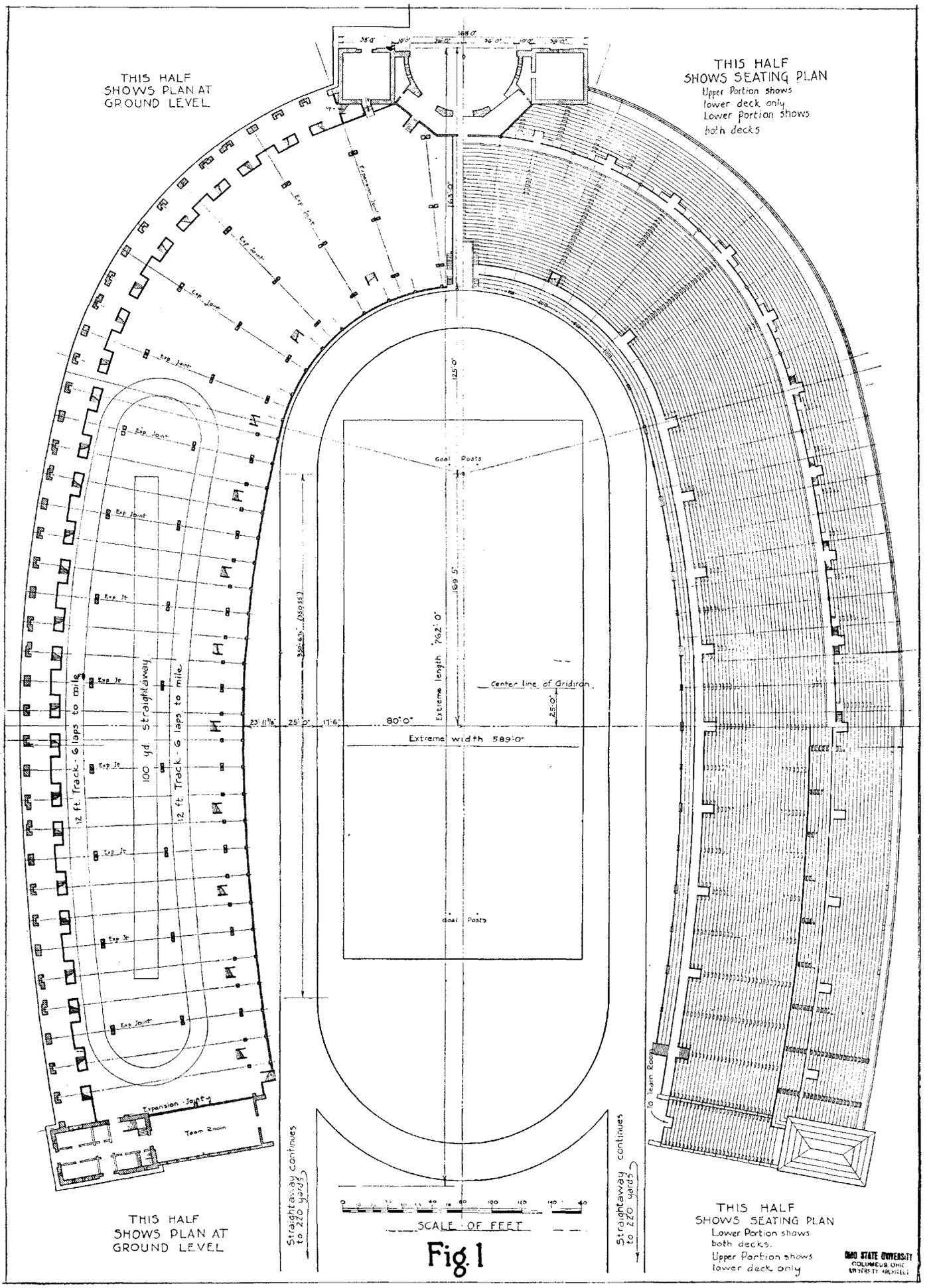
THIS HALF
SHOWS PLAN AT
GROUND LEVEL
THIS HALF
SHOWS SEATING PLAN
Upper Portion shows
lower deck only
Lower Portion shows
both decks
Goal Posts
Center line of Gridiron
Extreme length 762'0"
Extreme width 589'0"
169'5"
125'0"
80'0"
25'0"
23'11"
25'0"
17'6"
Goal Posts
12 ft. Track - 6 laps to mile
100 yd. Straightaway
12 ft. Track - 6 laps to mile
Exp Joint
Expansion Joint
Team Room
To Team Room
Straightaway continues to 220 yards
Straightaway continues to 220 yards
SCALE OF FEET
THIS HALF
SHOWS PLAN AT
GROUND LEVEL
THIS HALF
SHOWS SEATING PLAN
Lower Portion shows
both decks.
Upper Portion shows
lower deck only
OHIO STATE UNIVERSITY
COLUMBUS OHIO
UNIVERSITY ARCHIVES

