



Pre-Installation Manual

Vector

Center Network System

October 2013 / 10-095400-048

Brunswick® 
CUSTOMER SERVICE
A tradition in excellence.

Vector Centor Network System Pre-Installation Manual

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SAFETY

Throughout this publication, “Warnings”, and “Cautions” (accompanied by one of the International HAZARD Symbols) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. They are defined below. **OBSERVE AND READ THEM CAREFULLY!**

These “Safety Alerts” alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus training and “Common Sense” operation are major accident prevention measures.



NOTE or IMPORTANT!:

Will designate significant informational notes.



WARNING!

Will designate a mechanical or nonelectrical alert which could potentially cause personal injury or death.



WARNING!

Will designate electrical alerts which could potentially cause personal injury or death.



CAUTION!

Will designate an alert which could potentially cause product damage.



Will designate grounding alerts.

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Overview

The Brunswick Vector scoring system consists of several pieces of equipment that can be divided into two subsystems; the Scoring System and the center management system.

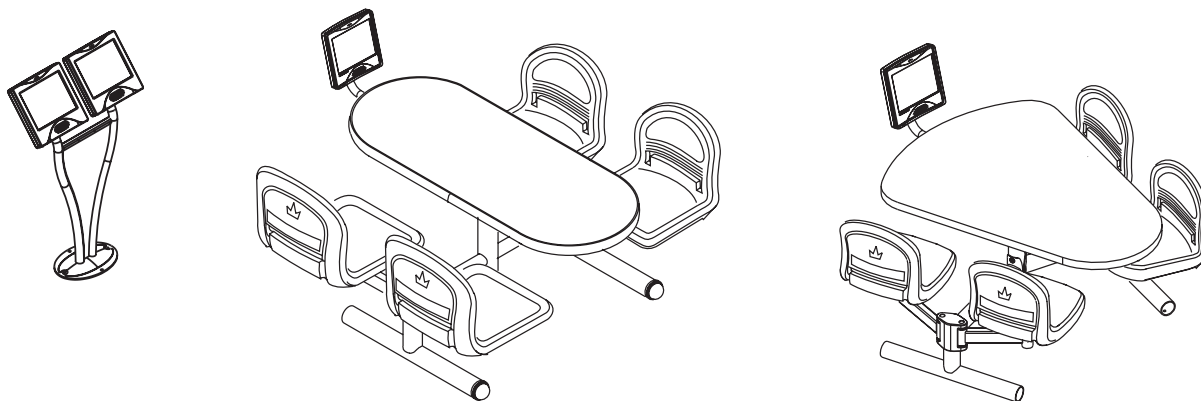
The scoring system consists of electronic assemblies located in the bowler and pinsetter areas. These assemblies control the pinsetter, perform automatic scoring functions, provide the bowler with input capabilities, and display information about the game in progress.

The scoring system is available with keypads or touchscreens (Flatscreens) and overhead monitors. A Scorer Computer interfaces the bowler keypads or touchscreens and supplies video for the overhead monitors and optional lower flatscreens for up to 8 lanes. Additional equipment such as Distribution PCBs and Pin Cameras or GS pinsetters and automated bumpers are connected to the Scorer Computer as needed.

The center management system consists of one or more computers located at the control desk and as needed various other locations around the bowling center. The main function of center management system is to provide the bowling center personnel convenient control of the scoring system and lanes from the control desk as well as point-of-sale (POS) terminals for other areas of the center.

BOWLER'S TOUCHSCREEN

Bowler's Touchscreen is the top of the line scoring system in the Vector. This system offers a lower touchscreen monitor and overhead monitors. Bowler's Touchscreen offers the convenience of touchscreen entry that can be free standing or integrated with Brunswick furniture in a table mount configuration. This offers the customer a full range of audio and video functionality of our Center Network systems. This system also allows the bowler the full bowler interface for name entry, score correction, and other special functions.



BOWLER'S KEYPAD

This system consists of the overhead monitor and a full keyboard console. This system gives the customer the full ability of the Vector scorer. The system enables full bowler interface into the system. This includes name entry, score correction, and the full menu options. Like Bowler's Touchscreen, Bowler's Keypad is offered in both free standing and table mount configurations.

VECTOR AND VECTOR PLUS

Vector and Vector Plus are Brunswick's versatile center management systems. The system is a network of Windows based PCs (clients) tied to a single server PC. The server is normally located in the office. In some instances (when an office computer is not needed for example), the server can be located at the Control Desk and utilized as a Control Desk terminal.

Clients are used for Control Desk, snack bar, bar, pro shop, and billiards terminals, or any place a point-of-sale (POS) terminal is needed.

Each client and server is available with a standard 17" monitor. However, a 17" or 19" touchscreen monitor is also available for any POS terminal.

Preliminary Survey

BUILDING CONFIGURATION

Lane Configuration

i **NOTE:** Special consideration will be needed for split house, multiple floors, and non-ground floor installations.

QUESTIONS	ANSWERS
<input type="checkbox"/> Break or Post Row Pairs	
<input type="checkbox"/> Distance Between Break	
<input type="checkbox"/> Existing or New Building	

Phase and Voltage

QUESTIONS	ANSWERS
<input type="checkbox"/> Pinsetter Subpanel	
i NOTE: Brunswick Surge Suppressors are required on each pinsetter and scoring subpanels.	
<input type="checkbox"/> Scoring Subpanel	

Existing Equipment

QUESTIONS	ANSWERS
<input type="checkbox"/> Scoring	
<input type="checkbox"/> Server Model Number	
<input type="checkbox"/> Quantity of Clients and Model Numbers	
<input type="checkbox"/> Camera Type	
<input type="checkbox"/> Capping Type	
<input type="checkbox"/> Ball Lift Type	
<input type="checkbox"/> Return Type	
<input type="checkbox"/> Automated Bumper Type	
<input type="checkbox"/> Foul Unit Type	
i NOTE: Brunswick Tel-E-Foul requires on/off switch for every unit supplied by an electrician.	
<input type="checkbox"/> Pinsetter Type	
<input type="checkbox"/> Overhead Type and Size	
<input type="checkbox"/> Masking Unit Type	

NEW EQUIPMENT

QUESTIONS	ANSWERS
<input type="checkbox"/> Scoring	
i NOTE: <i>Vector HD does NOT require any overhead video cabling, Vector SD REQUIRES overhead video cabling and conduit or cable management .</i>	
<input type="checkbox"/> Quantity of Client Computers	
<input type="checkbox"/> Digital Signage	
<input type="checkbox"/> Remote Order Printers	
<input type="checkbox"/> Wireless Handheld	
<input type="checkbox"/> Ticket Depot	
<input type="checkbox"/> BIG Server	
<input type="checkbox"/> Brunswick Music Network	
<input type="checkbox"/> Overhead Type and Size	
<input type="checkbox"/> Overhead Configuration	
i NOTE: <i>Brunswick Tel-E-Fouls requires on/off switch for every unit supplied by an elctrician</i>	
<input type="checkbox"/> Masking Units	
<input type="checkbox"/> Video Projection Screen	
<input type="checkbox"/> Type of Pinsetter or Pinsetter Interface	

DISTANCES

Ceiling Height and Type of Ceiling

i **NOTE:** Open ceilings require conduit or cable management system.

QUESTIONS	ANSWERS
<input type="checkbox"/> Over the Approaches	
i NOTE: Vector HD DOES NOT require overhead video cabling, Vector SD DOES require overhead video cabling and conduit or cable management.	
<input type="checkbox"/> Over Lanes	
<input type="checkbox"/> At the Masking Units	
<input type="checkbox"/> Over the Pinsetter	

Ethernet

QUESTIONS	ANSWERS
<input type="checkbox"/> Quantity of Switches on Curtain wall	
<input type="checkbox"/> Distance from Curtain Wall Switch to Control Desk Switch	
<input type="checkbox"/> Distance from Switch Overhead Structure to Control Desk Switch	
i NOTE: Vector SD DOES NOT have this switch. Vector HD DOES have this switch.	
<input type="checkbox"/> Distance from Control Desk Switch to Office	
i NOTE: Control desk switch is an 8-port switch including home run ethernet cable.	
<input type="checkbox"/> Distance from Control Desk Switch to Client #1	
<input type="checkbox"/> Distance from Control Desk Switch to Client #2	
<input type="checkbox"/> Distance from Control Desk Switch to Client #3	
<input type="checkbox"/> Distance from Control Desk Switch to Client #4	
<input type="checkbox"/> Distance from Control Desk Switch to Client #5	
<input type="checkbox"/> Distance from Control Desk Switch to Client #6	

Intercom

QUESTIONS	ANSWERS
<input type="checkbox"/> Distance from the closest end lane bowlers keypad or touch screen to the A/V box at control desk	

AUDIO/VIDEO

i NOTE: The Video Distribution Center can accept a variety of signal sources such as satellite boxes, cable set-top boxes, or DVD/Blu-ray players. The audio and video from each source is connected to a modulator that “assigns” a unique “TV” channel to the source. The number of modulators present in the system is determined by the number of video sources to that will be available for display on the monitors. When choosing modulators, it is important to consider the connection type available on the signal source, the output quality of the modulator (Standard or High Definition).

Three different modulators are available.

MODULATOR	AVAILABLE VIDEO INPUT CONNECTIONS	AVAILABLE AUDIO INPUT CONNECTIONS	OUTPUT RESOLUTION
480 (STANDARD DEFINITION)	COMPOSITE VIDEO	ANALOG AUDIO (MONO) RCA	480i
720* (ENHANCED DEFINITION)	COMPONENT VIDEO	DIGITAL AUDIO (STEREO) (RCA OR OPTICAL)	UP TO 720P
1080* (HIGH DEFINITION)	COMPONENT VIDEO VGA (15 PIN)	ANALOG AUDIO (STEREO) DIGITAL AUDIO (RCA OR OPTICAL)	UP TO 1080i

* Considered High Definition

i NOTE: For any video source with only an HDMI connector, HDMI to Component adapter, pn 57-863630-000, must be purchased. VGA to Component adapter, pn 57-863631-000 is available for the the 720 MODULATOR. Note: 57-863633-000, VGA to Component adapter ONLY FOR THE 1080 RESOLUTION MODULATOR.

QUESTIONS	ANSWERS
<input type="checkbox"/> Quantity of separate sources to display on overheads	
i NOTE: Projectors video is not part of Vector scoring and must be supplied by customer.	
<input type="checkbox"/> Quantity of 480 resolution modulator	
<input type="checkbox"/> Quantity of 720 resolution modulator	
<input type="checkbox"/> Quantity of 1080 resolution modulator	
<input type="checkbox"/> Distance from the Video Distribution Center to the middle of the bowling lanes at the overheads	
<input type="checkbox"/> Will the audio be connected to an external audio system?	
i NOTE: This may cause a timing issue between the audio and the video signals customer is responsible for supplying equipment to correct issue.	

Vector Scoring Installation Schedule

i **IMPORTANT:** *The following is based on a typical 24 lane center. Schedules may vary depending on center configuration and product to be installed.*

CUSTOMER RESPONSIBILITY

i **NOTE:** *All prework must be completed prior to equipment arrival. This includes Control Desk assembly and installation.*

1. Site Survey to be performed by a Brunswick Field Engineer. The Field Engineer will need to meet with the center manager/proprietor, mechanic, electrician, and architect to cover the following:
 - a. Determine non-bowling hours.
 - b. Provide a copy of league schedules.
 - c. Review electrical system needs.
 - d. Review overhead structure needs.
 - e. Review control desk and back office configurations.
 - f. Review Pre-Installation manual.
2. Prepare bowlers area for consoles:
 - a. Trenching for using electrical conduit.
 - b. Dual console risers for existing scorer replacement or surface molding.
 - c. Any tile work or carpeting.
3. Prepare control desk and office areas for routing of interconnecting cables.
4. Electrician installs electrical system, subpanels, outlets, surge suppressors, and switches for Tel-E-Foul units..
5. Install overhead monitor support structure.
6. Center mechanic attends Scorer Maintenance school.
7. Center to have a storage area ready for arrival of new equipment.
8. Brunswick receives credit approval.

i **IMPORTANT:** *An installation will not be scheduled until credit is approved and structural certificates are received.*

9. Brunswick receives structural certification from bowling center.

INSTALLATION SCHEDULE

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

To Be Performed By Certified Field Mechanic

Day 1

- a. Travel to installation.
- b. Unload truck and unpack equipment.

Days 2 and 3

- a. Layout and routing of cables from scorer console to pinsetter area.

Day 4

- a. Continue layout and routing of cables.
- b. Mount equipment on curtain wall.

Days 5 and 6

- a. Modify pinsetters.

Day 7

- a. Route cables in back office and control desk areas.
- b. Remove Tel-E-Scorers in bowlers' area.

Days 8, 9 and 10

- a. Install Vector consoles, overheads, and associated cabling.

To Be Performed By Brunswick Field Engineer

Day 8

- a. Travel to installation.
- b. Power audit of electronic equipment.
- c. Install control desk and back office computer systems.

Day 9

- a. Continue setup of control desk.
- b. Hook-up consoles and overheads.

Day 10

- a. Continue console and overhead hook-up.
- b. Begin setup of cameras and verify scoring.

i **NOTE:** *Some lanes available for use. Possible league coverage.*

Day 11

- a. Continue setup of cameras and verify scoring.
- b. Adjust consoles and overheads.
- c. Cover leagues and open bowling.

Day 12

- a. Complete system checkout and go over spare parts kits.

To Be Performed By Brunswick Field Trainer

Day 9

- a. Travel to installation.
- b. Control desk management training.

Day 10

- a. Scorer training.
- b. Control desk session.
- c. Possible league coverage.

Day 11

- a. Continue control desk session.
- b. Cover leagues and open bowling.

Days 12 and 13

- a. Back office session (League Record Service, Tournament, Open Bowler Data Base, etc.)
- b. Cover leagues and open bowling.

Important

This document contains information on electrical, installation, conduit, and lighting for Brunswick automatic scorers. It also contains the information necessary for the preparation of a site conforming to Brunswick specifications. Any deviation from these specifications could cause problems to your equipment that may be difficult to detect and/or correct. If you have questions regarding this document, call Brunswick Technical Support at 1-800-323-8141 (option 1).

When planning to install Brunswick electronic scoring equipment, the customer is required to provide an isolated ground (I.G.) electrical subpanel which is solely dedicated to those electronic systems with an isolated neutral and ground buss. These requirements are necessary to prevent electrical noise and damage from lightning strikes. An improperly grounded system can also result in memory losses, erroneous signals, and/or component failures. The isolated ground subpanel must be installed by a licensed electrician and must meet all local and national codes.

SURGE SUPPRESSION

A transient voltage surge suppressor (TVSS) is supplied with the scoring system. The installation of this device is the responsibility of the customer through a licensed electrician. The unit will be installed on the “Pinsetter” and “Scoring” subpanels.. This unit is designed for the most demanding environment and incorporates multistage filtration in its design. The sine wave tracking series is engineered to remove the more complex disturbances found in the electrical environment, in particular, high and low voltage ringing transients and harmonic activity.

i **NOTE:** *The surge suppressor wires should be as short as possible, with no coiling when installed on the I.G. subpanel. The TVSS device is provided with a plastic coupler to insulate the unit from the subpanel.*

BRUNSWICK’S RESPONSIBILITY

Brunswick scorer consoles are shipped with the necessary hardware for wood and cement floor installations. The aircraft cable for suspending the overhead monitors will be supplied by Brunswick.

POWER CONDITIONING

In some areas, additional power conditioning or uninterrupted power supply (UPS) equipment may be required to insure optimum performance of your scoring equipment. The purchase and installation of any power conditioning equipment is the responsibility of the customer, including a UPS system. If the bowling center is located in an area that has a history of frequent power failures or interruptions, the customer is advised to contact the Brunswick Electronic Repair. The Brunswick Electronic Repair Department will assist the customer with any additional equipment specifications or Brunswick approved power conditioning equipment required.

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the pre-installation manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of F.C.C. Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

ISOLATED GROUND RECEPTACLES - NEC 250-74 EXCEPTION 4

Where required, for the reduction of electrical noise (electromagnetic interference) on the grounding circuit, a receptacle in which the grounding terminal is purposely insulated from the receptacle mounting means shall be permitted. The receptacle grounding terminal shall be grounded by an insulated equipment grounding conductor run with the circuit conductors to the electronic subpanel.

GROUNDING CONDUCTOR - NEC 384-27

The grounding conductor shall be permitted to pass through one or more subpanels without connection to the panel board grounding terminal as permitted by Section 384-27 Exception, so as to terminate directly at the applicable derived system or service grounding terminal.

EXTENDED POWER OUTAGE

The circuit breakers (electronic subpanel) must be clearly identified and should be left on at all times under normal operation. If power is to be out for an extended period of time, it is recommended that circuit breakers to the electronic equipment be turned off. When power is restored, transient voltages could be induced into the equipment if circuit breakers are not off.

CARPETING IN BOWLERS' AREA

It is not recommended mounting consoles on carpeting. Carpeting may cause static which can be induced into electronic equipment. If carpeting is necessary in the bowlers' area, it is recommended that anti-static type of carpeting be used.

CARPETING IN ELECTRONICS AREAS

It's the Customer's Responsibility: If carpeting is to be installed at the site, it must be a computer-grade type which will generate no more than 2,000 to 3,000 volts of static discharge at 20% relative humidity and a temperature of 22°C (72°F). If carpeting is already installed and is not of a computer-grade type, it should be treated with an antistatic or anti-shock solution after it is cleaned. The frequency of these treatments depends on the amount of floor traffic in the room. Raising the humidity level should also be considered to control the generation of static electricity. Maintain a humidity level of 40-60% to control the generation of static electricity.

ATMOSPHERIC CONDITIONS

It is important that the climate control is maintained throughout the center. Indoor humidity is a large factor in lane conditions as well preventing static electricity. A relative level of 40% must be maintained to obtain optimum characteristics and performance from all equipment. A minimum of 35% and a maximum of 50% is possible if the temperature is controlled and constant.

Electrical Overview

ELECTRICAL SUBPANEL SPECIFICATIONS

i IMPORTANT!: *All subpanels and wiring **MUST** comply with local and national electrical codes.*

Pinsetter Subpanel – The Pinsetter subpanel used to power the GS-Series pinsetters and other Brunswick equipment must be powered directly from the primary main service subpanel or transformer and must be three phase. Non-Brunswick equipment including electronic video games, arc welders, HVAC, compressors, etc., cannot share this sub-panel.

Scoring Subpanel (Isolated Ground) – The scoring subpanel must be powered from the main service subpanel or transformer. This is an isolated ground subpanel that is REQUIRED for all of Brunswick electronic equipment and installed according to National Electric Code 250-74 or similar isolated ground guidelines according to local code and national electric codes. All the outlets for this panel must be an isolated receptacle similar to “Hubbell IG 5262” receptacles.

The **ONLY** type of equipment to be installed in the subpanels:

Pinsetter Subpanel

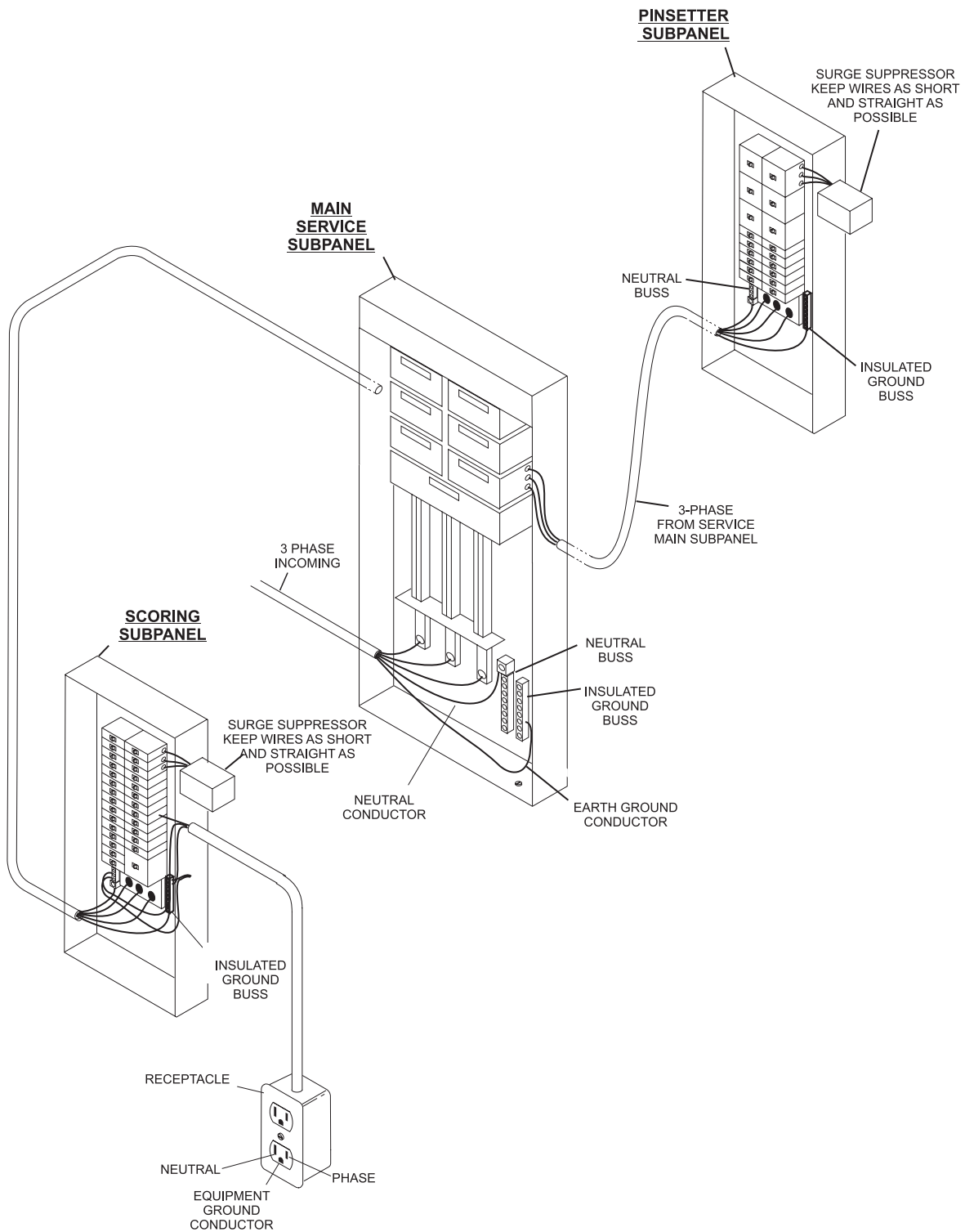
- GS-X Pinsetter
- Ball Lift
- Tel-E-Foul
- Lane Machine
- Ball Polisher
- Lightworx
- Lanescape Video Masking Unit
- Ticket Depot

Scoring Subpanel (Isolated Ground)

- Scoring Computer
- 32”/40”/46”/55” Overhead Monitors
- Display Controller
- HD Video Distribution Center
- Server Computer
- Client Computer
- Automated - Pinball Wizard
- Digital Signage
- BIG Server

