



Comprehensive Planning Guide

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Brunswick 
CUSTOMER SERVICE
A tradition in excellence.

Comprehensive Planning Guide

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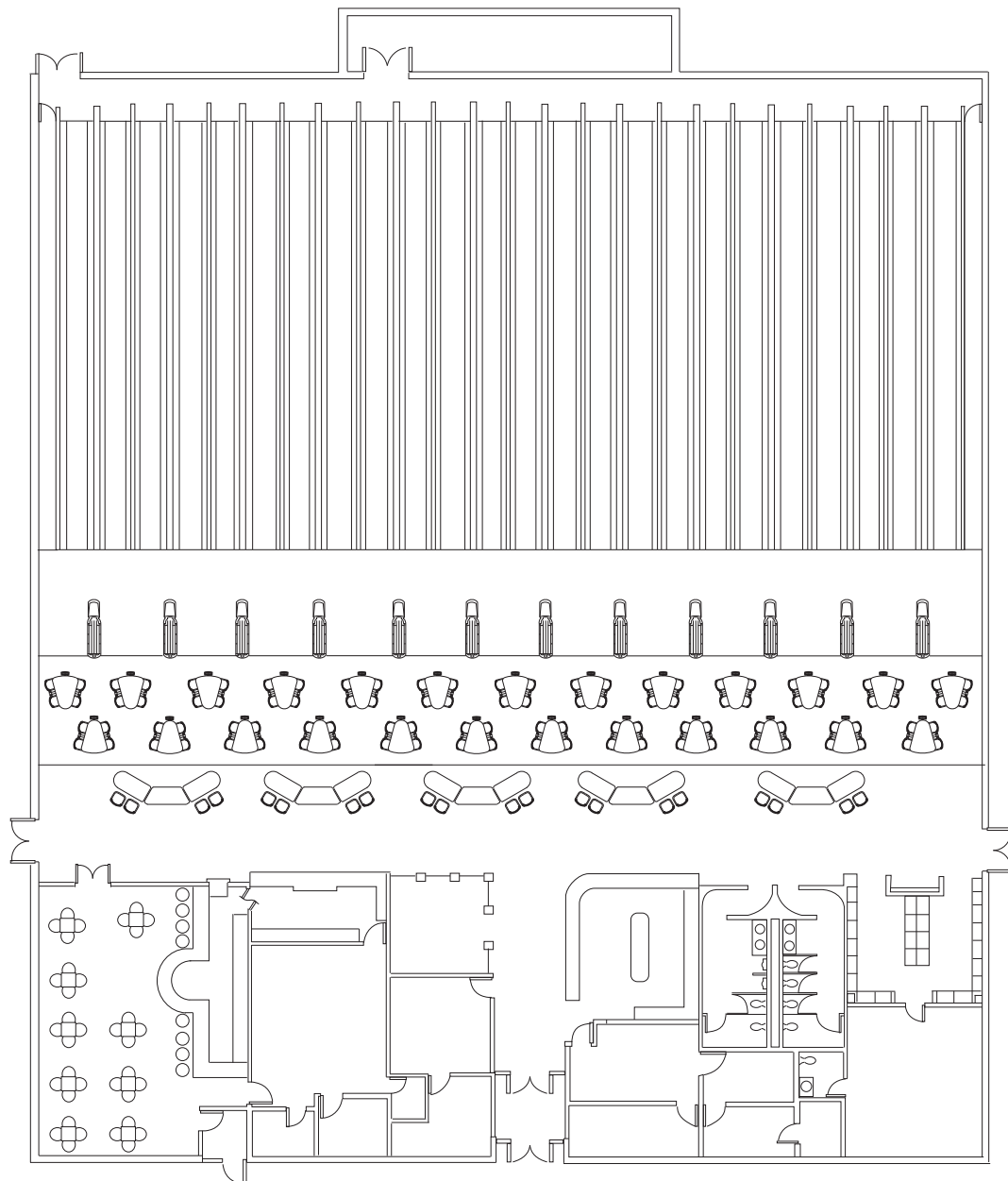
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Section 1: Type of Business

BOWLING BUILDINGS. Almost any type of permanent building is adaptable to a bowling lane building if it is large enough and approved for such use under local building and public codes. Ideally, it should have a clear span in the bowling equipment area. Any type of construction should be considered in relation to the insurability of the structure and on the contents of the building. Check with your **insurance agent** before initiating construction plans.

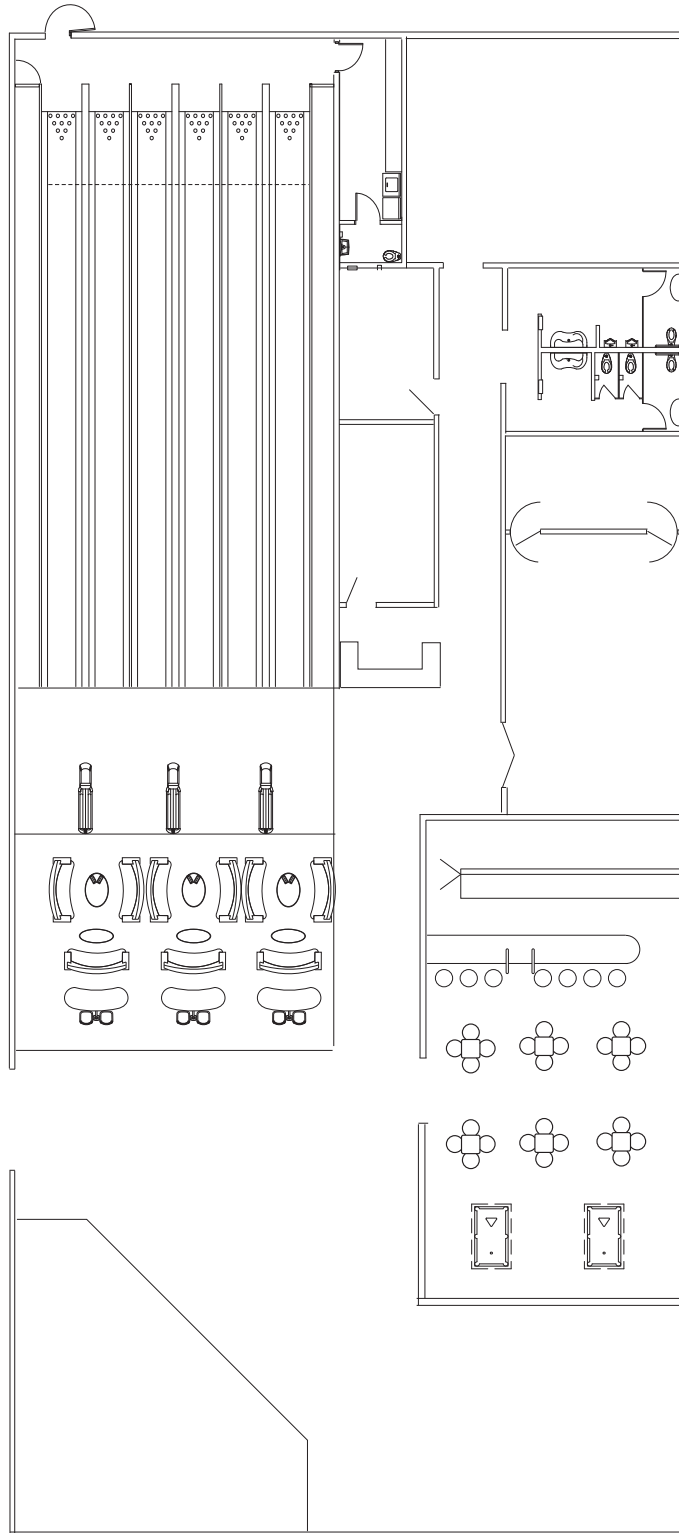
TRADITIONAL BOWLING CENTER

Traditional bowling centers are primarily focused on bowling and include a limited number of entertainment venues, typically featuring a game room and billiards area, pro shop and bar. Beverages play a strong role at traditional bowling centers and the food is usually limited to snack bar offerings.



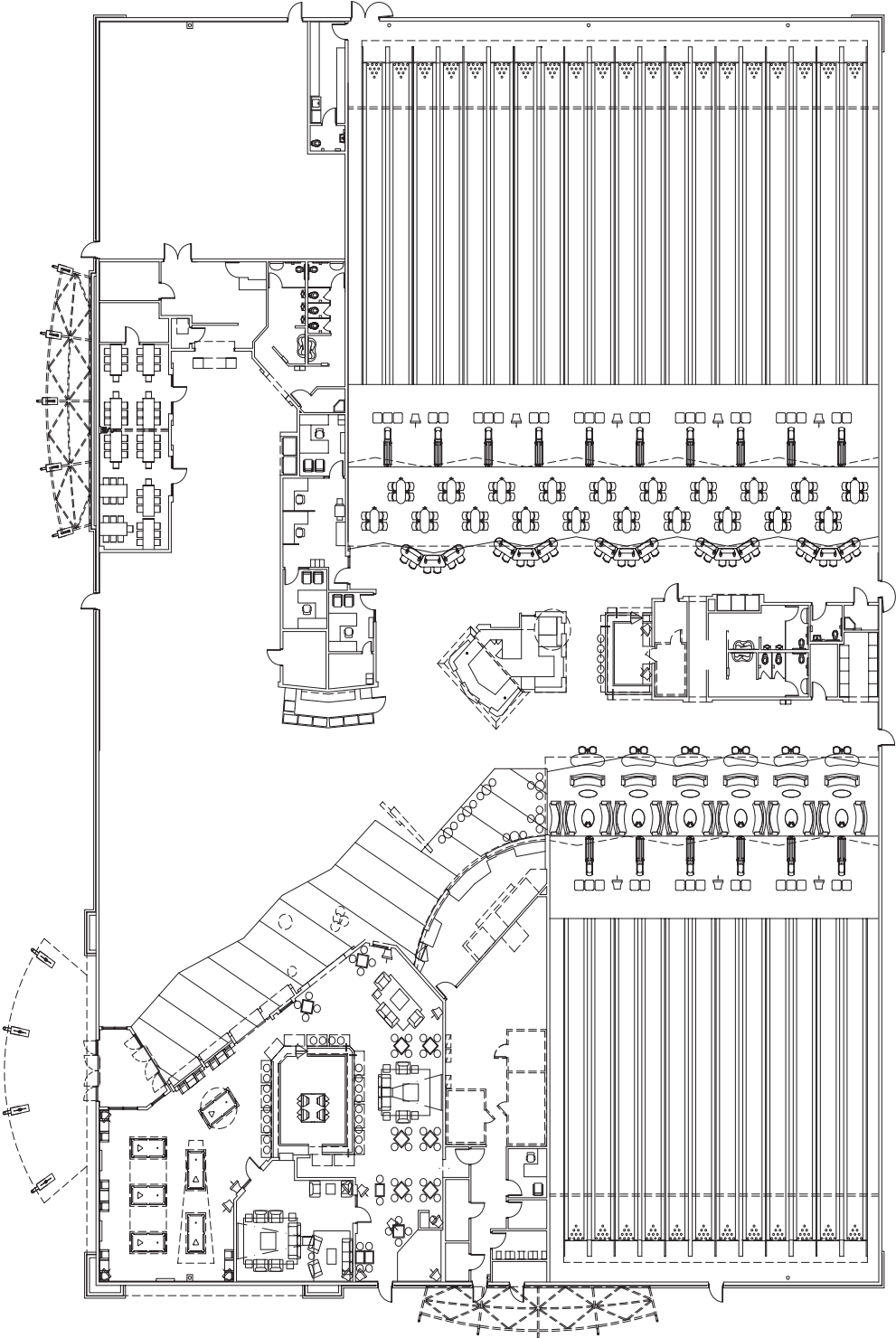
BOUTIQUE CENTER

Boutique centers are focused primarily on entertainment and socialization with full service, upscale food and beverage offerings. Bowling is the primary form of entertainment, but is a smaller component of the business and is set in a contemporary, social atmosphere. Boutique centers offer ancillary entertainment options such as live music, billiards, virtual/cyber gaming, and bocce as additional sources of revenue.



FAMILY ENTERTAINMENT CENTER

Family Entertainment Centers (FECs) are designed to provide entertainment in the form of bowling and various other venues. These venues may include arcades, laser tag, go carts, bumper cars and party rooms in addition to the venues found at traditional bowling centers. The food offerings at FECs is enhanced to match the atmosphere and beverage service plays a strong role. Typical options include snack bar, food court and branded concepts.



PROPERTY

Location

Locations containing restaurants, theaters, taverns, and other entertainment venues near residential areas are a good choice. Good visibility, easy access, and high traffic count all lend themselves to effective locations.

Zoning

Zoning can be a deciding factor in your bowling center location. Consider building expansion and additional services as well. Be aware of any ordinances that could affect your future plans

Property Size

Your desired center size (lane quantity) and supporting services will dictate the size of your property.

EXISTING BUILDING VERSUS NEW BUILDING CONSIDERATIONS

There may be existing structures that can be adapted to the needs of a bowling facility. Just be sure to consider the costs of bringing an existing building up to local regulations and compare those costs to new construction. For example, an existing building may require the following renovations: second floor facility elevator, handicap access, proper water pressure, proper sprinkler system, electrical power accommodating the building size, roof inspections for leaks and wear, HVAC operation, sufficient ceiling height, and sufficient spacing for lanes between post rows.

When designing a new building, the structure should have a clear span in the bowling equipment area and a ceiling height of at least 10' (3.05m). Bowling centers require specific heating, cooling, humidity, and electrical control systems. Discuss these requirements and their costs with the proper professionals before making your decision on an existing facility.

PROFIT OPPORTUNITIES CHECK LIST

- | | |
|---|--|
| <input type="checkbox"/> Billiards | <input type="checkbox"/> Rock Climbing Wall |
| <input type="checkbox"/> Arcade/Game Room | <input type="checkbox"/> Water Park |
| <input type="checkbox"/> Laser Tag | <input type="checkbox"/> Theater |
| <input type="checkbox"/> Virtual Bowling | <input type="checkbox"/> Restaurant/Cafe/ Snack Bar |
| <input type="checkbox"/> Go Karts | <input type="checkbox"/> Sports Bar/Night Club/Disco/Karaoke |
| <input type="checkbox"/> Golf | <input type="checkbox"/> Party Room |
| <input type="checkbox"/> Tennis | <input type="checkbox"/> Pro Shop |
| <input type="checkbox"/> Volleyball | <input type="checkbox"/> Nursery |
| <input type="checkbox"/> Bumper Cars | <input type="checkbox"/> Lockers |
| <input type="checkbox"/> Skate Park | |

Intentionally Blank

Section 2: Considerations

SITE PLANNING

Because a bowling center is a permanent building, its location on a parcel of property merits intensive study. The future long-range planning for the surrounding area, including zoning changes involving buildings, future road construction, or anything which could alter the present character of the property should be considered. Consider the following before buying land:

1. Zoning of land restricting commercial business or parking.
2. Nearby church or school building restricting the traffic or sale of alcoholic beverages.
3. Maximum future expansion.
4. Drainage requirements, location of sanitary and storm sewer lines, public utilities.
5. Maximum visibility of building from street, i.e., obstructing location of buildings, railroad over-passes, trees, signs, etc., in line of sight.
6. Observing local sound ordinances.
7. Sign location and local codes regarding size.
8. Availability of parking requirements for maximum number of lanes.
9. Distance from bulk of parking to entrance. (This often dictates location of lanes and layout of public area facilities, i.e., reception center, bar, etc., as they relate to traffic patterns within the building.)
10. Traffic flow restrictions to entrances and exits from property.
11. Certified test borings to determine if ground can support weight of a suitable building for bowling.

ACOUSTICS

All modern bowling centers are being designed with careful consideration given to acoustics.

Objectives

No sound is so inspiring as the triumphant shout of a bowler and no sound is so sweet to a bowler's ear as the *crash* of the pins when a strike is made. It is conceded that these noises give the necessary vitality to the game of bowling. However, in the interest of the bowler's comfort and to lessen the fatigue of employees, these noises must not be allowed to echo and reecho throughout the building.

It follows then that the principle goal is the rapid dissipation of noise itself. This conclusion indicates that special care must be taken to avoid "over-acousticizing" the lane area.

Generally, it appears the noise-reducing efficiency of most acoustic materials increases in direct proportion to the increased size of the space treated. This is due to lengthened reverberation time.

Acoustic Considerations

It may be necessary to hire an acoustical engineer when lanes are to be installed on a floor where the space below the lanes is to be occupied for any use that would be sensitive to sound, a careful study of the space should be made BEFORE the installation on the floor. The following facts are to be considered:

1. It is the responsibility of the building owner or the customer to provide a floor of the proper floor loading capacity to support the weight of the installation without undue vibration.
2. For acoustical treatment of the area below the bowling spaces, it should be remembered that solid mass prevents sound from penetrating through the floor.
3. There should be ample clearance between lanes and vertical structural members of the building to prevent transmission of noise through the building.
4. Pay particular attention to the location of pipes and ducts which will conduct noise unless they are properly isolated and insulated.
5. Take into consideration adjacent building areas that may be affected by sound, such as residential, restaurants, theaters and other such businesses.

Selection of Materials

Although they are not necessarily listed in order of their importance, the following considerations are offered to assist in the selection of finished ceiling materials.

1. The coefficient of noise reduction.
2. The flame resistant qualities of the materials as related to fire insurance and local ordinances governing places of public assembly.
3. The weight of the material and required method of erection as related to the structure of the roof or truss.
4. Ability to clean or refinish the material without impairing the acoustic quality of the material.
5. Ability to replace defective or damaged materials long after the original installation. Also, the ability to match the existing material at a later date if the lanes are expanded.
6. Resistance to vermin, fungus, mold, and dust.
7. Light reflecting ability.
8. Resistance to fallout over the lanes and machines.

Noise Reduction Coefficients

The general rule of thumb is for a noise reduction coefficient (NRC) of .70 to .85 in the pinsetter area and a NRC of .50 to .65 for the balance of the lane area. Hearing protection equipment is required in the pinsetter area. The bar and cocktail lounge is generally based on a NRC of .65 to .75.

Frequencies

The noise reduction coefficients of varying acoustical materials can be arrived at by considering 125 cycles as being the frequency for rolling bowling balls, 250 cycles for the frequency of human voices, and 500 cycles for the frequency of the pinsetter area, including machine noise and pin clatter. It is obvious, of course, that these evaluations are only approximated since noise often reaches across 2 or 3 frequencies for a brief moment.

Correlated Ceiling Plan

It is strongly recommended the architect prepare a study of the reflected ceiling plan of the lanes to correlate the location of light units, air conditioning grills or anemostats as well as communication systems, loud speakers, and curtain walls at the masking units.

HEATING AND VENTILATION CONSIDERATIONS

Costs of Air Handling

The selection of heating and air conditioning systems should be made in light of the three costs of each system. They are as follows:

Original Cost

The initial costs of equipment and installation involves supply and dispersal wells, machinery, controls, duct work, insulation, and installation. It also involves the cost of checking and balancing the entire system under load conditions so it functions as it was designed. Also, add the cost of any special structural requirements needed to accommodate the system.

Operating Cost

Operating costs involve fuel and power costs, water charges, licenses, or fees. Also consider the cost of chemicals, filter, etc., which would be required in the normal operation of the system. Some systems in some localities require the services of an operating engineer. Proper design of the system can frequently reduce operating cost.

Cost of Maintenance and Repairs

Cost of maintenance and repairs compute the labor and material charges to perform regular recommended maintenance procedures set forth by the manufacturer's guarantee or warranty. Consider the cost of labor and materials, and the availability of such materials at a later date, necessary to replace working parts of the system. Avoid selecting units containing nonstandard motors, controls, or compressors which cannot be replaced from stock or on short notice. Automatic dampers, etc., must be able to be operated manually for short times in the event of a failure of a control component.

Zoning

The engineer surveying the requirements for the system may decide to employ a zoned system since the activities in different parts of the building may vary from very heavy activity with heavy smoke load to light activity with light smoke load. Therefore, while there is a definite need for air change, the requirements for heating and cooling may not exist.

He must also anticipate sizeable shifts in occupancy within short periods of time during the day. For this

reason, the engineer uses either multiple or unloading compressors (or both) which will automatically compensate for varying loads. Provisions must be made for some CONTROLLED ATMOSPHERE in the event of breakdown of one of the components. For this reason, all automatic controls, motors, dampers, etc., should be able to be manually operated.

Heating System Selection

The fuel used for heating and hot water should be decided upon using the basis of continued local availability, prevailing and anticipated local costs, and the cost of necessary equipment and building area to utilize the fuel selected. Oil, gas, electricity, and coal have been used in the past. The majority of installations use oil or gas.

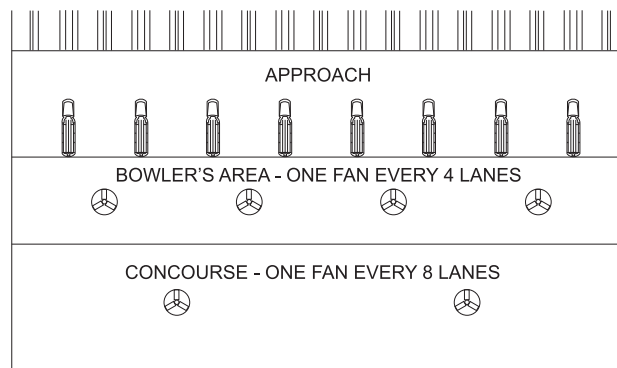
Heating and Cooling Systems

System Responsibility

It is suggested the heating and cooling system used be purchased with a single point of responsibility covering (1) design, (2) engineering, (3) manufacturing, (4) installation, and (5) service and replacement parts. It is further suggested that all major components be of one manufacturer's make to eliminate divided responsibility. This single point of responsibility or guarantee or warrant will assure highest quality performance and satisfaction to the operator.