Fig. 1

The Ohio Stadium

W. S. HINDMAN, *Chief Engineer*

The Ohio Stadium Project properly includes, in addition to the Stadium, other engineering features surrounding it which are necessary in order to protect the site selected, namely, the bridge at Woodruff Avenue, together with widening and straightening the Olentangy river channel between Woodruff and King Avenues, also the building of a levee this same distance on the east side of the river, to protect the Stadium and Athletic fields from floods. This article will be confined to the Stadium proper. A special effort on the part of the University Engineers and Architects working in harmony on the project, has been made to obtain the very best results conforming to modern architectural and engineering practice.

General Description: The Stadium as decided upon resembles a horse shoe in shape with two towers joined by an arch of 72 ft. span at the north end and a single tower at each end to the south, the south end being left open to permit having two 220 yd. straightaway tracks which extend beyond the structure, also to give better air circulation than would be obtained if this opening were closed. The gridiron or football field is within a quarter mile track 25 ft. in width, as shown on the Plan. (Fig. No. 1.)

Under the lower tier of seats in one wing, it is possible to have a six-lap running track with a 100-yd. straightaway track inside of it, as indicated on the plan. The open space under the seats may be used for all other indoor athletic training and in addition can be used for exhibition purposes, such as automobile shows or other exhibitions requiring a large floor space.

ARCHITECTURAL CHARACTER AND COMPOSITION

Properly to express the ideals for which it is built and influenced by all the ties of sentiment and historic precedent, the Ohio Stadium follows the example of most of its contemporaries and depends upon monumental simplicity and classic severity for its architectural character. While the double deck, a vital feature, determines very largely the architectural composition of the structure, the expression of monumental character in the use of an upper deck is a new and untried thing. There are examples of double deck stadia, notably those of professional baseball such as the Polo Grounds in New York, but in no instance has there been any pretense to monumental character. Indeed in all such cases there is a decided theatrical character which is desirable to avoid in these University structures.

The horizontal subdivision made by the wide flat band on the exterior wall suggests the top of the lower deck. This band has been carried around on the inside and is made to coincide exactly with the concrete beam which forms the lower fascia of the upper deck. This fascia, 27 inches deep, extends around the curve over a thousand feet in length from tower to tower and is relieved of the apparent incongruity of being an attenuated beam by the regularly expressed ends of the concrete rafters which support it at intervals of approximately 8 feet.

Externally the principal feature is the great semi-circular entrance at the closed end with its coffered semidome. The arch over this entrance is 100 feet high and 72 feet in diameter and suggests the character of the great niches of the baths built by the Roman Emperors. The coffered ceiling also suggests the very well known example in the Roman Pantheon. The continuity of stilted arches along the lower portion of the exterior wall suggest perhaps only remotely the composition of the Roman aqueducts and bridges. The screen wall of the upper deck with its small square windows and its engaged pilasters partakes somewhat of the character of the top story of the Coliseum. The use of these classic forms, however, does not detract from the novel composition suggested by the south elevation and the interior views. The impression created is that the structure consists of a long two-storied horseshoe terminating in towers at each end, and that in front of this structure has been placed an inner tier of seats extending down to the ground level.

