A WAR MEMORIAL FOR CAMBRIDGE, MASS.

submitted sept. thirteenth, nineteen hundred and fifty, in partial fulfillment of the requirements for the degree master in architecture.

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b. of arch. u. of minnesota 1948

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LETTER OF SUBMITTAL

PART ONE
The Idea of Living Memorials
   The Symbolic and Monumental 1
   The Living War Memorial 6
   For Cambridge - A Living Memorial 9

PART TWO
The Site
   The Sites Considered 13
   The Site Selected 20
   A Program for Land Acquisition 25

PART THREE
The Problems
   The High School Plant Considered
      The Existing High School Plant 29
      Needs of the High School Plant 31
   The Recreational Plant
      The Gymnasium and Its Related Spaces 33
      The Swimming Pool and Its Related Spaces 41
      Circulation Problems 58

PART FOUR
The Solution
   Summary 61
   Program of Requirements 62
   A Memorial Feature 69
   Jurisdiction and Administration 70
   Estimate of Costs 71
   Financing the Project 72

ACKNOWLEDGEMENTS

APPENDICES

REFERENCES
ILLUSTRATIONS
following page

MEMORIALS - Arc de Triomphe, Shaw Monument, Lincoln Memorial, Washington Monument. 2

MEMORIALS - Monument of Lt. Norman Prince, Memorial Gate, Memorial Flagpole, Minute Man, Memorial Window. 3

MEMORIALS - World War I Memorial at Gibraltar, Bok Singing Tower, Tomb of the Unknown Soldiers, Memorial at Chativre Thierry, West Point Monument. 4

AMERICAN BATTLE MONUMENTS - Memorial for Tunis, Africa, Hamm, Luxembourge, Henri Chapelle, Belgium, Florence, Italy, Margraten, Holland, Manilla, the Philippines. 5

PROPOSED WAR MEMORIAL FOR CAMBRIDGE by Marcel Breuer 9

THE SITE SELECTED AND ITS ENVIRONMENT 20

APPROACHES TO SITE 21

VIEWS OF LIBRARY PARK 23

VIEWS OF AREA TO BE ACQUIRED IN PHASE NO. 1 OF REDEVELOPMENT PROGRAM 26

VIEWS OF BUILDINGS ON SITE 30

EXISTING SWIMMING FACILITIES 49

TABLES

TABLE 1. MINIMUM LAND REQUIRED FOR PARKING AND OUTDOOR ATHLETIC PLANT 22

TABLE 2. LAND ACQUISITION COMPARATIVE COSTS 25

TABLE 3. STUDENT ENROLLMENT AT CAMBRIDGE HIGH AND LATIN SCHOOL 34

TABLE 4. ENROLLMENT IN PH. ED CLASSES AT CAMBRIDGE HIGH AND LATIN SCHOOL 35

TABLE 5. ATTENDANCE AT POOLS OPERATED BY THE CITY OF CAMBRIDGE 50

TABLE 6. ATTENDANCE AT Y.M.C.A. POOL 51

SCHEMATIC FLOW DIAGRAM OF PARTICIPANT CIRCULATION 60
MAPS following page

MAP 1. SITES CONSIDERED FOR CAMBRIDGE WAR MEMORIAL 14
MAP 2. GYMNASIUM AND SWIMMING FACILITIES IN CAMBRIDGE 15
MAP 3. PLAYGROUNDS IN CAMBRIDGE 15
Land Acquisition Map 25
Redevelopment Program, Stages 1, 2, 3 27
MAP 4. PLAYFIELDS IN CAMBRIDGE 32
MAP 5. POPULATION SPOT MAP 49
Cambridge, Massachusetts
September 1, 1950

Professor Lawrence B. Anderson, Head
Department of Architecture
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Anderson:

I should like to submit my thesis study, "A War Memorial For Cambridge, Massachusetts", in partial fulfillment of the requirements for the Degree of Master in Architecture from the Massachusetts Institute of Technology.

Respectfully submitted,

Leonard S. Parker
The project which inspired this thesis is a very real one. It has been the subject of heated debate from the chambers of the City Council to the parlors of Cambridge citizens. Details have been argued, but there never has been any disagreement from the veteran's organization on down, as to the type of memorial wanted. A utilitarian building to serve the community as a "living war memorial" was the unanimous desire.

The idea that war memorials should advance the ideals for which wars are fought, instead of merely immortalizing the men who fought and died in these wars, is not a new one, I found, but has grown slowly through the years until today it has taken on the force of popular conviction.

The Symbolic and Monumental:

The history of civilization through the centuries has been one of war with intermittent periods of peace. Battles have been fought, men have died, and those who lived felt the need to commemorate—so monuments were built to immortalize these battles and the men who died fighting them.

Fiske Kimball writing in the New York Times Magazine \(^1\) claims that "the urge to memorialize is old and deep." He points to the

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crudely renewed
the salient holds its own,
paid are its
dim defenders by the pomp;
paid, with a pile
of self-complacent stone,
the armies who
endured that sullen swamp.
pyramids the ancient Egyptians built as monuments to house the spirit and preserve the bodies of their dead Pharaohs. Memorials since then have taken other forms, from the cairns, mound, pylon, obelisk, to the arch, column, statue, cross, altar and tower. Some of these forms were inspirational in concept, powerful in their emotional impact, and designed of materials that could withstand the assault of time. Some also had a practical value in their application of engineering principals. Few, however, were in any sense utilitarian, not even in what Joseph Hudnut\(^2\) called, their "service to the spirit."

In our time that is to say the last half century, we have had countless examples of war memorials carried out with much the same purpose as in ancient times, i.e. to immortalize battles that were fought and the men who died in these battles. Many are not as simple and direct in their conception—often becoming purely ornamental and rather inartistic. It would be impractical, even impossible for the purposes of this thesis to mention them all, but it might be well to list a few of the better known monuments which serve as war memorials. The ultimate requirement, and incidently in my opinion, the only justification for a monument that is purely symbolic, and just as purely non-utilitarian, is that it should be a "work of Art." The greatest memorials quite naturally fulfill this requirement.

1) The Winged Victory of Samothrace.
2) Arc de Triomphe in Paris.
3) The Lion of Lucerne.

4) Reformation Monument in Geneva.
6) The Lincoln Memorial in Washington, D. C.
7) The Shaw Monument in Boston.

There are other memorials not nearly on as grand a scale as those mentioned above, which have nevertheless by their simplicity and unobtrusiveness, achieved a dignity that compels one to respond favorably toward them. The flagpole, a simple symbol of commemoration is yet an inspiring one, and is often used as a tool of the monument builder. The stained glass window and the simple plaque, are other devices which have produced pleasant results, depending of course on the sensitivity of the artist and the skill of the craftsman. Sculpture, as relief or statuary, has always been a popular expression of remembering and has often been misused. Many times two or more of these devices have been used in combination.

1) Memorial Flagpole, Duluth, Minn.
2) Memorial Window and Reredos, West Point, Chapel.
3) Memorial Gate at Harvard University.
4) The Minute Man, Concord, Mass.
6) Standing Figure of Lincoln, Chicago, Ill.

Memorials following World War I were not always as diminutive as those mentioned above. Many projects, architectural in nature with sculptural embellishments, were used to express the commemorative intention. The column, the tower and the even more imposing
MONUMENT SURMOUNTING SARCOPHAGUS OF LT. NORMAN PRINCE WASHINGTON CATHEDRAL

MINUTE MAN CONCORD MASS.

MEMORIAL GATE HARVARD U.

MEMORIAL WINDOW AND REREDOS WEST POINT CHAPEL

MEMORIAL FLAGPOLE DULUTH MINN.
"temples of memorial" were built in, "effective setting to provide for the annual meeting or act of commemoration, such as placing of a wreath on appropriate days of memorial." Among these are the following:

1) World War I Memorial at Gibraltar
2) Memorial at Chateau Thierry, France
3) Bok Singing Tower, Florida
4) West Point Monument
5) Bunker Hill Monument, Boston
6) Tomb of the Unknown Soldier, Arlington Cemetery.

In November of 1949 there were exhibited publicly for the first time 15 memorial designs that will commemorate the soldiers killed in World War II. These memorials will be erected within the next two years to mark the 15 permanent United States cemeteries throughout the world. The architectural firms privileged to execute this great task were chosen by the American Battle Monuments Commission, with the Philadelphia firm of John Harbeson as Architectural Consultants. The architects chosen were subject to approval by the National Fine Arts Commission.

The salient directives which produced the designs demanded that they be "dignified....durable....somewhat monumental....with special care against the penetration of water....and against condensation." At the exhibition the bulletin summed up the project in this sentence. "The war memorial exhibition is the absolute expression of American

WORLD WAR I MEM' L. AT GIBRALTOR

BOK SINGING TOWER FLORIDA

TOMB OF THE UNKNOWN SOLDIER ARLINGTON CEMETERY

MEMORIAL AT CHATEAU THIERRY FRANCE

WEST POINT MONUMENT
architecture designed to memorialize our dead on foreign soil."

Both the manner in which the architects were selected and the results they produced have been the subject of much controversy. These memorials could hardly be called "living memorials," yet there may be some justification for having them otherwise. However, in terms of art the majority of opinion seems to be that the memorials as proposed are sadly lacking. The Architectural Forum 4 sums up this opinion in a review of the exhibit by saying ".... no one was likely to claim that these cemeteries had matched the sad triumph of war by any comparable triumph of Art."

Six of the fifteen projects are pictured on the following page. They are:

1) Memorial for Tunis Africa
   by Moore and Hutchins.

2) Hamm, Luxembourg
   by Voorhees, Walker, Foley, and Smith.

3) Henri Chapelle, Belgium
   by Holabird, Root, and Burgee.

4) Florence, Italy
   by McKim, Mead, and White.

5) Margraten, Holland
   by Coolidge, Shepley, Bulfinch, and Abbott.

6) Manilla, the Phillipines
   by Gardner Dailey.

It seems quite evident that there are those who firmly believe even today, that the true expression of commemoration is by "a pile of self-complacent stone"; through symbolism, monumentality, and nothing else.

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MEMORIAL FOR TUNIS AFRICA

HAMM LUXEMBOURG

HENRI CHAPELLE BELGIUM

FLORENCE ITALY

MAGRATEN HOLLAND

MANILLA THE PHILLIPINES
The Living War Memorial:

Despite some scattered die-hard opposition, it seems increasingly evident that most memorials erected after World War II have been, and those that have yet to be built will be, quite different from those built after other wars. The chasm between the ideals for which wars are fought and the actual state of the world we live in, accounts at least in part, for the determination to make the war memorial serve the announced purposes of war.

The Toleda City Journal\(^5\) published the results of a survey of the war memorial plans of 500 cities and towns throughout the country. This article reports that "the determination that the war memorial be useful is an outstanding note of the survey." Mr. Stevenson, the author, finds a stubborn resistance has been set up against the "purely ornamental" type of memorial. He is not sure if this is a rebellion against expensive and useless structures, or if it means that people desire to "help provide a better cultural and physical framework for the future generation."

Zilpha C. Franklin, editor of the Community Service Section of the National Municipal Review, \(^6\) calls the living war memorial a "revolt against symbolism", and says that municipal authorities must take it into account. She writes:

> "Without organized leadership, with little publicity or other promotional aids, the American people who have remained on the home front, millions of them working in war plants, began talking about war memorials that are community usable."

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The trend for "living memorials" is not one which is without dissenters, however. There are men, distinguished in their fields, who are still on the side of the symbolic and monumental. Notable among these are Fiske Kimball, director of the Philadelphia Museum of Art; Philip C. Johnson, formerly of the Museum of Modern Art; the late Paul P. Cret, chairman of the War Memorials Committee of the American Institute of Architects. For Mr. Cret, the purpose of a memorial is "the perpetuation of the memory of a great man or great event to future generations, and the form the memorial must take therefore, is a clear and arresting expression of the commemorative idea wrought in enduring materials." Mr. Johnson agrees and while he is resigned to the fact that there will be "a large crop of useful or what are called 'living memorials', they will nevertheless fall short of adequacy, since merely calling them memorials will not make them such." Mr. Johnson offered his idea of a proper monumental memorial, namely, memorial mounds built perhaps, with bulldozers. 7

On the side of the living memorial again, is Dean Hudnut of Harvard University. His philosophy is a deeply perceptive humanism. He writes: 8

"We might let go of all idea of permanence and take something...which is for now a symbol that we are trying to build a civilization of free men....Whatever contains and sustains that for which our soldiers fought is a commemoration more eloquent and enduring than the loftiest monument....I am not for Memorial Convention Halls, or Memorial Baseball Fields.....but I am for some act, immediate and unequivocal in every town and village....Build something simple and considered, useful to the community--

park, playground, schoolhouse, music hall, theatre, library, church accessible to all faiths; not for practical convenience, but for service to the spirit....There are buildings which lift the community out of the business of getting and spending....Not war for that can never be recorded."