Ceiling Fans

With the continued increase of energy costs, provisions should be made to overcome the problem of stratified air in your bowling center. Ceiling fans located properly have proven to be an excellent method of accomplishing this. Ceiling fans offer a substantial savings in both heating and cooling energy costs. Brunswick's recommendations for ceiling fan locations are illustrated below. However, Brunswick also recommends you consult an Energy Consultant for additional information.



Recommended Ceiling Fan Locations

Energy Management

In today's environment, energy conservation has a direct effect on your bottom line profit. Every effort should be made to manage and conserve your energy consumption. It is suggested you consider installing an energy management system when you construct your new bowling center. There are many control systems now available for heating, air conditioning, and lighting. You should discuss all possibilities of energy management with your architect.

CEILINGS

Clear Span Ceiling

A clear span ceiling is the ideal type for bowling installations. When selected, plan to run roof trusses the full length of the lanes rather than the width. This offers ease of future expansion while still providing a clear span. A catwalk should be installed over the lanes to facilitate maintenance of ceiling and roof, plus electrical wiring inspection. It is necessary to ventilate the truss area between ceiling and roof to prevent mold and discoloration from dampness. Fire barriers between the ceiling and the roof deck will often reflect savings in insurance costs. Be sure to conform to venting requirements in the space between the ceiling and the roof.

For security purposes, rest room and storage area ceilings should be “fixed” rather than suspended.

i *NOTE: Ceiling is optional over bowling lanes and concourse. If no ceiling is desired, Acoustical considerations should be taken.*

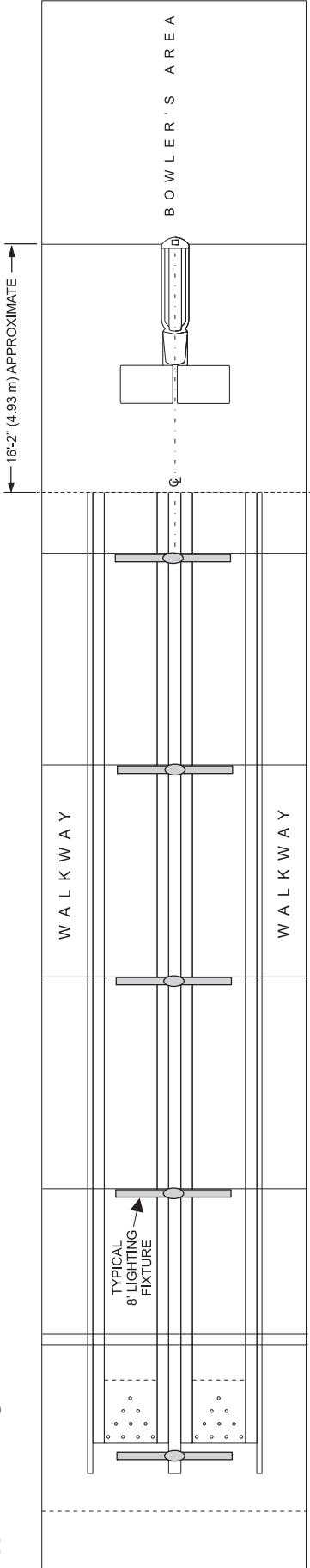
Ceiling Height

This height generally ranges from 10' to 12' (3.05 m to 3.66 m) above the approach and lane surface. A 12' (3.66 m) ceiling is recommended for installations to accommodate overhead scoring equipment, special effects lighting, and sound systems in the bowler's area.

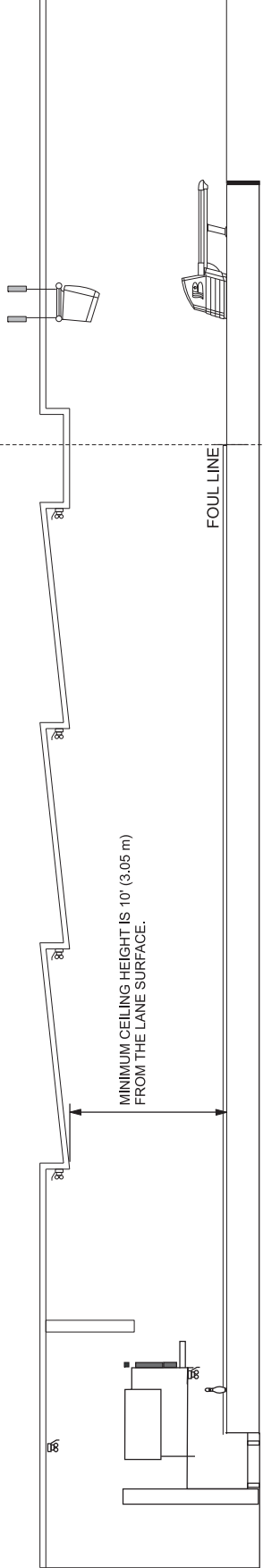
Structural Requirements

Regardless of the type of ceiling material selected, a provision should be made for supporting Brunswick scorer overhead equipment. For further information, refer to the Vector Center Network System Pre-Installation Manual for your scoring equipment. Refer to Section 6 of this Guide for the proper structural certificate.

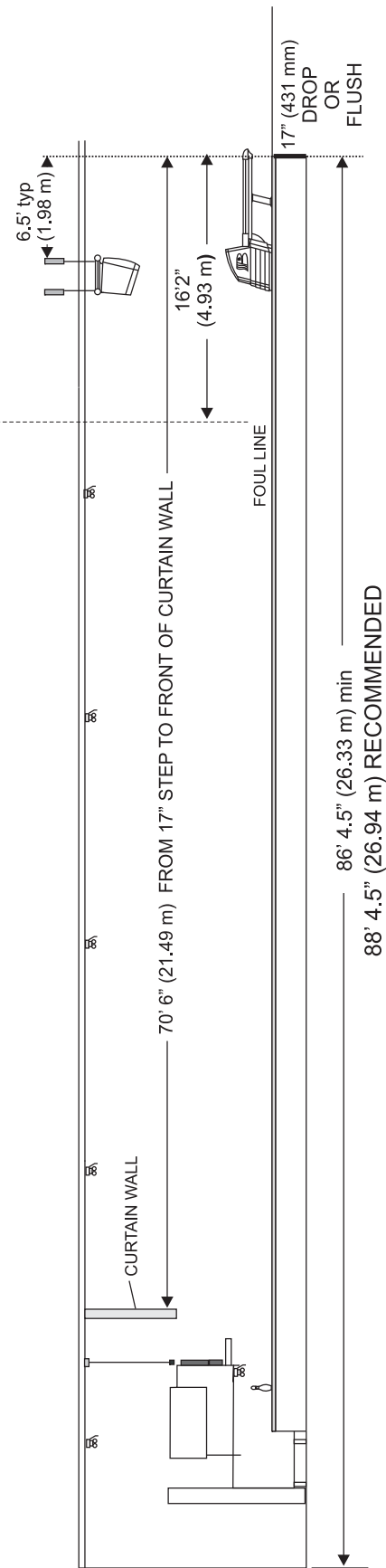
Typical Ceiling Construction



TYPICAL FOUR TIER LIGHTING PLAN



SECTION AT BOWLING LANE



LIGHTING

i **IMPORTANT!:** *Failure to comply with lighting specifications may adversely affect the performance of your electronic equipment.*

Planning

Of all the "mental hazards" in the design of a bowling center, lane lighting is recognized as one of the most important, yet it is often skipped over in the interest of saving the cost, effort, or time involved in a proper analysis of the problem. Each installation has individual problems and is worthy of considerable study. It is recommended that time be taken to review the following lighting specifications carefully.

Correlate the light plan with the reflected acoustic ceiling plan and also with the layout of air conditioning ducts, louvers, grills, and thermostats.

Electrical conduit or raceways of adequate size should be imbedded in the concrete to provide for high voltage and low voltage cabling for bowling and other required cabling/wiring.

Operation

It is desirable to control lane lighting longitudinally in bays of four lanes per switch at the Control Desk. A more compact panel board can be planned if the electrician uses low voltage from the Control Desk to activate the light panel. Brunswick suggests tamper-proof switches for lighting in the public areas, or switching public area lighting from circuit breaker panels.

Group replacement of lamps on a regular basis insures a high level of light output for the same current costs and minimizes bowling delays due to a defective or blown out lamp.

Objectives

There are certain constraints and suggestions worth passing on to a bowling center. First, the need for even light intensity on the lanes is paramount. Over the high reflective playing surface, extreme care must be taken to avoid "hot spots" of illumination. In addition to careful planning of the spacing of lights, if "hot spots" do occur, they can usually be washed out by tilting or shimming the light fixtures before they are permanently fastened.

The general approach of the above recommendations is a gradual increase of light level from low in the seating area to high on the pins, which should have the bowler's attention.

Air conditioning heat load is also a factor in planning the lights. Each watt hour of light introduces 3.4 BTU of heat which must be taken into consideration for the air conditioning equipment. Excessive high humidity can also unfavorably affect the operation of some fluorescent lamps.

Footcandles

Concourse, spectator area, or other public space illumination intensity is optional, but the location and type of fixture and intensity must be subject to the restriction of not washing out the score image. Illumination of 10-30 footcandles from flush-mounted or recessed ceiling fixtures is recommended. There should be no direct exposure of light sources into the seating and approach areas.

BUILDING CONSIDERATIONS

The following factors are important in planning a bowling center.

1. Architect familiar with type of business selected
2. Financing
3. Parking requirements, including requirements for the handicapped
4. Allied business and local ordinances in force governing such businesses as follows:
 - a. Liquor service/Liquor license
 - b. Food service
 - c. Game room/coin-operated rooms
 - d. Meeting, banquet, and entertainment facilities
 - e. Children's playroom
 - f. Other sport and recreational facilities
 - g. Retail and sale of bowling and other sporting goods
5. Facilities for the handicapped
6. Ground preparation below concrete
7. Foundation material treatment requirements
8. Provisions for computerized management system
9. Energy management
10. Interior climate control
11. Sound/noise restrictions
12. Security
13. Safety
14. Planning for future expansion

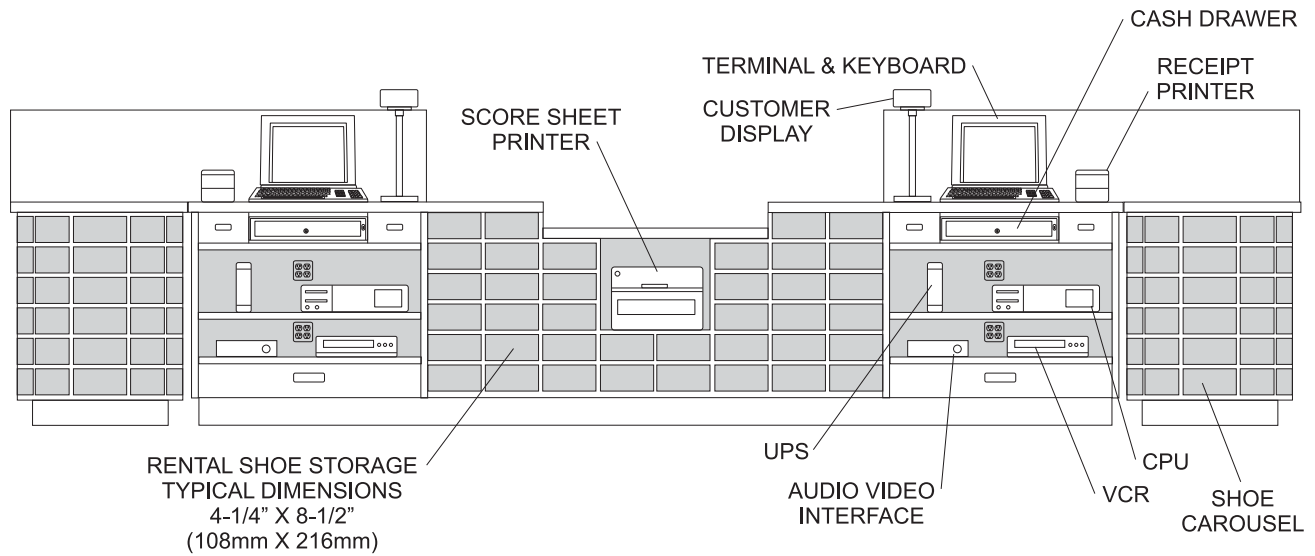
Possible Companion Accommodations

The design of companion accommodations may include items such as the following:

- Lounge/Bar
- Quick service bar or window
- Snack bar and/or restaurant
- Pre-cooler
- Game room
- Billiards room or area
- Rest rooms
- Ladies' lounge
- Locker area
- Maintenance equipment storage area
- Public telephone
- Telephone solicitation area
- Meeting rooms
- Banquet facilities
- Children's activity center
- Office(s) for owner/manager and other key staff
- Reception Center
- Heating, humidity control and air conditioning equipment
- Pro shop
- Vending machines
- Electronics systems room
- Handicap accessibility
- Party Rooms

Control Desk

The control desk, bar and snack bar should be proportioned to capacity lane conditions and be easily accessible from any part of the lanes. Should billiards be part of your building plans, the control desk should be positioned within view of both bowling and billiards (or game room) to avoid the need for a separate control desk for both.



Typical Control Desk Equipped with Brunswick Center Management Equipment

Rental Shoes

Rental shoes are a very important aspect of bowling. The condition of the shoes will greatly affect how much dirt and contaminants are introduced to the approach area of the lanes. A weekly schedule to examine the condition of the shoes is recommended.

The following chart is an example of the quantity and sizes of shoes for a typical 24 lane Family Entertainment Center.

QTY PER 24 LANES	SHOE TYPE
13	Youth size 8
15	Youth size 9
15	Youth size 10
15	Youth size 11
15	Youth size 12
16	Youth size 13
18	Youth size 1
16	Youth size 2
16	Youth size 3
16	Youth size 4
13	Men size 4/Women size 5.5 - universal
17	Men size 4.5/Women size 6 - universal
17	Men size 5/Women size 6.5 - universal
19	Men size 5.5/Women size 7 - universal
17	Men size 6/Women size 7.5 - universal
24	Men size 6.5/Women size 8 - universal
23	Men size 7/Women size 8.5 - universal
15	Men size 7.5/Women size 9 - universal
16	Men size 8/Women size 9.5 - universal
16	Men size 8.5/Women size 10 - universal
18	Men size 9/Women size 10.5 - universal
24	Men size 9.5/Women size 11 - universal
21	Men size 10/Women size 11.5 - universal
20	Men size 10.5/Women size 12 - universal
19	Men size 11/Women size 12.5 - universal
19	Men size 11.5/Women size 13 - universal
16	Men size 12
11	Men size 13
5	Men size 14
4	Men size 15
4	Men size 16
4	Men size 17
497	Total

Bowling Balls

The following chart is an example of the quantity and ball weights for a typical 24 lane Family Entertainment Center.

Recommended House Ball Quantities for a 24 Lane Center										
Ball Weight	6 lbs.	7 lbs.	8 lbs.	9 lbs.	10 lbs.	11 lbs.	12 lbs.	13 lbs.	14 lbs.	15 lbs.
No. of Balls	24	22	22	22	22	22	22	22	22	22

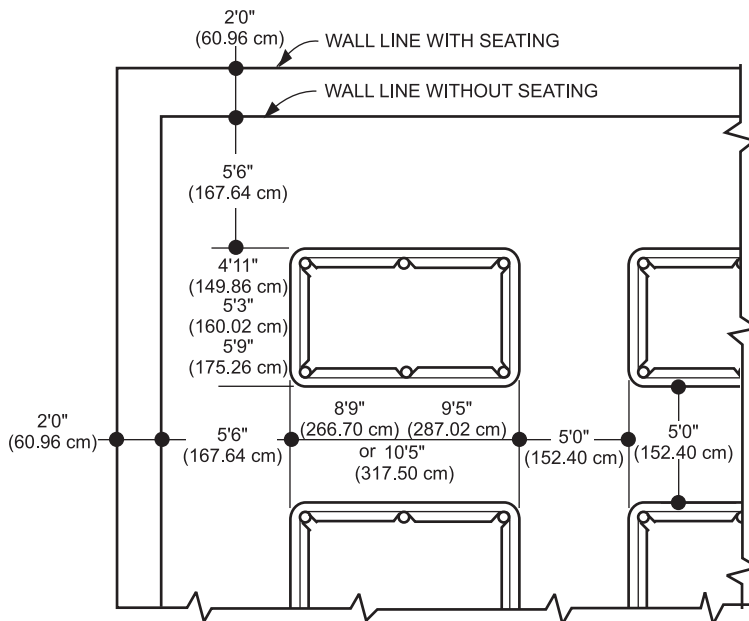
Billiard Rooms

Some communities have ordinances governing public billiard rooms. Therefore, it is advisable to investigate local laws in your pre-planning stages.

Normally, pocket tables of professional size or the small coin operated tables are used, isolated from the bowling lane area, but within close proximity to the reception center for the convenience of the control counter personnel.

Billiard rooms are family-oriented in decor. Carpeting is popular today, particularly the static-control type now available. If tile is preferred, Brunswick suggests vinyl for durability and ease of maintenance. Lighting of **50 to 75 footcandles** of even intensity on the playing surface 30" (.76 m) above the playing surface is desirable. The best type of fixtures are flush ceiling-mounted, centered over each table with a baffled diffuser to concentrate light over the playing surface.

Your wall treatment should provide easy maintenance, while adding to the at-home family type environment. Many types of wood paneling are available and are easy to maintain, or you may choose to install a vinyl-coated wall covering or carpeting on the walls, or a combination of these. Maintenance ease is extremely important in choosing wall covering.



Billiard Table and Spacing Dimensions

Electronic Game Room

Depending upon local laws, game rooms in which video, pinball, and other electronic and mechanical games are presented in a proper environment can add much to the success of the center. Care should be exercised in locating the game area so employees are able to supervise the area from the control desk. Some areas of the country require square footage minimums per child, and also, licensed attendants. Check in advance of construction as to requirements in your area.

Multi-Purpose Rooms

Meeting rooms and playrooms are often combined to perform dual purposes. Scheduling then becomes important in order to avoid overlap. You should also consider what is required for this room - storage closets, rest room facilities, video equipment, and secondary exit.

Locker Areas

For centers with high league bowling, locker areas may be appropriate. Locker areas should be located in the concourse, in close proximity to rest rooms. These areas can accommodate both men and women to conserve space and provide for family use of one locker. Locker room floors can be carpeted, preferably with static-control carpet. The area should be well lighted and ventilated. It is not advisable to have the locker area as part of the rest room area, or to be enclosed. Lockers should run perpendicular to the control counter for security purposes.

Rest Rooms

Rest rooms are areas of heavy traffic and require constant maintenance. With this foremost in mind, rest rooms should be designed for ease of maintenance and simple usage. Walls constructed of a glazed brick finish or ceramic tile reduce problems of vandalism and defacing. Floors are best covered with a ceramic tile for long durable wear and easy cleaning. Paper rollers and soap dispensers can be purchased through many manufacturers in recessed styling to reduce breakage. Toilets can be wall-mounted, which permits fast floor maintenance. Diaper changing facilities may be considered. Electric hand dryers are more sanitary than paper towels and less expensive over time. Plan to have good ventilation; exhaust must be directed outside, not returned to the circulation system of air conditioning. Lighting should be approximately 50 footcandles. Floor drains are recommended.

Building Maintenance Equipment Storage Area

The maintenance equipment storage area is best located at the front of the lanes, usually of the concourse. It should be ventilated to the outside and contain a deep sink and storage area for general clean up supplies. This is also the storage area where the Lane Machine is stored. Lane Machine dimensions are 57" x 45" x 18" (1.45m x 1.14m x 0.46m). The minimum size recommended is 4' 6" x 6' 8" (1.37 m x 2.03 m). This area should include a locking door that is labeled "Authorized Personnel Only".

Bowling Mechanic's Area

An area should be set aside for the center mechanic to store tools parts manuals and other maintenance supplies. The area should include a work bench. Ideal location is behind pinsetters near the center of the lanes. Size is dependant on number of lanes and amount of spare parts. A center with 12 lanes or less should plan for a 9' x 12' (approximate) room.

Back Office or Computer Room

The main reason for this office is to have an area for the manager or bookkeeper to perform the necessary clerical duties, material ordering, and record keeping. This office should be able to supervise the control counter nearby. The floor should be vinyl tile. Decorating is generally light and cheerful for maximum work efficiency. Provide adequate lighting for work efficiency. Larger centers will require office space for computer rooms, telephone solicitation, etc.

Food and Beverage Areas

This area should be decorated in lively, bright colors conducive to food consumption. Generally, this serves as a counter-carry out for food to be taken to spectator seating area tables. Maintenance of walls, ceiling, floors, counters, and equipment is of prime importance and the careful selection of these materials is recommended. Avoid flammable or toxic smoke-producing materials. Air conditioning and exhaust of cooking odors require careful planning. Automatic fire extinguishing systems should be installed over grills and deep fat fryers and in hood/duct assemblies. Maximum safety is extremely important. Walls and floors should be readily cleanable - materials such as ceramic tile and plastic laminate should be considered. If fluorescent lighting is used, lamps should be warm white to enhance the color of the food.

