

PN-ACN-403

PROGRAM AND DESIGN CRITERIA REPORT  
PROPOSED WOMEN'S DORMITORY, KABUL UNIVERSITY  
KABUL, AFGHANISTAN

AGENCY FOR INTERNATIONAL DEVELOPMENT

پيشنهاده دراپور پروگرام و طرح ليليه نسوان پونيمتون كابل  
كابل - افغانستان

اداره انكشاف بين المللي ايالات متحد ه امريكا

1 AUGUST 1977

۱۳۵۶/۵/۱۰

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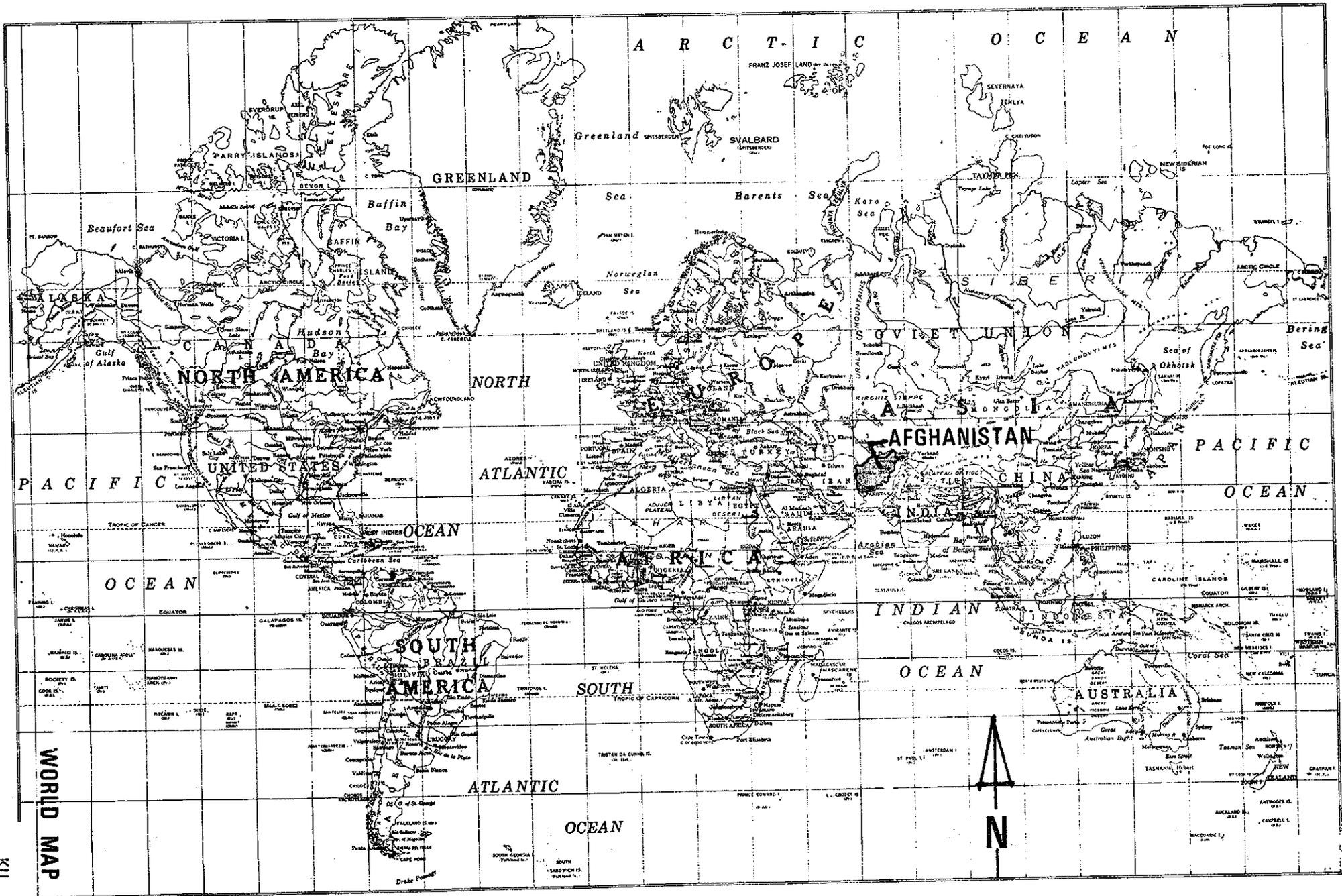
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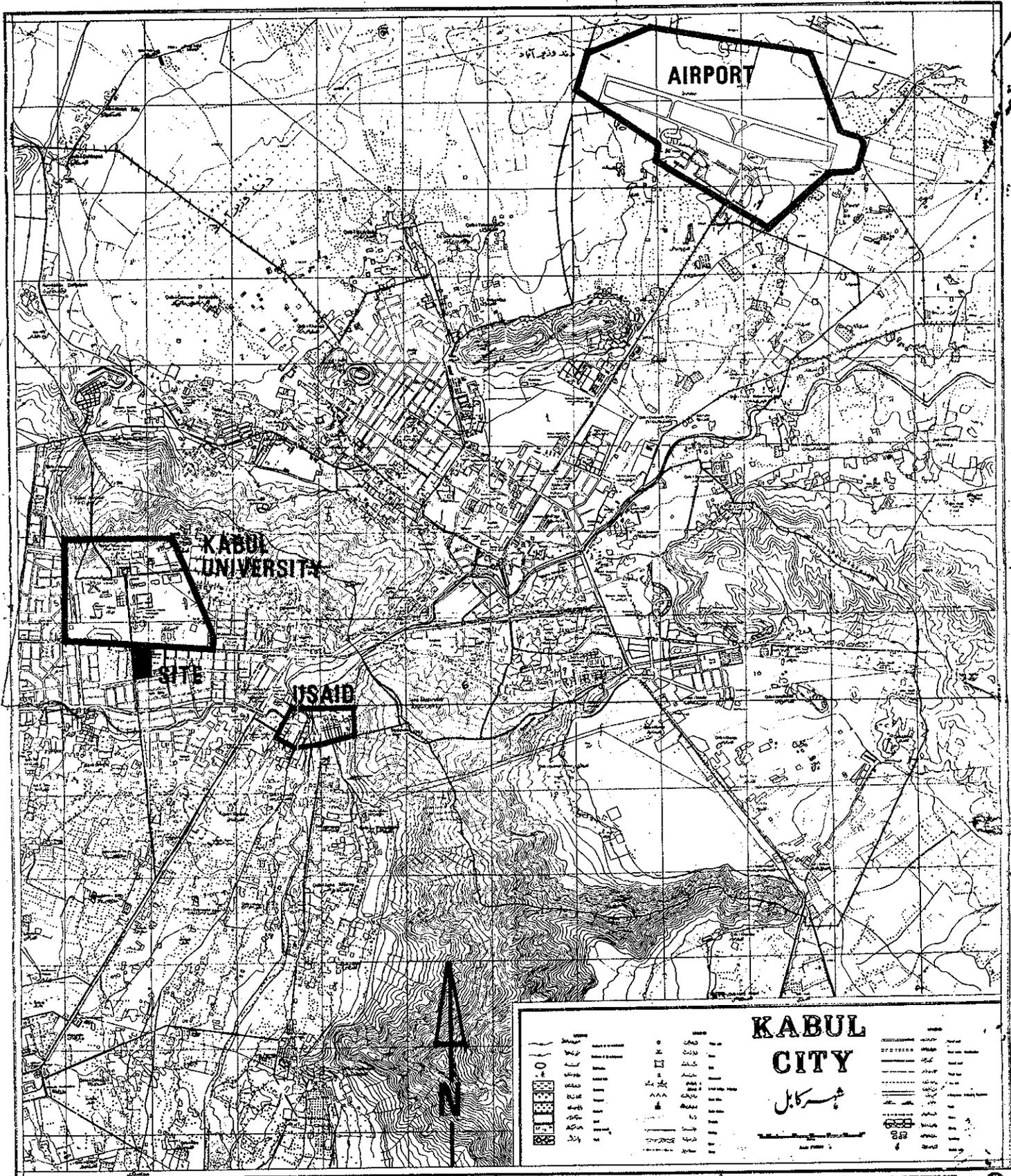
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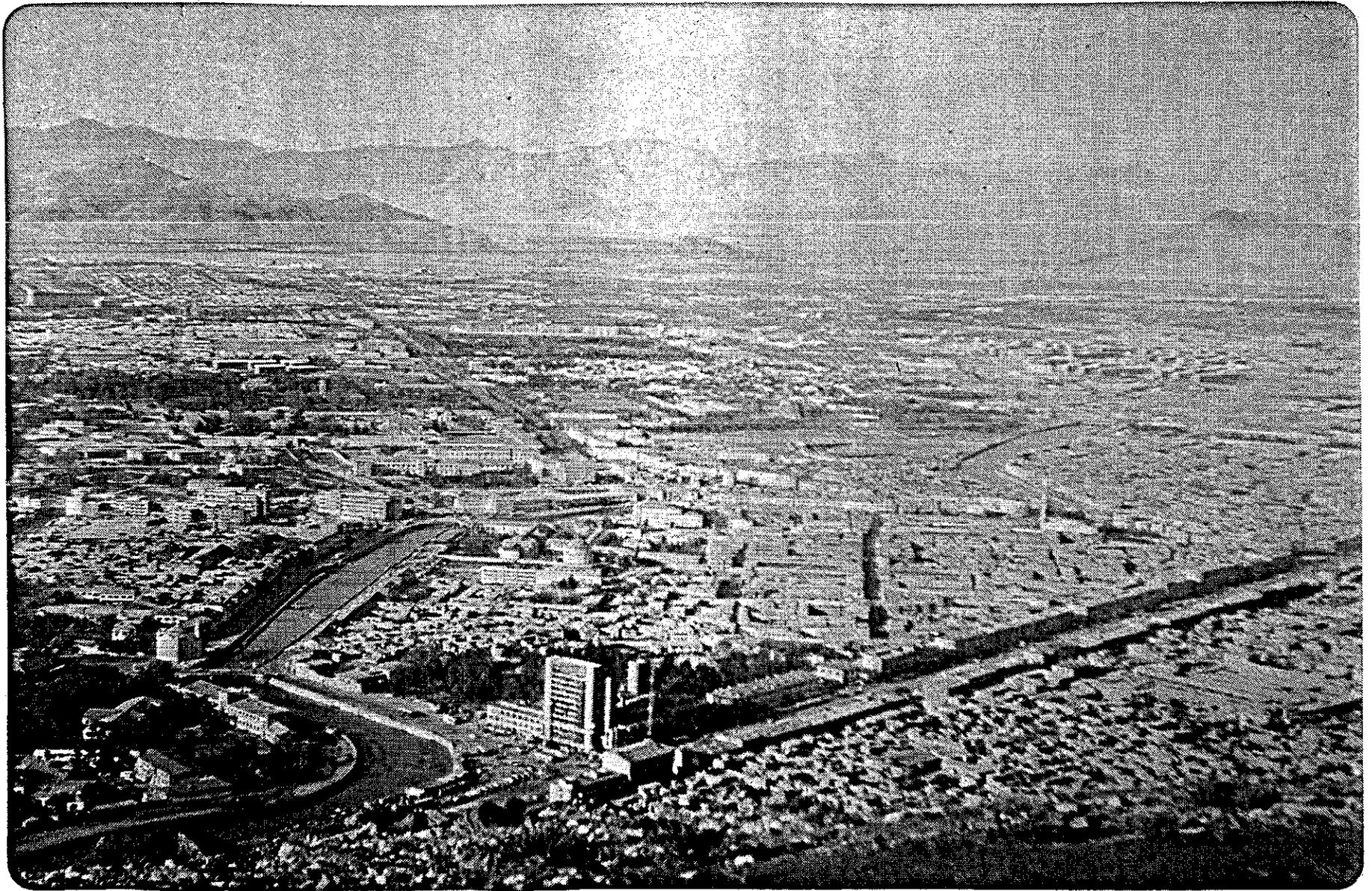


WORLD MAP









LOOKING EASTWARD TOWARD DOWNTOWN KABUL FROM 2000 METERS HIGH ON KOHE SHERDARWAZA. A NEW FOURTEEN (14) STORY BUILDING IS UNDER CONSTRUCTION IN THE FOREGROUND. KABUL AIRPORT IS IN THE FAR BACKGROUND, FLAT LOW LANDS.



LOOKING WEST FROM ATOP KOHE SHERDARWAZA AT THE "NOON GUN" SITE TOWARD THE KABUL UNIVERSITY CAMPUS (UPPER RIGHT OF CENTER), KOHE ALIABAD, AND THE TEACHERS' COLLEGE SITE (UPPER LEFT OF CENTER).

//

## BRIEF NARRATIVE OF PROBLEM

The Government of Afghanistan has set as a major priority, a greater development of its society through improved educational opportunities for those who are qualified and deserving. To date, the women qualified to attend an institution of higher education have received second rate treatment, especially in regard to housing accommodations. The essence of this project is to find and suggest solutions to the housing and socio-cultural problems of the female students.

The female students who attend Kabul University, are primarily from the rural areas of Afghanistan. For many, it is the first time they have been away from the home province, for any length of time. They bring with them the many cultural and traditional practices and problems to which they have long been accustomed. The women are then forced to accept other problems inherent to situations which have been imposed upon them by their substandard living conditions at the existing dormitory.

The living conditions at the present women's dormitories can best be described as deplorable. The dormitories, as such, are really only a collection of four (4) compounds originally owned by single families. They have been used as dormitories since September, 1970, when the decision was made to accept provincial women at the University. Prior to this date, provincial women were not admitted to the University unless identifiable relatives lived in Kabul, and were willing to care for them.

The early history of the women's dormitories and the myriad problems encountered are well documented in the files of the American Women's Association (A.W.A.) of Kabul. Since 1970, the A.W.A. has contributed large amounts of time, money and energy to help alleviate some of the more blatant examples of the unbearable conditions at the dormitories. This group obtained funds and services over the

years to improve the general appearance, sanitary, electrical, eating and sleeping facilities at the dormitories. These American women and their Afghan counterparts had to solicit aid to achieve the necessities of an almost decent and safe atmosphere for the women. The students, themselves, had to do much of the painting and decorating. The University had no plan or budget for the women's dormitory, other than that there should be one.

Today, these compounds are still being used, and are the so-called residences for nearly three hundred and fifty women. All rooms, including closets, which are large enough to contain a bed or beds, are used as sleeping areas, and proper study conditions are practically non-existent. Still, as previously mentioned, the University has no real budget for the immediate improvement of the women's lot. However, there are now more enlightened officials at Kabul University as well as a new Minister of Higher Education for Afghanistan. These officials have recognized that the women have been, and are still being treated somewhat negligently. They have resolved that any repairs or renovations of the existing dormitory will only be a temporary solution. It has therefore been determined that only a new and much larger dormitory will solve the immediate and future problems of the women who come to the University. The proposed women's dormitory for Kabul University, as visualized by the Government of Afghanistan, is to solve the immediate problems of the students' housing, as well as to serve as a catalyst for change in the development of the much needed potential of the provincial women of Afghanistan. The Government of Afghanistan, through the Ministry of Higher Education and Kabul University, have set as their common goal, equal advantages for women in education and employment, which the men have received by right. The dormitory facility would be the first major effort toward upgrading the standards of living and education of the women at Kabul University, and would hopefully, lead to more changes for the Afghan women throughout the society.

NUMBER OF WOMEN'S DORMITORY RESIDENTS AT KABUL UNIVERSITY, ACTUAL AND PROJECTED  
FROM 1967 TO 1981\*\*

<u>Year</u>	<u>Number of Students in Last Year</u>	<u>Freshmen</u>	<u>Graduates</u>	<u>Total</u>	<u>Projected</u>
1346 (1967)	3	.	.	3	
1347 (1968)	3	.	.	3	
1348 (1969)	3	.	.	3	
1349 (1970)	3	24	.	27	
1350 (1971)	27	63	.	90	
1351 (1972)	90	4	.	94	68
1352 (1973)	94	30	.	124	143
1353 (1974)	124	69	.	193	217
1354 (1975)	193	104	.	297	292
1355 (1976)	297 - 381	120	36	381	367
1356 (1977)	381 - 470	135	46	470	442
1357 (1978)					517
1358 (1979)					591
1359 (1980)					666
1360 (1981)					741

*Date down  
build*

\*\* This data was supplied to the A/E Team on May 15, 1977 by Kabul University Officials.

SOCIOLOGICAL, CULTURAL FACTORS AND ACADEMIC PRACTICES WHICH AFFECT THE LIVING AND STUDY HABITS OF FEMALE COLLEGE STUDENTS IN AFGHANISTAN

The A-E Team, after having spent only a month in Afghanistan, cannot readily speak with authority on the social, cultural, and academic practices which influence the character of the Afghan women attending Kabul University. However, certain factors can be discussed based on information obtained from Afghan officials and the personal observations of the A-E Team.

Some of the many socio-cultural factors which should be considered when attempting to design a dormitory for Afghan women include, historical background of the women; religious teachings, goals of the Afghanistan Government, and existing living conditions. In addition, the academic practices which influence the design of the facility would include such factors as educational backgrounds, student selection processes, and study habits of the female students.

The historical background of women in Afghanistan has been one of a secondary nature. Women have traditionally been subordinate to men in the day to day affairs of Afghan society. Women were (and perhaps still are) denied equal treatment in education, employment, civil and social rights. Many of these practices are contrary to the teachings of the Holy Koran, according to which, women should have equal rights to those of men, in education and other endeavors. This has been brought out in several discussions with the Afghans, and is mentioned in the "Women's Institute" chapter of the Afghanistan Republic Annual (1977 Edition) published by the Ministry of Information and Culture.

The Women's Institute is the organization designated to serve the Afghan women in the social, cultural, economic, legal and political fields, as well as to instruct them in carrying out the reformist programs of the State. The organization seeks to enhance the woman's role in the building of the society, end

unwholesome customs, and undesirable traditions. These efforts toward improving the conditions of the Afghan woman by the Government of Afghanistan have only occurred since 1964, while the Women's Institute has only been actively involved since 1975. The government has implemented a developmental seven year plan concerning women's affairs, in order to bring about the many necessary changes in the treatment of the Afghan woman.

get  
copy

The changes for women are slow in taking place. Some women of Kabul were still observed maintaining the custom of wearing the all-encompassing "chadri", which, more than anything else, shows the problems the women have to overcome. The women wearing "chadris" appear to be only bleak moving forms, with only hands and feet visible to persons in public places.

The female students at Kabul University, like the older Afghan women counterparts, have had little to say about their society, education, or living conditions. The women students at the University, are from the few provinces which have any sort of secondary educational facilities for women. They are selected for entrance to the University on the basis of their rankings on comprehensive examinations which determine where they are placed in the different departments of the University. Students (male or female) have no choice as to what area of study, or career would be best for them.

The study habits of the female Afghan students, could only be observed on the campus itself, since it was not possible for the A-E Team to visit the women's dormitory. However, in responses to a questionnaire prepared by the A-E Team, it was learned that many female students preferred to study in the dormitory room or lounge set aside for this purpose. The results also showed that many studied daily, most often at night. The existing women's dormitory, with its overcrowded conditions did not allow for good study conditions, or for the storage of reference materials necessary for a good academic experience. The women

observed by the A-E Team, usually studied individually or in small groups, along the many open shaded spots on various portions of the campus. It was seldom noticed if there were boys and girls studying together. This was mainly due to the strict adherence to the sexual separation teachings of the Islamic faith.

The following questionnaire was developed by the A-E Team, with the assistance of Kabul University and U.S.A.I.D. officials in order to make a determination as to how the students felt about the proposed dormitory facility. The questionnaire was translated into Dari so that it could be better understood by the students. The original questionnaire, and a sample of the Dari version are presented here, in their original forms, without further explanation.



3. From which province do you come ?
4. If you have an off-campus residence, what distance do you have to travel to get to the university ?
  - A. Less than one Km
  - B. One-two Km
  - C. *Greater* greater than two Km
5. What method of transportation do you use going to and from your residence and school ?
  - A. Walk
  - B. Bus
  - C. Taxi
  - D. Bicycle
  - E. ~~Other~~ *Private car*
6. How many persons are housed in your dormitory room ?
  - A. 1-2
  - B. 2-4
  - C. 4-6
  - D. More than 6 (specify number)
7. How many roommates would you personally prefer ?
  - A. 1-2
  - B. 2-4

C. 4-6

D. More than 6

8. Is there sufficient closet and storage space in your room for your needs?

Yes                      No

9. How many linear meters of closet space do you have? \_\_\_\_\_

10. How many linear meters of book shelves are provided in your room? \_\_\_\_\_

Is this amount adequate?      Yes              No

11. Are there any storage areas provided elsewhere in the residence for <sup>items</sup> items such as luggage, trunks or seasonal clothing?      Yes      No

12. Are there laundry facilities for your use in your residence?      Yes      No

13. <sup>are</sup> <sup>adequate</sup> Is there a ~~sufficient~~ <sup>adequate</sup> enough of the laundry facilities for everyone's use in the dormitory?      Yes      No

14. How often are the laundry facilities used?

A. 1-2 days a week

B. 2 days or more

15. Where do you usually study?

A. Dormitory room

B. A study room or lounge in the residence hall

C. Campus library

D. Other \_\_\_\_\_

16. Where would you prefer to study ?

A. Dormitory room

B. A study room or lounge in the residence hall

C. Campus library

D. Other \_\_\_\_\_

17. When do you usually study ?

18. At what frequency do you study ?

A. Daily

B. Weekly

C. Prior to exams only

19. How many meals do you eat at your residence during class days ?

A. One

B. Two

C. Three

20. How many meals do you eat on campus ?

A. One

B. Two

C. Three

21. What types of indoor and out door facilities for recreation and relaxation do you think appropriate for women living in the dormitory ?

22. What social or cultural considerations <sup>should</sup> schools be reflected in the design of the women's dormitory?

23. Are there any other suggestion that you might have, which have not been covered by this questionnaire?

Please return the completed questionnaire immediately to the area designated by the university for collection. Your cooperation in this endeavor is sincerely appreciated.

پرسشنامه در مورد پروژه پیشنهاد شده لیلیه نسوان

پسوندتون کابل

وزارت تعلیمات عالی و مامورین پوهنتون کابل اظهار ارزوښدي  
 نموده اند تا کیفیت حیات و تجارب اکادمیکي را که برای محصلات  
 شامل پوهنتون حتمی میباشد بهبود بخشند. برای تأمین  
 این مأمول اعمار یکنلیلیه جدید برای زنان یک اولیت مهم و لازمی  
 خوانده شده است. مجالس چند با مامورین فوق الذکر و مهندسين  
 دایر گردیده تا عوامل مختلف را که باید در عمارت شامل ساخته  
 شود مورد بحث و غور قرار دهند. برای اینکه مهندسين در عملیه دیزاین  
 شان کمک کرده شود پرسشنامه ذیل در مورد لیلیه نسوان طرح  
 گردید تا معلوم شود که بهصلاات کدام عوامل را مهم و مطلوب فکر  
 خواهند کرد.

شاگردان

اناث شاگردان ذکور و اعضاء تدریسی دعوت بعمل  
 آمده تا این پرسشنامه را جواب گویند.

جوابات دو کرب اخیر الذکر معنومات و ارقام قیمتداري بسد سترس پوهنتون  
 جهت رفیرنس اینسده خواهد گذاشت. لطفاً باخاطر داشته باشید که این  
 پرسشنامه صرف برای مقاصد معلوماتی بکار خواهد رفت  
 و تذکراسط در ان لازم نیست میباشد.

لطفاً بدور مناسبترین جواب حلقه بکشید.

زن ( مرد )

۱- کدام جنس متعلق میباشید ؟

۲- فعلا در کجا سکونت دارید

الف • در لیلیه پوهنتون

ب • در خارج از لیلیه پوهنتون

۳- از کدام ولایت آمده اید *ولایت وردک*

۴- اگر در خارج لیلیه پوهنتون سکونت دارید چقدر فاصله را میپیمائید تا به پوهنتون برسید

الف • کمتر از یک کیلومتر

ب • یک - دو کیلومتر

ج • بیشتر از دو کیلومتر

۵- برای رفت و آمد به خانه و مکتب از کدام طریقه ترانسپورت استفاده مینمائید

الف • پیاده

ب • بس

ج • تکی

د • بایسکل

ه • موتر شخصی

۱- چند نفر در اطلاق لیلیه تا ن بسر میبرند

الف • ۱-۲

ب • ۲-۴

ج ۰ ۴ - ۶

د ۰ بیشتر از شش نفر (تعداد را مشخص سازید) ۱۵

۲- چند نفر هم اطاقی را شخصا ترجیح می‌دهند

الف ۰ ۱ - ۲

ب ۰ ۲ - ۴

ج ۰ ۴ - ۶

د ۰ بیشتر از ۶

۸- آیا در اتاق شما برای احتیاجات ثانوی جای کافی برای

و ذخیره وجود دارد

بله

خیر

۹- حیاط با طول (درازی) چند متر جای کافی دارد  $\frac{6 m^2}{}$

۱۰- بحساب طول چند متر جای کافی برای کتابها در اتاق ثانوی

دارد  $\frac{1.5 m}{}$

آیا این اندازه کافیست

بله

خیر

۱۱- آیا برای ذخیره اقلام از قبیل کالا بکها و البسه موسمی

در لابیسه محل ثانوی وجود دارد

بله

خیر

۱۲- آیا در لابیسه ثانوی تمهیدات کالونی برای اینکه البسه ثانوی بشوید

وجود دارد

بله

خیر

۱۲- ایا در لیلیه تسهیلات کلاشوی بتسدرکافی برابراینکه هر یک البسه خود را بشوید وجود دارد

بلی

نخیر

۱۳- تسهیلات کلاشوی بکدام اندازه استعمال می‌گردد

الف • اویک تا دوروز در هفته

ب • دوروز ویا بیشتر

۱۴- معمولا در کجا مطالعه می‌کند

الف • در اتاق لیلیه

ب • در یک اتاق مطالعه ویا سالونی در تالار لیلیه

ج • در کتابخانه پوهنتون

د • دیگر جاها \_\_\_\_\_

۱۵- درسخواندن و مطالعه را در کجا ترجیح می‌دهید

الف • اتاق لیلیه

ب • یک اتاق مطالعه یا سالونی در تالار لیلیه

ج • کتابخانه پوهنتون

د • دیگر جاها \_\_\_\_\_

۱۶- معمولا در کدام وقت مطالعه می‌کنید

۱۷- چند دفعه مطالعه می‌کنید

الف • روزانه

ب • هفته وار

ج . تمام قبل از امتحان

۱۱- در روزهاییکه درس میداشته باشید در لیلیه تان روز چند بار

طعام صرف میکنید

الف . يك

ب . دو

ج . سه

۲۰- چند بار در پستون طعام صرف میکنید

الف . يك

ب . دو

ج . سه

۲۱- برای زنایک در لیلیه زندگی میکنند بفرشما چه نوع وسیله تفریحی واستراحت

در داخل عمارت و در خارج آن مناسب میباشد  
Since all girls living in the dormitory are not belonging to the poor families but

to the families with the help of which they could be enrolled in the dormitory  
because ~~the~~ dormitory ~~is~~ is a more appropriate place for study than the house.

۲۲- در دیزاین يك لیلیه زنانه چه ملحوظات اجتماعی و کلتوری باید

مد نظر گرفته شود

ملاحظات اجتماعی و کلتوری را در دیزاین مدنظر

This is up to the engineers who design the building .



## ALTERNATIVE SITE LOCATIONS NARRATIVE

The site selection criteria for the proposed Women's Dormitory had already been established by Government of Afghanistan and Kabul University officials prior to the A-E Team's arrival in Afghanistan. The criteria included the separation of the female Afghan students from the males, for reasons indicative of the religious and socio-cultural traditions of Afghanistan; privacy and protection from the public, and accessibility to the main campus. By using these criteria, the selection of a site was made by Kabul University officials, and submitted to the U.S.A.I.D./AF officials, and the visiting A-E Team, during the first official meeting on April 17, 1977.

It was at first decided that the location of the proposed dormitory would be at the site of the new development of Khoshal Khan Mina, west of the present University campus. However, about two weeks later, it was discovered that another location, at the present Teachers' College, south of the University, and much nearer the University campus was being suggested by some of the school officials as an alternative site. The following is a description of the original site, several alternates, and the final location (#2) which was selected two (2) days prior to the A-E Team's departure from Afghanistan. The number preceding the site name is keyed to the Alternative Site Location Map, and corresponds to the order in which the site was selected by the Kabul University officials.

### LOCATION 1 - KHOSHAL KHAN MINA

The Khoshal Khan Mina site is in a new section of town which is being developed, and is contiguous to the west boundary of Kabul. The illustrative plan was developed by the Afghans, with Russian assistance, and covers an area of over five (5) square kilometers, or approximately two (2) square miles.

The site chosen for the Women's Dormitory is located in the extreme eastern portion of the proposed new town development, and one block from Silo Road, which is about one and one-half (1-1/2) kilometers from the center of the Main Campus. This site had already been chosen by apparently higher ranking officials than the newly appointed Minister of Higher Education.

It was stated that the site must definitely be off campus for sociological and cultural reasons, and that some of the facilities at the proposed dormitory might be shared by the surrounding future neighborhood development. This is somewhat contradictory to the idea of relative seclusion and separation of female students imposed by the culture.

It was found, however, that Kabul University had already been negotiating for the necessary purchase of this site. The site is, at present, being cleared of the mud brick, and stone buildings and walls. In fact, the displaced owners of the existing buildings and walls personally remove all of the rubble stone walls and foundation walls from the demolished structures and transport them to the site of their new homes for re-use in their construction. In addition to the buildings and walls on the site, a concrete covered septic pit is located in the southeast quadrant of the site. The top of the water level in the pit is standing at about five feet below the surrounding grade.

There is a possibility of the adjacent two blocks south of the proposed Khoshal Khan Mina site being acquired for future University dormitory expansion. The present proposed site is adequate in size to accommodate a building about twice the size of the proposed 800 bed building, in a three story arrangement. However, many of the important outside recreational facilities will have to be reduced in scope or eliminated altogether. This would create a hardship for the women, since there are no exterior recreation spaces near the site and none are planned for some time.

There are no existing utilities in the streets surrounding this site, and the location and size of the future utility lines are not yet planned, or at least not readily available. Providing the necessary utilities to operate this building would increase the cost tremendously.

#### LOCATION 2 - TEACHERS' COLLEGE

The Teachers' College site is across the street and to the south of the existing women's dormitory location. The Teachers' College site is in the city proper, and consequently, has some utilities available in the surrounding streets and on the campus itself. Another advantage of the Teachers' College site is that it is across the street from and consequently within easy walking distance of the University. At the same time, the location, although close to the classroom buildings on the campus, is at least 700 meters, or close to one-half mile from the existing women's dormitory.