The entrance feature is emphasized but little on the interior. The seats of the upper deck pass right over the semidome. The irregular shaped space between the semicircular entrance and the line of columns supporting the upper deck is taken up with rest rooms and space for motion picture projectors, spot lights, etc.

All moulding profiles are susceptible of being worked in concrete. Relief from monotony of color and surface is afforded by the inlaying of terra cotta ornament in the form of a festoon band on the towers around the semidome, and over each of the blind arches of the exterior wall. These blind arches are introduced to relieve the monotony of the continuous arcade and to give expression to the vertical circulation to the upper deck. The entablature of the enclosed order in the towers is of colored terra cotta. The engaged pilasters on the upper screen wall represent points of reinforcement in that wall and are of the same Tuscan order as the enclosed order of the towers. The embellishment on the curved walls of the front entrance consists of a wainscot of bronze panels upon which are found the names of the founders, patrons, donors and subscribers whose generosity has made the Stadium a possibility. For surface treatment of the concrete, the Ohio Stadium similates the frank expression of material found in the Harvard Stadium, which after seventeen years of wear has proven very successful. The interesting texture given to the great glad areas of concrete by the form marks may not have been entirely intentional. The effect, for instance, of the markings from horizontal planks placed at regular intervals in sections of vertical planks in the end towers of the Harvard structure is as interesting in composition and proportion as it is in the frankness of material expression.

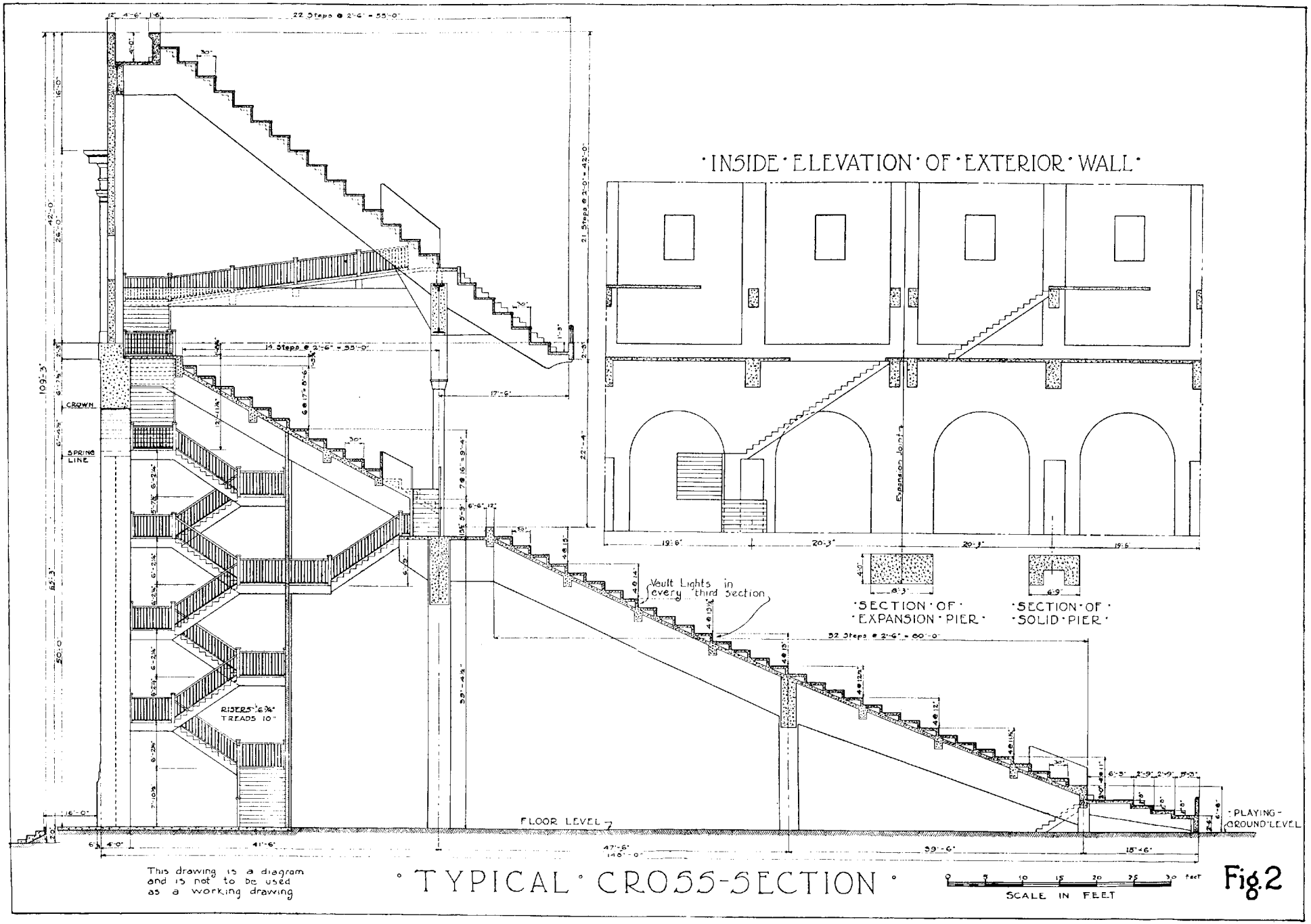
INSIDE ELEVATION OF EXTERIOR WALL
SECTION OF EXPANSION PIER
SECTION OF SOLID PIER
TYPICAL CROSS-SECTION
CROWN
SPRING LINE
FLOOR LEVEL
PLAYING-GROUND LEVEL
Vault Lights in every third section
RISERS 6¾"
TREADS 10"
Expansion Joint
This drawing is a diagram and is not to be used as a working drawing
SCALE IN FEET

