

Mr Allen:-

Thanks for the Magazine.

Have read the article and

made memo of party needed.

Says nothing about the
grade on the Court.

J. A. Russell

WAR PRODUCTION BOARD
DISTRICT OFFICE
414 Interstate Building
Kansas City 6, Missouri

IN REPLY REFER TO:

November 13, 1943

Forrest C. Allen,
Director of Physical Education
Varsity Basketball Coach
University of Kansas
Lawrence, Kansas

Dear Phog:

With reference to our conversation at the alumnae meeting and your letter of November 12, 1943, I submitted your appeal on two tennis courts to the Construction Section.

This application is being processed and you will receive it about Tuesday or Wednesday, October 16th or October 17th.

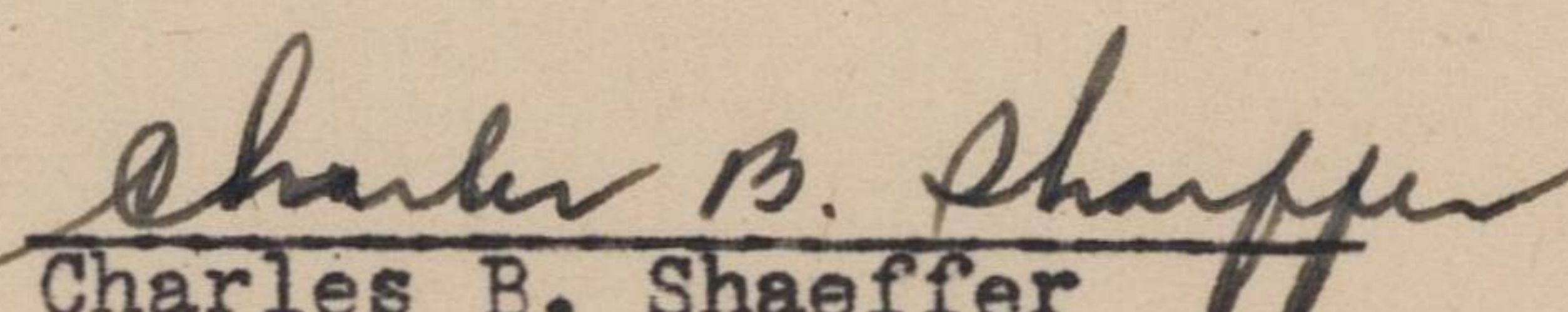
Your old friend, Bob Shaw, who is handling this in the Construction Section, sends his regards. He stated that he was with the Kansas City Southern in 1907 and that you were a member of the surveying party under old man Heilman.

I appreciate the fact that you and the other members of the Athletic Department were in Kansas City, Friday, and your assistance made our meeting a big success.

Please give my regards to Chancellor Malott.

With kindest personal regards, I remain

Yours very sincerely,


Charles B. Shaeffer
Acting District Manager



September 20, 1943.

M. N. Penny Construction Co.,
730 Delaware Street,
Lawrence, Kansas.

Dear Mr. Penny:

We have been trying to get a decision on the concrete tennis court project, but the Chancellor is out of town this week so it will be a few days before we can talk to him about it again. It was necessary for him to take the matter up with the Board of Regents.

I just wanted to keep you advised that we are pushing it as rapidly as possible.

Very sincerely yours,

FCA:AH

Director of Physical Education,
Varsity Basketball Coach.

November 17, 1943.

Memorandum to Chancellor Malott:

I am enclosing a copy of Charlie Shaeffer's
letter.

Things look good.

F.C.A.

COPY

WAR PRODUCTION BOARD
DISTRICT OFFICE
414 Interstate Building
Kansas City 6, Missouri

November 13, 1943

Forrest C. Allen
Director of Physical Education
Varsity Basketball Coach
University of Kansas
Lawrence, Kansas

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With kindest personal regards, I remain

Yours very sincerely,

(Signed) Charles B. Shaeffer
Acting District Manager.

W. C. McNown
F. A. Russell
Earnest Boyce
G. W. Bradshaw
D. D. Haines
B. L. Williamson
W. F. Scofield
R. C. Fitch

LAWRENCE

November 24, 1937

Dr. F. C. Allen
Department of Physical Education
University of Kansas

Dear Dr. Allen:

Attached is a rather hurried estimate on approximate costs to build one reinforced concrete tennis court. This estimate is based on plans and specifications of the Portland Cement Association and in line with suggestions of Jr. Coen, who has written me quite fully.

The cost may appear quite high and on an actual competitive bid it is quite likely you could get it done somewhat cheaper, although there is always the doubt if you would get as good a job as could be done by Buildings and Grounds. This work is quite similar to our reinforced concrete walks, which cost about 25¢ per sq. ft. finished. On this basis this cost would be 6720 sq. ft. at \$ 0.25 = \$1680.00, which is almost the same as above estimate.

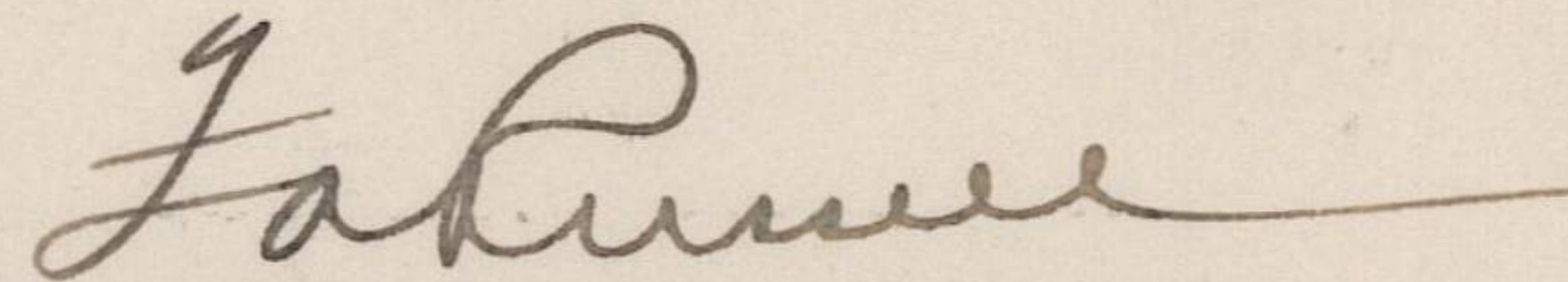
Junior Coen mentions a double court they built in Kansas City which cost \$2500.00. The double court could, of course, be built somewhat more economically than a single court.

In this estimate, nothing is included for the wire back stops or the tennis net.

The construction, to be satisfactory, will have to be very carefully done, particularly regarding grades and surface finishing. I am getting other information on courts built on the west coast, and may have some changes to suggest later on.

I trust this estimate will be of some service to you.

Yours truly,



F. A. Russell, Professor
of Civil Engineering

FAR:ef

Estimate of Cost of Construction of
Reinforced Concrete Tennis Court by the
Department of Physical Education
University of Kansas

Reinforced Concrete Court, 120 ft. long, 56ft. wide and 5 inches thick,
reinforced with wire mesh.

Concrete 56' x 120' x 5" 105 cu. yds.

Cement, 6 sax x 105 c.y. , 160 Bbls. at \$2.30	.....	\$ 368.00
Sand, 60 cu. yd.	at 1.00	60.00
Crushed Rock, 100 cu. yds.	at 2.00	200.00
Wire Mesh Reinforcing 760 sq. yds.	at 0.20	152.00
Expansion Joint Material, 430 lin. ft. at 0.06	.....	25.80
Coloring for top surface	.....	25.00
Two removable net posts	.....	25.00
Tile Drain, 380 Lin. ft. at 0.04	.....	15.20
Crushed rock for drain, 40 c.y.	at 2.00	80.00
Form Lumber, 360 Lin. ft., 2" x 6" = 360 F.M at 0.07	..	25.20

Total material \$976.20

Labor

Grading (estimate not a great deal required)	.....	\$50.00
Excavation for Drain Tile 40 c.y. at \$1.50	.....	60.00
Placing Drain Tile and filling ditch with crushed rock	.....	25.00
Lay and finish concrete	.....	500.00
Painting marking lines	.....	25.00
Engineering	.....	50.00

Total Labor \$710.00

Grand Total. Labor & Material \$1686.00

February 22, 1938.