What the veterans themselves feel about living memorials is appropriately expressed in the following letter written by a Marine Corp Sergeant during World War II. It sums up rather nicely the convictions that most people today have about war memorials in general and living memorials in particular. This letter was published in the Saturday Evening Post. 9

"Dear Editor: Recently in the newspaper of a big West Coast City, I saw an article about a proposed World War II Memorial. It discussed approximate costs, and had a map showing the proposed location. Now, this is not model city; like most big cities it has plenty of slums and needy children.

"This monument to be dedicated to our revered dead should be stopped. The money could go toward slum clearance, child clinics or any one of a thousand useful projects.

"Take it from a serviceman who has been in combat overseas and will be going back shortly, we don't want to be commemorated by any showy and useless pile of marble. We'd much rather see our children benefit by large, well-equipped parks, or perhaps a new lighting system or better desks in their classrooms--or anything really worthwhile.

"During the early 20's, a friend of mine took several trips through France. There she saw beautiful marble and vases with inscriptions that ran 'To Our Heroic Dead', 'They Died That We Might Live In Peace', and so on. In one place there was a sunken garden with a fountain and other fancy features, and a hired caretaker to keep the lawns cut and the flowers trimmed. It was all very expensive and very beautiful. The money could have kept a small hospital going. People of moderate means were inclined to feel that these memorials were unnecessary and somewhat vulgar. So do I.

9. Saturday Evening Post, October 7, 1944.
"The easiest prospect for a high-geared salesman is one who has had a close relative killed, and so misguided citizens influential in city and state politics often succeed in putting over a huge white monument--huge white elephant--in the midst of need and poverty. Those who have lost sons, husbands or brothers should remember that real improvements can also be specifically dedicated to their dead. For instance, it has long been customary to give rooms and beds in hospitals in the name of a loved one. 'They Died That We Might Live In Peace' would look a lot finer over the entrance to a slum children's playground than on an alabaster vase, and any man in the service would be prouder to have one small swing in that playground than all the marble-columned temples that ever wasted good space, time, and money.

S/Sgt. R. V. W., USMC"

For Cambridge--A Living War Memorial:

Cambridge, like many other cities in the United States had decided as early as 1944 that a memorial to the cities' World War II dead was an obligation not to be overlooked. The war was still raging in both theatres of operation when debate was started in the City Council chambers as to what the expression of the memorial should be. This debate culminated with the decision that a monument, expertly designed and executed would be satisfactory. Marcel Breuer, who at that time was a Professor of Architecture at Harvard University was invited to submit a fitting design for such a monument.

The illustration of Mr. Breuer's submittal in model form is shown following this page. It was to be a Memorial Plaza located in the path of a pedestrian thoroughfare in the Cambridge Common. It's plan was a small square 50' x 50', surrounded by low stone benches and paved with flagstone. Placed within this square plaza were several vertical sheets of rough and unbreakable plate glass, to compose translucent space divisions and to articulate the area as a whole. The names of servicemen and women were to be baked into
proposed war memorial for Cambridge by Marcel Breuer
the surface of the glass screens, to be lit up at night by spot-lights from beneath the stone benches. Peter Blake in his book, *Marcel Breuer, Architect and Designer*, said of this conception, "...Breuer achieved an architectural solution without esthetic compromise, a complete work of art, a pure space....he succeeded in circumscribing and defining space without destroying it."

Breuer's monument might have been accepted and built, had it not been for the protests of the veterans themselves. With the end of the war, these veterans returned to Cambridge and settled down to "rehabilitation." Many joined one of the several veterans' organizations in Cambridge and it was through these organizations that their protests were voiced. They objected strenuously to the building of a memorial that was merely monumental and symbolic and drafted resolutions to this effect which were submitted to city officials. Their desire was that if a memorial were to be built, it be utilitarian in nature—a living memorial.

The city officials recognizing this mandate requested that a veterans' advisory committee be appointed to assist them in arriving at the necessary decision toward achieving this end. This committee represented all of the veterans' organizations and worked with various city agencies. After considerable investigation into what this living memorial should be, it was recommended by the Veterans' War Memorial Advisory Committee that the building should include a swimming pool, a gymnasium, a skating rink, and "other recreational facilities." The Honorable Edward Crane, mayor of Cambridge, pledged himself to work for the fulfillment of this man-
date, while campaigning for his election to office.

With this major decision accepted it was then necessary to arrive at other decisions pertaining to site selection, building program, financing, etc. Here again the veterans' organizations were extremely helpful. Further investigation revealed that a skating rink, though a desirable feature would not be feasible in the proposed building program. The cost of its construction was prohibitive. Also the area of land necessary to hold such a structure dictated that it be located in an outlying section of Cambridge. This was opposed to the desire that the Memorial be centrally located. The building program then, as finally—but not irrevocably, proposed, was to contain the following three basic elements.

1) A gymnasium and its related spaces.

2) A swimming pool and its related spaces.

3) A memorial feature.

The last of these three elements was considered to be very important to the overall program by the veterans' organizations. It is their contention that a living memorial can very easily end up being just another "high school gymnasium", with the memorial idea losing its spiritual identity and significance, if it is not given a physical identity of its own in a form more dynamic than a cornerstone or plaque. It is agreed, however, that even this element could achieve a utilitarian purpose if it is properly handled.

The Veterans' War Memorial Advisory Committee on May 5, 1948 requested the staff of the Cambridge Planning Board to assist in the selection of a site for the War Memorial building and appointed
an Advisory Subcommittee on Site Selection. The Planning Board, collaborating with this subcommittee conducted a comprehensive survey of possible sites. The results of this survey were published in a brochure entitled "War Memorial Site Survey." It was recommended that the location for the memorial be, "the corner of Trowbridge Street and Cambridge Street where Felton Hall now stands."

Tentatively this site is the one considered by the City of Cambridge as the most suitable. Subsequent to this decision a Boston architectural firm was requested, or volunteered, to submit preliminary plans of the proposed memorial for approval. An advisory committee of prominent Cambridge citizens were appointed by Mayor Crane to assist him and at this writing plans of a very preliminary nature have been prepared, presented to this committee and discussed. No final action has as yet been taken.

It is the opinion of the author that the importance of the action taken by the people of Cambridge in demanding that the memorial to the soldier of the last war be a living memorial, lies not so much in what the end result will be, but rather in the fact that here in Cambridge as elsewhere in the United States there seems to be a shying away from monuments that do "eye service" to the memory of our dead soldiers, and nothing more. A memorial, useful to the families of the soldiers who died that will in no way suggest to our young people that war is in any way glorious or romantic, but will be what its name implies—a building to memorialize not the act of war but rather the men who died fighting it. It seems likely that Cambridge will have such a memorial.
an extremely difficult problem to solve in the scope of this project was the selection of the site which would embody and enhance the function and the spirit of a war memorial building for Cambridge.
The Sites Considered:

Tantamount to a mandate was the declaration of the Cambridge Veterans' War Memorial Advisory Committee that the Memorial "should be a utilitarian building containing a swimming pool, gymnasium, and other recreational facilities." ¹ In view of this, the factors which greatly influenced the selection of the site for the proposed building, may be summarized as follows:

1. The people of Cambridge have long needed a revitalization of their recreational plant. There is a serious shortage of both indoor and outdoor recreational areas. The Memorial which will in some small measure be a step in that direction must be so located that it will be easily accessible to the most number of people in that area of Cambridge which has the greatest need for these facilities.

2. The problems of transportation to and from the recreational area, the ever present problem of traffic congestion, and the accessibility to the people, both children and adults, who intend to reach the memorial on foot must be considered. Public transportation should be close by, with the site favorably located to it. Automobile traffic should be considered as to the availability of land for parking purposes. Particular consideration should be given to lo-

cating the memorial where traffic congestion is not already or foreseeably will not become a problem. This, of course, would directly tie in with the safety of the children and adults in reaching the building without great hazard and inconvenience.

3. To select a site where the land costs would not be prohibitive to the city is also an important factor. The high land values in the city of Cambridge make it so, since from a practical standpoint any site selected that would entail high cost of land acquisition would not be a feasible one.

4. The practical consideration that Cambridge is a city steeped with tradition must be taken into account. Disregard for this tradition in the selection of a site would meet with sufficient opposition to stall a program of development, though the good of the program could not be questioned. Therefore, an attempt to circumvent or completely avoid this opposition, in order to achieve the good, would appear to be in order.

Bearing in mind the qualifications stated above, a number of sites were studied throughout the city of Cambridge. The majority of those considered are at present owned by the city. These sites roughly fall into two categories; "outlying sites" and "central sites". Of the "outlying sites", eleven fall in East Cambridge along the river, and in the Fresh Pond and Clay Pit areas; seven fall in West Cam-

2. See Map 1 on the following page.
SITES CONSIDERED FOR CAMBRIDGE WAR MEMORIAL.

1. CIVIL WAR MEMORIAL HALL
2. TRIANGLE AT PEABODY SQUARE
3. CAMBRIDGE COMMON
4. MT. AUBURN & BOYLSTON ST'S
5. M.T.A. YARDS
6. CORP. BURNS PLAYGROUND
7. RINDGE TECH-BIBRARY GROUNDS - CAMBRIDGE HIGH & LATIN SCHOOL.

OUTLYING SITES
CENTRAL SITES
SURFACE TRANSPORTATION
SUBWAY
bridge, three of these being on property which is privately owned. It was the opinion of the Cambridge Planning Board that these sites should be eliminated as possibilities for several reasons. The most important were as follows:

1. All the outlying sites are relatively difficult to reach for a large percentage of the city's population because of the distance.

2. Public transportation facilities to many of the sites are either inadequate or entirely missing.

3. Though there is a general lack of adequate recreational facilities in Cambridge, the outlying areas are most favorably located to the facilities that do exist, with the central area of Cambridge being the least favored in this respect. 3

4. An arbitrary, but nevertheless, important consideration is the request by the Veterans' Advisory Committee for the War Memorial that the Memorial Building be placed on a "prominent site, centrally located". Though this request has political implications it nevertheless is being respected and naturally the outlying sites fall out of this category as to central location.

5. In choosing a site for the proposed War Memorial it is important that the location of existing public swimming facilities be considered. As plans for the War Memorial include such facilities it is important that the building

3. See Map 2 on the following page.
PLAYGROUNDS
PUBLIC SCHOOL
AREA EFFECTIVELY SERVED BY ADEQUATE SPACE SHOWN BY 1/4 MILE RADIUS.
be located in an area that at present is most lacking in that respect. Swimming facilities are now available at Donnelly Field in East Cambridge, at Magazine Beach on the Charles River, and at Gerry's Pit in North Cambridge. Except for the semi-public Y. M. C. A. pool which is already used to capacity, the central part of the city is without public swimming facilities. This would seem to dictate that the new swimming pool be located somewhere in the Central Square—Harvard Square area.

With the elimination of the outlying sites there remained seven sites in the "central zone," which were given careful consideration. These sites with their apparent advantages and disadvantages are as follows:

1. Memorial Hall

**Advantages:**

a) Public transportation facilities very good.
b) Very well related to points of historical interest and to other memorials.

**Disadvantages:**

a) Heavy traffic on two sides. Approaches would be hazardous to pedestrians both adult and children.
b) Property is privately owned and would be costly to obtain.
c) Parking problem already acute would be aggravated by additional load placed on area by new War Memorial.
d) Property is hemmed in by Harvard grounds and the Memorial might lose its identity.
e) The property is on the fringe of a commercial area and not particularly well related to informal everyday use.
2. Triangle at Peabody Square

Advantages:

a) Public transportation facilities very good.

b) Extremely well related to the Common which in part serves as informal athletic field and also is well related to other points of interest.

c) The location is a very prominent one on a site owned by the city.

Disadvantages:

a) Heavy traffic would make approaches hazardous to people who intend to reach the Memorial on foot.

b) It would increase traffic congestion in a place where congestion is already an acute reality.

c) Parking would be a serious problem.

d) The area is an extremely noisy one and the Memorial would need extensive acoustical treatment adding to the cost of the building.

e) The property is in the center of a section with heavy traffic and not suitable for informal everyday use.

3. The Cambridge Common

Advantages:

a) Adequate land owned by the city for both Memorial and playground space.

b) Transportation facilities good.

c) Parking space could be provided on grounds.

d) Historical significance of site would add to the prominence of the Memorial.