Lounge/Bar

The location of a lounge/bar within the bowling center is of prime importance and is related to local laws, traffic flow, and local area drinking habits. Should bowlers enjoy alcoholic beverages while bowling, for example, perhaps only a quick service bar is required. This could be used on the concourse area as well as the lounge itself. Normally, some food service should be available - often quickly accomplished by having the bar and snack bar in adjoining areas with a common quick-service counter.

Size in terms of seating capacity may be governed by local or state ordinances. State and municipal ordinances also govern the construction of walls and entrances for places where alcoholic beverages are sold and/or consumed.

Be certain to provide for storage areas for supplies. Liquor storage should be locked. Beer requires storage, precooling, and empty bottle storage and sorting areas. Easy access from the street is also necessary for deliveries. A common kitchen area could accommodate both the cocktail lounge and food and beverage to save space.

Roof

Your building is only as good as the roof placed over it. A bowling center and all equipment is a capital investment which should be protected as such.

Therefore, Brunswick recommends a recognized brand, solid bondable roof of the highest quality practical be installed over your building. The roof trusses should run the full length of the lanes rather than the width. This offers ease of future expansion while still providing a clear span. Insulation should be considered thoroughly as it affects air conditioning, heating, and humidity within. Reflective finish materials can save you money related to air conditioning. Expansion and contraction of roof surfaces is a vital factor in life of roof and flashing. If roof-mounted signs are considered, plan ahead so it can be in your roof specifications to the contractor. Scuttles, ventilators, louvers, and skylights, where used, should be flashed in the most thorough manner under supervision of the roof contractor and according to specifications and recommendations of roof materials manufacturer. Roof drains and scuttles should have anti-clog and antifreeze devices and should be inspected periodically for damage and service. Any bond should cover the flashing as well as the roofing material. Rooftop air conditioning should be installed over proper curbs. Pitch pot penetrations are not recommended.

Parking

It is essential to provide adequate parking facilities in locations where most bowling patrons will arrive by car. Ideally, parking should be as close to the main entrance as possible. Check local parking codes for requirements.

The parking area should be well lit, paved, drained, and provided with wheel bumpers. Blacktop surface is preferable, which should be sealed annually. Stone or gravel surfaces can increase dirt and other particles in the center.

It is advisable to locate water connections on the outside of the building. This allows hosing down the area, which reduces dirt being tracked into the center itself.

Shrubbery or other devices have been used to help screen and minimize headlight glare and reduce motor noise. These devices should never block the view of passing traffic, exits, or entrances. Special attention is needed for exit and entrance planning. They should be clearly identified and located so as not to interfere with the flow of highway traffic. Ideally, entering and exiting cars should not have to cross the flow of traffic.

REMEMBER, THESE ARE ONLY RECOMMENDATIONS. CONSULT YOUR ARCHITECT FOR ACTUAL PARKING LAYOUT.

Exterior Signs

Exterior identification is extremely important to a bowling building. It should be harmonious with the installation and efficient in respect to the task dictated by surrounding structures and competing signs and electric lights.

Illuminated signs are recommended since bowling, for the most part, is done after daylight hours. However, the sign should be clearly readable during the daylight hours in addition to having color and contrast for night visibility.

A controlled background sign is preferred for ease of reading. Sign construction runs the full range of materials and is closely dependent on local codes and ordinances, and wind load conditions. Local codes may affect overall size and location of the sign.

Special care must be taken so design permits easy maintenance and re-lamping without fighting winds on large surfaces. Quality electrical components also assure continuous operation and minimum maintenance. All types of signs may be leased or purchased. Maintenance contracts for cleaning and re-lamping are generally available.

Building Material Selections

Walls

Windows and Glass

Natural light is often a detriment in a bowling center. The elimination of such windows in the bowling area improves the lighting, cuts heat loss and air conditioning loads and also eliminates a dust and dirt problem. Windows can create a disturbance factor due to the glare of headlights from passing cars in the parking lot adjacent to the building. However, the use of glass at the main entrance is urged to provide an inviting view into the building and to display the activity within the building. All windows used in the rear of the building should be furnished with locking hardware.

Insulating Qualities

Regardless of the material used (brick, block, metal, or wood), strict attention should be paid to the transmission of heat, moisture, and humidity through the wall.

Interior Wall Treatment

In many instances, architects are eliminating solid confining walls around such areas as the snack bar, the bar, the pro shop, and billiard rooms by installing divider panels for maintenance and pleasant surroundings. Due to the problems of continued maintenance and insurance, they are reducing areas of plate glass and substituting other translucent materials in spaces where "borrowed light" partitions are desirable.

Provisions should be made for the public display of bulletin boards, league standing boards, etc., in a prominent traffic area.

The side walls may be furnished as the operator chooses, however, consideration should be given to using noise reduction material in this area. The wall behind the concourse should be constructed to withstand the abuse of the public in that area.

It is generally recommended, and frequently required by law, that the walls of public rest rooms be of moisture repellant material, such as tile and/or block with a glazed ceramic face, metal tile, plastic tile, terrazzo, carrara glass, or marble.

Floor Coverings

Floor coverings create a feeling of luxury and quality in a building. First impressions frequently measure acceptance in the minds of the public, and the floor is one of the first parts of a building observed upon entering. Floor coverings should enhance and compliment the interior - equipment, wall coverings, colors, etc.

Upper Floor Installation

Construction

Where lanes are to be installed on the second floor or higher, you must provide a floor strong enough to carry the load of the bowling equipment and public occupancy with the proper safety factors. Of equal importance is consideration of the transmission noise to spaces below the lanes. Your floor must be constructed to isolate and inhibit noise and vibration transmission. The Brunswick Floor Loading Certificate in Section 6 must be signed and certified by your architect or engineer.

Common Mistakes

Avoid these common errors in planning:

1. Columns in the lane or bowler's area.
2. Distracting activity alongside lanes.
3. Inadequate, excessive, or uneven lighting or glare.
4. Drab or discordant color combinations.
5. Noise of uncomfortable quantity or quality.
6. Inefficient air conditioning, heating, cooling, humidity control, or ventilation.
7. Poorly planned rest rooms, locker rooms, and lounges.
8. Inadequate children's activities center.
9. Poor use of space in high traffic area.



NOTE: *Poor housekeeping and slow or inefficient service are operational problems often traced to improper size or location of facilities in the original planning.*

Intentionally Blank

Section 3: Product Purchase Check List

Lanes

- Pro Lane
- Anvilane

Lane Machine

- Authority22
- Phoenix Lite

Pinsetter

- 208 Volt
- 230 Volt
- 380 Volt

Scoring System

- Vector
- Vector Plus
- Point of Sales
How many _____

Keypad Scorer

- Table
- Wishbone Pedestal
- Circular Ball Rack

LCD Scorer

- Table
- Wishbone Pedestal
- Circular Ball Rack

Overheads

Weldment

- Single
- Double
- Triple
- Continuous

CRT

- 27"
- 36"

LCD

- 32"
- 37"
- 40"
- 42"

Gutter

- Pin Ball Wizard
- Bankshot
- Stand-alone

Capping

- Lightworx
- Division Capping

Ball Rack Fan

- 120 volt
- 230 volt

Brunswick Interactive Games (BIG)

- Projector
- Projector Screen

Brunswick Entertainment Network (BEN) - (North America Only)

- 1 Channel
- 2 Channel
- 3 Channel

Billiards Light Controller

- Billiards Light Controller

Frameworkx Furniture

Table Top Seating

- Triangle Top
- Oval Top
- Reduced Oval Top

- Twin Bench Seating
End Table
 - With Holes
 - With out Holes
 - Drink Holder

Cocktail Table

- Tall
- Short

Free Standing Chair

- Tall
- Short

Section 4 - Building Requirements & Specifications

DOOR SIZE FOR BUILDING ACCESS

An entrance or an opening is required to bring the pinsetters into the building. The dimensions required follow below.

Front Entrance (First Choice):

Minimum Clear Opening 6'0" (1.83 m) wide x 8'0" (2.44 m) high

Minimum Clear Unobstructed Passage to Pit Area 6'0" (1.83 m) wide x 8'0" (2.44 m) high

Rear or Side of Service Aisle (Second Choice):

Minimum Clear Opening 6'0" (1.83 m) wide x 8'0" (2.44 m) high

Minimum Clear Unobstructed Passage to Pit Area 6'0" (1.83 m) wide x 8'0" (2.44 m) high

HEATING AND VENTILATION OBJECTIVES

There are other aspects of bowling lane installations proved by experience and study to be vital and must not be overlooked in planning a satisfactory system.

i *NOTE: Customer is responsible for paying additional labor if fully operational and functional HVAC systems are not complete before Brunswick installation.*

First

It is important to maintain a CONTROLLED ATMOSPHERE over the entire bowling center for human comfort, maintaining uniform playing conditions and proper function of the equipment. It is also necessary to control and reduce static electricity conditions in carpet and to minimize problems of airborne foreign particles, such as smoke, dust, and lint.

Second

Experience has established the need to extend the CONTROLLED ATMOSPHERE over the lanes, pinsetter area, and service aisle area.

i *NOTE: The BTU of a pinsetter is 293 watts/1000 BTU/hr.*

This CONTROLLED ATMOSPHERE should be extended to the storage and shop area of the service aisle for the protection of pins and equipment stored there.

No heating or air conditioning equipment should be suspended below the ceiling above the playing surface of the lanes.

Avoid the concentrated flow of either heated or cooled air on any single area of the bowling center. This may produce excessive moisture which could result in damage to equipment.

Third

The use of a properly designed air distribution system to deliver the correct amount of conditioned air to all of the public occupancy areas and to the bowling and service areas is important. The functions and characteristics of these areas must be studied by the engineer to accurately determine the correct distribution. Air must be delivered in each area so it is thoroughly mixed and brought to required room conditions before it comes in contact with the public, playing surfaces, or equipment. It is by correct control at these points that the life of the materials and surfaces can be extended and maintenance problems reduced.

Humidity

Bowling is a "round-the-clock," all season sport. Therefore, controlled temperature and humidity are prerequisites for a successful bowling establishment.

Research has proven that lack of proper humidity control can result in damage to bowling equipment such as pinsetters, kickbacks, pins, and lanes. Proper humidity control will improve pin action, pin life, condition, and appearance of lanes and approaches. Proper humidity control will also remove static electricity which causes severe dirt and maintenance problems, and also contributes to poor sliding conditions.

Indoor humidity is a factor in lane conditions and the sliding characteristics of approaches. High relative humidity (moisture content in the air) tends to make the lane conditioner evaporate slower and may cause sticky approaches. Low relative humidity will allow the lane conditioner to evaporate faster and may result in slippery approaches.

i ***IMPORTANT!: A RELATIVE HUMIDITY LEVEL OF 45% ±5% MUST BE MAINTAINED to obtain the many benefits of humidity control. Equipment requirements vary according to geographic location, building size, type of construction, etc. It is recommended that a competent air conditioning engineer, with full knowledge of the requirements to determine the exact requirements for proper humidity control.***

Recommendation for a Control System that has the capability to:

1. Record temperatures in all areas served
2. Record supply air temperatures of all HVAC units
3. Record the humidity in various locations of the center
4. Computer programmable to allow alternate controls that could include:
 - Computer accesses to retrieve the temperature, humidity and hours of operation history.
 - De-Humidifying operation of the HVAC equipment
 - Programmable Zone temperature set points
 - Time of day operation, HVAC units, lighting, and exhaust fans
 - Economizer operation for energy savings, controlled by a weather station

Dew point is another factor that must be considered for proper lane maintenance. Dew point is the temperature at which the air cooling becomes saturated and water droplets form as a result of condensation. Although this phenomenon is usually related to outside atmospheric conditions, it can also occur inside your bowling center. This usually happens when a great volume of outside air is being used to condition your center. All buildings require a percentage of outside air to maintain a proper and healthy environment for its occupants. However, an excessive amount of outside air being used to condition the building during some periods of the year could create a dew point in your center. If this happens, condensation can form and this may lead to conditioning problems and sticky approaches. Dew point data is available from your local weather information office.

The circulation of air is equally important to bowling conditions and comfort. Placement of supply and return vents should move air away from the bowlers' area and toward the concourse. This creates an "air wall" which prevents smoke and humidity from being blown onto the approach area.

Insulation

The engineer should specify to the architect his requirements for duct insulation and his recommendations for roof insulation and reflective roofing, since these considerations can do much to reduce equipment size and continued operation and maintenance expenses.

Design Conditions

All load conditions for both summer and winter operations must be based on design conditions which are (1) based on local weather and business factors, and (2) based on providing satisfactory indoor conditions for bowlers, spectators, bowling lanes, and other equipment.

1. For external conditions in practically all United States communities, the engineer can refer to the National Heating, Ventilating, and Air Conditioning Guide for accurate design conditions.

In the majority of instances, bowling establishments vigorously promote daytime business and double afternoon leagues are not uncommon. Therefore, it is recommended the sun load be calculated and provisions for air conditioning equipment be made to accommodate this condition.

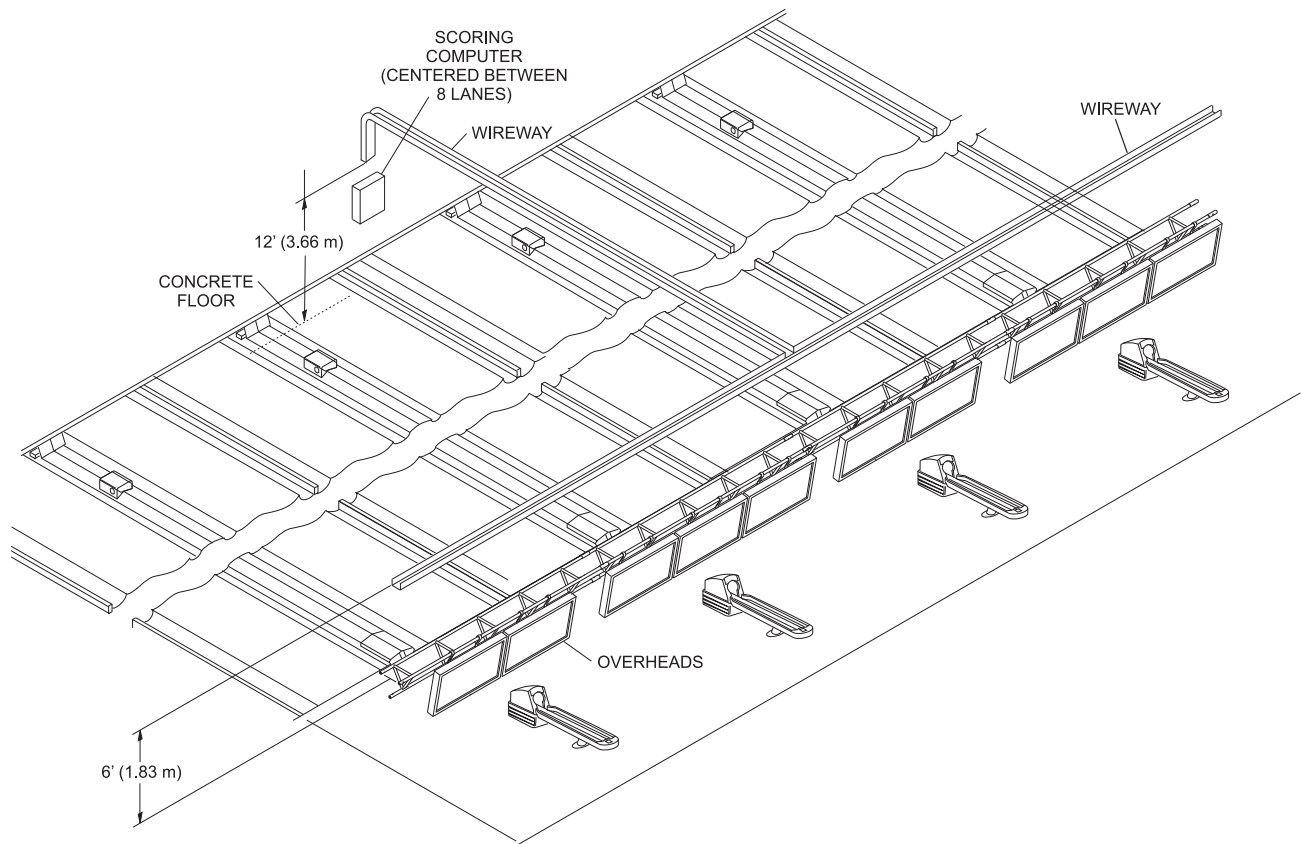
2. **Year round humidity should be maintained at 45% \pm 5% also, however, it may become necessary for short periods of time to automatically lower this in proportion to dropping outdoor temperatures in areas where severe conditions occur. This can vary in accordance with the construction of the building. This must be carefully analyzed by the engineer in his studies and the engineer may be able to suggest to the architect material changes affecting long-range economies.**



NOTE: Refer to Electronic Pre-Installation Guides for computer room requirements.

OPEN CEILING

Sufficient support and concealment will need to be provided for cabling in open ceiling construction. Wireways are recommended for cables from the scoring computer to the overheads.



Overhead Wireways for Open Ceilings

LIGHTING

i *NOTE: Customer is responsible for paying additional labor if a fully operational and functional center lighting system is not complete before Brunswick installation.*

Bowlers' Area (Suggested 10-15 Footcandles)

General lighting intensity in the bowlers' seating area should be 10-15 footcandles. Use of recessed ceiling fixtures (fluorescent single lamp) will provide the recommended zone light levels.

Special consideration should be given to the color treatment of walls and ceiling, and to the use of low-reflective carpet or tile in the seating area.

Approach (Suggested 5-10 Footcandles)

Approach lighting intensity should be 5-10 footcandles. This level can be obtained through incidental light from the seating area and lane surface. If additional approach lighting is used, it should be separately switched from the Control Desk or on dimmer controls.

Specialty Lighting

If the center plans to have "Cosmic Bowling", considerations should be made for black light fixtures in the bowler's, concourse and lanes areas; as well as other electrical provisions for specialty lighting over the lanes. Refer to Brunswick "Cosmic Lighting" layouts for detailed information.

Lane Surface (Required 15-20 Footcandles)

Lane surface illumination level should be 15-20 footcandles of even diffused lighting measured at floor level. The amount of incident light directly illuminating the masking units should be 10-15 footcandles.

Pinsetter Area (Suggested 30-35 Footcandles)

While proper pin lighting is installed on the automatic pinsetter, general lighting in the pinsetter area should be about 35 footcandles of even illumination over the machines and the service aisle.

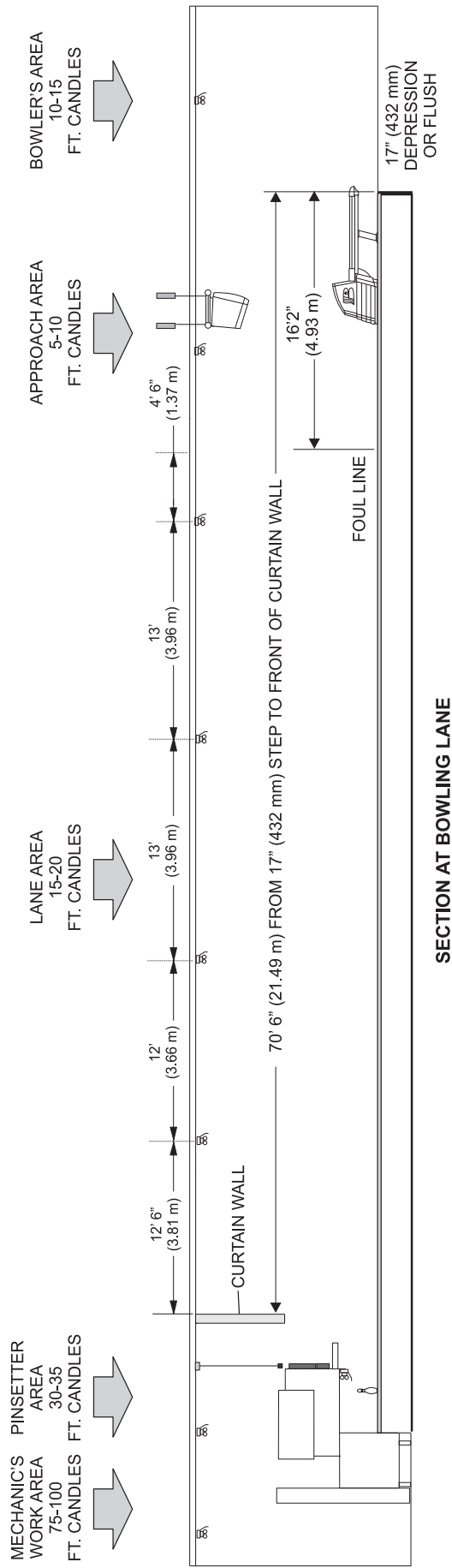
Mechanic's Work Area (Suggested 75-100 Footcandles)

The mechanic's work area should have 75-100 footcandles in the bench area.

Concourse Lighting

Concourse lighting should have 30-35 foot candles.

Typical Lighting Layout



SOUND & VIBRATION

Sound

i *NOTE: Sound reductions are the responsibility of an acoustical engineer. Brunswick will not provide information for sound reduction.*

Noise Reduction Coefficients

The general rule of thumb is for a noise reduction coefficient (NRC) of .70 to .85 in the pinsetter area and a NRC of .50 to .65 for the balance of the lane area. Hearing protection equipment is required in the pinsetter area. The bar and cocktail lounge is generally based on a NRC of .65 to .75.