Mr. Lyman R. Flook, Supt.,
Buildings and Grounds,
University of Chicago,
Chicago, Illinois.

Dear Superintendent Flook:

I ask pardon for the delay in acknowledging receipt of your letter of the 8th instant in reply to our inquiry regarding tennis courts of concrete.

The material you enclosed will be very helpful to us, and we appreciate your fine response to our inquiry. We shall take good care of the "Concrete Builder", and return it to you after our committee has carefully studied it.

With deep appreciation of your cooperation,

I am

Sincerely yours,

Director of Physical Education,
Varsity Basketball Coach.

h

The University of Chicago

Department of Buildings and Grounds

February 8, 1938

Mr. Forrest C. Allen
Director of Physical Education
University of Kansas
Lawrence, Kansas

Dear Mr. Allen:

Mr. Metcalf has referred to this office your inquiry of January 31 regarding concrete tennis courts.

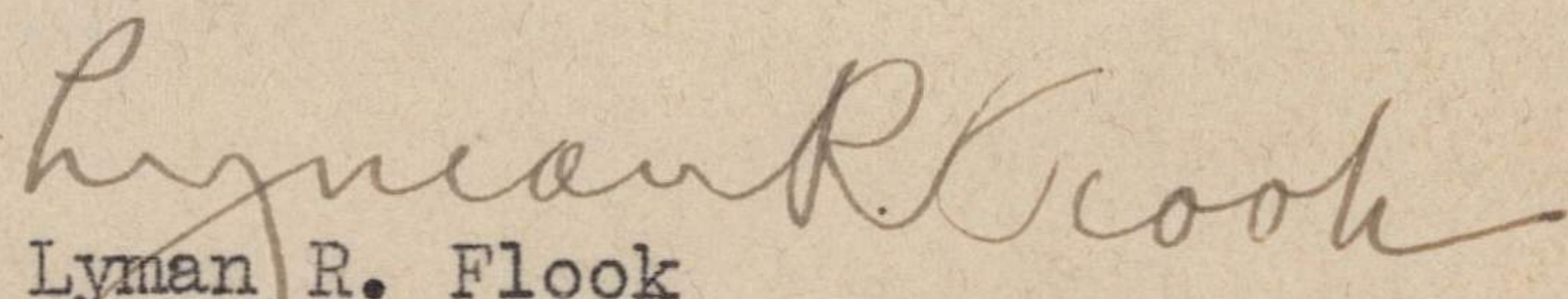
I enclose two publications of the Portland Cement Association; "Reinforced Concrete Tennis Courts - Suggested Specifications" dated August 1936, which gives their requirements, and "Concrete Builder" dated October 9-15, 1933.

I also enclose a copy of my letter to Mr. Hebert, of the Athletic Department, in which I mention requirements for concrete courts, three of which have been built here.

In this design we improve on the Portland Cement Association's requirements somewhat.

If this does not give you the necessary information, I shall be glad to clear up any further points.

Very truly yours,


Lyman R. Flook
Superintendent

lrf em
enc.

P. S. Kindly return the "Concrete Builder" when it has served its purpose.

January 18, 1938

Mr. Walter H. Hebert

Physical Education

Lyman R. Flook

Buildings and Grounds

CONCRETE TENNIS COURTS

In response to your request I enclose a blue print showing the reinforced concrete tennis court which was the first one built. I designed this court.

The reinforced slabs are laid alternately, each one dowelled into its neighbor.

The Portland Cement Association took many pictures during the progress of the work. They published them in their magazine "Concrete Builder", Vol. 6 No. 4 which was, I think, in October 1932.

In that issue beginning on Page 5, the article was related by Mr. Alfred Simmons, the Foreman for Bulley & Andrews, contractors for the College Residence Halls for Men, entitled "Building Black-colored Concrete Tennis Court with White Mortar Playing Lines". The article was illustrated by seven construction views and gives various specifications for the work.

Later we built two tennis courts at International House. All three of these courts have now been through several severe winters and very hot summers with no cracking, and there have been few complaints except those applying to all concrete courts.

This construction is not cheap in first cost; I think, however, in view of the length of life and good results over a period of years that it is the cheapest.

I trust this is the information desired.

lrf em
enc.

P. S. I have only one copy of the magazine. The Portland Cement Association could doubtless furnish a copy.

P-142

RECEIVED	
THE DEPT. of HEDCS. and GRDS.	
FEB 7 1938	
CORR.	
DATA	
L. R. FLOOK	<input checked="" type="checkbox"/>
W. L. KRGGMAN	<input type="checkbox"/>
C. A. BOSTWICK	<input type="checkbox"/>
F. A. HAYNES	<input type="checkbox"/>
W. H. LAVERTY	<input type="checkbox"/>
E. LECKIE	<input type="checkbox"/>
	<input type="checkbox"/>
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REINFORCED CONCRETE TENNIS COURTS
SUGGESTED SPECIFICATIONS

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue
Chicago, Illinois

August, 1936

NOTES ON REINFORCED CONCRETE TENNIS COURTS

These specifications have been prepared to serve as a guide in writing specifications for particular jobs. They cover, in general, the preparation of the subbase and the making, placing, finishing and curing of the concrete. Other features to be considered, such as fence enclosures, flood-lights for night playing, drinking fountains, posts, nets, and club house facilities, are usually items which vary widely with different court installations and should be treated in accordance with the individual job.

The smooth even surface of a concrete tennis court available at any season of the year, except during an actual storm, appeals to the lover of the game. There is never a delay occasioned by the need of rolling and marking the court. The hard surface makes a fast ball with an accurate bounce adding to the speed of the game, a feature essential to successful play.

Many park departments in our cities have chosen reinforced concrete for tennis courts because concrete courts add to the length of the playing season and reduce maintenance costs to a minimum. When one park superintendent in a mid-western city was asked why he favored concrete tennis court construction he said, "Our people now have a tennis season 90 days longer than when we were using earth courts. While the original cost of construction is somewhat larger the reduced maintenance more than offsets the initial increase expenditures."

Reinforced concrete is especially adapted to private tennis courts. Little or no attention is required to keep the surface in condition and this feature is appreciated where it is not possible to have a caretaker constantly available to keep the surface suitable for play.

Color incorporated into the concrete slab at the time it is placed, in the form of mineral pigments, makes a court that will harmonize with the general color scheme of the surrounding landscape and in the opinion of some players adds to the pleasure of the game.

In the northern sections of our country a properly constructed tennis court may be flooded, frozen over, and used for ice skating during the winter months, thus adding to its usefulness in providing healthful recreation. If flood-lights are installed, they may be used during the skating season as well as during the summer months.

REINFORCED CONCRETE TENNIS COURTS
SUGGESTED SPECIFICATIONS*

* * *

PREPARATION OF SUBBASE

1. Grade Line

a. The grade line for the finished surface of the court shall be established three (3) inches above the ground level at the net line.

2. Excavation and Depth

a. The subgrade shall be excavated to a depth of five (5) inches below the finished surface of the court, removing all sod, loam, roots, stumps, or other matter which may rot or decay. All soft or spongy spots shall be excavated and filled.

3. Compacting of Subgrade and Fills

a. The subgrade shall be uniformly compacted before concrete is placed. Where necessary fills shall be placed to bring the base to an elevation five (5) inches below grade. Fills shall be placed in layers not exceeding six (6) inches in thickness and each layer shall be well compacted. Water shall be used wherever it will assist in compacting the fills.

Note: Uniform bearing of subgrade is essential to prevent uneven settlement and cracking of the completed slab.

DRAINAGE

4. Tile Drains

a. Tile drains provided with an unobstructed outlet shall be installed as shown on the plans. The ditches in which drains are laid shall be back-filled with gravel or crushed stone not smaller than one-half (1/2) inch.

5. Surface Drainage

a. The surrounding ground shall be sloped away from the court so that surface water will not drain upon it.

*A layout drawing should accompany this specification showing the location and arrangement of the one or more courts contemplated.

CONCRETE MATERIALS

6. Portland Cement

a. Portland cement shall be of American manufacture and shall conform to the "Standard Specifications for Portland Cement" (Serial Designation C9-30) of the American Society for Testing Materials.