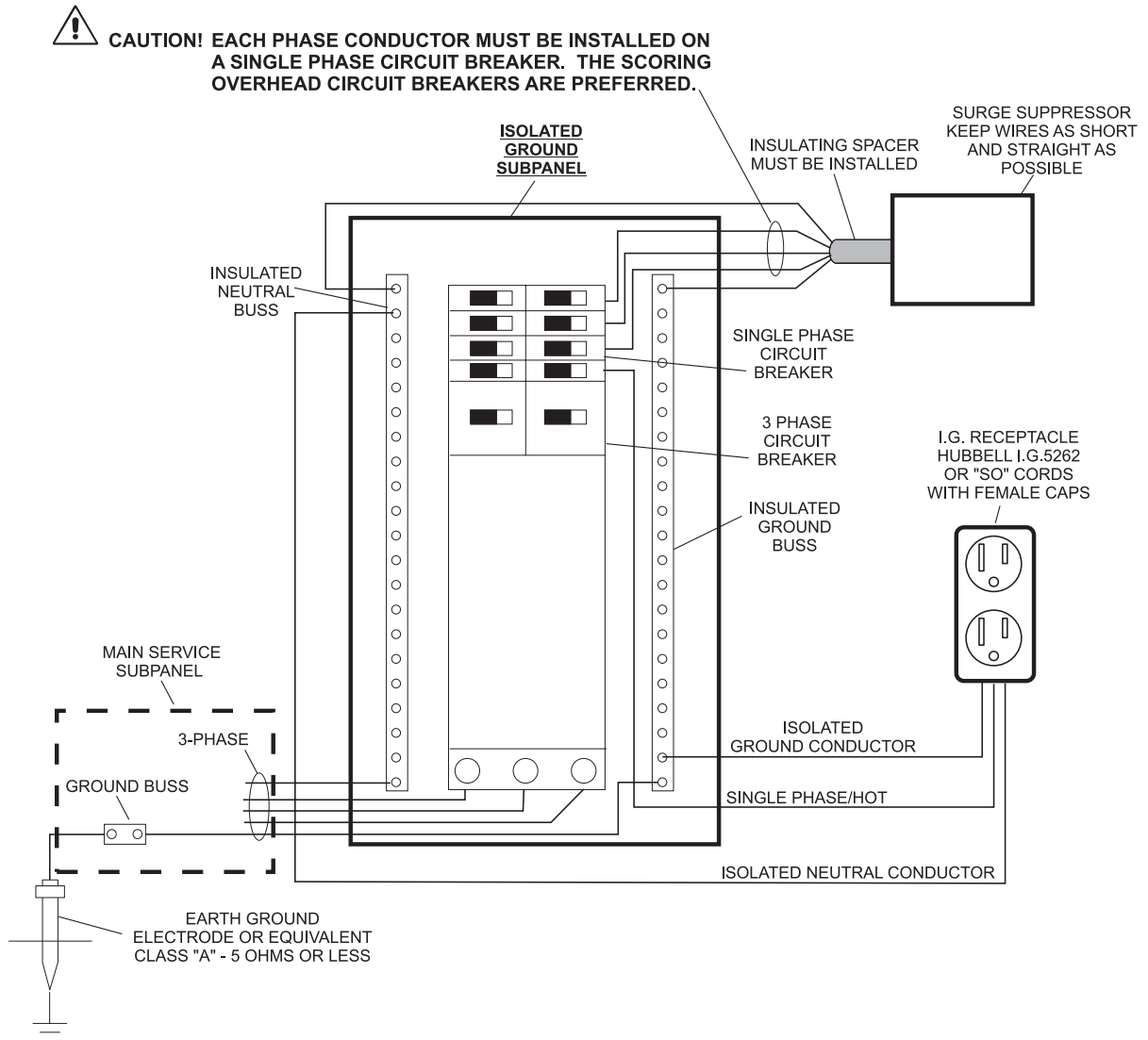


WARNING! *Any Non-Brunswick equipment circuits located in these subpanels will VOID ALL WARRANTY. This includes electronic video games, arc welders, HVAC, compressors, etc.*



i IMPORTANT!: Split house centers with multiple subpanels require a single source of power and ground from main service.

SCORING (ISOLATED GROUND) SUBPANEL AND SURGE SUPPRESSOR INSTALLATION



ELECTRICAL QUICK REFERENCE CHECKLIST



WARNING!: *FAILURE to COMPLY with the Electrical Quick Reference and Pre-Installation Manual specification will VOID ALL WARRANTIES. All electrical work must be completed before the engineer arrives on-site.*

- ☐ A **SEPARATE** and **DEDICATED** subpanel must be provided and **DIRECTLY** wired to main service, hereby called the “**SCORING SUBPANEL**.” If a transformer is installed, the primary of the transformer to main service must have a separate ground wire.
- ☐ Split house bowling centers with multiple subpanels **REQUIRE** a single source of power from main service entrance.
- ☐ The **ISOLATED GROUND** and **NEUTRAL** buss bars **CANNOT** be **BONDED** to the “Scoring” subpanel. Reference NEC 250-74 Exception 4.
- ☐ **EARTH GROUND** conductor **MUST BE** a minimum of **#6 AWG** wire or larger.
- ☐ The electrician **MUST** perform a **CONTINUITY** check on the electronics subpanel to ensure **NO** conduit to **ISOLATED GROUND** and/or **NEUTRAL** shorts exist.
- ☐ Greenfield or conduit **CANNOT** be used as the **EQUIPMENT GROUND** conductor for the system.
- ☐ Each **ISOLATED GROUND** circuit has a **SEPARATE** hot, neutral, and ground wire.
Example: 10 circuits = 10 hots, 10 neutrals, 10 grounds.
- ☐ Nonautomatic scorer equipment **CANNOT** share our Scoring subpanel or conduit raceways.
- ☐ All branch circuit runs **OVER 200 FEET** from all subpanels must be **#10 AWG** wire or larger.
- ☐ Class-A **CERTIFIED** ground is recommended and should be measured at main service.
- ☐ Floating receptacles in the consoles **MUST BE** insulated. Metallic electrical boxes **CANNOT** touch console metal base. If local code permits, you may install “SO” cords with insulated female cord cap receptacle.

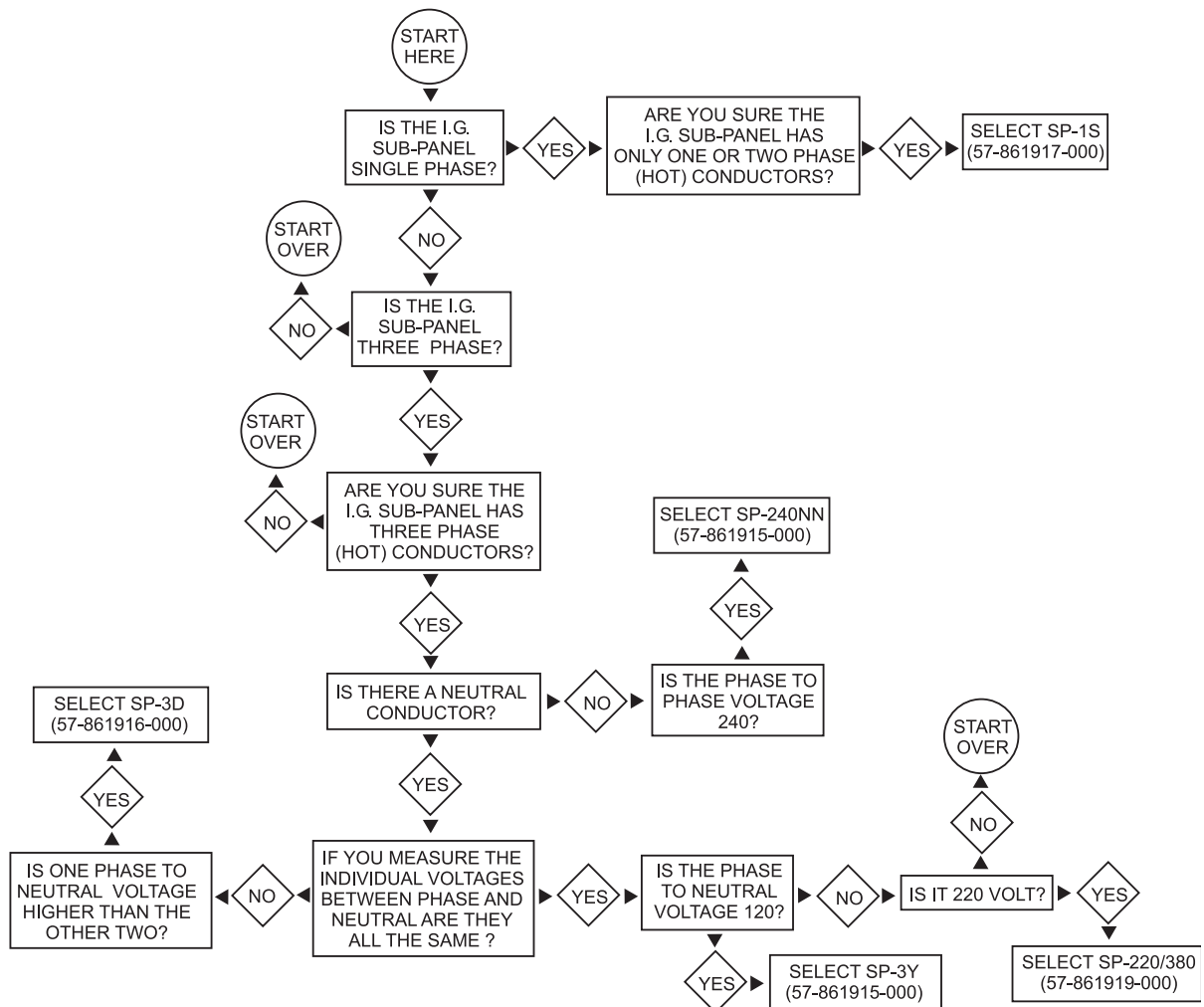


NOTE: *It is very important to read all the information available for the equipment being installed in your bowling center. Any deviation from these specifications could potentially cause problems to your electronic automatic scoring equipment that may be difficult to detect and/or correct.*

SELECTING A SURGE SUPPRESSOR

A flow chart diagram is shown below to assist you in identifying if the Scoring subpanel is **SINGLE** phase or **THREE** phase and which surge suppressor is needed.

Surge Suppressor Needed	Model	Voltage/Phase	Wye/Delta	No. of Wires	Brunswick Part No.
1	TK-TT160-3Y208-FB	120/208/Three	Wye	4 Wire + Ground	57-861915-000
2	TK-TT160-1S240-FB	120/240/Single	Wye	3 Wire + Ground	57-861917-000
3	TK-TT160-3D240-FB	120/240/Three	Delta	4 Wire + Ground	57-861916-000
4	TK-TT160-NN240-FB	240NN/Three	Delta	3 Wire + Ground	57-861918-000
5	TK-TT160-3Y380-FB	220/380/Three	Wye	4 Wire + Ground	57-861919-000



CONDUIT AND LOW VOLTAGE CABLE SPECIFICATIONS

It is the customer's responsibility to provide a raceway or means to run wires from the equipment, located at the Control Desk:

- To the Approach Area
- To the Office
- From the network switch on the curtain eall to the network switch on the control desk.
- Overhead Monitors

Additional low voltage cables are routed from the office to the closest end lane pair pinsetter area. Various ways of doing this can be discussed with the Brunswick Service Representative at the time of the survey.

The interconnecting cables are supplied and installed by Brunswick and routed through suitable conduit.

When routing the conduit or interconnecting cables from the scoring computer to the control desk or office, extra care must be exercised to not place them near a noisy electrical environment.

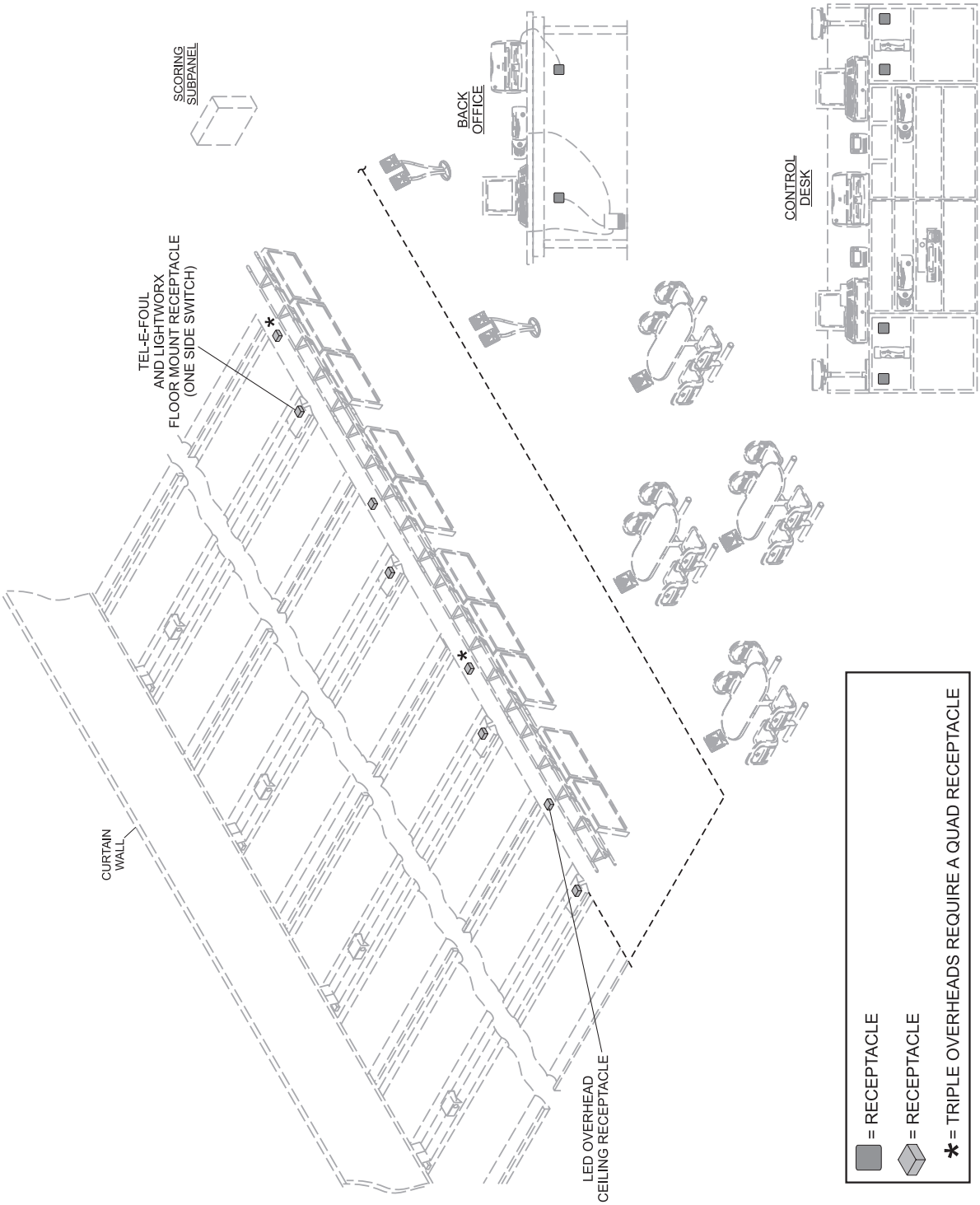
i **IMPORTANT!:** *The cables need to be installed in conduit only when local codes require it.*

1. Keep the conduit routing to a minimum, but keep in mind that routing them away from a noisy electrical environment is most important.
2. If conduit is required, only telephone or communication cables may be routed in the same conduit. Do not route them in conduit with any electrical equipment with high voltage power cables.
3. Do not lay the interconnecting cables or conduit raceways on top of, or close to fluorescent light fixtures. Route them as far from the fixtures as possible.
4. Keep cables as far away as possible from motors, compressors, and high voltage power cables. Do not lay them next to or closely parallel to existing high voltage electrical cables. When there is any doubt, contact your local representative, or contact the Brunswick Technical Support at 1-800-323-8141 (option 1), in the USA or Canada, or at 231-725-3300 for International. Fax number is 1-231-725-4667.

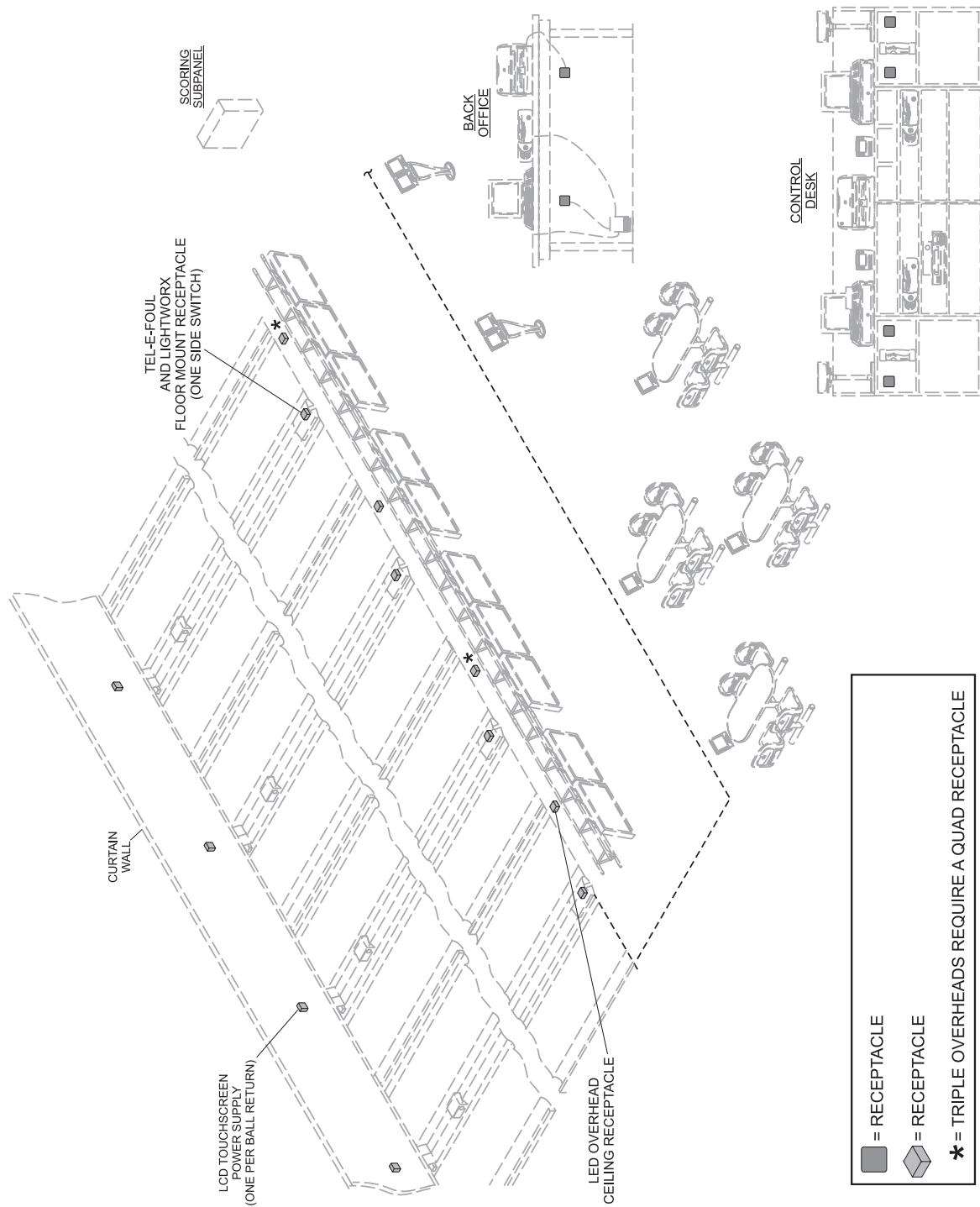
i **NOTE:** *Do not use plumbing/water pipe for low voltage cable conduits. **Electrical Conduit** must be used for all conduit. Extra charges will be applied if plumbing/water pipe is supplied.*

ELECTRICAL RECEPTACLE LOCATIONS

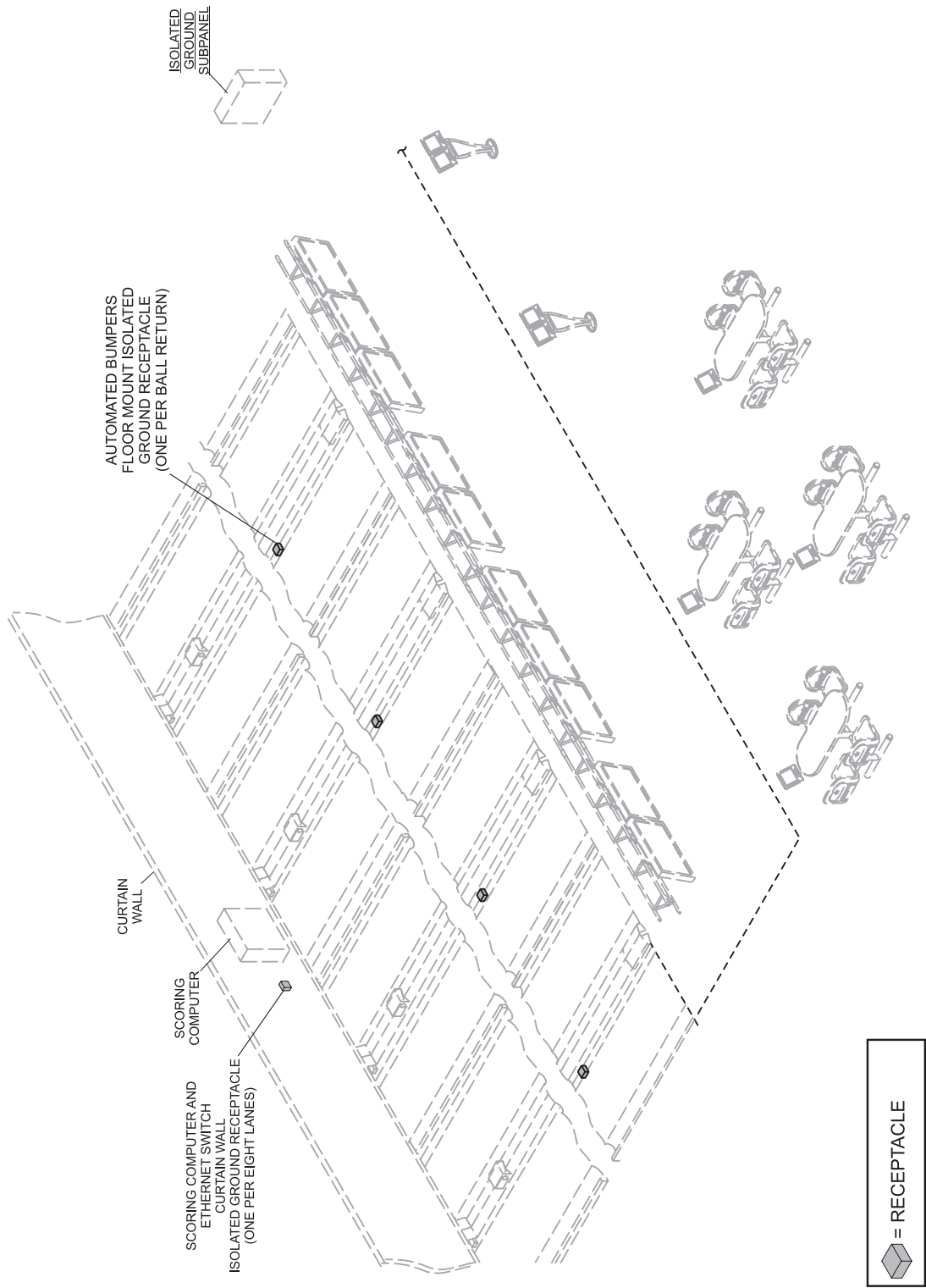
Bowler's Keypads



Bowler's Touchscreens



Isolated Ground



Scoring Computer

i NOTE: This chart is based on the installation of the 8 lane scoring computers. For centers with lane breaks, multiple floors, split houses, contact your Brunswick Service Representative for proper location of scoring computers and electrical receptacles.

i NOTE: For centers installing optional Bowler Touchscreen, one electrical receptacle is required for each lane pair.

