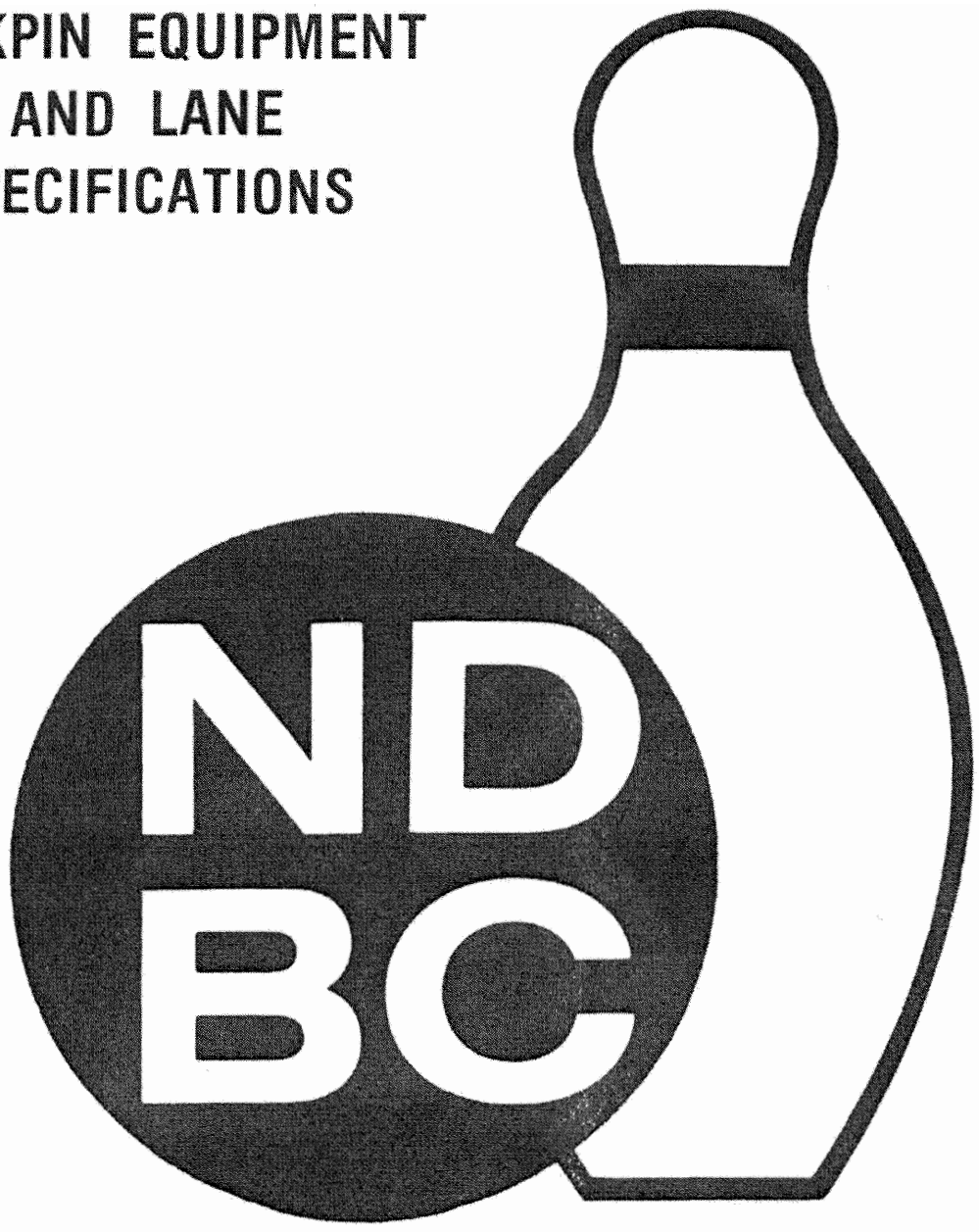
NATIONAL DUCKPIN BOWLING CONGRESS

DUCKPIN EQUIPMENT AND LANE SPECIFICATIONS



DUCKPIN EQUIPMENT AND LANE SPECIFICATIONS

THESE UPDATED SPECIFICATIONS WERE DEVELOPED BY THE NATIONAL DUCKPIN BOWLING CONGRESS, NEW EQUIPMENT, RESEARCH AND DEVELOPMENT COMMITTEE IN COOPERATION WITH THE DUCKPIN BOWLING PROPRIETORS OF AMERICA AND ARE TO BECOME EFFECTIVE JUNE 1, 1978

1. These specifications shall apply to all lanes in use except for those lanes that were installed under prior specifications (before January 1, 1975). If repairs or alterations are made which affect any existing specification, the change shall conform with specifications contained herein.