Disadvantages:

a) Heavy traffic would make approaches to Memorial hazardous.

b) Would increase traffic congestion in the area.

c) Noise control would add to initial building costs.
d) Most important is opposition to the use of the historical Common for anything else. The park is undoubtedly a needed asset to this section of the city and the space is a very pleasant one. "Sentiment" is a practical deterrent of any plans for building on this site.

It might be noted here that land somewhere on the periphery of the Common, relating the War Memorial to it, might be a possibility, but investigation of the area found it extremely expensive and with a high density of population per acre. Dislocation of this population at this time would not be advisable. The assessed valuation of this surrounding property was also prohibitive.

4. Corporal Burns Playground

**Advantages:**

a) Located in area not too heavily traveled.

b) Has very pleasant location overlooking Charles River.

**Disadvantages:**

a) Land at present being used as a playground, and is needed in that capacity to serve the school and neighborhood.

b) Site is extremely limited in area and would not serve the purpose unless much more land were acquired.

c) Public transportation facilities are not easily available.

5. Mt. Auburn and Boylston Streets

**Advantages:**

a) There is sufficient unused space in the vicinity to provide for parking and possibly playfields.

b) Easily accessible by public transportation, both surface and subway.

**Disadvantages:**

a) Traffic congestion in the vicinity.
b) Proximity to M.T.A. yards would present noise control problem.

c) Land privately owned in heavily built up commercial area. Has high assessed value of over $300,000.

6. Metropolitan Transit Authority Yards

Advantages:

a) Central and prominent site with an attractive river frontage.

b) Easily accessible from both surface and subway transportation.

c) Site is large enough to provide outdoor and indoor recreation spaces plus adequate parking space.

Disadvantages:

a) The yards cannot be removed until the subway is extended to North Cambridge.

b) Even if it were feasible to build the Memorial over the yards expense would be prohibitive.

c) Noise control would present a problem.

7. Library Grounds—Cambridge High and Latin School

Advantages:

a) Almost all land is at present owned by the city of Cambridge. That section not owned, including Felton Hall, has low assessed value and can be acquired by the city for comparatively little cost.

b) Is centrally located to all parts of Cambridge and well served by transportation facilities. The Cambridge Street trackless trolley and the Broadway bus pass by. It is five minutes walking distance from Massachusetts Avenue, and less than fifteen minutes walk from Harvard Square.

c) The site is located in an area which desperately needs recreational facilities. The neighborhood holds 20,000 residents not including university students all in a radius of within one-half mile.

d) Library park affords a pleasant green space which would enhance the quality of the building. This type of landscaped setting is difficult to find in Cambridge.
This location adjoining the Cambridge High and Latin School would provide the opportunity of equipping the school with a desperately needed athletic plant. They have at present very little plant and what they do have is outdated and inadequate. (This will be covered more fully later.)

Disadvantages:

a) Land is very limited. Deed restriction limits use of Library Park.

b) Parking is a problem. There is at present no space available for adequate on site parking.

The Site Selected:

On the basis of this analysis the site selected for the proposed Cambridge War Memorial Building was the Library Park-Cambridge High and Latin School Site. It must be noted here that the author was influenced in this selection by his desire that this work be of practical use to the agencies that are presently engaged in planning the Memorial Building. A Veteran Subcommittee on Site Selection working with the Cambridge Planning Board had previously recommended the site in question. Their recommendations were approved by both the City Manager's Office, and the Veterans' War Memorial Committee.

The site is about one-half mile walking distance from Harvard Square and about three-quarters mile from Central Square. The area is bounded on the north by Cambridge Street, on the south by Broadway Street. The east boundary is Ellery Street and west is Felton Street. There are two intermediate streets that basically divide the site into three sections.

1. The Rindge Technical High School bounded east and west by Irving Street and Felton Street respectively.
2. The Central Library and Library Park bounded east and west by Trowbridge Street and Irving Street respectively.

3. The Cambridge High and Latin School bounded on the east and west by Ellery Street and Trowbridge Street respectively.

Because section No. 1 is completely covered by Rindge Technical High School it could not be used as building ground. Section 2 holds the Central Public Library and though there is land available on either side, this land is restricted in its use. (This will be touched on more fully later.) Land immediately available for use is the north portion of the Cambridge High and Latin School section. It is on this portion of land that the new War Memorial building will be placed. Though about 75% of this land is owned by the city there is still a part of it that is privately owned. This part is marked "A" on the Land Acquisition Map which can be found following page 25. The city intends to buy this property before embarking on the building of the Memorial. On the property in question stands an apartment building called Felton Hall. It was built in 1878 and contains thirty-five small apartments which are occupied by fifty-four persons almost half of which are transient university students. There are only two children in the building. The plot contains 24,000 square feet of land and is assessed at $17,300; the building itself is assessed at $22,700 or about $650 per apartment, making a total assessed value of $40,000 for this property. On the extreme northeast corner of the site there exist five residences. These are at present occupied by eight families. The plot contains 19,130 square feet of land having an assessed value of $16,300, the
THE SITE SELECTED AND ITS ENVIRONMENT

1. Cambridge High & Latin School.
3. Central Library.
4. Felton Hall.
5. Holy Ghost Hospital.
6. Municipal Hospital.
7. Civil War Memorial Hall.
8. Harvard University.
9. Residential Areas.
LOOKING WEST ON CAMBRIDGE STREET

LOOKING NORTH ON TROWBRIDGE STREET

LOOKING NORTH ON ELLERY STREET
houses being assessed at $12,100, making a total of $28,400 for this property. The city can therefore acquire the privately owned portions of the site for its assessed value of $65,400 and intends to do so.

The site for all practical purposes is a level one, and the soil condition lends itself to the type of construction needed. The area is zoned as a residential C-2 district, and Municipal building, park or playground, or recreation building are approved in such district.

The disadvantages inherent in this site have to do with the limited amount of land available for adequate outdoor athletic areas, for both high school and community use, and for parking space that would be necessary to serve spectator activities for both high school and general public. An estimate of the space needed for these functions are; for parking of 200 cars--50,000 square feet; for recreation and outdoor athletic spaces 225,000 square feet. Though the latter figure falls short of National Recreation Association Standards it would still suffice for the needs of the high school if some spaces were designed to serve more than one activity.

The land now occupied by the Central Public Library and by the surrounding Library Park seemed to be the obvious answer to the need for more land. However, there are several considerations that prevent its use. These are:

1. The Central City Library.
2. The Rindge deed restriction.

4. See Table No. 1 on following page.
<table>
<thead>
<tr>
<th>Minimum Land Required</th>
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<tr>
<td>for Parking and</td>
</tr>
<tr>
<td>Outdoor Athletic Plant</td>
</tr>
</tbody>
</table>

**Parking:**

Space required for 200 cars parked diagonally. Each car requires approximately 250 square feet.

Parking space required, approximately..................50,000 sq.ft.

**Outdoor Athletic Plant:**

Running track, football field
Combination, approximately............................150,000 sq.ft.

Baseball diamond,
Regulation size, approximately..........................42,000 sq.ft.

Softball diamond,
Regulation size, approximately..........................28,000 sq.ft.

Seating for 2000 spectators,
Bleacher type, approximately............................5,000 sq.ft.

Total outdoor area required......................275,000 sq.ft.

1. **The Central City Library**

   This library building was started in 1887 and was completed in 1889; a wing was added in 1894 and in 1903 the stacks were completed. The building can roughly be said to be sixty years old. It is still a very sound structure and is kept in good repair. However, it is generally agreed that the facilities provided in the building are very inadequate, and plans are being projected to add on to the present structure and remodel some of what already exists. There has recently been talk of relocating the Central Library. Upon investigation however, I found that there is little likelihood of this happening in the near future. The consensus of opinion seemed to be that the library would remain where it is for at least another twenty-five years. Therefore, any plans to use the land on which the Library now stands could not be realized for at least that length of time.

2. **The Rindge Deed Restriction**

   Another consideration is the deed restriction that exists concerning the Library grounds. This land was willed to the city by Mr. Frederick H. Rindge, whose good will toward Cambridge took concrete form on many occasions through gifts to the city of other lands and buildings, notably Rindge Technical High School, Rindge Athletic Field, the Public Library and others. This deed restriction limits the use to which the library grounds may be put. (See Extract from Rindge Deed, Appendix B.) Though the deed is not
VIEWS OF LIBRARY PARK
legally binding it seems fairly certain that the City of Cambridge will remain morally obligated to respect Mr. Rindges' wishes in this case.

"It would be absolutely unthinkable to use the Library Park site for any purpose that was not intended by Frederick Rindge as stated in the deed. This deed though not legally binding will be respected by the City of Cambridge. Though the heirs of Frederick Rindge might consent to using the site for other purposes, it is not felt that the City of Cambridge has the moral right to disregard his wishes." 5

At present that area of Library Park in question is being put to very good use as a green oasis for play and rest by the mothers with young children and by the old people of the neighborhood. It could not be contemplated to remove this area from their use, without first providing another place equally as pleasant to take its place. This would be difficult to do as green open spaces are at a premium in the city.

Even if these restrictions toward obtaining land did not exist, or if for some reason we chose to ignore them, the land available in Library Park would not be adequate to meet even minimum requirements for recreation spaces as recommended by the National Recreation Association.

The next logical step, therefore, seemed to be the acquisition of land on the periphery of the site which could be put to that use. With this in mind a study was made of the land adjacent to the site. In selecting land the following factors were considered.

1. The initial cost of acquisition.

5. Statement by Mr. John A. Daley, City Solicitor for City of Cambridge, in interview with author.
2. The use to which this land is presently being put.

3. Its relationship from an architectural and planning standpoint to the grounds that will carry the new War Memorial Building.

The site map following this page adequately describes the land considered. Table No. 2 gives a breakdown of the assessed land acquisition costs.

A balance of the three considerations cited above indicated that the land between Ellery and Dana Streets, and Cambridge and Broadway Streets, designated on the map as "Area B", was the land best suited to our purposes, for the following reasons.

1. Its total area of 245,601 square feet came closest to the area needed.

2. Its average assessed value per square foot was lower than any of the other sites considered.

3. The land is being used exclusively for residential purposes all of which are of the 2 and 3 family types.

4. Its relationship to the site of the proposed war memorial is the most favorable. The streets do not cause a traffic hazard and the land is readily accessible from both the high schools and the new building.

A Program For Land Acquisition:

It became evident after interviews with Mr. Mark Fortune of the Cambridge Planning Board that it would be a practical impossibility to acquire all this land at this time. The two main reasons for this are apparent. The initial cost of acquiring the land in one lump would be prohibitive. The dislocation of the residents living in the area would work a hardship on them and would meet with
## LAND ACQUISITION
### COMPARATIVE COSTS

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<td>E</td>
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<td>136,900</td>
<td>36,000</td>
<td>172,500</td>
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</table>
POSSIBILITIES FOR LAND ACQUISITION

AREA BY SECTIONS
A - 42,830 SQ. FT. (TOTAL)
B - 245,601 SQ. FT. (TOTAL)
C - 164,753 SQ. FT. (TOTAL)
D - 82,625 SQ. FT.
E - 65,776 SQ. FT.
considerable opposition. There is still a housing shortage in Cambridge and until more housing becomes available, dislocation would not be feasible.

For the purposes of this thesis and, it is hoped, for the realization of a war memorial that will serve the ultimate needs of the community, a coordinated and comprehensive program of land acquisition, demolition, and building seems to be the only answer. A reasonable, though admittedly arbitrary period of 25 years was selected for the completion of this program, which will be divided roughly into three phases. These phases which would embrace the acquisition of land, the demolition or repair of existing structure, and the building of new structure, are as follows:

**Phase I (1950-1952)**

Acquisition of Areas "A" at an assessed cost to the city of $65,400 or $1.53 per square foot.

Tearing down of existing Girl's Gymnasium in the old "Latin School Section".

Construction of the new War Memorial Building.

**Phase II (1952-1960)**

Acquisition of Area "B-1" at an assessed cost of $46,400 or $1.40 per square foot.

Construction of new classroom wing and high school library extending across Ellery Street onto Area "B-1".

Demolition of old "Latin School" section of the Cambridge High and Latin School.

Conversion of that land to use as outside pool terrace and additional park space.
VIEWS OF AREA TO BE ACQUIRED IN PHASE NO. 1 OF REDEVELOPMENT PROGRAM.
Phase III-A (1960-1965)

Acquisition of Area "E" at an assessed cost of $172,500 or $2.61 per square foot.

Conversion of that land to use as on site parking space and small athletic spaces such as tennis, badminton, horseshoes, etc.

Phase III-B (1965-1975)

Acquisition of remaining land "B-2" and "B-3" at an assessed cost of $372,000 or $1.65 per square foot.

Closing off of Ellery Street to traffic.

Conversion of these spaces to an outdoor athletic plant which will include running track, football, baseball and softball diamonds, spectator bleachers, etc.