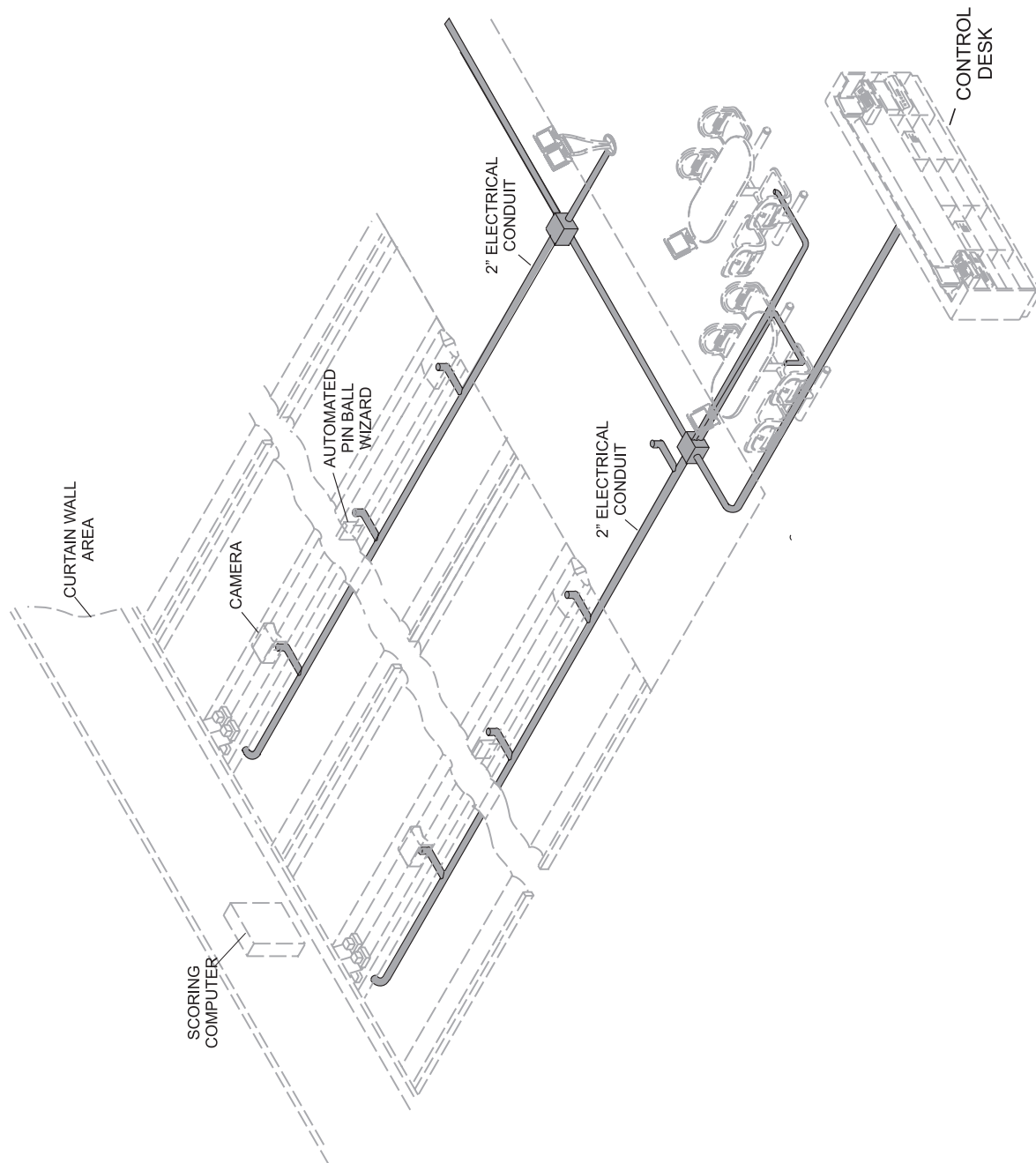
CURTAIN WALL SCORING COMPUTER AND ETHERNET RECEPTACLE LOCATION

	1	2/3	4/5	8/9	10/11	12/13	14/15	16/17	18/19	20/21	22/23	24/25	26/27	28/29	30/31	32/33	34/35	36/37	38/39	40/41	42/43	44/45	46/47
2	C/S																						
4		C/S																					
6			C/S																				
8				C/S																			
10			C/S		C																		
12				C/S	C																		
14				C/S		C																	
16				C/S			C																
18				C		C/S		C															
20				C		C/S			C														
22				C			C/S			C													
24				C			C/S				C												
26				C		C/S			C			C											
28				C		C/S				C			C										
30				C			C/S			C				C									
32				C				C/S			C				C								
34				C			C			C/S			C			C							
36				C			C				C/S		C				C						
38				C			C					C/S		C				C					
40				C			C				C/S			C					C				
42				C		C		C				C/S			C					C			
44				C		C			C				C/S			C					C		
46				C		C				C				C/S			C					C	
48				C			C				C				C/S			C					C
50				C		C			C				C/S			C			C				C

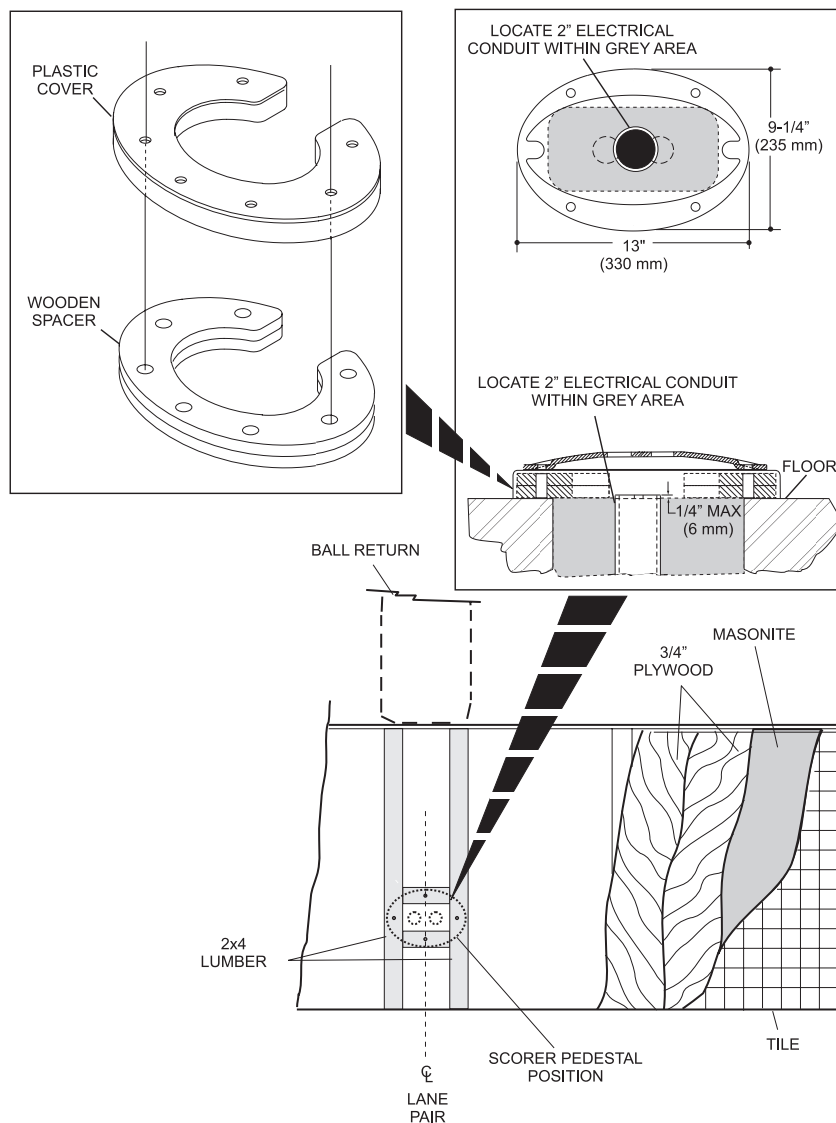
CONDUIT LOCATION IN FLOOR

The illustration below shows a typical conduit network to accommodate all cables in the system. The conduit sizes shown apply to all scoring systems.

i NOTE: All conduit for low voltage cables must be **ELECTRICAL CONDUIT** NOT plumbing/water conduit.



Wood Floor

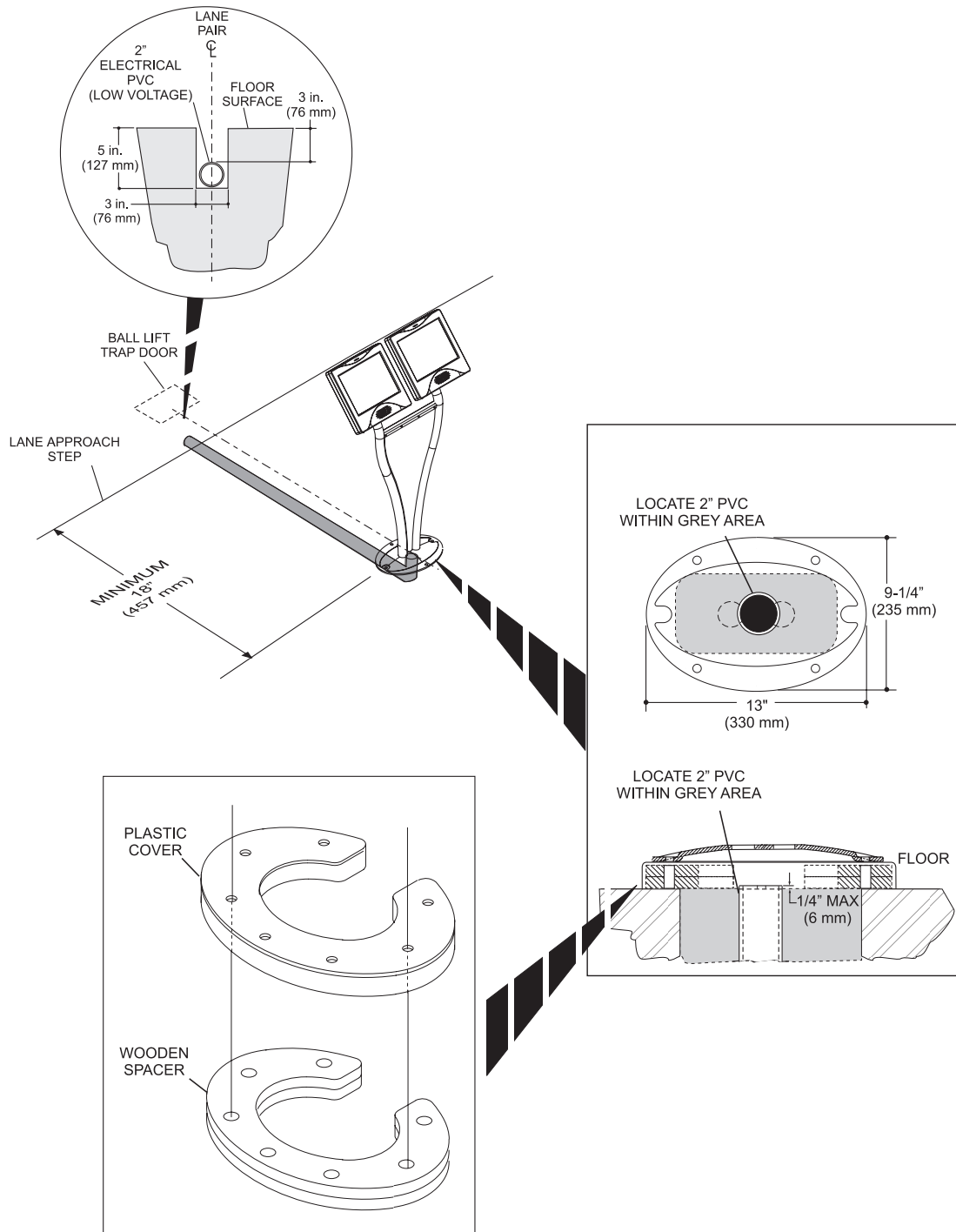


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: BUILD RACEWAYS USING 2 X 4 LUMBER ON THE EXISTING FLOOR. COVER WITH TWO LAYERS OF 3/4" PLYWOOD, ONE LAYER OF MASONITE AND ONE LAYER OF TILE. IT IS NECESSARY TO CUT OUT A PORTION OF THE APPROACH HEADER TO ALLOW THE CABLES TO BE ROUTED UNDER THE APPROACH. REFER TO DIMENSIONS ABOVE FOR PLACEMENT OF 2 X 4 LUMBER.

THE REMAINING 2 X 4S MAY BE POSITIONED IN ANY MANNER THAT PROPERLY SUPPORTS THE FLOOR. ONE SUGGESTION IS TO PUT THE LUMBER ON 16" (406 MM) CENTERS.

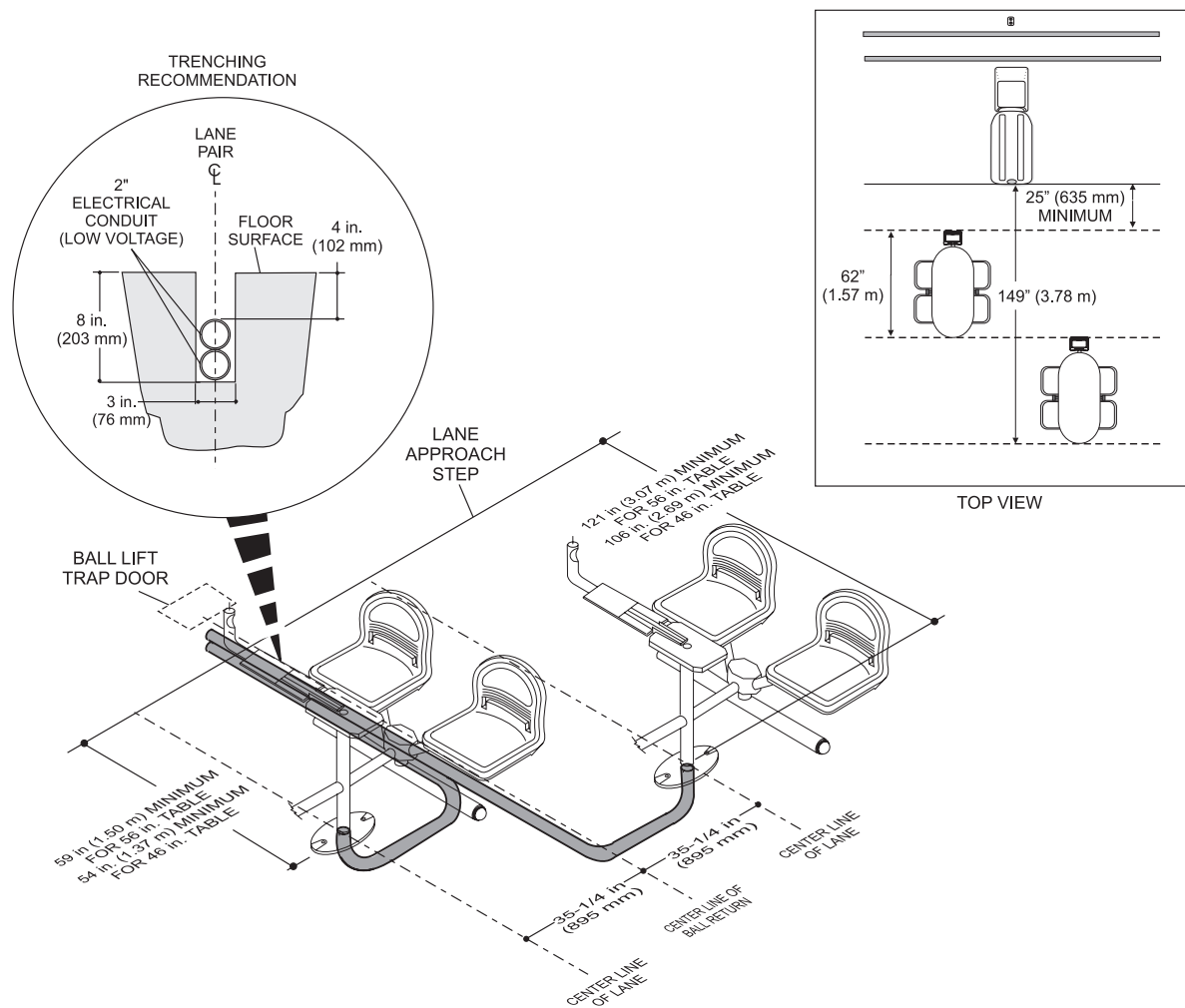
Pedestal



INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: A LOW VOLTAGE 2" ELECTRICAL CONDUIT FROM THE CENTER LINE OF THE BALL LIFT TO THE PEDESTAL IS REQUIRED FOR LOW VOLTAGE CABLES.

Oval Table

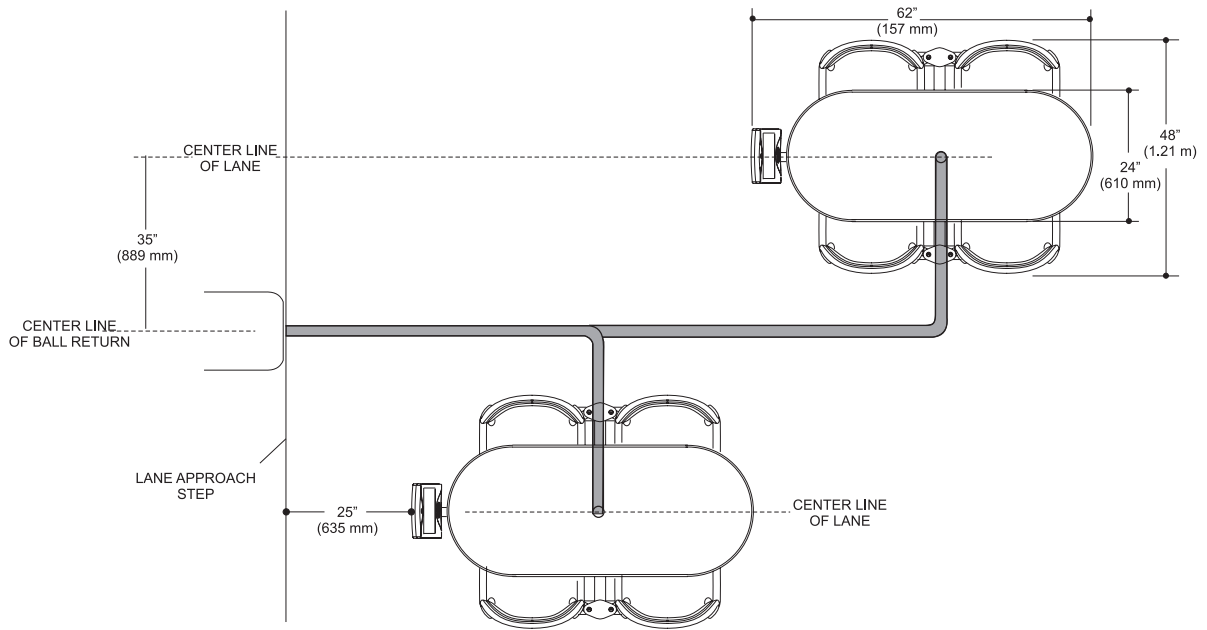


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: TRENCH OR ROUTE 2 EACH 2" ELECTRICAL CONDUIT FOR LOW VOLTAGE CABLES. THESE CONDUITS MUST BE 3" (76 mm) BELOW FLOOR SURFACE AND MEET LOCAL CODES.

i NOTE: A minimum space of 25" (635 mm) is required between the lane approach step and scorer.

BRUNSWICK RESPONSIBILITY: SUPPLY AND ROUTE LOW VOLTAGE CABLES TO THE BOWLER'S KEYPAD OR TOUCH SCREEN.

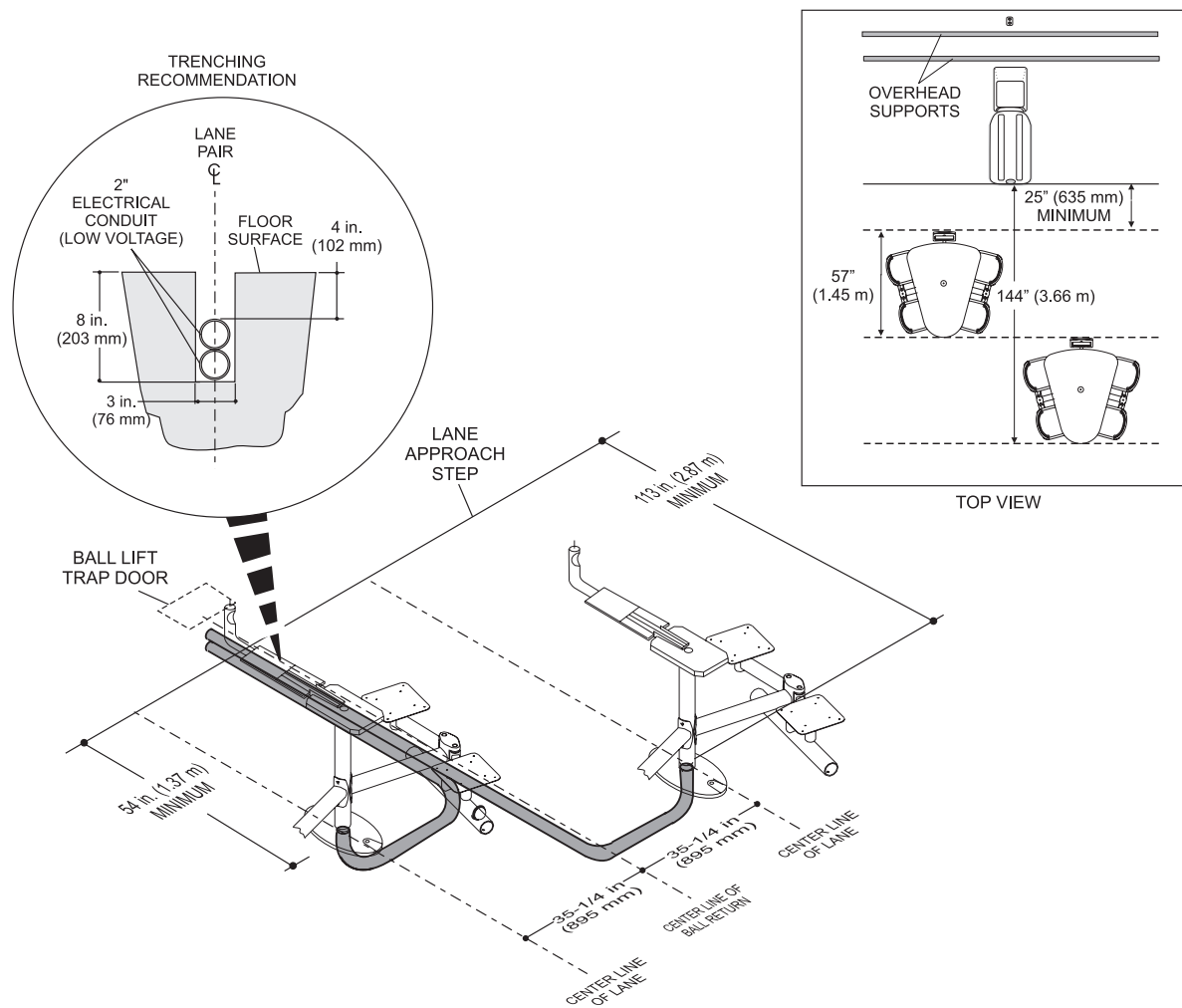


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: BUILD RACEWAYS USING 2 X 4 LUMBER ON THE EXISTING FLOOR. COVER WITH TWO LAYERS OF 3/4" PLYWOOD, ONE LAYER OF MASONITE AND ONE LAYER OF TILE. IT IS NECESSARY TO CUT OUT A PORTION OF THE APPROACH HEADER TO ALLOW THE CABLES TO BE ROUTED UNDER THE APPROACH. REFER TO DIMENSIONS ABOVE FOR PLACEMENT OF 2 X 4 LUMBER.