Frequencies

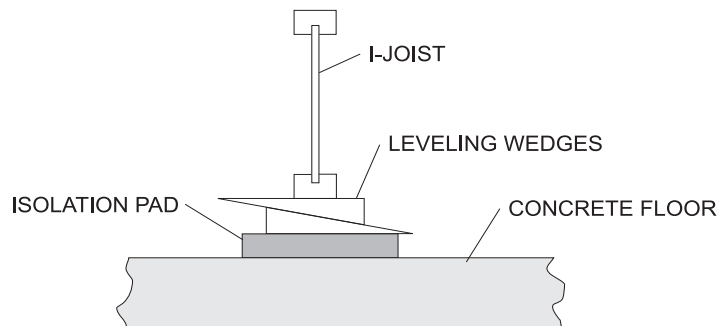
The noise reduction coefficients of varying acoustical materials can be arrived at by considering 125 cycles as being the frequency for rolling bowling balls, 250 cycles for the frequency of human voices, and 500 cycles for the frequency of the pinsetter area, including machine noise and pin clatter. It is obvious, of course, that these evaluations are only approximated since noise often reaches across 2 or 3 frequencies for a brief moment.

Vibration

Upper Floor

Areas sensitive to noise and vibration such as upper floor installations may require additional material for the installation. Following is an example of isolation pads which reduce the vibration of the bowling lanes. These isolation pads are to be installed at all points where the bowling foundation is in contact with the cement floor throughout the pinsetter and lane area.

The proprietor will need to contact their architect for further information.



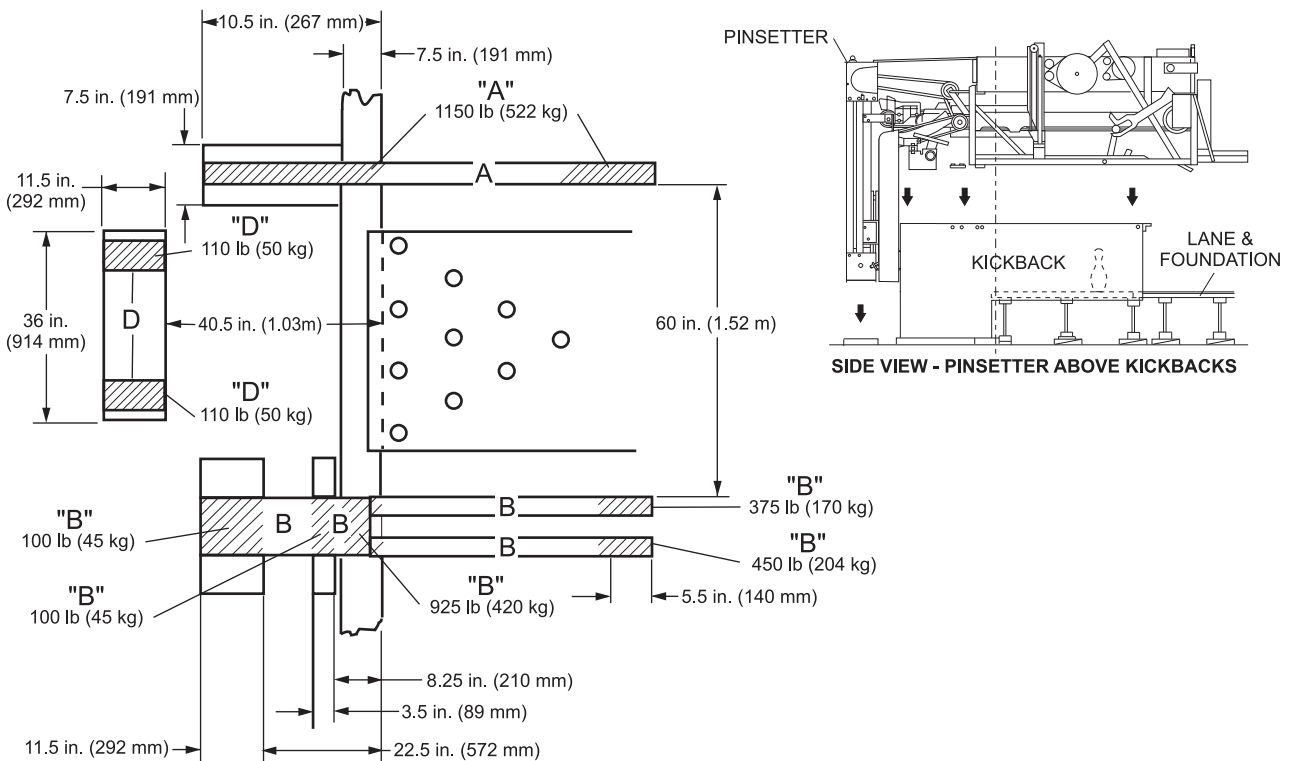
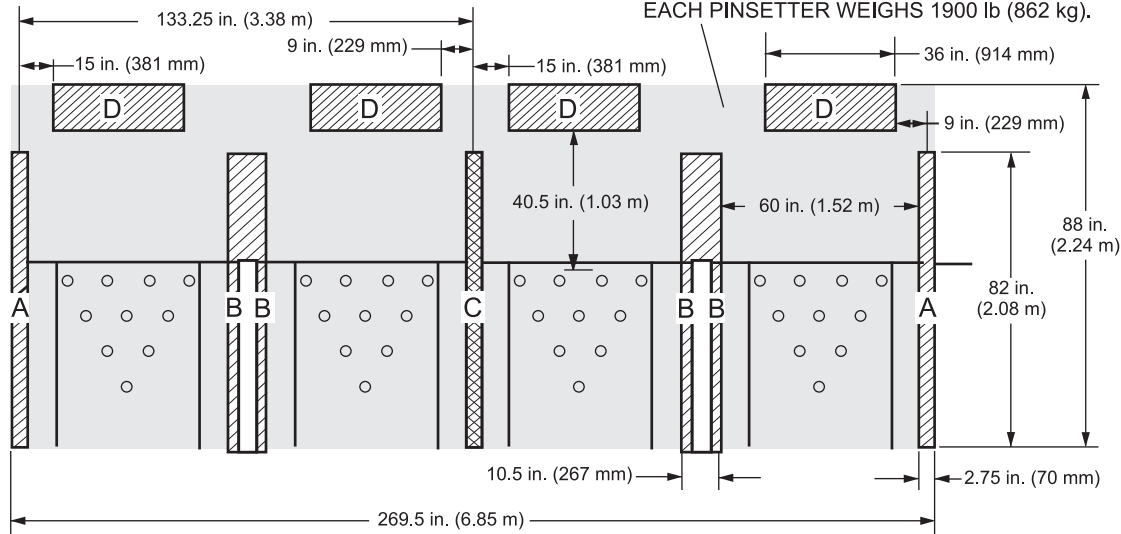
Isolation Pads

i *NOTE: Isolation Pads are the responsibility of the architect. Brunswick will not provide isolation pads.*

FLOOR LOADING

Pinsetter Area

I NOTE: AVERAGE EQUIPMENT LOAD FOR 4 LANES (88" X 269.5") WITH PINSETTER IS 10,200 lb (4627 kg) OR 62 lb/ft² (303 kg/m²). EACH PINSETTER WEIGHS 1900 lb (862 kg).

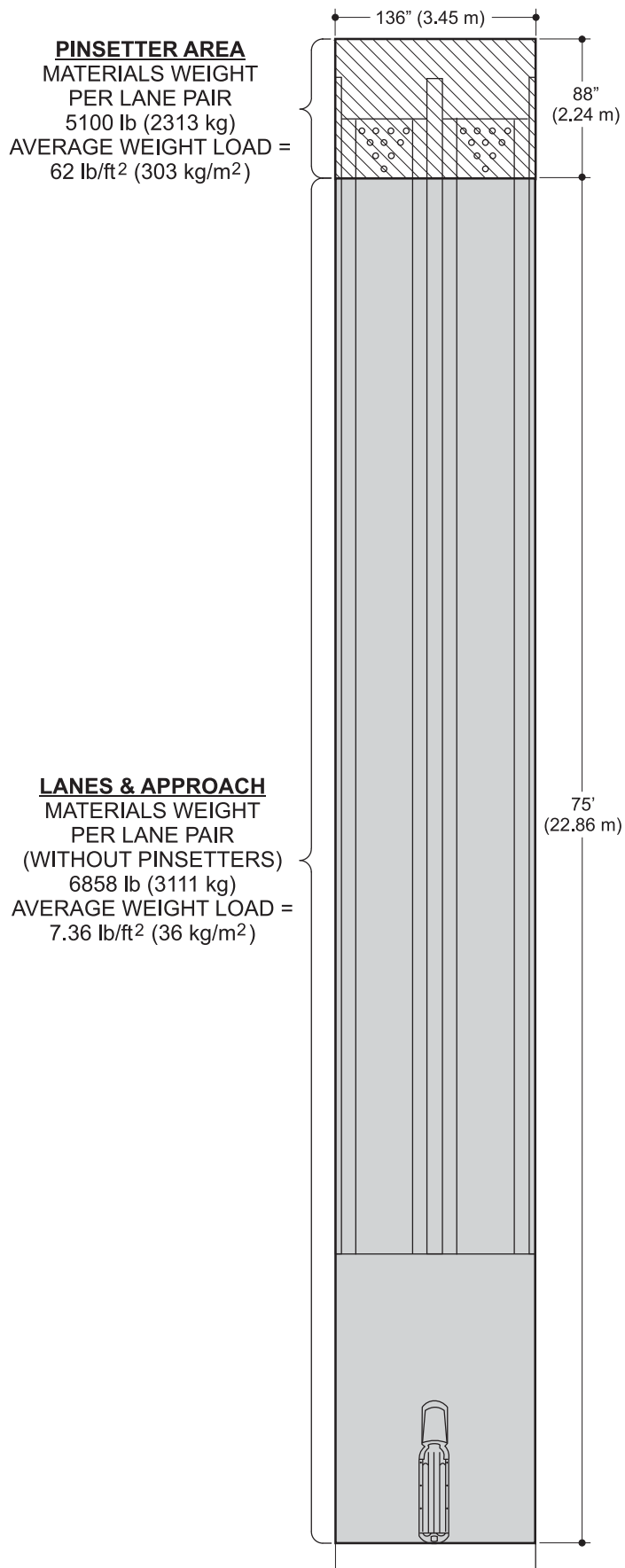


LEGEND:

- A. LOADING OF 1150 POUNDS (522 kg)
- B. LOADING OF 1950 POUNDS (885 kg)
- C. LOADING OF 2150 POUNDS (975 kg)
- D. LOADING OF 220 POUNDS (100 kg)

I NOTE: WEIGHT BEARING CAPACITY OF THE FLOOR WILL BE THE RESPONSIBILITY OF THE CUSTOMER. CUSTOMER MUST SECURE CERTIFICATION BY A REGISTERED ARCHITECT THAT THE BUILDING STRUCTURE IS ADEQUATE TO SUPPORT THE MACHINES. WHEN FIGURING THE STRENGTH OF AN EXISTING BUILDING OR THE DESIGN OF A NEW BUILDING, THE MACHINE SHOULD BE CONSIDERED AS A DYNAMIC LOAD.

Pinsetter Area and Lane & Approach Area



FLOORS

Concrete Floor

Bowling lanes are installed on a waterproof, reinforced concrete slab poured over compacted fill. In the pit and lane area, a minimum of 4" (102 mm) thick concrete is required. In the lane area, the surface **must be power-troweled and level to within 1/2" (13 mm)**. Care must be exercised to maintain a close tolerance (1/2" or 13 mm) on levels to avoid excessive shimming on lane foundations. Due to size, these floors are usually poured in strips rather than in one pour. Be sure to "key" the concrete to insure the waterproof quality and to avoid "heaving" at a later date.

i *NOTE: Customer is responsible for paying additional labor and shimming material if the lane area is greater than 1/2" (13 mm) from being level.*

The need for, type, and location of expansion joints must be determined by the architect. **Your architect or engineer must certify on the floor loading certificate, provided by Brunswick, that the floor will meet our requirements in this area.**

i *IMPORTANT!: Concrete in bowlers' seating area should be thick enough to accept a 2-1/2" (64 mm) anchor for seating and other related equipment.*

Vapor Barrier

Brunswick **REQUIRES** the concrete floor be poured over a properly installed vapor barrier. The polyethylene materials can be used for this in most cases. Extra care is needed in placing the concrete to prevent the barrier from being torn or punctured. It should also be placed so it will not be punctured when bowling equipment is fastened to the floor.

i *NOTE: The customer will be responsible for any additional material if the floor does **not** have a vapor barrier, for example - treated lumber in between Brunswick I-joist and concrete*

Termite Proofing

In some areas where the problem exists, the soil beneath the building should be treated to prevent termite penetration. Consult your local pest control authority.

Pipes, Drains, etc.

Pipes, drains, or ducts which could break or require replacement should never be placed in or below the concrete in the lane area.

Before pouring concrete, all conduit or wireways must be securely placed and checked for accuracy of location.

i *NOTE: Refer to GS Pinsetter and Vector Center Network System Pre-Installation manuals for proper placement of conduits. As always, the Brunswick Service department is available for clarification.*

Hardening and Dust-proofing

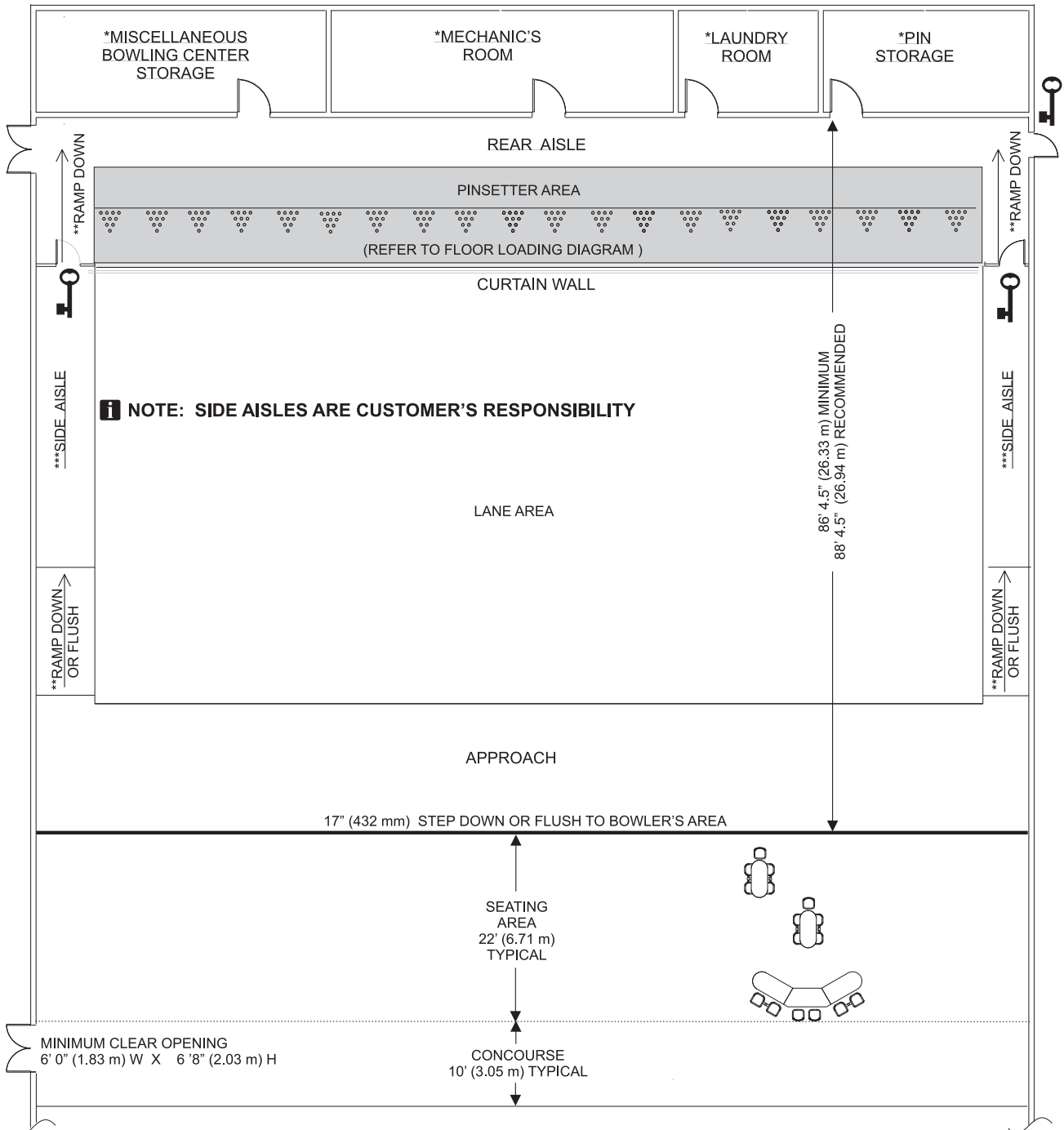
The pinsetter area and service aisles should be power-troweled, hardened, and dust-proofed concrete for reasons of maintenance. **All concrete not covered with tile or floor covering should also be permanently sealed.**

Drying Time

Since wood products can be affected by excess moisture, it is the customer's responsibility to provide conditions conducive to installation on site. Concrete drying time can vary. Consult your architect and cement contractor to insure cement is completely dry.

FOUNDATION CONSTRUCTION

Overview



*RECOMMENDED

**SIDE AISLE RAMPS ARE BUILT OF WOOD AND CAN BE LOCATED AT THE FOUL LINE OR BEHIND THE CURTAIN WALL

***SIDE AISLES ARE CUSTOMER'S RESPONSIBILITIES

 LOCKED DOOR REQUIRING MECHANICAL OR ELECTRONIC PASS CODE TO ENTER

Key Bowling Lane Dimensions

Equipment Length

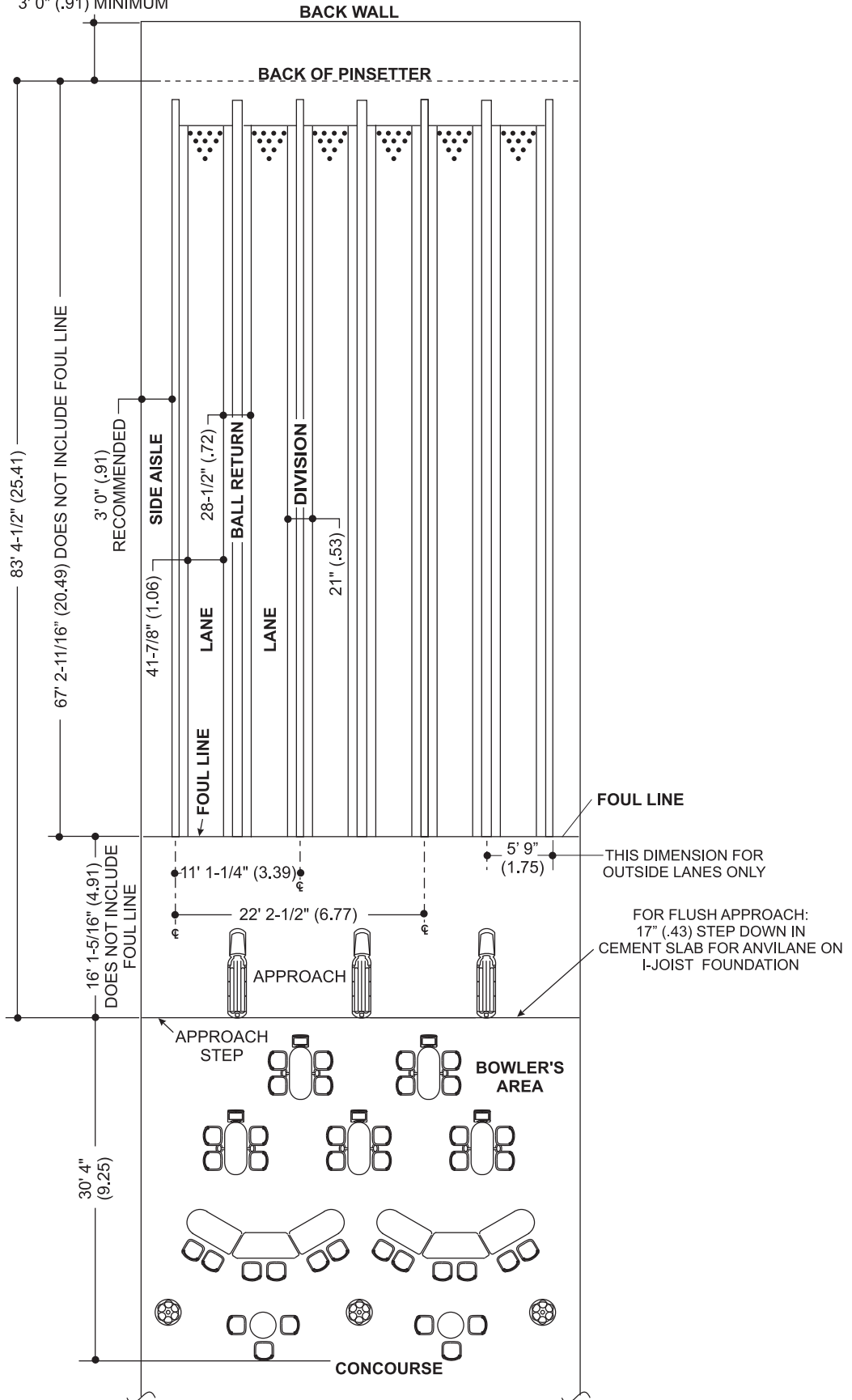
The total length of the bowling area is determined by using a recommended 5' (1.52 m) clear service passage behind the pinsetters and the overall length of the bowling lanes, which is 83' 4-1/2" (25.41 m) and includes the pinsetter, lane and approach. To these dimensions add an area for the bowlers' seating, based on seating configuration. Refer to Key Bowling Lane Dimensions graphic on the following page..