2. The specifications for lane beds and approaches marked with asterisks are mostly for the installation and resurfacing of lanes. They will be spot checked by National Duckpin Bowling Congress inspectors after installation or resurfacing.

3. GENERAL

These specifications concerning the pins, balls and lanes used in playing the game of Duckpins relate to the game as played in establishments utilizing automatic pin setting and foul detecting equipment. Specifications covering the game in establishments utilizing manual pin setting and foul detecting methods may be found in the National Duckpin Bowling Congress yearbook, Rules and Regulations which was current for the 1973-74 season.

Any material or equipment necessary to the construction of, or operation of, a regulation Duckpin Lane which is not specifically described herein is subject to the approval of the National Duckpin Bowling Congress.

For purpose of this specification reference is made to a drawing, designated as Figure 1, which depicts the plan view of a Duckpin Lane (excluding gutters) showing the location of, and establishing nomenclature for, the major sub-divisior in the following text. All dimensions shown are nominal and are subject to tolerancing in the following specifications.

Unless otherwise noted below all moldings used in the construction of the lane which are subject to action by the ball and/or the pins must be rounded on the exposed edges to a minimum radius of 1/8". The origin of any radius arm will be so positioned that the radius will form an arc which is tangent to the intersecting surfaces for all radii.

Holes drilled or bored through any exposed surface for the purpose of insertion of screws, nails, or other fasteners, shall, when not containing the fastener be plugged with a suitable compound and flushed with the surface. "Screws, nails and other fasteners shall not project above the surface of the material."

4. DUCKPIN

The dimensions and outline of a regulation Duckpin are given in Figure 2.

The cross section of the pin is circular throughout and its profile shall taper gradually from top to base in a smooth continous curve as defined by the dimensional checkpoints shown on the drawing. All dimensions shown are subject to a tolerance of ± 1/32". As shown, the base is a flat surface perpendicular to the major axis of the pin and a 3/32 beveling or rounding of the outer edge of the base shall be allowed.

Sets of pins shall be ten (10) in number and made of one piece, clear hard maple and/or laminations of pieces of clear hard maple. No type of laminated pin will be recognized without the approval of the National Duckpin Bowling Congress. Pins may also be fabricated entirely of plastic or other synthetic materials which have been approved specifically by the National Duckpin Bowling Congress. The dimensions shown on Figure 2 apply to the finished pin including any protective coating or finish. All pin coatings or finishes are subject to the written approval of the National Duckpin Bowling Congress.

All pins manufactured for National Duckpin Bowling Congress sanctioned league and tournament play shall bear the name and/or trademark of the original manufacturer and/or distributor thereof and shall be marked "NDBC APPROVED".

Pins that have been turned down, trimmed and then refinished may not be relabeled or used in sanctioned league or tournament play. Using a mild abrasive to remove surface dirt is permissible.

Only one make of pin may be used on any one pair of lanes in league play. All pins used in any sanctioned event or tournament must be of the same grade and made by the same manufacturer, mixing of different grades and makes will not be allowed.

5. BALL

The weight of the ball shall not exceed 3 pounds 12 ounces. Any ball of lesser weight may be used. The ball must pass through an officially approved ring with an inside diameter of 5.001 + .002" (5"). Any ball that will pass through an official ring will be considered to be of proper size except that the diameter of the ball shall not be less than 4 3/4" in any case. The material used in constructing of an official ring and the design of the ring must be approved by the National Duckpin Bowling Congress.

National Duckpin Bowling Congress approved balance scales, weights and rings will be procured and maintained by each local Duckpin Association. Each item will be checked annually by an independent testing agency which meets with the approval of the local association. If the material and/or design used in constructing the official ring warrants more frequent inspection, National Duckpin Bowling Congress when approving the material and/or design, shall specify the minimum period between inspections. Balance scales and weights shall be subject to the same inspection restriction if the National Duckpin Bowling Congress determines that a shorter inspection period is necessary.