Fig.2

Location: The site selected for the structure is located south of Woodruff Avenue between the present agricultural buildings and the river on the tract of land set aside for athletics by the University and seems to be the logical place for a structure, which covers as much area as any ten buildings on the campus. This location being so near the level of the river makes it necessary that all of the seats and field be above the general ground level, which although making the structure high, offers the possibilities of utilizing the space under the seats for athletic purposes, which heretofore has not been taken advantage of in similar structures to any great extent.

Grading: Approximately 60,000 cubic yards of fill will be necessary to bring the playing field to an elevation two feet above the general ground level and fill out 50 feet from the outside of the structure. This also includes the approach to the north end, from Woodruff Avenue, 100 feet wide. The playing field is located over the old river bed which accounts for most of the fill, but which provides a natural drainage for the site. It is expected that a large percentage of the filling material will be obtained from the straightening and widening of the Olentangy river on account of its being close to the Stadium site and since a much greater amount of material than required to construct the levee will be available.

In considering the structure from an engineering standpoint, it must be understood that none of the construction plans have been entirely completed at the present time and that the accompanying diagrams are only typical and subject to many changes in detail, although the general scheme will no doubt be followed out as indicated.

Foundation: A thorough examination of the site for determining the depth of suitable material on which to place the foundations or the bearing power of same has not been made, but from information at hand, the foundations will probably be on a layer of glacial gravel which is only a few feet below the present ground level at any point.

Dimensions: The structure will have an extreme length along the main north and south axis of 760 feet with a maximum width of 590 feet over all and be uniformly 148 feet from inside to outside, except at the towers. It will have an outside perimeter of about 1800 feet and a height of 107 feet from the base or ground floor level to the highest seat or top of outside wall. Each side will be curved, having three radii of 273 feet, 952 feet and 1508 feet for the outside, beginning at the north end. There will be 78 arched openings through the exterior walls, each having a width of 12′-9″ with a height of 56 feet to the crown of the arches and an average spacing of 20 feet center to center.

