Bowling Alley Design and Construction Guide

Plan and Build Your Ideal Bowling Alley

Introduction

Whether you're a professional bowling alley, an indoor entertainment venue, a comprehensive recreation center, or a homeowner, Flying Bowling can help you design and build a fully functional, visually appealing bowling alley from scratch.

This guide covers every key step from site selection to construction, including architectural design, interior design, structural engineering, electrical systems, HVAC, and plumbing.

If you have any questions during the planning process, please don’t hesitate to contact us:

Phone: 86-15013107020
Email: jackson@flyingbowling.com

Architecture

Lane Quantity and Layout

Single Lane: Ideal for small homes or spaces with limited room. While single lanes are costly, they provide dedicated space for professional bowlers to practice.

Double Lanes: Perfect for private residences and small entertainment venues. Double lanes allow alternating play and enhance interaction. Shared components make them more cost-effective.

4-8 Lanes: Suitable for professional bowling alleys, entertainment centers, or large event spaces, meeting commercial operational needs.

8 Lanes or More: Ideal for large-scale commercial bowling alleys or comprehensive recreation centers. Detailed space layout and equipment placement are required.

Download our free design handbook and CAD drawings for more inspiration.

Site Selection and Space Plannin

Location

Can be in basements, ground floors, or upper levels, ensuring structural safety and ease of equipment transport.

Can be standalone buildings or connected to other entertainment areas, depending on the intended use.

Equipment Transport Considerations

Bowling equipment (e.g., pinsetters) is bulky and heavy. Ensure transport paths are clear, without narrow corridors or sharp turns.

Equipment installation typically occurs in the late stages of construction. Ensure pathways remain unobstructed.

Equipment Access

When designing a bowling alley, pathways for equipment transport and installation are critical:

Equipment Weight and Dimensions

FLYING ULTRA (FUSB) pinsetters are 2.13m tall, 1.22m wide, and weigh 544kg. Smaller models like the Flying Classic (FCSB) can pass through standard 0.9m-wide doors.

Some bowling equipment can be up to 4.57m long, requiring clear transport paths without tight spaces or sharp turns.

Installation Sequence

Equipment installation usually occurs in the late stages of construction. Ensure transport paths remain clear and unobstructed.

- Before Flying Bowling’s installation team arrives, ensure all equipment components are delivered near the installation area and stored in a dedicated space to prevent loss.

Interior Space Planning

Length

A standard bowling alley space is approximately 30 meters long, with the bowling equipment occupying 26 meters (including the bowling area, lanes, pinsetters, and maintenance aisles behind the machines). Add an additional 4 meters for a leisure area.

If your space is insufficient, we can customize the dimensions to suit your venue.

Width

Width depends on the number of lanes. The table below shows common configurations:

Number of Lanes	Left Aisle Width	Equipment Width	Right Aisle Width	Total Width Range
1	0-0.9m	2.1m	0-0.9m	2.1-3.9m
2	0-0.9m	3.5m	0-0.9m	3.5-5.3m
4	0-0.9m	6.9m	0-0.9m	6.9-8.7m
8	0-0.9m	13.7m	0-0.9m	13.7-15.5m
12	0-0.9m	20.5m	0-0.9m	20.5-22.3m

Ceiling Height

Ideal ceiling height is 3 meters, with a minimum of 2.4 meters (measured from the lane surface).

Ensure ceiling height accommodates maintenance for pinsetters.

If the ceiling is lower than 3 meters, scoring displays can only be installed beside the lanes.

Curtain Wall Design

In bowling alley design, a curtain wall (also called a barrier or top wall) separates the pinsetter room from the bowling area. It serves both functional and aesthetic purposes.

Position and Dimensions

The curtain wall should be installed in front of the pinsetter, approximately 3.6 meters from the machine's rear end. The distance from the back of the curtain wall to the pinsetter should be about 0.5 meters. This design ensures the pins and curtain wall are positioned correctly, avoiding visual obstruction for bowlers.