7. Concrete Aggregates

a. Concrete Aggregates shall consist of natural sands and gravels, crushed stone, blast furnace slag, or other approved inert materials having clean, uncoated particles of strong and durable minerals. Aggregates shall meet the requirements of the Tentative Specifications for Concrete Aggregates of the A.S.T.M. (Designation C33-30T)

b. Size. Coarse aggregates shall range in size from one quarter (1/4) inch to the maximum size used but shall not exceed 1 inch in diameter. Fine aggregate shall range in size from fine to coarse within the limits indicated below, percentage by weight:

Passing through No. 4 sieve.....	100%
Passing through No. 50 sieve (Not more than)	30%
Passing through No. 100 sieve, (Not less than)	10%
Passing through No. 100 sieve, when screened dry	Not more than 5%
Volume removed by sedimentation	Not more than 3%

8. Water

a. The water used in mixing concrete shall be clean, and free from acids, alkalies, excessive salts, oil or organic materials.

DIMENSIONS AND DETAILS OF CONSTRUCTION

9. Design

a. The construction of the courts shall conform to the shape, lines and dimensions as called for on the plans. Where the specifications and the plans conflict, the specifications shall be taken as the authority.

b. Slope. One court. The court shall be given a slope of three (3) inches from one side to the other.

c. Slope. Two Courts. Each court shall be given a slope of three (3) inches, from the longitudinal expansion joint between the two courts, to the outside of each court.

10. Dimensions

- a. Thickness. The total thickness of the finished slab shall be not less than five (5) inches.
- b. Length. The length shall be not less than one hundred and ten (110) feet. (See Note.)

Note: For official tournament play, the length of the slab shall be not less than 120 feet.

- c. Width. One court. The width shall be not less than sixty (60) feet.

11. Placing Reinforcement

- a. Metal reinforcement, shall be thoroughly cleaned of mill and rust scale and of coatings that will destroy or reduce the bond. The effective weight per 100 square feet shall be not less than 80 pounds. Reinforcement shall be accurately placed within the slab, two (2) inches from the top surface of the court.

12. Expansion Joints

- a. Expansion joints shall be provided at the net line and at the longitudinal center line between abutting courts.

- b. Expansion joints at the net line shall be at least one-half ($1/2$) inch wide and between courts shall be at least one (1) inch wide. All expansion joints shall extend the full depth of the slab and shall be filled with prepared felt or other suitable material trimmed level with the surface of the court.

Note: Adjacent courts may be divided by a strip of turf one (1) foot or more in width.

- c. Reinforcing shall not be carried continuously across expansion joints.

- d. All joints shall be finished with one-quarter ($1/4$) inch edging tool.

13. Construction Joints

- a. When approved by the engineer, construction joints may be made to conform to the playing lines of the court or to come at any location in the concrete slab outside the field of play.

- b. Reinforcing shall be carried continuously over all construction joints.

FORMS

14. Materials

a. The forms shall be free from warp and of sufficient strength to resist springing out of shape. Wooden forms shall be of not less than two (2) inch stock.

15. Setting

a. The forms shall be well staked or otherwise held to the established line and grades and their upper edges shall conform to the established grade of the court.

16. Treatment

a. All wood forms shall be thoroughly wetted or oiled and metal forms oiled before depositing any concrete against them. All mortar and dirt shall be removed from forms that have been previously used.

CONCRETE QUALITY

17. Proportioning (Water-Cement Ratio Method)

a. Concrete shall be mixed with not more than six (6) U.S. gallons of water per sack (94 lb. net) of cement. Surface water carried by the aggregates must be included as part of the mixing water in determining the amount of water to be added to the batch.

Note: The quantity of mixing water used in each one sack batch shall not exceed 6 gals. with dry sand and 5 gals. with wet sand. The water should be carefully measured to secure uniform batches. Limiting the mixing water to these requirements will insure strong dense concrete which will resist effects of weather and will provide a good wearing surface.

b. The coarse aggregate shall be not less than the amount of fine aggregate nor more than twice the amount of fine aggregate.

c. Fine and coarse aggregates shall be used with the specified quantities of cement and water in such proportions to produce concrete that will work readily into the corners of the forms and around the reinforcement without excessive puddling or spading and without permitting the materials to segregate or water to collect on the surface.

18. Mixing

a. The concrete shall be mixed until there is a uniform distribution of the materials and the mass is homogeneous and uniform in color. The mixer shall be of such

type as to insure the maintenance of the correct proportions of the ingredients. The mixing shall continue for at least one minute after all the ingredients are in the mixer.

b. When coloring pigments are added to the mix the time of mixing shall be increased to at least two (2) minutes after all the ingredients are in the mixer.

19. Placing

a. Concrete shall be placed three (3) inches thick on which the reinforcing shall be laid and the placing of the concrete immediately continued to the established grade.

b. When concreting is once started, it shall be carried on as a continuous operation until the placing of one block is completed.

c. Where more than one court is built, the concrete shall be placed in alternate blocks.

20. Finishing

a. After the wearing surface has been brought to the established grade by means of a strikeboard, it shall be worked with a wood float in a manner which will compact it and produce a surface free from depressions or inequalities of any kind. After the concrete has hardened sufficiently to prevent fine material from working to the top (when the sheen or shiny film of water on the surface has disappeared) it shall be steel troweled but excessive working shall be avoided.

b. After the surface has been troweled and before the concrete has thoroughly hardened, it shall be lightly brushed in one direction with a fine hair broom.

PROTECTION

21. Protection from Weather

a. The concrete surface must not be damaged or pitted by rain drops and therefore the contractor shall provide and use when necessary, sufficient tarpaulins or other material to completely cover all sections that have been placed within the preceding twelve (12) hours.

22. Curing

a. As soon as each finished court section has hardened sufficiently to prevent damage thereby, the concrete

shall be cured for at least seven (7) days either by covering it with at least one (1) inch of wet sand which shall be kept wet by sprinkling with water, or by ponding.

MISCELLANEOUS

23. Court Lines

a. The necessary court lines shall be one and one-half (1-1/2) inches in width and shall be marked as indicated. All lines shall be formed by painting with two coats of a good portland cement paint.

Note: White lines are standard and are usually preferred regardless of the color of the court. They may also be built integrally into the slab with white portland cement concrete as described in the accompanying article.

24. Grading Around Court

a. The ground around the court for a distance of three (3) feet from the court limits shall be graded up level with the court surface, using clay or earth firmly compacted.

25. Color

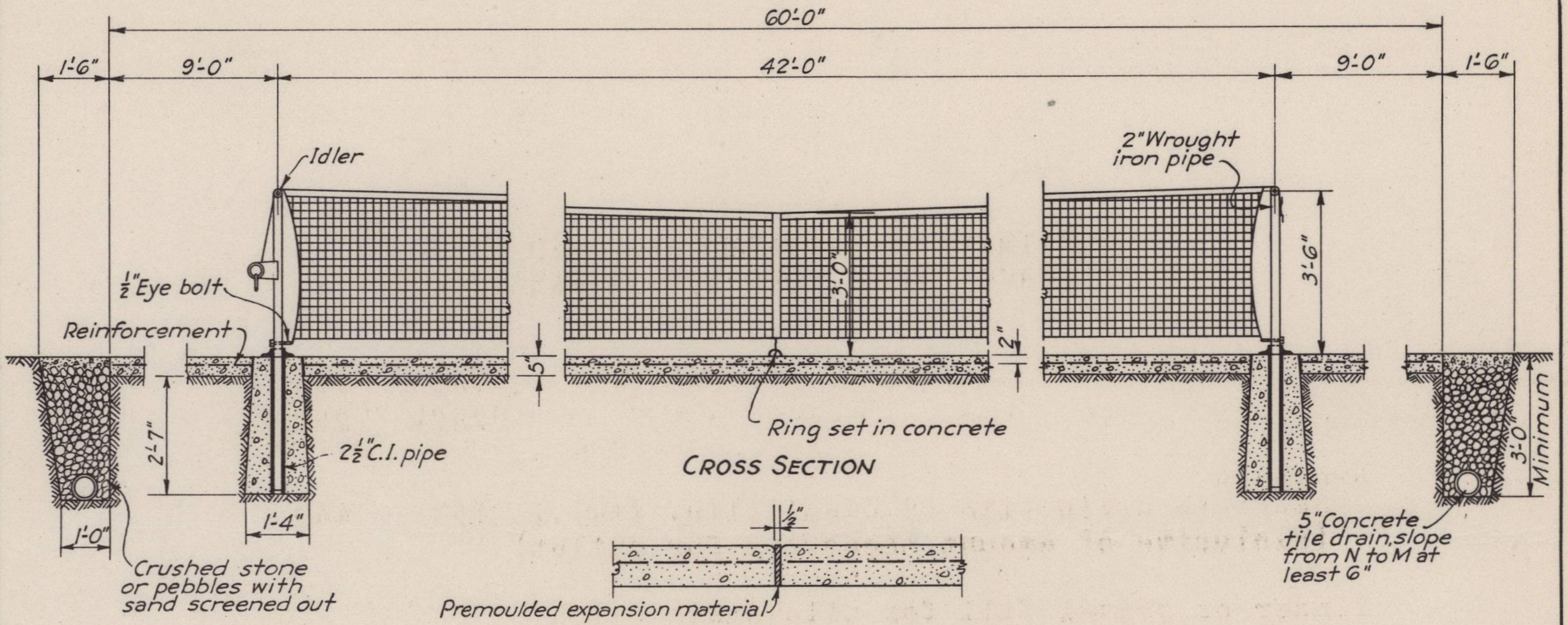
a. If it is deemed desirable to incorporate color in the concrete placed above the reinforcing, it shall be placed in the mixer with the other materials in the quantities specified. Only mineral oxide pigments shall be used and in no case shall more than ten (10) per cent of color by weight of the cement be added.