The Teachers' College site is on open land that has apparently never been developed, therefore, no demolition is required. In addition, no special grade beams in the footings and foundation walls are necessary to span septic pits and footing trenches. There are presently many double rows of large trees on the site, and many of the rows run north and south and would separate the dormitory from the teachers' college facilities. These existing trees would also accomplish a major portion of the landscaping, and possibly eliminate this cost altogether.

There is also room for expansion on this site, that could possibly accommodate at least 2400 (twenty-four hundred) resident students, if necessary, with adequate recreational facilities. Since there are existing recreation facilities on the teachers' college, the necessity for duplication will be minimized.

Another advantage of this site is that the property is already under the ownership

of the Ministry of Higher Education, and therefore, no acquisition costs are required to be expended: The property need only be transferred to the University. This site is also in close proximity to convenience shopping in the south portion of the site. Moreover, there are existing Mosques close by, including one on the campus of the Teachers' College itself.

The surveillance of the women's dormitory by adjacent residences was one of the criteria given to justify the Khoshal Khan Mina site. There are, however, residences across the street, to the west of the Teachers' College site, that can serve the same purpose, if necessary. In addition, there is an existing two (2) meter high wall surrounding the site, that would provide the necessary security and privacy required, and at the same time eliminate the construction of one as would be required at the Khoshal Khan Mina site.

#### LOCATION 3 - SOUTHERN BASE OF KOHE ALIABAD

The possibility of the use of this site for the location of the proposed Women's Dormitory was only mentioned in passing, as a means for the University to acquire some substandard housing through the urban renewal process. Less opposition would be encountered if the property was acquired for the women's dormitory as opposed to any other reason. No serious investigation was made of the site since the Khoshal Khan Mina site had already been decided upon at that time. The site does however, face south and would easily reflect the character of the existing traditional terraced residences.

#### LOCATION 4 - EAST SIDE OF EBNECINA SCHOOL

This location was only mentioned in passing, and it was not under the jurisdiction of the Ministry of Higher Education, since it is a high and night school. However, a few of the positive aspects of the Teachers' College site also exist at this location.

#### LOCATION 5 - EXISTING HOUSES USED FOR WOMEN'S DORMITORY

This property is on the University campus proper, but has not yet been acquired by the University. The University is in the process of purchasing the individual properties from the existing owners for use as dormitory facilities. This site has many of the advantages of the Teachers' College site, with the additional positive aspect of being on Campus. However, the construction of the proposed facility on this site would require that the female students be housed elsewhere during the construction phase. The disruption caused by moving might not be a bad idea if the temporary quarters are better than the existing facilities, where many of the women occupy shower stalls and closets.

#### LOCATION 6 - NEAR EXISTING MEN'S DORMITORY

This location was mentioned in passing, dismissed immediately, and not discussed further because of the obvious social problems which could develop.

#### LOCATIONS 7 AND 8

These sites are adjacent to the existing women's dormitory site #5, and immediately across the street, respectively. The sites are on Kabul University property, thus posing no problems in regard to development. Both sites enjoy the same advantages as the sites #2 and #5, but would pose problems of privacy due to the prominence of their locations, which are on the main roads to the campus. However, one advantage of both locations is their proximity to many of the campus facilities such as the main dining hall and library, which would eliminate the need for incorporating these facilities into the dormitory facility.

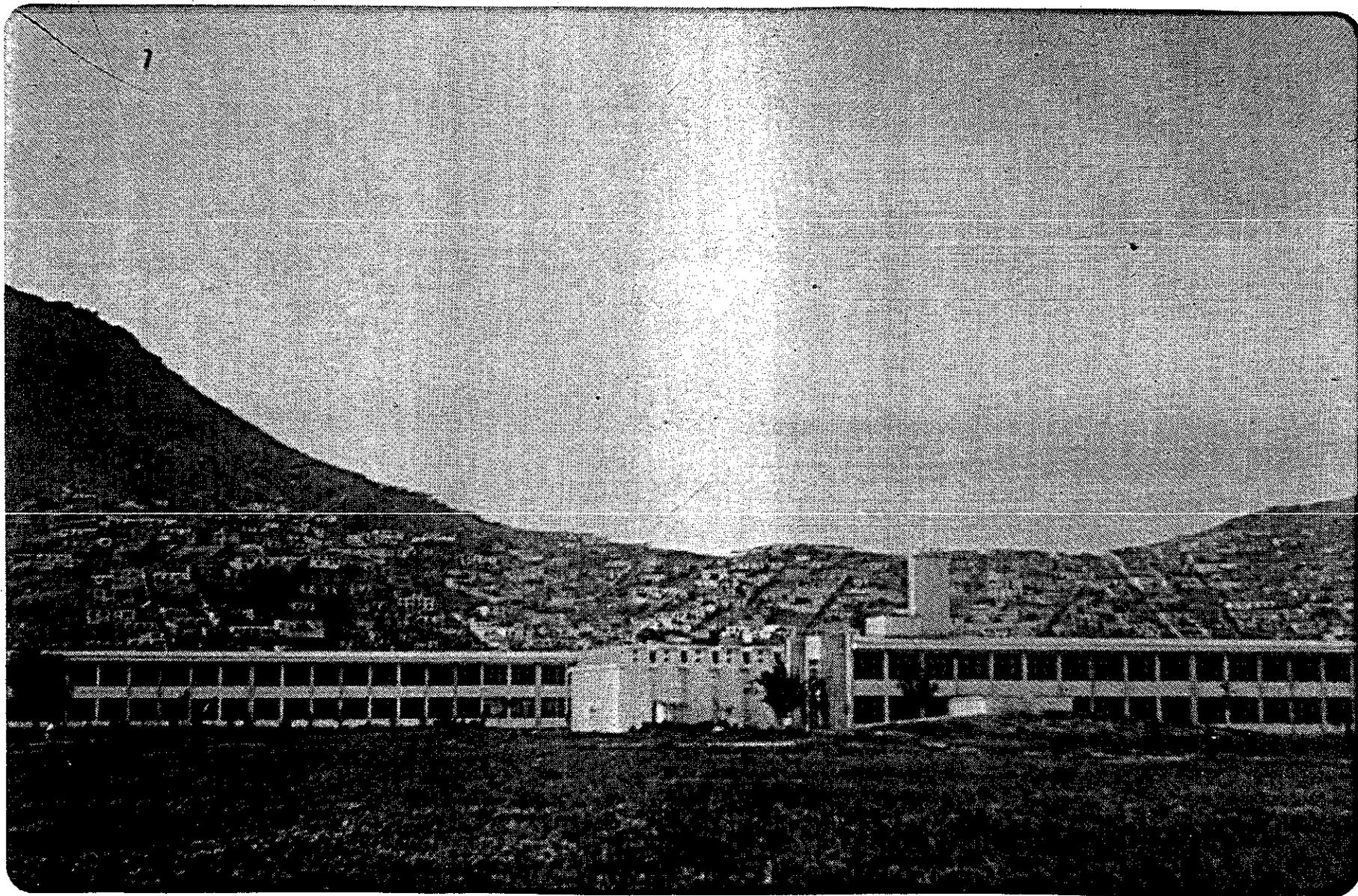
#### SUMMARY

The Teachers' College site #2, was last mentioned as the final selection to the U.S.A.I.D./AF officials and the A-E Team on May 17, 1977. This date was, of

course, too late to obtain any pertinent data as to the dimensions and area of the site. However, since this site is vacant, and appears to be two (2) to two and one-half (2-1/2) times the size of the Khoshal Khan Mina property, there is no real problem in locating the proposed building.



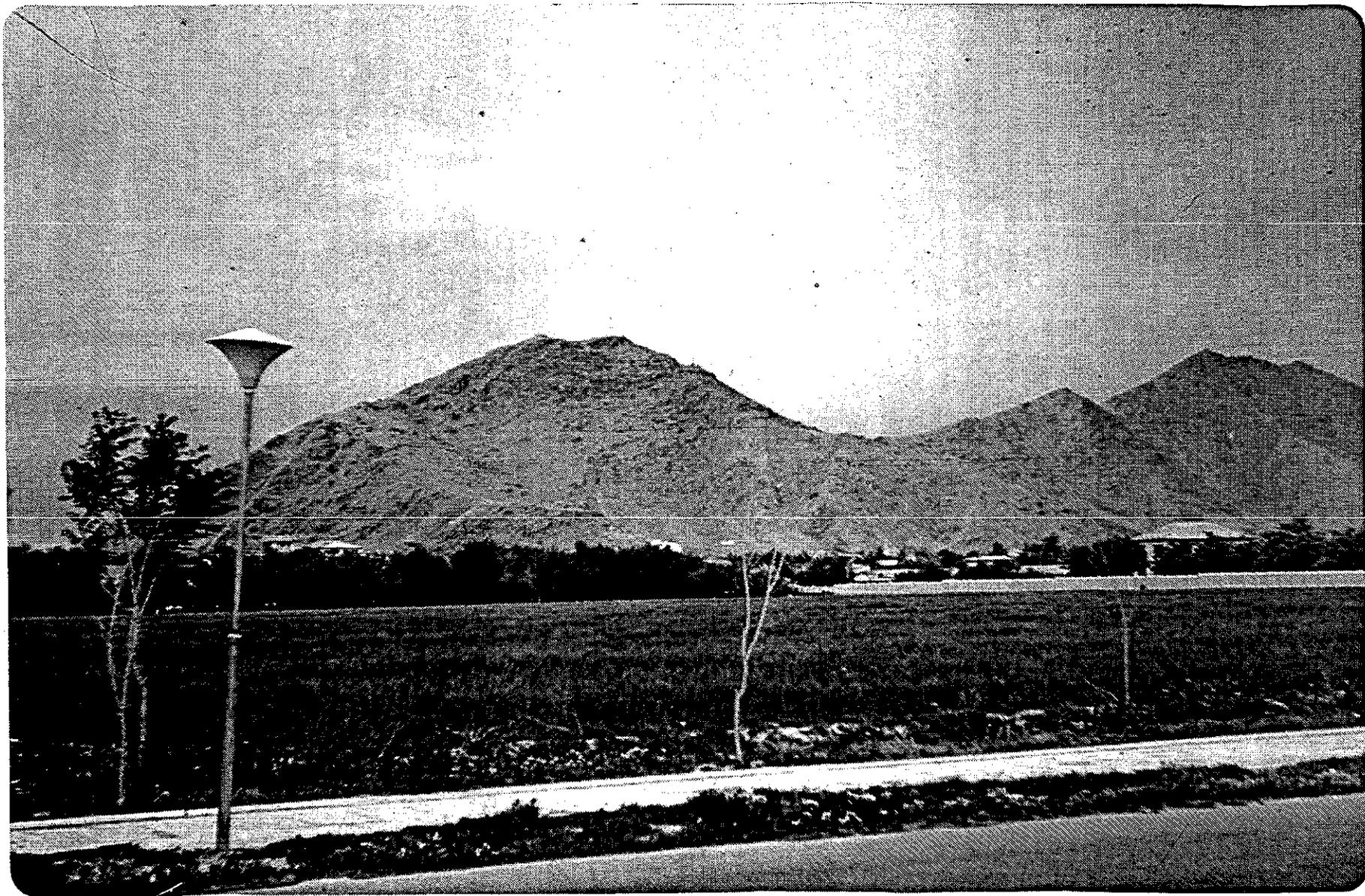
36  
SOUTHWEST CORNER, KHOSHAL KHAN MINA LOOKING EAST TOWARD PUBLIC BATH (WHITE BUILDING AT FAR RIGHT) AND COMPOUND WALLS OF TRADITIONAL RESIDENCES. IN THE IMMEDIATE BACKGROUND ARE SHOPS AND APARTMENT BUILDINGS AT SILO ROAD. KOHE AZAMAI AND KOHE SHERDARWAZA ARE IN THE FAR BACKGROUND.



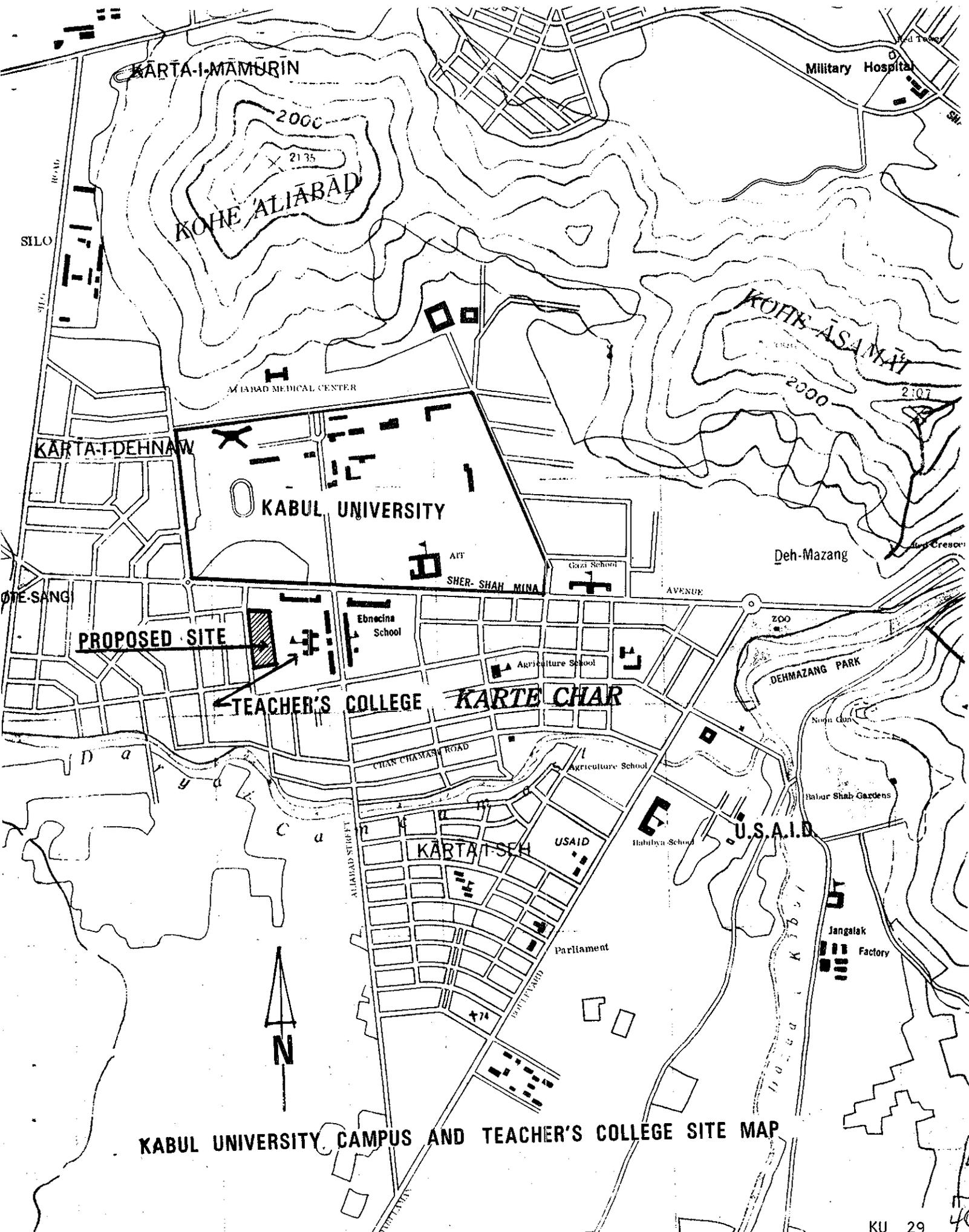
LOOKING NORTH FROM THE CAMPUS OF KABUL UNIVERSITY AT THE FOOT HILLS OF KOHE ALIABAD IN THE BACKGROUND. THIS PROPOSED SITE IS INDICATED AS NUMBER 3 ON THE "ALTERNATIVE SITE LOCATION MAP".

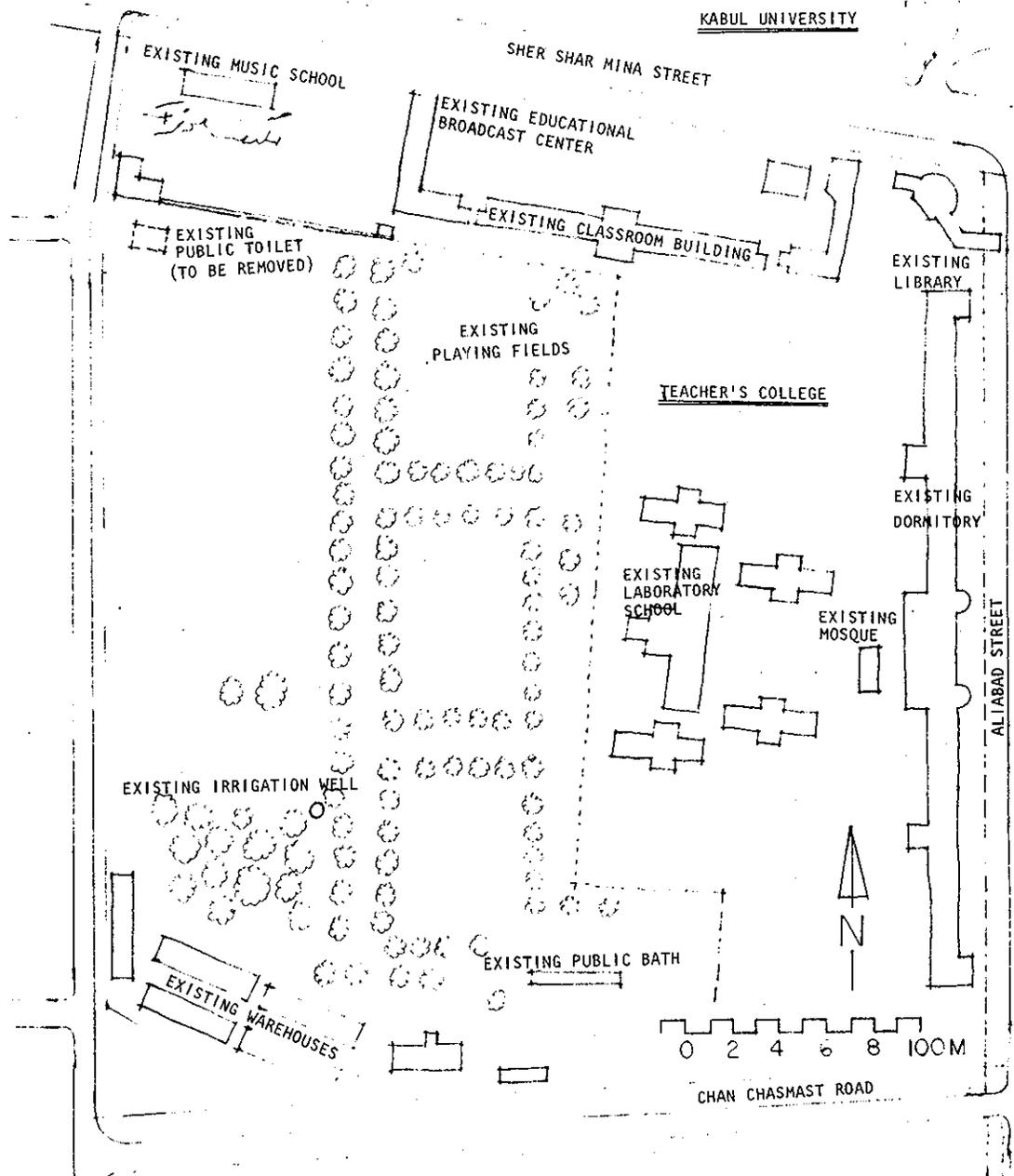


38  
KABUL UNIVERSITY SITE LOOKING WEST ON CAMPUS, WEST OF SOUTH ENTRY AND JUST NORTH OF THE TEACHERS' COLLEGE SITE INDICATED AS NUMBER 7 ON THE "ALTERNATIVE SITE LOCATION MAP", AND THE HOUSES USED AS THE PRESENT WOMEN'S DORMITORY ARE SHOWN BEHIND THE WALL AND INDICATED ON THE "ALTERNATIVE SITE LOCATION MAP" AS NUMBER 5.



89  
KABUL UNIVERSITY SITE LOOKING SOUTHEASTWARD INDICATED AS SITE NUMBER 8 ON THE "ALTERNATIVE SITE LOCATION MAP". THE SITE IS PRESENTLY USED AS A WHEAT FIELD. THE WALL AT THE ROAD SEPARATES THE CAMPUS FROM SHER SHAR MINA AVENUE THAT FORMS THE SOUTH BOUNDARY OF THE CAMPUS. THE 2322 METER HIGH KOHE SHERDARWAZA FORMS THE BACKGROUND.





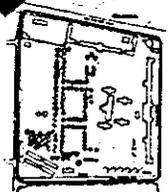
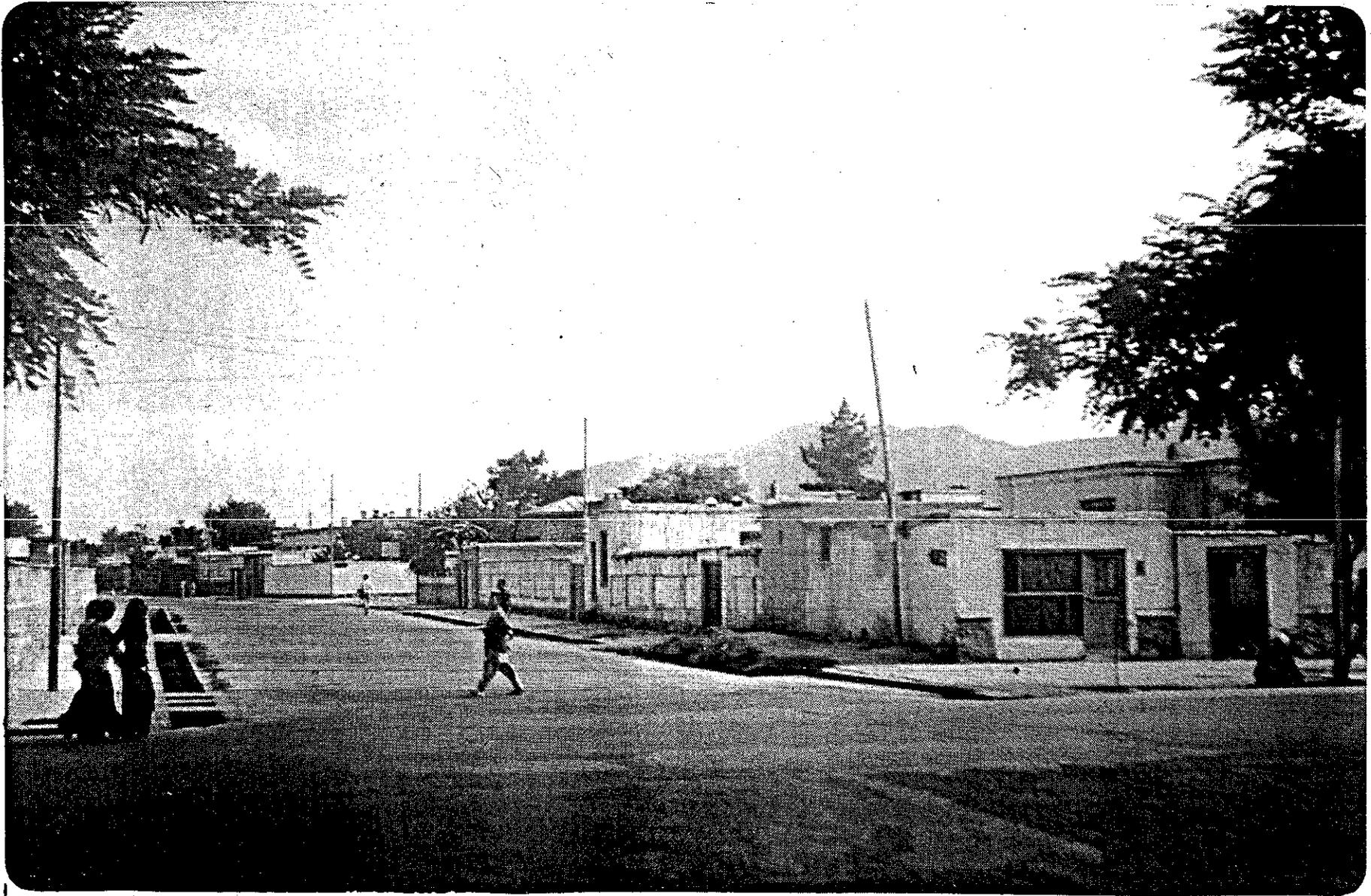
**EXISTING CONDITIONS PLAN**

PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE  
 KABUL UNIVERSITY KABUL AFGHANISTAN

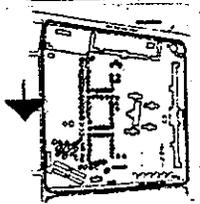
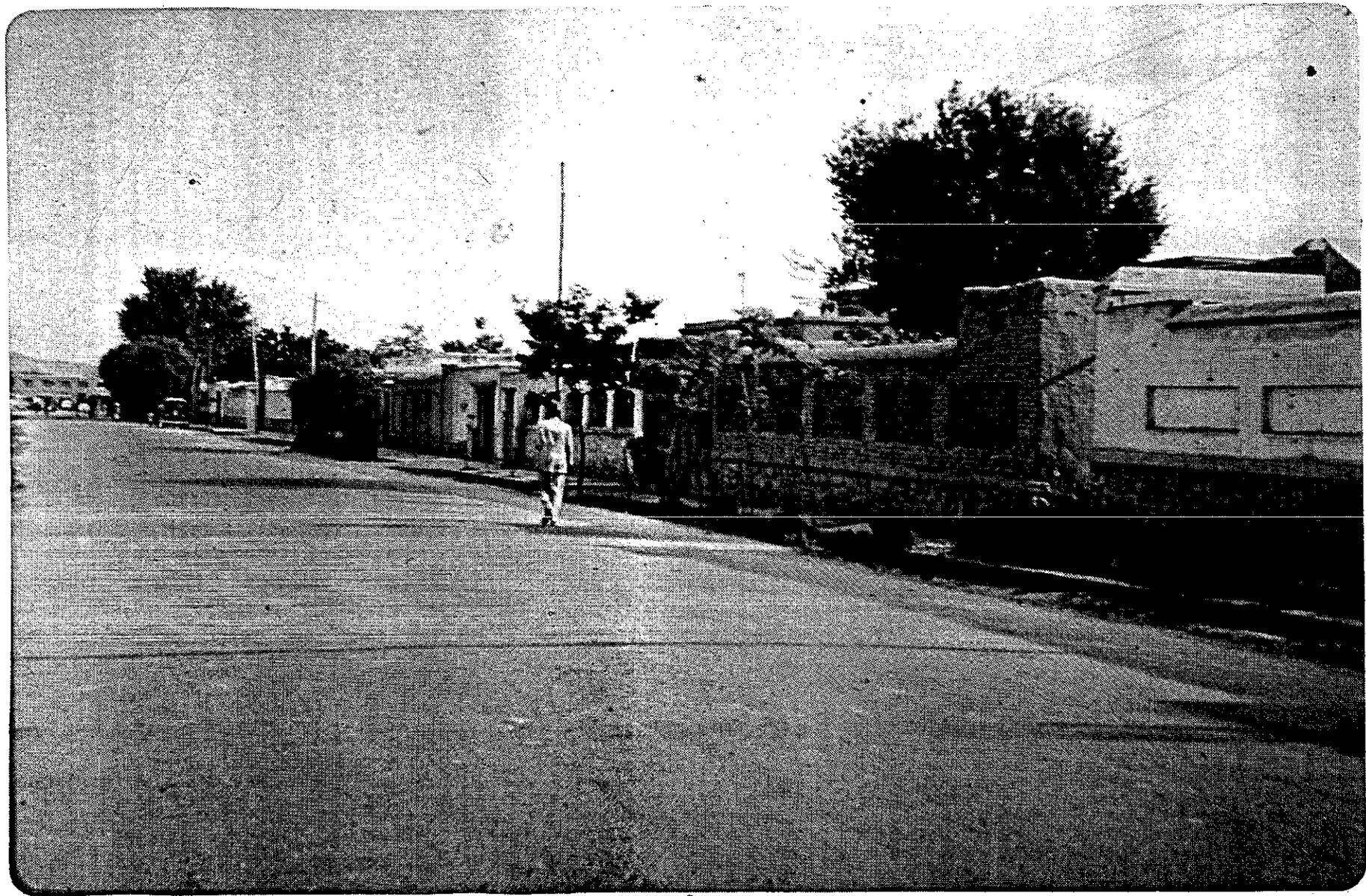
KU 30



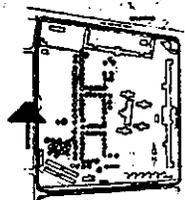
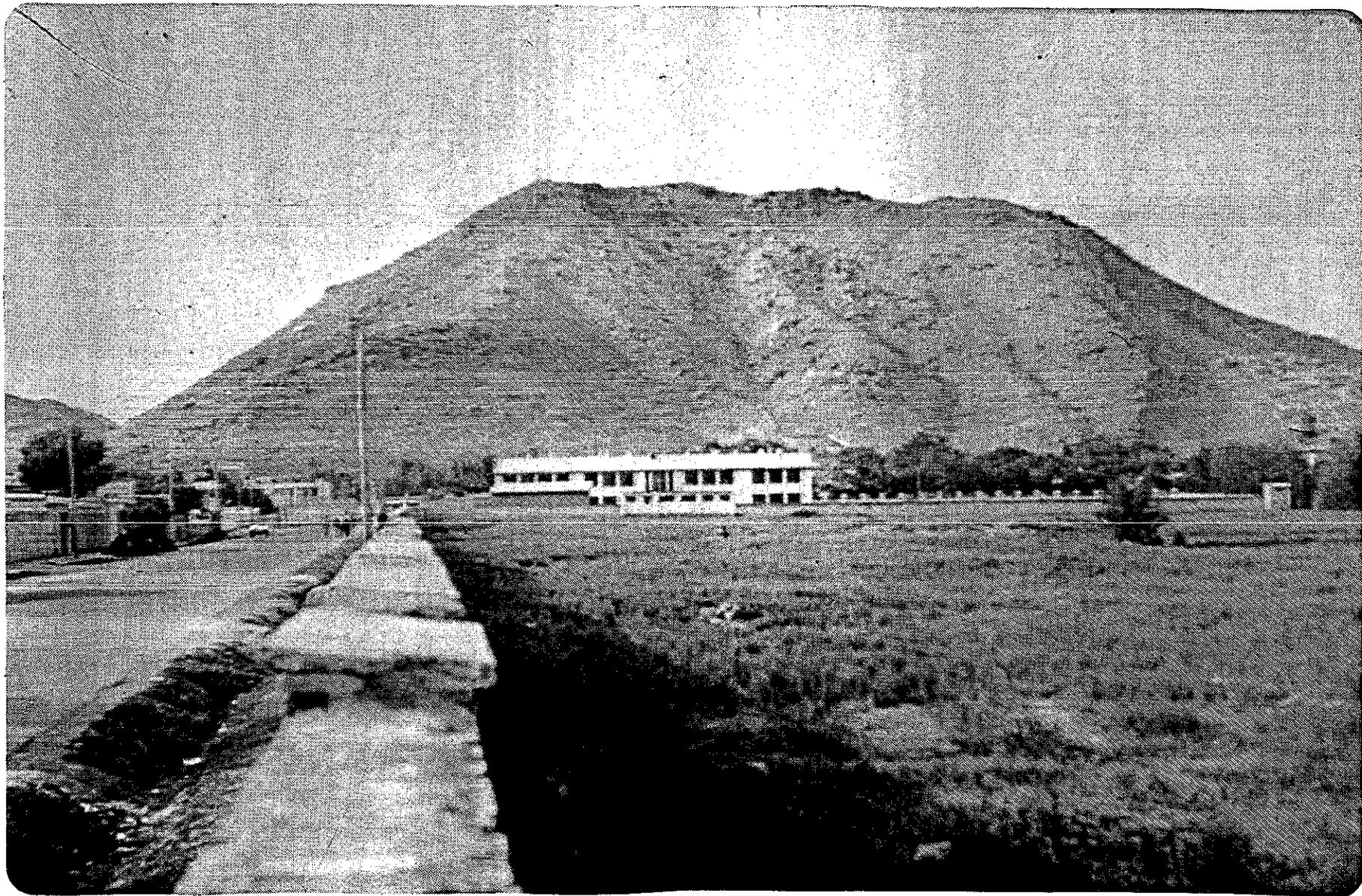
41