The independent testing agency, designated by the local association, shall possess inspection equipment capable of making the measurements as required below, and shall so certify upon a certificate to be supplied with each piece

of equipment so measured, along with the results of the measurement. The required measurements to be made and certified are:

a. The inside diameter of the ring shall be measured at three points 120 degrees ± 10 degrees apart to an accuracy of ± .0001". The three measurements shall be recorded on the certificate assigned to that ring. The measurements shall be made at a temperature of 68 ± 2 degrees F.

b. The weight of each balance weight shall be recorded on the appropriate certificate. This measurement shall be made to an accuracy of ± .01 ounce per pound.

c. The balance scales shall deflect a minimum of 1.0 degrees with the addition and removal of 0.25 ± .025 ounce to each balance table. The angle shall be measured to an accuracy of ± 0.1 degrees. The scale sensitivity will be recorde on the appropriate certificate. The scales shall operate freely with no hang ups over the full range of possible deflection. The results of the free operation test shall be recorded on the certificate.

Each certification shall be signed and attested by a responsible official of the testing agency and the date of the tests shall also be included on the certificate.

6. LANE APPROACH AREA

Reference may be made to Figure 1 for the location of the approach area of the lane.

The approach area shall provide a clear approach to the lane bed and shall not be less than 15 feet in length as measured from the approach edge of the foul line band in any establishment constructed after December 1965.

* The approach area must be as level as possible, free and clear of any hindrance to the bowler. The ball return adjacent to the approach area must be placed in such a manner that the width of the approach will not be less than the width of the lane bed plus the gutters from the approach edge of the foul line band out to an imaginary line drawn paralled to the foul line band, located 10 feet back from the approach edge of the foul line band. In any establishment where the approach area is constructed or re-constructed after 31 December 1974, the ball return will be so placed that the unobstructed area shall extend to an imaginary line located 15 feet back from, and parallel to the foul line band. The approach area must not slope more than .031" per foot along any axis. The area shall be constructed of material as approved by the N. D. B. C. identical to that used in the lane bed and coated with a hard durable, transparent finish which may differ from that used on the lane bed.

Dirt, dents, loose boards, pits or other surface defects must not be of such magnitude as to offer any hindrance or hazard to the bowler.

7. FOUL LINE

Reference may be made to Figure 1 for locating foul line and foul band.

The foul line band must be clearly and distinctly marked upon, or embedded in the lane, and shall at no time project above the lane surface. It shall extend from the lane to, and upon, any adjoining walls or posts within reach of the bowler. The foul line band shall not be less than 3/8" nor more than 3/4" in width and the edge of the foul band nearest the approach area shall be the legal foul line.

* Foul bands when embedded into a groove across the lane surface shall at no time project above the surface of the lane and may not be more than 1/32" below the surface. An open expansion joint not exceeding 1/32" in width will be permissible on all sides of the embedded material to allow for expansion of surrounding lane material. The embedded material should be centered in the lane groove. No screws or fasteners will be permitted through the outer surface of the embedded foul band.

Automatic foul detecting devices using photo-electric principles are approved when properly installed and the installation approved by the National Duckpin Bowling Congress.

The automatic foul detecting device shall be considered as operating properly when it fails to trigger on a regulation ball rolled through the light beam from the approach area at a velocity just sufficient to reach the pit, but will trigger on any other object such as a bowler's shoe when it intercepts the beam, and at the approach edge of the foul line. This requirement applies to any portion of the beam path.

Audible foul indicators, even when used in conjunction with a warning light, shall be of such intensity as to be clearly discernible above the ambient noise level normally encountered in league play. The automatic foul detecting device shall show no tendency to operate on ambient light, i.e. should show no intermittent or spasmodic triggering in the absence of a signal such as provided by an object legitimately interrupting the beam.

8. LANE BED

The lane bed shall be constructed of material as approved by the N.D.B.C. and shall form a smooth continuation of the approach area. The material forming the lane bed shall be coated with a hard, durable, transparent finish. The width of the lane bed shall be $40\frac{1}{2} + 2$ inches. The length of the lane bed is governed by dimensions between the foul line and the position of the No. 1 pin and the approach edge of the pin deck. (See Pin Deck Spec.)

* The surface of the lane bed must be free of defects such as loose boards, dents, grooves, splinters or any other condition which would lead to deflection of the ball from its true course. The lane bed must be held as level as possible; the cross bed (normal to the major axis) tilt not to exceed .015" per foot, and the tilt along the major axis not in excess of .031" per foot.