THE REMAINING 2 X 4S MAY BE POSITIONED IN ANY MANNER THAT PROPERLY SUPPORTS THE FLOOR. ONE SUGGESTION IS TO PUT THE LUMBER ON 16" (406 MM) CENTERS.

Triangle Table

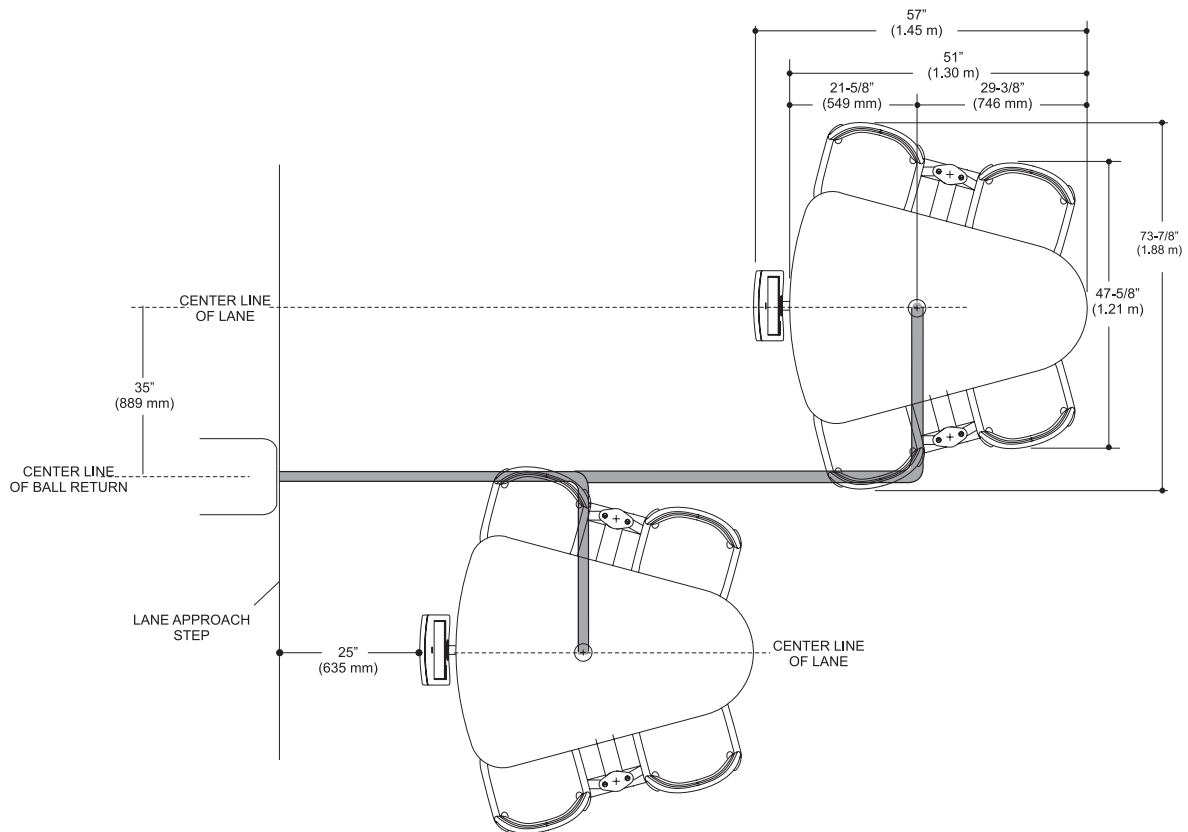


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: TRENCH OR ROUTE 2 EACH 2" ELECTRICAL CONDUIT FOR LOW VOLTAGE CABLES. THESE CONDUITS MUST BE 3" (76 MM) BELOW FLOOR SURFACE AND MEET LOCAL CODES.

i NOTE: A minimum space of 25" (635 mm) is required between the lane approach step and scorer.

BRUNSWICK RESPONSIBILITY: SUPPLY AND ROUTE LOW VOLTAGE CABLES TO THE BOWLER'S KEYPAD OR TOUCH SCREEN.

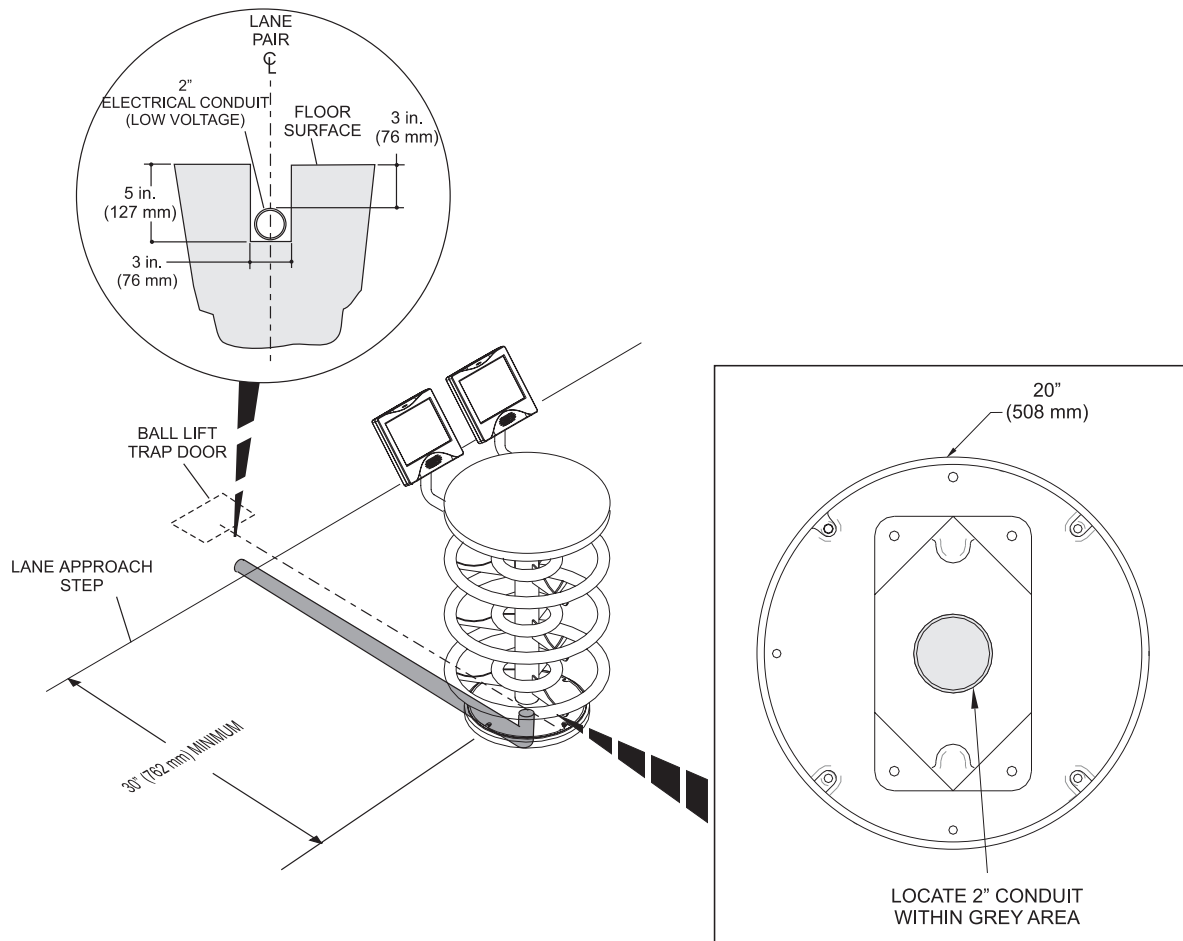


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: BUILD RACEWAYS USING 2 X 4 LUMBER ON THE EXISTING FLOOR. COVER WITH TWO LAYERS OF 3/4" PLYWOOD, ONE LAYER OF MASONITE AND ONE LAYER OF TILE. IT IS NECESSARY TO CUT OUT A PORTION OF THE APPROACH HEADER TO ALLOW THE CABLES TO BE ROUTED UNDER THE APPROACH. REFER TO DIMENSIONS ABOVE FOR PLACEMENT OF 2 X 4 LUMBER.

THE REMAINING 2 X 4S MAY BE POSITIONED IN ANY MANNER THAT PROPERLY SUPPORTS THE FLOOR. ONE SUGGESTION IS TO PUT THE LUMBER ON 16" (406 MM) CENTERS.

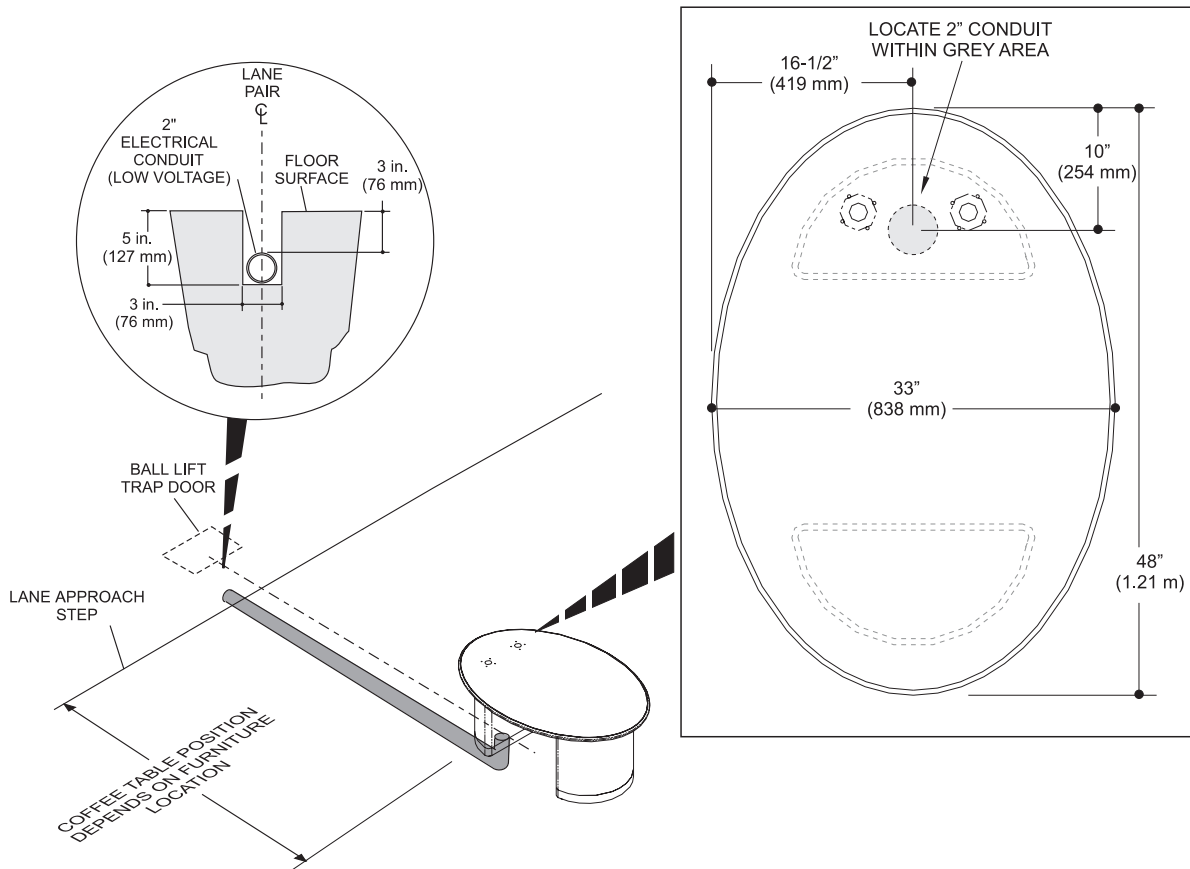
Circular Ball Rack



INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: A LOW VOLTAGE 2" ELECTRICAL CONDUIT FROM THE CENTER LINE OF THE BALL LIFT TO THE CIRCULAR BALL RACK IS REQUIRED FOR LOW VOLTAGE CABLES. FOR INFORMATION ON INSTALLING CIRCULAR BALL RACK ON WOOD STRINGER, REFER TO SECTION "WOOD FLOOR."

Coffee Table



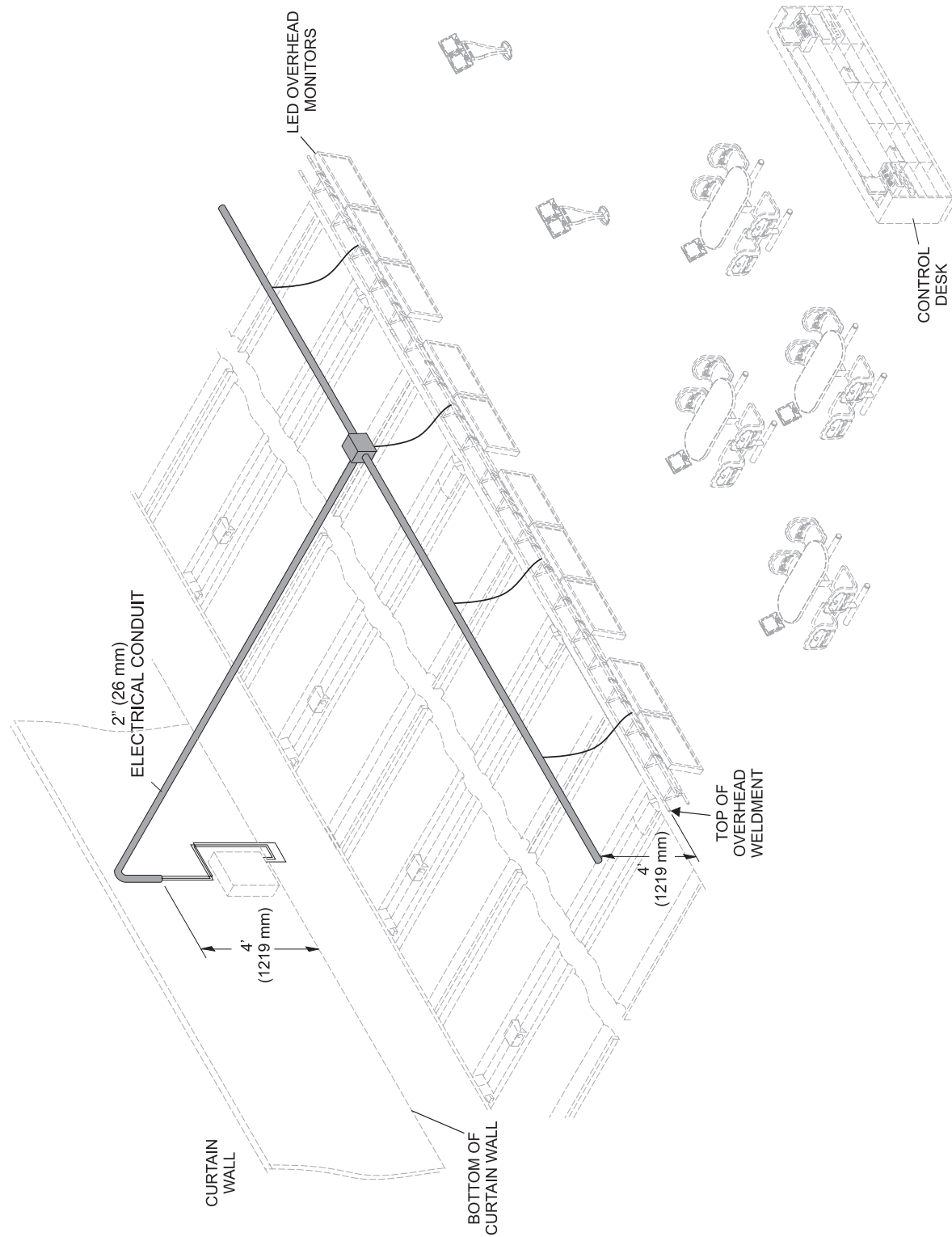
INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: A LOW VOLTAGE 2" ELECTRICAL CONDUIT FROM THE CENTER LINE OF THE BALL LIFT TO THE COFFEE TABLE IS REQUIRED FOR LOW VOLTAGE CABLES. FOR INFORMATION ON INSTALLING COFFEE TABLE ON WOOD STRINGER, REFER TO SECTION "WOOD FLOOR."

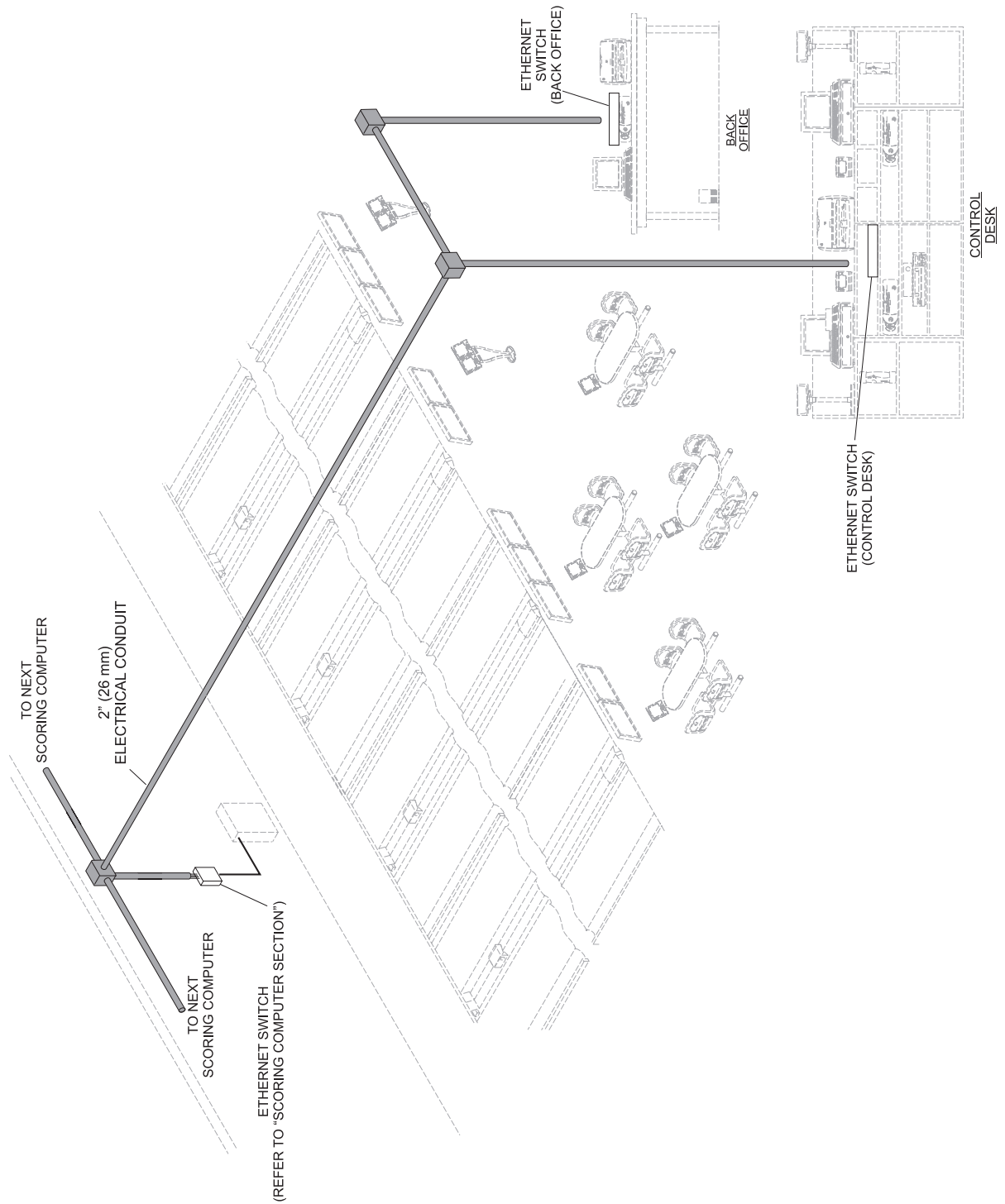
CONDUIT IN CEILING

Standard Definition (SD)

Vector Scoring Video (SD)



Ethernet Switch and Cable (SD)



Ethernet Switch and Cable Location (HD)

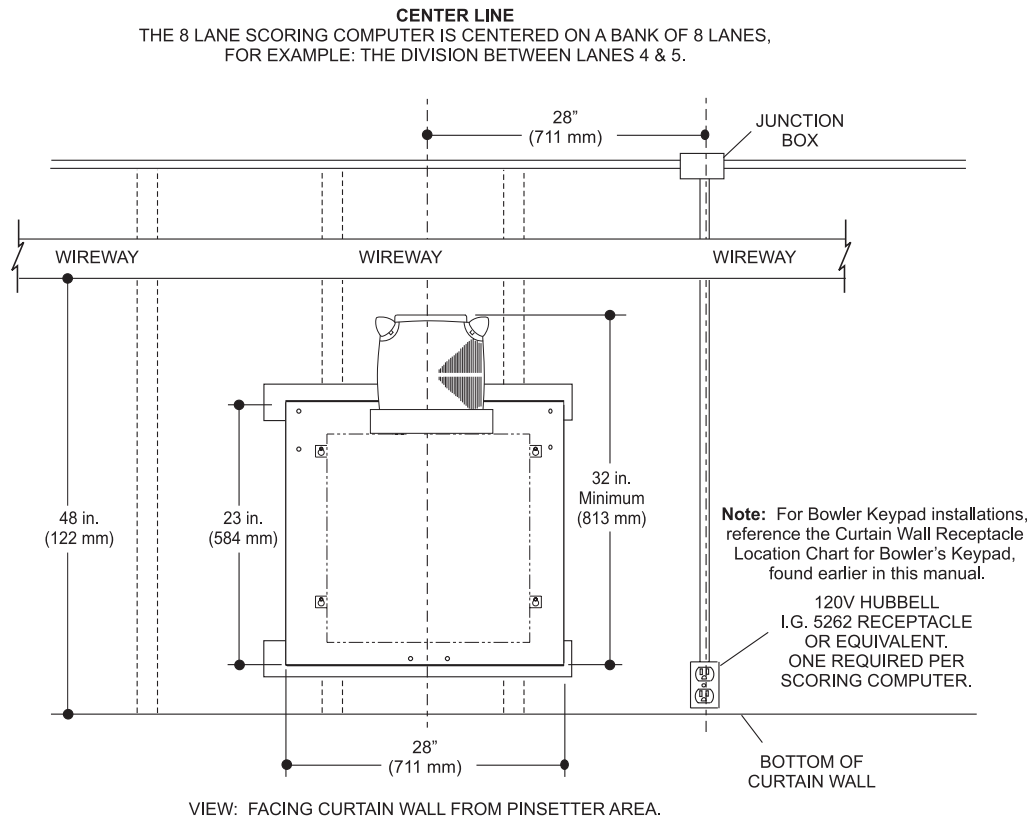


Electronic Equipment Specifications

SCORING COMPUTER

Direct Connect GS-98, GS-X and Non-GS Pinsetters

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	2.5	300	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE OR EQUIVALENT. NO MORE THAN 6 LANE PAIRS PER 20 AMP CIRCUIT.
200-220	50/60	AC	1	1.25	300	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE. NO MORE THAN 10 LANE PAIRS PER 16 AMP CIRCUIT.



INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: PROVIDE A SUITABLE LOCATION ON THE CURTAIN WALL AS SHOWN ABOVE FOR THE VECTOR SCORING COMPUTER. INSTALL RECEPTACLE ON THE CURTAIN WALL. REFER TO LOCATION CHART FOR EXACT LOCATION.

IF A CURTAIN WALL IS NOT AVAILABLE, A SUPPORT STRUCTURE MUST BE INSTALLED TO HANDLE THE 100 LB. STATIC WEIGHT LOAD PER LANE PAIR.

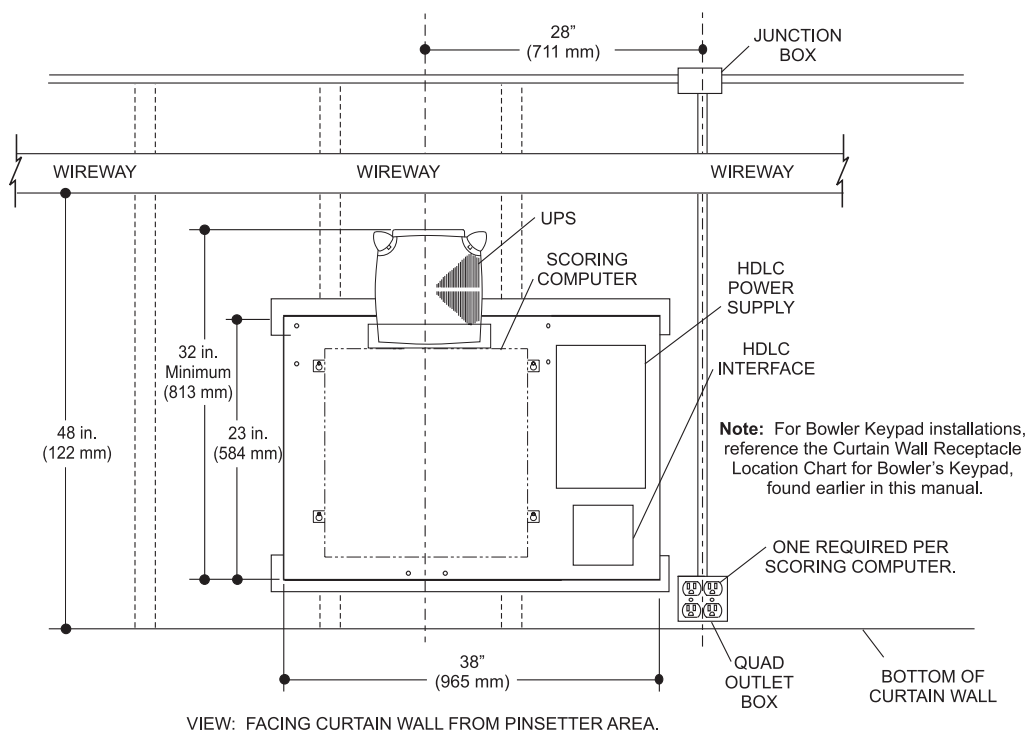
i NOTE: If Brunswick masking units are present, the mounting panel may be mounted to the masking unit structure with optional bracket kit.

BRUNSWICK RESPONSIBILITY: TO INSTALL THE ELECTRONICS MOUNTING PLATE ON THE CURTAIN WALL OR SUITABLE STRUCTURE.

GS-10, GS-92, GS-96 and Non-Direct GS-98 Pinsetters

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	3.5	420	2 WIRES + GROUND	INSTALL CIRCUIT WITH QUAD RECEPTACLE. NO MORE THAN 4 LANES PAIRS PER 20 AMP CIRCUIT.
200-240	50/60	AC	1	1.75	420	2 WIRES + GROUND	INSTALL CIRCUIT WITH QUAD RECEPTACLE. NO MORE THAN 7 LANES PAIRS PER 16 AMP CIRCUIT.

CENTER LINE
THE 8 LANE SCORING COMPUTER IS CENTERED ON A BANK OF 8 LANES,
FOR EXAMPLE: THE DIVISION BETWEEN LANES 4 & 5.



INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: PROVIDE A SUITABLE LOCATION ON THE CURTAIN WALL AS SHOWN ABOVE FOR THE VECTOR SCORING COMPUTER. INSTALL AN QUAD RECEPTACLE OR EQUIVALENT ON THE CURTAIN WALL. REFER TO LOCATION CHART FOR EXACT LOCATION.

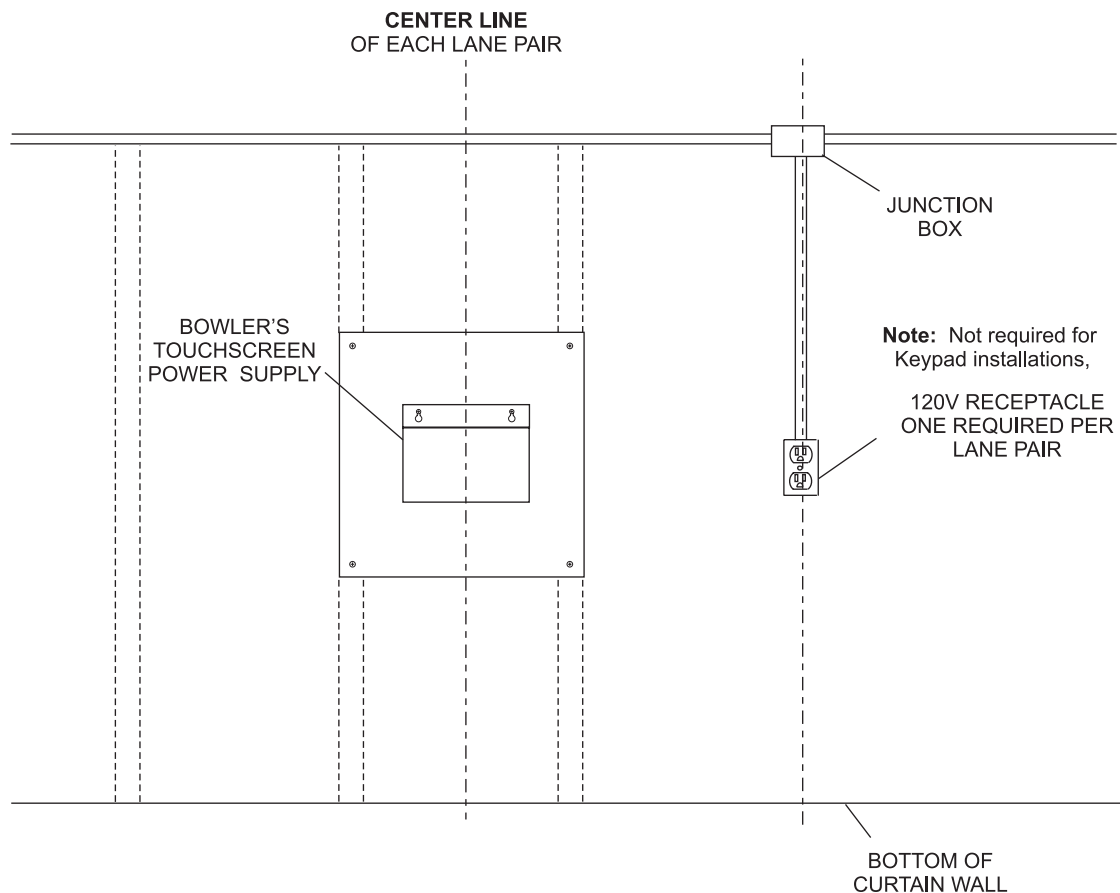
IF A CURTAIN WALL IS NOT AVAILABLE, A SUPPORT STRUCTURE MUST BE INSTALLED TO HANDLE THE 100 LB. STATIC WEIGHT LOAD PER LANE PAIR.

i NOTE: If Brunswick masking units are present, the mounting panel may be mounted to the masking unit structure with optional bracket kit.

BRUNSWICK RESPONSIBILITY: TO INSTALL THE ELECTRONICS MOUNTING PLATE ON THE CURTAIN WALL OR SUITABLE STRUCTURE.

BOWLER'S TOUCHSCREEN POWER SUPPLY

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	.5	60	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE. NO MORE THAN 24 LANES PAIRS PER 20 AMP CIRCUIT.
200-240	50/60	AC	1	.25	60	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE. NO MORE THAN 20 LANES PAIRS PER 16 AMP CIRCUIT.



INSTALLATION INFORMATION

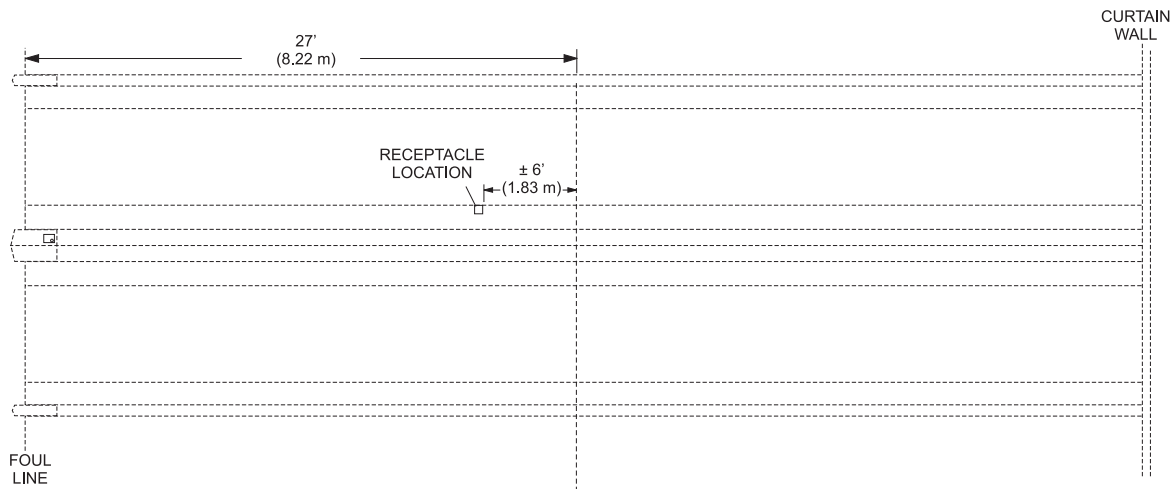
CUSTOMER'S RESPONSIBILITY: PROVIDE A SUITABLE LOCATION ON THE CURTAIN WALL AS SHOWN ABOVE FOR THE BOWLER'S TOUCHSCREEN POWER SUPPLY. INSTALL A RECEPTACLE ON THE CURTAIN WALL. REFER TO LOCATION CHART FOR EXACT LOCATION.

i NOTE: *At locations where there is a scoring computer present, bowler's Touchscreen will share the receptacle with the scoring computer.*

BRUNSWICK RESPONSIBILITY: TO INSTALL THE BOWLER'S TOUCHSCREEN ON THE CURTAIN WALL OR SUITABLE STRUCTURE.

AUTOMATED BUMPER SYSTEM - PINBALL WIZARD

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	3.0	360	2 WIRES + ISOLATED GROUND #12 AWG WIRE	INSTALL CIRCUIT WITH 120 VOLT HUBBELL I.G. 5262 RECEPTACLE OR EQUIVALENT. NO MORE THAN 4 LANES PAIRS PER 20 AMP CIRCUIT.
200-240	50/60	AC	1	1.5	360	2 WIRES + ISOLATED GROUND #12AWG WIRE	INSTALL CIRCUIT WITH APPROPRIATE I.G. RECEPTACLE. NO MORE THAN 4 LANES PAIRS PER 16 AMP CIRCUIT.



INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: THE CUSTOMER MUST PROVIDE ELECTRICAL POWER SOURCE THAT COMPLIES WITH LOCAL CODE.

i **IMPORTANT:** *This power source should be supplied from scorer I.G. sub-panel.*

LIGHTWORX POWER

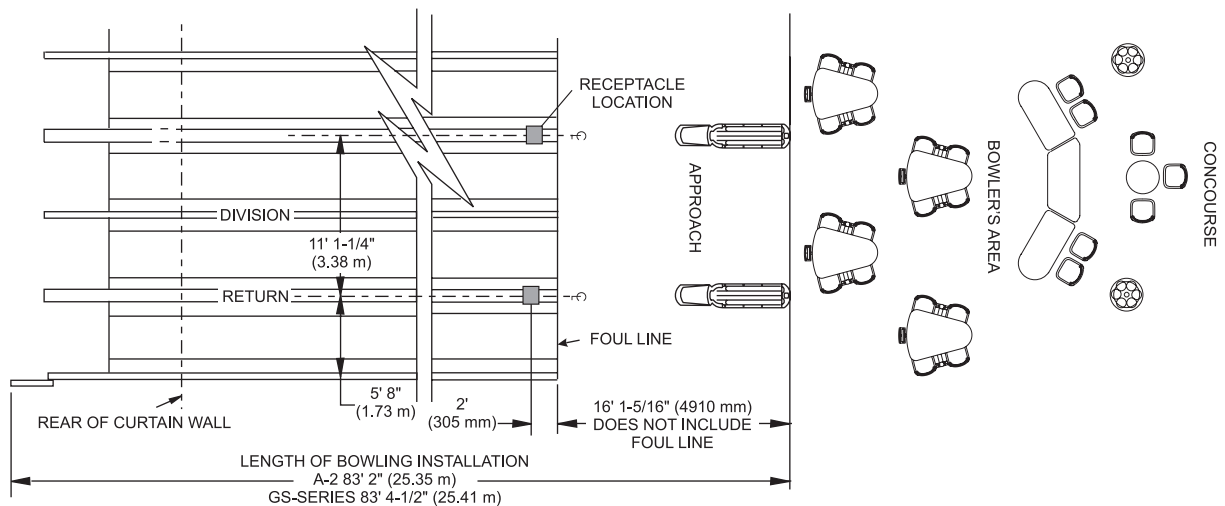
Electrical Information								
VOLTS	HERTZ	AC/DC	PHASE	AMPS	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY	BRUNSWICK RESPONSIBILITY
120-230	50/60	AC	1	1	120	2 WIRE GROUND WITH RECEPTACLE	TO SUPPLY FEEDER WIRING AND "J" BOX AND LOW VOLTAGE CONTROL. CUSTOMER/ELECTRICIAN TO CONNECT.	TO SUPPLY POWER CABLE TO "J" BOX.

Circuit Requirements - Lightworx				
WIRES PER CIRCUIT	UNITS PER CIRCUIT	WIRE SIZE	BREAKER SIZE	RECEPTACLE SUPPLIED BY BRUNSWICK
3	UP TP 10	12 GAUGE	20 A	NO

Receptacle Location Lightworx

ONE JUNCTION BOX BELOW THE LIGHTWORX UNIT ON EACH BALL RETURN NEAR THE FOUL LINE.

i NOTE: *Wiring for 120-230 volts must be furnished and installed by customer. All wiring must conform to local codes*



TEL-E-FOUL

Electrical Information								
VOLTS	HERTZ	AC/DC	PHASE	AMPS	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY	BRUNSWICK RESPONSIBILITY
120	50/60	AC	1	1	120	3 WIRE INSULATED GROUND WITH RECEPTACLE	TO SUPPLY FEEDER WIRING AND "J" BOX AND LOW VOLTAGE CONTROL. CUSTOMER/ELECTRICIAN TO CONNECT.	TO SUPPLY AND INSTALL TEL-E-FOUL AND POWER CABLE TO "J" BOX.
230	50/60	AC	1	.5	120			

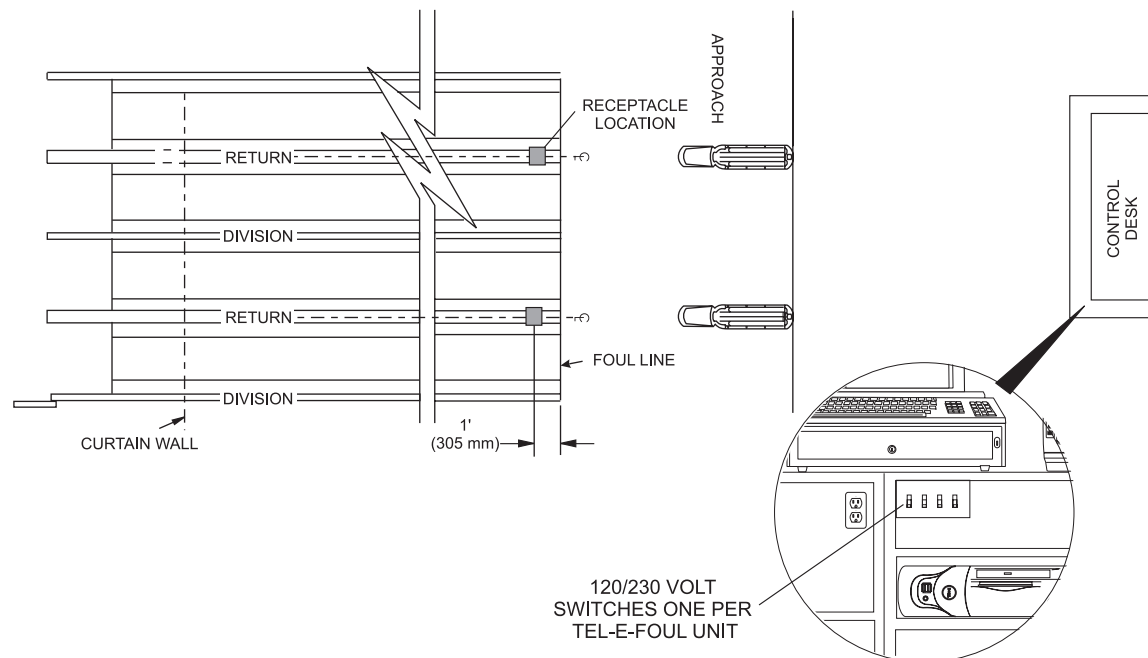
Circuit Requirements - Tel-E-Foul				
WIRES PER CIRCUIT	UNITS PER CIRCUIT	WIRE SIZE	BREAKER SIZE	RECEPTACLE SUPPLIED BY BRUNSWICK
3	UP TP 10	12 GAUGE	20 A	NO

Receptacle Location Tel-E-Foul

ONE JUNCTION BOX BELOW THE TEL-E-FOUL UNITS ON EACH BALL RETURN NEAR THE FOUL LINE

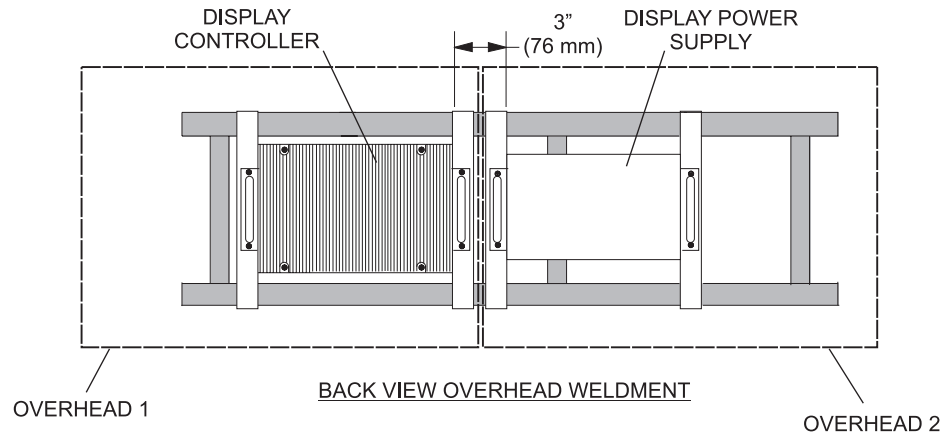
i NOTE: One on/off switch per Tel-E-Foul.

i NOTE: Wiring for 120-230 volts must be furnished and installed by customer. All wiring must conform to local codes



VECTOR HD DISPLAY CONTROLLER AND POWER SUPPLY

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	1	120	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE. NO MORE THAN 24 LANES PAIRS PER 20 AMP CIRCUIT.
200-240	50/60	AC	1	.5	120	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE. NO MORE THAN 20 LANES PAIRS PER 16 AMP CIRCUIT.

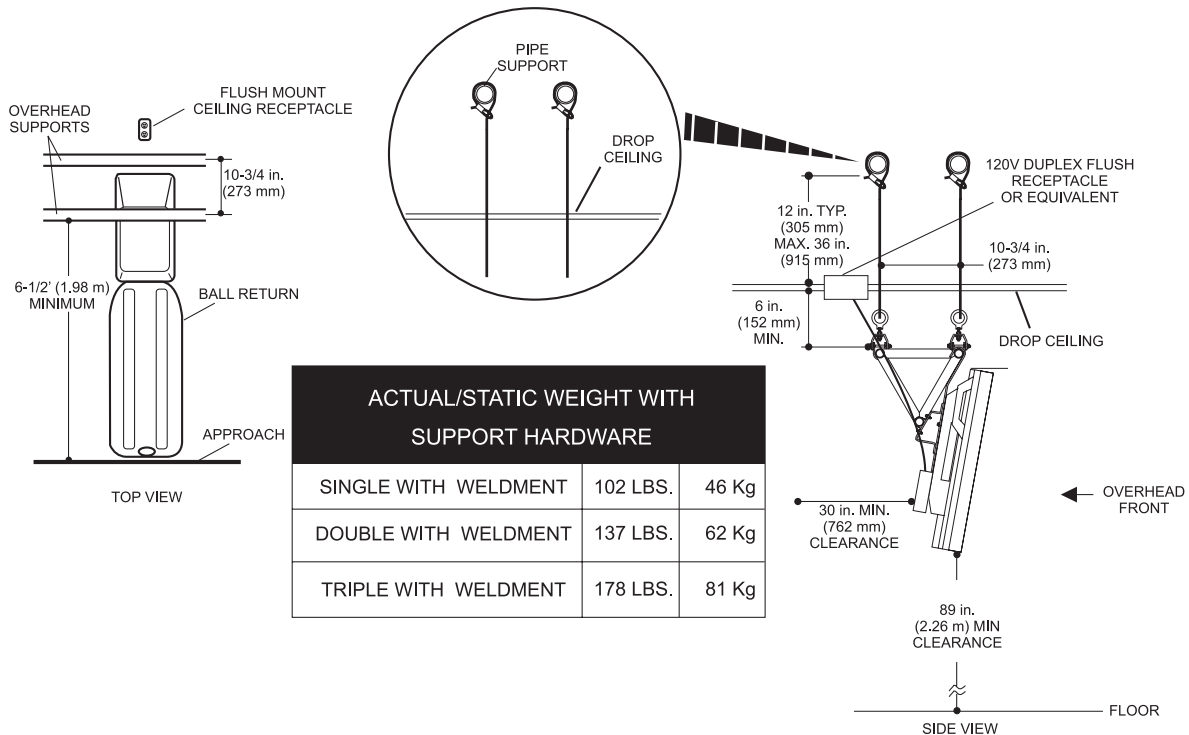


i NOTE: The above information refers to the power requirements for a lane pair. Refer to "Summary of Electrical Information" table for circuit and receptacle requirements for a complete lane pair.