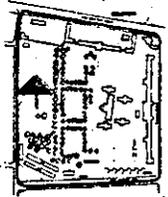
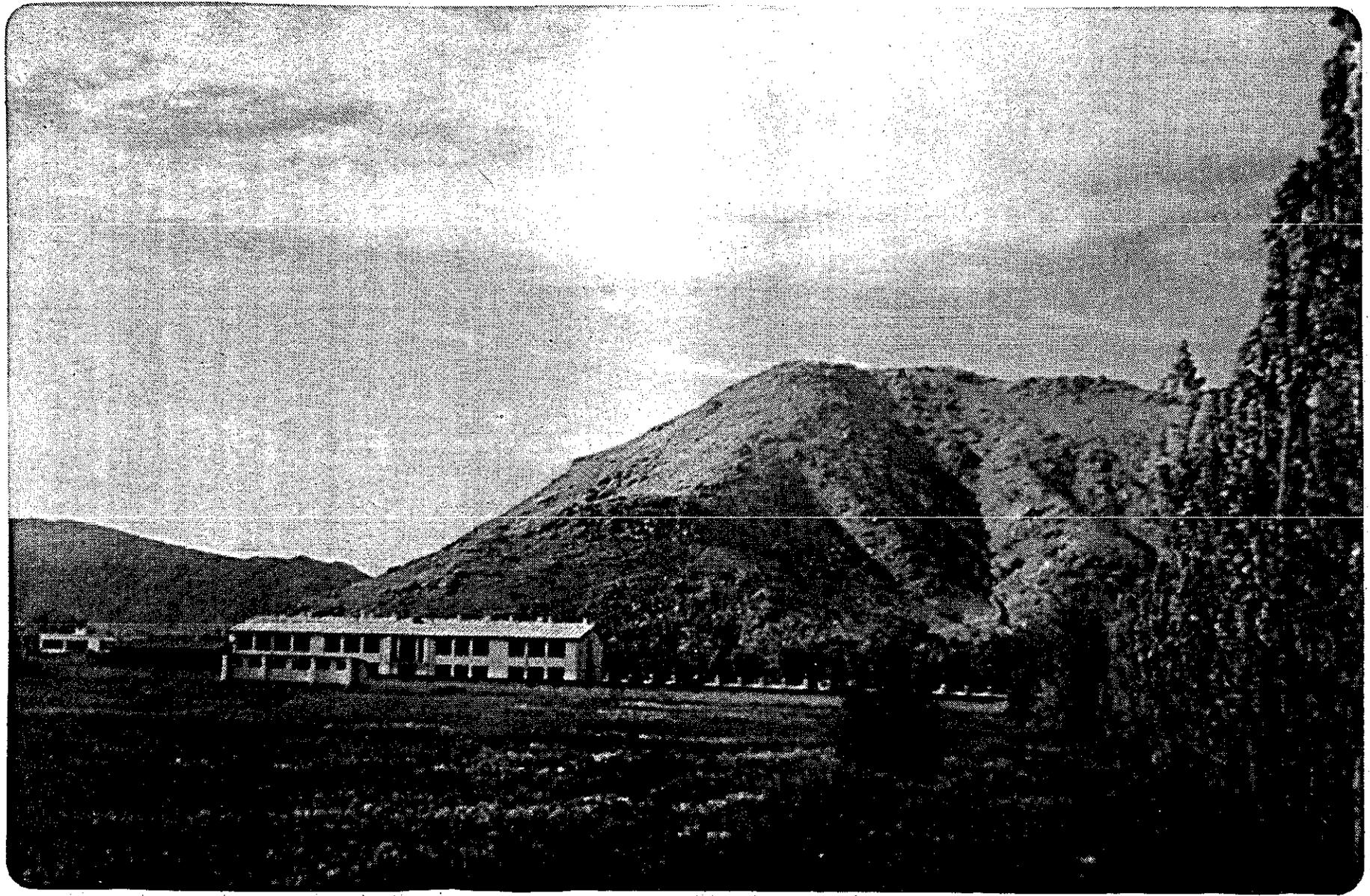
TEACHERS' COLLEGE SITE LOOKING SOUTH ON THE WESTERN BOUNDARY STREET FROM SHER SHAR MINA SARAQ THAT FORMS THE NORTH BOUNDARY OF THE TEACHERS' COLLEGE AND THE SOUTH BOUNDARY OF KABUL UNIVERSITY. MANY SHOPS AND BAZAARS OCCUR ALONG SARAQ SHER SHAR MINA TO THE RIGHT. THE OPPOSITE SIDE OF THE WESTERN BOUNDARY STREET IS ESSENTIALLY RESIDENTIAL.



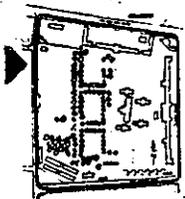
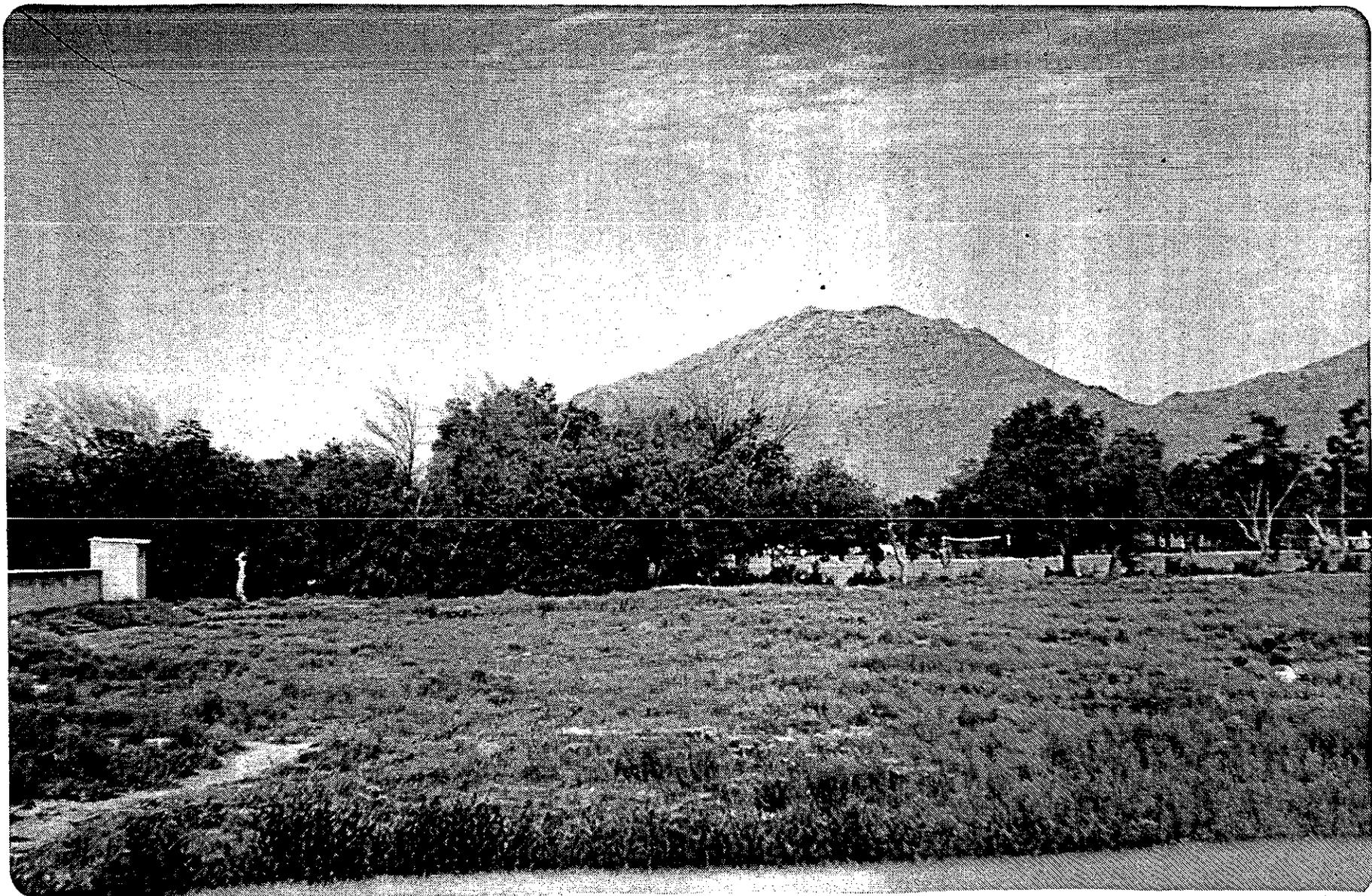
TEACHERS' COLLEGE SITE LOOKING SOUTH ON WESTERN BOUNDARY STREET SHOWING THE VARYING CHARACTER OF THE WALLED COURT YARDS THAT ARE TYPICAL OF KABUL. A COMMERCIAL AREA IS AT THE END OF THE STREET IN THE BACKGROUND.



TEACHERS' COLLEGE SITE LOOKING NORTH ALONG THE WEST BOUNDARY STREET AT THE PROPOSED DORMITORY SITE, WITH THE EXISTING MUSIC SCHOOL AND WALL IN THE BACKGROUND, AND THE EXISTING TOILET-BATHING FACILITY TO BE REMOVED, JUST IN FRONT OF THE WALL. THE EXISTING RESIDENTIAL SECTION IS TO THE LEFT. THE NORTH TO SOUTH WALL IS TO BE PENETRATED FOR ACCESS TO THE PROPOSED DORMITORY SITE. THE 2135 METER HIGH KOHE ALIABAD FORMS THE NORTHERN BACKGROUND OF KABUL UNIVERSITY.

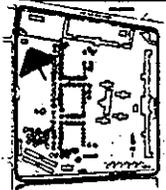


TEACHERS' COLLEGE SITE LOOKING NORTHWEST DIRECTLY AT THE PROPOSED SITE. THE WEST WALL BOUNDARY IS TO THE LEFT, AND THE WESTERN GROVE OF TREES IS TO THE RIGHT. THE SOUTH WALL AT THE MUSIC SCHOOL IS THE NORTH BOUNDARY OF THE PROPOSED NEW BUILDING. THE LOW WHITE BUILDING THIS SIDE OF THE WALL IS THE EXISTING TOILET TO BE REMOVED. KOHE ALIABAD, THE BACKDROP OF KABUL UNIVERSITY IS IN THE FAR BACKGROUND.



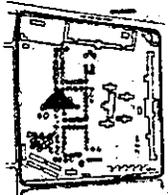
TEACHERS' COLLEGE SITE LOOKING EAST FROM THE EXISTING BOUNDARY WALL. THE SOUTH WALL OF THE EXISTING MUSIC SCHOOL IS ON THE LEFT, AS WELL AS THE CORNER OF THE EXISTING TOILET-BATHING FACILITY TO BE REMOVED. THE BUILDING IS TO BE BUILT IN THIS SPACE BETWEEN THE EXISTING WEST WALL AND THE GROVE OF TREES IN THE IMMEDIATE BACKGROUND. KOHE ASAMAI, AT 2107 METERS HIGH, FORMS THE DISTANT BACKGROUND.

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TEACHERS' COLLEGE SITE LOOKING WEST-NORTHWEST AT EXISTING WALL FORMING THE WESTERN BOUNDARY OF THE PROPOSED DORMITORY SITE. A RESIDENTIAL NEIGHBORHOOD IS BEYOND THE WALL ON THE OTHER SIDE OF THE STREET.

47



TEACHERS' COLLEGE SITE - LOOKING NORTH IS THE FIRST GROVE OF TREES THAT IS PROPOSED TO BE RETAINED TO FORM A BARRIER BETWEEN THE PROPOSED DORMITORY AND THE TEACHERS' COLLEGE FACILITIES. KOHE ALIABAD IS IN THE DISTANT BACKGROUND.

## DESIGN CRITERIA

The Kabul University officials have requested a Women's Dormitory project which is comparable to many similar facilities being built for other educational facilities on campus, and elsewhere in the city. The women's facility must at the least be as good as the existing men's dormitory on the Nurses' Training Facility. Keeping this in mind, the officials expressed their needs to A-E Team that the dormitory contain public spaces such as a moderate sized lobby; several visitor lounges and toilets; a dining room seating one-quarter of the student population; a small Mosque for fifty (50) persons; and a small studyroom-library.

✓ Is this possible?

In addition to the above, certain administrative areas were requested and deemed necessary for the smooth operation and supervision of the dormitory. These include the guard or security office and sleeping area; the control and reception desk; the administrative office; the housekeeping, janitorial and engineer offices. A small infirmary was later added to the administrative area at the request of U.S.A.I.D. personnel in Washington.

The main area of the building as foreseen by the K.U. officials includes 100 to 200 dormitory rooms with a preferred maximum of four (4) persons to a room and supplemented by the necessary convenience facilities designed according to the current standards. In support of the dormitory rooms, facilities for students' laundry, seasonal storage, study, indoor and outdoor recreation were found to be essential.

In addition to the aforementioned public, administrative and student areas, there are the mundane areas such as the mechanical room, various types of building storage and utility rooms which must be provided in order that the

building function properly. These areas must be designed to be as efficient, economical and inconspicuous as possible, but yet provide the required services to the building.

The various elements of the dormitory shall be further explained in the text which follows so that certain organizational relationships that dictate the design of the proposed dormitory become evident.

The proposed design schemes are to be based on resident populations of between a minimum 400 up to 800 women as well as the related support facilities which might be required. It is to be noted, that the above figures are not fixed, except in regards to available funding. However, the University officials were quite adamant in expressing that their needs necessitate a minimum 800 bed dormitory. This is borne out by the student projection numbers developed by the University and published elsewhere in this report.

The proposed schemes show flexibility for expansion and repetition, both horizontally and vertically. The designs by necessity shall incorporate the use of modules in the dormitory room proper, but allowing for the variables in the sizes and types of the support facilities. The more explanatory documentation in regards to the above mentioned schemes shall be discussed elsewhere in this report.

The dormitory is comprised of three major elements in the plan. The elements include: 1) the public and administrative area, 2) service and support facilities, and 3) the student areas.

#### Public and Administrative Areas

The public and administrative areas include such spaces as the security office, control and reception desk, lobby, horizontal and vertical

circulation, Administrative office, matron's apartment, public toilets, lounge(s), Mosque and the dining room. These elements, with the exception of the Mosque, should be located on the first floor and central to the other elements. This area would serve also as the area for the entertainment of guests and visitors.

The security office and the nearby Sleeping Area would be stationed at the main entrance to the building where supervision of visitors and protective services could be performed without the male guards having to enter the building proper, except in case of emergencies. The protection and privacy of the women will be augmented by the traditional compound wall which would enclose the entire site.

The control and reception desk which would be located immediately beyond the entrance would serve as the means of internal security. Visitors and guest would check in and out of the building at this point. The desk should be located so that high visibility can be maintained. The desk would also serve as the receiving area for students' mail and visitors to the adjacent administrative, director's office and infirmary.

The director and the matron of the facility will in all probability be the same person, so therefore the matron's apartment would provide for full-time supervision of the dormitory. The apartment would be adjacent to the office and control desk, but not necessarily connected directly. The apartment would be a fully equipped one-bedroom unit with a private courtyard and entrance for the use of the matron and her guest only.

The public toilets and various lounges will be located between the control desk and the guest lounges preventing visitors from entering the non-public areas and disrupting the privacy of the other students.

The dining room, which would be the largest and most dominant feature located on the first floor, would be designed to accommodate at one time up to one fourth of the building's student population or a maximum capacity of 200 persons. The above mentioned ratio and maximum were suggested by University officials based upon their knowledge of student class schedules and eating habits. The lunch period is from 11:30 to 1:30 p.m., which would assure 800 students could be served in the 2 hour period. The dining room should be out-fitted with movable furniture so that the space could also serve as a large multi-purpose room for the University's and community's use. The dining room could serve as a study hall in the evenings after it has been cleaned from the last meal. The dining room would be serviced by the kitchen, a trash room, storage and receiving area. The kitchen will be equipped with both western type fixtures and those suitable for traditional Afghan foods. The latter is necessary because some Afghan dishes were described as difficult to prepare in a western kitchen. This solution was again the result of suggestions by the University officials and some architects who were consulted about Afghan customs.

#### Infirmary

The need for the infirmary was not brought out in the A-E Team discussions with the K.U. officials, but was added in accordance with the suggestions of U.S.A.I.D. personnel in Washington. However, the need is obvious, since the students could get sick or hurt and would require emergency treatment. The infirmary would be able to provide initial health check-ups, immediate first aid or perhaps isolation of short term ill students. It is also anticipated that each student's health records would be maintained in the

infirmary. The infirmary would only need to have four to six beds for a facility of this size.

#### Service, Support and Mechanical Equipment

The service and support facilities are those areas which provide for the operation of the building and consists of such spaces as the kitchens, house laundry, maintenance, maintenance storage, office space and sleeping quarters for janitor and building engineer, workshops, general storage, mechanical equipment and spare parts storage. These areas are reached by a service yard which is screened from the main entrance. Access to this area would be limited to those persons directly involved in the mechanical operation of the building.

The mechanical equipment for this facility should be very carefully thought out and of a simple nature. This is mandated by the abundance of evidence throughout Kabul University and the city of Kabul that maintenance has not been high priority or in many cases is non-existent and because replacement parts are not readily obtainable. In several buildings, including the existing male dormitory at Kabul University, some parts of the mechanical systems have been rendered inoperable through neglect or a lack of preventive maintenance. This dormitory has only been in operation for about 18 years or since 1962. It is probable that there is a shortage of trained personnel for the upkeep of buildings, machinery and mechanical equipment at the University. This could be eliminated to a certain extent for this proposed project if some kind of training program could be instituted on the operation and servicing of the equipment and the general maintenance of the building. This training program would serve as a means of prolonging the life cycle of the building and equipment, the costs of future expensive

Possible?

repairs or replacement and provide much needed jobs for the Afghan men. In addition, this program could serve as impetus for Kabul University officials in regards to this subject elsewhere on campus.

In conjunction with the above mentioned suggestion, it became evident that there would be a need for a spare parts storage for many items which require frequent replacing. It was stated that some machinery could not be operated because of the lack of replacement parts, and that importation of some of the items took months or were not available at all. Cub-off  
pt.

The mechanical equipment for this facility will in all probability be a two-pipe hot water system employing standard radiators and oil-fired boilers. This system is relatively simple and has been used in many of the campus buildings. Other mechanical systems such as electrical resistance heating or heat pumps would be either too expensive to operate or subject to major mechanical problems. The hot-water system, although having a more expensive initial installation cost than some other systems, is a better and more uniform and constant heat source.

The dormitory should be separated into zones in order to provide some flexibility and energy savings when certain parts of the building are not occupied.

It is anticipated that the dormitory will not have a central cooling system, mainly for economic reasons. The facility will have operable windows and various sun-screening devices to aid in cooling and ventilation of the interior spaces. The north-south orientation of the dormitory wings will be much more comfortable than any other orientation. The large windows on the southern sides of the wings will provide supplemental heat gain in the winter. The use of smaller windows on the north, east and west sides will control heat loss

in the winter and heat gain in the summer.

Solar heating is a very attractive alternative, when considering the possibilities for a relatively maintenance free mechanical system for this facility. A solar system employing water as the medium of heat transfer requires a minimum of moving parts and service. This energy source would be very appropriate for Afghanistan with its bright sunny days which are seldom overcast. It should also be noted that Kabul University only heats its building three months a year as opposed to five to six months in most parts of the United States. This matter of using solar heat for this building should be seriously considered in later phases of the project. The potential good for Afghanistan and the possible savings of future expenditures should by far outweigh the initial cost of the equipment.

#### Student Areas

The largest element of the dormitory facility is the student areas or wing consisting of the students' rooms, toilets and showers, laundry, storage, lounges and recreation rooms.

The dormitory rooms will stretch out along a double-loaded corridor approximately 6 feet or 1.83 meters wide. Interspersed with the dorm rooms shall be cores made up of the toilets, showers, storage and vertical circulation. The double-loaded corridor system, although not preferred by the university officials, was the most logical and economical solution for this project.

Now through investigation and meetings, it was determined that the dormitory rooms would be designed to accommodate only four (4) persons. It is

to be noted, that in the United States it is rare that the maximum of four students would be placed in a dormitory room used for both sleeping and studying. However, considering the existing over-crowded conditions which the female and male dormitory residents endure at Kabul University, four persons to a room seems generous, especially compared to 10 to 12 in the existing dormitories.

A typical room would consist of space for a single bed, wardrobe, desk and a small book shelf for each student. Single beds were proposed because of the difficulty in using the bunk beds. However, it may be necessary to have the beds designed as the bunk bed type, thus providing some flexibility for room arrangements or possibly temporary expansion needs. The resultant area required for these items plus circulation space figures out to be 95 square feet or nearly 9 square meters per student. In comparison, U. S. college dormitories are usually designed with 110 to 120 square feet per person.

*what difficulty? they use them now*

The stairs, toilet and showering facilities and some student storage rooms shall be located in at least two banks per wing along the corridor at such intervals as not to be uncomfortable for those students, but not close enough to be uneconomical. The stair locations are based on a U. S. maximum of 100 feet (30 meters) between stairs and a maximum deadend corridor of 50 feet (15 meters), acceptable in many U. S. states.

The toilets and showering facilities have to be designed to respect the customs and traditions of the Afghan women and was mentioned several times in discussions with Kabul University officials and with the Director of the Nurses' Training School. This school which provides housing and training of provincial women and girls as nurses can serve as lesson in the design of

the dormitory, especially in regards to the toilet and shower rooms. The Director emphasized that many of the provincial women students, many with the same background as the Kabul students, have to be literally taught to use the unfamiliar western type water closets. Still, it was not uncommon that many of these were broken due to improper use, such as a person standing or squatting on the seat. To alleviate many of the costly maintenance problems which result, the Director suggested that a combination of the western type and the recessed floor-mounted Turkish water closets be employed at the Kabul University facility. The latter, although not totally similar to their home facilities, is used in the same manner. It is important that the water closets not be orientated in the east-west direction so as not to conflict with religious traditions.

It should also be noted, that the Afghan women are accustomed to modesty and privacy when using toileting or shower facilities. To this end, individual cubicles should be provided. The shower cubicles should be large enough to accommodate drying and dressing.

The fixtures for the toilet and shower facilities if provided in accordance with the recommended standards for American college dormitories for females would be as follows:

1 water closet for each 8 persons

1 lavatory for each 12 persons

1 shower for each 8 persons

The student laundry facility is located away from the dormitory wing for economical reasons. The use of one large laundry room for students instead of a series of small ones spread throughout building reduces the number of washers,

dryers or laundry tubs required. This method saves on costly plumbing and maintenance as well.

Recreation rooms and lounges shall be located near the cores in the dormitory wings and at the first floor public areas. These rooms at times could become study rooms, depending on exam schedules.

Students' study habits at Kabul University vary according to the individual and the department to which they belong. Many students were observed studying outside under streetlamps, trees, walking, and in small groups. These patterns should be incorporated in the design of the facility and the surrounding grounds.

#### Mosque

The Mosque was suggested by the K.U. officials as being necessary since religion and education in the Islamic society are synonymous. This is borne out by the fact that in the existing men's dormitory, which was built without a Mosque, one had to be created out of a large lounge. According to the Director of the dormitory, it is being used by large numbers of students. It was also pointed out that the female students would in all probability be more religious than the males.

The University officials expressed their need for only a small Mosque with a maximum capacity of 50 persons. The orientation of the Mosque in Kabul must be toward the west. The proposed schemes show this orientation as well as the Mosque being located on upper floors in a quieter atmosphere than the lower public areas.

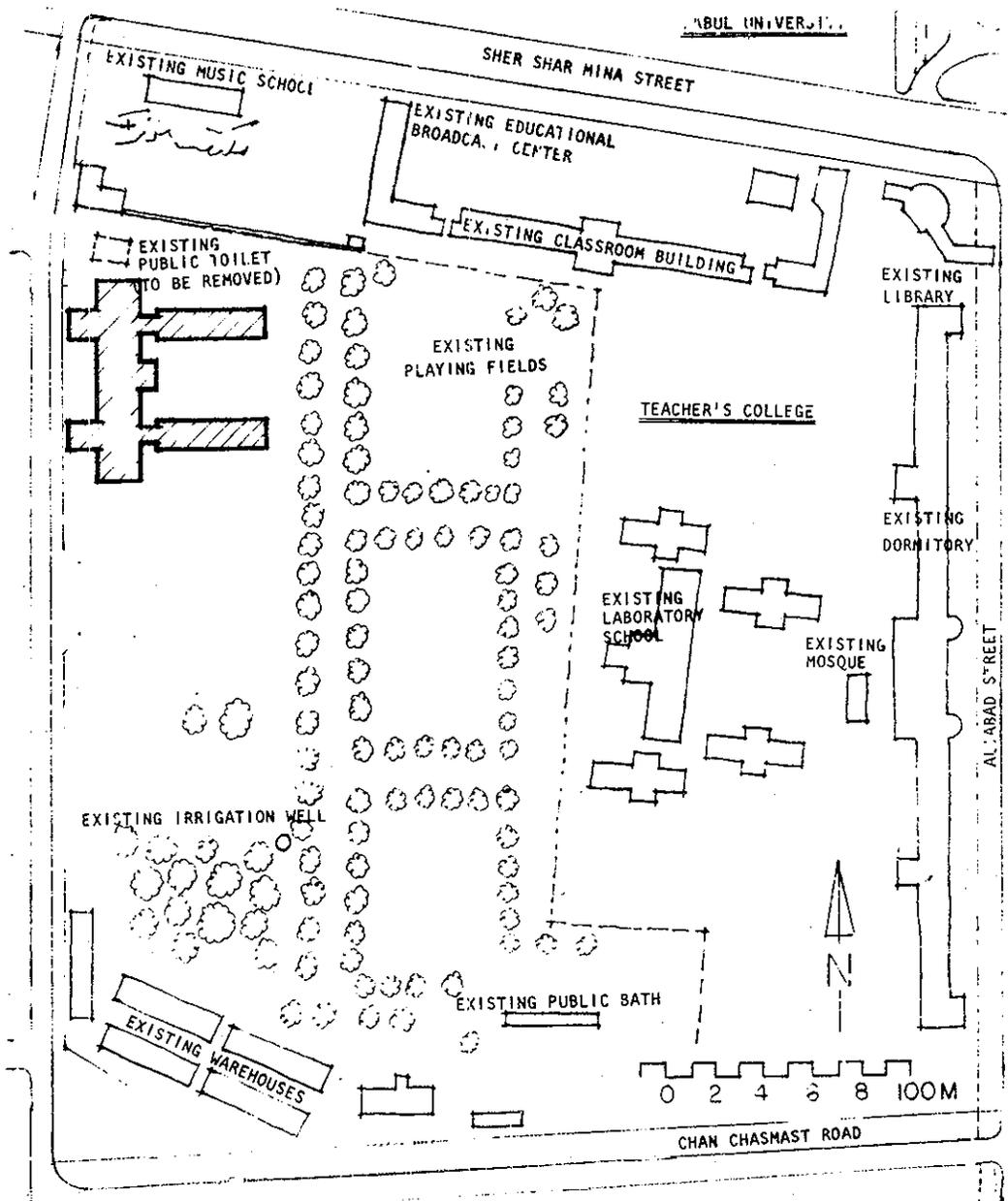
The student storage room is to be located away from the dormitory wings and under the direct supervision of the Administration. The storage room would

be equipped with lockers or boxes for each student's belongings (e.g. luggage, trunks or seasonal clothing). Storage of these items in the student's rooms would unnecessarily burden the limited wardrobe space.

Maintenance free materials should be incorporated through this facility for the reasons mentioned previously in this section of the report. Kabul University officials preferred hard natural materials such as brick, stone terrazzo, marble and wood which have held up well under continuous use. These materials, with the possible exception of wood, is used extensively throughout the campus and are easily available in the country and relatively inexpensive. The employment of building materials requiring little or no maintenance is essential for the long term use and care of the facility. This subject is covered more extensively in another section of this report.

The orientation of buildings most commonly employed in Kabul is in the North-South directions. This allows for full enjoyment of the best exposures. This custom has been maintained in the design of the dormitory, by providing large glazed areas on the south side of the building in as many spaces as possible. This will aid in the heating of the dormitory during the fall months prior to the mechanical heat being turned on. Summertime heat gain from this exposure will be counteracted by sunscreens or large overhangs. The north side will have smaller openings to abet the colder temperatures and winds. Also, many of the support facilities shall be placed on the north side so as to allow more dormitory rooms to have southern exposure. Window openings will be held to minimum on the east and west ends, thus minimizing or eliminating the uncomfortable heat gain and sun's glare which are characteristic of these exposures.

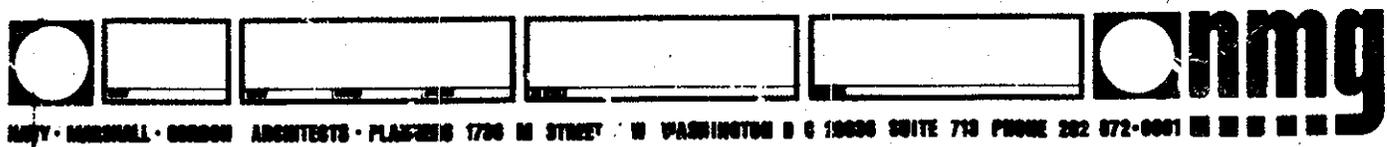
The exterior recreation spaces required by the facility should include areas for passive and impassive activities, including but not limited to such spaces for sitting, walking, volleyball, and tennis.