A special feature is the upper deck, which has not been used on a stadium previously and which has been introduced to increase the seating capacity without having the outer seats at too great a distance from the playing field.

Seating: The seating will consist of three rows of boxes around the inner circle, together with 46 rows of seats on the lower deck and 22 rows on the upper deck, there being a three foot aisle at

(Continued on page 27)

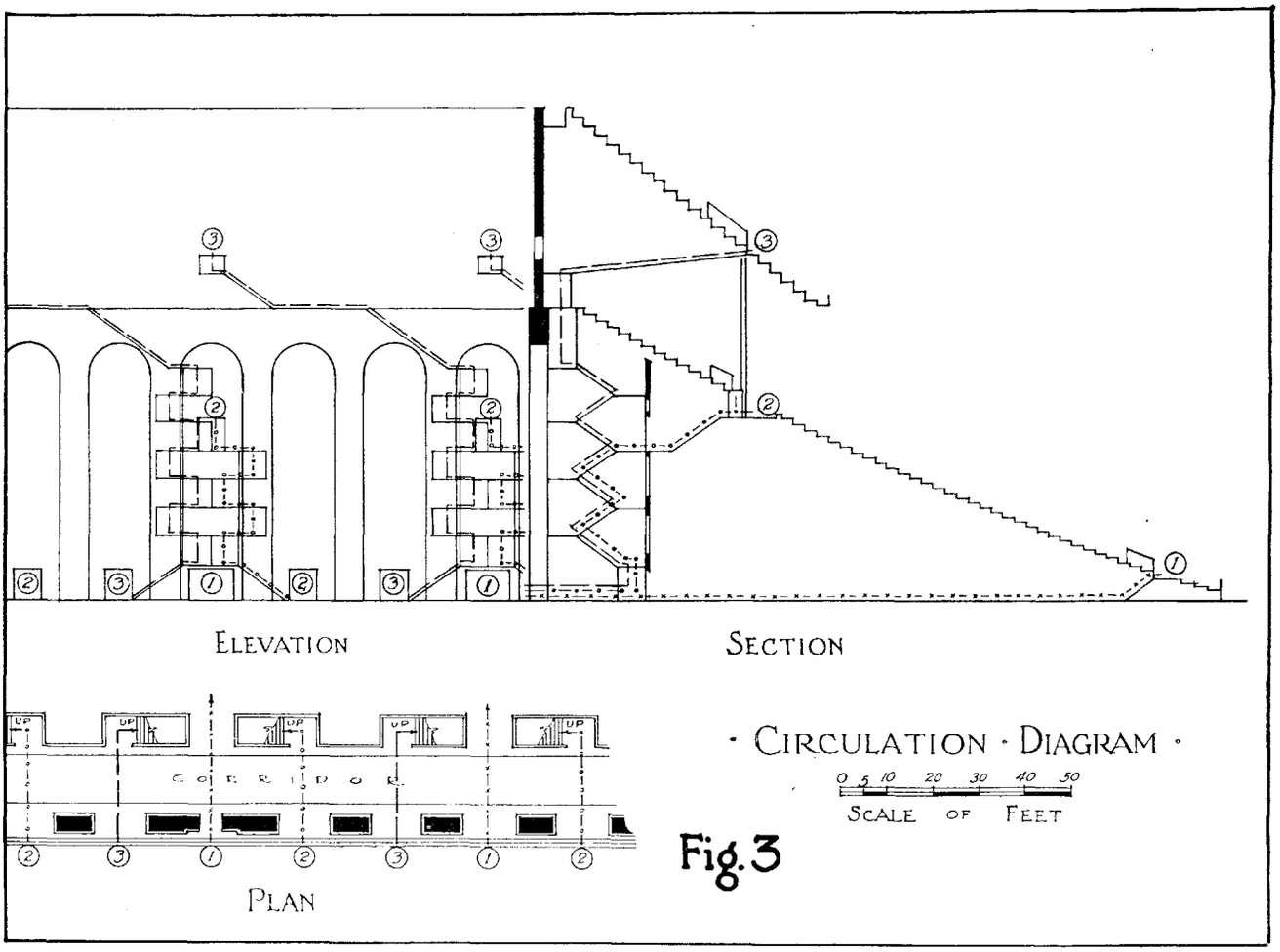

Fig. 3

THE OHIO STADIUM

(Continued from page 5)

approximately thirty foot intervals. This will accommodate about 63,000 people with approximately two-thirds on the lower deck, also the upper deck will be a protection to about 18,000 seats directly under it.

Sight Lines: The height of the structure is determined by the sight lines described as follows: In order that runners may be seen on the track nearest to the spectators, a point on the track is assumed to be visible to all sitting on a line normal to the curve of the structure, also the average height of the eyes when in a sitting posture is assumed to be four feet; then by drawing a line from the common point on the ground through a point four inches above the eye and producing it until it intersects a vertical line thirty inches back, it will give the elevation of the next steps or seat, etc., which gives a variation in risers from eleven inches at the bottom to seventeen inches for the last row of seats on the lower deck. By using a constant rise of two feet for the upper deck we have a uniform slope to the seats which simplifies the construction and the spectator's view is not obstructed. It has been determined also that a spectator sitting on the topmost seat of the lower deck will be able to see all plays on the football field with the exception of a high punt, when the ball may not be visible for a brief period of time on account of the outer edge of the upper deck.

Circulation: As stated before, around the structure there is a series of openings each of which will be an entrance to a 15 ft. passageway which is continuous and from which spectators will go directly to their section and seats called for, as shown in Fig. No. 3.

As indicated on the diagram, every third opening will lead straight through on the ground floor level to a portal directly behind the row of boxes and will distribute to the boxes and about one-third of the lower deck. The opening to the right of this will lead up a stairway to a portal located under the upper deck on a line with the supporting columns and will distribute to the remaining two-thirds of the lower deck. The opening to the left of the first mentioned will lead by way of stairways and ramps to the upper deck.