Demolition and relocation of the existing Central City Library.

Conversion and landscaping of that entire area to a park.

The advantages of this type of programming are apparent. There would of course be a 25 year period of cost dispersion, and a corresponding period of gradual dislocation of the residents on the land in question. The length of the program and its timing do not demand that structures which are at present in usable shape be torn down. If properly handled the end results would achieve a unity of planning and architectural elements that would be highly successful. Finally, a consideration that is often neglected in planning a new building. The program as outlined would allow for extreme flexibility in future planning of the area in question. In any educational institution the existing program of activities is not a final one. During the lifetime of a building it can be
expected to change. This is especially true of the high school in question whose recreational facilities have been extremely limited and have in turn limited the program of activities. It would be a mistake to design too rigidly around the existing program of activities. To plan a new building thus, is contrary to progress—it is designing today for yesterday. It is necessary to analyze the existing program and in addition to predict as far as possible its future changes so that the building and its surrounding spaces will be prepared to aid rather than hamper program growth. They must be adaptable to change and growth—flexible, expandable, for over the centuries the concepts of physical education and recreation have undergone a continual change.

The three phase program outlined allows for change to be made according to the need. If at some future time there is justification for revising and/or improving the long range plans, this can be done and in the hands of intelligent planners, the overall good of the original concept need not be impaired.
having selected a site and elaborated on its extension and the use to which its land will be put, it would next seem to be in order to consider the peculiar problems peculiar to this project.
The High School Plant Considered:

Having selected a site and elaborated on its extension and the use to which its land will be put, it would next seem to be in order to consider the problems peculiar to this project. It is my contention that any approach to the problem of the War Memorial building on this site that does not consider its relationship to the high schools both from a functioning and aesthetic standpoint would not be the correct one. As stated before, one of the major justifications for using this site is that the war memorial facilities will be used in providing the students of the public high schools with sorely needed physical education facilities, and perhaps lead directly to a revamping of those facilities, both recreational and academic that already exist. I therefore made a careful study of these facilities in order to determine the needs of the schools before approaching the design of the memorial building itself. The conclusions I reached as to present facilities and future needs may be summarized as follows.

The Existing High School Plant:

1. Rindge Technical High School is an excellent school with adequate facilities for indoor recreation and physical education. However, it lacks school library facilities that are adequate. At present the school is using a room for library purposes. The Cambridge Board of Education is at present occupying space in the building which could be used to expand the classroom space and provide for an expansion
of the school's curriculum.

2. The Cambridge High and Latin School is totally inadequate as to structures and facilities to meet the demanding needs of the expanding adolescent education of the present day.

a) There are no health and physical education facilities of any kind for boys. This means gymnasium, locker space or showers. Briefly, no space for instruction in health and hygiene is at present available.

b) The physical education facilities available for girls are limited to an antiquated and inadequate gymnasium located in the basement of the old Latin School section of the building. It is totally unsatisfactory. According to the Cambridge School Survey, 1 "nothing in the present setup could be salvaged or would merit salvaging in projecting a modern program of physical education for girls."

c) Both Rindge Tech and Cambridge High and Latin School are without playfield area for outdoor physical education or for high school sports programs. Inter-scholastic teams, under unreasonable handicaps, must travel long distances for football, track, or baseball practice. It has long been accepted practice to have outdoor recreational facilities directly adjacent to the school plant.

OLD SECTION
CAMBRIDGE HIGH AND LATIN SCHOOL

NEW SECTION

RINDGE TECHNICAL
HIGH SCHOOL

CENTRAL PUBLIC LIBRARY
d) Cambridge High and Latin School has nothing whatever available that could be even loosely termed a high school library. The Central City Library at one time had a room that was set aside for use of the high school pupils from both schools. The use of this room has now been abolished, but even if facilities were again provided in the City Library, the manner in which it might function and the space that might be put to its use would be entirely inadequate. The City Library itself is at present operating under extreme handicap due to lack of space and funds.

"A well organized, well equipped, well staffed library is the most vital and essential 'laboratory' in any school and especially in a school organized to meet the needs of adolescent youth of high school age." 2

e) The old Latin School section is a liability in relation to any long term planning for the future. It has practically no facilities essential to a modern secondary school. Aside from gymnasium facilities, which were mentioned above, the toilets are far below any satisfactory standard; the cafeteria or lunchroom are most unsatisfactory and the building itself is a recognized fire-hazard.

Needs of the High School Plant:

The manner in which the War Memorial will function, the use to which it will be put, and its relationship to the land on which

it will stand as well as to the other buildings now in the area, depend on what is going to be done to and for the high schools. The needs of the high schools, both immediate and for the future are as follows:

1. Indoor physical education facilities including a new gymnasium, lockers, showers, and other spaces and equipment necessary for a modern high school physical education program for boys and girls.

2. Outdoor athletic spaces designed for organized physical education, inter-scholastic team competitions, and informal play. This would include running track, football and baseball practice fields, and space for smaller athletic games. This field should be directly adjacent to the school and easily accessible from it.

3. An adequate school library which would serve both high schools independent of the Central City Library.

4. Demolishing the old Latin School section and erecting classroom and other facilities to replace it. These are necessary to the proper function of the school.

5. Removing the offices of the Cambridge School Board from their present location in the Rindge Technical High School and utilizing this space to broaden the present curriculum of that school.

Though most of these facilities would be reserved exclusively for use by the high schools, it has been recommended that the Gymnasium and its locker and shower rooms be allowed to serve the
general public during those times when it is not in use by the high school. The need for this provision is prompted by the lack of similar facilities in the area, and by the desire to get the maximum use out of those facilities.

The Recreational Plant:

1. The Gymnasium and Its Related Spaces:

This element of the War Memorial building and its related spaces presented problems that required adequate solution before any attempt could be made toward their design. These consisted mainly of determining what facilities should be provided and to what extent. The possibility of over-designing these spaces was always present—even more dangerous was the possibility of under-estimating the load they will carry and discovering too late that the plant is inadequate to the needs.

The following considerations were therefore important to the analysis of these needs:

a) The enrollment trends in the high schools based on past statistics and reliable predictions for the future.

b) An estimate of the size of enrollment in future phy ed* instructional periods based on past statistics and reliable predictions for the future.

c) Maximum number of students, boy and girl, conveniently handled per instructional period.

d) A determination, based on the above information of the dressing, locker room, shower facilities necessary to serve the high school.

* Phy Ed will be used to designate physical education.
e) A determination as to how much the facilities will have to be increased in order to allow for use by the general public.

In attempting to predict possible future enrollment at the Cambridge High and Latin School it was necessary to analyze their past enrollment. The Cambridge School Survey 3 reports that the total high school enrollment in 1936 was 4735 pupils. It dropped to 3495 by 1945, gained slightly to 3512 pupils in 1946. Of this last figure 2503 students were enrolled in the Cambridge High and Latin School. Table No. 3 gives the enrollment figures at the Cambridge High and Latin School for the period of October 1, 1946 through July 1, 1950. It can be seen from this table that the general drop in enrollment has continued. It is not the intention of the author to analyze the reasons for this decrease. Suffice it to say that it is the considered opinion of school officials and of the survey people cited previously that a further decrease in high school enrollment is to be anticipated for the next five to six years. There will be a gradual increase in enrollment, however, starting in 1960 and reaching a peak about 1965. This can be attributed largely to a marked increase in the birth rate during and immediately following World War II. These children will become of high school age during this period. It is then assumed that enrollment will level off and reach a more or less stable stage. For

### Table 3

*STUDENT ENROLLMENT AT CAMBRIDGE HIGH AND LATIN SCHOOL*

Yearly enrollment from Oct., 1946 to July, 1950

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<td>Senior</td>
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</table>

*Based on statistics from the Cambridge Board of Education.*
the purposes of this report I will make the assumption then that the enrollment at the Cambridge High and Latin School will fluctuate between the limits of 2000 to 2500 students within the next 25 year period. The maximum figure of 2500 students will be the basis for the design of athletic plant facilities as they relate to the high school student body.

In making an estimate of the number of pupils who will be taking phy ed instruction other factors must be taken into account. Under the existing phy ed setup at the Cambridge High and Latin School, two instructional periods per week are required of every freshman and sophomore student. Phy ed classes are offered to juniors and seniors as an elective course. Those electing to participate are also expected to attend two instructional periods per week. Naturally, individual classes are held for boys and girls. Table No. 4 shows the breakdown by years of the number of boys and girls enrolled in phy ed classes according to grade for the period of December 1, 1947 through December 1, 1950. The enrollment during that period varied from 358 to 387 for boys, being more or less constant. Girl enrollment varied from 468 to 775. These figures were based on a total school enrollment of from 2004 to 2248, (see Table No. 4) comprised of from 689 to 733 boys, and from 1291 to 1538 girls. From these figures it can be seen that approximately 52% of the total boy enrollment and about
### Table 4

**Enrollment in Phy Ed Classes at Cambridge High and Latin School**

Yearly enrollment from Dec., 1, 1947 to July 1, 1950

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<td>39</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
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<td>384</td>
<td>362</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
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<td>761</td>
<td>728</td>
<td>775</td>
<td></td>
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<tr>
<td>Yearly Totals</td>
<td></td>
<td>826</td>
<td>1145</td>
<td>1090</td>
<td>1150</td>
</tr>
</tbody>
</table>

*Based on estimates of Physical Education Department of the Cambridge Public Schools*
the same percentage of the total girl enrollment took phy ed. Translated into terms of future phy ed class enrollments it can be assumed that if 2500 students is to be the peak total enrollment at the Cambridge High and Latin School, facilities will have to be provided for at least 50% or 1250 of this total enrollment in any projected physical education plant. The ratio of girls to boys enrolled in phy ed classes has been roughly in the ratio of 2 to 1. The opinion of school officials—and past statistics support their opinion—is that there will not be a great deviation from this ratio in future years. We can therefore assume, that of the 1250 students enrolled in phy ed classes, about 830 will be girls and the remaining 420 will be boys.

The Size of Class per Instructional Period:

At present the Cambridge High and Latin School is operating on a five period day. Assuming that this schedule will be used in the future, we will attempt to arrive at the size of the phy ed class per instructional period. For a 5 day week, at 5 periods per day, 25 periods would be available for phy ed classes. If each class is required, as they are at present, to take 2 periods of instruction per week, this would allow for 12 instructional sections. On the basis of this we can arrive at the number of students in each section. For boys, with a total phy ed
enrollment of 420 pupils, each instructional section would have about 35 students. For girls, with a total phy ed enrollment of 830 pupils, each instructional section will be comprised of about 65 students.

Indoor Instruction—Recreation Facilities:

The gymnasium, which in this project, will be used by the school and the community in general, should be so designed that it will function efficiently for both types of use. The immediate concern of the school is to make sure that adequate provisions for instructional spaces are provided. These spaces are referred to as "teaching stations" and are defined as follows.

"A teaching station is a separate teaching or meeting space of sufficient size to accommodate a group of students for the conduct of needed and appropriate activities to be taught by one teacher or one leader. This means one teacher or leader in one defined space working with one group or section." 4

The Physical Education Department of the Cambridge High and Latin School felt that 4 such stations would provide adequately for the instructional needs of the school. Investigation revealed that for a phy ed enrollment of 1250 students this was the number of stations recommended. 5

Two stations would be used for boys, and two for girls. These stations would have to be adequate to hold the esti-

ated size of classes and flexible enough to be converted to other uses during "after-school hours." The overall gymnasium space could be divided into four separate teaching stations by the use of some type of folding partitions, which could be operated to enlarge these spaces as necessary. It is important that each of these spaces be acoustically controlled so that activity going on in one space will not be disturbing to any classes that might be in session in the adjoining area.

The gymnasium would be used for inter-scholastic competitions of various kinds and should be large enough to provide for them comfortably. One regulation size basketball court with dimensions 50' x 84', with two smaller courts of 42' x 74' could be included in the overall gym space and would serve both school activities and sports competitions. Provision should be made to assure adequate safety zones around these active areas.

It has been recommended that accommodations should be provided for at least 1500 spectators for various athletic competitions. In order that full utilization be made of the total gymnasium space it would seem reasonable to provide some type of bleacher setup that would not require sacrificing needed floor space for spectator use. Some type of folding or removable seating could be provided.

Adequate storage should be provided directly adjacent to the gym floor, for various pieces of instructional equip-
ment such as, mats, parallel bars, bucks, horses, spring boards, etc. As some of this type of equipment will be used simultaneously by both boys and girls, separate storage areas are necessary for each.

There are of course other spaces necessary to the functioning of the gymnasium. These will be described in Part IV and will be dealt with in the design solution of the project.