**PROPOSED 400 BED SCHEME**

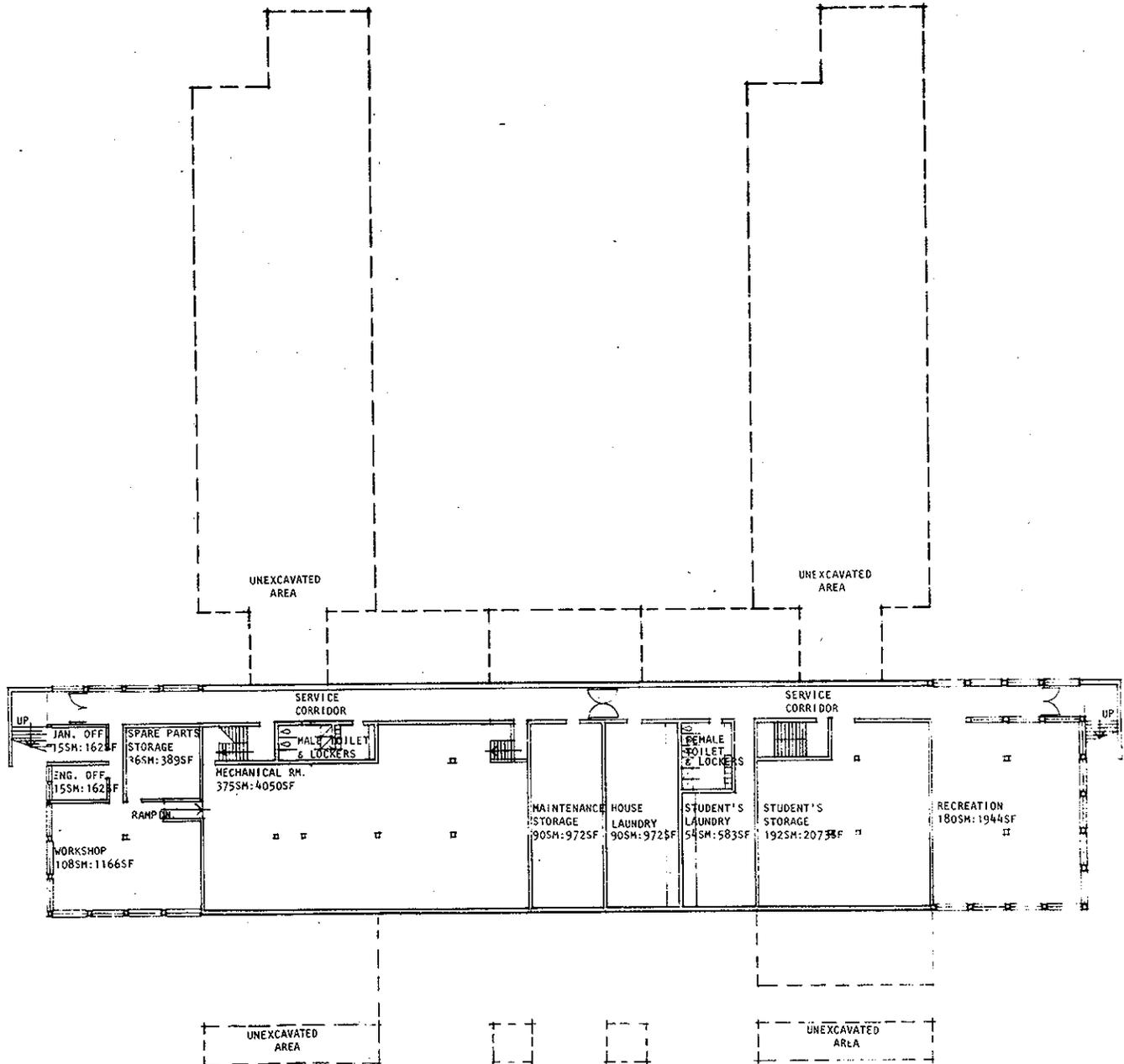
PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE  
 KABUL UNIVERSITY. KABUL AFGHANISTAN

KU 43





KU 44

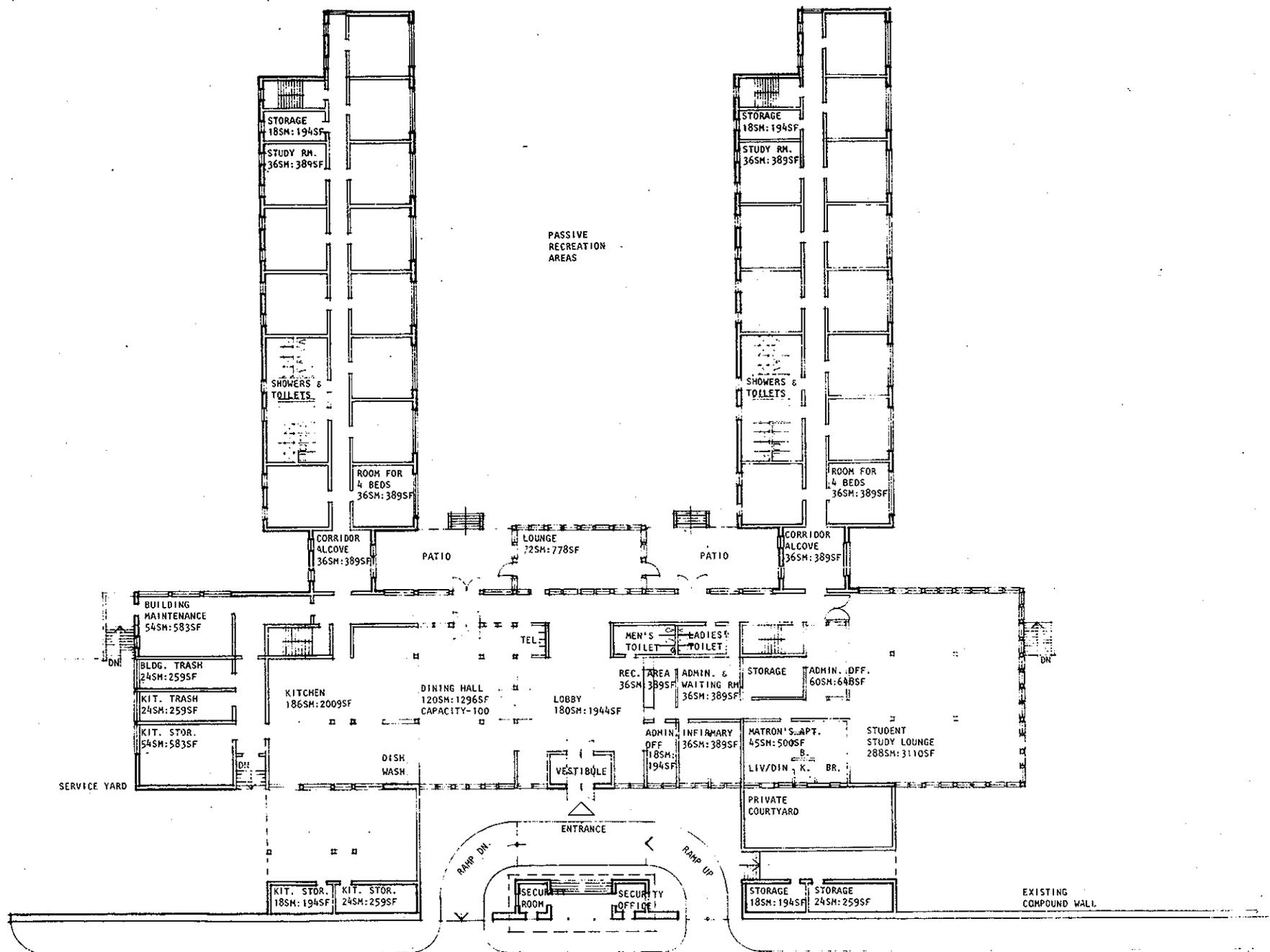


**BASEMENT PLAN 400**

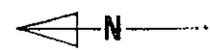
**PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE KABUL UNIVERSITY KABUL, AFGHANISTAN USAID**

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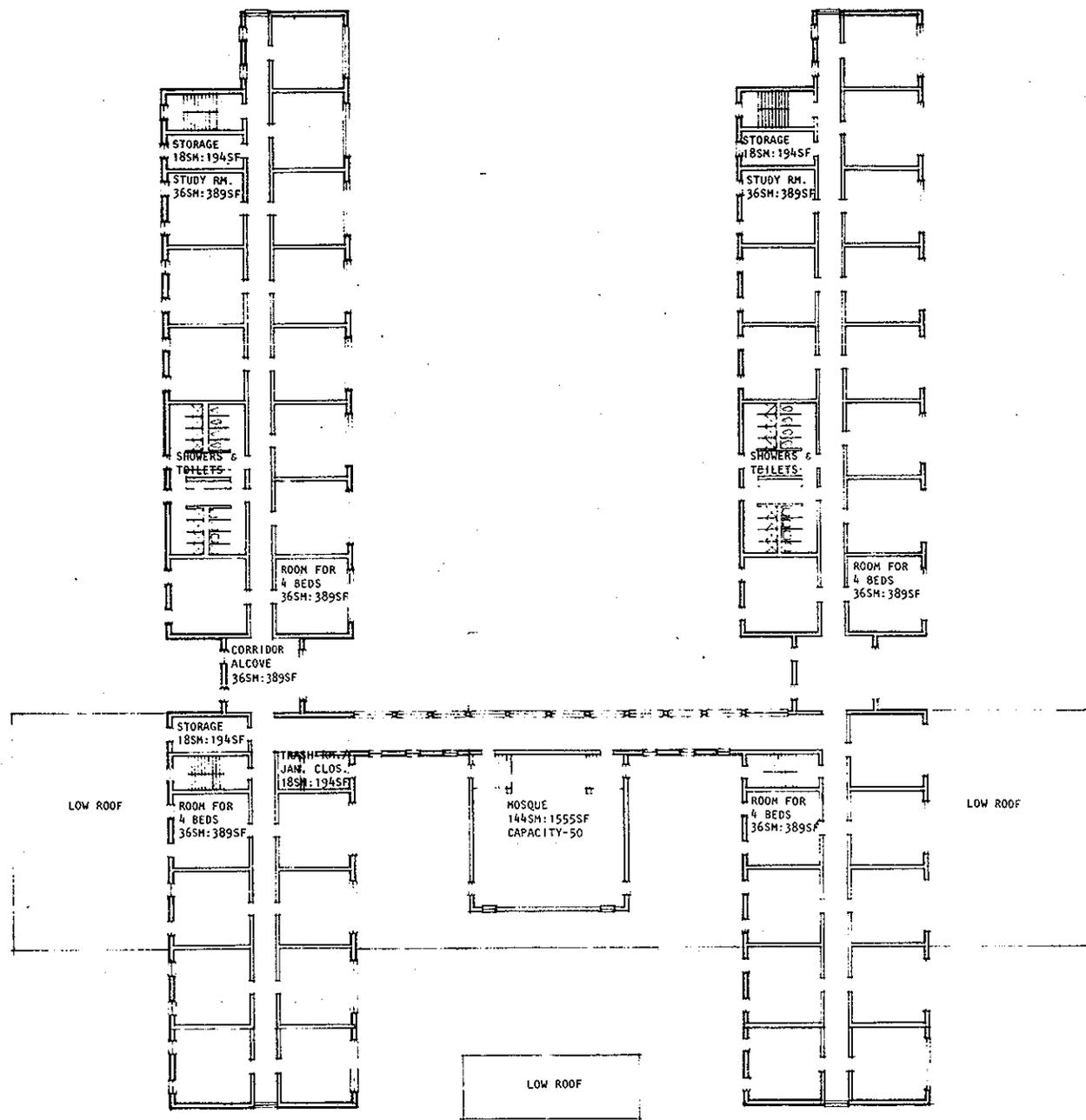
**FIRST FLOOR PLAN 400**



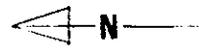
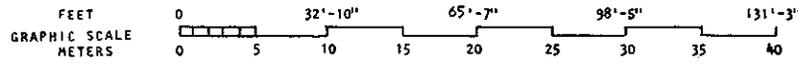
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SECOND FLOOR PLAN 400

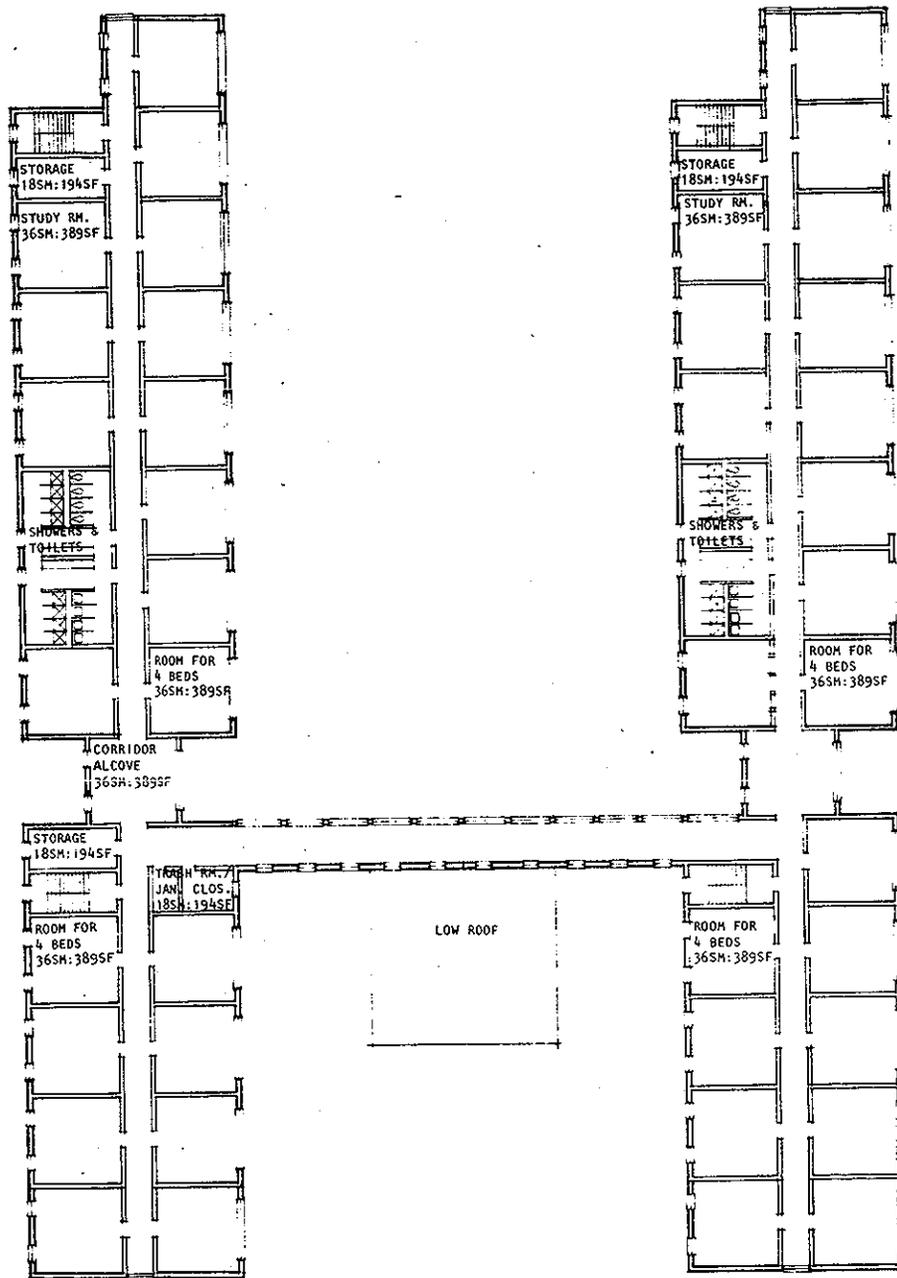


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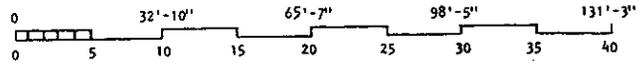


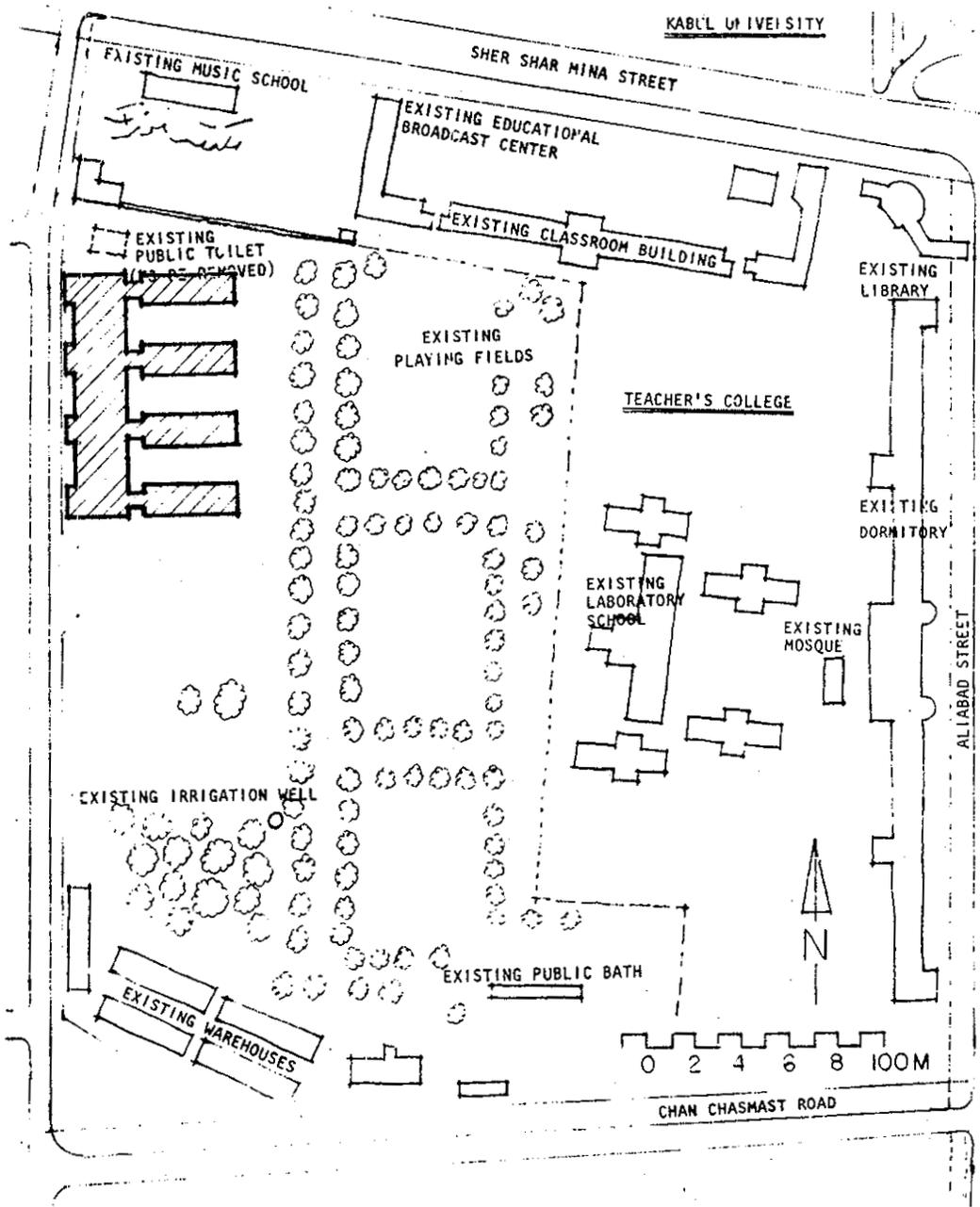
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THIRD FLOOR PLAN 400

FEET  
GRAPHIC SCALE  
METERS

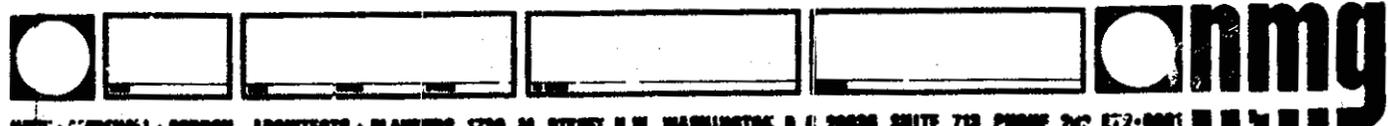




**PROPOSED 800 BED SCHEME**

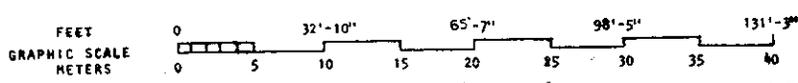
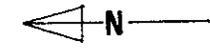
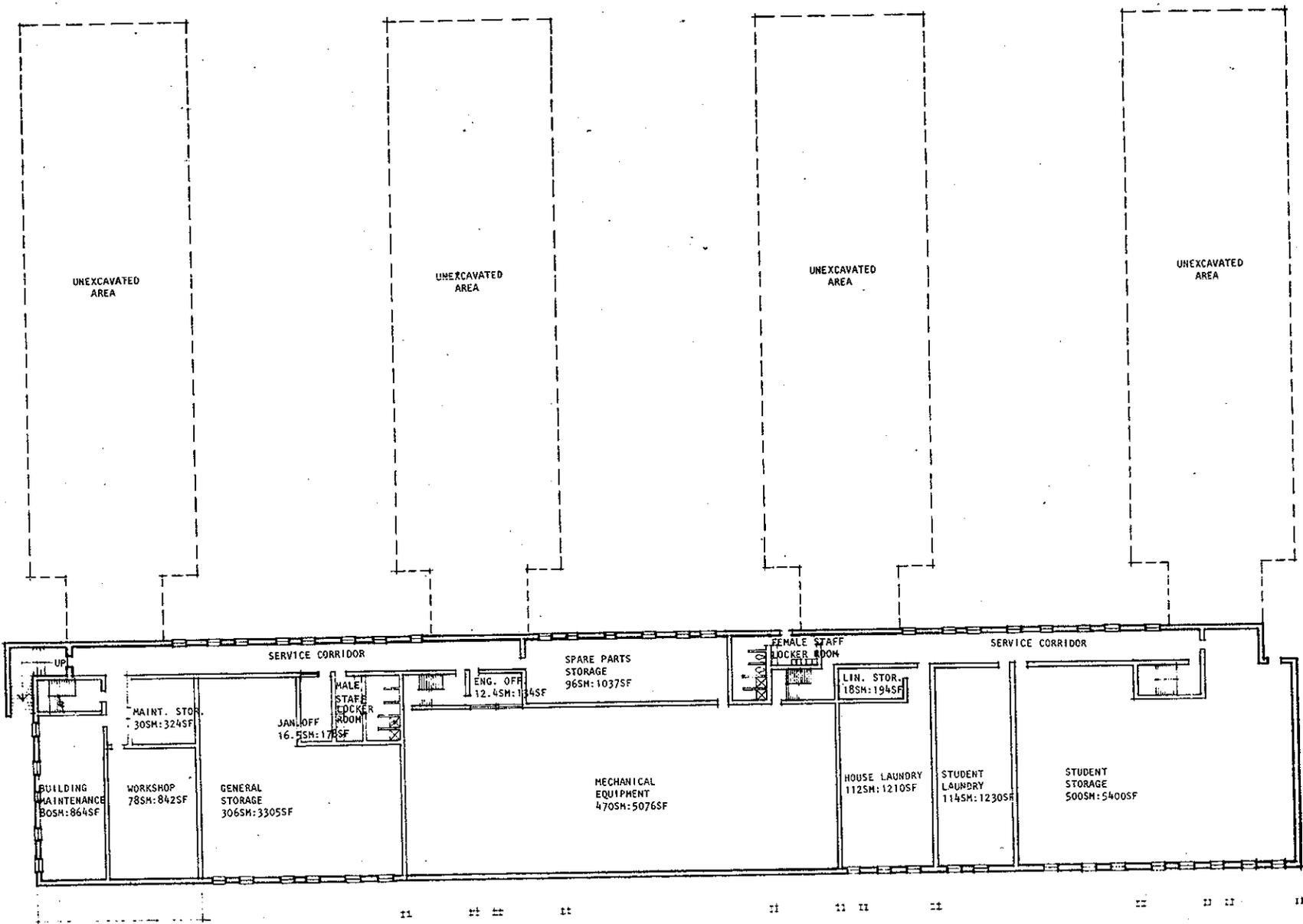
PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE  
 KABUL UNIVERSITY, KABUL AFGHANISTAN

KU 48



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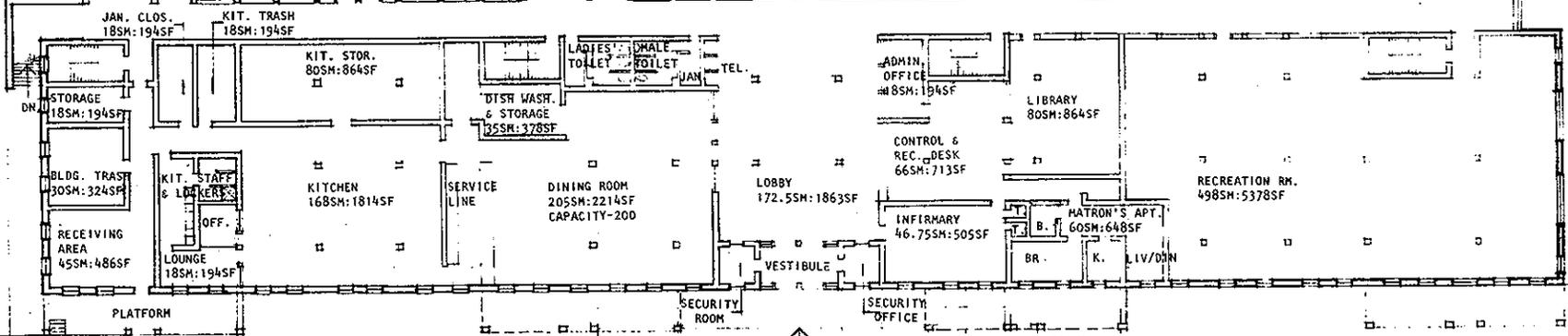
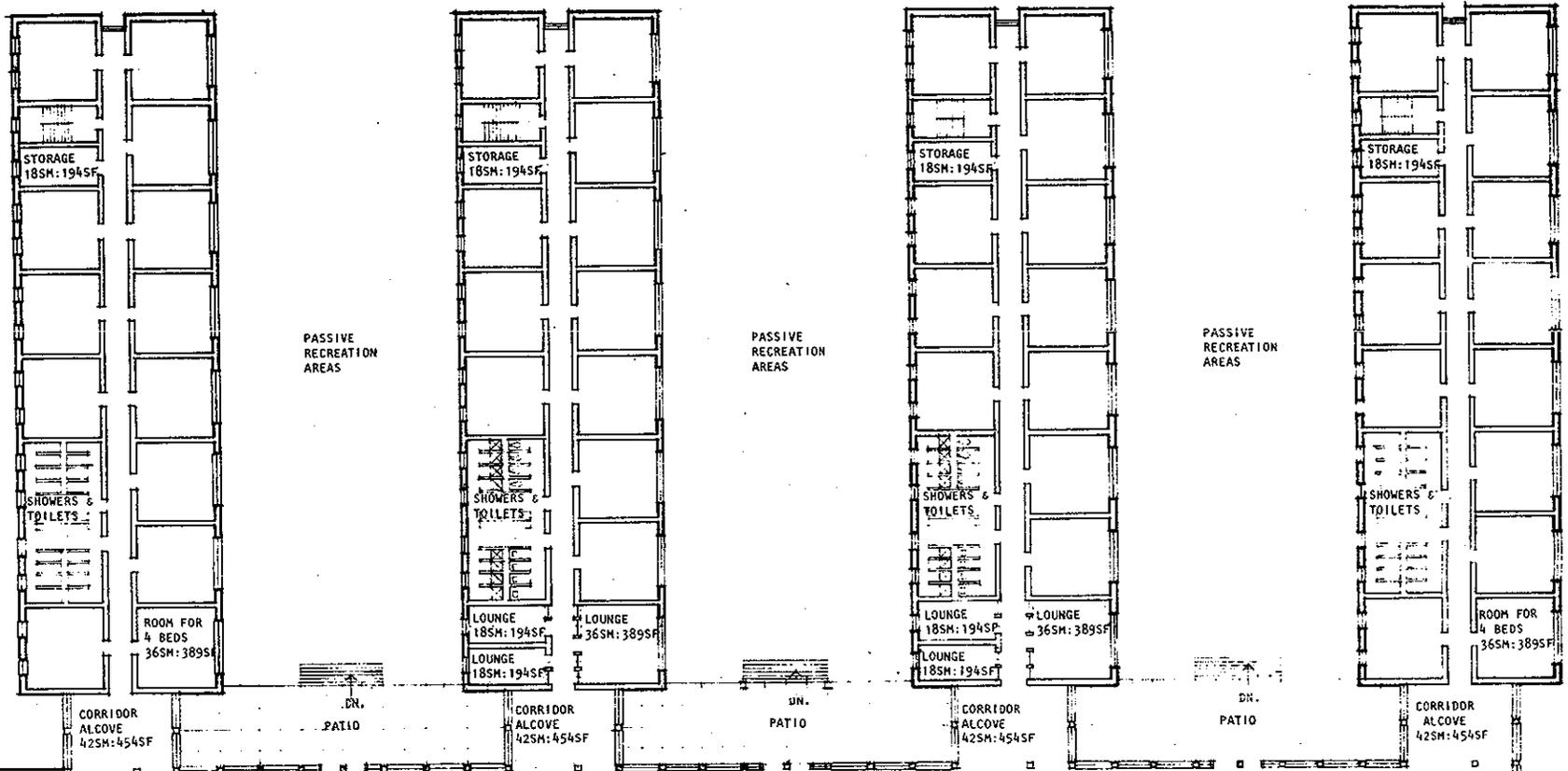
HWY • MARSHALL • GORDON ARCHITECTS • PLANNERS 1720 M STREET N W WASHINGTON D C 20036 SUITE 719 PHONE 202 872-0991



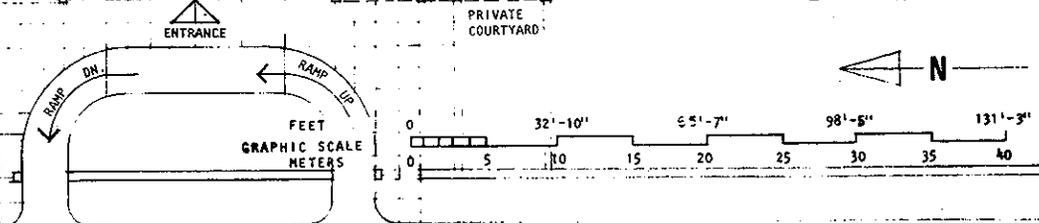
**BASEMENT PLAN 800**  
**PROPOSED WOMEN'S DORMITORY**    **TEACHER'S COLLEGE SITE**    **KABUL UNIVERSITY**    **KABUL, AFGHANISTAN**    **USAID**