9. PIN DECK

Figure 3 is the plan view of the pin deck showing official pin numbering system along with the theoretical positions of the pin centers. It should be

noted that the dimensions shown are nominal and are subject to tolerancing in the following text. The pin deck or plate may be made of any suitable material approved by the New Equipment, Research and Development Committee.

* The pin deck shall be mounted at the end of the lane bed with an open expansion joint not more than 1/16" in width between pin deck and end of lane bed being permissible. The width of the pin deck shall be ideally identical with that of the lane bed, but a tolerance of ± .031 inch is permitted. The deck shall be mounted so that the center line of the pin deck shall coincide with the projected center line of the lane bed within ± .031 inch.

* The surface of the pin deck shall not be above, nor more than ½" below the surface of the lane bed. The pin deck surface shall be free of dents, scratches, scars or gouges such that will interfere with any ball and/or pin action. This restriction shall not prohibit scribing, center drilling spots, or otherwise placing reference marking on the surface for installation purposes. In any case the scribe lines shall not be wider than .015" or the center drilling more than .062" in diameter at the surface. The surface will be as level as possible and should not tilt in the cross lane direction more than .015" per foot or more than .053 per foot along the major axis of the lane.

A tail plank must be attached to the pit edge of the deck. This plank or board shall not exceed 2" in thickness and shall be rounded at the top edge nearest the pit to a radius of not less than ¼". The top edge of this plank shall not project above the surface of the pin deck nor be more than 1/8" below the surface of the deck.

* At the time of installation, the theoretical center point for the Number 1 pin shall be located at a point on the projected center line of the lane bed with a tolerance of ± .015 inch in the cross lane direction and not less than 5 inches from the lane bed edge of the pin deck. The term "Theoretical" is used here because the pin centers are imaginary points on the deck whose ideal locations are the results of calculation. The distance from the foul line to the theoretical No. 1 pin center shall be 60 feet ± 1 inch. The theoretical No. 5 pin center shall also lie on the projected center line of the lane bed within a tolerance of ± .015 inch in the cross lane direction.

The distance between the pit edge of the pin deck and a line drawn through the theoretical centers of the 7 - 8 - 9 and 10 pins shall be 3 ± 1/8 inches along the center line of the deck.

The geometrical figure formed by the periphery of the theoretical pin spotting centers is that of an equilateral triangle - 3 feet on each side with 12" between centers of adjacent pins. The automatic pin setting equipment shall be capable of repetitively setting the pins with a circular error of not more than 1/8 inch from the theoretical (calculated) pin centers.

Side moldings along the edges of the pin decks shall not project above the surface of the pin deck and must taper from edge of pin deck no less than ¼". All moldings (including the tail plank) may not be split, splintered or pitted in any way that would result in damage to the ball or pins against the edge of the pin deck or against the molding itself.

* The pin deck may be uniformly coated with lacquer or other protective material. Where lacquer or any other compound is used at the junction of the pin deck and lane bed for protection of the lane bed edge, the coating shall not overlap the pin deck by more than 2 inches.

All exposed edges on sweep arms used with automatic pin setting machines must have a radius so as not to damage balls or pins. Deposition of debris on the lane bed, pin deck or gutters resulting from damaged sweep arms will not be tolerated and will be cause for corrective action.

10. PIT

The minimum depth of the pit at its highest point shall not be less than five (5) inches below the surface of the pin deck at the pit edge, and an incline of not more than three (3) inches shall be allowable in the pit floor. The depth measurement shall be made from the surface of the pin deck to the highest point of the pit floor.

Kickbacks attached to the lane dividers or division boards must be fabricated of rubber or fiber; this material being subject to the approval of the N.D.B.C. The distance between the kickbacks shall not be less than 56 inches.

Conveyer belts used as gutter extensions to the pit shall not extend more than 15 feet back from the pit edge of the gutters. These belts must not be less than 1/2" below the surface of the pin deck measured at the 7-10 line. Gutter moldings used in conjuction with conveyer belts shall not exhibit any sharp edges which can damage the ball and/or pins.

11. CUSHION

The cushion which forms the primary backstop for the balls and pins is located at the rear of the pit. The cushion shall be capable of swinging freely, have a covering material of a dark color, must be properly packed. The covering must not be loose or split. No portion of the cushion shall be closer than 26 inches from the edge of the pin deck (not tail plank). Proper packing of the cushion shall be determined on the basis of the side profile. A properly packed cushion is one whose point of maximum thickness in any vertical plane along the major axis of the lane, shall not be below the level of the pin deck.