The Dressing-Locker Room Suite:

This suite is composed of spaces for dressing and undressing, space for lockers both storage and dressing type, space for shower rooms, for drying after showers and a space for storage and dispensing of towels.

Having determined the number of students that are likely to be enrolled in each instructional section, it now becomes possible to fairly accurately estimate the facilities necessary for their use, both as to the type and their number. Of course the fact that gymnasium and locker facilities will serve a dual use complicates the problem. It has been mentioned before that these facilities will be used by the school only during the school day and will be available for community use during the early and late evening. This "pupil-community" setup requires careful scheduling and administration the aspects of which will be discussed more fully later in this paper. The space and facilities to be provided will
be effected by this dual use only on occasion, for instance when there might be inter-scholastic team practice at the same time that the gymnasium is being used for community recreation. It is for periods such as these that some special provision should be made. Ordinarily, locker and shower facilities provided for pupil use would be adequate to also serve general community needs in the after school hours. There is also a problem of security which could be met by the use of locking systems on the pupil storage lockers, and in the cases of community use, by the issuance of locks and/or keys for dressing lockers if these are desired by the participant. Shower facilities should prove adequate for the dual use, if they are properly designed, as there is no time factor involved in after school use. However, there should be provisions made for installation of individual control on some shower heads for public use.

The kind and number of facilities that should be included in the dressing-locker room suite are as follows:

a) Storage lockers for girls should be provided, 1 for every student or 830 storage lockers, plus another 10% for expansion making a total of 910 storage lockers.

b) Dressing lockers and/or dressing cubicles for girls should be the same as the maximum number of girls that are to be found in any one instructional period. Add to this 10% to allow for variation in class size and for general public use. This would give a total of 70 dressing lockers. The girl dressing and locker spaces are preferred in semi-private enclosures.

c) The number of shower heads for girls shower rooms should equal 40% of the number of students in the largest instructional section. This would mean a total of
26 shower heads. All of these are preferred to be operated by individual controls and should be in semi-private enclosures.

d) Toilet facilities for girls based on peak instructional section of 65 girls, would include 1 water closet per 30 girls or a minimum of 3 water closets. Lavatories would be 1 for every 20 girls or 4 lavatories.

e) Storage lockers for boys would be 1 for every student plus 10% for expansion. This would give a total of 460 storage lockers.

f) Dressing lockers for boys would be equal to the number of boys in the largest instructional section plus 10% for variation in class size and for general public use. This would give a total of 50 dressing lockers.

g) Shower heads for boys shower room should equal 30% of the number of students in the largest instructional section plus 10% for general use. This would give a total of 16 shower heads. Of this number 12 should be on "gang control" and 4 on individual control. Community type shower rooms would be preferred.

h) Toilet facilities for boys would include 1 urinal for every 25 boys or 3 urinals; 1 water closet for every 50 boys with a minimum of 2 water closets; 1 lavatory for every 20 boys with a minimum of 3 lavatories.

2. The Swimming Pool and Its Related Spaces:

General Swimming Pool Information

Types of swimming pools:

1. Fill and Draw: This type is filled with clear cool water which is used until the water becomes dirty and turbid to a degree that makes it unfit for further use. The pool is then drained, cleaned and refilled with fresh water. Fill and draw pools are rapidly going out of existence because it is impossible to control the water conditions; they are recognized as a menace to public health.
2. **Flow Through:** This type is one in which a flow of fresh water passes through the pool continuously. It is not a universally accepted type inasmuch as the cost of supplying fresh water constantly, is in most cases, prohibitive. Another major disadvantage of this type is the areas of stagnant water where the fresh water does not circulate.

3. **Recirculating:** This type of pool uses the same water over and over with minor additions to replace that lost in operation and evaporation. The pool water is pumped continuously from the pool, through the purification system and back into the pool. Re-circulating pools are used to the exclusion of all other types due to the fact that in this type of pool it is possible, with the aid of the proper equipment, to maintain clear, sparkling and clean water at all times.

The Swimming Pool Layout:

1. **Elementary Instruction and Swimming-Diving Unit:** These are two separate pools housed in the same pool room. The elementary instruction pool is to be used in conjunction with a deep swimming and diving pool. The size of this pool varies, but a minimum size of 28' x 40' is recommended. The depth should be 3' sloping to 5' at the deep end. The decks should be at least 6' wide and the ceiling at least 12' high. The functions of the pool are limited to instruction in swimming, recreation for small groups, life saving classes, simple water games, and therapeutic swimming. The swimming-diving pool is preferably 75' in length. Its depth range is
from 7' at the shallow end to 12' at the diving board end, five feet in front of the board itself. This pool may also be used for competitive diving and swimming.

2. **Multiple Pool**: This pool provides for varied activities simultaneously or separately in adjacent units, such as the diving pool, the recreation pool, specialized competitive pool. This pool has a high degree of specialization and can only be economically justified in an area high in potential swimming demand.

3. **Divisible Pool**: This pool may be varied in size by a moveable partition or bulkhead. For example, a pool of 150' in length may be designed to accommodate two pools, each 75' in length and the width the same or wider than the "all-purpose pool." At its full length this pool would be 50 yards plus the distance required to accommodate the width of the bulkhead and to insure accurate measurement for official competition. A second bulkhead would increase further the usefulness of the pool by making it possible to provide a diving area and two recreation or practice swimming areas.

4. **Twin Pools**: These are sometimes designed end to end or side by side in such a manner that they can be made into one larger pool by the removal or shifting of barriers both in the room and in the water. Twin pools might be a variation from rectangular pools.

5. **The All Purpose Pool**: This pool is the type of layout most
commonly used for swimming places serving a public function. It has at least three zones, a shallow area for beginners in swimming, an intermediate area for general swimming, and a deep area for diving, the whole pool being used for swimming meets.

Limitations of the all purpose pool are:

a) Olympic events cannot be held, unless the pool is constructed in metric measurement.

b) For competitive swimming events, many coaches prefer the shallow end to be deeper than the usual 3 or 3\(\frac{1}{2}\) feet.

Advantages of the all purpose pool:

a) It is easily adaptable to accommodate many different aspects of use by both students and the general public.

b) It meets official rule requirements for competitive meets.

c) It affords ease of supervision.

d) It is the most economical to operate when its multiple uses are considered.

e) Maximum safety is provided for the variety of activities.

A pool designed to serve all-round needs should have at least three depth zones, a shallow area for beginners in swimming, an intermediate area for general swimming, and a deep area for diving. The three zones should be so integrated that the combined whole area may be used as a unit for swimming meets, diving contests, or water games when desired.

The size of the shallow area in the pool for the needs of beginners in swimming should be calculated on the basis of po-
tential swimmers in the horizontal, prone, or supine positions rather than in the vertical position usually assumed by waders. In these terms the beginner will require as much or more space than the swimmer. "Since the beginner is easily frightened by contacts with other non-swimmers, it may be best to provide him with a little more space than is necessary for swimmers." This standard which is set down by Frederick W. Luehring in his book Swimming Pool Standards, is in sharp contrast with the space allowance advocated for beginners by the Joint Committee Report, which states that "the average space allowance for each non-swimmer in the water is approximately one half that of the swimmer in deep water." Of course Mr. Luehring is concerned with pools used in an educational program while the Joint Committee is speaking of public recreation pools. Public pools are undoubtedly operated to a considerable extent as wading and bathing areas rather than primarily as swimming places. However, it is Mr. Luehring's contention that with public acceptance of and desire to participate in swimming instruction, it is likely that rapid advancement will be made in swimming skills with the result that there will be a greater demand for the use of the pool for swimming.

In any case it is more than likely that the proposed War Memorial Pool will be used for both recreational and educational purposes and it would be unwise to give preference in the design of the pool to one type of activity over the other. After appraising the literature available on swimming pool standards it appeared to me that at best there is much disagreement amongst
the experts as to what are the "best standards." Several of the points as to sizes of pools that there was agreement on were as follows:

1. The minimum depth of the pool should be three feet. Mr. Luehring concedes this point with the remark that "Fortunately, with a three foot minimum depth.....the entire pool may be used for swimming."

2. The minimum length of pool should be 60 feet with 75 feet preferred.

3. There was also basic agreement as to the depth of water in the "diving Zone." This was expressed as minimum depth for 1 meter board should be 8 feet with 10 feet preferred, and minimum depth for 3 meter board should be 10 feet with 12 feet preferred.

The main points of contention were as follows:

1. The length of the diving Zone: Here Mr. Luehring questioned the standards set forth by the Joint Committee in which they defined this zone as being within a 10 foot radius of the diving board or platform. He claimed that the length of the diving zone should extend at least 18 feet and preferably 25 feet from the deep end of the pool, for a low board, and at least 25 feet and preferably 36 feet for the high board.

2. The width of the diving zone: Here again the sources differed. The Joint Committee recommended that the low board be placed as near as 6 feet from the side wall and the high
board as near as 9 feet from the side wall; Mr. Luehring claims this is unsafe practice and recommends that the boards be placed at least 10 feet and preferably 13 feet from the side walls of the pool.

3. The size allotted to shallow area: This area has been recommended by various authorities as composing anywhere from 40% to 95% of the total pool area. This difference in standards seems logical however, if the main uses of the pool are analyzed. For instance, a pool reserved for purely public use would have a greater proportion of non-swimmers and would therefore be better served by a greater shallow area. On the other hand a pool used exclusively for competitive swimming might very well have only a small part of it shallow.

There have been other points of variance as to standards. What can be defined as shallow water? This depth of water has been ranged by experts anywhere from 5 feet all the way down to 1 foot. Normally however, a good all round minimum depth for a pool could be accepted at 3 feet. Also standards for length of pool are debatable. They of course would depend on the use to which the pool will be put. The metric length would be best if a bulkhead were provided which would shorten the pool to the desired length for swimming meets which used the standard English measure of length.

Personal Service Facilities:

The location and layout of personal service facilities
should be such as to enforce the routing of all who use the pool through these various facilities in a direct and hygienic manner and without cross traffic in the following order: (1) locker room, (2) toilet, (3) showers, (4) footbaths, (5) entrance to pool room. These facilities should be designed and constructed to facilitate frequent and thorough scrubbing. The floors should be of a smooth, non-slip, impermeable material and should be equipped with hose attachments for flushing, and with ample floor drains.

There are of course many other points to be considered that pertain to mechanical equipment, lighting, pool construction, etc., that have been investigated but will not be discussed in length for the purposes of this report.

**Location of the Swimming Pool**

The question now arises as to the advisability of locating the new municipal swimming pool on the site that has been selected for the Memorial Building, and this question is deserving of analysis. It is important when considering where to locate a municipal pool to take into account the following factors:

a) Density of population to be served.

b) Proximity of other public or semi-public pools.

c) Access to pool by public transportation, automobiles, and parking facilities.

d) Its relation to other recreational facilities.

e) Type of program to be conducted.
POPULATION SPOT MAP
1 DOT EQUALS 10 PERSONS
SOURCE: 1940 U.S. CENSUS OF POPULATION
CAMBRIDGE PLANNING BOARD
Within a half mile radius of the chosen site, there live as more or less permanent residents, approximately 20,000 persons. This number does not include students who are attending the various colleges in the area. This is one of the most densely populated areas of Cambridge, and there is no indication that a migration will occur in the near future.

Nowhere in this area are there any public swimming pools. The Y.M.C.A. pool is close by, but it is semi-public in nature and an admission charge is required for use of their facilities. There are four public swimming places in the Cambridge area. All of them are of the outdoor type and only one is an artificial pool. These pools are the following:

a) Gerry's Landing on the Charles in Southwest Cambridge.

b) Jerry's Pit in West Cambridge.

c) Magazine Beach on the Charles in Southeast Cambridge.

d) Gold Star Mothers' Pool at Donnelly Field in East Cambridge.

All of these facilities are for summer use only, and are beyond walking distance of the central area of Cambridge. Aside from the Donnelly Field pool none are adequately served by public transportation. It is a hardship for youngsters to make use of these facilities. Of course there are the M.I.T. and Harvard pools in the area, but both are for private use only.

The site in question is very favorably located in relation to transportation facilities. The Cambridge Street trackless trolley runs along the north end of the site. The Broadway Street bus is routed along the south. Subway transportation
is within easy walking distance at Harvard Square. There is not heavy traffic in this area so this aspect would not present a hazard to the person approaching the site on foot.

The combination of gymnasium and swimming pool will provide an attractive recreational center to an area badly in need of it. Both Rindge Tech and the Cambridge High and Latin School are equipped with auditorium facilities and in general the recreational group would hold promise of becoming an extremely active area for public use.

The last two decades have witnessed a tremendous increase in the use of swimming as a part of the physical education and recreation program. Few physical activities involve as much "big-muscle" exercise as does swimming. For general purposes of physical condition, few activities are as valuable. In therapeutic treatment of physical handicaps swimming has demonstrated outstanding possibilities.