KU 49

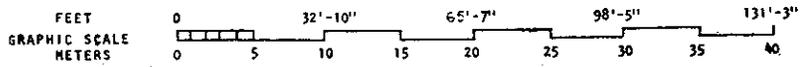
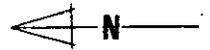
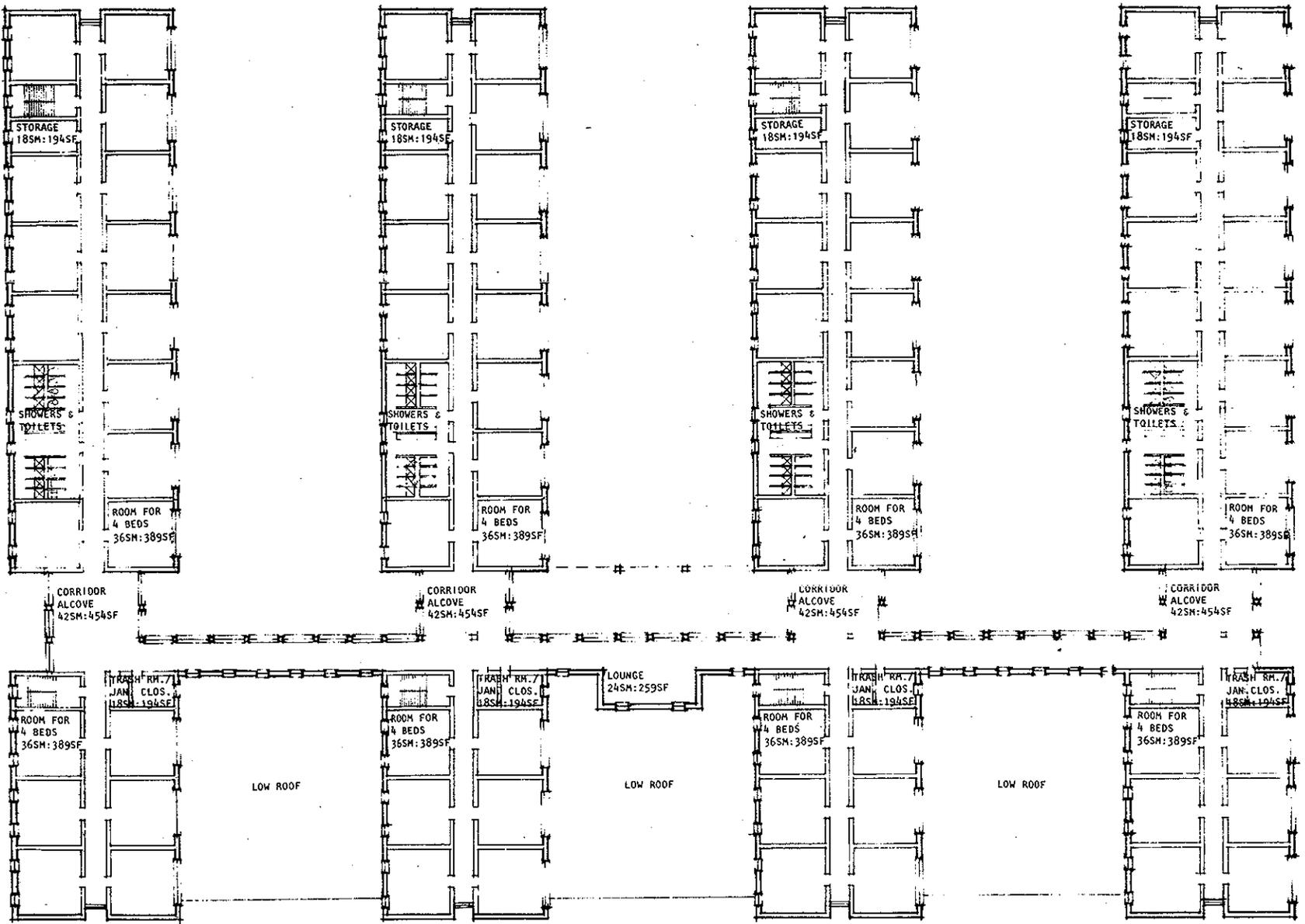




**FIRST FLOOR PLAN 800**

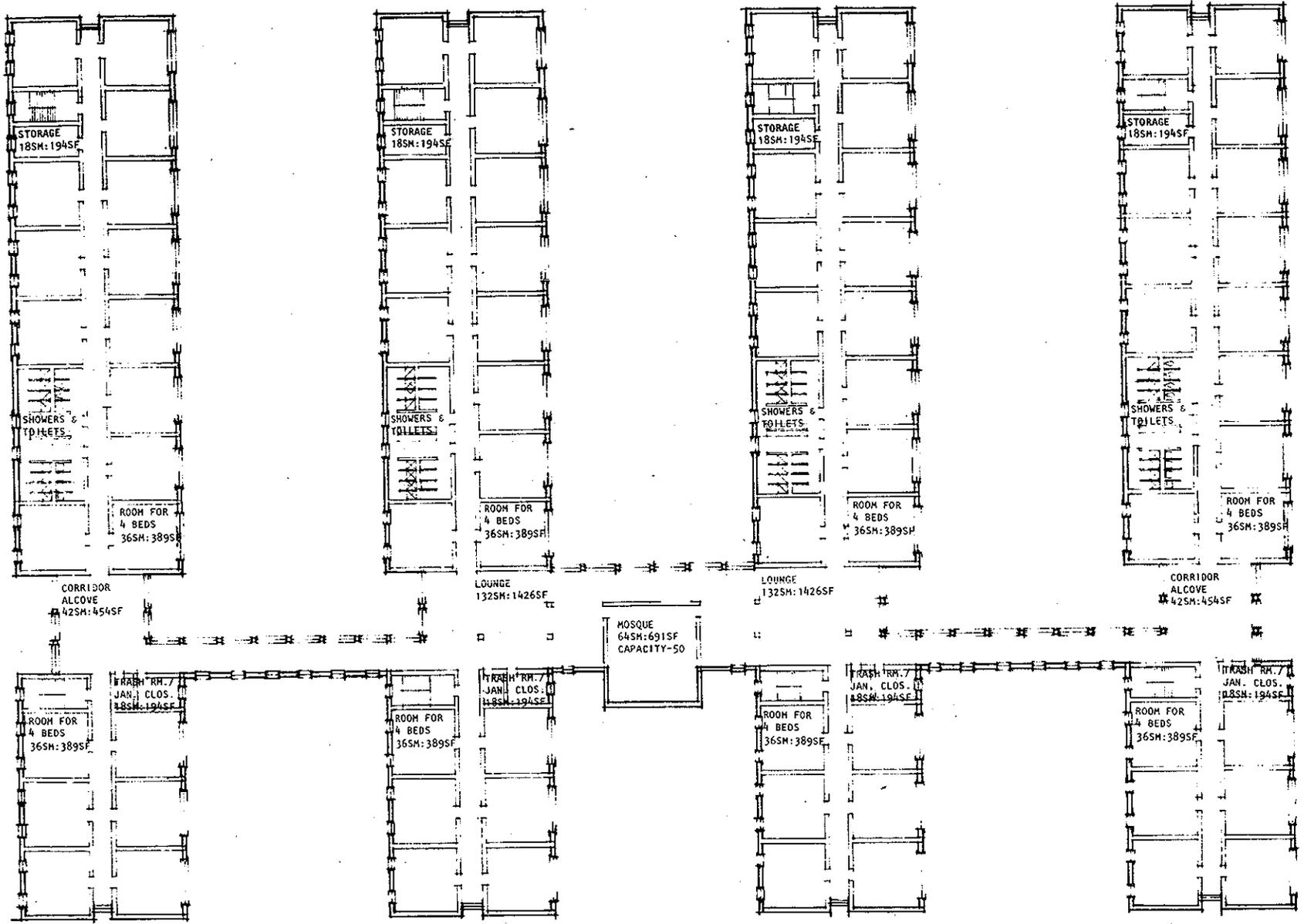


KU 50



SECOND FLOOR PLAN 800

KU 51



THIRD FLOOR PLAN 800



KU 52



BRIEF ARCHITECTURAL AND ENGINEERING ANALYSIS JUSTIFYING THE CONTEMPLATED  
SCHEME, LOCATION AND COST ESTIMATE

The architectural schemes for the proposed Women's Dormitory Project at Kabul University as shown in this report reflect the input of extensive investigations by the A-E Team; meetings with Kabul University and U.S.A.I.D. officials; and considerable suggestions by those officials, local architects and contractors. The results of these investigations, meetings and suggestions have led to the design of a secured and private dormitory facility. It is located within walking distance of the University; oriented in the preferred north-to-south directions; contains the necessary elements required to make the female students comfortable; and makes use of locally available materials and methods of construction.

The proposed location of the dormitory at the Teacher's College Site, is the result of decisions made in many meetings held by Kabul University, high officials from the Ministry of Higher Education, and others from the Government of Afghanistan. The Teacher's College Site can be justified by its proximity to the University, the availability of utilities in nearby streets, and the fact that the property ownership need only be transferred from the Ministry of Higher Education to Kabul University. The site is close enough to the main campus so that students need only walk to classes. It is not, however, close enough to cause any real social problems with the male dormitory students. The site is vacant except for an existing toilet building that requires demolishing, and the existing north and west compound walls bordering the site. There is no existing vegetation in the immediate area of the proposed building which would require removal. However, there is an existing grove of trees which forms the eastern boundary of the site, but will not be a hindrance to the construction of the dormitory building. The trees, in fact, make the site more attractive, form

a natural barrier between the other elements of the Teacher's College, and provide a saving on landscaping costs. The existing compound walls, like the existing trees, could be retained and used as a major element in the design of the new facility. The walls would require some repair work, but not so much as to pose an economic restraint on the project.

The proposed schemes employ a north to south orientation in the dormitory wings, and an east to west orientation of the public areas, which are common to all students. The southern exposure as shown in the proposed schemes, is the most preferred by the Afghans, and is widely used throughout the city of Kabul, whenever feasible. This exposure, which is the most comfortable during both the summers and winters in the Kabul area, has been exploited to its maximum in the layout of the dormitory rooms. The east to west orientation of the public areas and service areas was necessary in order to tie the many functions of the facility together, as well as to make the building more economical and efficient in its operation and maintenance. The orientation of the central area, as shown, allows for easier control of students visitors and staff by the dormitory administration. In addition the elements necessary for the operation and maintenance of the facility are located within easy reach of the entire facility, thus making servicing more efficient and economical.

The proposed schemes contain only those elements requested by the Kabul University officials, and those deemed necessary by the A-E Team through investigation of current practices in college dormitory design, as well as practices indigenous to the Afghans. The schemes reflect the separation of the building into areas as dictated by function and user requirements. These include those areas which are for the visiting public, administrative staff service personnel and student residents. This method of plan organization allows for maintenance of the requested and desired privacy, as well as for the convenience of the female

residents of the dormitory. In addition, the plans respect the sociological and cultural traditions of the Afghan Society through such considerations as the orientation of the Mosque and toileting facilities, food preparation and compound walls.

The materials which have been suggested reflect the desire of Kabul University officials to have a building with as few maintenance problems as possible, and still be of an attractive nature. Thus, hard durable materials such as brick, terrazzo, stone, wood and stucco would be employed in the facility. These materials are all locally available and commonly used in many of the recently constructed public buildings in Kabul. This availability of materials, and the resultant familiarity of the materials to local laborers allow for good economics as regards the total construction cost of the project. The actual construction of the dormitory is made easier by the use of local materials, construction methods and laborers who work with these materials and methods regularly. It is to be noted that the masonry that will be used for walls and partitions will not be counted on for any structural integrity in the dormitory facility. The A-E Team is concerned with the relatively poor workmanship involving the commonly used soft-burned brick construction in Kabul. ✓

The primary engineering concern is the structural system for the proposed new dormitory building. Because of the current technology in Afghanistan, and the country's susceptibility to earthquakes, it is recommended that some type of reinforced concrete frame be used. Other systems, such as steel joists, composite steel beams, pre-stressed precast units, etc., could prove to be better academic solutions, but they will not be considered because their use would either introduce a new technology whose construction difficulties would be great, or they would present problems of importation from abroad. This is the general consensus of the architects and major contracting officials who were

interviewed by the A-E Team. Although pre-fabricated housing has been provided in the Kabul area (primarily by the Russians) it is not being considered at this time. However, in later phases of the project there should be further investigation into this matter, especially in light of the limited funds which seem available for this project. Pre-fabrication of some elements of the project could make the building more economical.

Reinforced concrete frame construction has been used quite extensively in new multi-storied buildings in Kabul, especially for buildings that are designed and built by the Ministry of Public Works of the Government of Afghanistan. The A-E Team observed such buildings in various stages of completion in Kabul. Those observations have been recorded in this report in the section on the Afghan's desired systems of construction. The proposed new building will be designed so that the structural system (member sizes and spans) will be in line with similar buildings in Kabul. A standard structural module will be used for the proposed dormitory building so that similar member sizes can be used. This standardization will reduce overall material and forming costs. Specific requirements such as concrete and steel strength will be covered during the working drawings phase. It is recommended that regardless of the type of contractor (Afghan, American or joint venture), construction supervision by United States experts be provided to insure that the quality of the structural work meets U.S. standards. The mechanical and electrical systems in the proposed building will be built to conventional standards of the United States. Since these systems will have no unusual requirements, no particular problems are anticipated. It is anticipated that some level of expert supervision will be provided during the construction.

According to the authorities interviewed at the time, Afghanistan does not have a functioning written building code. Little information on design standards

was made available to the A-E Team. It is anticipated by the A-E Team, that a standard U.S. code will be used, and perhaps augmented by the foreign codes commonly used in Afghanistan and its neighboring countries. This matter would require further investigation in later phases of the project.

The physical characteristics and actual size of the site could not be readily determined by the A-E Team during its visit to Kabul. The University officials through their Faculty of Engineering, promised to forward to the Team data concerning the means and bounds of the site, as well as soil bearing capacity and other boring data. As of this writing, nothing has been received by the A-E Team regarding this matter. However, through observation of such existing conditions as the water level in the irrigation well, it can be assumed that the site has a low water table, thus not posing any problem to excavation.

The cost estimates for the construction of the proposed 400 and 800 Bed Schemes were based on the figures of \$21/SF and \$20/SF respectively, which were current in Kabul during April - May 1977. These figures seem to have met the general consensus of the local architects and construction officials for recent un-equipped public buildings. The cost estimates of \$2,112,873 for the 400 Bed Scheme and \$3,682,980 for the 800 Bed Scheme are within the original U.S.A.I.D. proposed estimates of \$5,000/bed. This can be compared to a minimum construction cost of a \$40/SF for a typical unequipped dormitory in the U.S. This figure when applied to the proposed dormitory schemes would be as follows:

$$\underline{400 \text{ Bed Scheme}} - 100,612 \text{ SF} \times \$40 = \underline{\$4,024,480} \text{ } (\$10,061/\text{bed})$$

$$\underline{800 \text{ Bed Scheme}} - 184,149 \text{ SF} \times \$40 = \underline{\$7,365,960} \text{ } (\$9,207/\text{bed})$$

The cost estimates, of course, are dependent on the availability of the materials selected for use, dormitory rooms and building configuration, labor and

construction time. The cost of the land is not included since the Teacher's College Site is owned presently by the Ministry of Education. It is anticipated by the K.U. Officials that the property would be transferred to the University. It should also be noted that the cost of supplying new utilities to the now vacant site cannot be estimated at this time.

ESTIMATE OF PROBABLE CONSTRUCTION COSTS IN THE KABUL AREA FOR THE PROPOSED 400 AND 800 BED SCHEMES, AND ACTUAL DETAILED ESTIMATE FOR CAMPUS BUILDING PRESENTLY UNDER CONTRACT

The following cost estimates for the proposed buildings are based on information received from various sources in Kabul, Afghanistan. The information is from offices and individuals at U.S.A.I.D./AF, the Afghanistan Construction Unit/Kabul (ACUK), the Banai Construction Unit, and the principals of ABAD Architects and Engineers.

In Afghanistan, construction costs are based mainly on either cost per cubic meter, or cost per square meter. However, in a detailed cost breakdown, the unit cost may be given in any number of units of measure including, but not limited to kilograms, pieces, bags, each, linear meters, sheets, bundles, and paw cans. For easier understanding, however, the following gross areas and cost estimates are based on a square foot cost of \$21/SF for the 400 bed scheme, and \$20/SF for the 800 bed scheme. The one dollar difference is based on the fact that the greater volume and quantity of items in the latter, allows for a decrease.

Proposed 400 Bed Scheme

Gross Area - 9,316 SM = 100,613 SF

Total perimeter of foundation - 535.5 M = 1,767 FT

Three (3) stories high at dormitory wings only, plus partial basement or approximately 13 M (42 FT) above finished grade.

Approximate construction cost at \$21/SF x 100,613 SF = \$2,112,873 (100,361,468 Afs)

Proposed 800 Bed Scheme

Gross Area - 17,051 SM = 184,149 SF

Total perimeter of foundation - 763 M = 2,518 FT

Three (3) stories high at dormitory wings only, plus partial basement or approximately 13 M (42 FT) above finished grade.

Approximate construction cost at \$20/SF x 184,149 SF = \$3,682,980 (174,941,550 Afs)

The following partial breakdown of material and labor costs are for a current building about to be constructed on the Kabul University campus. Elements of the list were compiled by the Afghan Construction Unit/Kabul (ACUK), and transmitted to the A-E Team by the University officials.

Estimate of Probable Construction Cost (The U.S. Dollar equivalents shown reflect the ratio of 47.5 Afs to one dollar, which was current in April - May, 1977)

1. General Conditions

No information is available.

2. <u>Site Work</u>	QTY	UNIT	UNIT PRICE	
			Afs	Dollar
Manual Excavation		m <sup>3</sup>	65	1.37
Backfilling		m <sup>3</sup>	55	1.16
Hauling		m <sup>3</sup>	80	1.68
Gravel Fill 20 Cm		m <sup>3</sup>	310	6.53
3. <u>Concrete Work</u>				
Concrete w/o reinforcing		m <sup>3</sup>	4100	86.32
Concrete Slabs w/o reinforcing on grade		m <sup>2</sup>	1350	28.42
Steel Reinforcing Bars		Kg	50	1.05
Sand Fill 10 Cm		m <sup>3</sup>	210	4.42
Sidewalks		m <sup>2</sup>	280	5.89
4. <u>Masonry</u>				
Regular burned brick 25 Cm		m <sup>3</sup>	920	19.37

	QTY	UNIT	UNIT PRICE	
			Afs	Dollar
Regular burned brick 12 Cm		m <sup>3</sup>	150	3.16
Face brick-exterior type "hochtied"		m <sup>3</sup>	1200	25.32
<b>5. <u>Metal</u></b>				
Metal railings		Kg	100	2.11
Metal Welcome mats		pcs	3500	73.68
<b>6. <u>Carpentry</u> - UNKNOWN</b>				
<b>7. <u>Moisture Protection</u> - UNKNOWN</b>				
<b>8. <u>Doors, Windows, and Glazing</u></b>				
Windows		m <sup>2</sup>	2000	42.11
Interior doors, presswood Core w/o glass		m <sup>2</sup>	2150	45.37
Interior glazed doors		m <sup>2</sup>	1900	40.09
Exterior metal glazed doors		Kg	180	3.80
Metal glazed windows		Kg	180	3,80
Glazing 4 mm		m <sup>2</sup>	1300	27.43
Glazing 5 mm		m <sup>2</sup>	1450	30.60
<b>9. <u>Finishes</u></b>				
Plastering - Interior walls & ceilings		m <sup>2</sup>	60	1.26
Plastering - exterior coarsewall		m <sup>2</sup>	65	1.37
Painting - latex/2 coats-interior walls		m <sup>2</sup>	30	.63
Painting - latex/2 coats-interior ceilings		m <sup>2</sup>	34	.72
Painting - latex/2 coats-exterior		m <sup>2</sup>	37	.78
Painting - plastic/2 coats		m <sup>2</sup>	82	1.73
Terrazzo floor tile at stairs		m <sup>2</sup>	1400	29.54
Cement Floor - exposed		m <sup>2</sup>	85	1.79

	QTY	UNIT	UNIT PRICE	
			Afs	Dollars
Oil painting wood & metal surfaces of doors and windows/2 coats		m <sup>2</sup>	95	2.00
Terrazzo W.C. and Shower Partitions		m <sup>2</sup>	1650	34.82
Ceramic tile 30/30 Cm		m <sup>2</sup>	1200	25.32

10. Specialties - UNKNOWN
11. Equipment - UNKNOWN
12. Furnishings - UNKNOWN
13. Special Construction - UNKNOWN
14. Conveying Systems - Not used
15. Mechanical - UNKNOWN
16. Electrical - UNKNOWN

The price of labor, craftsmen and equipment varies from time to time and in the various provinces. Normally the labor cost for the Kabul area is the highest in the provinces. Moreover, there is a variation in the high and low salaries for all the provinces. For example, a low salaried watchman may make 2500 Afs. per month, while a high salaried watchman may make 3500 Afs per month. The salaries indicated above, in U.S. dollars based on the current May, 1977 exchange rate are \$52.75 and \$73.85, respectively.

The following are salaries in Afs. and U. S. Dollars for trades in the Kabul area:

TRADE	COST PER	LOW SALARY		HIGH SALARY	
		Afs	Dollars	Afs	Dollars
Carpenter 1st class	day	140	2.95	160	3.38

TRADE	COST PER	LOW SALARY		HIGH SALARY	
		Afs	Dollars	Afs	Dollars
Carpenter 2nd class	day	110	2.32	140	2.95
Common Laborer	day	40	.84	70	1.47
Watchman	month	2500	52.75	3500	73.85
Mason 1st class	day	140	2.95	160	3.38
Mason 2nd class	day	100	2.11	120	2.53
Electrician	day	140	2.95	180	3.80
Foreman	month	3000	63.30	3500+	73.85+
Storekeeper	month	3000	63.30	3500+	73.85+
Truck driver	day	1300 w/petrol	27.43	1500 w/petrol	31.65

PROPOSED WOMEN'S DORMITORY PROJECT - ESTIMATE OF PROBABLE OPERATING AND MAINTENANCE COSTS

The maintenance of the proposed building is anticipated to be accomplished within the framework of the present central Kabul University equivalent of a buildings and grounds department. In many cases, the present department is incapable of doing a class "A" job, due to the fact that they are hindered by insufficient funds, and the lack of necessary supplies, equipment, replacement parts and trained personnel.

Operation and maintenance costs for a particular building is almost impossible to separate from the funds appropriated for the entire campus. The operation and maintenance funds are distributed as a lump sum to all the buildings. Separate and complete itemized records for individual buildings on campus, were not available to the A-E Team. However, some data for an existing men's dormitory, which was initially built for 800 occupants was provided to the A-E Team on May 16, 1977, just prior to the Team's departure from Afghanistan. Some of the expenses will apply to the proposed building, even though this same men's dormitory now houses 2600 students (instead of 800) in the original space. However, as incomplete as these figures are, they do give some idea as to what projections might be made in relation to operation and maintenance costs of the proposed women's dormitory.

The following items concerning the men's dormitory, are reproduced here in their original forms (Dari and English translations) to illustrate the responses from the Kabul University officials to requests by the A-E Team, for information on operating and maintenance costs.

KABUL UNIVERSITY  
MAINTENANCE GENERAL DIRECTORATE  
TECHNICAL SECTION

M E M O

DATE: 5/16/77

General Directorate of Accounting:

Two days ago we requested you to provide us with information about expenses of the dormitory in the capital. You gave us information on two items namely oil and foodstuffs which are not to the satisfaction of the respective committee. It is hoped that you will write the total expenses of the dormitory in the capital. Hereby, it is written to you to please give us information as soon as possible about the total annual expenses of the dormitory such as foodstuff, fuels, salaries of dormitory personnel, clothes etc., Upon receiving your information the Selected Committee will take necessary actions.

Yours sincerely,

Dip. Moh'd Qasim Imam  
Director General of Maintenance

General Directorate of Maintenance

The Dormitory General Directorate spent on the following items during the year 1355:

1- Chapter 110, employees' salaries	Afs.	3538724.00	
2- Chapter 130, lunch allowance, professional & academic privilege allowances	Afs.	114366.00	
3- Chapter 140, fees	Afs.	139895.00	
4- Chapter 210, communications	Afs.	3411.00	
5- Chapter 230, welfare services	Afs.	24144.00	
6- Chapter 240, house rent	Afs.	250980.00	
7- Chapter 250, maintenance and repairs	Afs.	509901.00	
8- Chapter 280, other expenses	Afs.	10000.00	
9- Chapter 310, general supplies	Afs.	18889352.00	
10- Chapter 330, agricultural materials	Afs.	3280.00	
11- Chapter 340, construction materials	Afs.	158200.00	
12- Chapter 360, technical materials	Afs.	240.00	
13- Chapter 370, materials for production & distribution of power	Afs.	15771.00	
14- Chapter 440, office equipment	Afs.	760.00	
15- Chapter 460, materials for communications, production and distribution of power.	Afs.	260.00	
16- Chapter 490, furnitures and other equipment	Afs.	29335.00	KU 65

Above is the information about the expenses incurred in 1355.

Signatures

Afs. 24941828.00

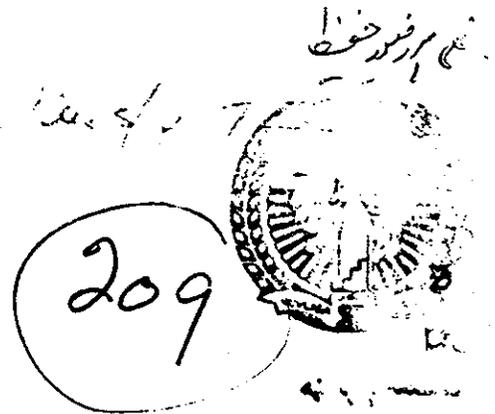
Translated by

Danishyar: ma 5/17/77

23



د کابل پوهنتون  
د حفظ و مراقبت لوي مدیریت  
د تخنیکي (حانسه) ګه





KABUL UNIVERSITY  
PRESERVATION AND MAINTENANCE GENERAL DIRECTORATE  
TECHNICAL SECTION

QUESTION

General Directorate of Accounting

Please, from your last year records available, let us know how much are the annual expenses of electricity oil, water and foodstuffs etc., of the dormitory in the capital. Please give the above information in term of afghani so that necessary action will be taken.

Sincerely yours,

Sd/ Dip. Moh'd Qasim Emami  
Dip. Moh'd Qasim Emami  
Director General of  
Preservation & Maintenance

ANSWER

General Directorate of Preservation and Maintenance:

On the basis of Book 2-20 of expenditures the annual expenses of oil, and foodstuffs of the Directorate of dormitories during the year 1355 are as follows:

1- Oil consumption	Afs. 3,100,000.00
2- Foodstuffs	Afs. 13,510,661.00

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Total      Afs. 16,610,661.00

As mentioned above a total sum of sixteen million six hundred and ten thousands and six hundred and sixty one afghanis was spent on oil and foodstuffs during the year 1355. Water and electricity bills are not known to this directorate. They should be found out from the respective employees of the Kabul Power Department on the basis of the electricity consumption notebook.

Signed

dated: 22/2/56 (May 12, 77)

Translated by  
Danishyar:ma

5/15/1977



The total sum of the above figures, excluding the item listed as "foodstuffs" is 28,041,828 Afs = \$590,354.77 (based on current exchange rate of 47.5 Afs to \$1.00 U.S., during April - May, 1977)

The approximate maintenance cost figure used by local architects on many public facilities in Kabul, has been 2% per year of the construction cost for the first five years after the building's completion. Thereafter, for the next 15 years, the figure of 1% of the construction cost is used. No estimate was given for periods beyond 20 years.

The first two years, or "tuning Up" period of government buildings has a guaranteed upkeep by the contractor, as set forth by Afghan laws. The mechanical and electrical work is usually guaranteed for only one year after the completion of the work.

The following computations represent the approximate costs of operation and maintenance for both the 400 and 800 bed proposals, utilizing the above percentages and the previous construction cost estimates.

	<u>Approximate Construction Costs</u>	<u>2% per Year First 5 Yrs.</u>	<u>1% per Year Next 15 Yrs.</u>	<u>Total for 20 Yrs.</u>
400 Bed Scheme	\$2,112,870.00	\$42,260 x 5 = \$211,300	\$21,130 x 15 = \$316,950	\$528,250
800 Bed Scheme	\$3,687,980.00	\$73,750 x 5 = \$368,800	\$36,880 x 15 = \$553,200	\$922,000

In comparison to the above, it should be noted that a building of this type in the United States would cost approximately \$3.20/square foot to operate and maintain.

400 Bed Scheme - 100,613 SF x \$3.20 = \$301,836.00

800 Bed Scheme - 184,149 SF x \$3.20 = \$552,447.00

THE NEED TO PROVIDE ACCEPTABLE STANDARDS FOR HEATING, ILLUMINATION, PERSONAL CARE AND COMFORT FACILITIES

The need to provide acceptable standards for heating, illumination, and personal care and comfort facilities is extremely important for this project inasmuch as very high standards in these various aspects exist in most of the other facilities on the campus.

The existing facilities for the women students residing on campus are presently extremely poor. However, as these students are from provinces where few modern facilities exist, they are consequently used to much less than they now have in what we consider poor living conditions. There is, however, no need to perpetuate a bad situation by providing less than adequate facilities. In the present facilities, many of the resident women occupy small areas with no electricity, and minimal personal care and comfort facilities. In comparison, the men's dormitory, though having over three times the eight hundred (800) occupants for which it was built, is far superior to the substandard conditions which exist in the women's dormitory houses. This project is intended to correct such inequalities.

There is a very serious need to provide adequate heating for the proposed dormitory, since the temperature in Kabul does become extremely frigid. In the winter season, from December through February, for example, the temperature is as low as from seven to one degree Centigrade during daylight hours, to a low range of from zero to minus fifteen degrees Centigrade, at night. In addition to this variation in temperature, there are also extreme variations in other weather conditions. For instance, there are many days during the winter months when snow may accumulate as much as one half meter over a period of days, although it may melt within a short period of time due to the sun's brightness.

The school is officially closed from about January 1 to March 21, however, many of the provincial students remain in the dormitories during this period. The two main reasons for staying at school are that many students lack the funds to get home, and that many of the roads and passages, especially through the mountains, are closed because of severe cold and snow drifts. For this reason, adequate heating must still be provided for the building during the cold months, even though the school is officially closed. If the heating system is zoned by residential wing, it will be possible for students who are unable to go home to live in designated wings of the dormitory, in order to further conserve energy and expense. There would then be no need to heat the entire facility, as only certain parts would be occupied.