12. FIXED GUTTERS

Gutters shall be placed immediately adjacent to, and at both sides of the lane bed. The gutters may be made of any suitable material as approved by the New Equipment, Research and Development Committee.

The gutters shall not be less than 7¼" in width including the thickness of the gutter material as measured at the approach edge of the foul band.

(THE ABOVE ASSUMES A CONSTANT THICKNESS OF GUTTER MATERIAL)

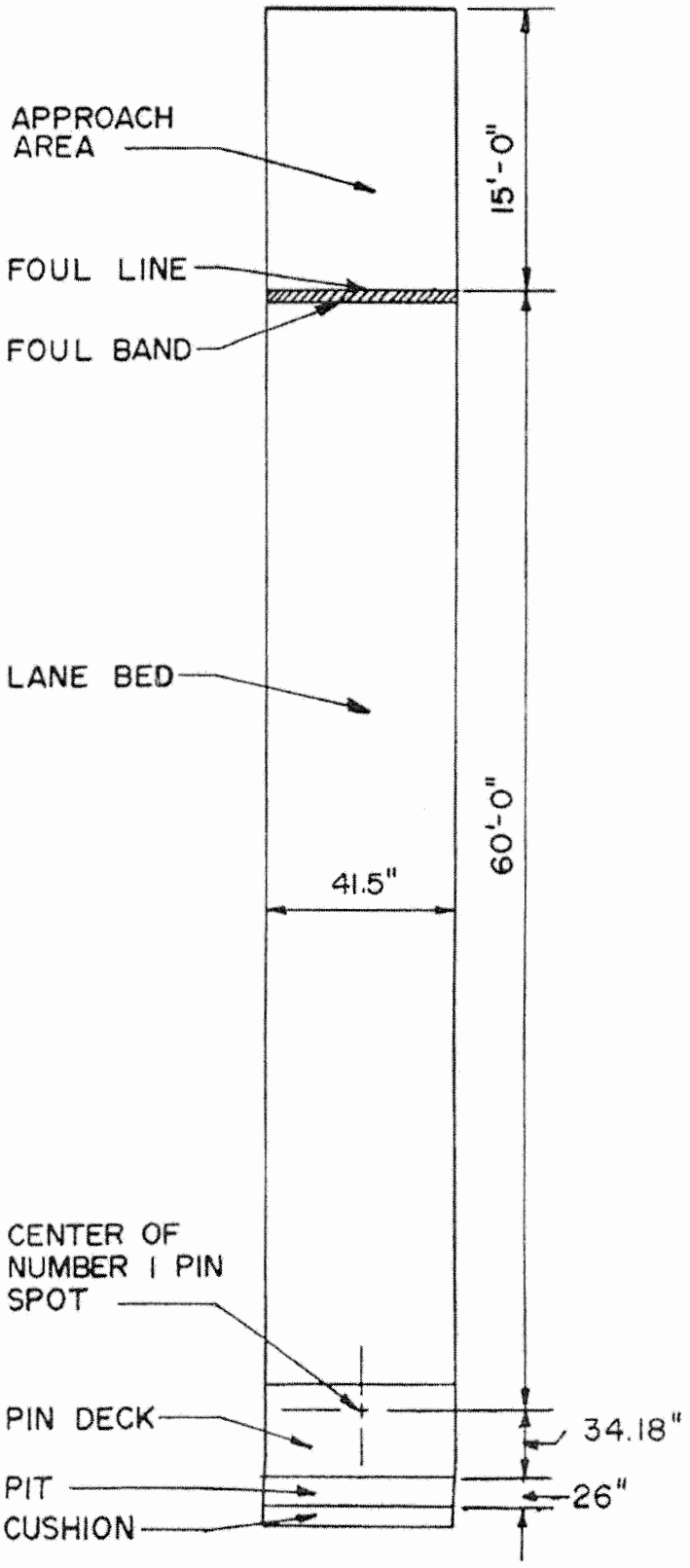
13. LANE RESURFACING

All lanes and approaches must be resurfaced and refinished at least every

second year. The N.D.B.C. Executive Secretary or persons appointed by him can waive this requirement. Should inspection at any time disclose sub-standard condition of any lane or lanes in an establishment, such corrective procedure as may be necessary shall be taken. The date of resurfacing and the name of the resurfacing firm, or person, along with the business locality shall be stencilled on the bare wood on the left side of each resurfaced lane bed near the pin deck (i.e. No. 2 pin side). The stencil shall than be coated with the usual lane coating compound.