(End of Specification)

MISCELLANEOUS

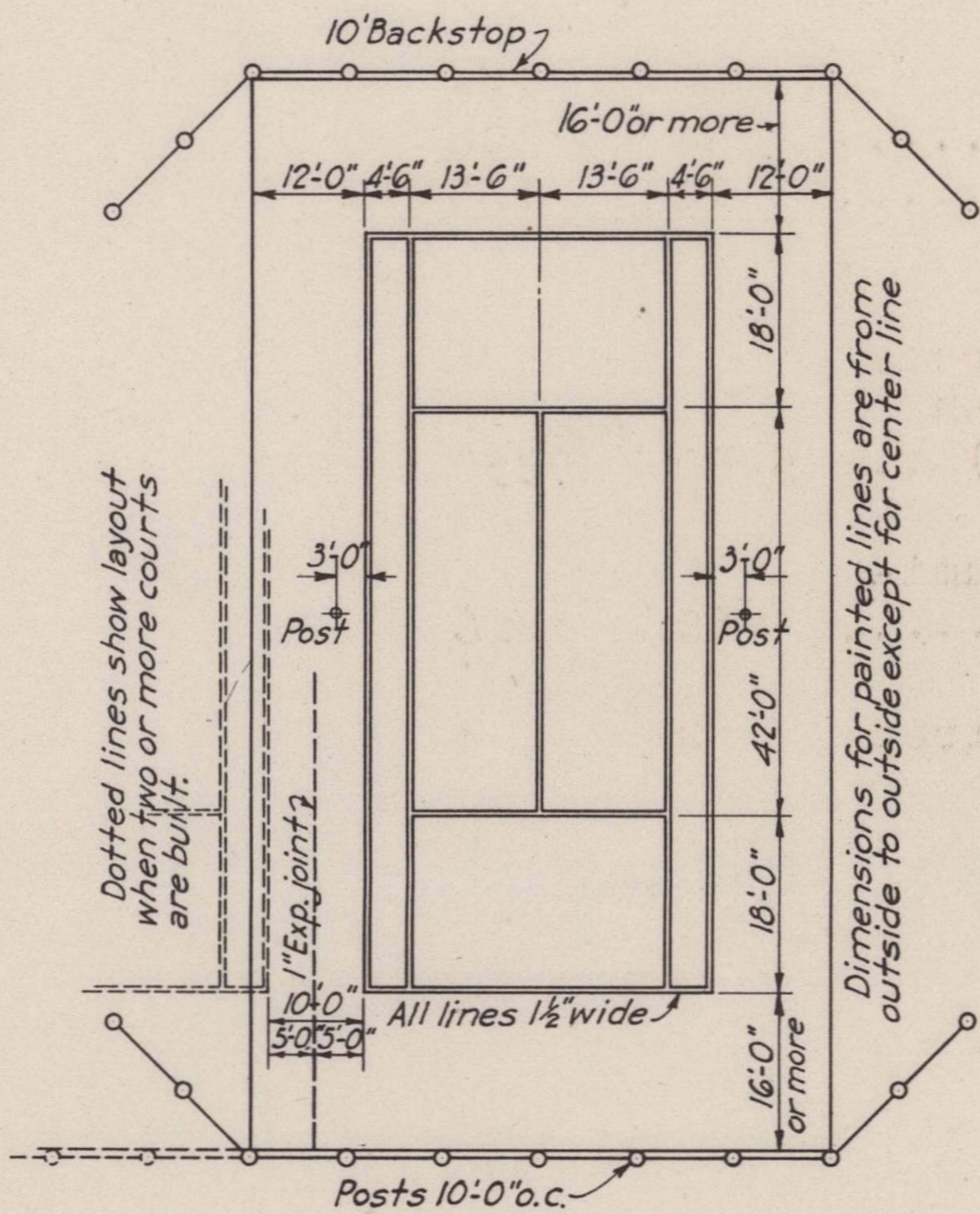
ESTIMATE OF MATERIALS REQUIRED FOR
CONSTRUCTION OF CONCRETE TENNIS COURTS

	<u>One</u>	<u>Two</u>
	<u>Court</u>	<u>Courts</u>
Drainage		
Concrete drain tile 5" diam. (lin. ft.)..	350	440
(Exclusive of amount necessary for outlet)		
Cinder or gravel fill for tile drain ditch		
(cu.yd.)	47	59
Concrete		
60'x110'x5" thick (cu.yd.)	102	180
(1:2 $\frac{1}{4}$:3 mix)		
Cement (bbls.)	160	295
Sand (cu.yd.)	54	96
Stone (cu.yd.)	71	125
Reinforcement		
(Woven or welded steel mesh for concrete		
reinforcement, to weigh not less than		
80 pounds per 100 square feet) (lb.) ...	5280	9350
Expansion joint filler, premoulded bitumi-		
nous type (lin.ft.)	60	216
Steel posts for net, complete No. required	2	4