The need to provide acceptable standards for illumination is very important to the student, since it is extremely difficult and tiresome to study or read with poor quality or low intensity light. During the day, the Kabul area is almost always bright and sunny. This is true even in the winter season since the sky is clear except when snow is falling. When snow is on the ground, the natural light intensity is still high, due to reflected light. The low and light colored buildings serve to increase this light intensity. Even after the snow, the sky is bright and sunny in the winter. During the spring, summer and fall, the natural light intensity is extremely bright. This is true even during the dust storms that are prevalent during the fall. In the spring, the time when most of the rain occurs, the dark clouds approach the city predictably from the northwest, in a very narrow path. The natural light quality is slightly below average, since the sky is still bright beyond the narrow approaching path of dark clouds.

To make use of this natural light intensity for illumination, and for the economic reasons involved, the proposal is to provide high intensity artificial

light only where needed in task areas such as study rooms and over desks, in kitchens, offices, etc. In the corridors, dining areas and other areas not requiring intense illumination for work, only low intensity artificial light will be provided for use when absolutely necessary. When required, artificial illumination will be provided at widely spaced intervals in these areas and should be separately controlled so as to conserve energy. These areas will rely primarily on the quality of natural light.

The need to provide acceptable personal care and comfort facilities is equally as important, as an integral part of the plans for the proposed women's dormitory. In the present group of houses used for the purpose of a make-shift women's dormitory, the facilities are extremely poor and unhealthy. For example, many of the women occupy shower stalls and closets as bedrooms because of overcrowded conditions in these buildings which were originally designed for a single family. In many cases, there are as many as thirty-five (35) or more students occupying one of these modest sized houses.

When showers, baths, and closets are converted for dormitory room occupancy, the use of these important personal care and comfort facilities becomes at the least overtaxed, and more often practically non-existent: It should be noted here that only one toilet serves the three hundred and fifty women. Therefore, in a new facility, adequate shower stalls, toilets, laundry and storage space, and closets are mandatory for the well-being and good health of the students. Even though the necessities to be provided are far more than those which now exist, they are in no way proposed to be elaborate, nor more in number than needed.

## SYSTEMS OF CONSTRUCTION

The most desirable system of construction adaptable to local customs and the capabilities of local contractors and labor forces varies, depending on the size, complexity and type of structure.

In the larger, multi-storied, more complicated buildings, the structural system most used is one of reinforced concrete footings, foundation walls, foundation tie grade beams, columns, spandrels, floor and roof slabs. The foundation tie grade beams and floor and roof spandrels, are to help withstand the earthquake forces. The outside and inside infill exterior walls are usually of brick, either soft or hard burned. These infill walls are almost always stucco or cement plaster finished. Other exterior wall veneer finishes such as various quarried and field stone are used extensively in the more elaborate government and private buildings.

In one and two story residential buildings, the structural system most employed is one of bearing walls. Foundations walls of about one meter deep, and 24 inches or 60 centimeters thick, composed of rubble stone are employed extensively in this type of building. In many cases, the rubble stone wall is exposed exteriorly for about one meter above grade. This is especially true in the case of the numerous privacy walls surrounding the property at the street, rear, and party property lines.

The bearing wall above grade at the building, usually continues to be 24 inches thick, although it is sometimes reduced to about 16 inches. However, the above grade wall is usually constructed of local soft burned brick. This brick is not fired sufficiently to attain adequate strength and impermeability, consequently, it is always stuccoed or cement plastered. This soft burned brick is only suitable for interior walls if they are left exposed. For the most part, these

interior walls are also cement parged since the soft burned brick surfaces scratch, flake, dust and chip easily.

The roofing system on a more traditional one or two story building is constructed of *undressed timber poles and boards*, and covered with a layer about 12 inches or 30 centimeters thick of mud reinforced with straw.

Structural wood is very scarce, and is rarely used in multi-storied buildings other than for scaffolding, shoring and form work.



CONSTRUCTION OF THE MEDICAL SCHOOL TAKING PLACE ON CAMPUS. THE CONSTRUCTION IS OF CAST-IN-PLACE CONCRETE WITH PRECAST CONCRETE SUSPENDED SUPPORTS FOR THE HORIZONTAL CAST-IN-PLACE CONCRETE LOUVERS. THE CONCRETE AS WELL AS THE BRICK WILL BE STUCCOED OVER. THE FRENCH SPONSORED MEDICAL FACILITY IS BEING CONSTRUCTED BY THE NATIONALIZED AFGHAN CONSTRUCTION UNIT OF KABUL.

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## CONSTRUCTION MATERIALS AND ITEMS

The most desirable construction materials and items in light of Afghan customs, preferences, availability, and cost, would generally be those that are local, readily available and familiar to the laborers.

### Customary Use of Materials

Mud is used extensively on the exterior of traditional buildings. Stucco is used for the most part, on the exterior and interior of new buildings. Soft burned brick, if used on the exterior, is also covered with straw reinforced with mud or stucco, since the bricks will deteriorate if exposed to the weather. Hard burned brick is also stuccoed on the exterior of new buildings. However, it is some times left exposed in corridors and other interior partitions. The exposed hard burned brick is easily maintained, and does not need painting or show soil spots as does stucco.

Reinforced concrete framing is used in most new multi-storied buildings for foundations, spandrels, floors and roof systems, and especially to tie the building together to resist earthquake forces. Concrete is also used for exterior panel walls, and is usually stuccoed, as are the structural concrete elements.

Walls surrounding properties are very common throughout the city. Most of these are solid brick, with a mud or stucco finish, although, occasionally stone walls are used. Wood or metal, solid or semi-solid screened panels are also used on the exterior walls.

### Availability of Materials

The following materials are processed, produced and available in the Kabul area:

Cement, lime, gypsum, whitewash, wood boards, strips and beams of archa

wood, wood poles of chinar wood, fired brick, sun-baked brick, marble, field stone, quarried stone, white straw, sand, gravel and plastic sheeting.

The following materials and items (with their country of origin designated) are imported into the Kabul area:

The following items and materials are imported from Japan:

Reinforcing steel of various diameters, galvanized corrugated sheet metal, galvanized flat sheet metal, galvanized wire mesh, glass, window bolts and sockets, and nails.

From China, the following items are imported:

Window bolts and sockets, hasps and nails.

Reinforcing steel of various diameters is imported from Russia.

Window bolts and sockets are imported from India.

The following items and materials are imported from Pakistan:

White paint, galvanized metal, window screens, and various sizes of hinges.

Most electrical equipment and items are imported from Germany, including the following:

Switches, circuit breakers of various amperages, socket outlets, switch boards, junction boxes.

Most plumbing fittings are imported from either Japan or Germany.

The imported Japanese items include: nuts, elbows, couplings, reducer valves, valves, tees and zinc pipe.

On the other hand, tapes, rope, joint filler, treads, putty, cast iron drain piping, tees and elbows are imported from Germany. Plumbing fixtures such as laboratory sinks and water closets are also imported from Germany.

Care must be taken to make sure that the various fittings, if imported from different countries, are compatible with each other, and can be connected so as to operate efficiently. This is particularly true of items that are metric and non-metric. There are instances at Kabul University now, where mechanical

equipment items from the United States cannot be connected to adjacent parts from Germany, therefore, the system is rendered ineffective and inoperative.

#### Preferred Use of Materials

In addition to the use of materials structurally and decoratively, as mentioned above, certain other materials are used and preferred for the interiors of new buildings. Terrazzo or terrazzo tile is used extensively for floors of public and semi-public buildings. The terrazzo floor is relatively maintenance free, and better able to withstand the abrasive effects of the sand tracked and blown into the buildings. Precast terrazzo panels are also used in toilets and bath rooms, as wainscots, toilet partitions and bases.

#### Material and Item Costs

The cost of materials depends mostly upon the availability. There is also an erratic fluctuation in the cost of materials based on availability and quantity at a particular time.

## OUTLINE SPECIFICATIONS

### 1. GENERAL REQUIREMENTS

- 1A The work includes the building, and all exterior utility areas within the property line as shown on the site plan and all necessary underground and above ground utility work to connect to public utilities, or utilities outside of the property line.
- 1B Spare parts equivalent to five percent (5%) of the moving plumbing and mechanical items and electrical fixtures shall be provided for future maintenance and repair.

### 2. SITE WORK

- 2A All existing structures and underground foundations shall be demolished and materials removed from site.
- 2B Site shall be regraded for positive drainage.
- 2C Soil at existing footing trenches shall be placed in 20 centimeter (8 inch) layers to 95% compaction.
- 2D Soil test borings shall be required prior to the structural design and construction of building.
- 2E Curbs, gutters, and paving shall be concrete of 4000 psi equivalent.
- 2F Seed and sod all areas on the site not devoted to building, or passive recreation areas. Sod all other areas disturbed by the construction process.

### 3. CONCRETE

- 3A Concrete footings shall be reinforced with steel to have a strength equivalent to 3000 pounds per square inch, and designed for reinforcing

steel having one half the strength of grade 60 by the American Society for Testing Materials A-615, if strength value and source are unknown.

3B Exterior concrete at sidewalks, patio lead walk, balcony and steps shall have a strength equivalent to 4000 pounds per square inch.

3C Concrete footings, walls and spandrels shall be tied together continuously, including the reinforcement to resist earthquake forces.

#### 4. MASONRY

4A Exterior masonry infill shall be brick cavity walls with exterior surfaces covered with stucco.

4B Non-bearing walls or panels, to be stuccoed or plastered, may be of local soft-burned brick except in toilets, baths, kitchens and other areas subject to moisture and humidity.

4C Interior walls shall be brick masonry with plaster or cement parging finish.

4D Interior exposed brick walls shall be hard-burned brick.

4E All exposed brick work shall be cleaned with a solution of muriatic acid and thoroughly rinsed.

#### 5. METALS

##### STRUCTURAL STEEL

5A Structural steel reinforcing bars shall be assumed to be half the value of American Society for Testing Materials A-36, if strength is unknown.

## MISCELLANEOUS METAL

- 5B Miscellaneous steel angles may be used above openings not more than two meters (6'-6"±) in width, as an alternative to masonry lintels.
- 5C Metal railings shall be locally prefabricated after shop drawings and full size samples are fabricated and approved.

## 6. CARPENTRY AND MILLWORK

- 6A Exterior wood trim shall be local wood, milled and worked locally. Shop drawings shall be submitted prior to fabrication and assembly.
- 6B Interior wood trim and frames shall be milled locally of soft woods such as poplar. Shop drawings are required for fabrication, cutting and assembly.

## 7. MOISTURE PROTECTION

- 7A Flashing shall be 22 gauge painted galvanized metal, or .019 gauge aluminum, and shall be used where roof surfaces come in contact with vertical wall surfaces, changes in direction and changes in materials.
- 7B Finish roofing shall be galvanized sheet metal with standing seams.
- 7C Scuppers and gutters shall be 22 gauge galvanized metal.
- 7D 6 mil polyethylene film is to be used at all grade slabs.
- 7E Caulking shall consist of neoprene butyl rope backed-up with polysulfide sealant.

## 8. DOORS, WINDOWS AND GLAZING

- 8A Exterior doors shall be solid core of heavy duty exterior grade wood.

8B Interior doors shall be solid core, of wood or particle board, and locally constructed with standard ship-lap edging detail at head and jambs.

8C Window frames shall be of locally prefabricated wood. Shop drawings and full size samples of each type shall be required for approval prior to final fabrication.

#### FINISH HARDWARE

8D Exterior doors shall receive three (3) stainless steel hinges. Interior doors shall receive two (2) stainless steel hinges. All doors shall receive locksets or latchsets (as applicable), stops and handles.

8E Glazing at windows shall be equivalent to double strength grade B. Glazing that is full height, at doors, side lights, and windows, without horizontal members, shall be .5 centimeters (1/4") thick tempered plate glass.

### 9. FINISHES

#### PAINTING

9A Exterior wood surfaces to be painted shall receive two coats of oil paint.

9B Exterior metal shall receive one coat of rust proof primer, and two coats of oil paint.

9C Exterior masonry shall receive two coats of exterior grade masonry paint.

- 9D Interior partitions to be painted shall receive two coats of latex or alkyd paint.
- 9E Interior wood not to be painted shall receive one coat of stain and two coats of varnish. Sand before applying second coat of varnish. Interior wood to be painted shall receive two coats of semi-gloss oil paint.
- 9F Interior metal to be painted shall receive one coat of rust proof primer and one coat of oil paint.
- 9G Plaster walls shall receive two coats of latex or alkyd paint.
- 9H Plaster ceiling shall receive two coats of latex or alkyd paint.

#### FLOORS

- 9I Local precast terrazzo tiles shall be used throughout the facilities.
- 9J Local precast terrazzo treads and risers shall be used at all stairs.

#### 10. SPECIALTIES

- 10A Toilet and bathroom accessories shall be stainless steel and shall include toilet paper holders for each toilet compartment, and grab bars for each floor recessed toilet compartment.
- 10B Stainless steel shelving shall be provided at each lavatory mirror.
- 10C Mirrors of plate glass approximately 12" wide x 24" high shall be provided at each lavatory.
- 10D Full length plate glass mirrors 18" wide and 60" high shall be installed, one in each bathroom.

10E Robe hooks shall be provided in each toilet compartment, shower compartment and sixteen in each toilet room, and eight in each student room.

10F Toilet partitions shall be of locally available terrazzo.

11. EQUIPMENT

KITCHEN EQUIPMENT

11A Refrigerators shall be double-door, stainless steel commercial type, with a capacity of approximately two cubic meters each.

11B Freezers shall be double door stainless steel commercial type, with two cubic meter capacity each.

11C Ranges shall be 220 volt electric.

11D Kitchen shall be equipped with cast iron heavy duty stove with removable lids to accommodate the cooking of traditional Afghan foods.

11E Kitchen shall be equipped with linear cast iron open flame bar-b-que grilles for charcoal, with removable open metal grate top to accommodate the cooking of traditional Afghan spit dishes.

11F The House laundry shall be equipped with electric washers and dryers of commercial quality and sizes.

11G All electrical equipment shall be 220 volts or with permanent factory installed voltage adaptors.

12. FURNISHING

12A Each window shall be equipped with a non-cord hand operated drapery rod.

13. SPECIAL CONSTRUCTION

13A The concrete and steel reinforcement in the structural system shall be tied together to resist earthquake.

14. CONVEYING SYSTEM

14A None required.

15. MECHANICAL

15A Plumbing pipes shall be cast iron for building drains; copper for water supply; galvanized steel for soil and waste, and P.V.C. piping may be used for vent stacks.

15B Lavatories shall be vitreous china.

15C Water closets shall be vitreous china, flush valve type.

15D Half the water closets shall be the floor recessed "Turkish" basin type with pull chain gravity flush tanks.

15E Kitchen sinks shall be stainless steel.

15F Laundry sinks shall be stainless steel or local precast terrazzo.

15G Hot water heaters shall be quick recovery electric of sufficient capacity each, to serve the occupants during peak hours.

15H Solar energy hot water heating system shall be investigated as possible substitute for electric.

15J Fittings for showers, lavatory, water closets, laundry sinks and kitchen sink shall be stainless steel.

15K Water supply shall be derived from drilled and cased deep-wells with pump and tank.

#### HEATING AND VENTILATION

15L Heating system shall be a zoned hot-water system with radiators.

15M Alternate heating system shall be a solar heated hot water system with heat pumps being used for supplemental heat source.

15N Ventilation fans shall be used in all toilets, bathrooms, kitchens, and interior spaces. Fans shall be connected to ducts where necessary to exhaust directly to the exterior.

#### 16. ELECTRICAL

16A Electrical service wiring and accessories shall be 220 volt underground system with emergency generators.

16B A system of localized task area lighting shall be used instead of general illumination to conserve energy for entire building.

16C Hooded localized lighting shall be placed and used in work areas in dormitory room to prevent disturbance of other occupants.

16D Fixtures in halls, stairs, bathrooms, toilets and dining areas shall be bracket type to facilitate access for lamp changing and cleaning.

16E Exterior lights and outlets shall be waterproof.

16F Convenience outlets shall be placed at three meters (10 feet) on center in rooms and at ten meters (32 feet) on center in corridors.

ASSESSMENT OF PROCEDURES BY WHICH THE GOVERNMENT OF AFGHANISTAN - KABUL  
UNIVERSITY WOULD CONTRACT FOR DESIGN, CONSTRUCTION DOCUMENTS AND CONSTRUCTION  
OF THE PROPOSED WOMEN'S DORMITORY

The A-E Team sought, through interviews and written requests of various officials, the methods by which the Government of Afghanistan and/or Kabul University entered into contracts for the design, construction documents and construction of public buildings. The persons interviewed or written to about this matter included local architects and engineers, major contractors and several Kabul University officials.

No information was given on the common selection process by which architect-engineers were chosen to undertake the preparation of design and construction documents for a public building. Of course, the number of these professionals in the Kabul area is very limited. However, it can be assumed that the process may be similar to that which is used in the United States, i.e. invitation to submit a bid for professional services for a particular project.

The general consensus is that the normal procedure usually entails production of the design drawings, construction documents and specifications by the architect-engineer under the supervision and review of the Construction Department of the Ministry of Public Works. This department, along with the Ministry of Planning, must approve all the submissions by the architect-engineer on the proposed project. After approval has been obtained, estimated funds are budgeted for the project. The Government, upon completion of the construction documents and specifications, will advertise for bidders. There is no indication as to whether foreign countries are invited to present bids, even though there were numerous examples of foreign contractors having completed buildings in Kabul. The award of the construction contract is based on the lowest bid,

followed by an authorization to commence construction. This method was said to have been employed on all Kabul University buildings.

In the specific case of the U.S.A.I.D. sponsored proposed Women's Dormitory project for Kabul University, the selection of the architect-engineer will most likely be made by that agency, subject to the approval of the Government of Afghanistan. U.S.A.I.D. has only two options in selecting the architect-engineering firm, one of which is the outright selection of an Afghan firm, the other is the selection of an American A-E firm through the open bid basis. The common U.S. practice of joint venturing between two companies cannot be considered at this time due to the questionable status of Afghan investment laws on this matter. It seems that the foreign partner must be a minority shareholder, subject to the approval of an investment committee consisting of members of the Ministries of Commerce, Finance, Mines and Industry, and the President of Da Afghanistan Bank. After an indeterminate period, the joint venture would then have to be approved by the Cabinet. It is doubtful that many American firms would want to undergo such scrutiny for a single small project. However, if a clarification of this problem could be achieved, and determined by both parties as not so objectionable, the results should prove attractive. The final product would, hopefully, be designed in accordance with not only respect for Afghan customs and traditions, but also the U.S. construction standards for a building of this type.

Another alternative for the selection of the A-E firm is that U.S.A.I.D. select through the open bid process, an American firm to do the design and construction supervision.

As for the matter of contractor selection procedures for the actual construction of the project, the same problems are encountered as those which arise in

in selecting the architect-engineer. The contractors may be chosen from one of the major Afghan firms, or an American construction firm could be called on to bid on the project. Joint ventures could conceivably be used, since it was emphasized by officials of both Bonai Construction and Afghan Construction Unit that they had been involved in partnerships with foreign firms on various large public buildings. It can be assumed that those agreements were subject to the same processes of approval as previously mentioned. In addition to the questionable feasibility of joint ventures, it must be noted that all labor practices and wages are subject to Afghan Laws.

CAPABILITY OF LOCAL ARCHITECTURAL - ENGINEERING FIRMS TO UNDERTAKE DESIGN,  
CONSTRUCTION DOCUMENTATION AND SUPERVISION OF THE PROJECT

During the course of the A-E team's investigation into the capabilities of local architect-engineering firms to undertake the design, construction documents, and construction supervision of the proposed structure, it became evident that there were only two Afghan firms in Kabul. The two firms are ABAD (Afghan Bureau of Consulting Architects and Engineers) and CECSAR (The Center for Engineering, Consulting Services and Applied Research). The following is a brief resumé of each company.

ABAD

ABAD is the only known private and independent architectural and engineering firm practicing in the entire country of Afghanistan. It was established in 1969 under the laws of the Government of Afghanistan, and is duly registered with the Afghan Ministry of Commerce. The firm is headed by Mr. Nasir A. Saberi, President. The architectural department of the company is headed by Mr. Ehsanullah Ferzad. ABAD has five partners, with various backgrounds in the architectural and engineering disciplines. Several of the partners and staff members are graduates of some of the most prestigious schools of architecture and engineering in the world, including many in the United States. Their in-house capabilities include architecture, structural, mechanical and electrical engineering and surveying. There is presently a staff of thirty-five (35), but at times, there have been as many as sixty-five (65) in the one office. The firm also uses local mechanical and electrical consultants, when needed.

The ABAD company is an independent organization, with no connection to the government. The firm has an impressive background in designing buildings of

various types. Some of the larger projects include the Afghan Insurance Company Office Building, the multi-story Afghan Department Store, a religious complex at Jamal Mina, the Flight Information Center at the Kabul International Airport, and Afghan Computer Center, and several supermarkets. Smaller projects designed by ABAD include numerous private homes, apartments, office buildings and several cinemas.

### CECSAR

The following section dealing with CECSAR contains excerpts taken from a biographical sketch prepared by that body at the request of the A-E team. These excerpts are indicated by opening and closing quotation marks at the beginning and end of the text.

"The Center for Engineering, Consulting Services and Applied Research is an administrative organization of the Faculty of Engineering, Kabul University. The present CECSAR Director is Dr. Saboor Rahim, a United States trained soils engineer. The Executive Committee of CECSAR, composed of representatives of the various engineering disciplines, screens incoming requests for services and assigns personnel to projects by matching the expertise and availability of individuals to project requirements. Proposals are prepared by project leaders, for review by the Executive Committee, and submission to clients.

The primary purpose of CECSAR is to provide opportunities for the highly trained staff of the Faculty of Engineering to engage in meaningful consultation and applied research projects so as to enhance their practical abilities and to allow them to function more effectively as teachers of young Afghan architects and engineers. It is also intended to develop a pool of practical and experienced Afghan professional architects and engineers having modern laboratory equipment at their disposal, to assist directly in the development of Afghanistan.

Laboratory requirements for engineering testing and research are stringent, and in general are not available elsewhere in Afghanistan.

The most important aims of this non-profit organization are:

- A. To encourage research on local projects.
- B. To allow faculty and students the opportunity to participate and be involved in developmental projects of the country.
- C. To improve the instruction method and quality of education in the Faculty of Engineering.
- D. To encourage and to develop local research and consulting personnel and gradually eliminate the country's need for foreign consulting personnel and firms.
- E. To help the country save the high cost of employment of foreign experts and to diminish its foreign currency expenditures.

All ninety-two (92) members of the Faculty of Engineering are members of CECSAR. Of these, sixty-three (63) are present on the Faculty today, and twenty-nine (29) are overseas on study or lectureship programs which require them to return to Afghanistan -- most in the near future.

The fourth and fifth year students of the Faculty of Engineering also provide a considerable manpower resource for CECSAR, especially for technical level work.

Two Nebraska Team members assigned to the Faculty of Engineering, are associate members of the CECSAR, and are available to assist without extra pay in any of its endeavors. They are:

Dr. R.E. Gibson, Civil Engineer

Dr. N.F. Bolyea, Management Engineer

CECSAR is also able to draw upon the services of Afghan engineers not employed by the Faculty, for projects requiring expertise not available on the Faculty.

Although a relatively young organization, CECSAR has been involved in a wide range of projects, both large and small. Typical small projects include aggregate

and soils investigations, chemical property analysis, and other routine testing of construction materials using the facilities of the Faculty. Larger projects dealing with the design of complete school and hospital complexes, the planning and design of irrigation systems, and large scale soils and foundation investigations have been undertaken.

In the period from October, 1974 to May, 1977, CECSAR has worked on 148 engineering projects for a total fee of over \$140,000. Many of these projects were small materials testing jobs, while others were done for government organizations at no fee. Some of CECSAR's larger projects include:

- A. The design, working drawings, and models for several Primary Rural Schools for USAID.
- B. The standard design and bill of materials for nine types of Basic Health Centers for USAID.
- C. Soil tests, and aggregate analysis and design for the Pul-e-Matak, Band-e-Amir, and Kandahar Tirinkat highways, for the Swiss consulting firm, Motor Columbus.
- D. Model testing of the Khanabad irrigation projects is in progress by CECSAR Hydraulics, Civil, and Agricultural Engineers.
- E. The design of seven vocational agricultural school complexes throughout Afghanistan is underway for the Ministry of Education utilizing World Bank funds.

During the three months preceding the Nawroz (March 21) of each year, all sixty-three (63) members now present in Kabul would be available to serve the project, as school is not in session at Kabul University during that period. This is also true for approximately one month during Ramazan. When school is in session, it is estimated that on the average, each available member can devote ten hours per week to the project. The availability of professional level workers (those with BS degrees, and those in non-construction related) is estimated as follows:

## CECSAR MEMBERS

### Available Manhours Per Week

<u>WORKERS</u>	<u>No. of CECSAR Members</u>	<u>During School Year</u>	<u>During Vacation Periods</u>
Professional	34	340	1360
Technical	29	290	1160

When CECSAR is awarded an extended contract for services, one or two key personnel needed for administration of the project may be relieved of all or most of their teaching assignments, and the teaching loads redistributed.

Some of the services also can be accomplished by students. In construction related fields, CECSAR could call upon over two hundred fourth and fifth year students in engineering and architecture. It is estimated that, on the average, each of these students can devote ten hours per week to project activities.

While the activity of CECSAR has invaluable academic and instructional advantages to the Faculty of Engineering, its main goal is the development of a group of practical architects and engineers who can aid in the development of the Republic of Afghanistan by designing projects at low cost, while maintaining high professional standards."

### Summary

The A-E Team's investigation into the capabilities and willingness of the local architectural-engineering firms, ABAD and CECSAR, to participate in this project was carried out through interviews at their respective offices, and visits to some projects. The A-E Team received good cooperation and in many cases, helpful insights into many aspects of local customs and architectural practices. Many of their recommendations were incorporated in some form or other into the design proposals.

The ABAD Company probably represents the strongest and most professional of the two groups. This is easily due to the fact that they are a full-time organization whose sole purpose is the practice of architecture and engineering. The members of ABAD have several years of experience in the design, preparation of construction documents, and supervision of construction of larger projects. There is no doubt in the minds of the A-E team that ABAD would do nothing less than a professional, well designed and documented building for this project. The quality of their work speaks for itself.

Although the ABAD officials expressed their preference for doing all of the design, construction documentation and construction supervision on the project, they would not be opposed to joint-venturing with a U.S. firm on various future phases of the project.

CECSAR as a unit, has an impressive array of professional and academic talents. Many of these people have outstanding qualifications in their respective fields. Some have practices abroad before coming back to Afghanistan, and joining the Faculty of Engineering. Others have maintained small offices in their homes doing mostly private residences, and small commercial buildings. However, as a group, they do not have a track record for a project of the magnitude of the proposed women's dormitory. There was no evidence indicated by example, of any work, whether a completed building or construction documents, for a project of this size and complexity. The written sketch itself (prepared by CECSAR), indicates the lack of professional experience required to do this project effectively. However, CECSAR should gain immeasurable experience, if they are given the chance to complete the World Bank sponsored rural vocational agricultural school project, which was pending at the time of this writing.

CECSAR has one other major problem, other than the lack of experience, and that is time. All of its members, with a few exceptions, are professors at the Faculty

of Engineering, with full or part-time teaching duties. Many of these architects and engineers are not only teaching, but have small individual practices operated out of their homes. It is difficult to imagine, in spite of the evidence presented in their prepared sketch, that these people have the time or the energy to take on something as large as this project. The time schedule for completion of full design and construction documents could be increased considerably if restricted to part time participation of CECSAR members. Of course, the cost would increase, as well.

The A-E Team is not convinced that participation by fourth and fifth year students of the Faculty of Engineering would be to the best interest of this project. It is doubtful that many of the two hundred cited in CECSAR's sketch would have the time or experience to be a part of this project. There is no evidence that the students were consulted about this matter. Although the suggestion of students gaining real job experience is both commendable and desirable, it should not be at the expense of a project which requires immediate and professional attention.

It should be said, however, in regard to CECSAR, that they could probably joint-venture with another firm, whether from Afghanistan or the United States, without much difficulty. CECSAR architects presented very capable design abilities on the projects observed in their office.

CECSAR, being a branch of a government institution, Kabul University, is obligated by the laws of Afghanistan in regard to joint-ventures, with foreign nationals, laborers, wages, and as a result, the Ministry of Public Workd has to approve all contracts of this nature.

## CAPABILITY AND WILLINGNESS OF LOCAL CONTRACTORS TO CONSTRUCT THIS PROJECT

There are two local construction companies that are capable and willing to construct this project. Both of these companies are under the jurisdiction of the Government of Afghanistan, Ministry of Public Works. However, the two companies are completely independent of each other, and participate in a seemingly healthy competition to obtain work.

The two companies referred to are the Afghan Construction (A.C.U.) and the Banai Construction Unit. A brief background description of each of the companies is presented here to illustrate their experience and capabilities.

### The Afghan Construction Unit

This firm is the older and more experienced of the two organizations, having been established since 1961. A.C.U. is the off-spring of an earlier construction company called the Kabul Construction Unit, a division of the Helmand Valley Authority. The success in the construction of the Hashimi Bridge in Herat Province led to the establishment of the Afghan Construction Unit as a fully equipped company to meet the construction needs of the country. To this end, A.C.U. officials have stated that they have tried to keep abreast of technical, physical and economic principles of modern building construction, as practiced in the more developed countries. The Afghan Construction Unit has several divisions, of which the Kabul unit is the headquarters, and is designated in this section of the report as A.C.U.-K.

The Afghan Construction Unit-Kabul, is headed by Mr. Abdullah Breshna, president and architect. He explained some of the company's governmental ties, past achievements, current work, material handling and procurement methods, and past relationships with foreign construction companies.

Mr. Breshna pointed out that A.C.U. is a division of the Ministry of Public Works and therefore, is obligated to accept all work from the government as first priority. Thus, their availability for other projects must be considered as questionable. It was for this reason that A.C.U.-K could not accept the contract for the new men's dormitory at Kabul University. A.C.U.-K could possibly be available for the women's dormitory, since high governmental officials have been <sup>who</sup> involved, personally, in the selection of the proposed site.

Some of A.C.U.'s past achievements and current projects are as follows:

- A. Rozantoon Project at Charahee Sedarat
- B. Penal Institution for Ministry of Interior
- C. Afghan Insurance Company Building
- D. Archives of the Ministry of Foreign Affairs
- E. National Archives Building
- F. Presidential Palace #1, and Chehstoon Palace
- G. Nurses' Training Facility
- H. Post Office buildings
- I. Health Facilities for Ministry of Public Health
- J. Flight Information Center at airport
- K. A large textile factory in Kandahar (current)
- L. 700 ton/day cement factory in Herat (current)
- M. Japanese sponsored T.V. station in Kabul (current)
- N. Fourteen story Pension Building in Kabul (current)
- O. Various electrical power distribution installations ranging from high voltage (15,000 V.) to low voltage (380 V.)