Concourse

The concourse, which is in back of the spectator seating, may vary in width. The clear width should be ample to accommodate at least a peak load of 10-15 people per lane. The maximum milling area is generally located around the control counter, snack bar, restaurant, and entrance lobby. Vending machines, ball cleaners, etc., are usually located on the concourse, preferably recessed. Concourse tables and chairs can help turn this area into an income-producing area. Adequate wall area should be provided for bulletin boards, score sheets, and other announcement boards. Your Brunswick representative will inform you of these requirements and give suggestions for nonstandard layouts. House ball storage racks will also be necessary. Consider these factors when planning your concourse.

SERVICE AISLE
5' 0" (1.52) RECOMMENDED
3' 0" (.91) MINIMUM

i NOTE: METRIC DIMENSIONS
() IN METERS



Key Bowling Lane Dimensions

Bowling Lane Widths

The following dimensions are net measurements of the uninterrupted lane widths only, and therefore, additions should be made for columns, walls, and passages between lanes or beside them.

No. of Uninterrupted Lanes	Minimum Width <u>10-1/2" Returns</u>
2	11' 6" (3.51m)
4	22' 7-1/4" (6.89 m)
6	33' 8-1/2" (10.27 m)
8	44' 9-3/4" (13.66 m)
10	55' 11" (17.04m)
12	67' 0-1/4" (20.43m)
14	78' 1-1/2" (23.81m)
16	89' 2-3/4" (27.20m)
18	100' 4" (30.58m)
20	111' 5-1/4" (33.97m)
22	122' 6-1/2" (37.35m)
24	133' 7-3/4" (40.74m)
26	144' 9" (44.12m)
28	155' 10-1/4" (47.5m)
30	166' 11-1/2" (50.89m)
32	178' 0-3/4" (54.27m)
34	189' 2" (57.66m)
36	200' 3-1/4" (61.04m)
38	211' 4-1/2" (64.43m)
40	222' 5-3/4" (67.81m)
42	233' 7" (71.20m)
44	244' 8-1/4" (74.58m)
46	255' 9-1/2" (77.97m)
48	266' 10-3/4" (81.35m)

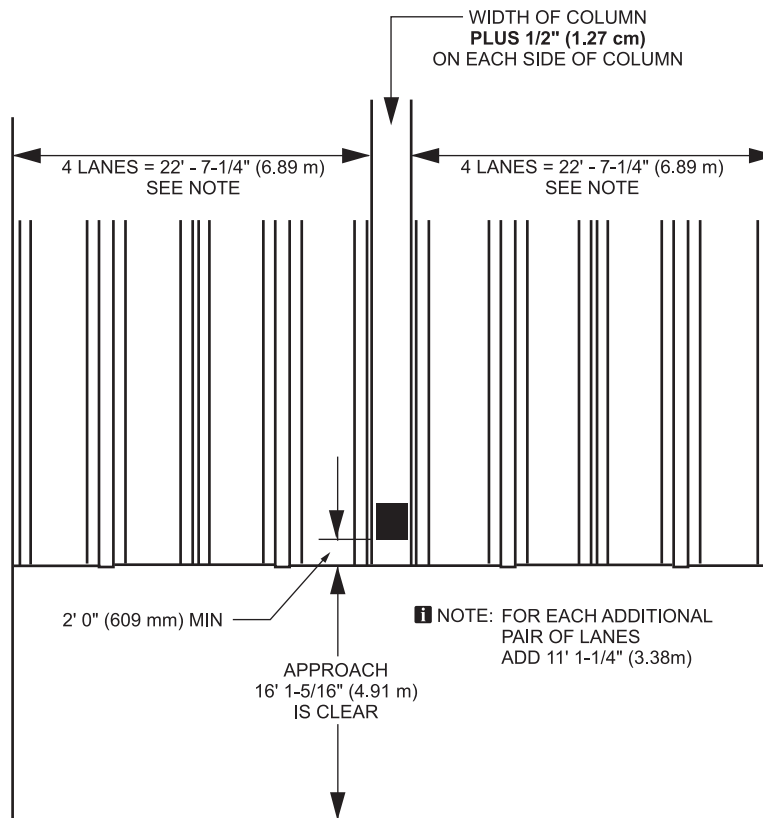


NOTE: For each additional pair of lanes above 48 lanes, add 11' 1-1/4" (3.38 m).

Column Spacing

Ideally, a clear span is preferred. However, where supports for the structure above the lane are necessary or existing, it is desirable to use a minimum lateral spacing between columns of 22' 7-1/4" (6.89 m) per four lane bay plus 1" (2.54 cm) for clearance to reduce transmission of noise.

Longitudinally, the fewer columns the better. The 16' 1-5/16" (4.91 m) approach area and at least 2' (.61 m) beyond the foul line should be kept free of columns if possible.



Pinsetter Access

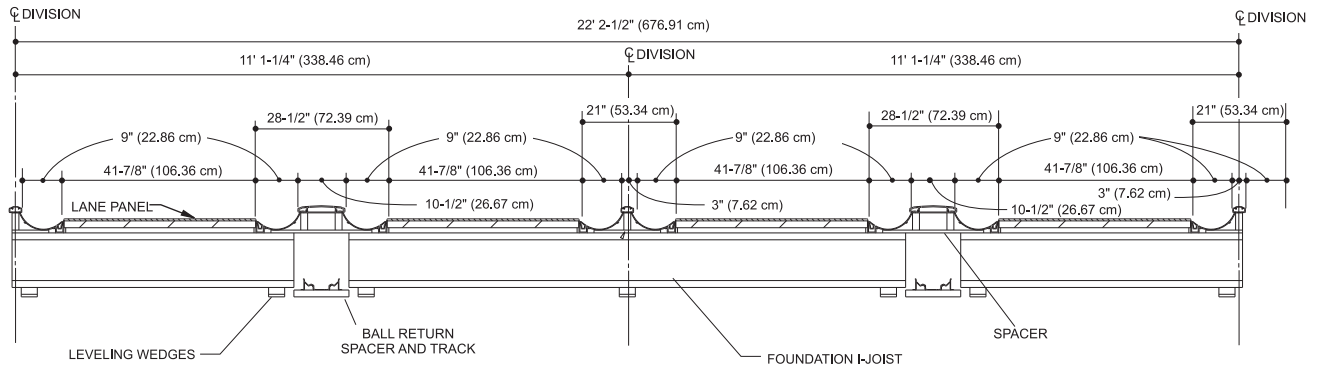
The width of side aisles is determined by the economical width of the building. It serves as a convenient indoor route for personnel to the pinsetters and storage areas. A side aisle width of 3' (.91 m) is suggested with a ramp down at the foul line or behind curtain wall. If no side aisle is provided, at least 1' (30.5 cm) should be allowed from the outside edge of the gutter to the wall to give the bowlers freedom on the approach. Side aisles should include a locking door at masking units to prevent unauthorized access to the pinsetter area. A sign noting "Authorized Personnel Only" should be mounted on or above the door. All areas specific to center mechanical or maintenance personnel should be locked and clearly marked "Authorized Personnel Only" to prevent access by unauthorized or untrained personnel.

Building Width

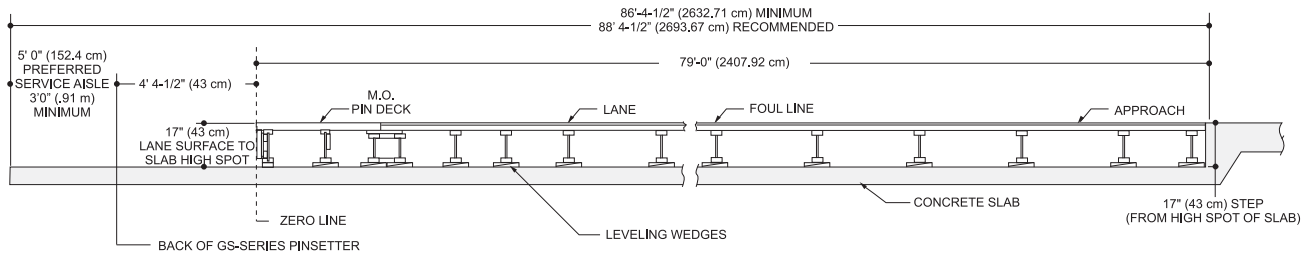
The width of the building is determined by adding the following:

- Width/thickness of outside walls
- Side aisles
- Columns
- Lane area

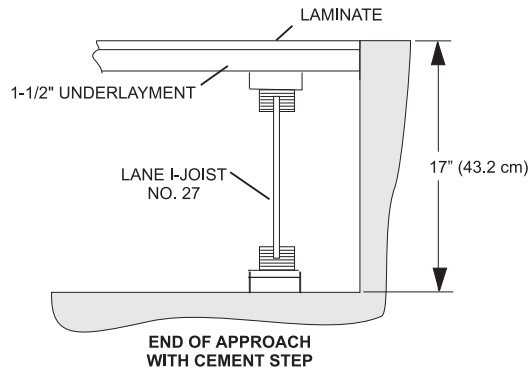
Lane Foundation Dimensions



End View

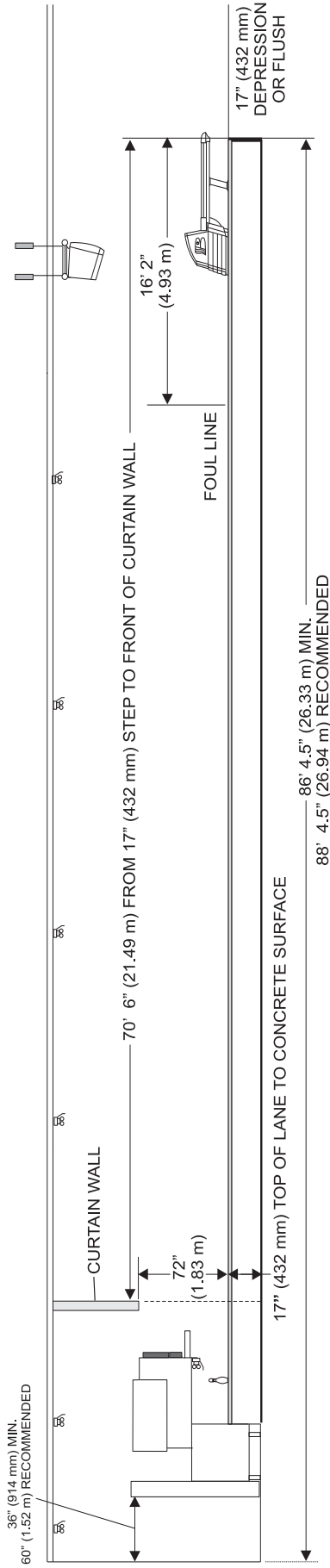


Side View

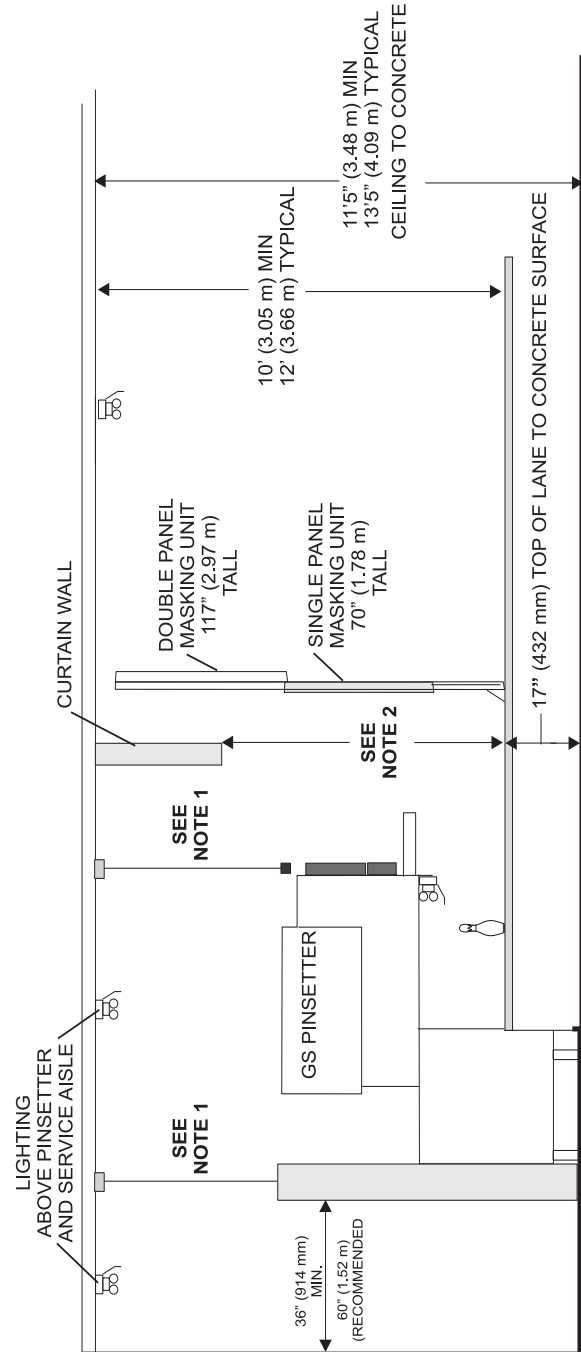


Flush Approach Detail

Pinsetter Foundation Dimensions

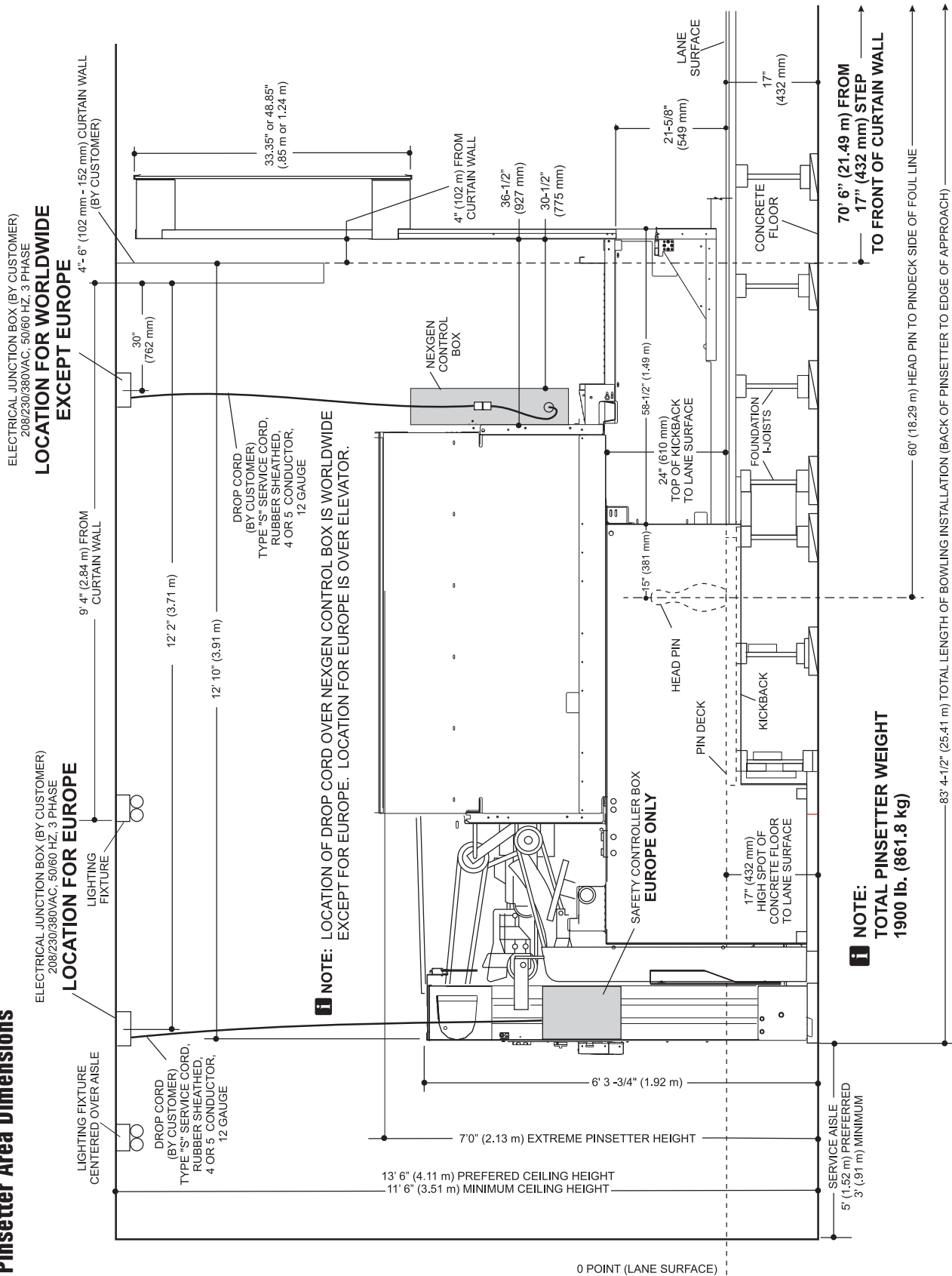


SECTION AT BOWLING LANE



- NOTE 1:** LOCATION OF DROP CORD OVER NEXGEN CONTROL BOX IS WORLDWIDE EXCEPT FOR EUROPE. LOCATION FOR EUROPE IS OVER ELEVATOR.
- NOTE 2:** DOUBLE, 2 PANEL MASKING UNIT = 72" (1.83 m). SINGLE, ONE PANEL MASKING UNIT = 67" (1.70 m). **IMPORTANT: CURTAIN WALL MUST BE CONSTRUCTED AFTER PINSETTERS ARE INSTALLED. PINSETTERS CANNOT BE INSTALLED WITH CURTAIN WALL HEIGHT OF 67" (1.70 m) FROM LANE SURFACE.**

Pinsetter Area Dimensions



FIREBLOCKING

The "*Fire Resistant Construction Form*", which can be found in Section 6 of this Guide, must be submitted to Brunswick prior to construction.

Local building codes vary from area to area, based on your local code it may be necessary to install fireblocking under the lanes. Refer to fireblocking overview and details diagrams.

The Brunswick lane foundation consists of high pressure laminate mechanically fastened to a wooden underlayment of engineered strand board. The underlayment is spaced above the floor by engineered lumber I-joists. These components do not meet requirements of fire-retardant-treated lumber. It is the responsibility of the proprietor and proprietor's architect to investigate and comply with local building codes. If additional labor and/or materials need to be added to Brunswick's standard installation in order to comply with local codes, it must be done at expense of the proprietor.

Following is some information the architect may find helpful in complying with local codes. The information is taken from the 2006 Edition of the "*International Building Code*" written by International Code Council. The International Code Council consists of representatives from Building Officials and Code Administrators International, the International Conference of Building Officials and, the Southern Building Code Congress International. The intent of this code was to draft a comprehensive set of regulations for building systems consistent with and inclusive of the scope of their existing model codes. The requirements for bowling lane construction can be interpreted many ways. This code makes clear reference to bowling and lane construction.

The 2006 Edition of the International Building Code states:

COMBUSTIBLE MATERIALS IN TYPES I and II CONSTRUCTION

Section 717 - Concealed Spaces

717.1 General. Fireblocking and draftstopping shall be installed in combustible concealed locations in accordance with this section. Fireblocking shall comply with Section 717.2. Draftstopping in floor/ceiling spaces and attic spaces shall comply with Sections 717.3 and 717.4, respectively. The permitted use of the combustible materials in concealed spaces of buildings of Type I or II construction shall be limited to the applications indicated in Section 717.5.

717.5 Combustible materials in concealed spaces in Type I or II Construction. Combustible materials shall not be permitted in concealed spaces of building of Type I or Type II construction.

Exceptions:

1. Combustible materials in accordance with Sections 603.

603.1 Allowable materials. Combustible materials are permitted in buildings of Type I and II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3.

7. Finished Flooring applied directly to the floor slab or wood sleepers that are fire stopped in accordance with Section 717.2.7.

717.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fire blocked in such a manner that there will be no open spaces under the flooring that will exceed 100 square feet (9.3m²) in area and such space shall be filled solidly under permanent partitions so that there is no communication under the flooring between adjoining rooms.