Viewing Angle Planning

From the bowler's perspective at the foul line, the curtain wall should appear directly above the pins. However, this may block the view of the pins. To optimize visibility for spectators and bowlers, consider seat placement carefully.

Functionality and Aesthetics

Curtain wall height should align with the bowler's line of sight while standing, ensuring visual continuity.

Enhance the alley's ambiance by adding decorative elements, such as LED screens, custom graphics, or lighting effects.

Properly planned curtain walls can isolate rear mechanical noise and visual distractions, creating a focused and enjoyable environment.

Pinsetter Room Design

The pinsetter room is the core functional area of the bowling alley, requiring careful planning for efficient operation and easy maintenance.

Room Dimensions

The pinsetter room is approximately 4.8-5.5 meters long, divided into three main sections:

1. Technician Workspace: 0.5 meters in front of the pinsetter for maintenance and operation.

2. Pinsetter Area: 3.1 meters long for the pinsetter and related components.

3.Maintenance Aisle: 0.8-1.2 meters behind the pinsetter for technician access.

Convenience Planning

Ensure easy access to the pinsetter room. Avoid placing the entrance in inaccessible areas, as this may require technicians to go outside, change shoes, or wear rain gear.

If possible, design a direct path from the main bowling area to the pinsetter room for convenience.

Seating Area

Seating Position

Ideal seating positions allow spectators to see the entire lane from the front, tracking the ball's movement and pin positions clearly.

Spectators sitting in the middle of the seating area may have obstructed views of the ball's path or pins.

Viewing Angle Planning

Ensure the seating area design does not block the bowler's or spectator's line of sight.

Spectator seating height should align with the bowling area for the best viewing experience.

Comfort and Layout

Focus on seat comfort and layout, ensuring ample space and optimal viewing angles.

Add small tables, drink holders, or other amenities to enhance spectator comfort.

Storage and Equipment Management

Lane Oil Machines

Create a closet or storage space for lane oil machines. These machines weigh 113-159kg, have wheels, and measure approximately 1.14m long, 1.45m wide, and 0.6m tall.

Store them near the entrance for easy access without stairs.

Maintenance Supplies

Designate a space for bowling lane maintenance supplies, such as lane cleaning brushes, oil, cleaning fluids, and multipurpose cleaners.

If storage for the lane oil machine is already sufficient, consider storing these supplies there to save space.

Bowling Balls and Shoes

Provide a space for storing custom bowling balls and shoes.

Use shelves 0.6m deep to keep shoes and balls organized.

Temporary Storage

Install ball racks in front of the ball return for temporary storage of balls in use. This is not a long-term storage solution.

If you need ideas, contact our team for custom furniture designs tailored to your venue.

By planning the pinsetter room, seating area, and storage spaces effectively, you can ensure smooth operation and a comfortable spectator experience, providing a pleasant environment for bowling activities.

Interior Design

Acoustic and Soundproofing Design

Acoustic Materials：
Use carpets, fabric-wrapped wall panels, or acoustic ceilings to reduce echo and improve sound quality. Choose materials with high NRC (Noise Reflection Coefficient).

Soundproofing Design：
Use high STC (Sound Transmission Class) materials to block external noise.
Recommended materials include:

- Double-layer walls with air gaps.
- Mineral wool or acoustic fiber-filled walls.
- Mass-loaded vinyl (MLV) sound barriers.
- Viscoelastic sealants (e.g., Green Glue).

Bowling Ball and Shoe Storage Design

Flying Bowling provides bowling balls and shoes for each lane, but many operators prefer custom designs with their logo. We offer custom services for balls and shoes.

Storage Space：
Design dedicated storage areas for balls and shoes, ensuring convenience and aesthetics.
Use open shelves or closets to maintain a clean look.