A.C.U.-K has several methods of handling and procuring building materials, equipment and supplies. A.C.U.-K maintains warehouse facilities for up to a year's supply of some materials which have to be imported. This allows them to begin some jobs immediately upon signing the contract. Other imported materials, which sometimes take from three to six months for delivery, are ordered at the time of the signing of the contract.

Another method employed by A.C.U.-K, in regard to materials, is that of in-house production. The production unit or "Factories Department", is located on seventeen hectares of land in Puli-Charki, Kabul. Composed of several different factories, the department provides materials needed by project crews, and those

that are special orders for other clients. The factories include carpentry, stone-cutting, block-making, terrazzo, gravel-washing, and construction materials mixing plants. Some of the products manufactured, in addition to those indicated above are metal pipes of various diameters, seventeen varieties of concrete block, ceiling block and concrete fencing block.

A.C.U.-K has had an extensive history of joint ventures with German contractors working in Afghanistan. Mr. Breshna stated that A.C.U.-K would welcome the opportunity, is necessary to joint venture with an American Contractor. He stated that A.C.U.-K would benefit substantially in experience from such an association. He further suggested that the American company should be responsible for the administration, procurement of materials, and supervision of the project, while the Afghan Construction Unit would be responsible for the actual construction and labor force. The latter, apparently because of Afghan laws on laborers and wages, and the fact that A.C.U.-K would be more familiar with the individuals available for construction work than an American firm. It is to be noted that joint ventures with foreign firms are subject to the approval of the Government of Afghanistan.

#### The Banai Construction Unit

This company was established in 1967, by the Government of Afghanistan, under the jurisdiction of the Ministry of Public Works, to take up the construction of major civil engineering projects in Afghanistan. The company, over the years, has broadened its scope into other construction areas than civil engineering.

The organization of Banai is very similar to the Afghan Construction Unit, as is much of their work. Banai is headed by Mr. Ghulam Hossain Popal, Engineer. Mr. Popal apprised the members of the A-E Team of the status of some of the present work the company is engaged in at this time, cited numerous examples of past work,

and offered some valuable suggestions concerning the proposed dormitory facility. The Banai Construction Unit is currently trying to upgrade its facilities, capabilities and equipment, so as to be in stride with the Government of Afghanistan's seven year development plan. Mr. Popal cited examples of this goal, such as new cranes with high-rise capabilities, new tracks, bulldozers, tractors, scrapers, etc.

Banai Construction Unit, like its competitor A.C.U.-K, is obligated to set top priority on government projects. It too, has rejected some smaller projects due to the lack of available crews and time. However, it was stated that Banai has had to turn down other projects which did not meet their standards, or were too complex. Banai Construction Unit provides a separate crew for each project. Their major headquarters is located in Kabul, with a subsidiary headquarters in Herat. The number of crews depends mainly on the number of jobs.

The following, is a list of some of Banai's completed and current projects:

- A. Training Center for Ministry of Communications
- B. Court Building for Kabul Province
- C. Forest Research Station for the Ministry of Agriculture
- D. Hostel for nurses
- E. Renovation of Darulaman Palace
- F. Water supply project for Jalalabad and Herat cities
- G. Paktia Development construction project
- H. Industrial Estate construction project at Kabul
- I. Computer Center (current)
- J. Fire Station
- K. Dormitories for Nanagarhar University
- L. Medical Training Center at Kabul University (current)
- M. Cotton textile factory at Herat
- N. 200 bed regional hospital at Herat
- O. Slaughterhouse at Herat
- P. Dormitories at Jalalabad (current)
- Q. Presently bidding on the new men's dormitory at Kabul University

Banai maintains its own manufacturing plants, including mechanized carpentry shop, modern brick factory, and spare parts and tool facility. Banai purchases materials independently of the government, usually from foreign importers, on a low bid basis. Mr. Popal stated that the use of Japanese materials have been best for

Afghanistan in the past, because of the good relationships and much lower prices.

Banai Construction Unit has also had extensive experience with joint ventures with other foreign construction companies from Austria, Great Britain, Canada and Japan. There were no joint ventures, to date, with any American firms, but Mr. Popal could see no difficulty in such a relationship. He too suggested that the American company handle the paperwork, while Banai constructed the building.

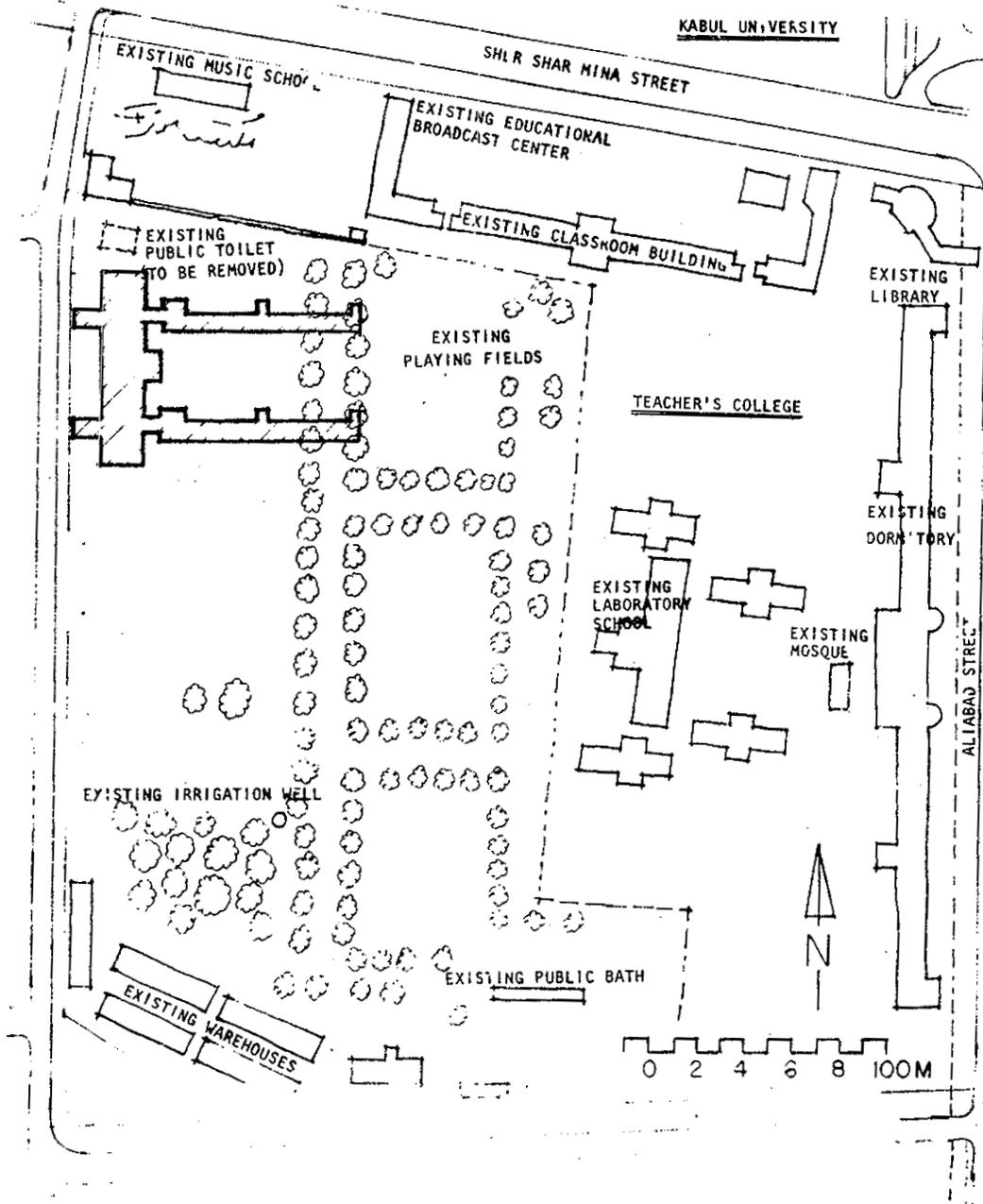
Mr. Popal suggested that since this project was being planned to have central heating, which has been used so seldom in Afghanistan, an American engineering firm design the system, and supervise its installation. This point was brought up numerous times in other discussions with various persons.

#### Summary

During the latter stages of the A-E Team's investigation into the capabilities of contractors, it was discovered that there were, contrary to earlier impressions, several private contractors in and around Kabul. However, these companies were too small and inexperienced to undertake a project of this magnitude.

The A-E Team, during its stay in Kabul, was able to see several buildings done by the two major construction units. The projects ranged from those which were completed and occupied, to those which were in various stages of construction. The two companies seemed to do an equal amount of work with the same degree of effectiveness. However, some officials and architects stated that the Afghan Construction Unit would be a wiser choice due to the probability of fewer major errors. The work and methods, although somewhat simplistic by United States standards, appeared to be satisfactory. The laborers in the various trades did acceptable work, but might require closer supervision than was evident at the time of the A-E Team's visit. The safety standards on the job site leaves much to be

desired. However, those buildings which were complete showed good and sometimes exceptional craftsmanship.



ALTERNATIVE BUILDING CONFIGURATION - 400 BED SCHEME A  
 PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE  
 KABUL UNIVERSITY, KABUL AFGHANISTAN USAID

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ALTERNATIVE BUILDING CONFIGURATION - 400 BED SCHEME A

NARRATIVE OF ADVANTAGES, DISADVANTAGES AND COST ESTIMATE

The most important advantage to this scheme is that all the dormitory rooms will have the much preferred southern exposure due to the single-loaded corridors. This proposal would require that only the support facilities, such as showers and toilets, storage, and stairs, be located on the north side of the corridor. These rooms require less natural light than the dormitory rooms. Another advantage is that the building is only three stories high, and does not present a problem for those who have to walk up to the second and third floors. The broad spacing of the two wings allows for easy penetration of the sun into the interior court, which is large enough for several passive recreation areas. This scheme does allow for future expansion by means of a similar but shorter building to the south.

There are a number of disadvantages to this proposed scheme, of which the most obvious is the excessively long corridors. The corridor as shown, would be 119 meters or 387 feet from the first student room to the last. This distance would require duplication of support facilities in order not to inconvenience any student in the everyday use of the facilities. Also inherent in this scheme is the problem of alienation of the students, themselves. There would be some difficulty in getting to know many persons on your floor, other than immediate neighbors. The long corridors do not invite travel beyond one's immediate needs. In addition to the aforementioned problems, this scheme increases maintenance problems, and could possibly require more personnel to do the same amount of work as a building half the size. Externally, the building, as shown, disrupts existing tree lines, roads and playing fields which add to the overall attractiveness of the site. Last, but not least, is the disadvantage of the increased costs of construction of this building due to a greater gross

area, longer foundations, exterior walls, windows and roofing.

The following are physical characteristics which affect the overall feasibility and approximate construction costs of the proposed scheme:

Gross Area - 10,810 SM = 116,748 SF\*

Total perimeter of foundation - 768.5 M = 2,498 FT.

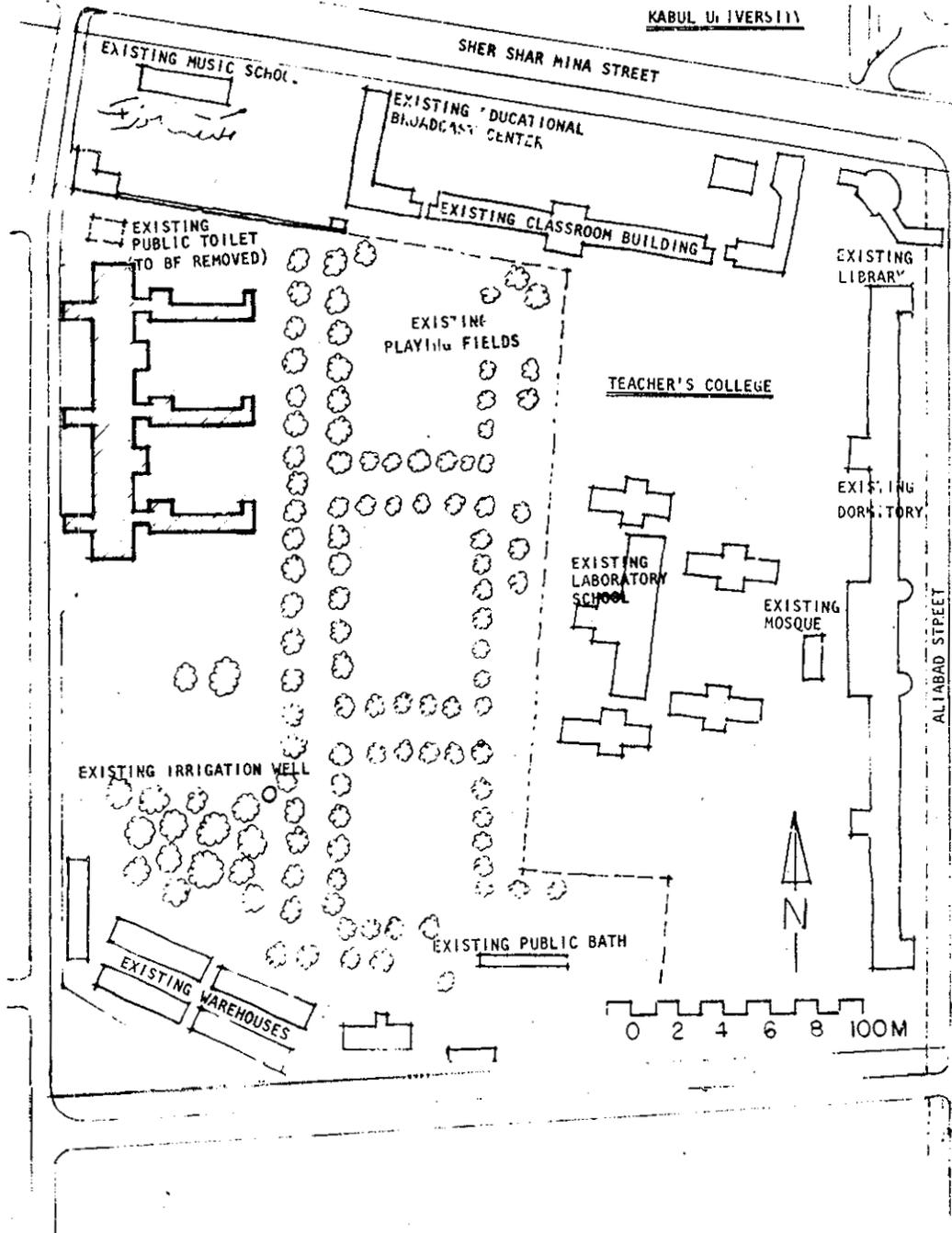
Three (3) stories high at dormitory wings only, plus partial basement or approximately 13 M (42 FT) above finished grade.

Total exterior wall surface area - 9,990 SM = 107,892 SF

Approximate construction costs at \$21 SF\*\*x116,748 SF = \$2,451,708

\* The gross area figure represents the actual area of the proposed building with fixed equipment only.

\*\* The square foot cost represents the cost of building construction current in Kabul, Afghanistan at the time of the A-E Team's visit in April and May, 1977.



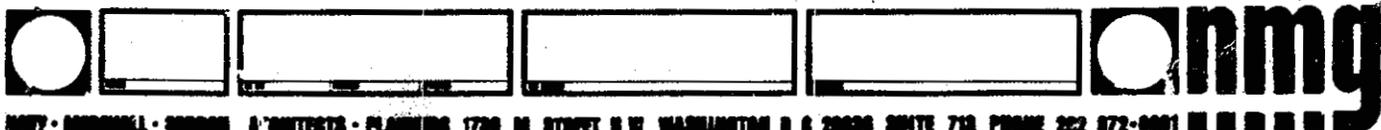
**ALTERNATIVE BUILDING CONFIGURATION - 400 BED SCHEME B**

**PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE**

**KABUL UNIVERSITY, KABUL, AFGHANISTAN**

**USAID**

KU 105



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ALTERNATIVE BUILDING CONFIGURATION - 400 BED SCHEME B

NARRATIVE OF ADVANTAGES, DISADVANTAGES AND COST ESTIMATE

The important advantage to this proposal is that all the dormitory rooms will have the commonly preferred southern exposure due to the single loaded corridors. This scheme would require that only the support facilities; showers and toilets, storage and stairs, be located on the north side of the corridor. These rooms require less natural light than the dormitory rooms. Another advantage is that the building is only three stories high, and does not present a problem for those who must walk up to the second and third floors. This scheme has relatively short corridors which allow for easier circulation by the students from one area of the building to another. There is a better opportunity with this plan for the students to mingle with others who are in other areas of the building. In addition, there is no increase in the number of stairs required, in any one corridor, to safely evacuate the building in the event of an emergency. The increased first floor public area allows for more and larger spaces to accommodate the students' and visitors' needs. The wide spacing of the three dormitory wings allows for full penetration of the sun's rays into the courtyards which provide for convenient passive recreation activities by the students and their guests. This plan does not interfere with the existing trees, roads and adjacent playing fields which make the facility more livable.

The disadvantages of this proposal include the increased building area; more showers, toilets, storage and stairs; more foundations, exterior walls, windows and roofing. The future expansion possibilities to the south are limited to a smaller building. In addition, this proposal increases operating, maintenance, maintenance personnel and overall construction costs of the building.

The following are physical characteristics which affect the overall feasibility and approximate construction cost of the proposed scheme:

Gross Area - 11,240 SM = 121,392 SF\*

Total perimeter of foundation - 798.5 M = 2,595 FT

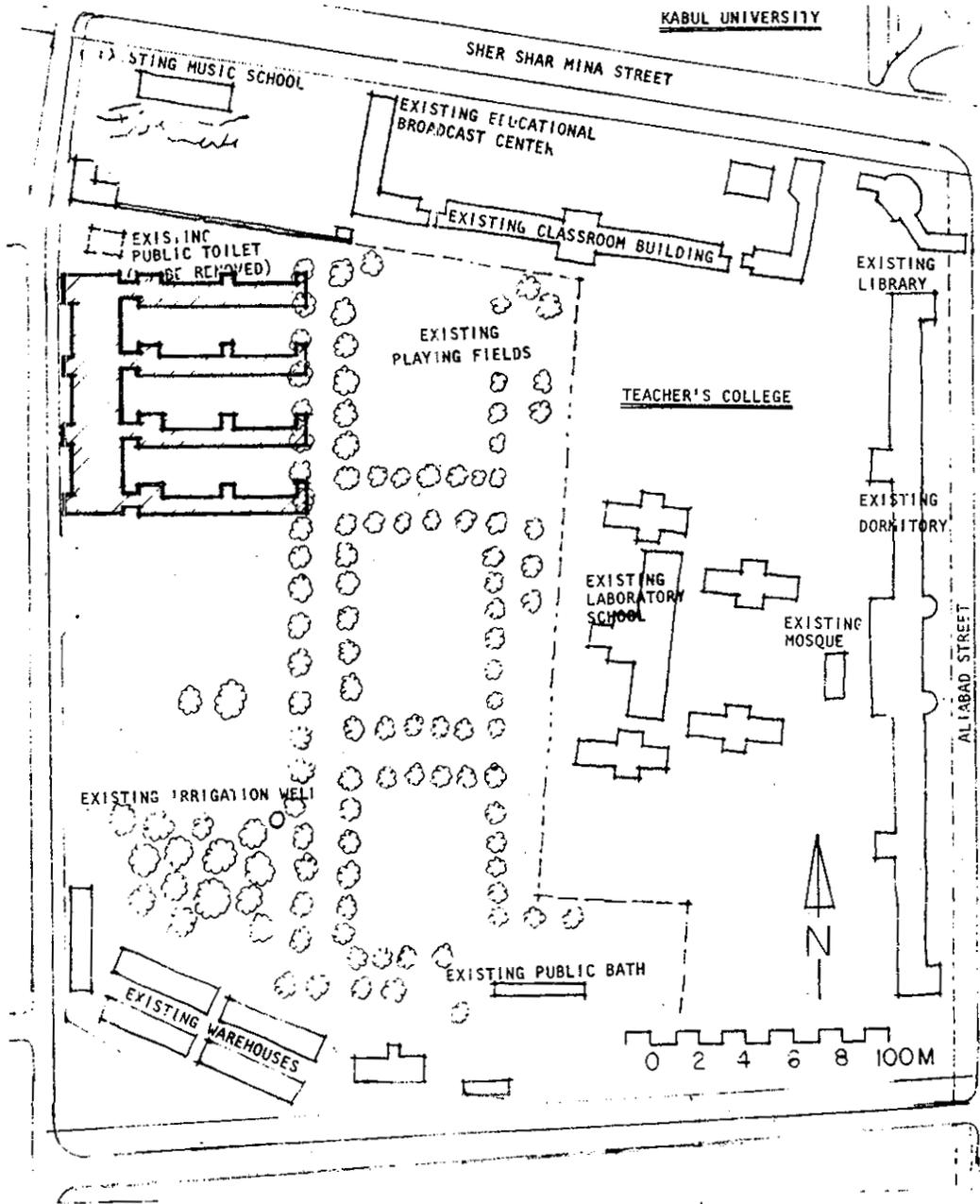
Three (3) stories high at dormitory wings only, plus partial basement, or approximately 13 M (42 FT) above finished grade.

Total exterior wall surface area - 10,380.5 SM = 112,109.4 SF

Approximate construction costs at \$21 SF\*\* x 121,392 SF = \$2,549,232

\* The gross area figure represents the actual area of the proposed building with fixed equipment only.

\*\* The square foot cost represents the cost of building construction current in Kabul, Afghanistan at the time of the A-E Team's visit in April and May, 1977.



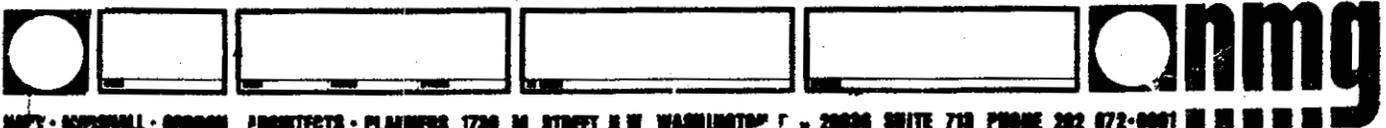
**ALTERNATIVE BUILDING CONFIGURATION - 800 BED SCHEME A**

**PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE**

KU 108

**KABUL UNIVERSITY. KABUL. AFGHANISTAN**

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ALTERNATIVE BUILDING CONFIGURATION - 800 BED SCHEME A

NARRATIVE OF ADVANTAGES, DISADVANTAGES AND COST ESTIMATE

The obvious advantage to this scheme is that all the dormitory rooms will have the much desired southern exposure due to the single-loaded corridors. As a result, only the convenience and circulation spaces, such as showers and toilets, storage, and stairs need be located on the north side of the corridor. These rooms, with their relatively short term usage, require less natural light than the dormitory rooms. The building is only three stories high, and does not present a problem for those who have to walk up to the second and third floors. The 18 meter spacing between the four wings is sufficient for easy penetration of the sun into the interior court without creating shadows upon an adjacent wing. The resultant spaces are large enough for small passive recreation activities.

There are a number of disadvantages to this proposed scheme, of which the most discouraging is the excessively long corridors. The corridor as shown, would be 119 meters, or 387 feet from west end to east end. This distance would require duplication of all convenience and circulation spaces so as not to cause discomfort to the students in the use of the facilities. This scheme also tends to cause the alienation of the students due to the difficulty in getting to know persons on the floor, other than immediate neighbors. The long corridors do not invite travel beyond one's immediate needs, and could pose severe security problems. In addition to the aforementioned problems, this scheme increases maintenance problems, and could possibly require more personnel to do the same amount of work as a building half the size. Externally, the building as shown, disrupts the existing tree lines, thus decreasing the beauty of the natural environment and increasing the landscaping cost by the cost of replacement with new specimens. This scheme also allows only a minimum amount of experience, with

a much smaller building or wing. Lastly is the disadvantage of the increased costs of construction of this building due to a greater gross area, longer foundations, exterior walls, windows and roofing.

The following are physical characteristics which affect the overall feasibility and approximate construction cost of the proposed scheme:

Gross Area - 18,995 SM = 205,146 SF\*

Total perimeter of foundation - 1,173 M = 3,812 FT

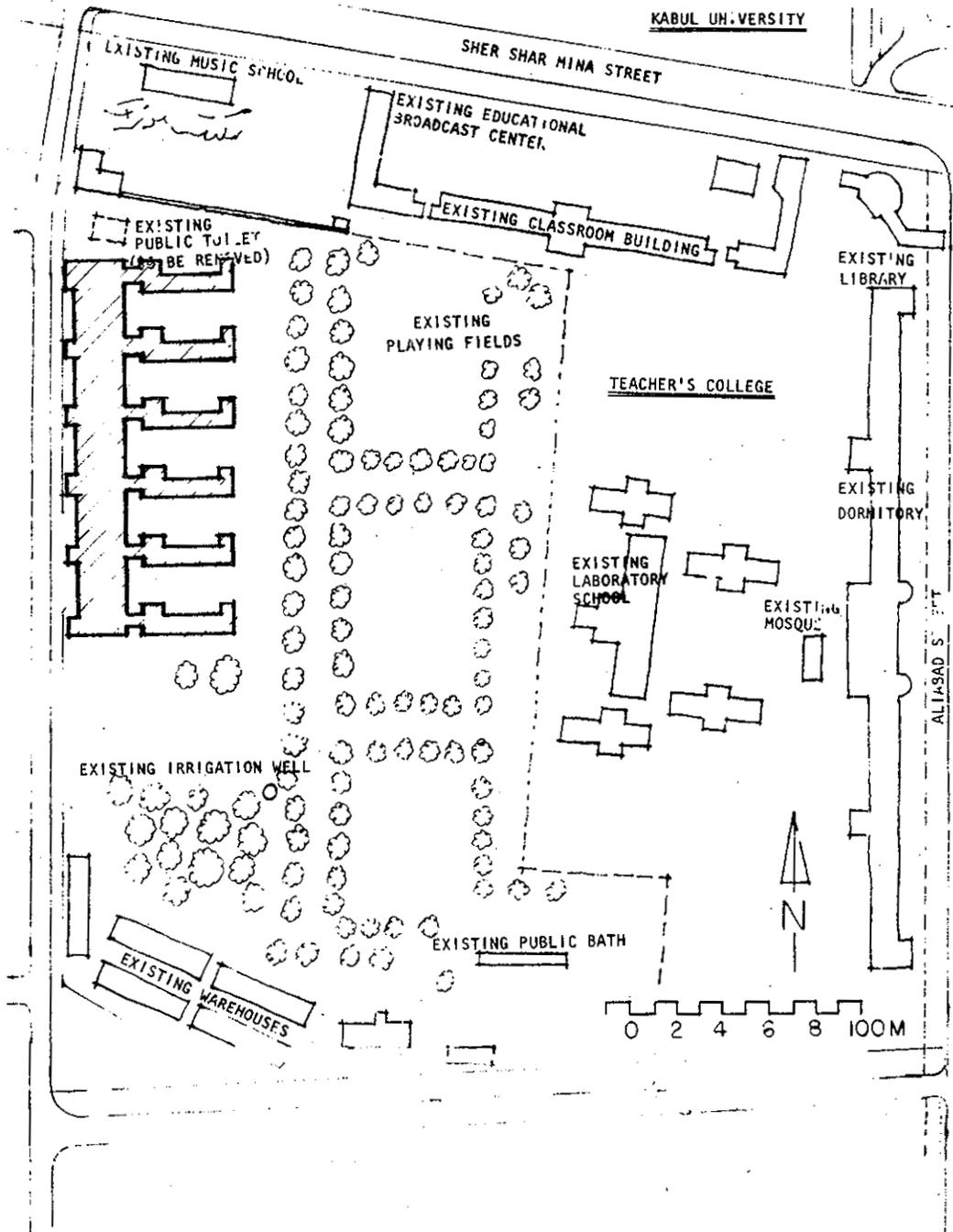
Three (3) stories high at dormitory wings only, plus partial basement or approximately 13 M (42 FT) above finished grade.

Total exterior wall surface area - 15,249 SM = 164,689 SF

Approximate construction cost at \$20 SF\*\* x 205,146 SF = \$4,102,920

\* The gross area figure represents the actual area of the proposed building with fixed equipment only.

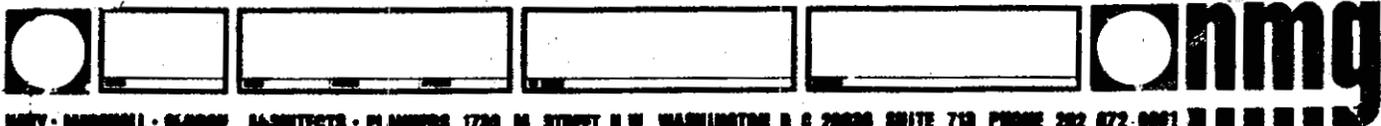
\*\* The square foot cost represents the cost of building construction current in Kábul, Afghanistan at the time of the A-E Team's visit in April and May, 1977.



**ALTERNATIVE BUILDING CONFIGURATION - 800 BED SCHEME B**

**PROPOSED WOMEN'S DORMITORY TEACHER'S COLLEGE SITE**  
**KABUL UNIVERSITY, KABUL AFGHANISTAN USAID**

KU 111



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ALTERNATIVE BUILDING CONFIGURATION - 800 BED SCHEME B

NARRATIVE OF ADVANTAGES, DISADVANTAGES AND COST ESTIMATE

This scheme has several advantages, of which the most important is that the dormitory rooms will have the much desired southern exposure due to the single-loaded corridors. This means that only the convenience and circulation spaces such as the toilets and showers, storage, and stairs, need be located on the northern side of the building. The nature and usage of these rooms demand less natural light than the habitable dormitory rooms. Since the building is only three stories high, no real problems exists for those who must walk up to the second and third floors. This scheme allows for easier circulation by the students from one wing to another, without excessive walking, thus providing greater opportunities for the students to mingle with each other. In addition, there is no increase in the number of stairs required in any one corridor, to safely evacuate the building in the event of an emergency. The increased first floor public area allows for more and larger spaces to accommodate the students' and visitors' needs. The 18 meter spacing between each of the six dormitory wings is sufficient for full penetration of the sun's rays into the courtyards. The five courtyards would be used for various passive recreation activities by the students and their guests. This plan does not interfere with the existing trees, roads and adjacent playing fields which make the facility more livable.

The disadvantages of this proposal include the increased building area; additional showers, toilets, storage and stairs; more foundations, exterior walls, windows and roofing. This proposal negates any future expansion possibilities to the south or to the east. In addition, this proposal increases the cost of operating and maintaining the building, requires more maintenance, internal staff and security personnel and the overall construction cost of the building.