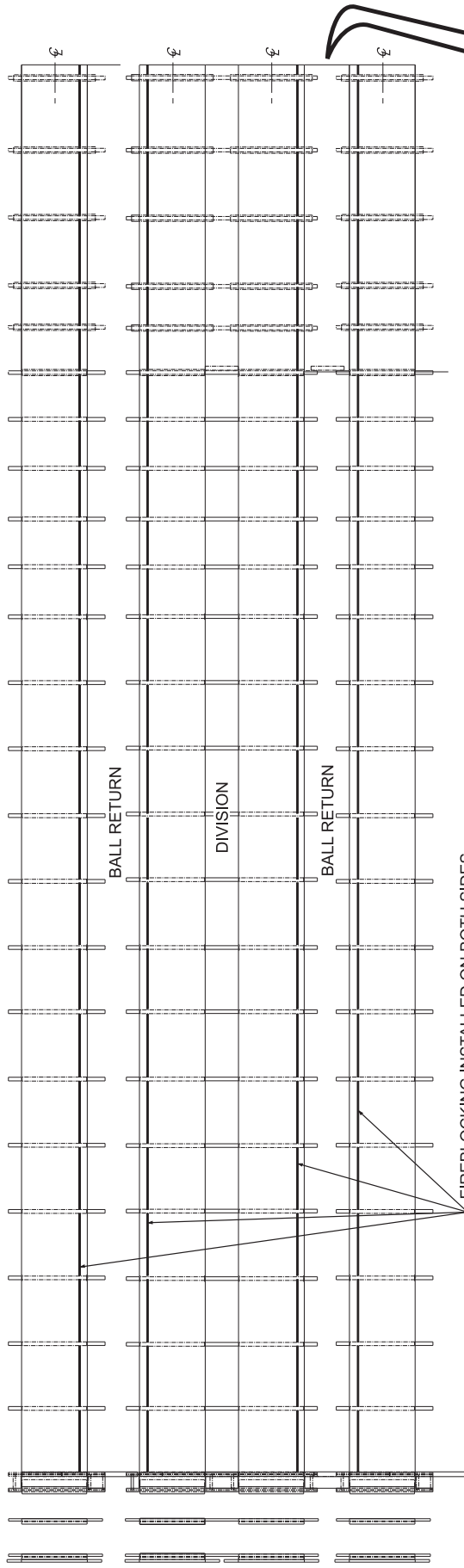
Exceptions:

2. Fire blocking is required only at the juncture of each alternate lane and at ends of each lane in a bowling facility.

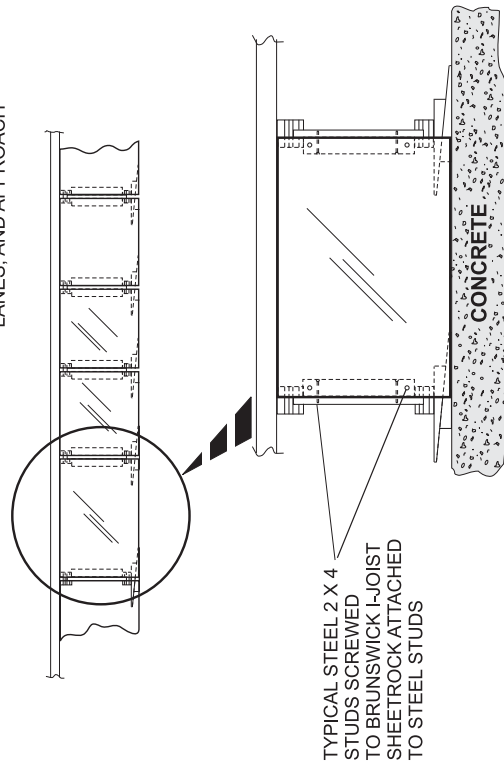
Brunswick has installed many bowling centers where the proprietor's contractor installed drywall (sheetrock) fireblocking as specified above. However, by signing the "Fire Resistant Construction Form", the proprietor acknowledges that it is the sole responsibility of the proprietor to investigate and comply with local building codes and to secure appropriate methods, and seek code approval for the fire-resistance-rated construction if required prior to the start of installation, and pay for all associated material and labor.

Refer to the fireblocking overview and detail diagrams which follow.

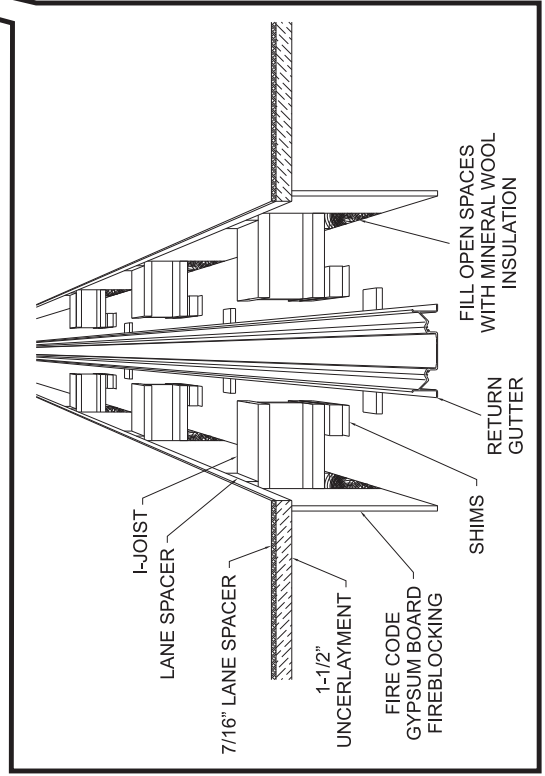
Fireblocking Overview



FIREBLOCKING INSTALLED ON BOTH SIDES OF THE BALL RETURN, THE FULL LENGTH OF LANES, AND APPROACH



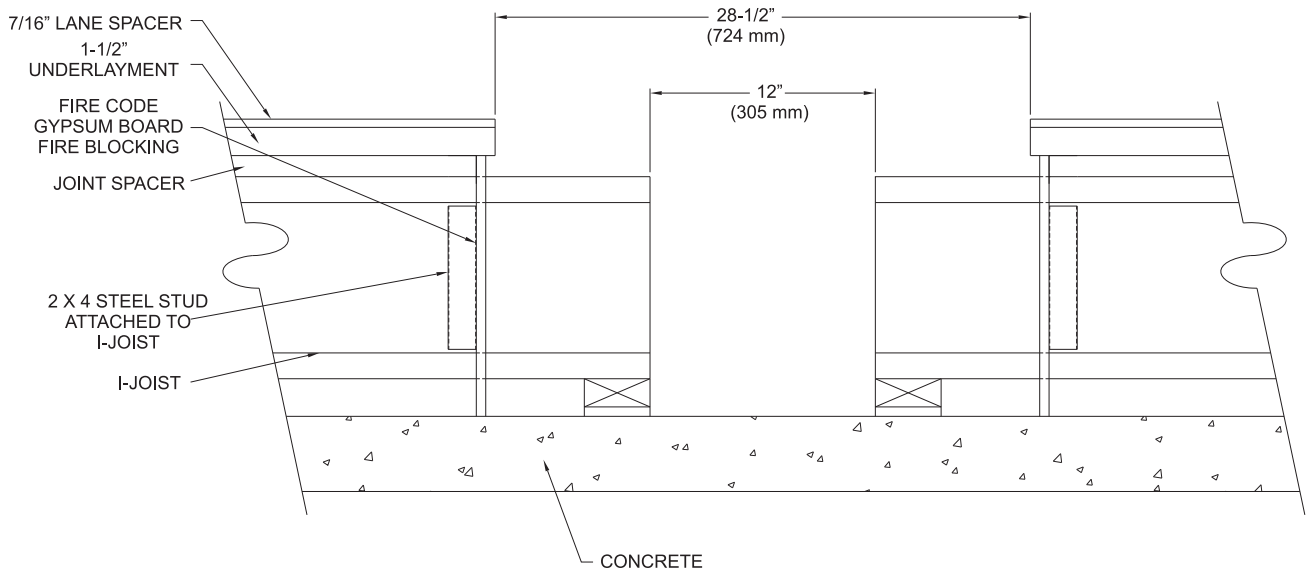
TYPICAL STEEL 2 X 4 STUDS SCREWED TO BRUNSWICK I-JOIST SHEETROCK ATTACHED TO STEEL STUDS



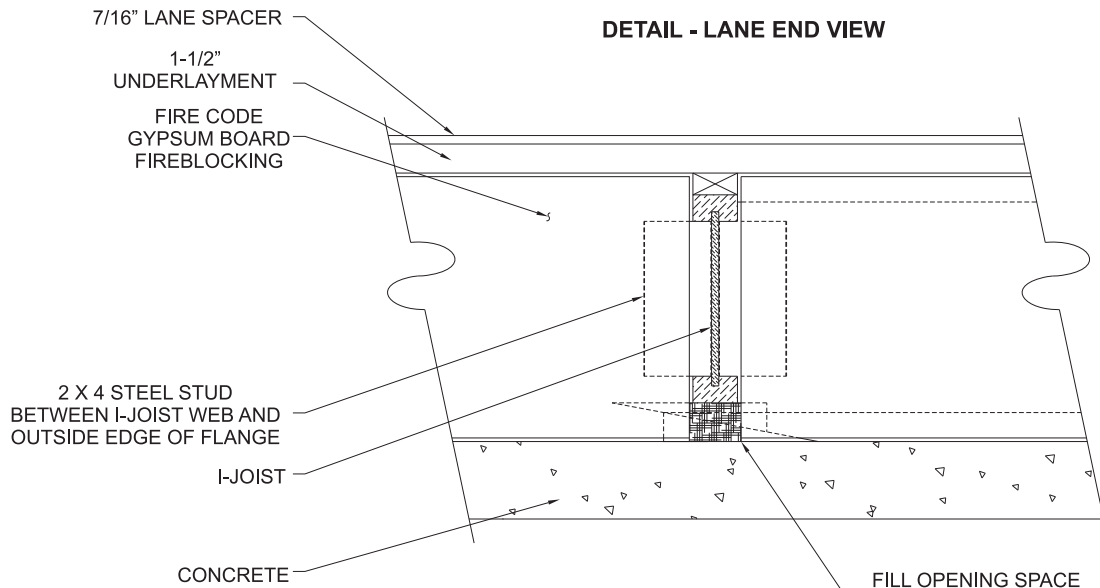
END VIEW AT BALL RETURN

IF REQUIRED BY LOCAL CODE: FIREBLOCKING INSTALLED BY CONTRACTOR TO COMPLY WITH 100 SQUARE FOOT RULE

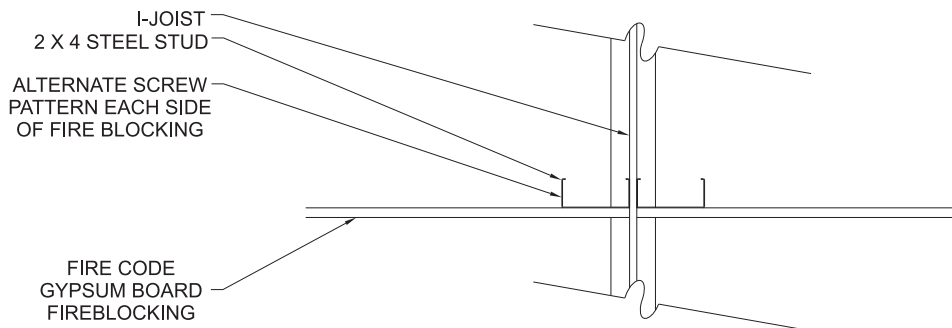
Fireblocking Details



DETAIL - LANE END VIEW



DETAIL - LANE SIDE VIEW



DETAIL - LANE TOP VIEW

CONTROL DESK AND OFFICE LOCATIONS

Refer to the Vector Center Network System Pre-Installation Manual.

The UPS at the Control Desk and Office locations is intended for Brunswick equipment ONLY. Provide extra electrical outlets for non-Brunswick equipment

A suitable raceway or conduit will need to be installed for communication cabling for the Control Desk and Office locations.

i *NOTE: Time line for construction of Control Desk, back office and other office locations must be completed with Brunswick bowling lanes.*

STORAGE REQUIREMENTS

Your building plans should provide for a special area that also functions as a work area, washroom, shower, laundry facility, bowling pin storage, and miscellaneous storage. A mechanic's room is typically located in the center of lanes for quick response and efficient maintenance. Since the pinsetter area is a noisy area, this shop should be so constructed as to be as quiet as possible for maximum work efficiency of the mechanic. The depth of this area generally varies from 8' (2.44 m) to 14' (4.27 m), while the width depends on the space for the above mentioned operations. Provide fireproof cabinets for combustible items. Fireproofing and good ventilation should be provided in accordance with local codes. Explosion-proof electrical fixtures should also be provided.

Storage must be provided for pins and cleaning supplies. For a 24 lane center, 10 cases of extra pins would be sufficient. An architect will provide information on the proper storage area for cleaning supplies.

BRUNSWICK INTERNET CONNECTION POLICY

Contact the Brunswick Customer Response Center at 1-800-937-2695, or in International locations, 231-725-4966, Fax 231-725-4667 or your salesman for the latest Brunswick Internet Connection Policy.

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Section 5: Brunswick Construction Schedule Requirements

CONSTRUCTION SCHEDULE

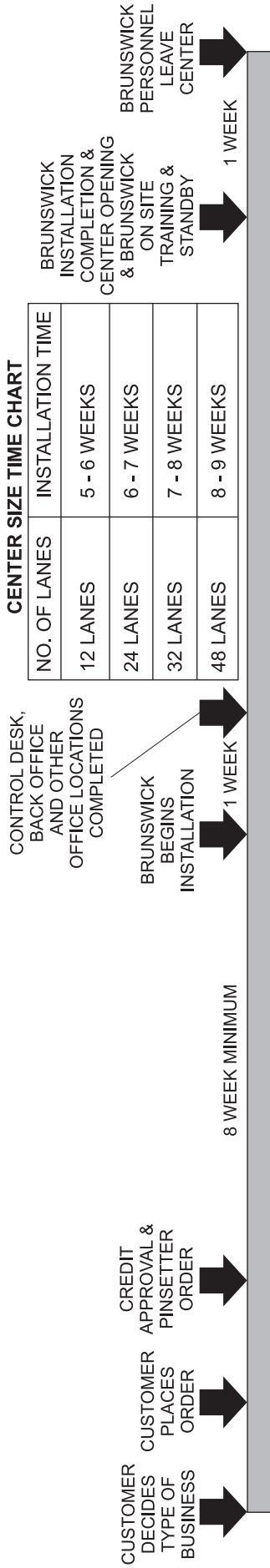
The formulation of an intelligent and realistic construction schedule assures good building practices and quality workmanship. It will coordinate the ordering and delivery of materials to the job site with the correct sequences of trades. It will allow adequate time for tradesmen to properly perform their work and will expedite the total construction program since it will provide time for inspection and testing of the work as it is installed.

All trades should be acquainted with the schedule and strict adherence to the schedule should be insisted upon. In areas deemed necessary by the architect, performance bonds may be required.

Time Line for Brunswick Installation

i *NOTE: Brunswick installation completion will be delayed if Brunswick pre-installation requirements are not met.*

i *NOTE: Control Desk, back office and other office locations are required to be completed one week after Brunswick installation begins.*



ELECTRICAL REQUIREMENTS

Miscellaneous Power Requirements

MISC. POWER REQUIREMENTS (FROM PANEL OTHER THAN AUTO SCORER PANEL)

BALL RETURN POWER
120/208/230 VAC 1 PHASE
2 LOCATIONS PER CIRCUIT
(24 LANES = 12 LOCATIONS)
NOTE: Non I.G. circuit

FOUL/LIGHTWORX POWER
120/230 VAC 1 PHASE
8 LOCATION PER CIRCUIT
DUPLX OUTLET
(HALF HOT/HALF SWITCHED AT DESK)
12" (774 mm) OFF OF CENTER LINE
OF BALL RETURN
NOTE: Non I.G. circuit

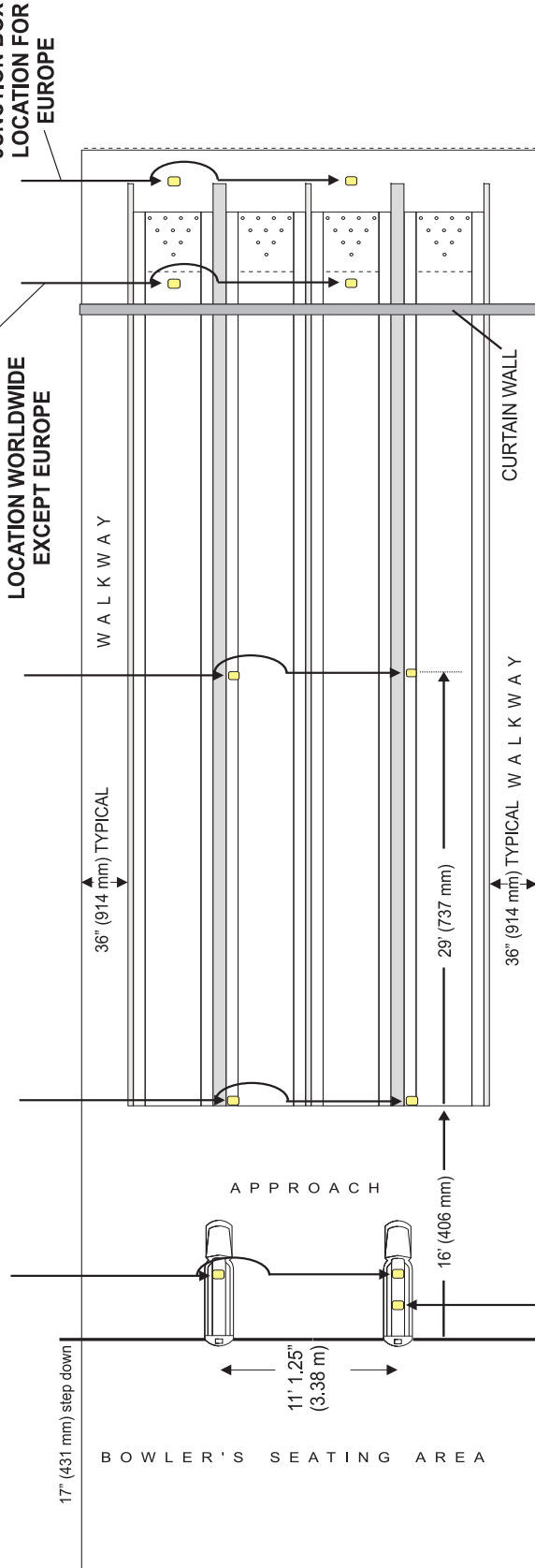
PINBALL WIZARD POWER
115-230/200-230 VAC 1 PHASE
4 LOCATION PER CIRCUIT
DUPLX OUTLET
(24 LANES = 12 LOCATIONS)
12" (774 mm) OFF OF CENTER LINE
OF BALL RETURN
NOTE: Must be on I.G. circuit

PINSETTER POWER
200-250/380-415VAC 3 PHASE
1 LOCATION PER CIRCUIT
4-WIRE "S" CORD 12g
(24 LANES = 12 LOCATIONS)
NOTE: Non I.G. circuit

NOTE: Non I.G. circuit

NOTE: Must be on I.G. circuit

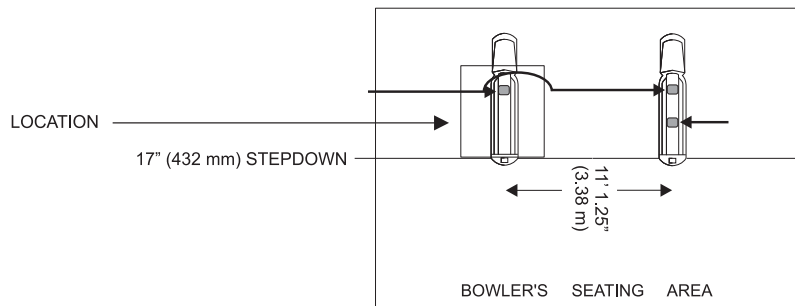
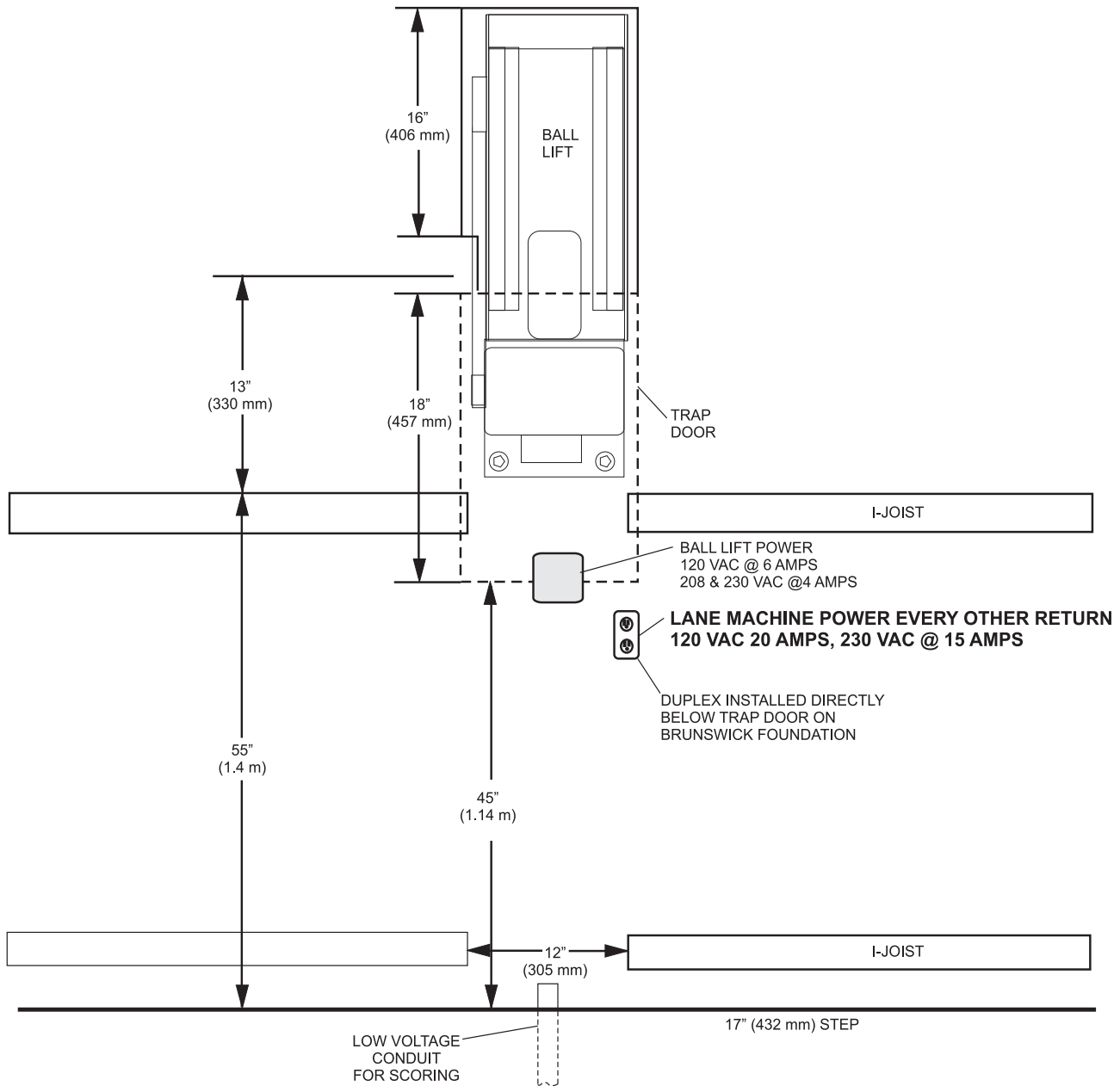
NOTE: Non I.G. circuit