Before stating what the requirements for a new pool would be it might be well to first investigate the use to which those pools already in operation are being put. For the purposes of this report I will limit myself to the two city owned pools at Jerry's Pit and at Donnelly Field and to the Y.M.C.A. indoor pool, which though semi-public in nature redeives extensive year-round use by the community.

Jerry's Pit and the Donnelly Field Pool are used during the summer months only. The attendance figures (see Table No. 5) at these pools increased proportionately with the severity of
*ATTENDANCE AT POOLS OPERATED BY THE CITY OF CAMBRIDGE*

Monthly attendance for 1949-50

<table>
<thead>
<tr>
<th>Year and Month</th>
<th>Name of Facility</th>
<th>Total attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jerry's Pit</td>
<td>Donnelly Field</td>
</tr>
<tr>
<td>1949 June</td>
<td>$3100</td>
<td>$11,700</td>
</tr>
<tr>
<td>July</td>
<td>15,650</td>
<td>32,925</td>
</tr>
<tr>
<td>Aug.</td>
<td>6,960</td>
<td>16,024</td>
</tr>
<tr>
<td>Sept.</td>
<td>2,130</td>
<td>5,266</td>
</tr>
<tr>
<td>Total</td>
<td>27,840</td>
<td>55,915</td>
</tr>
</tbody>
</table>

| 1950 June      | 7,200            | 8,020            | 15,220           |
| July           | -                | -                | -                |
| Aug.           | -                | -                | -                |
| Sept.          | -                | -                | -                |
| Total          | -                | -                | -                |

Peak attendance for one day.................1525 persons

*Based on statistics obtained from Mr. S. Mahoney, Director, Dept. of Recreation Cambridge, Massachusetts.

#These figures are for part of the month.
the summer heat. Other factors which might influence attendance and curtail it would be epidemics such as the polio epidemic of August, 1949. Generally, however, both swimming areas are used intensively and are usually over-crowded. The peak attendance for one 12 hour day was 1525 persons at the Donnelly Field Pool with attendance exceeding 500 persons per day on many days during the month of August. This pool is 42' x 90' in size and according to design standards is not adequate to accommodate these peak loads. This overcrowding of the pool's facilities occurred despite a scheduled program of pool use. This program encompassed all ages for a reasonable period of activity.

The Y.M.C.A. pool provides the only year round activity in swimming of a semi-public nature in Cambridge, and is therefore worthy of some comment. The pool is 20' x 60' in size with 10' of deck at the sides and 15' of deck at the ends. The pool is in almost constant use from 10:00 a.m. to 10:00 p.m. on weekdays and from 9:00 a.m. to 9:00 p.m. on Saturdays. Its use is reserved for members of the "Y" though paid admissions to use their facilities are encouraged. Because the swimming program is carefully scheduled they are able to accommodate all those who desire to swim. The pool has admittedly been overcrowded on many occasions, especially during the summer months when instructional classes have been held with as many as 70 using the pool at one time. Daily bathing loads average 200 persons with peak loads of 350 bathers not too uncommon. (See
**ATTENDANCE AT Y.M.C.A. POOL (by years)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Men and Boys</th>
<th>Women and Girls</th>
<th>Organized Classes</th>
<th>Total</th>
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<tr>
<td>1946</td>
<td>40,718</td>
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<td>1947</td>
<td>45,837</td>
<td>2,880</td>
<td>10,557</td>
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<td>1948</td>
<td>Not available</td>
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<td>16,087</td>
<td>-</td>
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<tr>
<td>1949</td>
<td>33,227</td>
<td>3,875</td>
<td>20,844</td>
<td>57,946</td>
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</table>

Max. Daily Attendance..............369 persons

Max. monthly attendance usually in August..................6000 persons

Min. monthly attendance usually in January..................3000 persons

*Based on statistics obtained from Miss Crane, Cambridge Y. M. C. A., Cambridge, Massachusetts*
Table No. 6  ) According to design standards the average daily bathing load should be 60 persons per hour per 12 hour day.

Locker room facilities include 140 lockers for members and 200 for general use for a total of 340 lockers. All of these are of the dressing locker type. There are 2 shower rooms, one having 12 showers and the other 14 showers for a total of 26. These facilities were said to be adequate.

Size of the Swimming Pool

The problem of determining the size of a public swimming pool is a difficult one because there are no fixed rules for estimating what attendance at the pool might be. It has already been shown that the population density in the area of the proposed pool is great. Though this would undoubtedly assure the use of the pool, the question remains as to how great this use will be. It is my intention therefore, to select a size that is feasible by comparison and analysis according to the following factors:

a) Limitations of land and money availability.
b) The crowding limit of the pool according to its size.
c) Comparison to size and peak loads at other pools in Cambridge.
d) Effect of a scheduled program of activities on maximum use of the pool.
e) Conclusions as to the adequacy of the pool size selected.

Before going any further into this analysis it might be well to first define what the capacity of a swimming pool is
in respect to the number of swimmers it will hold. This capacity is called the "crowding limit" of a pool and is defined as "the maximum number of persons that can be present in a pool room at any given time and still allow space for active swimming participation." In determining what the crowding limit for indoor pools would be, it is recommended that the pool be divided into two zones and the crowding limit for each computed separately. The zones are the "diving zone" and the "swimming zone". That area extending 10' from the extremity of a diving board or tower should be considered as reserve for divers. Not more than 3 persons should be permitted in the water in this area at one time while diving is in progress. About three times that many can be on deck or diving platform awaiting their turn to dive. Twelve persons is therefore the maximum number permitted to be in the diving zone of each diving board or platform. The swimming zone is that area of the pool not included in the diving zone. It is the consensus of opinion of swimming pool operators that the space required by a swimmer is equal to 4/5 the square of his height and that an average of 2/3 of the swimmers present would be in the pool at the same time. On this basis the average space requirement for a swimmer is 36 square feet and allowing for 1/3 of the swimmers on shore, an average of 27 square feet should be provided for each swimmer expected to be present at time of maximum load. On the basis of this standard a pool 20' x 60'

having 1 diving board would have a crowding limit of 50 persons;

a pool 42' x 90' having 3 diving boards would have a crowding limit of 160 persons; and a pool 60' x 150' having 3 diving boards would have a crowding limit of 330 persons.

The limitations imposed on the size of the pool are primarily due to the limited land available for building and the limited building budget. It would be apparent for instance, that a pool 60' x 150' would require more land and money than is available, even if such a size were required. On the other hand a pool of dimensions 20' x 60' would obviously be much too small for the purposes of the memorial. Therefore, a size somewhere within these two extremes would be a logical starting point.

The Gold Star Mothers' Pool at Donnelly Field has on many days during the summer season been extremely overcrowded. It was the observation of Mr. Mahoney, Director of Recreation for the City of Cambridge that the pool exceeds its crowding limit on most days during the summer months. The statistics listed in Table No. seem to confirm this observation. This overcrowding occurs despite the scheduled program of activities. It might be fair to assume that the attendance would not be as great at an indoor pool, but even so it would appear that based on the population of the area and on the extensive use to which the Y.M.C.A. pool is put the new memorial pool should be of adequate size to hold a capacity of at least between 150 and 200 swimmers.

In preliminary plans submitted to the City of Cambridge
by a Boston firm of architects, it was recommended that the pool room contain two pools, one being a large swimming and diving unit and the other a small pool for elementary instruction in swimming. The sizes of these two pools were to be 36' x 82'-6" and 20' x 30' respectively. The deck space around the large pool was 10' at the sides and 20' at the ends. For the small pool, 10' at the sides and 15' at one end and 15' at the other end. These dimensions gave the total pool room an area of 8860 square feet. The total swimming capacity of the pools was 126 persons. As it was felt that this capacity was inadequate to the needs, several alternatives were considered by the author, keeping always in mind that limitations in land availability prevented the enlargement of the pool room to any great extent. These alternatives were as follows:

a) Using the same scheme that was described in the preceding paragraph, but simply increasing the dimensions of the swimming and diving pool to 42' x 82'-6", leaving all other dimensions as previously indicated. This increase would make the total area of the pool room, 9385 square feet and would increase the capacity to 160 swimmers.

b) Building only one all purpose pool whose dimensions would be 60' x 82'-6". This pool would have 15' of deck at the ends, 8' of deck at one side and 15' of deck at the other side. The total area of this pool
room would be 9337 square feet, slightly less than in scheme "a". The capacity of the pool would be 180 swimmers. The variance of course occurs in the fact that two pools require more deck space.

Aside from the important fact that scheme "b" provides a greater swimmer capacity than "a" it has other advantages. These advantages are as follows:

1) Initial saving in cost of construction. One pool would afford an appreciable saving in labor and materials. Duplication of concrete work and mechanical equipment, hardware, etc., would not be necessary.

2) The pool in scheme "b" is inherently more flexible for maximum use for competitive swimming events. The width of the pool which is 60' is regulation length for high school interscholastic competitions, and the pool could be divided into two parts for large meets with the simultaneous running of events. The 82'-6" length is regulation for meets of olympic caliber. A 75' length which is also a regulation length for racing could be obtained by use of a movable bulkhead running the width of the pool.

3) The 60' x 82'-6" pool provides more shallow space for beginners to learn to swim than that provided for in scheme "a". Requirements for depth of water for this purpose state that "A pool designed to serve all round needs should have a shallow area three to five
feet in depth." 7 In scheme "b" 2820 square feet of swimming space is provided for this purpose, while in scheme "a" only 2574 square feet is afforded. This despite the fact that the 2 schemes have almost identical total pool room areas.

4) Scheme "b" also provides better control over all swimming areas.

For the purposes of this thesis then the author proposes the use of a pool 60' x 82'-6" the total crowding limit of which will be 180 swimmers.

The Dressing-Locker Room Suite

As in the gymnasium locker rooms, the swimming pool should have separate and distinct areas for undressing, showering, and toilet activities. The facilities provided for these functions are usually based on the crowding limit determined above, with some allowances being made for periods of peak load and over-crowding. In the case of this thesis project however, adherence to these standards may not be advisable. In studying the plans of the proposed memorial building, it will be noted that the gym locker room and the pool locker room adjoin each other in both the boys and girls sections. They are separated by a movable barrier which does not however, act as a visual barrier. The unique use to which the recreational facilities will be put prompted this solution. The aspects of this design feature
will be discussed more fully later in this report. At this time suffice it to say that during most periods when peak loads would normally be expected to be in attendance at the pool both the gym locker facilities and the pool locker facilities will be available for use. This of course, allows for the number of locker, shower, and dressing facilities for swimming use to be appreciably reduced. The facilities provided for exclusive use by swimming participants are as follows:

a) Clothing storage will be provided by means of a system of tote boxes. The boxes will be picked up as will towels and suits from the same point of control. After use, the used towels and suits will be returned to control point by user. Boys and girls control points will be adjoining in order that one attendant can supervise both sections during slack periods. Of course, during times of greater attendance the personnel can be increased to accommodate the load. Four tote box racks holding 336 toteboxes to be provided for girls, and the same number to be provided for boys.

b) Dressing facilities: 75 private dressing stalls to be provided for girls; 22 private dressing stalls for boys with 6 community dressing spaces accommodating 80 persons.

c) Shower heads: 8 shower heads in private stalls for girls. 12 shower heads, community type for boys.

d) Toilet facilities: 3 water closets and 4 lavatories for girls; 3 water closets, 3 urinals, and 3 lavatories for boys.

e) Girls will also be provided with 4 hairdryers.

Circulation Problems:

The problems of circulation are very important to the proper functioning and control of the entire project. Because of the diversity of uses to which the recreational facilities in the Memorial will
be put, these problems are especially difficult to solve. In general, there should be no congestion or intermingling of participant and spectator, of student classes and general public participant, and of course, of the male and female sections of all types of participation. Separate access to the respective locker rooms from the outside should be provided for student and general public. In the case of spectator circulation, the spectator should be able to reach the provided seating without interfering with any activity occurring on the playing court in the gym and without crossing or coming in contact with the active area of the swimming pool room. For participant use, both student and general public, the circulation between locker room and gymnasium and between locker room and swimming pool should be separate and clearly defined. In this respect the arrangement of the pool locker room and the gym locker room should be such that a participant can go from locker room to gym, back to the locker room and then if he or she so desires, to proceed to the pool room without inconvenience, and without crossing an area of dressed public circulation. A consideration unique to this problem is the circulation necessary from the high school proper to the Memorial building for those students enrolled in phy ed classes. It should also be possible to go from the respective locker rooms to outside areas of activity without undue inconvenience. A summary of the circulation patterns necessary to the efficient and proper functioning of the recreational plant follows:
a) Student circulation from the high school to the locker room and from there to the assigned area of activity on the gym floor or swimming pool room. These patterns should be distinct and separate for each sex.

b) General public circulation from the street to the locker room and from there to the gym floor or swimming pool room. Here again the patterns should be distinct and separate for each sex.

c) During those periods when recreational facilities are reserved for general public use only it should be possible for the participant to make use of both gym and pool facilities. This would mean that the participant should be able to complete activity on the gym floor, proceed back to his locker and then be able to go for a swim after the necessary control shower, without having to cross a street dress circulation and without undue inconvenience.

d) Circulation from the respective locker rooms to areas of outside activity without undue inconvenience. These patterns should be distinct and separate for each sex.

e) Spectator circulation from the street to the area of seating without interference with the other circulations and without disturbing activity of participants in both the gym and pool room.

f) Adequate number of means of ingress and egress for both spectators and participants.