Design Details：
Bowling balls have a diameter of approximately 22.65cm, so shelves should have enough space for easy placement and removal.
Shoes should be stored in vertical spaces 16-20cm apart for easy categorization.

Floor and Wall Design

Floor Recommendations：

- Carpet: Recommended for its acoustic benefits but requires regular maintenance.
- Wooden Flooring or Vinyl: Durable and low maintenance, ideal for commercial spaces.
- Tiles or Colored Concrete: Not recommended due to poor acoustic performance and susceptibility to damage.

Wall Design

Floor Recommendations：
Use vertical decorative elements (e.g., pilasters or acoustic panels) to add depth to the space.
Install mirrors or large wall art to enhance visual effects.
If the venue is near windows, apply UV-blocking film to prevent direct sunlight from affecting the lane surfaces.

Structural Engineering

Floor and Wall Design

Floor Load-Bearing Capacity：

Each pinsetter, including its base, weighs up to 1,500kg. Ensure the load-bearing capacity in the pinsetter area is 350kg/m², and 200kg/m² in the bowling and leisure areas.

Ensure the bowling lane installation area is level, with a height deviation of no more than 2cm.

Pipe and Duct Planning

Pipe Restrictions：
Do not run pipes, cables, or radiant heating under bowling equipment.
If wastewater pumps are required, install them in the service aisle behind the pinsetters.

Electrical Systems

Power Requirements and Planning

Subpanel Configuration：

Bowling equipment operates at 220V. Install a 100-amp subpanel in the pinsetter room, dedicated to bowling equipment.

Ensure no obstacles are within 1 meter of the subpanel.

Equipment Power Supply：

Pinsetters require a single-phase power supply. Confirm local voltage and plug standards with our team before production.

Provide separate power outlets for lane management systems, lighting, and scoring displays.

Lighting Design

Zoned Lighting：
Pinsetter rooms, bowling areas, and seating zones require individually controlled lighting. Some bowlers prefer bright lanes for better ball tracking, while softer lighting is ideal for seating areas.

Special Effects：
Bowling lanes glow under specific light sources. Consider using special effects like blacklight or laser lighting to create a unique atmosphere.

HVAC and Plumbing

Temperature and Humidity Control

Stable Environment:
Maintain a temperature of 22°C ± 4°C and humidity of 45% ± 5%.
Ensure all materials acclimate to the environment before installation to prevent damage from expansion or contraction.

Pipe Planning:
Do not run pipes, drains, or radiant heating under bowling equipment.
If using radiant heating, ensure it does not interfere with lane structures.

Furniture

If each lane accommodates four or five bowlers, there may be waiting time between turns. Providing comfortable seating, snacks, and social spaces is essential. Many private lanes feature built-in bench seating in straight or U-shapes. Sectional sofas are also common. Adding movable chairs offers flexibility for bowlers. Don't forget a few coffee tables.

For venues with 12 or more consecutive lanes, factory-produced furniture is a great option, as it is modular and fits perfectly with the lanes.

Color

Most commercial bowling centers use the same cookie-cutter color schemes. Choose unique colors to convey a sense of exclusivity, making your venue stand out.

Lane Colors

Lane colors have the most significant visual impact, as they cover large areas.

- 1. Lane materials must stay within the lane system boundaries and not extend to aisles or seating areas.

- 2. Avoid matching lane colors with adjacent flooring. This may look like a mistake. Instead, choose contrasting, complementary colors to visually separate the bowling area from spectator zones.

Guardrails

If your bowling alley has foot traffic on one or both sides of the lanes, install guardrails or low walls to prevent accidents. Guardrails should start at or just beyond the foul line and end at the curtain wall.

Conclusion

Whether it's a home bowling alley, a professional venue, or an entertainment center, Flying Bowling provides professional design and construction solutions. From initial planning to final inspection, we'll guide you every step of the way.

Contact us today to start your bowling alley project!

✆ Phone:
✉ Email:

Let's build your perfect bowling alley together!