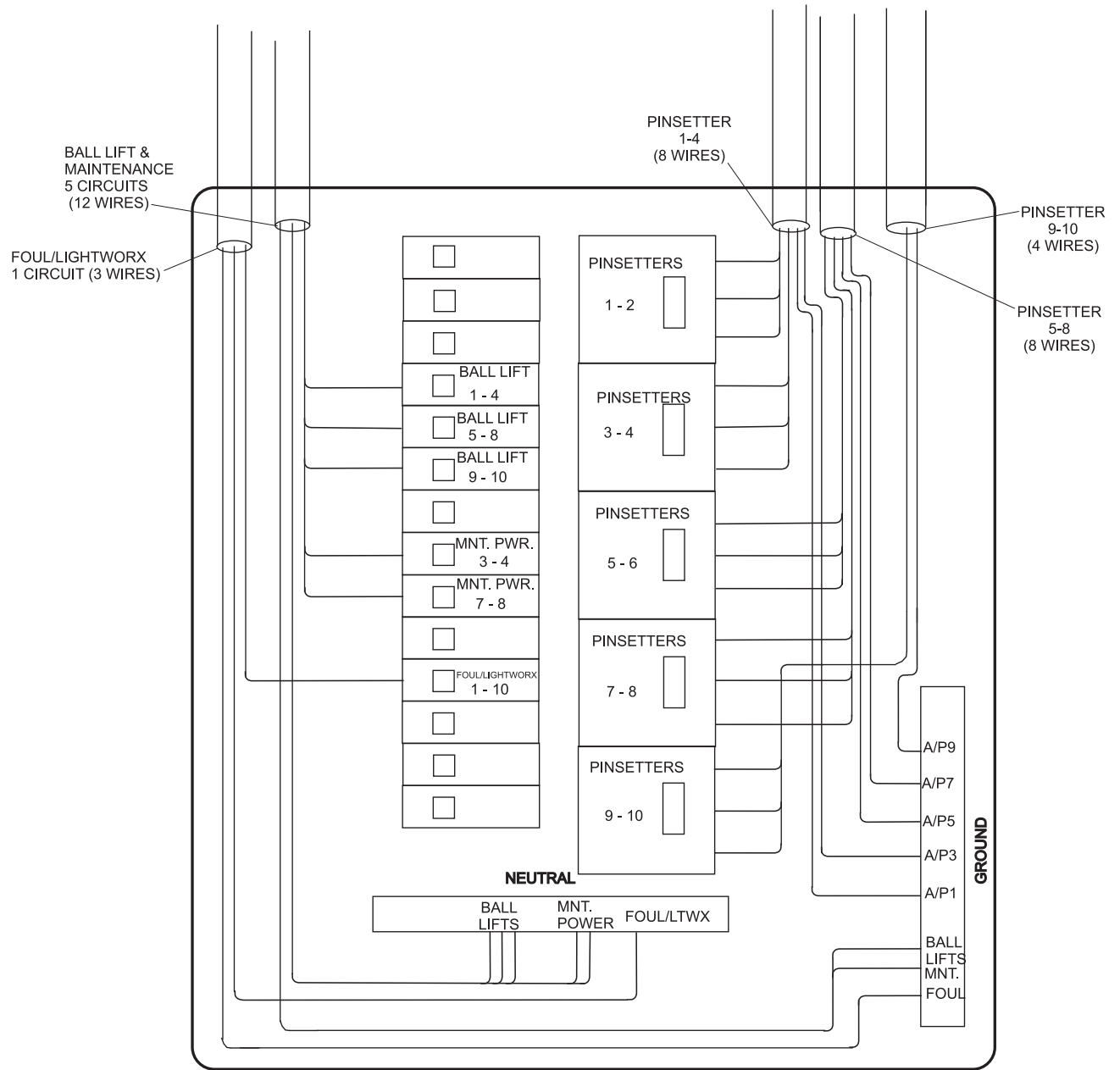
MAINTENANCE POWER
120/230 VAC 1 PHASE
2 LOCATIONS PER CIRCUIT
DUPLX OUTLET -EVERY OTHER
BALL RETURN LOCATION
(24 LANES = 6 LOCATIONS)

Ball Lift and Lane Machine Electrical Requirements

ALL ELECTRICAL INSTALLED ABOVE GRADE
AFTER INSTALLATION OF I-JOIST SYSTEM



Pinsetter and Related Non I.G. Electrical Service Panel (for 10 lanes)



BRUNSWICK PRE-DELIVERY REQUIREMENTS

Before Brunswick equipment is delivered to the job site, the following conditions must exist to sustain the Brunswick warranty on lanes and equipment.

The Shell

The entire building must be enclosed. This includes a watertight roof and permanent windows and doors.

The building must be able to be locked and security provisions for storage of Brunswick equipment and mechanic's tools and machinery are required.

Bowling Lane Area

The area for bowling lane installation must be perfectly squared. The curtain wall must be parallel with the end of the approach. The walls along the sides of the first and last lanes should be parallel and squared with the side of the approach, thereby insuring a perfect rectangle.

Concrete Floor

A floor loading certificate, prepared by the architect, is required by Brunswick prior to delivery of Brunswick products. It is necessary that all interior concrete flooring be poured 4" (102 mm) thick and completely dried before arrival of the bowling lane materials to prevent moisture absorption by these materials.

The concrete floor of the bowling lane area must be power-troweled and level to within 1/2" (1.27 cm).

The concrete floor must be waterproofed under the bowling lane area. Brunswick suggests using a vapor-seal system for this purpose. In addition to sealing the pinsetter area, it must also be power-troweled.

It is suggested that reinforcing and mechanical keys be used at all joints and risers.

The concrete in the pinsetter area, bowler's area, and service aisles should be waterproofed, hardened, and dust proofed concrete.

Before pouring concrete, all conduit and raceways must be securely placed and checked for accuracy of location.

Plumbing

All water, waste, and sewer lines shall be tested and approved prior to the delivery of bowling lanes and materials on the job sites.

Ceiling

The ceiling must be completed before the installation of the bowling lanes begins. Brunswick mechanics cannot work if the bowling lane area is occupied by scaffolding and other equipment used by electricians and other mechanics working on the ceiling or floor.

Lighting

The lighting must be completed before the installation of the bowling lanes begins. Permanent light fixtures should be installed to insure adequate working light. Brunswick mechanics cannot work if the bowling lane area is occupied by scaffolding and other equipment used by electricians working on the ceiling.

Electrical Power

Electrical power for suitable illumination, electrical tools, and equipment used by our mechanics is to be furnished and supplied by the purchaser at his expense and must be available at the time installation commences.

i *NOTE: A contractor's temporary line is not sufficient. Electrical Outlets must be permanent. Generator power is not acceptable*

Sprinkler Systems

The sprinkler system must be installed and tested prior to installing the lanes.

Permanent Pinsetter Power Wiring

Permanent power wiring must be completed before the installation of automatic pinsetters commences. Confirmation of ability to furnish necessary voltage and adequate service capacity is required from the utility company prior to delivery by Brunswick of the automatic pinsetters and Brunswick automatic scorers.

Climate Control

Continuous controlled atmosphere as outlined in the Heating and Ventilation section of this manual must be maintained prior to delivery of any bowling lane materials to the job site. This is to insure ideal installation conditions, continuing minimum maintenance problems, uniform high scoring quality of the lanes, and also, to insure the validity of Brunswick warranties. All aspects of the heating, ventilating, and humidity control equipment must be inspected, tested, and balanced and shall be continuously functioning prior to, and throughout, the installation period on a 24 hour a day basis.

Unloading and Storage Space

An adequate unloading area with a suitable driveway must be directly accessible to vehicles to facilitate the unloading of bowling lane materials. Adequate area in addition to the bowling area must be provided for the storage of foundation materials and lane panels and for the storage of equipment, supplies, and tools. This area shall be secure against pilferage and shall be dry and clear of all other trades or their equipment and supplies. *All materials delivered to the job site address is the responsibility of the customer.*

Equipment Entrance Requirements

Adequate entrance space must be available for pinsetters and lane panels.

Washroom Facilities

It is necessary that washroom facilities be provided for use by installation personnel.

Dumpster

Customer must provide a 30 cubic yard (23 cubic meters) dumpster before Brunswick installation.

Threshold Molding

Threshold molding between the approach area of the lanes and the bowler's seating area is the customer's responsibility.

Brunswick Internet Connection Policy

The internet connectivity is required to be permanent and installed before Brunswick installation begins.

BRUNSWICK PRE-DELIVERY CHECK LIST

ALL of the following requirements are required to be completed before Brunswick installation can start. Failure to complete ALL of these requirements will delay the construction completion of Brunswick bowling lanes.

- Shell of Building
- Bowling Lane Area
- Control Desk and Office Locations
 - Construction must be completed one week after Brunswick starts installation.
- Concrete Floor
- Plumbing
- Lighting
 - PERMANENT lighting fixtures are required
- Ceiling
 - Structure for overhead monitors
 - Wireway from scoring computer to overheads ONLY for open ceiling
 - Ceiling completed
 - Sprinkling system
- Climate Control
 - Heating and cooling operational. Humidity control to be at Brunswick standards of 45-55%.
- Electrical Power
 - Permanent power for power tools. GENERATOR power is NOT acceptable.
 - Pinsetter Power
 - Ball Lift Power
 - Foul Light Power
 - Pinball Wizard Power
- Unloading and Storage Space
- Equipment Entrance
- Washroom Facilities
- Dumpster
- Internet Connection

i **NOTE:** *If any of the Brunswick pre-delivery requirements are not complete, the customer will be responsible to pay for all additional material or labor.*

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Section 6: Required Certificates

The following section contains all the certificates required for Brunswick equipment. The certificates are required only for Brunswick equipment purchased. The Brunswick salesman will be responsible for the collection of any certificates.

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I, by signing this document certify to Brunswick Corporation and to the proprietor named below, that:

1. I am an Engineer/Architect licensed by and in good standing with the state of _____; and
2. I have examined the floor loading diagram for Brunswick Bowling equipment and that I have examined the premises, especially the _____ floor on which the Brunswick Bowling Equipment is to be installed at _____
3. I further certify that the _____ floor of the premises which I examined will support _____ lanes of Brunswick Bowling equipment.

(Print Name of Architect or Structural Engineer)

(Signature of Architect and Date)

(Title)

(License Number)

Seal

(State of)

Certification and Release of Brunswick by Proprietor

I, _____ as proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards and Brunswick Corporation that:

1. The proprietor has obtained the above floor loading certification for the proprietor's own benefit; and
2. The proprietor is not relying on Brunswick for assurance that the floor structure described in the "*Floor Loading Certification*" will support the GS Pinsetters with kickbacks selected by proprietor and installed by Brunswick.

In consideration of Brunswick's agreement to install the GS Series pinsetters, and by signing below, proprietor for proprietor's own self and for proprietor's heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives ("Proprietor Group"), releases and agrees to indemnify Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors, and subcontractors from all claims, demands, action, cause of action, or their functional equivalent, that any member of the Proprietor Group may have or which may subsequently accrue to a member of the Proprietor Group arising out of or connected with, directly or indirectly, they inability of the floor structure described in the above "*Floor Loading Certification*" to support the GS-Series pinsetters installed by Brunswick in accordance with the floor loading specifications on the reverse side of the sheet.

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

(Print Name of Proprietor or Corporate Officer)

(Signature and Date)

(Title)

Intentionally Blank

The Brunswick lane foundation consists of high pressure laminate mechanically fastened to a wooden underlayment of engineered strand board. The underlayment is spaced above the floor by engineered lumber I-joists. These components do not meet requirements of fire-retardant-treated lumber. It is the responsibility of the proprietor and proprietor's architect to investigate and comply with local building codes. If additional labor and/or materials need to be added to Brunswick's standard installation in order to comply with local codes, it must be done at expense of the proprietor.

Below is some information the architect may find helpful in complying with local codes. The information is taken from the 2006 Edition of the *"International Building Code"* written by International Code Council. The International Code Council consists of representatives from Building Officials and Code Administrators International, the International Conference of Building Officials and the Southern Building Code Congress International. The intent of this code was to draft a comprehensive set of regulations for building systems consistent with and inclusive of the scope of their existing model codes. The requirements for bowling lane construction can be interpreted many ways. This code makes clear reference to bowling and lane construction below.

The 2006 Edition of the International Building Code states:

COMBUSTIBLE MATERIALS IN TYPES I and II CONSTRUCTION

Section 717 - Concealed Spaces

717.1 General. Fireblocking and draftstopping shall be installed in combustible concealed locations in accordance with this section. Fireblocking shall comply with Section 717.2. Draftstopping in floor/ceiling spaces and attic spaces shall comply with Sections 717.3 and 717.4, respectively. The permitted use of the combustible materials in concealed spaces of buildings of Type I or II construction shall be limited to the applications indicated in Section 717.5.

717.5 Combustible materials in concealed spaces in Type I or II Construction. Combustible materials shall not be permitted in concealed spaces of building of Type I or Type II construction.

Exceptions:

1. Combustible materials in accordance with Sections 603.

603.1 Allowable materials. Combustible materials are permitted in buildings of Type I and II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3.

7. Finished Flooring applied directly to the floor slab or wood sleepers that are fire stopped in accordance with Section 717.2.7.

717.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fire blocked in such a manner that there will be no open spaces under the flooring that will exceed 100 square feet (9.3m²) in area and such space shall be filled solidly under permanent partitions so that there is no communication under the flooring between adjoining rooms. Refer to *"Typical Draft Stop Location"* diagram on the following page.

Exceptions:

2. Fire blocking is required only at the juncture of each alternate lane and at ends of each lane in a bowling facility.

Brunswick has installed many bowling centers where the proprietor's contractor installed drywall (sheetrock) fireblocking as specified above. However, by signing below, the proprietor acknowledges that it is the sole responsibility of the proprietor to investigate and comply with local building codes and to secure appropriate methods, and seek code approval for the fire-resistance-rated construction if required prior to the start of installation, and pay for all associated material and labor.

Print or Type Name of Proprietor or Corporate Officer

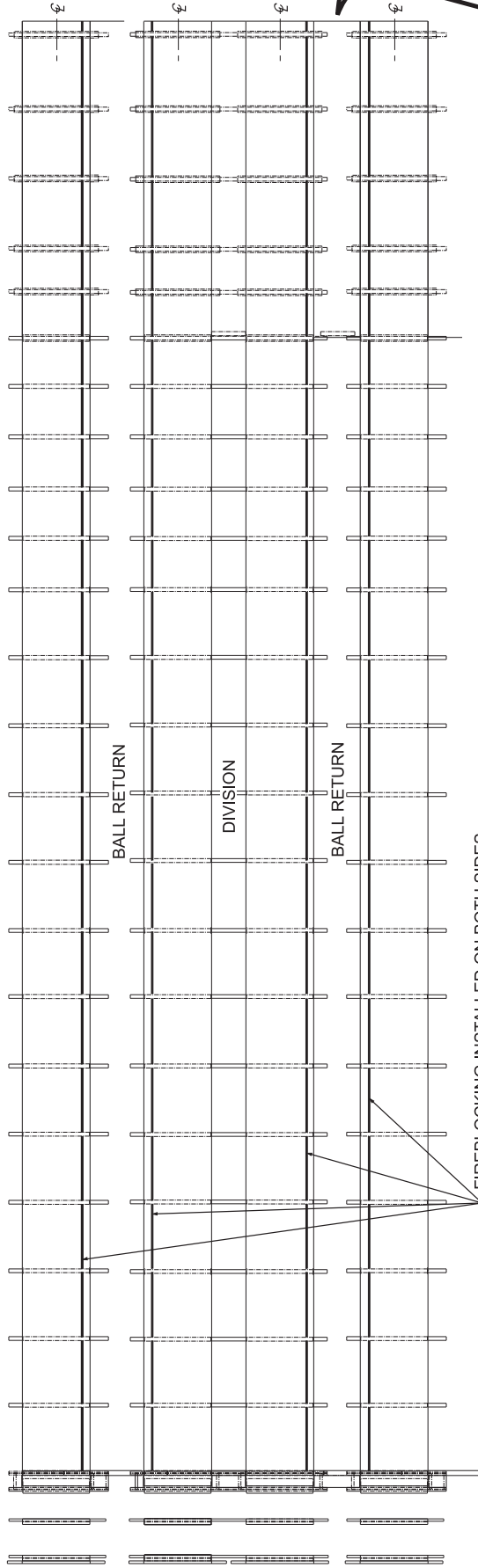
Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

Signature

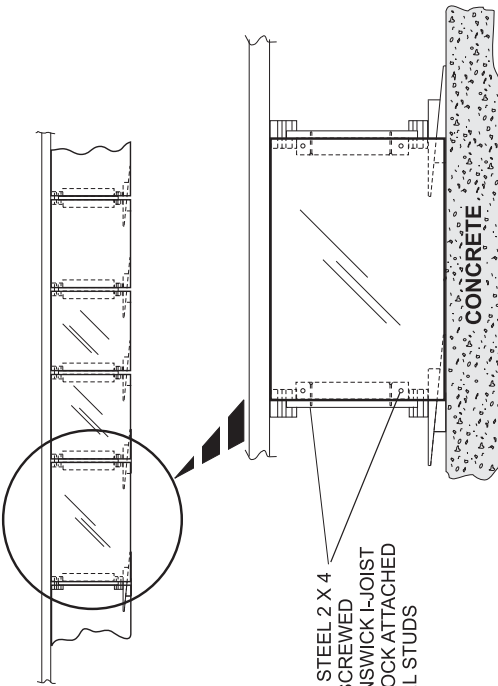
Title

Date

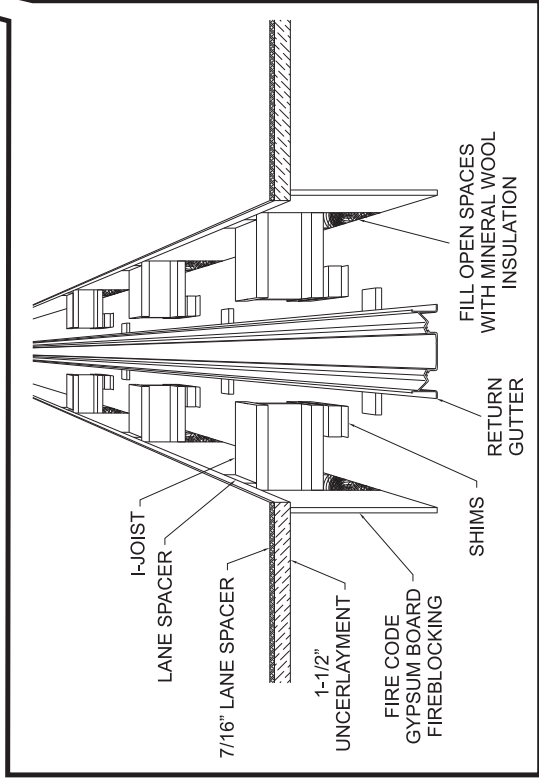
Fireblocking Overview



FIREBLOCKING INSTALLED ON BOTH SIDES OF THE BALL RETURN, THE FULL LENGTH OF LANES, AND APPROACH



TYPICAL STEEL 2 X 4 STUDS SCREWED TO BRUNSWICK I-JOIST SHEETROCK ATTACHED TO STEEL STUDS



END VIEW AT BALL RETURN

IF REQUIRED BY LOCAL CODE: FIREBLOCKING INSTALLED BY CONTRACTOR TO COMPLY WITH 100 SQUARE FOOT RULE

I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below that:

1. I am an engineer/architect licensed by and in good standing with the State of _____; and
2. I have examined the bowling center premises known as _____, located at _____; and
3. The curtain wall structure of the bowling center is fully and safely capable of supporting the configuration of curtain wall electronic units, not exceeding 100 pounds actual/static weight for each scoring computer to be attached to the curtain wall or suitable structure by the means and methods set forth in the support specifications on the reverse side of this sheet.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal

Date

Certification and Release of Brunswick by Proprietor

I, _____, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor's own benefit; and
2. The proprietor is not relying upon Brunswick for assurance that the curtain wall or suitable structure described in the Structure Certification will support the curtain wall electronic units selected by the proprietor and installed by Brunswick.