The following are physical characteristics which affect the overall feasibility and approximate construction cost of the proposed scheme:

Gross Area - 23,239 SM = 250,981 SF\*

Total perimeter of foundation - 1,172 M - 3,809 FT

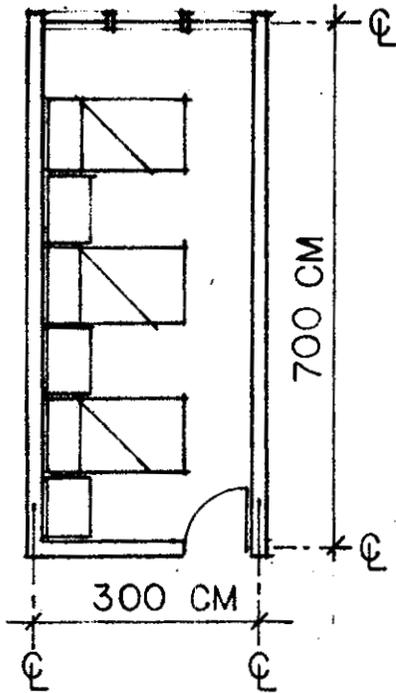
Three (3) stories high at dormitory wings only, plus partial basement, or approximately 13 M (42 FT) above finished grade.

Total exterior wall surface area - 15,236 SM = 164,549 SF

Approximate construction cost at \$20 SF\*\* x 250,981 SF = \$5,019,620

\* The gross area figure represents the actual area of the proposed building with fixed equipment only.

\*\* The square foot cost represents the cost of building construction in Kabul, Afghanistan at the time of the A-E Team's visit in April and May, 1977.



KU 114

ROOM CONFIGURATION - SCHEME 3A

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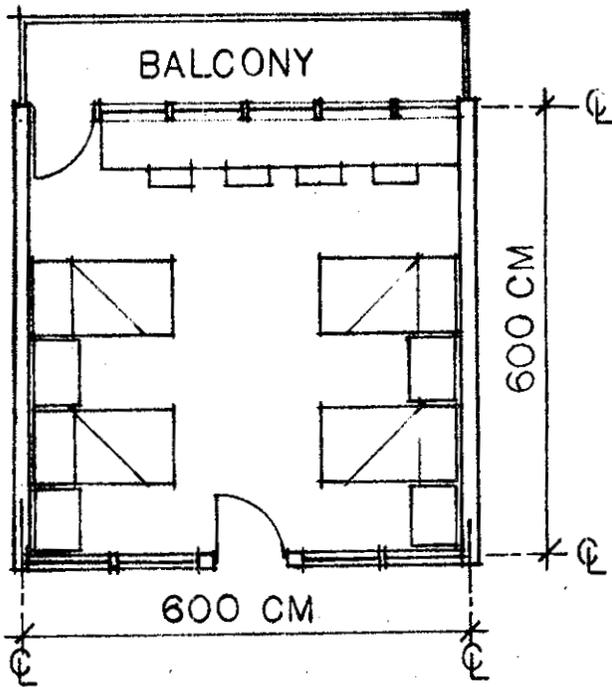
ROOM CONFIGURATION - SCHEME 3A NARRATIVE OF ADVANTAGES AND DISADVANTAGES

This layout has the advantage of having only three persons in the room. The smaller number is more conducive to a comfortable living atmosphere, with a minimum amount of disturbance by the roommates. Three occupants to the room allows for a more acceptable standard of privacy for the women students. The reduced width of the room consequently reduces the length of the building subjected to the exterior elements such as heat and cold.

Single beds and wardrobes or closets are provided for each student. Low indirect lighting is proposed at the sleeping areas, instead of general illumination. This is in keeping with economic and energy conservation principles.

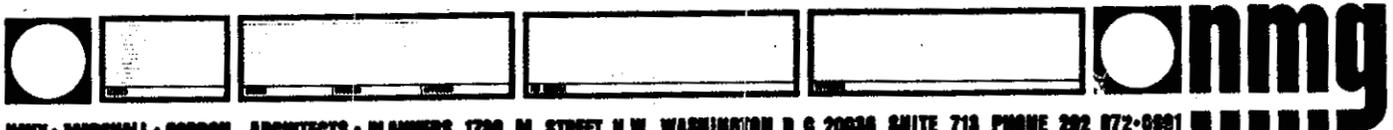
There are some disadvantages or negative aspects of the attached scheme. For example, there is no study area within the room. The room is not divisible into functional areas because of limited space dimensions, furniture arrangement, and the number of occupants. In addition, no expansion is permitted, due to width of the room.

As the room is three beds deep, there is little natural light at the bed closest to the corridor. The room is also too deep to allow for the provision of natural light via high windows at the interior corridor wall.



KU 116

ROOM CONFIGURATION - SCHEME 4A

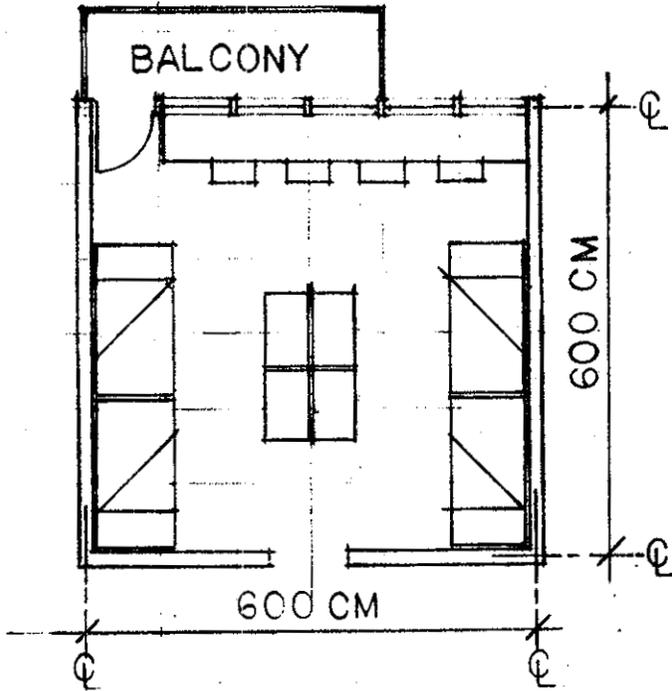


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## ROOM CONFIGURATION - SCHEME 4A NARRATIVE OF ADVANTAGES AND DISADVANTAGES

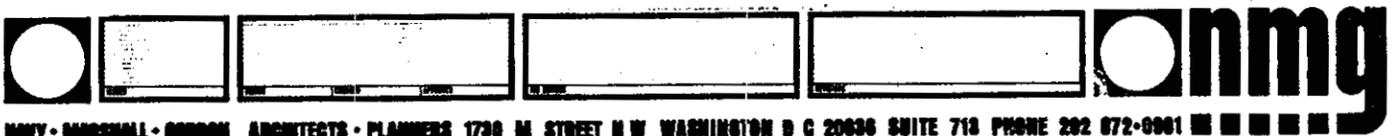
There are various advantages and positive aspects to this scheme. There is a study area within the room, proper, and it is located at the exterior wall where there is natural light available. The room furniture arrangement is flexible, so that the room may be subdivided to give a sense of privacy and individualism in the different functional areas. All of the beds are close enough to the windows to share the natural light and avoid any sense of confinement. Single beds, wardrobes or closets, study desks with drawers are provided for each student. Four occupants to the room allows for a more acceptable standard of privacy, at the same time, providing a more economical building. Local task lighting at the desks and low indirect lighting is proposed at the sleeping areas instead of general illumination. This method of lighting would conserve electricity and provide a more private atmosphere. High glass, and operable louvers are placed at the interior corridor wall to create a sense of spaciousness in the room and corridor, as well as to provide cross ventilation within the room. The balcony increases the room size visually, and provides for exterior relaxation and study opportunities. The balcony, when provided on the southern side of the building, allows for the shading of the rooms during the summer, but would not block the warming sun rays in the winter.

Some disadvantages of this layout are that the provision of high windows at the interior corridor wall may cause infiltration of noise from the corridor to the room. The balconies could not be provided on the north side of the building since it would block the warming rays of sun during the winter, thus making the dormitory rooms harder to heat as well as allowing snow to accumulate for long periods before eventually melting. In addition, balconies would add to the overall cost of the project.



KU 118

ROOM CONFIGURATION - SCHEME 4B



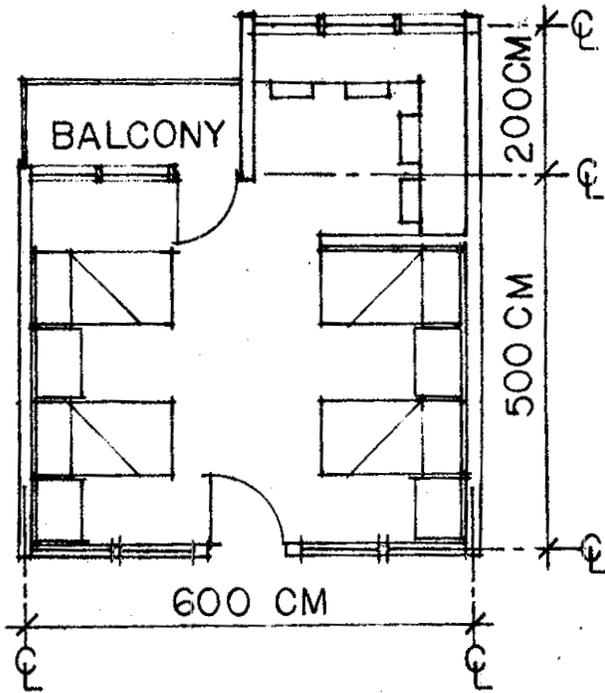
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ROOM CONFIGURATION - SCHEME 4B NARRATIVE OF ADVANTAGES AND DISADVANTAGES

The advantages of this scheme is that there is a study area within the room proper and it is located at the exterior wall where there is natural light. Single beds, wardrobes or closets, study desks with drawers are provided for each student. Local task lighting at the desks and low indirect lighting is proposed for the sleeping areas instead of general illumination. This method of lighting would conserve electricity and provide a more private atmosphere. There are no windows provided at the interior corridor wall that would allow for noise infiltration. Four occupants to the room allows for a more acceptable standard of privacy, at the same time providing a more economical building, employing fewer rooms. The reduced depth of the rooms consequently reduces the costs of the building. The balcony increases the room size visually, and provides for exterior relaxation and studying opportunities. The size of the balcony allows for variation in the elevations of the building, thus providing a more interesting facade at a lower cost than a continuous balcony.

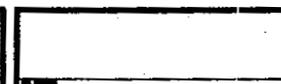
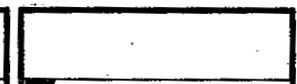
Various disadvantages to this layout exist. No expansion is permitted to the width of the room, and the beds can only be placed as shown unless the wardrobes are portable. The lack of high windows at the interior corridor wall does not allow the borrowing of natural light from the exterior windows of the dormitory rooms, therefore, more artificial light must be provided. In addition, due to the lack of windows at the interior corridor, there is no possibility of cross ventilation. The balconies can only be provided on the south side of the building, due to problems of unnecessary shading of rooms and snow accumulation if they were provided on the north side. The balconies would necessitate a different type of structural support than is typically employed in the building, and would add to the overall cost of the project.



KU 120

**ROOM CONFIGURATION - SCHEME 4C**




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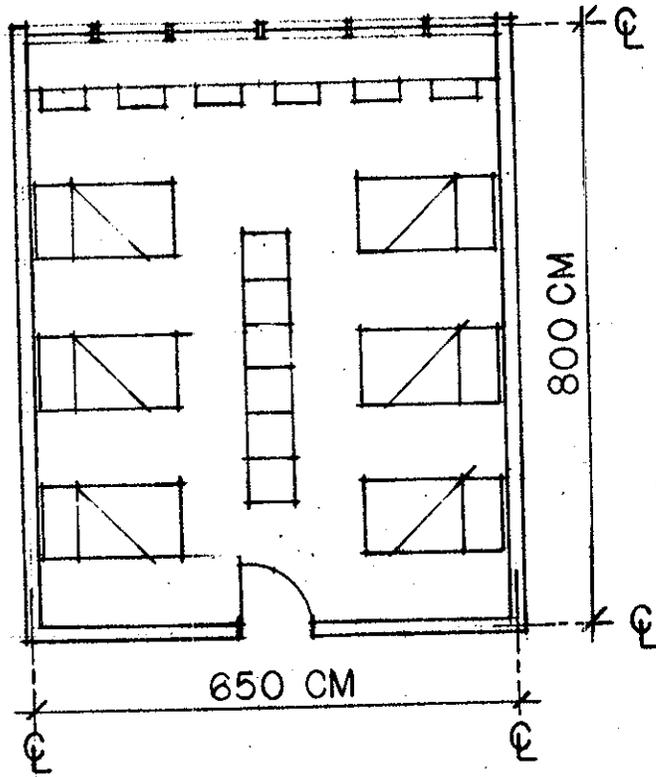
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## ROOM CONFIGURATION - SCHEME 4C NARRATIVE OF ADVANTAGES AND DISADVANTAGES

Some advantages of this scheme are that there is a study area adjacent to the room proper, and that it is located at the exterior wall where there is natural light. The study area is so located to minimize the disturbance of sleeping roommates when another is studying. The room furniture arrangement is flexible, and the room may be subdivided to give a sense of privacy and individualism in the different functional areas. Four occupants to the room allows for a more acceptable standard of privacy, and at the same time provides a more economical building. Single beds, wardrobes or closets and study desks with drawers are provided for each student. Local task lighting at the desks, and low indirect lighting at the sleeping areas are proposed instead of general illumination, for economical and energy conservation reasons. High glass, and operable louvers are placed at the interior corridor wall to create a sense of spaciousness in the room, and to provide cross ventilation within the room. The balcony increases the room size visually, and provides for exterior relaxation and study opportunities. The balcony, when provided on the south side of the building, allows for the shading of the rooms during the summer, but would not block the warming rays of the sun during the winter. The balcony and study area configuration allow for a more interesting facade than would be achieved with a flat facade.

There are a number of disadvantages to this scheme. No expansion is permitted due to the width of the room. The provision of high windows at the interior corridor wall may cause the infiltration of noise from the corridor into the room. The amount of natural light allowed into the sleeping area immediately adjacent to the study area is limited by the divider partition. The balconies could not be provided on the north side of the building since they would block the warming rays of the sun during the winter thus making the dormitory rooms

more difficult to heat, as well as allowing snow to accumulate for long periods of time before melting. The balcony and study areas also add to the depth of the dormitory wing, and increase the costs accordingly.



KU 123

ROOM CONFIGURATION - SCHEME 6A



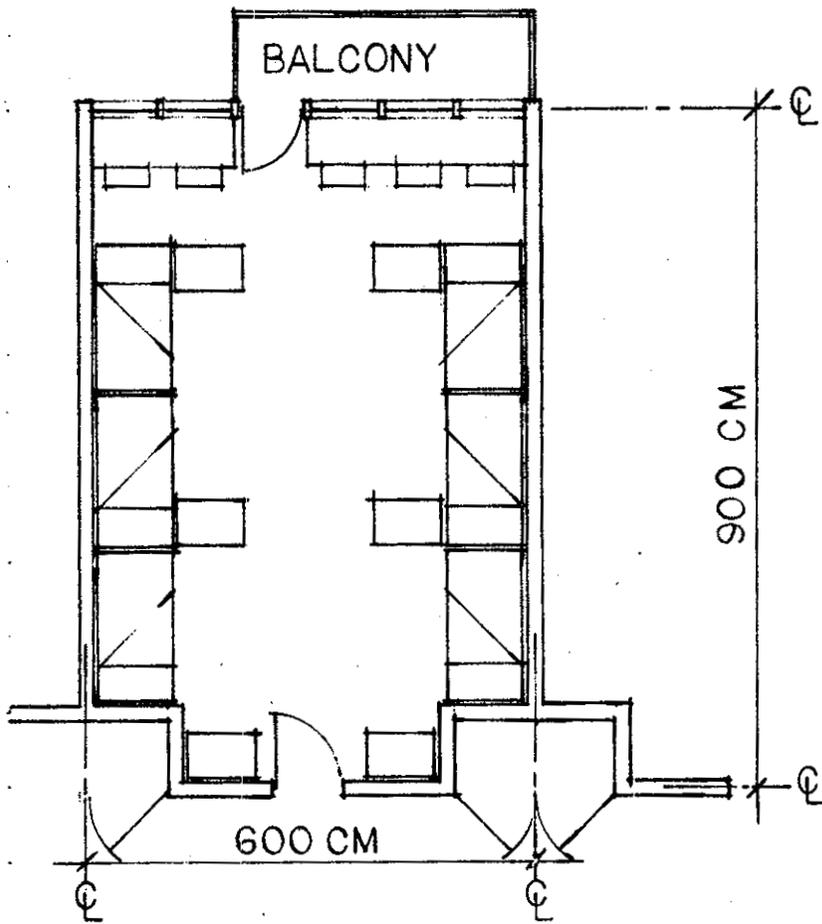
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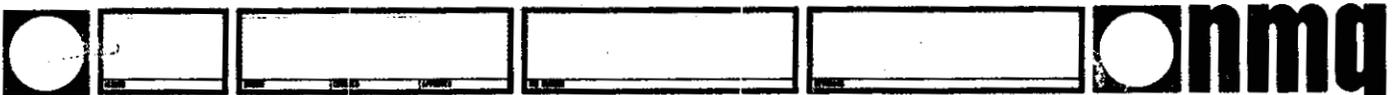
## ROOM CONFIGURATION - SCHEME 6A NARRATIVE OF ADVANTAGES AND DISADVANTAGES

Some of the positive aspects of this scheme are that there is a study area within the room proper, and that it is located at the exterior wall where there is natural light. The room furniture arrangement is flexible, and the room may be subdivided to give a sense of privacy and individualism in the different functional areas. Single beds, wardrobes or closets and study desks with drawers are provided for each student. Local task lighting at the desks and low indirect lighting at the sleeping areas are proposed in lieu of general illumination for economical and energy conservation reasons. Six persons to a room decrease the overall number of rooms required, which means a corresponding decrease in the cost of building and operating the facility.

There are various negative aspects to this scheme. For example, no expansion is permitted due to the width of the room. The room is three beds deep, therefore, little natural light is at the beds closest to the corridor. The lack of high windows at the interior corridor does not allow cross ventilation within the room, and prevents the borrowing of light from the room to the corridor. In addition, six occupants per room do not allow for a sense of individual privacy while sleeping or studying.



KU 125 ROOM CONFIGURATION - SCHEME 8B

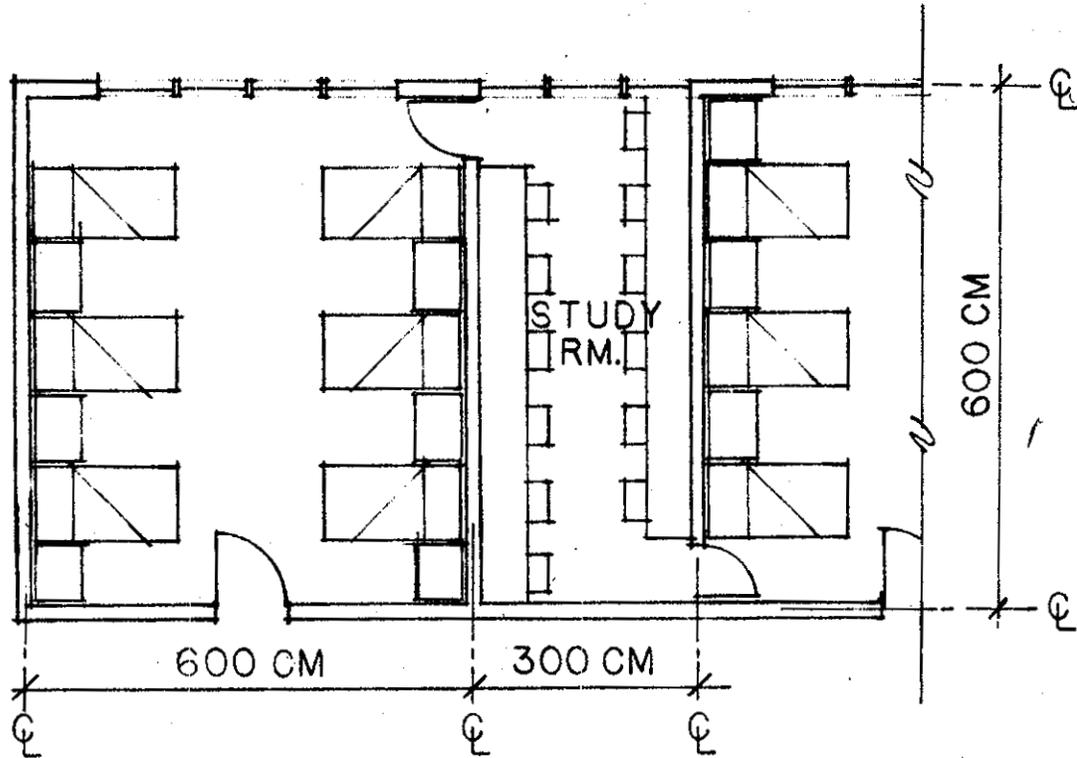


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ROOM CONFIGURATION - SCHEME 6B NARRATIVE OF ADVANTAGES AND DISADVANTAGES

Some of the advantages of this scheme are that there is a study area within the room proper, and it is located at the exterior wall where there is natural light available. The room furniture arrangement is flexible, and the room may be subdivided to give a sense of privacy and individualism in the different functional areas. Single beds, wardrobes or closets, and study desks with drawers are provided for each student. Local task lighting at the desks, and low indirect at the sleeping areas are proposed instead of general illumination for economical and conservation reasons. The balcony increases the room size visually, and provides for exterior relaxation and study opportunities. The balcony, when provided on the southern side of the building, allows for the shading of the rooms during the summer, but will not block the warming sun rays in the winter. Of considerable importance, six occupants per room decrease the overall number of rooms required, which means a corresponding decrease in the cost of building and operating the facility.

There are a number of major disadvantages to this scheme. No expansion is permitted due to the width of the room. The room is three beds deep, therefore, little natural light is at the beds closest to the corridor. The lack of high windows at the interior corridor wall does not allow cross ventilation within the room. Balconies could not be provided on the northern side of the building since they would block the warming rays of the sun during the winter, thus making the dormitory rooms more difficult to heat, as well as allowing snow to accumulate for long periods of time before melting. There is also the fact that six persons per room does not allow for a sense of individual privacy while sleeping or studying.



KU 127

ROOM CONFIGURATION - SCHEME 6C



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ROOM CONFIGURATION - SCHEME 6C NARRATIVE OF ADVANTAGES AND DISADVANTAGES

Some of the positive aspects of this scheme are that there is a study area adjacent to the room proper, and that it is located so as to have some natural light. The placement of the study area as shown, limits the disturbance of sleeping persons. Single beds, wardrobes or closets, and study desks with drawers are provided for each student. Local task lighting at the desks, and low indirect lighting at the sleeping areas are proposed in lieu of general illumination. This method of lighting would conserve electricity, and provide a more private atmosphere. In addition, six occupants per room would decrease the number of rooms necessary thereby decreasing, correspondingly, the cost of building and operating the facility.

Some of the negative aspects of the proposed scheme are that some parts of the study area are not at the exterior wall, where the use of natural light can be taken advantage of. The study area as shown, could accommodate twelve persons, which could make for difficult study conditions. No expansion is permitted due to the width of the room, and the room is three beds deep, which means that little natural light will be available for the beds closest to the corridor. The dormitory room and adjacent sleeping area as shown, make the building much longer, and therefore require more floors or wings. This would make the building more expensive to build, operate and maintain. There would be no cross ventilation in the room, due to the lack of windows at the corridor. Also, six persons to a room does not allow for a sense of individual privacy.

## SUMMARY RECOMMENDATIONS

In the preceding sections of this report, the A-E Team has attempted to document every item which might have bearing on the subject of the proposed Women's Dormitory Project at Kabul University. As a result of this extensive documentation, it would seem too repetitive to attempt to summarize, even in brief, all the important information; findings, Kabul University objectives, preferences, requirements and decisions; as well as alternatives and recommendations. However, a few key points should be re-stated for emphasis.

Through investigation and observation, it became evident that there is an unquestionable need and desire for a modern, comfortable dormitory facility for the female students of Kabul University. It can be seen by any and all who have visited the University campus, or have perhaps read this report, that the female students are not subject to the best possible treatment or living conditions. As stated previously, the existing women's dormitory conditions are deplorable, unhealthy, not conducive to a proper learning atmosphere, and unequal to those of the men. The new women's dormitory project would at least eliminate the physical problems in the female students' environment, although, it cannot, by itself, eliminate the social and cultural problems which may exist.

The resident population of the building as requested by Kabul University officials, needs to be set at a minimum of 800 beds. Future projections of the University illustrate that, by the time the building is ready for occupancy, there will be this many students requiring campus housing. It can be assumed, however, that the need could conceivably be even greater. This would depend upon the success of the Government of Afghanistan's program to improve the educational level of the women throughout its provinces. Kabul University's female student population will increase or decrease in proportion to the success or failure of the national educational program.

A dormitory for 800 or more students improves the economic feasibility of the project, but if the available funding is not sufficient at this time, then a 400 bed unit building would allow for minimal future expansion possibilities. Of course, the major shortcoming of this alternative, other than that it barely satisfies the needs of the present population, is that a second or third building would have to duplicate many elements of the first. These buildings would also prove to be more expensive to build and maintain due to increased prices of materials, labor and importation costs

It should be noted that inherent in any proposal for a 400 bed dormitory, is the problem that the student population will still be increasing during the planning and construction phases of other buildings or additions. This will necessitate the crowding of more people into the dormitory rooms, over-burdening the toilet, shower and laundry facilities, as well as over-crowding the dining room. Any additional persons above the number for which the facility is designed, would result in a situation similar, if not as bad as the conditions existing in the present dormitory compounds. The objectives of the proposed Women's Dormitory Project, as seen by all concerned, are to alleviate the inadequacies in the female students' housing, not to plan for new ones.

The A-E Team will not attempt to recommend any particular Architect-Engineering or contracting firm for the proposed Women's Dormitory Project since there is too much pertinent information which is unavailable at this time. Other sections of this report do, however, cover such areas as the selection process by which the Government of Afghanistan, Kabul University, and/or U.S.A.I.D. will award the contracts for the design and construction of the facility. These matters, of course, will take an indeterminate amount of time to be processed in both the United States and Afghanistan. It is hoped by all concerned, that this project will be expedited in the shortest possible time. Conceivably,

conditions at the existing women's dormitory will worsen as time and increasing population take their toll.

Notwithstanding the above questionable time period required for contract award, it is anticipated that the project should take approximately two and one-half (2-1/2) to three (3) years from design through occupancy. Of this period, it can be expected that six months will be taken up by the design, necessary reviews, and final construction documents. The actual construction could conceivably take two (2) to two and one-half (2-1/2) years, barring any extremely long delays due to inclement weather, importation of materials and equipment, etc. The scheduling, procurement and delivery of materials to the construction site, must be well planned in advance of a building's construction. This is especially true in Afghanistan in light of the country's particular location, climate and transportation problems. Contingencies must be a necessary part of the preliminary planning of the various phases of the building in order to best expedite the project in the shortest time possible. It is this factor which dictates that as much local material, equipment and manpower as possible be utilized on the project. This will not only decrease the time that the Afghan women have to live in their unpleasant surroundings, but also make for sound economics for the sponsor.

In order for this project to be a total success, the Afghans must and should participate fully with U.S.A.I.D., in all aspects of planning, approving and building the dormitory. This joint effort should prove satisfactory to both parties in that the Afghans will get a dormitory building which is capable of handling their needs, and U.S.A.I.D. will get their money's worth in a good product and the resultant good relationship with the host country. The Kabul University campus has several examples of buildings which were designed and built by foreigners (some of which were American), with little regard for the

traditions, customs or environment of the Afghans. It is to be hoped that those lessons have been learned, and will be eliminated from this project.

	Approximate Common Equivalents		Conversions Accurate to Parts Per Million	
<b>LENGTH</b>	1 inch 1 millimeter 1 inch 1 centimeter 1 foot 1 meter 1 yard 1 meter 1 mile 1 kilometer	= 25 millimeters = 0.04 inch = 2.54 centimeters = 0.3937 inch = 0.3 meter = 3.3 feet = 0.9 meter = 1.1 yards = 1.6 kilometers = 0.6 mile	Inches × 25.4* millimeters × 0.0393701 Inches × 2.540000 centimeters × 0.393701 feet × 0.3048* meters × 3.28084 yards × 0.9144* meters × 1.09361 miles × 1.60934 kilometers × 0.621371	= millimeters = inches = centimeters = inches = meters = feet = meters = yards = kilometers = miles
<b>AREA</b>	1 square inch 1 square centimeter 1 square foot 1 square meter 1 square yard 1 square meter 1 square mile 1 square kilometer	= 6.5 square centimeters = 0.16 square inch = 0.09 square meter = 11 square feet = 0.8 square meter = 1.2 square yards = 2.590 square kilometers = 0.3861 square miles	square inches × 6.4516* square centimeters × 0.155000 square feet × 0.0929030 square meters × 10.7639 square yards × 0.836127 square meters × 1.19599 square miles × 2.58998 square kilometers × 0.386138	= square centimeters = square inches = square meters = square feet = square meters = square yards = square kilometers = square miles
<b>VOLUME</b>	1 cubic inch 1 cubic centimeter 1 cubic foot 1 cubic meter 1 cubic yard 1 cubic meter 1 quart (liq.) 1 liter 1 gallon 1 liter	= 16 cubic centimeters = 0.06 cubic inch = 0.03 cubic meter = 35 cubic feet = 0.8 cubic meter = 1.3 cubic yards = 1 liter = 1 quart (liq.) = 4 liters = .25 gallon	cubic inches × 16.3871 cubic centimeters × 0.0610237 cubic feet × 0.0283168 cubic meters × 35.3147 cubic yards × 0.764555 cubic meters × 1.30795 quarts (liq.) × 0.946353 liters × 1.05669 gallons × 3.78541 liters × 0.264172	= cubic centimeters = cubic inches = cubic meters = cubic feet = cubic meters = cubic yards = liters = quarts (liq.) = liters = gallons
<b>MASS</b>	1 ounce (avdp) 1 gram 1 pound (avdp) 1 kilogram 1 short ton 1 metric ton	= 28 grams = 0.035 ounces (avdp) = 0.45 kilogram = 2.2 pounds (avdp) = .9078 metric ton = 1.102 short tons	ounces (avdp) × 28.3496 grams × 0.0352740 pounds (avdp) × 0.453592 kilograms × 2.20462 short tons × 0.907029 metric tons × 1.10250	= grams = ounces (avdp) = kilograms = pounds (avdp) = metric tons = short tons

## METRIC CONVERSION TABLE

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