See following page for diagram of circulation flow of proposed War Memorial for Cambridge.
from the foregoing survey and analysis of the background, needs and limitations of this project, it becomes possible to move forward to a solution of the problem of the war memorial for Cambridge.
The primary reasons which influenced the solution of this problem may be summarized as follows:

1) It has been the expressed desire of the people of Cambridge that a memorial to its heroic war dead be a "living memorial"; that it be something useful to the community yet expressive of the commemorative spirit.

2) The need for additional recreational facilities for the City of Cambridge is generally known. It would seem logical that these facilities be located in an area of Cambridge which is most in need of these facilities.

3) The inadequate physical education plant of the city's high schools provided an important reason for locating the Memorial in such close proximity to them in order that its recreational facilities could be utilized to the fullest extent. The lack of such facilities for general use in the area in question supported this point of contention.

4) The limitations imposed on the solution by legal barriers such as the Library Grounds Deed Restriction and by the location of existing buildings important to the general scheme, dictated the general orientation and placement of the new War Memorial building.

5) The limitations imposed on the building by limited land and money availability determined the location of major elements within the building proper, and also seemed to indicate that an extended program of neighborhood redevelopment was necessary.

6) The space given to various facilities in the building was determined by careful analysis of the population of the area, by study of enrollment trends in the adjacent high schools, and by the desire to achieve maximum flexibility in the use of these facilities.

7) Careful analysis was necessary to assure that a maximum number of persons could be present in the smallest space adequate to the needs. This was particularly true in the swimming pool room and was necessary generally because of the limited land available for building.
8) Because of the diversified use to which the recreational facilities will be put it was necessary to take into account the varied circulation patterns that resulted and to resolve them into simple and efficient form.

For these reasons and for others elaborated on previously in this report it was decided that accommodations and facilities should be provided in the recreational section of the War Memorial Building based on the following distribution:

**Gymnasium:** Capable of containing 4 instructional sections. The facilities provided that pertain to personal service such as lockers, showers, etc., were based on the following breakdown of participation for school use.

- **Male:** 420, 35 per instructional period
- **Female:** 830, 65 per instructional period

In addition to this number, approximately 10% increase was provided in personal service facilities to take care of class size increase and general public use during after school hours.

**Swimming Pool:** Will have a crowding limit of 180 swimmers. Personal service facilities will be provided independent of gymnasium facilities based on the following breakdown:

- **Male:** 106
- **Female:** 75

These facilities will be in a position to be extended during peak load periods by using the facilities provided in the gym locker room which is directly adjacent.

**Spectator Seating:** Facilities for spectator seating will be provided according to the following requirements:

- **Gymnasium:** 1500 spectators.
- **Pool Room:** 220 spectators.

**Program of Requirements:**

**The Gymnasium and its Related Spaces**

**Gymnasium:** 100' x 114'.................................11,400 sq.ft.
req'mts. Can be divided into 2 teaching stations, 1 for boys, 1 for girls, each 57' x 100'. Can be divided again to form 4 teaching stations, 2 for boys and 2 for girls, each 50' x 57'. Floor space adequate for 2 basketball courts each 42' x 74' with 1 large court 50' x 84'. Fording bleachers to provide seating for 1500 spectators.

use To be used for physical education instruction for students during school hours; for general public use after school hours; for inter-scholastic competitions by pre-arranged schedule.

2 Posture Correction Rooms:
1 boy, 1 girl.................................1,600 sq.ft.

req'mts. To be equipped with storage space for movable equipment. Full length mirror to be provided. Also tack and chalk board.

use To be used for special assignments of students needing remedial treatment and special teaching. Can also serve as team room, or for special team practice sessions.

Boy's Dressing-Locker Room Suite..................4,000 sq.ft.

req'mts. 1) 460 storage lockers; 73/2" x 12" x 36".
2) 60 full size dressing lockers.
   12" x 12" x 72"
3) Shower heads (15)
   12 on gang control
   4 on individual control
4) Toilet facilities.
   3 water closets, 3 urinals,
   3 lavatories
5) Toweling or Drying room
6) Towel service room
7) Mirrors to be provided in locker rooms and toilets.

use To be used by students during regular school days and by general public outside of school hours.

Girls' Dressing-Locker Room Suite...............4,380 sq.ft.

req'mts. 1) 910 storage lockers; 71/2" x 12" x 24"
2) 65 dressing stalls (private) 3' x 3'-6"
3) Shower heads (25); all on individual control in enclosed private booths.
4) Toilet facilities.
   4 water closets, 5 lavatories.
5) Towel service room.
6) Mirrors to be provided in locker room and toilet.

use To be used by students during regular school days and by general public outside of school hours.

2 Visiting Team Rooms:
1 boys, 1 girls' ....................................... 600 sq.ft.

req'nts.  
1) 24 dressing lockers, 12" x 12" x 72".
2) 2 shower stalls.
3) 1 water closet
4) 1 lavatory.

use To be used by visiting teams at interscholastic competitions.

2 Gym Equipment Storage Areas:
1 boys' section - 1 girls' section.................. 1,400 sq.ft.

req'nts. To be directly adjacent to respective gym teaching stations. Should be possible to close off for security reasons.

use To be used for storage of gym equipment such as horses, mats, bucks, horizontal bars, etc.

Uniform and Equipment Room............................. 800 sq.ft.

req'nts. Space requires special heating and ventilating for drying of uniforms. Means of hanging uniforms should be provided.

use To store and dry athletic gear and equipment such as basketball uniforms, football gear, etc.

Administrative and Utility Spaces:

Office for Faculty Manager................................. 150 sq.ft.
Should adjoin uniform and equipment room.
To contain 1 water closet, 1 lavatory, 1 shower stall, and dressing locker.

Office for Male Phy Ed Instructor...................... 180 sq.ft.
To be adjacent to and looking out onto gym floor. To contain 1 water closet,
1 lavatory, 1 shower stall, 4 dressing lockers to provide for officials at athletic events. 1 desk and chair, filing cabinet, and a small special equipment locker.

Office for Female Phy Ed Instructor.................180 sq.ft.
Same as above.

2 First Aid and Exam Rooms.........................350 sq.ft.
1 Boys' section - 1 girls' section.
To be equipped with 1 lavatory, built-in foot bath for treating sprained ankles, medicine cabinet, physician scale and stadiometer. Rub-down table in boys room. Cots should be provided in both rooms. These rooms may serve as school physical examination rooms and as rest rooms.

Kitchenette.................................150 sq.ft.
To be directly accessible to gymnasium.
Purpose not to serve meals but to provide light snacks that can be quickly prepared.
To be equipped with ample shelf space, storage space for dishes, pots, and pans, warming oven, refrigerator, cooking unit, and possibly a deep freeze unit for storage of ice cream. Will be used in connection with dances, meetings and so on.

Custodial and Storage Rooms.........................240 sq.ft.
2 to be included in plant. 1 to be located adjacent to locker rooms at lower level and the other adjacent to gymnasium proper. These rooms to contain the equipment and supplies necessary to service the athletic plant. 1 slop sink and adequate storage space necessary.

The Swimming Pool Room and Its Related Spaces

The Pool Room: 110' x 114'..............................12,540 sq.ft.

req'mts. Swimming pool size to be 60' x 82'-6".
Deck at end to be 15', deck at west side to be 8' and at east side 15'. Minimum depth will be 3'. Maximum depth at diving boards to be 10'. Diving facilities provided to be two 1 meter and one 3 meter boards.
use To be used in high school phy ed pro-
gram and by general public for mass
recreational swimming. Also for swim-
ning meets.

Mens' Dressing-Locker Room Suite..................3,280 sq.ft.

req'mts. 1) Storage Basket Room - to contain 4
racks of tote boxes at 84 per rack-
total of 336 tote boxes. Storage
space for swim suits and towels. To
open onto locker room proper.
2) Dressing facilities, 22 private dress-
ing stalls, 3' x 3'-6".
6 community dressing stalls. Average
size 12' x 14'. Will accommodate 100
men approximately, at one time.
3) Shower facilities.
12 shower heads provided. Community
type on gang or individual control.
4) Toilet facilities.
3 water closets, 3 urinals, 3 lavo-
tories.
5) Toweling or drying space.
6) Footbath - compulsory for all swimmers.
4' x 6' placed at exit from shower room.

use To be used by high schools for phy ed instr-
uction. By general public during periods
of mass recreational swimming.

Womens' Dressing-Locker Room Suite..................3,340 sq.ft.

req'mts. 1) Storage Basket Room - to contain 4
racks of tote boxes at 84 per rack -
total of 336 tote boxes. Storage
space for swim suits and towels. To open on-
to locker room proper and to adjoin mens'
Basket room.
2) Dressing facilities. Approximately 90
private dressing stalls, 3' x 3'-6".
3) Shower facilities. 8 shower heads pro-
vided in private stalls 3' x 3'. All on
individual control.
4) Toilet facilities. 3 water closets, 4
lavatories.
5) Footbath - compulsory for all swimmers.
4' x 6' placed at exit from shower room.
6) 4 hairdryers to be provided in locker
room.
use To be used by high schools for girls' phy ed instruction. By general public during periods of mass recreational swimming.

Instructors' Control Office ..................... 150 sq.ft.
To be located at deep end of pool.
Enclosed, with window on side of office facing pool. To contain 1 shower stall, 1 locker, small closet, first aid facilities. Also desk and chair.

Pool Storage Room ............................500 sq.ft.
For the storage of miscellaneous swimming pool equipment such as flutter boards, games equipment, water polo balls, special synchronized swimming equipment, floats, etc. Will also contain service sink and storage space for maintenance equipment such as hose, brooms, etc.

Pool Mechanical Equipment Room ...............900 sq.ft.
To contain disinfecting equipment, pumping and other circulation equipment, regulation and control equipment.

Spectator Facilities For Recreational Plant

1) 1500 seats provided in gymnasium by means of folding bleachers. Additional seating may be provided if necessary by use of removable bleachers.

2) 220 permanent seats provided in swimming pool room by means of grandstand type seating. Additional spectator space provided by use of observation platforms when necessary.

3) Ticket office ......................... 120 sq.ft.
For the sale of tickets for athletic events. To open directly onto major spectator circulation. Equipped with desk, chair, filing cabinet, and small portable safe.

4) Check Room - Space to check 1000 coats-700 sq.ft.

5) Mens' Toilet ............................... 220 sq.ft.
5 water closets, 4 urinals, 4 lavatories.

6) Powder Room and Womens' Toilet .............240 sq.ft.
5 water closets, 4 lavatories.

7) Telephones (4) enclosed in individual booths.
Participant Coat Room..........................220 sq.ft.
   Located adjacent to locker room. For
   use by participants only.

Facilities Within the Memorial Feature

Auditorium........................................1,420 sq.ft.

rq'mts. To seat 200 persons. Can be divided
by movable partition into 3 smaller
meeting rooms each 18' x 26'. To have
small kitchen adjacent to it for ser-
vice of snacks etc. Space for chair
storage should be provided.

use To be used for meetings by veterans' orga-
izations, by the School Board and
Library Board for meetings and confer-
ences, by various City organizations
for meetings. Can also be used for
small lectures and social functions.

Offices of Cambridge Board of Education:

1) Clerical Office and Reception........360 sq.ft.
   To contain 3 desks, 3 chairs, fil-
ing cabinets, record storage facil-
   ities, and space for reception seat-
ing.

2) Office of Sup't. of Schools.........192 sq.ft.
   To contain 1 desk, 1 chair, filing
   cabinet, 1 w.c., 1 lavatory, small
   closet.

3) Office of Ass't Sup't of Schools.....180 sq.ft.
   To contain same as above.

Offices of Cambridge Board of Recreation:

1) Clerical Office and Reception........210 sq.ft.
   To contain 2 desks, filing cab-
inets, space for storage of records
and for reception seating.