32" OVERHEAD LED MONITOR

Electrical Information

EQUIPMENT	VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
32" OVERHEAD LED WITH SD INTERFACE	100-130	50/60	AC	1	1.2	94	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	.6	94		
32" OVERHEAD LED WITH HD INTERFACE	100-130	50/60	AC	1	1.7	154	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	0.85	154		



i NOTE: The above information refers to the power requirements for a single unit lane pair. Refer to "Summary of Electrical Information" table for circuit and receptacle requirements for a complete lane pair.

INSTALLATION INFORMATION

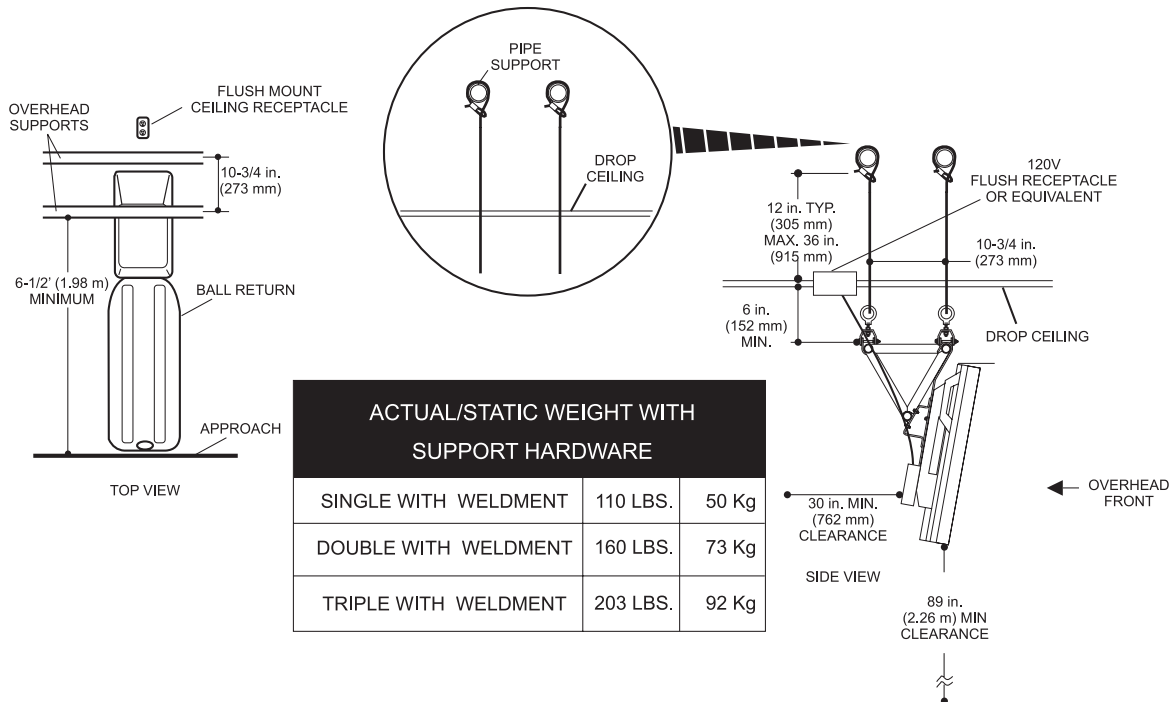
CUSTOMER'S RESPONSIBILITY: USING THE PREFERRED METHOD OF SUPPORT, THE OVERHEAD IS TO BE SUSPENDED FROM PIPE SUPPORTS WHICH ARE SUPPORTED FROM ROOF TRUSSES. THE RECEPTACLE IS TO BE INSTALLED FLUSH WITH THE CEILING AND LOCATED NEAR THE REAR SUSPENSION WIRE ON THE CENTER LINE OF A PAIR OF LANES. THE CUSTOMER IS RESPONSIBLE FOR SUPPLYING, INSTALLING, AND MAINTAINING THE PROPER POSITION OF THE SUPPORT PIPE. THE CUSTOMER IS ALSO RESPONSIBLE FOR HAVING THE STRUCTURE CERTIFICATE FORM COMPLETED BY AN ARCHITECT OR STRUCTURAL ENGINEER. SEE "WIDE SCREEN LED OVERHEAD VIDEO DISPLAY CERTIFICATE FOR SUPPORT WEIGHT SPECIFICATIONS. TRIPLE OVERHEADS REQUIRE A QUAD RECEPTACLE CENTERED TO THE REAR OF THE SUPPORT WIRE.

i NOTE: Support pipes must be as straight as possible. Any variation in the support will affect overhead positioning.

40" OVERHEAD LED MONITOR

Electrical Information

EQUIPMENT	VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
40" OVERHEAD LED WITH SD INTERFACE	100-130	50/60	AC	1	1.2	119	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	.6	119		
40" OVERHEAD LED WITH HD INTERFACE	100-130	50/60	AC	1	1.7	179	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	0.85	179		



i NOTE: The above information refers to the power requirements for a single unit lane pair. Refer to "Summary of Electrical Information" table for circuit and receptacle requirements for a complete lane pair.

INSTALLATION INFORMATION

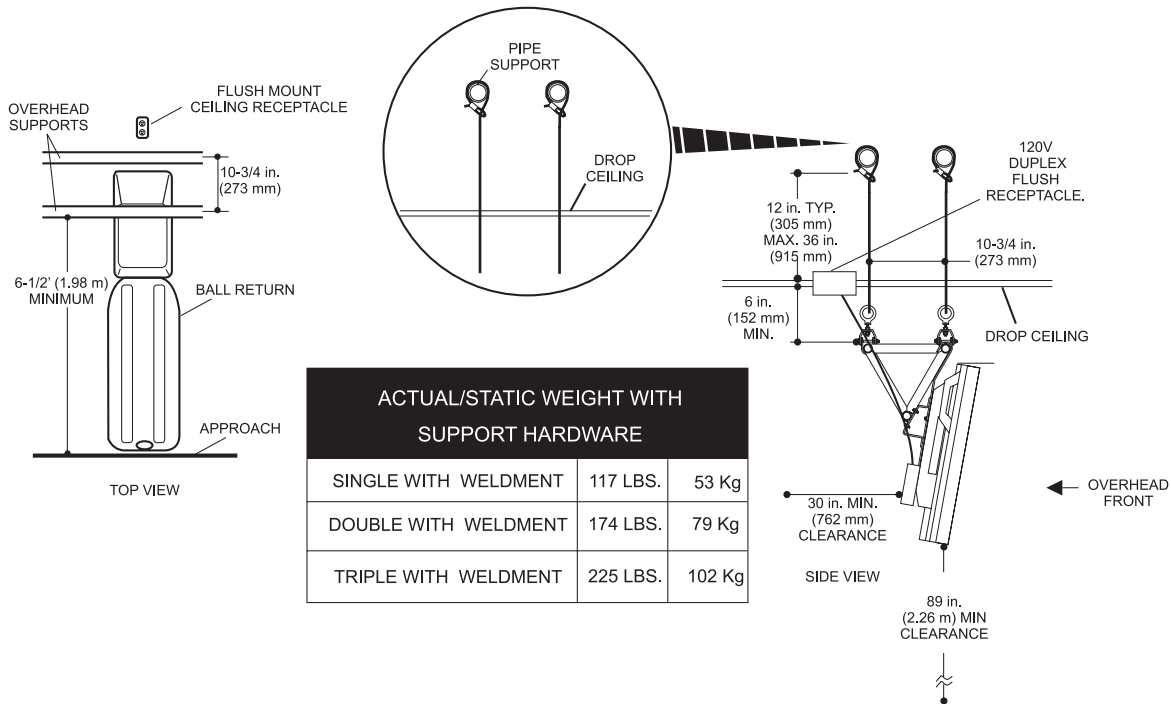
CUSTOMER'S RESPONSIBILITY: USING THE PREFERRED METHOD OF SUPPORT, THE OVERHEAD IS TO BE SUSPENDED FROM PIPE SUPPORTS WHICH ARE SUPPORTED FROM ROOF TRUSSES. THE RECEPTACLE IS TO BE INSTALLED FLUSH WITH THE CEILING AND LOCATED NEAR THE REAR SUSPENSION WIRE ON THE CENTER LINE OF A PAIR OF LANES. THE CUSTOMER IS RESPONSIBLE FOR SUPPLYING, INSTALLING, AND MAINTAINING THE PROPER POSITION OF THE SUPPORT PIPE. THE CUSTOMER IS ALSO RESPONSIBLE FOR HAVING THE STRUCTURE CERTIFICATE FORM COMPLETED BY AN ARCHITECT OR STRUCTURAL ENGINEER. SEE "WIDE SCREEN LED OVERHEAD VIDEO DISPLAY CERTIFICATE FOR SUPPORT WEIGHT SPECIFICATIONS. TRIPLE OVERHEADS REQUIRE A QUAD RECEPTACLE CENTERED TO THE REAR OF THE SUPPORT WIRE.

i NOTE: Support pipes must be as straight as possible. Any variation in the support will affect overhead positioning.

46" OVERHEAD LED MONITOR

Electrical Information

EQUIPMENT	VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
46" OVERHEAD LED WITH SD INTERFACE	100-130	50/60	AC	1	1.2	136	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	.6	136		
46" OVERHEAD LED WITH HD INTERFACE	100-130	50/60	AC	1	1.7	196	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	0.85	196		



i NOTE: The above information refers to the power requirements for a single unit lane pair. Refer to "Summary of Electrical Information" table for circuit and receptacle requirements for a complete lane pair.

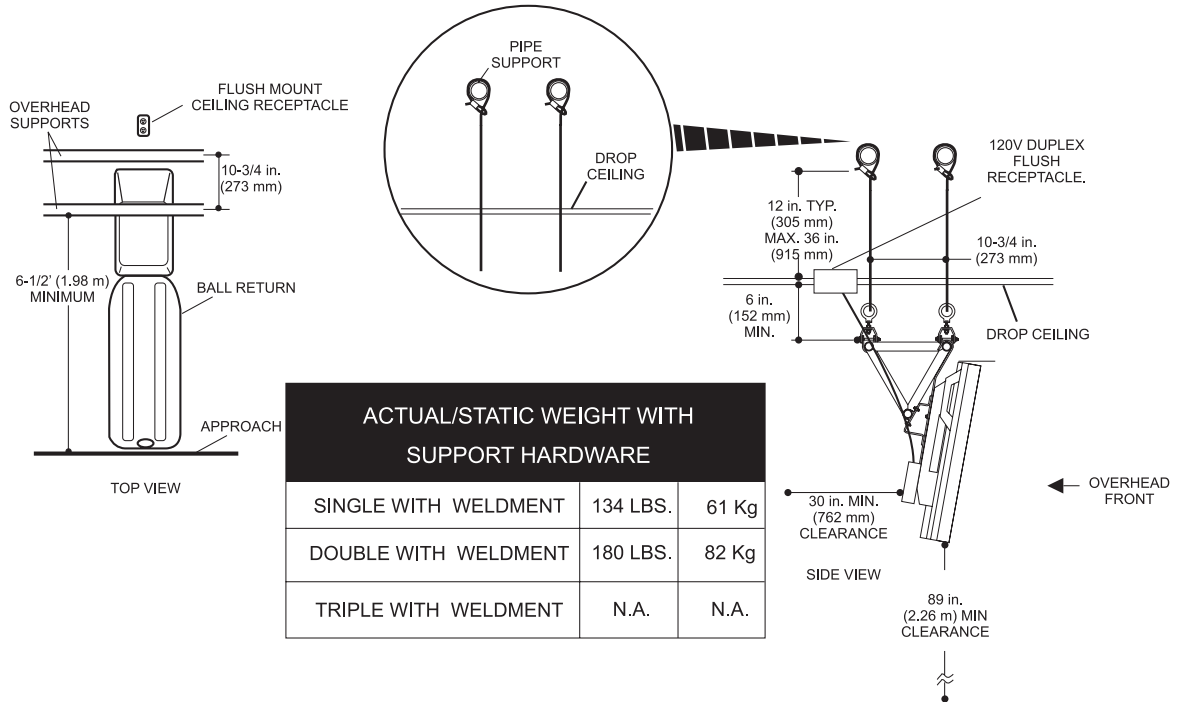
INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: USING THE PREFERRED METHOD OF SUPPORT, THE OVERHEAD IS TO BE SUSPENDED FROM PIPE SUPPORTS WHICH ARE SUPPORTED FROM ROOF TRUSSES. THE RECEPTACLE IS TO BE INSTALLED FLUSH WITH THE CEILING AND LOCATED NEAR THE REAR SUSPENSION WIRE ON THE CENTER LINE OF A PAIR OF LANES. THE CUSTOMER IS RESPONSIBLE FOR SUPPLYING, INSTALLING, AND MAINTAINING THE PROPER POSITION OF THE SUPPORT PIPE. THE CUSTOMER IS ALSO RESPONSIBLE FOR HAVING THE STRUCTURE CERTIFICATE FORM COMPLETED BY AN ARCHITECT OR STRUCTURAL ENGINEER. SEE "WIDE SCREEN LED OVERHEAD VIDEO DISPLAY CERTIFICATE FOR SUPPORT WEIGHT SPECIFICATIONS. TRIPLE OVERHEADS REQUIRE A QUAD RECEPTACLE CENTERED TO THE REAR OF THE SUPPORT WIRE.

i NOTE: Support pipes must be as straight as possible. Any variation in the support will affect overhead positioning.

55" OVERHEAD LED MONITOR

Electrical Information								
EQUIPMENT	VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
55" OVERHEAD LED WITH SD INTERFACE	100-130	50/60	AC	1	1.9	165	2 WIRES + GROUND	INSTALL CIRCUIT WITH RECEPTACLE.
	200-240	50/60	AC	1	.95	165		
55" OVERHEAD LED WITH HD INTERFACE	100-130	50/60	AC	1	2.4	224	2 WIRES + GROUND	
	200-240	50/60	AC	1	1.2	224		



i NOTE: The above information refers to the power requirements for a single unit lane pair. Refer to "Summary of Electrical Information" table for circuit and receptacle requirements for a complete lane pair.

INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: USING THE PREFERRED METHOD OF SUPPORT, THE OVERHEAD IS TO BE SUSPENDED FROM PIPE SUPPORTS WHICH ARE SUPPORTED FROM ROOF TRUSSES. THE RECEPTACLE IS TO BE INSTALLED FLUSH WITH THE CEILING AND LOCATED NEAR THE REAR SUSPENSION WIRE ON THE CENTER LINE OF A PAIR OF LANES. THE CUSTOMER IS RESPONSIBLE FOR SUPPLYING, INSTALLING, AND MAINTAINING THE PROPER POSITION OF THE SUPPORT PIPE. THE CUSTOMER IS ALSO RESPONSIBLE FOR HAVING THE STRUCTURE CERTIFICATE FORM COMPLETED BY AN ARCHITECT OR STRUCTURAL ENGINEER. SEE "WIDE SCREEN LED OVERHEAD VIDEO DISPLAY CERTIFICATE FOR SUPPORT WEIGHT SPECIFICATIONS. TRIPLE OVERHEADS REQUIRE A QUAD RECEPTACLE CENTERED TO THE REAR OF THE SUPPORT WIRE.

i NOTE: Support pipes must be as straight as possible. Any variation in the support will affect overhead positioning.

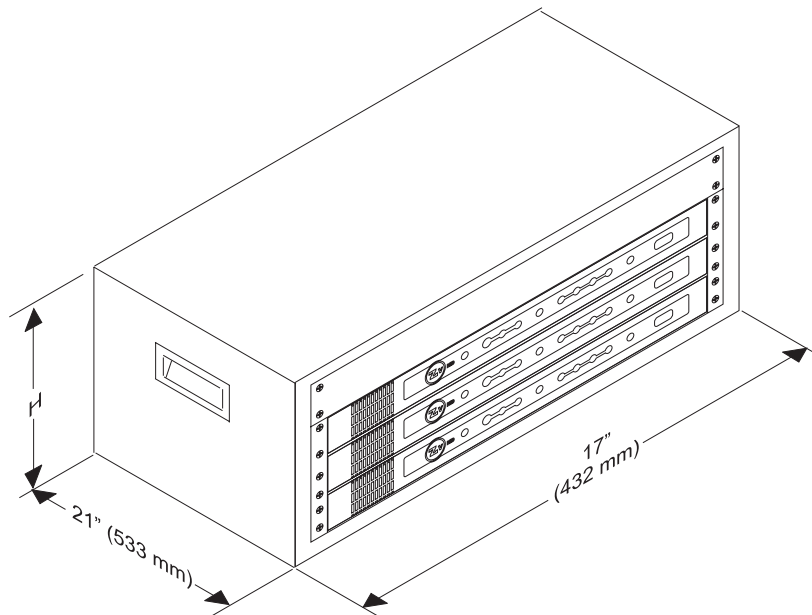
HD VIDEO DISTRIBUTION CENTER

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	20	2400	2 WIRES + GROUND	-
200-240	50/60	AC	1	16	2400	2 WIRES + GROUND	-

i NOTE: The Video Distribution Center can accept a variety of signal sources such as satellite boxes, cable set-top boxes, or DVD/Blu-ray players. The audio and video from each source is connected to a modulator that “assigns” a unique “TV” channel to the source. The number of modulators present in the system is determined by the number of video sources to that will be available for display on the monitors. When choosing modulators, it is important to consider the connections available on the signal source, the output quality of the modulator (Standard or High Definition), and future needs.

There can be any number of different channels and modulators in the HD video distribution center. The quantity and type of modulator is determined by the customer.

NUMBER OF CHANNELS	H = HEIGHT
1-3 Channels	10.5" (267 mm)
4-5 Channels	14" (356 mm)
6-7 Channels	17.5" (445 mm)
8-9 Channels	22.5" (572 mm)
10-12 Channels	28" (711 mm)



INSTALLATION INFORMATION

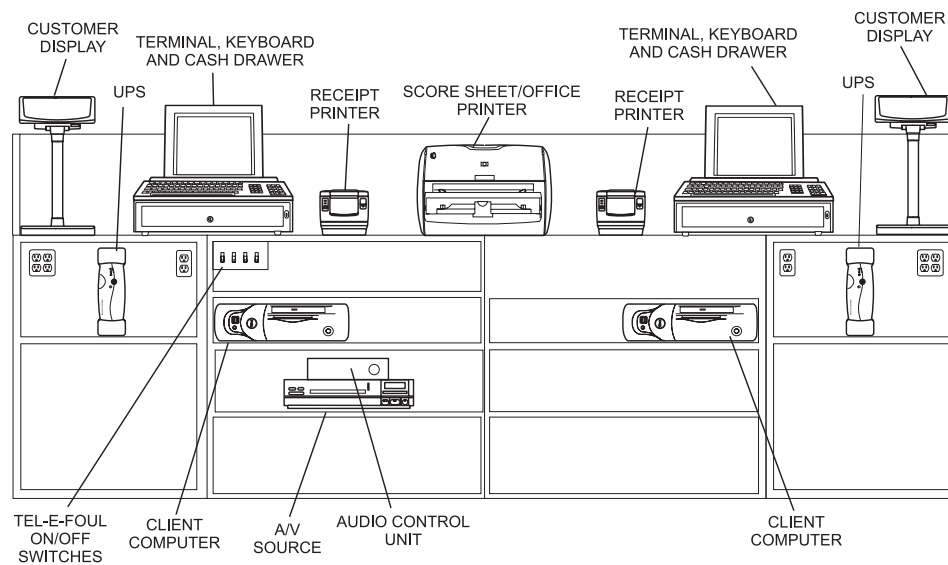
i NOTE: All video sources must be a component input.

i NOTE: The HD video distribution center must be within 3-4 ft (9-1.2 m) of the component video source.

i NOTE: One circuit is necessary for the HD video distribution center.

CONTROL DESK

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	20	2640	2 WIRES + GROUND	INSTALL CIRCUIT WITH APPROPRIATE RECEPTACLE.
200-240	50/60	AC	1	16	2640	2 WIRES + GROUND	



INSTALLATION INFORMATION

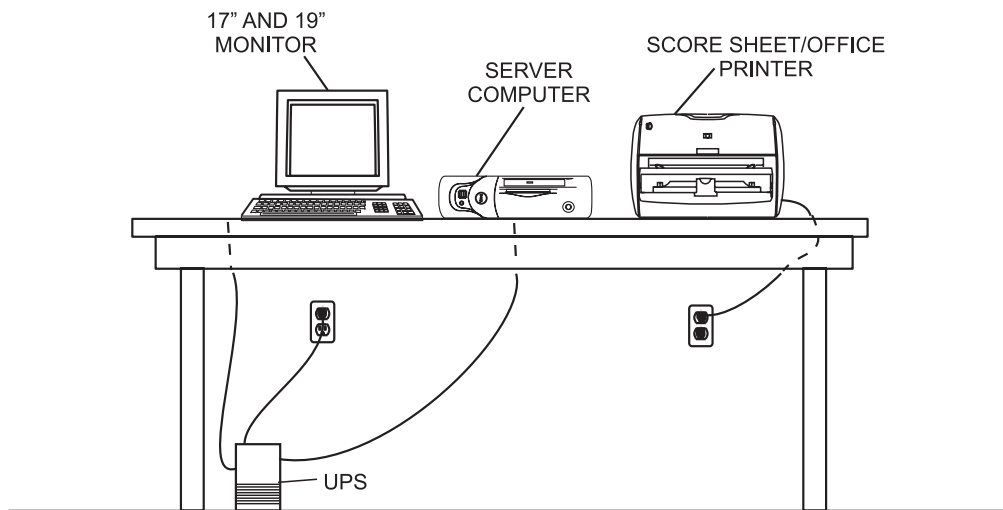
CUSTOMER'S RESPONSIBILITY: THE CONTROL DESK SHOWN IS AN EXAMPLE OF A TWO TERMINAL CONTROL DESK. THE CONTROL DESK LAYOUT VARIES WITH INDIVIDUAL BOWLING CENTERS. THE DECISION OF EQUIPMENT LOCATIONS SHOULD BE MADE BEFORE POWER OUTLETS AND CONDUITS ARE INSTALLED. PLEASE PROVIDE OUTLES IN SIMILIAR CONFIGURATION AS SHOWN.

i NOTE: *The CPU must be within 3-4 ft (.9-1.2 m) of the terminal and printer.*

i NOTE: *Two circuits are necessary for everything at the Control Desk.*

OFFICE

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	13.5	1680	2 WIRES + GROUND	INSTALL CIRCUIT WITH APPROPRIATE RECEPTACLE.
200-240	50/60	AC	1	6.75	1680	2 WIRES + GROUND	

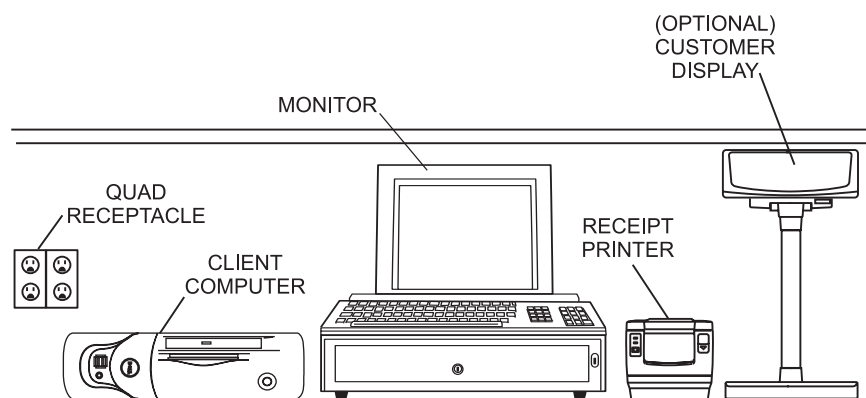


INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: INSTALL ONE CIRCUIT WITH TWO EACH RECEPTACLES WITHIN THREE FEET (914 MM) OF THE UPS AND COMPUTER.