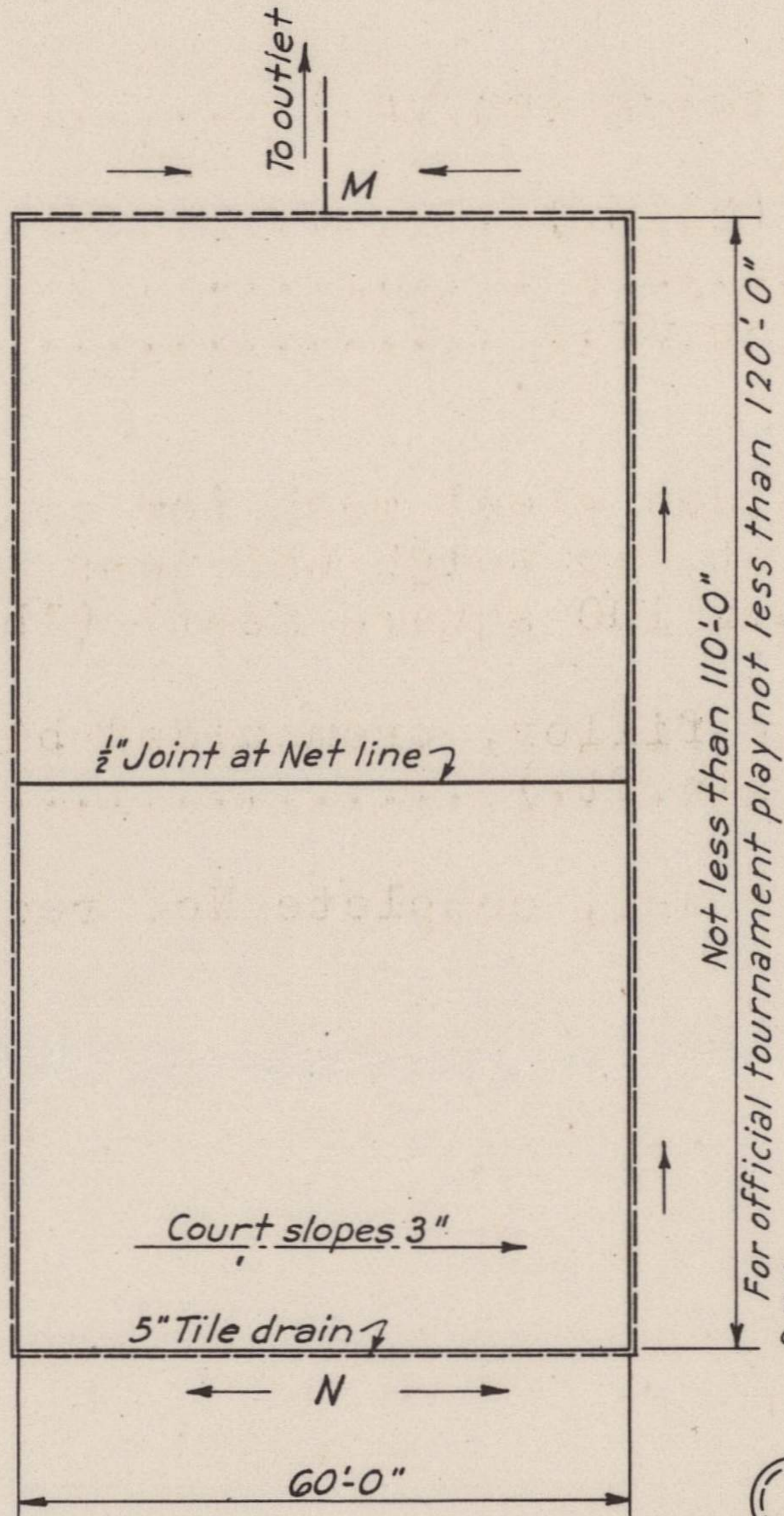


DETAIL OF EXPANSION JOINT

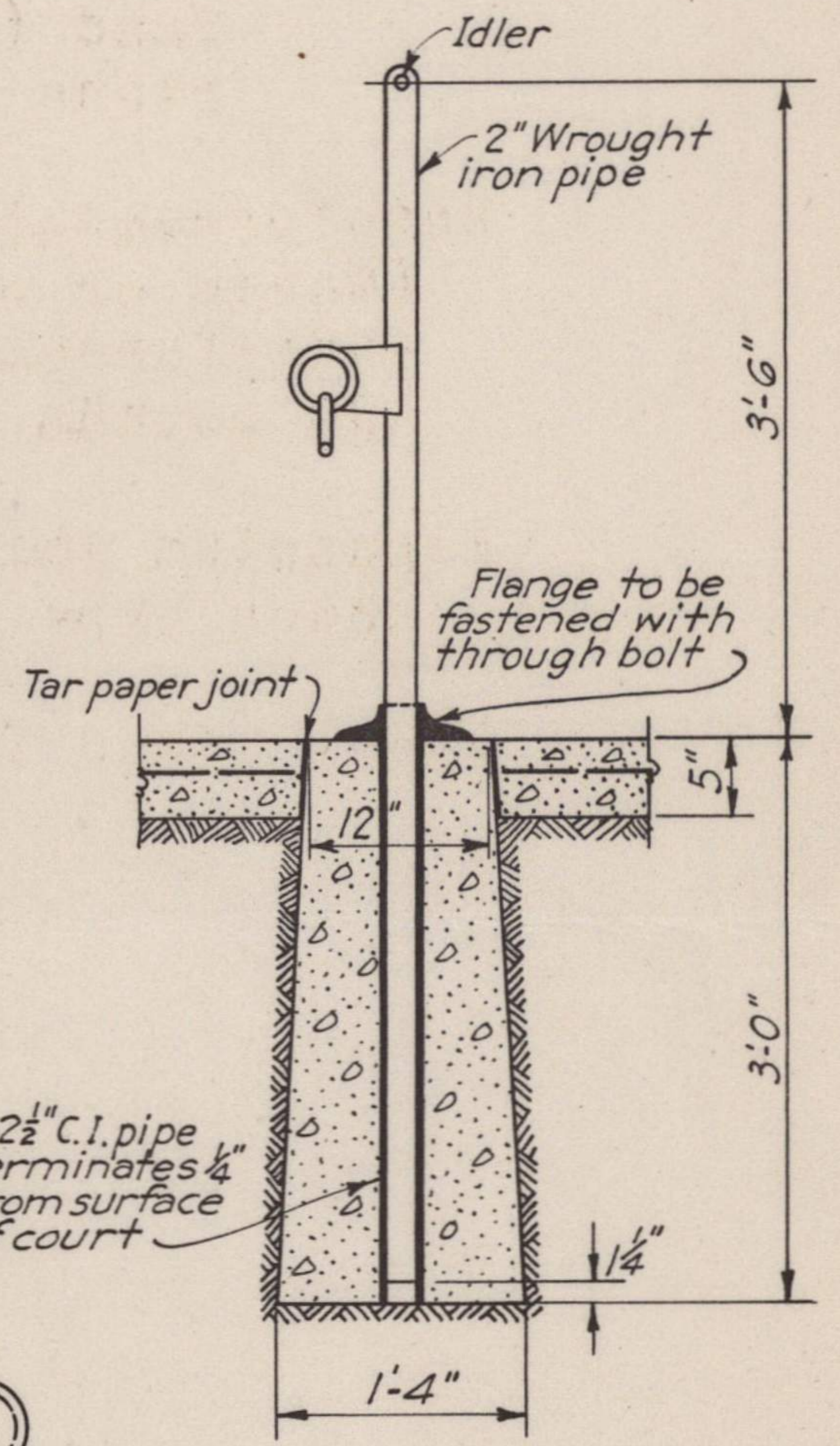
For tournament play the back court should be not less than 21'