2) Office of the Director of Recreation..200 sq.ft.
   To contain 1 desk, 1 chair, filing
   cabinet, 1 water closet, 1 lavatory
   small coat closet.

Facilities for General Use:

1) Mens' Toilet...........................120 sq.ft.
   3 water closets, 3 urinals, 2 lav.
2) Women's Toilet ....................... 100 sq. ft.
   3 water closets, 3 lavatories.
3) Small Coat Room ...................... 150 sq. ft.
   Space provided for 200 coats.
4) Storage space for chairs to be used in Auditorium.
5) 2 public telephones.
6) Lounge space adjacent to Auditorium.

A Memorial Feature

It seems only natural that the motivating force behind this entire project, namely that of commemoration, should find some kind of physical expression in the design of this memorial building. The author is in complete accord with the veterans' organizations who have expressed the desire that the memorial should not lose its identity or be completely subordinated visually to the recreational elements of the memorial. These elements may "contain and sustain that for which our soldiers fought," but is it not necessary to instill something into the overall composition that without compromise speaks of commemoration?

It is the hope of the author that the design of the Memorial Feature will speak for itself, but the following aspects of orientation and placement might bear comment:

1) The Memorial Feature is orientated toward Library Park, which offers an attractive landscaped setting greatly used by the people of the area. It would be visible to people approaching from either Cambridge Street or Broadway.

2) The entrances to both the recreational elements and the auditorium for both spectators and participants are so located that circulation patterns flow by the memorial.

feature and through it making them constantly aware of the identity of the building.

3) By having the memorial feature open to the out of doors, it becomes an integral part of the surroundings and without being intrusive serves as a constant reminder to the many students in the area and to the casual passerby of the men who died in the last war.

Jurisdiction and Administration

It is apparent that because of the diversity of uses to which the Memorial Building will be put there would arise conflicts as to who uses the facilities and at what time. Also the question of what branch of the city government will pay the salary of the necessary employees and other expenses involved in operation of the recreational facilities. Involved in this matter of jurisdiction and administration are the following:

1) Cambridge Board of Education
2) Cambridge Board of Recreation
3) Various of the Veterans' Organizations

Toward a solution of this problem it has been recommended 2 that the city set up a Board of Trustees to manage the Memorial and administer its operation. This board would consist of the executive head of the City ex-officio and five members, two of whom shall not be veterans. This action is permitted by State law the contents of which can be found in Appendix C of this report.


Estimate of Costs

This estimate is based on construction costs only and does not include cost of acquiring land and of landscaping this land. This aspect of overall cost is alluded to in Part Two of this report. Because of differences in construction costs the following 2 volumes of the total cubic capacity of the Memorial project will be figured separately to arrive at a total cost estimate.

1) The Recreational Plant including the gymnasium, the swimming pool and its related spaces.

2) The Memorial Feature including circulation spaces to the Recreational Elements.

A figure of $.95 per cubic foot for the recreational plant seemed reasonable. This figure was used in a previous preliminary estimate made by the Cambridge Planning Board on studies of the War Memorial made by a Boston Architectural firm. 3 For the Memorial Feature it was thought that a figure of $1.25 would be in order because of the higher degree of finish and the better types of material to be used.

<table>
<thead>
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<th>Element</th>
<th>Cubage</th>
<th>Cost per cubic foot</th>
<th>Total</th>
</tr>
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<tr>
<td>Recreational Plant</td>
<td>1,020,472</td>
<td>$.95</td>
<td>$969,448.00</td>
</tr>
<tr>
<td>Memorial Feature</td>
<td>126,032</td>
<td>1.25</td>
<td>157,540.00</td>
</tr>
<tr>
<td>Grand Total</td>
<td>1,146,504</td>
<td></td>
<td>$1,126,988.00</td>
</tr>
</tbody>
</table>

3. See page 12 of this report.
Financing the Project

Funds for the erection and equipment of memorial community buildings may be secured by any one of three general methods:

1. Public funds secured through bond issue or tax levy.
2. Voluntary contributions secured by popular subscription.
3. A combination of these 2 methods.

Where it is planned to finance the Memorial Building from tax funds, a careful check should be made, to determine just what state and local legislation exists authorizing the issuance of bonds or the levying of a special tax for this purpose. There have been many communities that have raised the necessary funds by depending exclusively on voluntary contributions. In a few cases the building was financed by a combination of public funds and private subscription. It is desirable in such cases to have the title rest with the local government making appropriations.

In the case of the City of Cambridge it would seem to be advisable to utilize the first method mentioned above. State law, included in full in Appendix C, now permits the City to issue bonds outside of its debt limit, up to $\frac{1}{2}$ of $1\%$ of its assessed valuation, for the construction of a War Memorial. The estimated cost falls within these limits.
As a fitting conclusion to this work I should like to acknowledge the parties mentioned below for their cooperation and criticism during its preparation. Needless to say, I am extremely grateful to them all.

School of Architecture and Planning

Professor Lawrence B. Anderson, Head
Professor William H. Brown
Professor Robert W. Kennedy
Professor Ralph Rapson
Professor Gelotte

Cambridge Planning Board
Mr. Mark Fortune, Head

Colleagues and classmates, who have helped make this year a fruitful and exciting one.


A cliche, tired but true.

To my wife, Betty, a special vote of thanks for her patience, criticism and slave driving.

finis
January 11, 1949

To the Veterans' War Memorial Advisory Committee:

Since its appointment your Subcommittee on site selection has given considerable thought to the question of a suitable War Memorial Site and has had many meetings with the Planning Board and its staff on this subject. After careful consideration it is our opinion that the site that best meets the requirements for a recreational memorial building serving all Cambridge is in the vicinity of the High and Latin School. The Subcommittee accordingly endorses the findings of the accompanying technical report, which has been prepared by the Planning Board Staff. This report has been presented to the Planning Board and has received its endorsement.

In considering a centrally located site for a War Memorial it soon became apparent to us that it was not feasible to include a skating rink in such a building. A rink of professional size with suitable seating capacity for spectators would cost over $1,000,000. Indications are that such a building would find great use in Cambridge and would pay for itself in rentals and admission charges. This Subcommittee strongly recommends that a skating rink be considered as part of the City's normal program for recreational development, rather than as a War Memorial.

The Subcommittee takes pleasure in submitting its findings for your earnest consideration.

Sincerely yours,

Ralph Robart, Chairman
Robert Duncan
Ted Galligan
James F. Hughes
George Mickle
Francis J. Roche
APPENDIX B

Extract from Rindge Deed of Gift of Public Library and Library
Grounds to the City of Cambridge, June 14, 1889

"If it is consistent with other uses I shall be glad to have
some portion of the land reserved as a playground for young child-
ren, and, if the City of Cambridge shall desire at any time to
erect upon the premises additional buildings to be occupied as a
museum of art or halls for lectures or some kindred purpose I as-
sent to such use; but I do not intend that any portion of the land
hereby conveyed shall be used for any of the purposes of ordinary
city business such as a site for a city hall or a police station
or even for a school house.

"I do not wish to embarrass this conveyance by making it a
condition of this deed that these expressions of my wishes should
be observed, preferring to leave it entirely to the honor of the
people and officers of my native town to see that those wishes as
above released premises with all the privileges and appurtenances
to the same belonging to the said City of Cambridge and its suc-
cessors, to its and their use and behoof forever."
ACTS OF 1920, CHAPTER 292: AN ACT AUTHORIZING CITIES AND TOWNS TO APPROPRIATE MONEY FOR MEMORIALS TO SOLDIERS, SAILORS AND MARINES.

Whereas, It is desirable for the public interest that this act take effect immediately, therefore it is hereby declared to be an emergency law necessary for the immediate preservation of the public convenience.

Be It Enacted, Etc., As Follows:

Section 1. Chapter sixty-one of the General Acts of nineteen hundred and nineteen is hereby amended by striking out section one and substituting the following:-Section 1. For the purpose of properly commemorating the services and sacrifices of the soldiers, sailors and marines who have served the country in war, cities and towns may accept gifts or bequests and may appropriate money for the acquisition of land by purchase or by right of eminent domain, or for the purchase, erection and equipping of buildings, or for the construction of other suitable memorials. If land is taken by right of eminent domain, compensation shall be awarded and paid in the same manner as for highway takings. To meet the cost of maintaining such memorials, cities and towns may raise by taxation such sums as may be deemed necessary.*

Section 2. Said chapter sixty-one is hereby further amended by striking out section two and substituting the following:-Section 2. To provide the necessary funds for the acquisition of land, or for the construction of buildings or other structures, including the cost of original equipment, a city or town may borrow, outside the statutory limit of indebtedness, an amount not exceeding one-half of one percent of its assessed valuation for the preceding year, and may issue bonds or notes, payable in not more than twenty years, in accordance with section fourteen of chapter seven hundred and nineteen of the acts of nineteen hundred and thirteen.**

Section 3. Said chapter sixty-one is hereby further amended by striking out section three and substituting the following:-Section 3. Cities and towns which accept gifts or bequests or appropriate money for the purposes set forth in this act may provide for a board of trustees which shall have charge and control of the construction of any memorial hereunder, and shall have the custody and care of any such memorial after its construction. Such boards shall have full power to make such rules and regulations from time to time relative to the use of said buildings as they may deem necessary. In cities such a board shall consist of the mayor, ex officio, and five members appointed by him and approved by the council, two of whom shall not be...
veterans of any war. Two of said board shall be appointed for a term of one year, two for two years, and one for three years, and as the term of each member expires, a successor shall be appointed in like manner for a term of three years. Any vacancy shall be filled for the unexpired term in like manner. In towns such a board shall consist of the chairman of the board of selectmen, ex officio, and five members elected by the town, in the same manner as other town officers, two of whom shall not be veterans of any war. Two of said board shall be elected for a term of one year, two for two years, and one for three years, and as the term of each member expires, a successor shall be elected in like manner for a term of three years. Until the board is elected, the selectmen may appoint a temporary board to serve until the next annual town election. Any vacancy occurring in a town board shall be filled for the unexpired term by the remaining members. All members of said boards shall continue to serve until the qualification of their respective successors.

Approved April 9, 1920

* Ch. 40, Sect. 5, Clause 12, General Laws, Tercentenary Edition.

** Ch. 44, Sect. 8, Clause 10, General Laws, Tercentenary Edition.

/ Ch. 41, Sect. 105, General Laws, Tercentenary Edition (as amended by Ch. 132, Acts of 1936) inserts after word "was" in fourth line. "or persons who have rendered military service for the Commonwealth in time of war."
bibliography

Books:


Roth, Alfred. La Nouvelle Architecture. Zurich, 1940. Pp. 139-156.

Pamphlets & Brochures:


Magazines, Other Periodicals:


Theses:

Graheck. A Recreation Center for South End Boston. 1943.


A WAR MEMORIAL FOR CAMBRIDGE, MASS.
longitudinal section

cross section thru gym

cross section thru pool

east elevation

elevation, sections
structural details

3-ply felt and asphalt roll roofing
3% sprayed aluminum coated asphalt
sprayed urethane foam of aluminum paint
refrain concrete beam 23'-0" span

section thru memorial feature

concrete shaft wire mesh reinforcing
metal mesh a frame anchored to concrete
prefab double glass towers for blackout curtain
furring channel
acoustic ceiling
adjustable layers
metal frame pigeon cove vertical louver
refrain concrete shelf
marble steel
copper drip
rigid insulation
high density cork tile floor
21/2" spray insulation and mastic
furring channels
corrugated metal
corrugated metal
waterproofing
rigid insulation
air space
wire mesh and plaster
metal base
high density cork tile floor
mastic
finished cement bed
radiant heating coils
split circuit installation
refrain stainless steel
stainless steel
refrain concrete columns
mosaic stone pavement
concrete bed
3' x 3' x 3' concrete block
6" crushed rock
grade

section thru pool room wall
3/4" x 1" x 0"

binder non-slip ceramic mosaic tile mounted on 12" x 24" sheets
concrete bed
water proofing
red oak hardwood
cork embedded in 2" concrete bed
concrete slab

paved to drain

concrete floor wall
water proofing
3" concrete slab
duct space for warm air supply and return
refrain concrete footing
water proofing
6" crushed rock

paved to drain

sidewalk

1/2 - 1/2" w/ mortar

the thesis, master in architecture
mass. institute of tech., 1950
leonard s. parker, designer
plan section of brise soliel

plan section "a"

details of memorial wall

structural framing isometric

structural details

thesis, master in architecture
mass. institute of tech., 1950
leonard s. perker, designer
A WAR MEMORIAL FOR CAMBRIDGE, MASS.

thesis, master in architecture
mass. institute of tech., 1950
leonard s. perker, designer