POINT OF SALE TERMINAL

Electrical Information							
VOLTS	HERTZ	AC/DC	PHASE	AMPS PER UNIT	WATTS	BRANCH CIRCUIT	CUSTOMER RESPONSIBILITY
100-130	50/60	AC	1	8	1440	2 WIRES + GROUND	NO MORE THAN 2 POINT OF SALE TERMINALS PER CIRCUIT
200-240	50/60	AC	1	4	1440	2 WIRES + GROUND	NO MORE THAN 3 POINT OF SALE TERMINALS PER CIRCUIT



NOTE: 120 VOLT SHOWN FOR ILLUSTRATION PURPOSES.

INSTALLATION INFORMATION

CUSTOMER'S RESPONSIBILITY: THE POINT OF SALE TERMINAL CAN BE LOCATED IN VARIOUS AREAS OF THE BOWLING CENTER. THEY ARE TYPICALLY IN THE LOUNGE, SNACK BAR, PRO SHOP, OR BILLIARDS AREA. THE ELECTRICAL CONFIGURATION IS THE SAME FOR EACH LOCATION, A SUITABLE LOW VOLTAGE RACEWAY MUST BE INSTALLED FOR COMMUNICATION CABLES.

Summary of Electrical Information

Equipment	Volts	Hertz	AC or DC	Phase	Amps per Unit @120 VAC	Amp per Unit @240VAC	Lanes per Fused Circuit	Wires per Fused Circuit	Circuit Breaker Size	Watts per Pair of Lanes	Connector (Female) Supplied by Customer 12 Volt	Special Notes
32" Overhead LED w/SD Electronics	100-130	50/60	AC	1	1.2	-	8	3	20	336	120 Volt Duplex	Ratings are only for Double LEDs Quad need for Triple
	200-240	50/60	AC	1	-	0.7	12	3	16	336	120 Volt Duplex	
40" Overhead LED w/SD Electronics	100-130	50/60	AC	1	1.2	-	4	3	20	600	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	0.7	6	3	16	600	120 Volt Duplex	
46" Overhead LED w/SD Electronics	100-130	50/60	AC	1	1.2	-	3	3	20	720	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	.07	6	3	16	720	120 Volt Duplex	
55" LED w/SD Electronics	100-130	50/60	AC	1	1.9	-	3	3	20	330	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	.95	4	5	16	330	120 Volt Duplex	
32" Overhead LED w/HD Electronics	100-130	50/60	AC	1	1.7	-	6	3	20	420	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	0.85	10	3	16	420	120 Volt Duplex	

Equipment	Volts	Hertz	AC or DC	Phase	Amps per Unit @120 VAC	Amp per Unit @240VAC	Lanes per Fused Circuit	Wires per Fused Circuit	Circuit Breaker Size	Watts per Pair of Lanes	Connector (Female) Supplied by Customer 12 Volt	Special Notes
40" Overhead LED w/HD Electronics	100-130	50/60	AC	1	1.7	-	4	3	20	660	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	0.85	6	3	16	660	120 Volt Duplex	
46" Overhead LED w/HD Electronics	100-130	50/60	AC	1	1.7	-	3	3	20	780	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	0.85	4	5	16	780	120 Volt Duplex	
55" LED w/HD Electronics	100-130	50/60	AC	1	2.4	-	3	3	20	488	120 Volt Duplex	Ratings are for Single LED Quad needed for Triple
	200-240	50/60	AC	1	-	1.2	4	5	16	488	120 Volt Duplex	
Scoring Computer Electronics	100-130	50/60	AC	1	2.5	-	-	3	20	240	I.G. 5262 Hubbell	Flush Mount Receptacle or Female Cord
	200-240	50/60	AC	1	-	1.25	-	3	16	240	Appropriate I.G. Receptacle	
HD Display Controller	100-130	50/60	AC	1	1		24	3	20	60	I.G. 5262 Hubbell	
	200-240	50/60	AC	1		.5	20	3	16	60	120 Volt Duplex	
HD Video Distribution Center	100-130	50/60	AC	1	20	-	-	3	20	2400	120 Volt Duplex	
	200-240	50/60	AC	1	-	10	-	3	16	2400	120 Volt Duplex	

Equipment	Volts	Hertz	AC or DC	Phase	Amps per Unit @120 VAC	Amp per Unit @240VAC	Lanes per Fused Circuit	Wires per Fused Circuit	Circuit Breaker Size	Watts per Pair of Lanes	Connector (Female) Supplied by Customer 12 Volt	Special Notes
Client Computer	100-130	50/60	AC	1	5	-	-	3	20	600	120 Volt Duplex	
	200-240	50/60	AC	1	-	2.5	-	3	16	600	120 Volt Duplex	
Server Computer	100-130	50/60	AC	1	6	-	-	3	20	960	120 Volt Duplex	500 VA UPS Supplies Power
	200-240	50/60	AC	1	-	3	-	3	16	960	120 Volt Duplex	
Point of Sale Terminal	100-130	50/60	AC	1	-	-	-	3	20	2880	120 Volt Duplex	Quad Receptacle
	200-240	50/60	AC	1	-	6	-	3	16	2880	120 Volt Duplex	
Tel -E-Foul	100-130	50/60	AC	1	13.5	675	10	3	20	120	120 Volt Duplex	Duplex Receptacle
	200-240	50/60	AC	1	-	.5	10	3	16	120	120 Volt Duplex	
Lightworx	100-130	50/60	AC	1	1	-	10	3	20	120	120 Volt Duplex	Duplex Receptacle
	200-240	50/60	AC	1	-	.5	10	3	16	120	120 Volt Duplex	
Automated Bumpers	100-130	50/60	AC	1	3	-	8	3	20	360	I.G. 5262 Hubbell	Quad Duplex per Circuit
	200-240	50/60	AC	1	-	1.5	8	3	16	360	Appropriate I.G. Receptacle	
Scoresheet/Office Printer	100-130	50/60	AC	1	6	-	-	-	20		Receptacle	Duplex Receptacle
	200-240	50/60	AC	1	-	3	-	-	20		recetacle	
Computer Monitor	100-130	50/60	AC	1	1.5	-	-	-	16		Receptacle	Duplex Receptacle
	200-240	50/60	AC	1	-	0.75	-	-	16		Recetacle	

Lighting Specifications

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

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.

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.

IN SUMMARY

In general, what the above recommendations are trying to accomplish is a gradual increase of light level from low in the seating area, to high on the pins. The pins 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.

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 activators at 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.

PLANNING

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 Vector cabling.

LIGHT LEVELS

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.

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.

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 for servicing.

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

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

Pin Light Specifications

For Brunswick "A" and A-2 Pinsetters, the pin lights should be 40 watt, soft white or cool white tubes. For AMF Pinspotters, the pin lights should be 30 watt, soft white or cool white tubes. The pin light reflectors should be cleaned and, if necessary, painted prior to the arrival of the Brunswick Field Engineer to allow optimum light required for proper scoring.

Ultra-Violet (UV) or Black Light Bulbs

Ultra-violet light is measured differently than white light. Ultra-violet light releases very little visible light to the human eye. Instead, an ultra-violet light emits mostly ultra-violet (UV), which cannot be seen and blocks the visible light that can be seen.

White light is measured in watts. Ultra-violet light is measured in nanometers. A high quality effective ultra-violet light for bowling centers to have a “glowing” in the environment is long wave, 315 to 380 nanometers. Ultra-violet light bulbs are typically made using mercury vapor lamps or specially designed LED lights

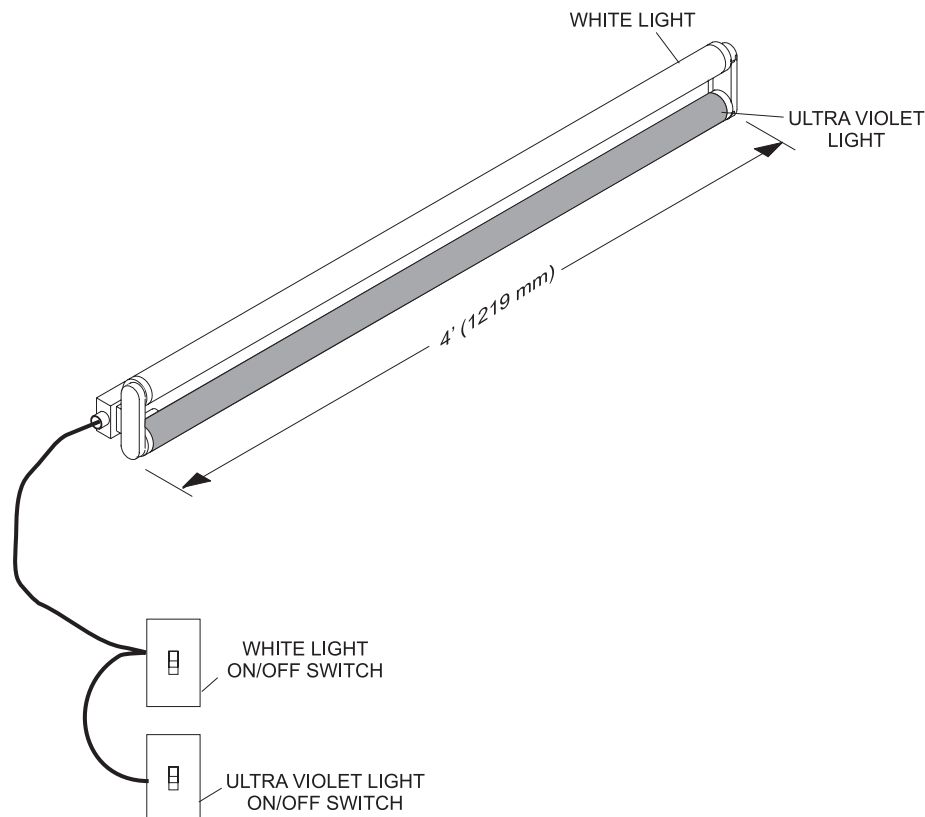
Brunswick recommends florescent light bulbs, manufacturer part number is “F32T8-BLB”. If these types of light bulb are not preferred by the customer, seek professional advisement from a lighting engineer

i NOTE: Brunswick does NOT recommend incandescent light bulbs. Do NOT mistake this with “F32T8-BL”. The “BLB” and the “BL” bulb are different lights and will not perform the same.

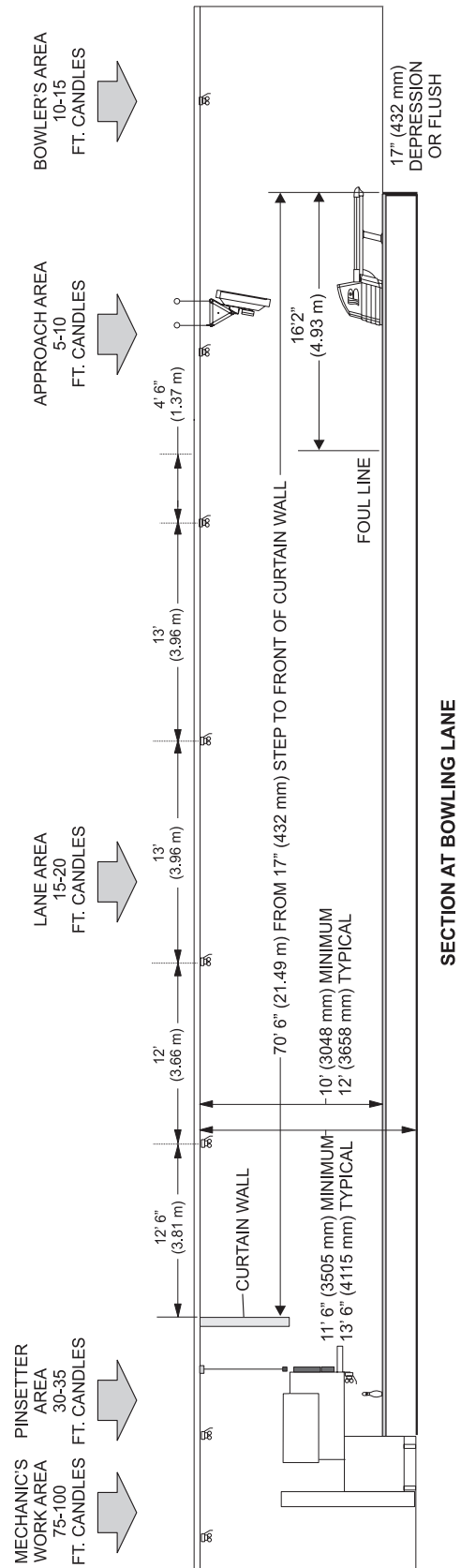
i IMPORTANT: Failure to comply with Brunswick recommendations will drastically affect the “glowing” environment in the bowling centers.

Light Fixture Configuration

When designing the lighting use a dual light fixture, with one white light and one ultra-violet bulb in the light fixture. Have a power on/off switch for the white light and another separate on/off switch for the ultra-violet light. This will allow the location and the placement of the white and ultra-violet light bulb the same to allow for an even light level intensity on the lanes.



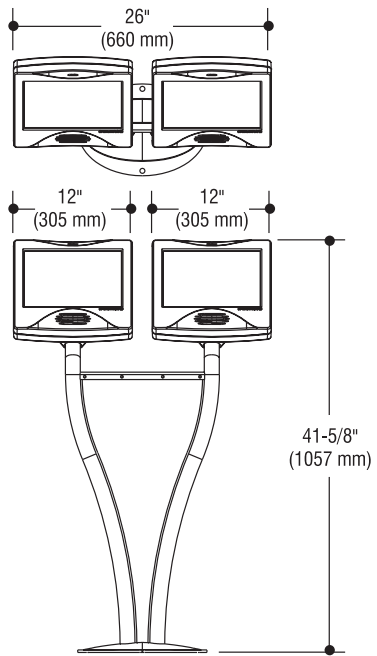
LIGHT LOCATIONS



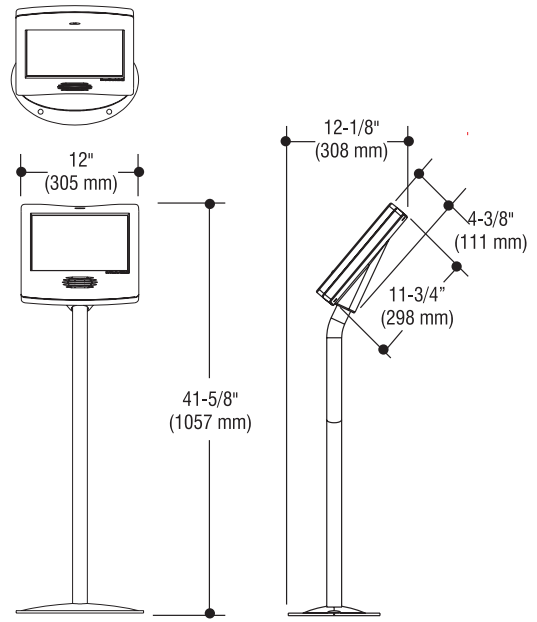
NOTE: The light fixtures contain a white light and a separate ultra violet bulb in the same fixture.