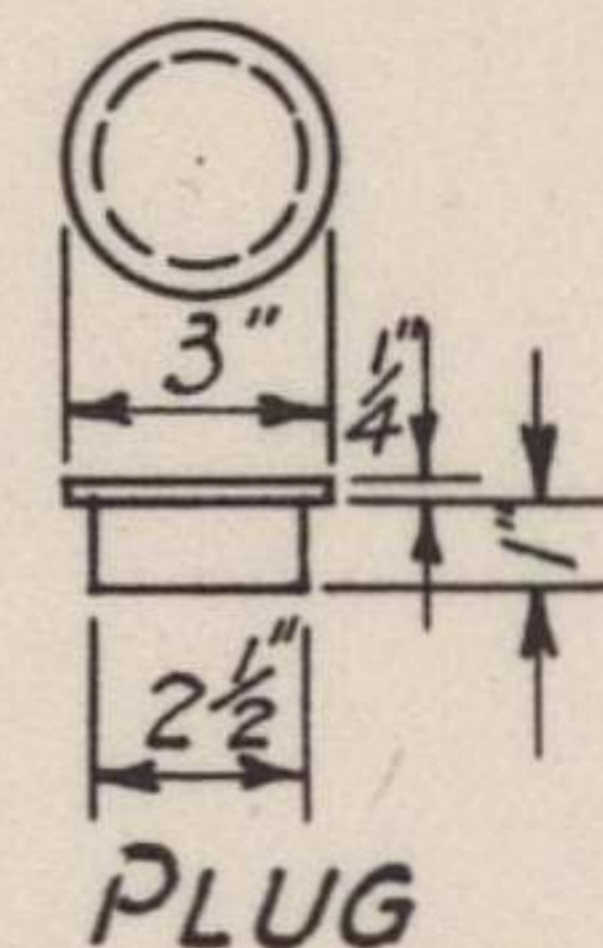
PLAYING DIAGRAM



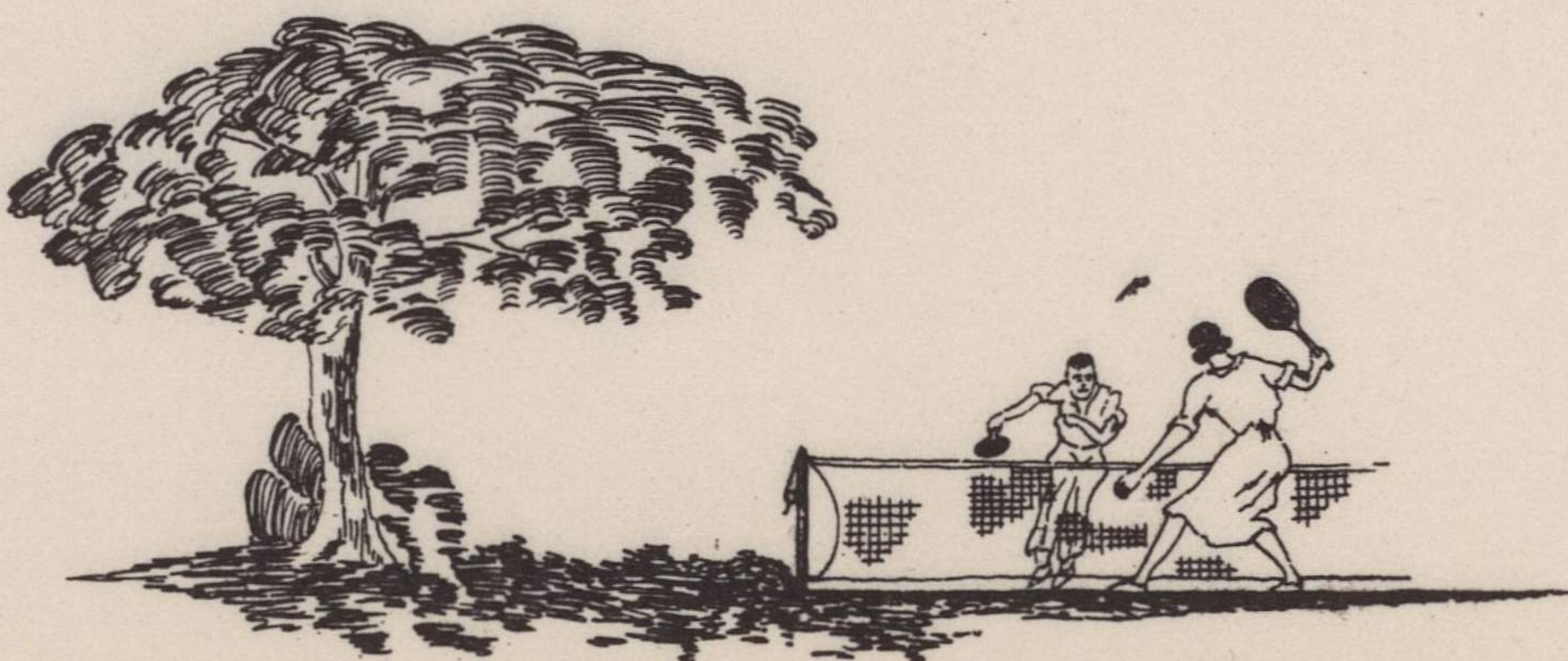
CONSTRUCTION PLAN



REMOVABLE PIPE POST



To be inserted in top of C.I. pipe when post is removed



PORTLAND CEMENT ASSOCIATION
CHICAGO
CONCRETE TENNIS COURT

Apr. 10, 1931 Scale 1/2" & 3/8" = 1'-0"
Drawn J.E.Z. Traced J.E.Z. Checked
Approved

Revised 7-29-36

C-1016

L. R. FLOOK
UNIV. OF CHICAGO.

CONCRETE BUILDER

RECEIVED
THE UNIVERSITY OF CHICAGO
Dept. of Building & Townships
Supt. _____
Supt. _____
MAR 24 1934
Clerk _____ Dr. Rm. _____

Volume 6
Number 4

RECEIVED
THE UNIVERSITY OF CHICAGO
Dept. of Building & Townships
Supt. _____
Supt. _____
MAR 23 1934
Clerk _____ Dr. Rm. _____
Gen'l For. _____ Editor _____
Jan. For. _____ G. I. Cl. _____
Supt. _____ P. & M. _____
Gen'l For. _____

Published by
Portland
Cement
Association

YOUR LIFE YOUR PROPERTY

FIRE TAKES A TOLL OF 10,000 LIVES
AND \$500,000,000 EVERY YEAR



FIRE PREVENTION WEEK

OCT. 9-15

Concrete for Permanence and Firesafety

Building Black-Colored Concrete Tennis Court with White Mortar Playing Lines

By ALFRED SIMMONS

Foreman, Bulley & Andrews, Concrete Contractors, Chicago, Ill.

THE black-colored concrete tennis court which we built for the University of Chicago has several features that will interest concrete contractors. The plans, which were prepared by the building and grounds department of the university, called for black concrete topping that would prevent glare from bright sunlight. The playing lines were to be of white cement mortar which would not need constant repainting. The surface was to have a mat- or canvas-like finish. The drainage system was to be different in that surface water was to be collected and carried away without allowing it to run over the edges of the slab or over the next court.

All of these features interested me, and I could see that here was a chance to build something new in tennis court construction.

Construction Details

IN beginning this work we set stakes (about 10 ft. apart both ways) to the finished grade which allowed for a slope of 2 in. to one side. Next we laid 6-in. drain tile around the outside of the court, connecting it to the storm water drain. About 8 in. from the edge and near the net post on the low side of the court, we built up a riser pipe to provide an outlet for the integrally formed gutter along the outer edge of the concrete slab. Then we placed the base for the net posts. This was done early so that the forms could be taken off when we built the slab.

After the surface of the old court was removed to 5 in. below the top of the grade stakes, we set the forms which consisted of 2-in. material. They were set along the single court playing lines, continuing out to the edges of the court. In this way, the concrete slab was built in sections corresponding to the playing lines.



Alfred Simmons

To make the grooves for the white concrete playing lines, we used 2 by 2-in. wood strips beveled on one side to permit easy removal. These were lightly nailed to the form boards. For the double court lines, the 2 by 2's were notched into the top of the cross forms and supported in between on small wooden stakes. Later, when the strips were pulled out, we drove the stakes down and filled the spaces with white portland cement mortar.

All sections of the court were reinforced with large-mesh metal reinforcement weighing 78 lbs. per 100 sq. ft. To tie adjoining sections of the concrete together and keep them even, we placed $\frac{5}{8}$ -in. round bars, 30 in. long, about 3 ft. apart in all construction joints. The work was laid out so we could keep going without having to work over any of the completed slabs before they were at least two days old.

For the concrete in the 5-in. slab, we used a 1-2 $\frac{1}{2}$ -3 $\frac{1}{2}$ mix for the base and a 1-2 $\frac{1}{2}$ mix for the top. To get the color in the topping that the inspector wanted, we used 1 gal. of specially prepared liquid black mineral oxide to each sack of portland cement. We placed concrete

that was quite stiff yet workable. I mean "placed" not "poured" because the concrete we used wouldn't pour, but required placing. I have found that quite stiff concrete can be worked into place easily when the mix has enough sand in it. Where the concrete is placed sloppy, the finishers are always delayed and more time is required to work out the high and low spots left when the excess water gets away.

Speeding Up Work

TO speed up the job, we waited until two sections of the base course were filled, leveled and tamped before we put on the black-colored topping. We struck off the topping, wood-floated it and then steel-troweled it sparingly. Finish troweling was not needed since the court was to have a mat- or canvas-like finish. To get this finish we brushed the top both ways with a long-handled floor brush just as the water sheen disappeared from the surface. The brush had hair bristles. I found that if a brush is used too soon, the surface smears over; if too late, the brush will not score the surface. The right time to do this brushing, we found, was just when we wanted to go to dinner or go home at night, but we always stayed to complete the job.

Curing Important

WE have found that it pays to cure concrete carefully, especially on high grade colored jobs or surfaces which will receive a lot of wear. As quickly as the surface was hard enough so it wouldn't mar, we covered the finished sections with heavy waterproof paper to keep the concrete from drying out. After the last slab had cured for four days, we took off the paper covering and cleaned and washed the court with clear

water. We waited for the wood strips in the marking lines to dry out before we attempted to remove them. In this way, we made sure that the edges of the slabs would not be damaged. We cleaned the grooves and surface of the concrete after the strips were taken out.