PLAN VIEW OF DUCKPIN LANE

FIGURE 1

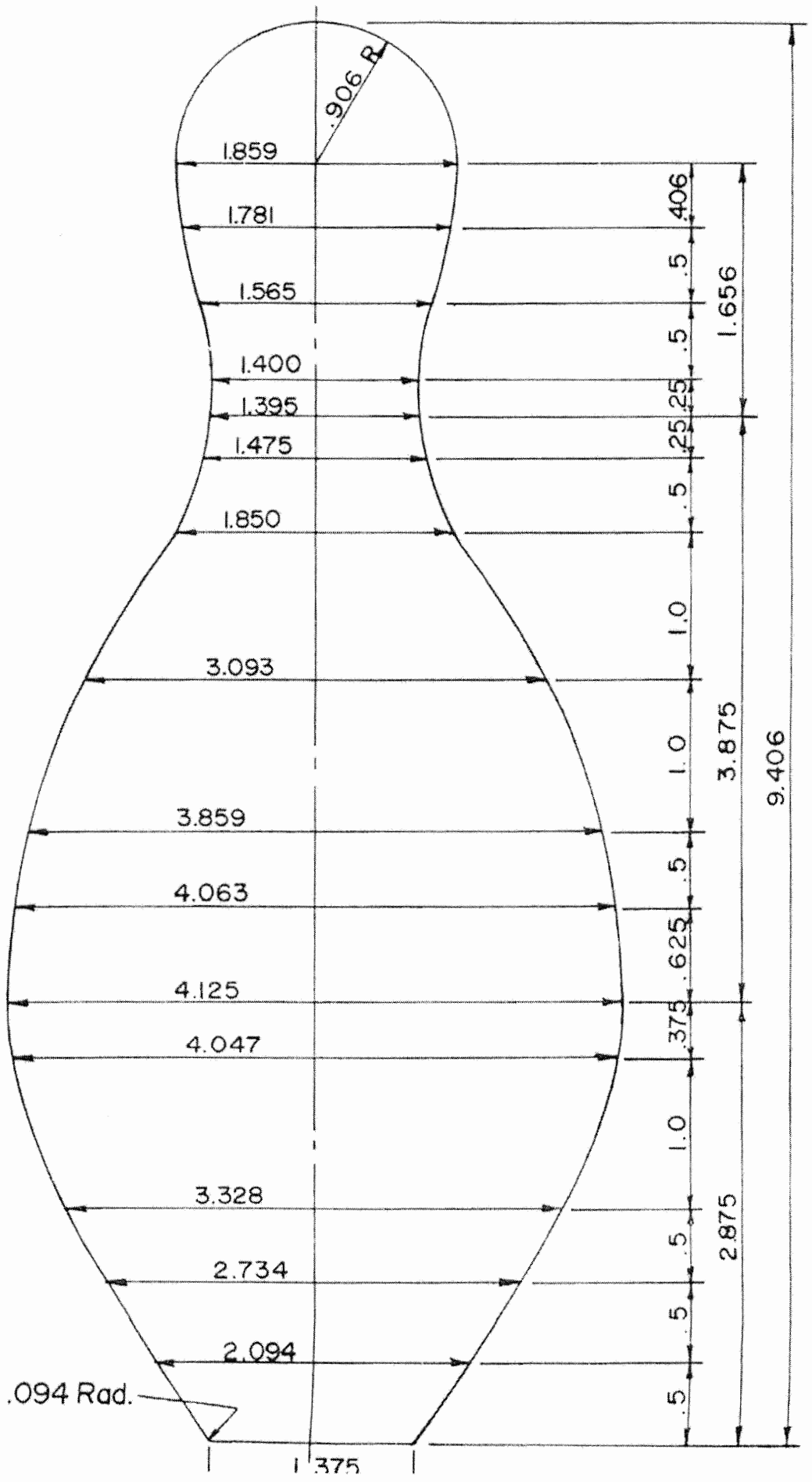


NOTE

This drawing excludes the gutter areas and is for REFERENCE only. All dimensions are nominal. See text for further detail. Nomenclature used here applies to specifications in text.