To empty the stands, gates will be provided in front of the boxes whereby the crowd can go directly onto the field, thus relieving the stairways from congestion. On account of conserving the space under the stands and interfering as little as possible with the lighting, no satisfactory arrangements of ramps has been devised, also the elevation is so great that their length makes it almost prohibitive.

Expansion Joints: On account of the difficulties experienced in trying to conceal expansion joints in concrete work, it has been decided that at 60 foot intervals the structure will be cut entirely through on a radial line from top to bottom by a butt joint, thus making it in separate complete units. The trouble with sliding joints being the tendency to break around the joint, besides causing internal stresses in the structure, which are generally not taken into account in designing concrete structures. In order to do this double columns and beams will be used at these points, and where water is likely to get through provision on the under side will be made for carrying it away. The exposed joints in the exterior wall will not be concealed as this contingency has been considered in making the architectural design.

Construction: The entire lower deck and towers will be constructed of reinforced concrete, but the upper deck on account of reducing the dead load will be of structural steel encased in concrete.

In order to interfere as little as possible with the space underneath the seats, the main supporting columns will be about 60 feet centers and the columns supporting the upper deck will be placed directly over these, as shown on the plan and general cross-section.

On account of the lower tier of seats acting as a roof, it will be necessary to have a slab construction under them, which will be supported by beams and girders resting on columns. It is contemplated at present to precast the concrete seats or steps for the upper decks in order to cheapen and facilitate erection. Tests and experiments will be conducted with the materials available for use in the concrete construction and combinations of these will be specified to secure the best possible results conforming to up-to-date engineering practice.