White Playing Lines

THE next step was to dampen the bottom and sides of the grooves with a whitewash brush and water. Then we filled the grooves with a mortar made of 1 part white cement and 2 parts coarse white sand. The mortar was mixed quite stiff. We tamped it thoroughly in place to make sure that the grooves were completely filled. Care was taken in placing the white mortar not to smear any of it on the black surface.

The edges of all slabs and the white marking lines were finished with an



Construction view showing strips that form grooves for playing lines; reinforcement; dowels; gutter, which carries surface water to drain; base for net posts separated by tarred expansion joints. Waterproof paper used in curing is turned back to show that concrete is moist.

edger. We found that by running the edger first along the hardened concrete

that the white mortar is forced away from the black concrete top and then, when the white lines were edged, we had a clean, sharp break between the two colors. We covered the mortar in the marking lines with waterproof paper and let it cure for several days. Then we wet the entire court several times a day for a week, after which it was opened for play.



Colored topping being placed over concrete base which is tamped to compact it. Fairly stiff concrete used in both base and top. (Below) Finisher doing rough steel-troweling immediately after topping has been floated.

See Next Page . . .

. . . for additional construction photographs of the black colored concrete tennis court which Mr. Simmons has just described. Included in the group is one picture showing progress of another similar job which Bulley & Andrews obtained after completing the court for the University of Chicago. Good work paves the way for other jobs.

Sign Up Now to Work for Factories This Winter

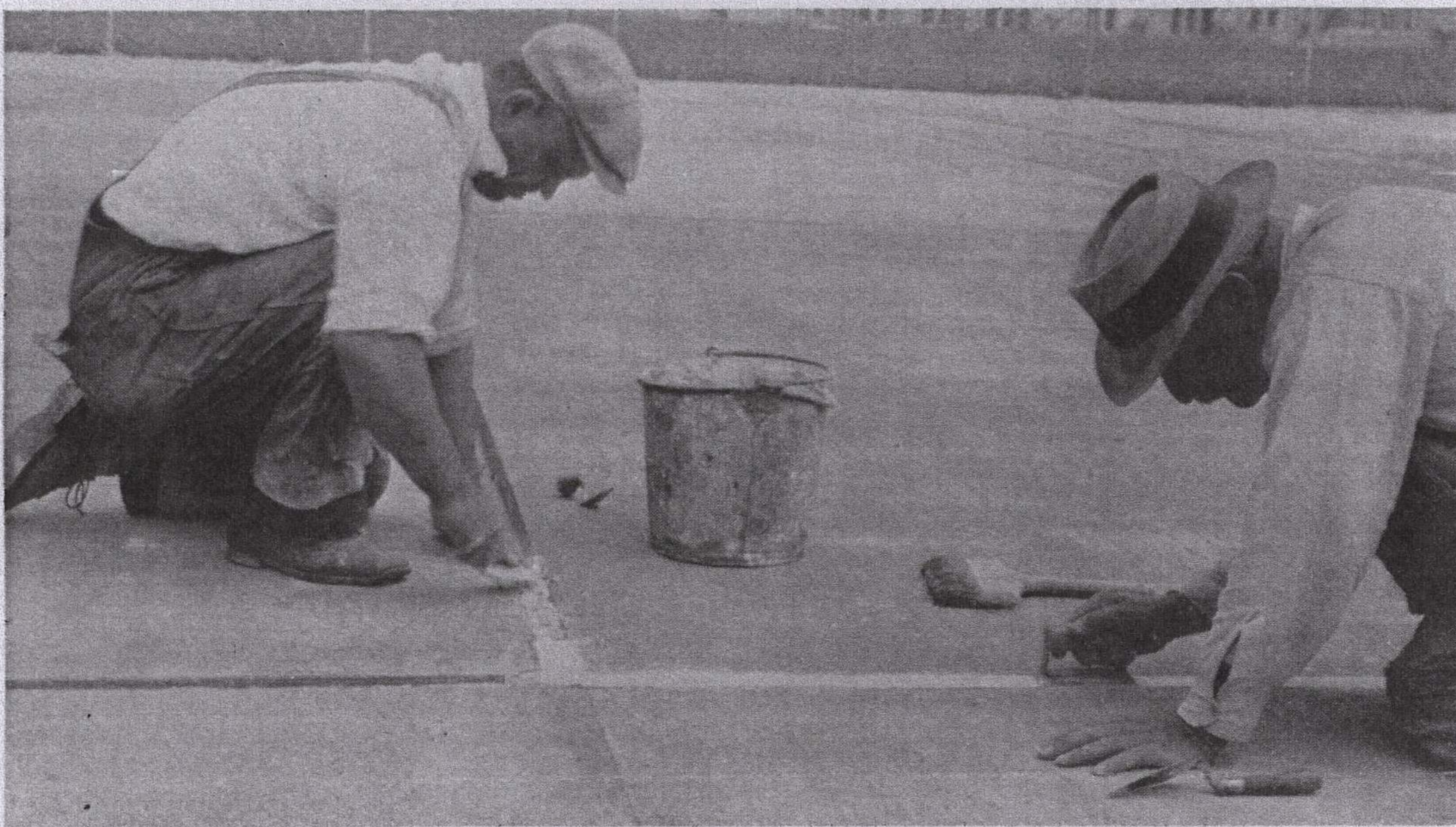
Progressive concrete contractors are making plans *now* for the coming winter. Many factories which have been idle for months already are swinging into production; will be in the market for concrete improvements this winter. See the managers or owners today; tell them you want to do their repair work this winter. *Now* is the time to get orders for this work.



Brushing surface with floor brush in both directions to produce canvas-like finish.



Tamping white portland cement mortar into grooves at lines.



White portland cement mortar is pressed into place with pointing trowel, finished with an edger, and then excess mortar is brushed away.

One good job paves the way for others. Bulley & Andrews obtained contract to build these two concrete courts after doing satisfactory work on the court which is described by Alfred Simmons.



COPY

July 6, 1938.

Dean Frank T. Stockton,
School of Business,
University of Kansas.

Dear Dean Stockton:

I am now enabled to answer your request contained in your letter of June 2, 1938. I wrote you on June 15 that as soon as opportunity presented itself I would submit as complete data as possible concerning the plant needs of physical education.

(1) Women's Building. I am submitting a sketch of the Women's Building, supervised by Professor George M. Deal on a CSEP project, and done by Jim Bounds. This building, with our excellent outdoor playing facilities, will afford the women of Kansas one of the most complete instructional, recreational and social plants in the country. It is an imperative women's need at the University of Kansas.

The Women's Building will provide facilities for many activities that have heretofore been very limited. One of the outstanding features is the 75 foot swimming pool with standard diving boards and equipment. The bowling alleys will introduce an entirely new activity to our curriculum, one which has been very popular in other schools where the equipment has been available. The rifle range, indoor archery and golf cages will permit the introduction of these courses, during the winter months.

The large gymnasium will provide ample space for the gymnasium classes and team sports, such as basketball, volley ball and softball. Intramural games will not have to be played at night, but at 4:30 in the afternoon. On the roof of the two wings as well as on the gymnasium floor will be laid out courts for badminton, darts, deck tennis, shuffleboard and tennis.

The lounge with the kitchenette provides a study room, a place for small teas, parties, committee and club meetings. Adequate airy locker space, dressing booths, showers, toilets and hair dryers have been planned. The corrective room will be provided with the latest equipment for the remedial work of the students. The dance studio on the third floor with its many windows will be set up with a stage and lighting effects for dance programs and exhibitions. The class rooms will be used for the theory classes and lecture work.

(2) Grading Intramural Field. You will recall that I submitted an estimate on grading the intramural field to the Budget committee. This estimate was made under the supervision of Prof. F. A. Russell, and I believe that the budget committee rather agreed that they would be willing that we submit that as a biennial request to the legislature. You will recall that on this field where the students play their intramural games there is better than a 14 foot drop from the north end of the field to the south end. This not only makes it extremely dangerous, but it is well-nigh impossible to play any game of skill under these conditions.

(3) Concrete Handball Courts. These are to replace the old worn-out wooden handball courts that now stand south of Robinson Gymnasium. The estimated cost of these courts is \$5,000.