In consideration for Brunswick's agreement to install the curtain wall electronic units, and by signing below, proprietor for proprietor's own self and for proprietor's heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives ("Proprietor Group"), releases and agrees to indemnify Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors, and subcontractors from all claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group may have or which may subsequently accrue to a member of the Proprietor Group arising out of or connected with, directly or indirectly, the inability of the curtain wall or suitable structure described in the above Structure Certification to support the curtain wall electronic units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet.

Print or Type Name of Proprietor or Corporate Officer

Signature

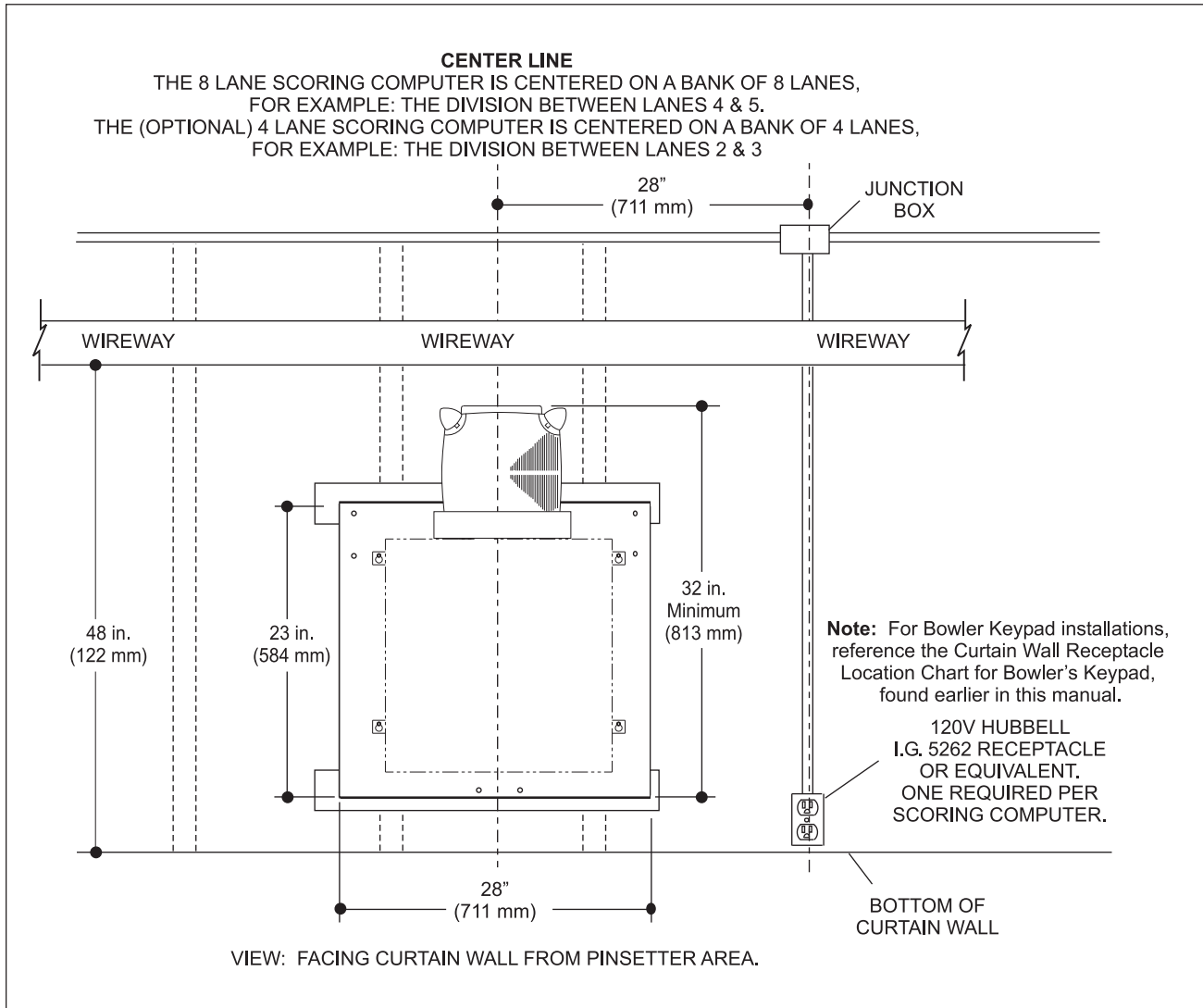
Title

Date

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

Curtain Wall Structure Support Specifications

Using the preferred method of support for the curtain wall electronics, the customer is responsible for supplying, installing, and maintaining the proper position of the electronics located on the curtain wall. If a curtain wall is not available, a support structure must be installed to accommodate the 100 pounds actual/static weight load per lane pair.



Curtain Wall Mounting

I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below, that:

1. I am an engineer/architect licensed by and in good standing with the State of _____ ; and
2. I have examined the bowling center premises known as _____
located at; _____ and
3. The roof structure of the bowling center is fully and safely capable of supporting a minimum of 480 pounds of additional static weight for each pair of bowling lanes in the center. Display support to be attached to the roof structure by the means and methods set forth in the support specifications on the reverse side of this page, together with a number of 40" & 46" overhead video displays.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal

Date

Certification and Release of Brunswick by Proprietor

I, _____, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor's own benefit; and
2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the Structure Certification will support the 40" & 46" Overhead Video Display units selected by the proprietor and installed by Brunswick.
3. The proprietor will not hang anything other than the Brunswick-provided video displays from the display supports, and will monitor the bowling center to ensure that customers of the center do not hang or place weight in any way on the display supports.

In consideration of Brunswick's agreement to install the 40" & 46" Overhead Video Display units, and by signing below, proprietor, for proprietor's own self and for proprietor's heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives ("Proprietor Group"), releases and agrees to indemnify and hold harmless Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors and subcontractors (collectively, "Brunswick") from all liability, claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certification to support the 40" & 46" Overhead Video Display units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet, or (ii) the inability of the display supports to support any weight placed upon it in excess of the weight of the Brunswick-provided video displays.

Print or Type Name of Proprietor or Corporate Officer

Signature

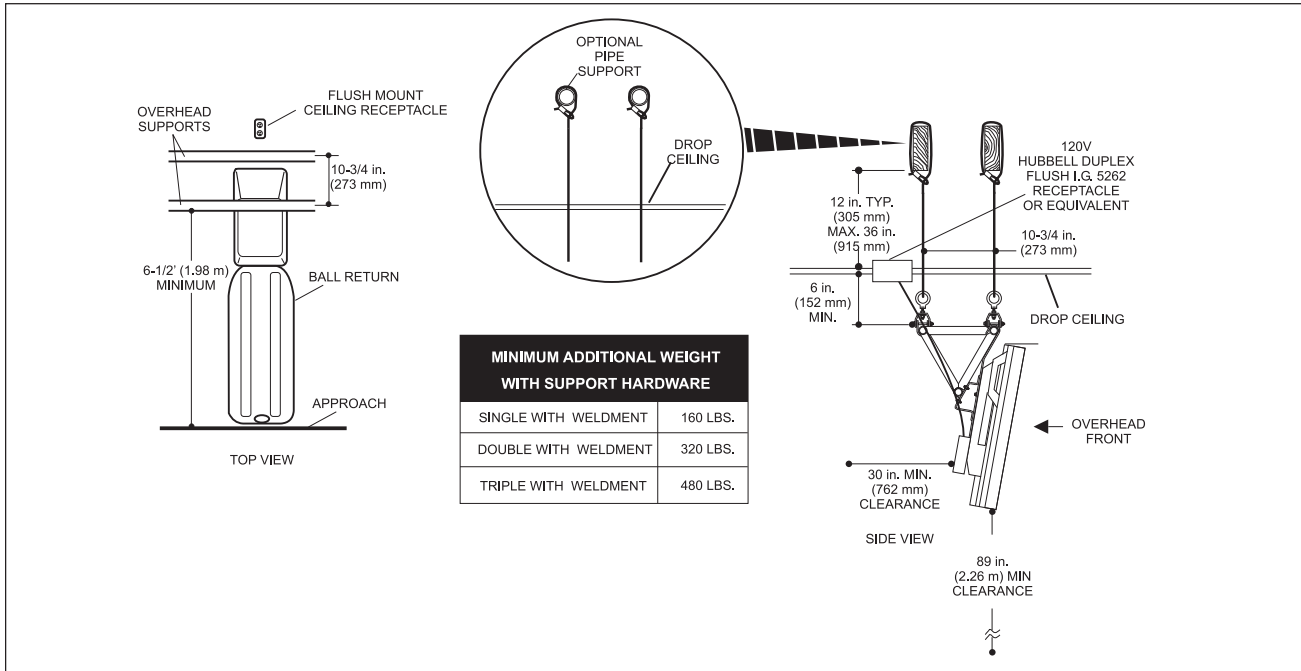
Title

Date

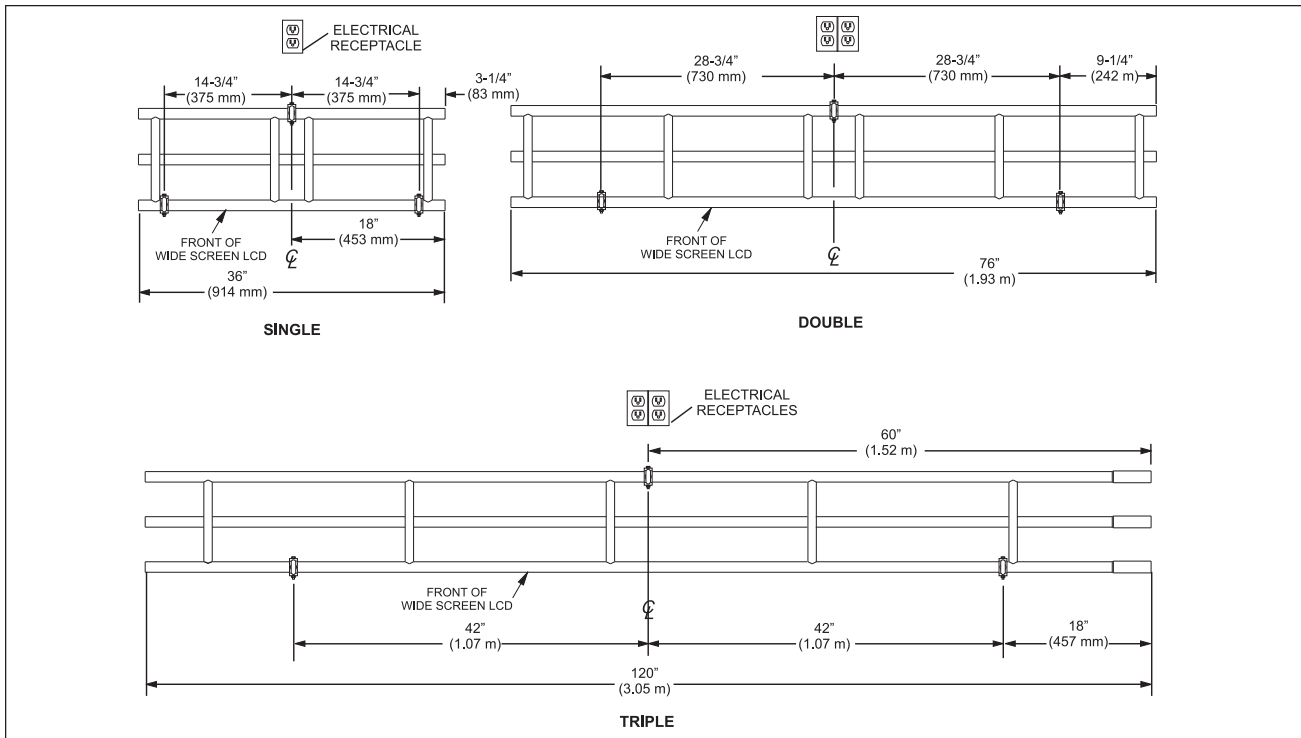
Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

40" & 46" Wide Screen LCD Overhead Video Display Structure Specifications

The customer is responsible for supplying, installing, and maintaining the proper position of these beams or pipe (refer to figures below) and for having certification from an architect or structural engineer that the method of support will be capable of supporting a minimum of 480 pounds of additional static weight per lane pair for up to triple overheads.



Side View



Top View

I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below, that:

1. I am an engineer/architect licensed by and in good standing with the State of _____ ; and
2. I have examined the bowling center premises known as _____
located at; _____ and
3. The roof structure of the bowling center is fully and safely capable of supporting a minimum of 396 pounds of additional static weight for each pair of bowling lanes in the center. Display support to be attached to the roof structure by the means and methods set forth in the support specifications on the reverse side of this page, together with a number of 32" overhead video displays.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal

Date

Certification and Release of Brunswick by Proprietor

I, _____, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor's own benefit; and
2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the Structure Certification will support the 32" Overhead Video Display units selected by the proprietor and installed by Brunswick.
3. The proprietor will not hang anything other than the Brunswick-provided video displays from the display supports, and will monitor the bowling center to ensure that customers of the center do not hang or place weight in any way on the display supports.

In consideration of Brunswick's agreement to install the 32" Overhead Video Display units, and by signing below, proprietor, for proprietor's own self and for proprietor's heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives ("Proprietor Group"), releases and agrees to indemnify and hold harmless Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors and subcontractors (collectively, "Brunswick") from all liability, claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certification to support the 32" Overhead Video Display units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet, or (ii) the inability of the display supports to support any weight placed upon it in excess of the weight of the Brunswick-provided video displays.

Print or Type Name of Proprietor or Corporate Officer

Signature

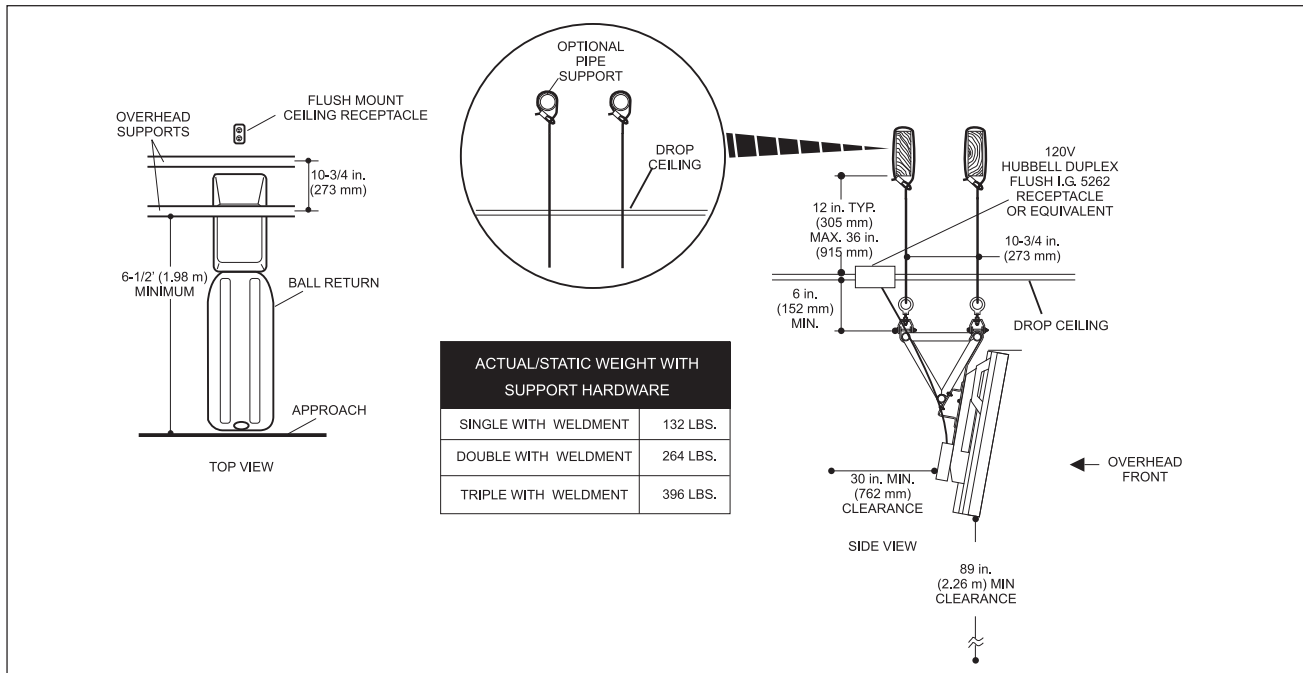
Title

Date

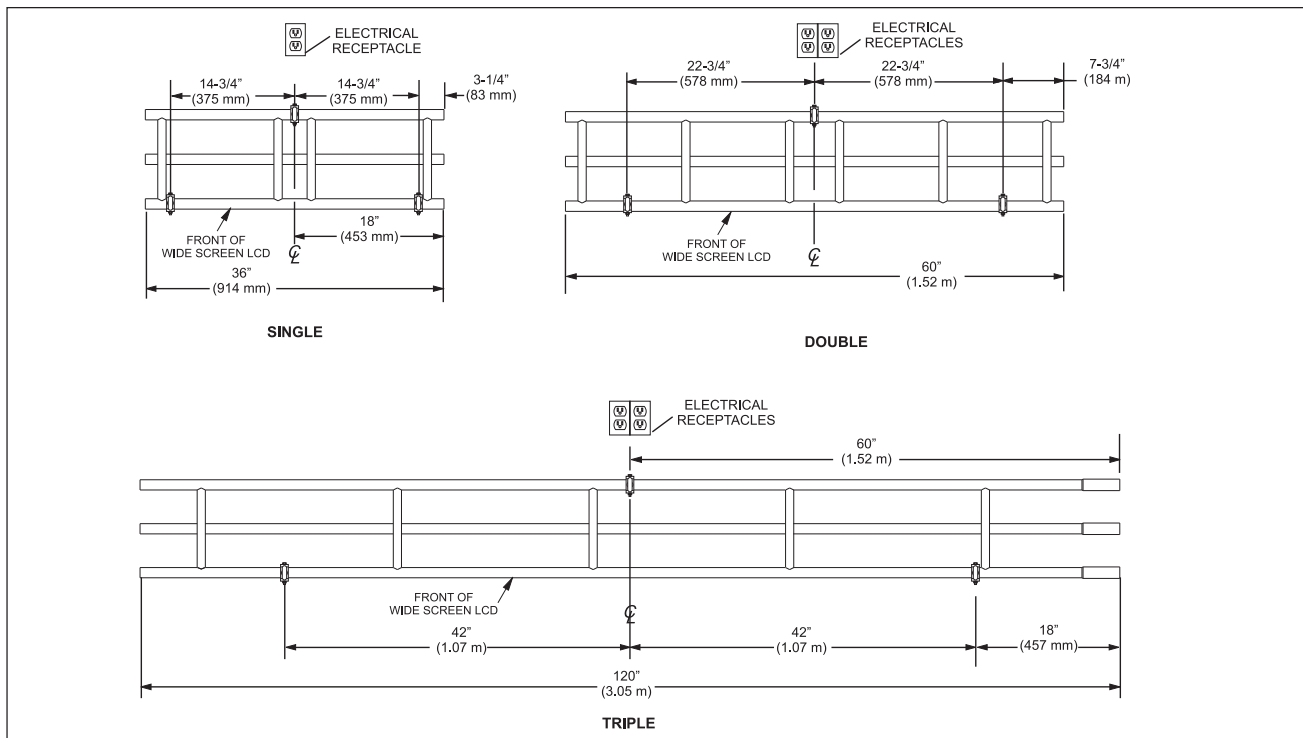
Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

32" Wide Screen LCD Overhead Video Display Support Specifications

The customer is responsible for supplying, installing, and maintaining the proper position of these beams or pipe (refer to figures below) and for having certification from an architect or structural engineer that the method of support will be capable of supporting an additional 396 pounds actual/static weight per lane pair for up to triple overheads.



Side View



Top View

Brunswick Proprietor Supplied Overhead Display Structure Certificate

I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below that:

- 1. I am an engineer/architect licensed by and in standings with the State of _____; and
- 2. I have examined the bowling center premises known as _____
Located at; _____ and
- 3. The roof structure of the bowling center is fully and safely capable of supporting a 45 pound overhead display support (to be attached to the roof structure by the means and methods set forth by the engineer/architect of the State), in addition to a number of the proprietor’s supplied overhead displays, which support _____ pounds actual/static weight for each pair of bowling lanes in the center.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal

Date

Certification and Release of Brunswick by Proprietor

I, _____, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

- 1. The proprietor has obtained the above Structure Certification for the proprietor’s own benefit; and
- 2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the Structure Certification will support the Overhead Video Display units selected by the proprietor and installed by the proprietor.

In consideration of the proprietor’s agreement to install the Overhead Video Display units selected by the proprietor, and by signing below, proprietor, for proprietor’s own self and for proprietor’s heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives (“Proprietor Group”), releases and agrees to indemnify and hold harmless Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors and subcontractors (collectively, “Brunswick”) from all liability, claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certification to support the Overhead Video Display units installed by proprietor in accordance with the support specifications on this sheet, or (ii) the inability of the display supports to support any weight placed upon it in excess of the weight of the proprietor-provided video displays.

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

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