PLAN VIEW OF DUCKPIN

FIGURE 2



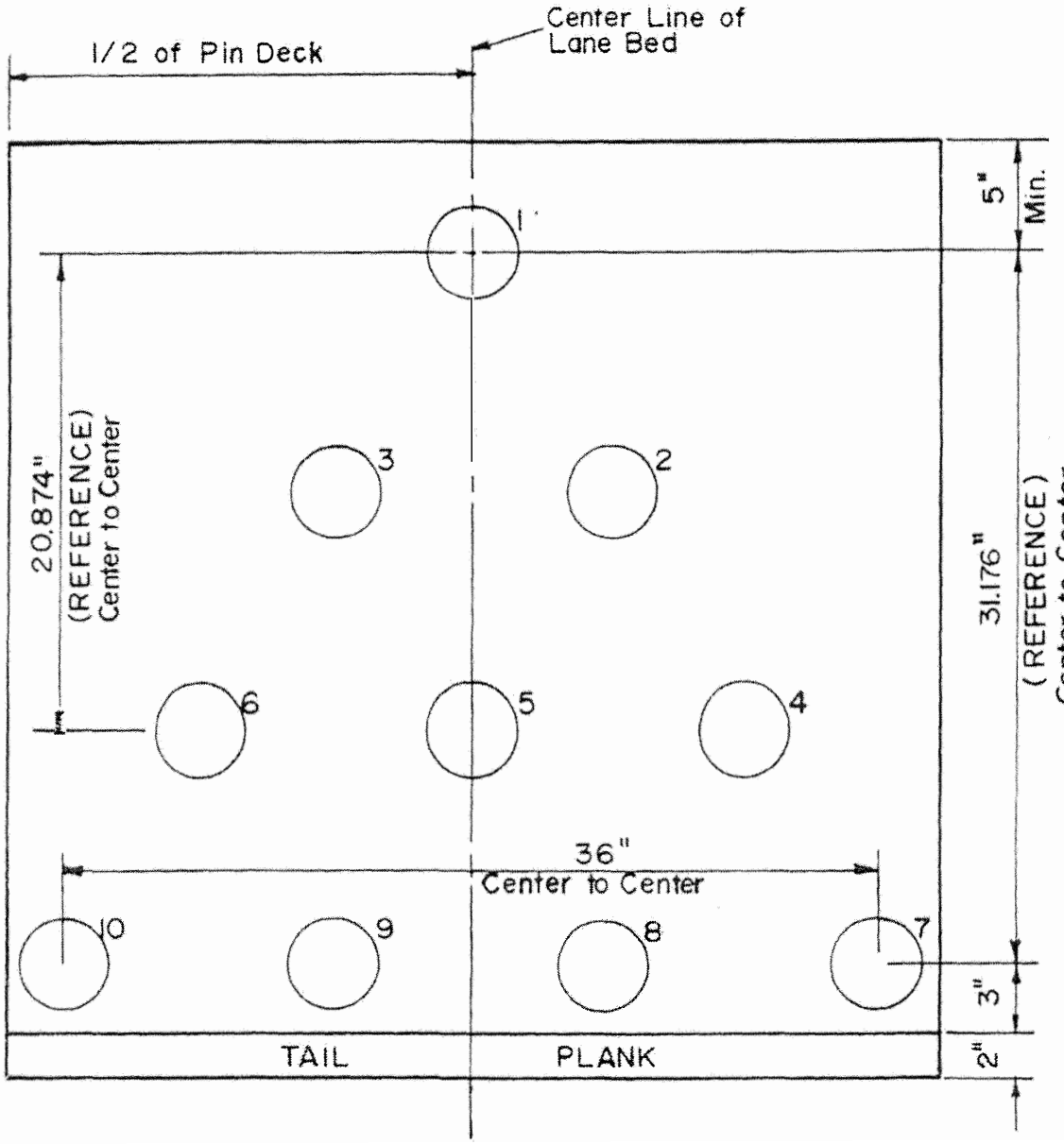
NOTE

ALL dimensions are in inches.

Tolerance ±.0312

PLAN VIEW OF PIN DECK

FIGURE 3



NOTES

1. All dimensions are nominal.
2. Width of Pin Deck determined by width of Lane Bed.
3. Nominal 12" distance between adjacent pin centers.
4. Number next to pin spots designate the official number of the pin so indicated.
5. Centers of Pin Spots number 1 and 5 to be located equi-distant from edge of Lane Bed.
6. See text for further details.