(4) Concrete Tennis Courts. Most universities, like Oklahoma, Nebraska, Missouri and Iowa State, have concrete tennis courts. All of the championship games in California are played on concrete tennis courts. Concrete tennis courts and gravel tennis courts are comparable to concrete highways and gravel roads in maintenance cost. It costs \$1.00 per day to sprinkle, roll and mark each tennis court. We plan to use the unit construction method in building the concrete tennis courts. Each court will cost about \$1,600. We had planned to erect four south of the hill.

(5) Improvement and maintenance of University Golf Course, \$1,800.

(6) Placing floor above beams in basketball court in Robinson Gymnasium. This will provide additional teaching and research rooms for the department of physical education. Skylights can easily be placed in the roof, and dormer windows on the south to give the necessary sunlight. A stairway can readily be built from the running track to the floor level of the sky rooms. When we obtain the Women's Building then the entire space in Robinson Gymnasium can be turned over to the Department of Physical Education for our major's work. The University electrician and I have been working on this new project. I have discussed the matter with Prof. F. A. Russell, but we have no estimate on the project at the present time. This gymnasium was built in 1906 for 1200 students. As it is now, we have the offices of the Athletic Department, all of the gymnasium facilities for the men and women are quartered here, as well as the teaching rooms for our new major work in physical education.

In addition, the gymnasium is used for the state teachers' meeting each biennium, for the W.S.G.A. carnival, the Puff Pant Prom, and enrollment for both the fall and spring terms and the Summer Session.

This new arrangement of flooring above the beams will in no way interfere with the necessary height and lighting of the present ceiling for varsity basketball practice and for intramural games as now carried on. New lighting fixtures can then be installed, thereby replacing the old dangerous and antiquated fixtures that now exist.

(7) Replacing Potter's Lake with a modern concrete Swimming Pool for University students. With proper architectural and landscaping features this improvement could be made one of the beauty spots on the campus without any of the unpleasant situations accruing. I will reserve further discussions on this until a later time.

(8) Winter Outdoor Skating Rink. This could be built on the intramural field. I have in mind the flooding of a rink area which would be definitely planned on the intramural field. This would provide safety in our winter skating activity.

(9) 160 Acre Golf Course one mile from the University. I have in mind a very definite farm of 160 acres which would make an ideal golf course for the students and faculty of the University of Kansas. I visited the Yale Sports Fields for intramurals, and that is five miles from New Haven and the students go there for their recreation and exercise. On account of the topography of Mt. Oread it is absolutely necessary that land be acquired for play fields for the students of the University. This golf course would be one of the most beautiful in the country and the students will demand it in a short time. I am looking ahead. Any purpose is to get donors to purchase these play fields the same as we ask for scholarships and buildings. It seems just as reasonable to me to provide for the health and recreation of our youth

as it is to plan for their academic training. In fact, I think more so, at times.

(10) Lawn Bowls - Bowling on the Green. This sport is definitely taking the colleges by storm. The only difficulty is to get a flat area on which to bowl. This would be a great early fall, late spring and summer recreation that we should definitely plan for on this campus. We have nearly spoiled a fine golf course by planting trees in the fairways, and unless we have a recreation engineer to work out these things we will be growing everything but strong young men and women.

(11) Bridle Paths on the Campus. These could follow the roads and by-ways and would be a great source of recreation and enjoyment to faculty members and students.

Dean Stockton, I would like to ask a favor of you - that you read Chapter XIX, my contribution in "Higher Education in America", edited by Raymond A. Kent, and published by Gim and Company. I would like to call your attention especially to constructive suggestions on pages 594 to 597. This pertains as to how the earnings from athletics could be used for physical education. Of course, this is so remote that it is not possible now. But I would like to call attention to the fact that when the charter of the University of Kansas Physical Education Corporation was drawn up that we had it worded so that the purpose of the corporation was to use the earnings, after the stadium was paid for, for play utilities for students of the University of Kansas. This is in the charter now, and provision is made as to how the money can be used.

I would like to have your reaction after you have read my chapter in "Higher Education in America". I am sending you a book which we have checked out from the library in our name. When you have finished with it please notify my office and we will call for it and return the book to the library.

There is another feature of our department which I would like to mention - that of a service program. You doubtless will get a letter this fall from our department when we send a letter to all departments offering our cooperation and supervision of all recreational equipment. This equipment will be furnished by the Department of Physical Education to other departments for picnics, breakfasts or outings. It is our purpose to furnish ping pong tables, badminton sets, soft ball or indoor baseball outfits, deck tennis, darts, volley ball, horseshoes, basketball, quoits, croquet, archery and bridge tables for the more inactive groups. We will have one of our majors in the department who will be taking some course like Community Recreation to transport this equipment to the location of the breakfast or picnic, set up the equipment, furnish the balls or other necessary equipment, and to supervise any play that is necessary. After the outing is over this material will be gathered up by the student, placed in the truck and returned to the gymnasium. There will be no charge for this service.

I have a very definite plan for rehabilitating Brown's Grove. I have definite ideas as to where we can get any building material we need, and I have already conferred with Mr. Brown. For the School of Education breakfast the other morning we did this very thing I have been telling you about. On the Fourth of July I got the truck and together with Howard Engleman, one of our students, we loaded up all of our play equipment, transported it to Brown's Grove, and set it up. The response was one of the most delightful experiences that I have had.

I expect to enlarge upon this program, but space forbids at the present time. We have a basketball goal set up there now for the adults. When we interrogate the various school departments for their outings we expect to find out how many adults and children of the different ages will attend. We will put up a 9 foot goal for children of junior high school age and let them use a soccer ball; for the younger tots we will have a goal 8 feet in height and let them use a felley ball for their play. We expect to build toilet facilities, and luncheon tables for serving. We will also have some benches for comfortable resting places. All of this equipment will be furnished by the department of Physical Education and it will be placed at Brown's Grove apart from the old retreat where everybody goes. I want to have it arranged with Mr. Brown that we will have priority on the dates, but of course everybody else may use it when the University departments do not care to use Brown's Grove. I have a notion that this should prove to be a real service that our department can render to the University departments.

Concerning Basketball. May I say that I have discussed the matter with Director Gwinn Henry. I told him that I was less than mildly interested in the building of a field house for basketball. Since the auditorium was built primarily as an auditorium and a basketball court, and then later we were denied the right to practice for our varsity games therein, even for two months of the year -- that if a two-fold project turned out this way then I would consider any other project, when more hands were in it, a very bad omen. The reason that we cannot use the auditorium, even after 5:30 p.m. for practice during the months of January and February, is because of the fact that the organ is rented to the students at the rate of 40¢ per hour.

And again, since about \$900 was spent last winter on heating the indoor track underneath the stadium, frankly I can see no urgent need for a field house at the present time. And too, it is necessary to possess the money for the initial start. With the present basketball set up the Athletic Association is not spending any money on basketball rental; and for the difference on what the Association might make with larger seating capacity in a new field house as compared to no expense at the present time, I am convinced that the Athletic Association would lose financially by a field house venture.

Very cordially yours,

Director of Physical Education,
Varsity Basketball Coach.

FCA:AH

March 10, 1938.

Mr. Gordon Clucas,
1335 Vermont St.,
Lawrence, Kansas.

Dear Gordon:

I regret that I find it impossible to meet with your committee Friday afternoon, as I have been called out of town on an emergency matter.

You will pardon me for saying so, but I feel that the former chairman of this committee, who was appointed to work with me on the costs of the project, delayed things so long and unnecessarily that real progress on the work has been delayed.

Gordon, you asked me to get an estimated cost on the adequate grading of the intramural field so that these figures could be used in your body's deliberation as to the final action of the committee. Frank Harwi asked for full information on the concrete tennis courts. We went to no end of trouble in contacting Professors McCom and Russell, and having CSEP workers switched from their original positions to detailed work on concrete tennis court construction so that we might get this information for Mr. Harwi, and apparently to no avail.

I find myself now in the position as being unwilling to trouble these busy professors and their busy assistants longer unless the committee is in a definite frame of mind to act, and when the committee decides what they want, then I will be very happy to submit figures of the University professors who are experts in their line of work. This pertains, of course, to the project that the committee might decide upon.

Sincerely yours,

Director of Physical Education,
Varsity Basketball Coach.

FCA:AH