racks on the walls. Final construction of the Recruit Training Building was accomplished for approximately \$600,000 less than the amount authorized and appropriated.

The total amount of classroom space at NTC Orlando actually constructed is 37,684 square feet. Based on total recruit loading of 4000, this results in 9.4 square feet per student which compares favorably with the criteria used in the civilian sector.

Air Force Comments

As noted by the GAO draft report, the criterion of 12 square feet per student was used to determine classroom requirements in the new composite buildings at Lackland AFB. The requirement also corresponded to usage of classrooms in Basic Military Training (BMT)

APPENDIX I

at that time (1959-1964). This usage called for a six week BMT course of 96 academic hours. The academic hours were later reduced to 64 and this, in turn, reduced the total classroom requirements. The reduction in classroom requirements at Lackland AFB is being recognized in a new definitive drawing for its future composite buildings. The definitive will also incorporate the space requirements for support activities of the type now housed in existing converted classrooms. The past five years of experience will be incorporated to insure an optimum balance between the resident load, the support areas, and classrooms that make up a BMT complex. It appears that seven or eight classrooms, containing a total of 500 to 600 seats, will be required for each 1040 man composite building.

Attachment
(Tab I)

BEST DOCUMENT AVAILABLE

PLANNING, PROGRAMMING AND CONSTRUCTION OF RECRUIT TRAINING BUILDING
 NAVAL TRAINING CENTER, ORLANDO, FLORIDA

1. Summary

	<u>Price</u>	<u>Gross Area</u>	<u>Total Area Classroom</u>	<u>Individual Classroom Size</u>	<u>SF/Recruit</u>
a. Initial Planning	\$2,177,000	96,063 SF	39,960 SF	1,480 SF	24.6
b. Refined Estimate	1,985,000	87,363 SF	36,344 SF	1,344 SF	22.4
c. Actual Construction	1,384,374	89,000 SF	37,684 SF	1,314 SF	22.0

2. Actual Planning and Construction for Recruit Training

a. Plan approximately 40% of recruits in classroom at one time:

40% x 4,000 recruits average on board = 1,600 (1,620 used)

- b. Each classroom should accommodate a company of 60 recruits.
- c. Average on board loading will vary continuously. Maximum company size of 85 recruits. This limit determined by management experience. The barracks capacity would limit the company size to 96 men.
- d. The type of curriculum requires 22 SF/recruit rather than a maximum of 30 SF/student. When company reached maximum size of 85 recruits, the 15.5 SF/recruit is considered to be an acceptable minimum.
- e. The initial plan provided approximately 24.6 SF/recruit. During OSD review it was determined that this should be reduced to 22.4 SF/recruit.
- f. The scope authorized and funded by Congress was at 22.4 SF/recruit.
- g. The actual construction provides 22 SF/recruit based on a 60 man company.

3. Utilization

- a. Since commissioning on 1 July 1968 there have been several occasions when the total recruit on board level required the company size to be as high as 74 recruits. While this loading provides less than optimum space per recruit it and the maximum company size of 85 recruits will be workable.
- b. Under normal peacetime conditions the company size at Orlando will vary between 60 and 70 men per company or a range 19 to 22 SF per recruit in the classroom.

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TAB 1

Copies of this report are available from the U. S. General Accounting Office, Room 6417, 441 G Street, N W., Washington, D.C., 20548.

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