Equipment Dimensions

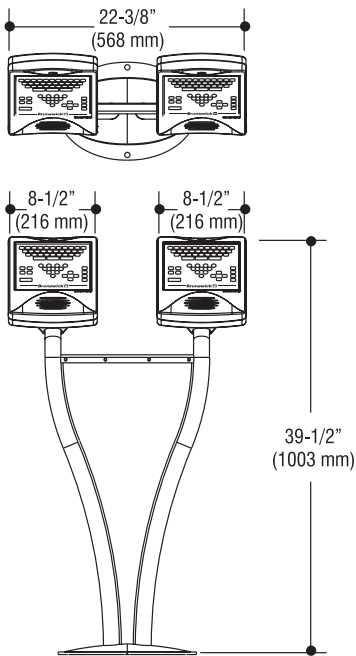
PEDESTALS



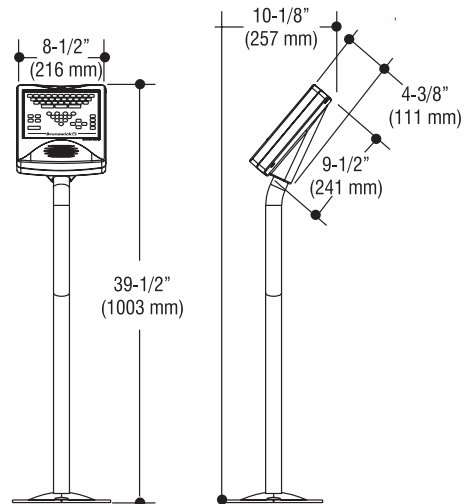
Bowler's Touchscreen Dual Pedestal



Bowler's Touchscreen Single Pedestal



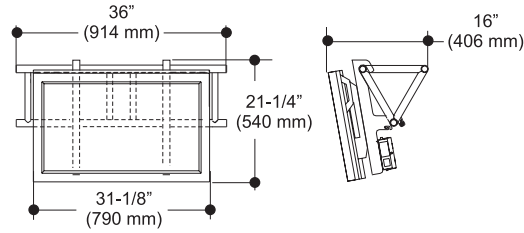
Bowler's Keypad Dual Pedestal



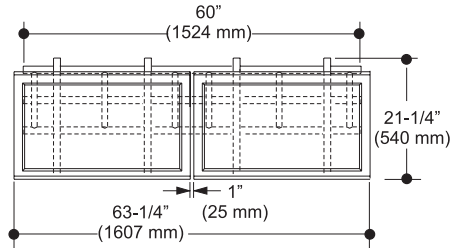
Bowler's Keypad Single Pedestal

LED OVERHEAD MONITORS

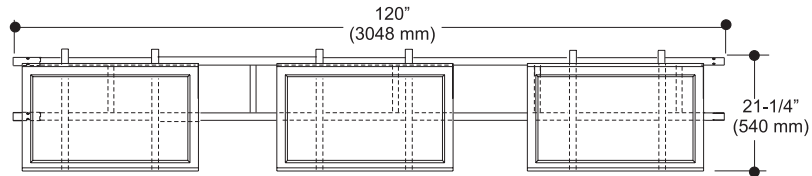
32" LCD Single Overhead



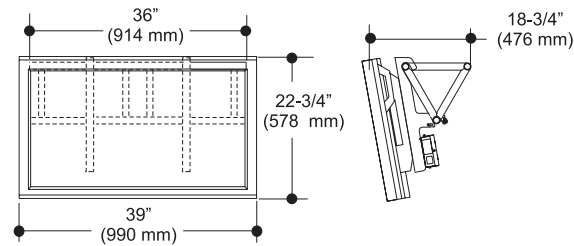
32" LCD Double Overhead



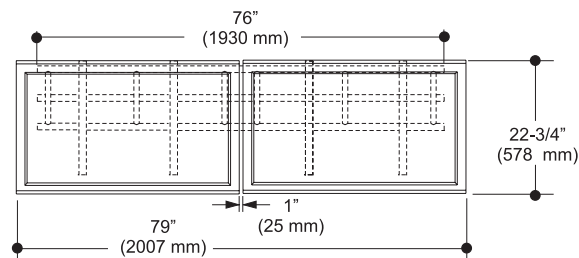
32" LCD Triple Overhead



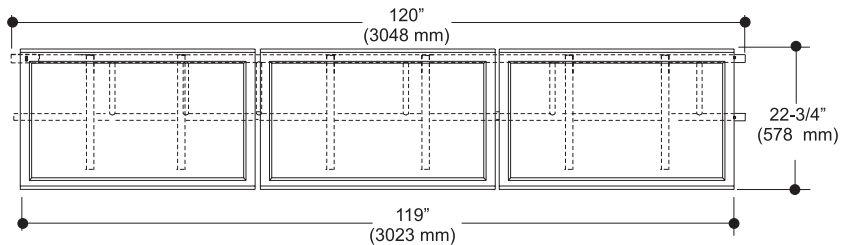
40" LCD Single Overhead



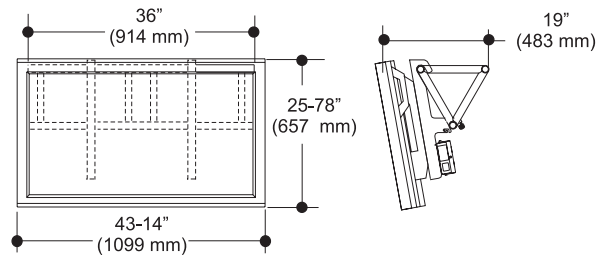
40" LCD Double Overhead



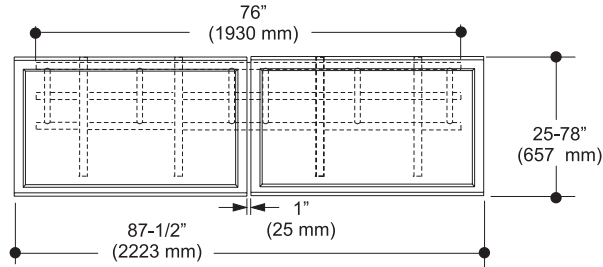
40" LCD Triple Overhead



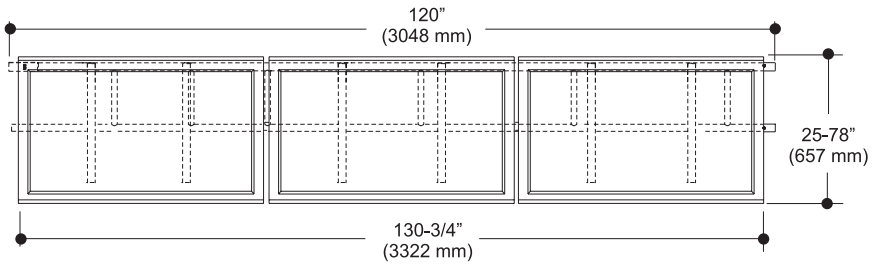
46" LCD Single Overhead



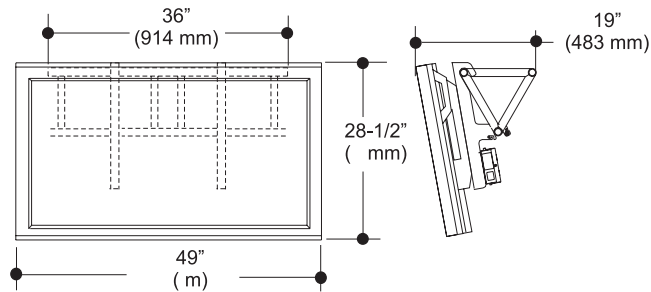
46" LCD Double Overhead



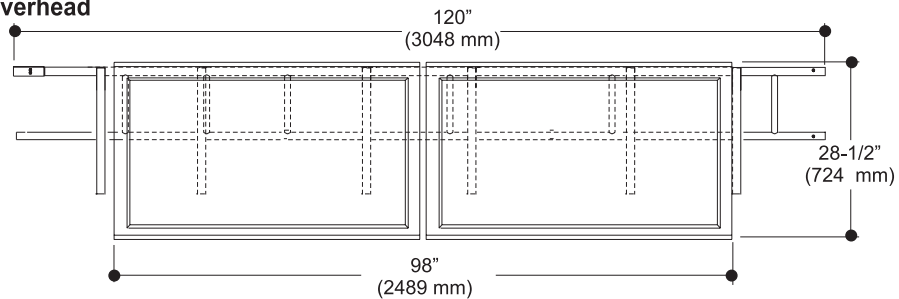
46" LCD Triple Overhead



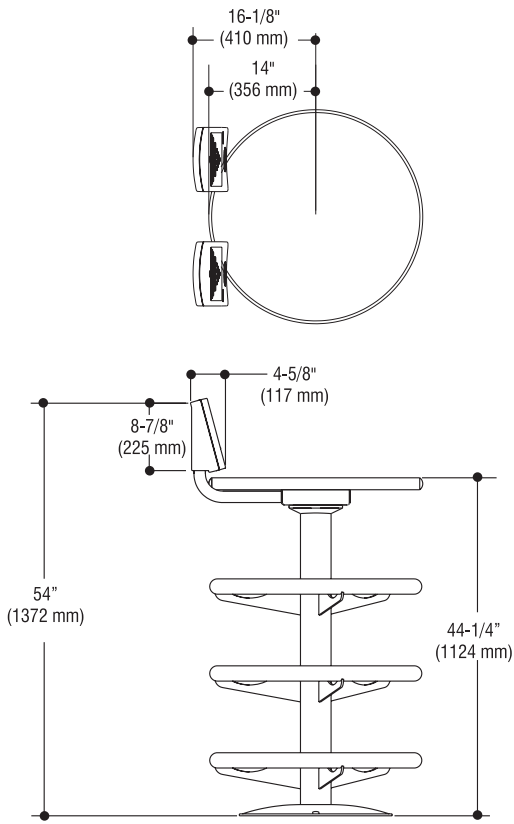
55" LCD Single Overhead



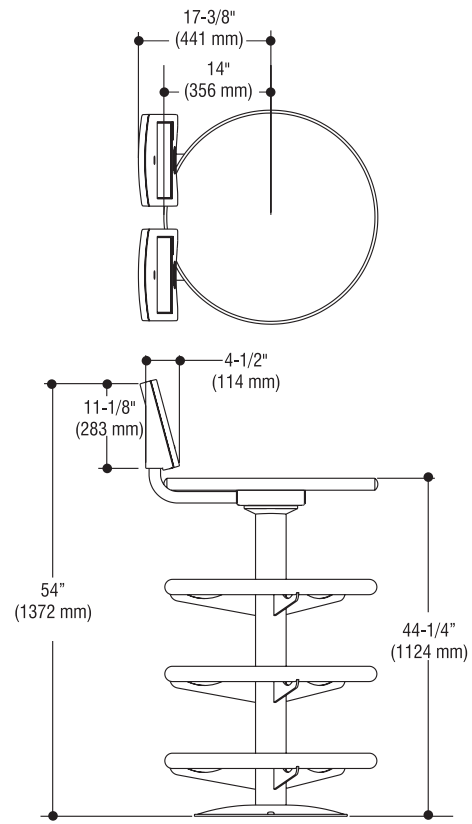
55" LCD Double Overhead



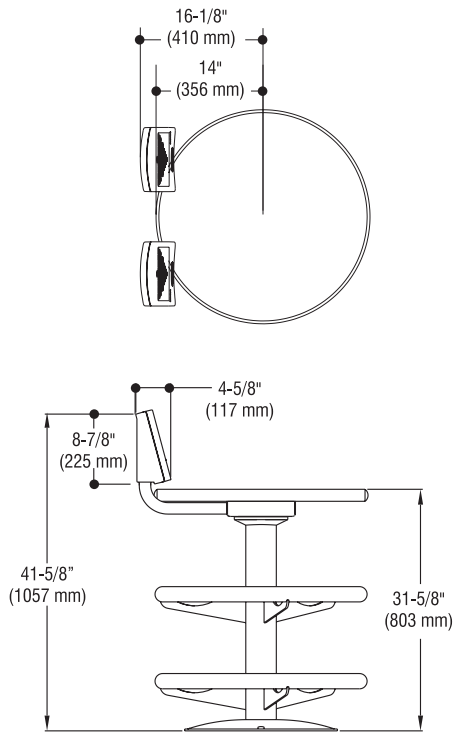
CIRCULAR BALL RACKS



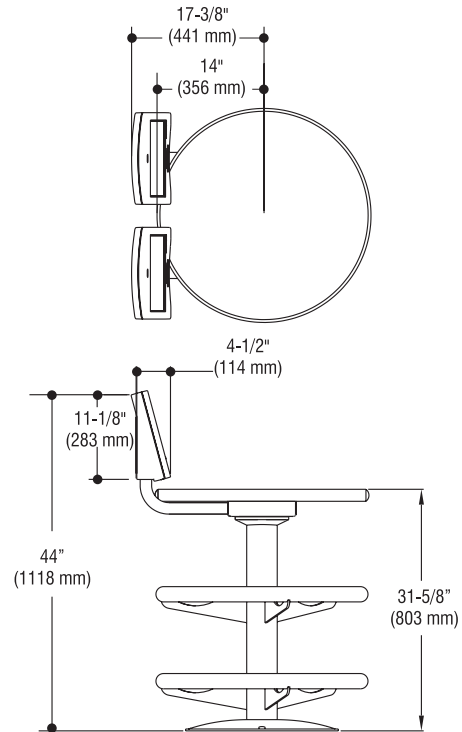
3 Tier Ball Rack with Bowler's Keypad



3 Tier Ball Rack with Bowler's Touchscreen

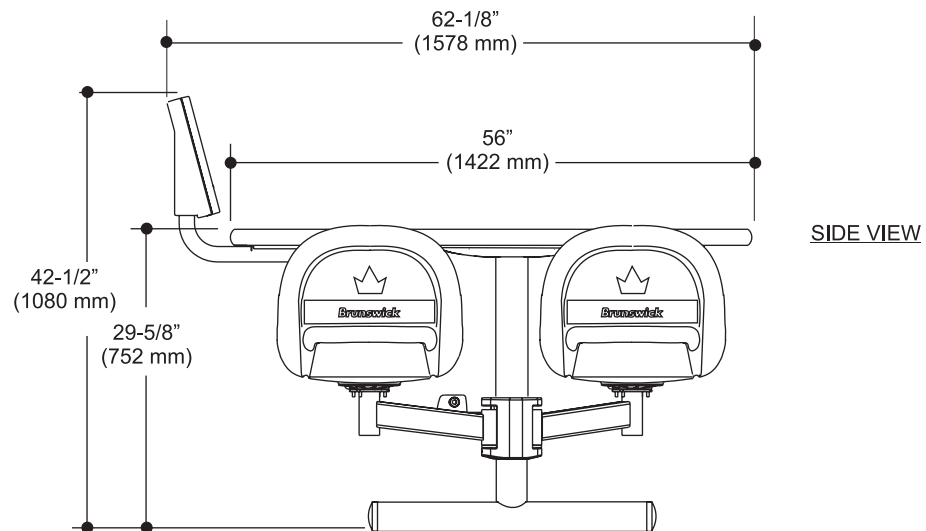
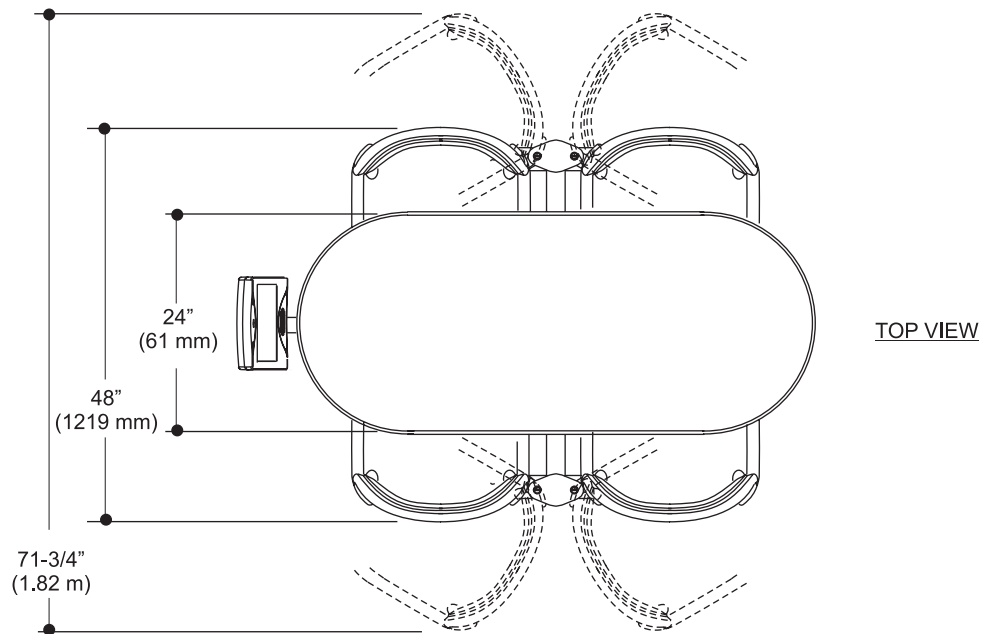


2 Tier Ball Rack with Bowler's Keypad



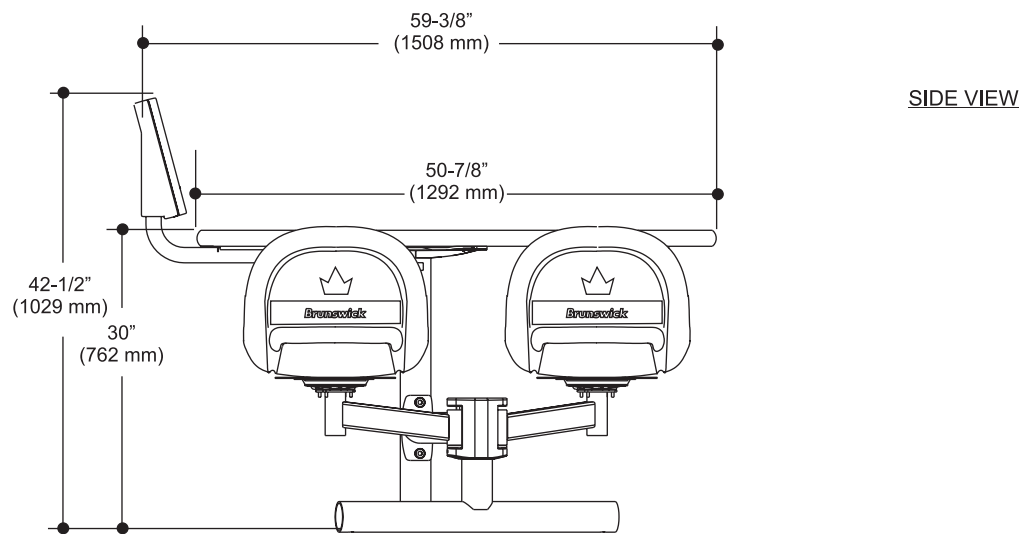
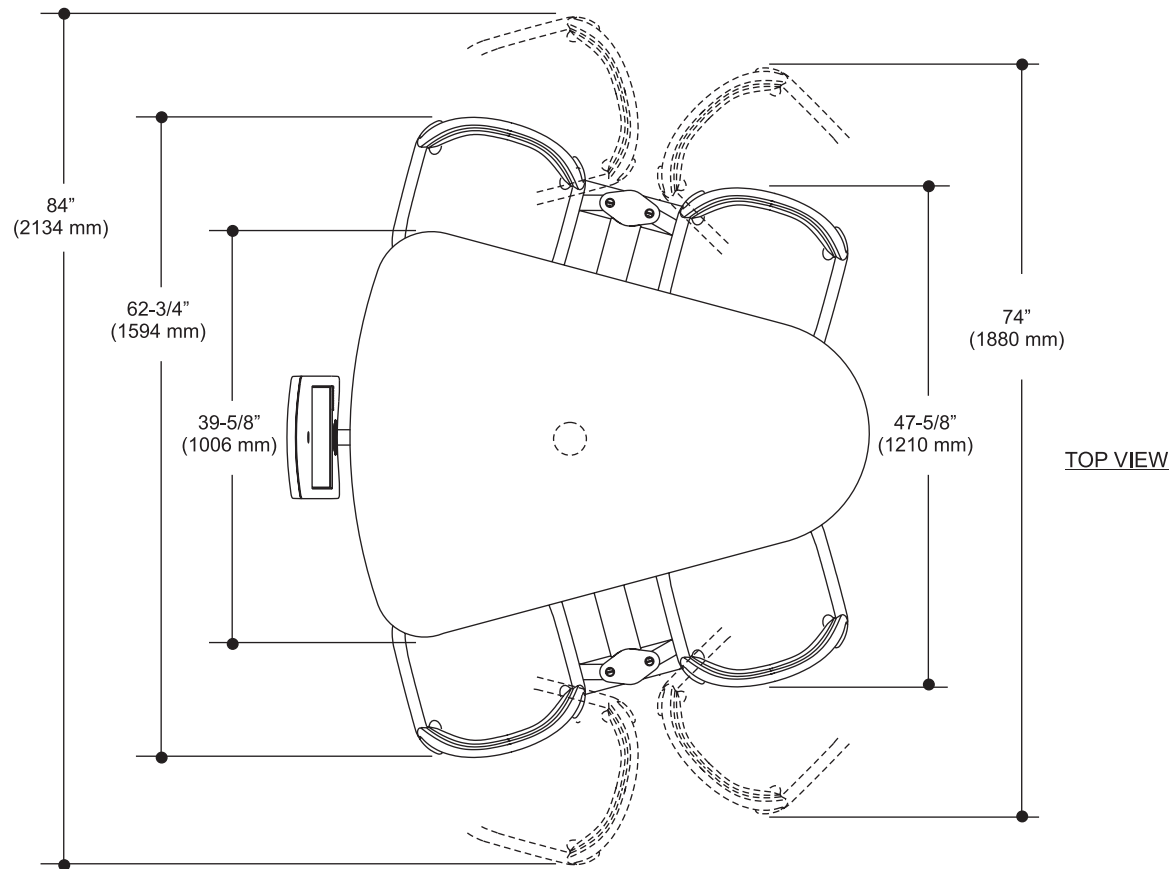
2 Tier Ball Rack with Bowler's Touchscreen

OVAL TABLE



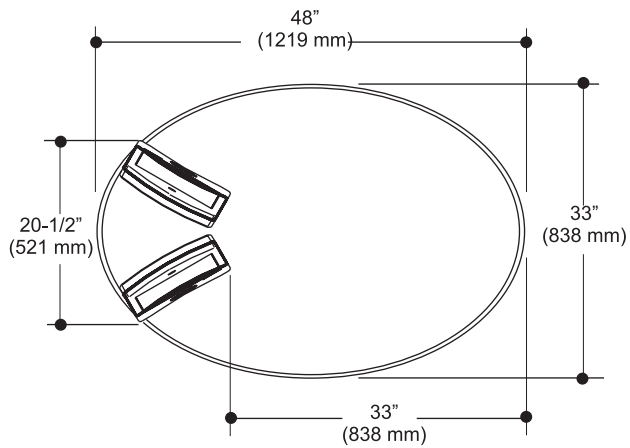
Oval Table

TRIANGLE TABLE

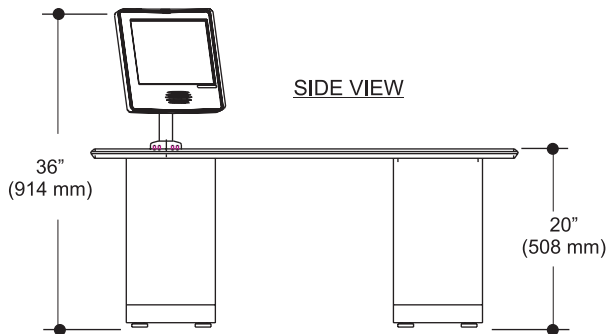


Triangle Table with Bowler's Touchscreen

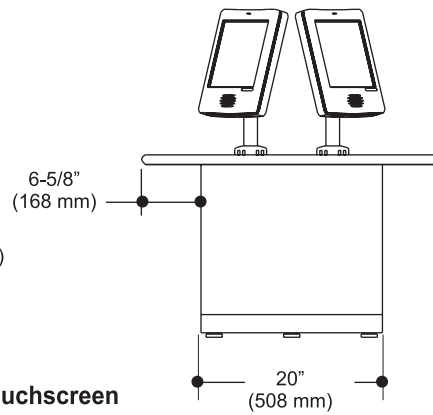
COFFEE TABLE



TOP VIEW



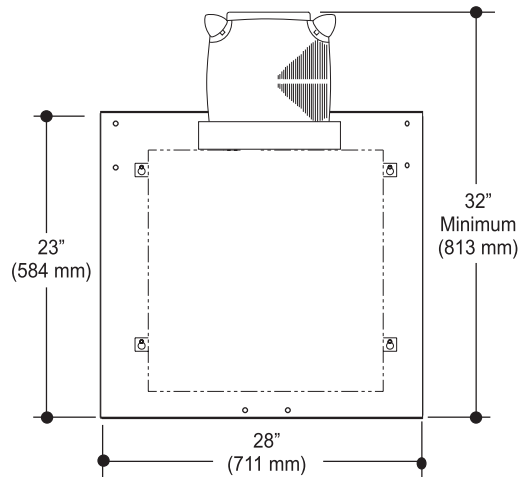
SIDE VIEW



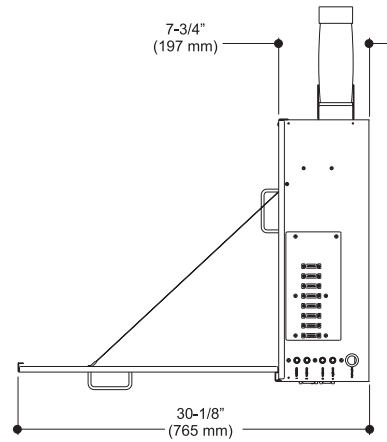
FRONT VIEW

Coffee Table with Bowler's Touchscreen

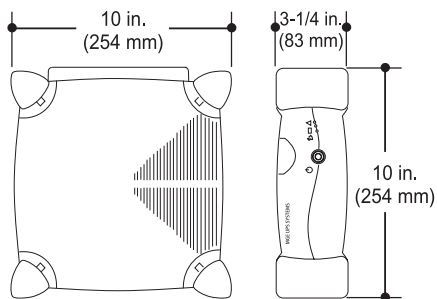
SCORING



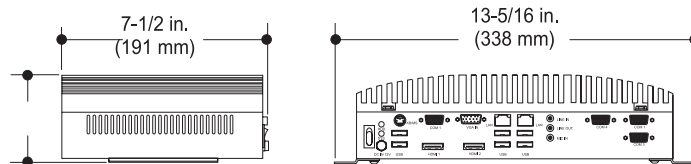
**Scoring Computer and
Curtain Wall Mounting Bracket**



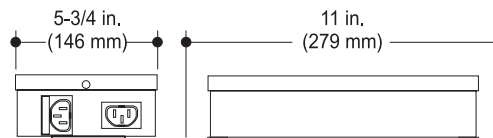
**Scoring Computer and
Side View with Access Panel Open**



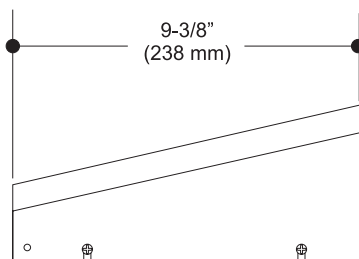
Uninterruptible Power Supply (UPS)



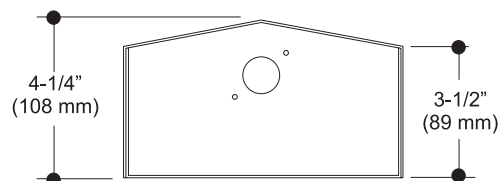
HD Controller



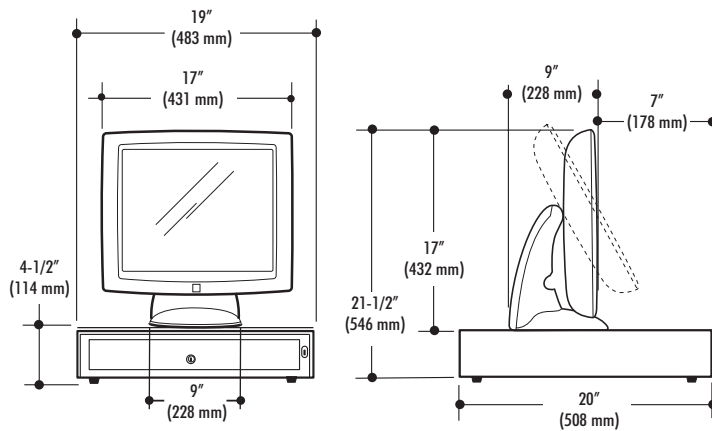
**HD Controller
Power Supply**



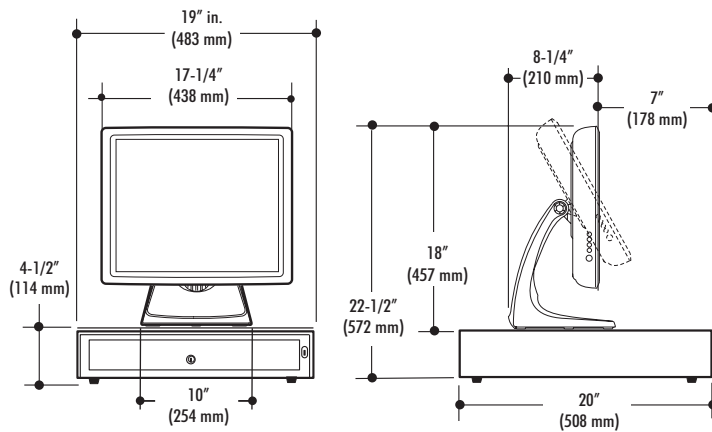
Camera



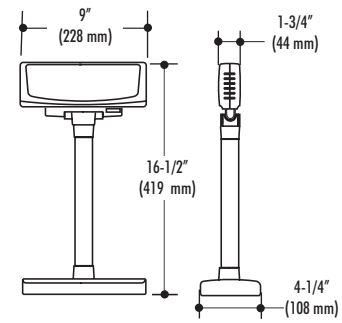
CENTER MANAGEMENT SYSTEM



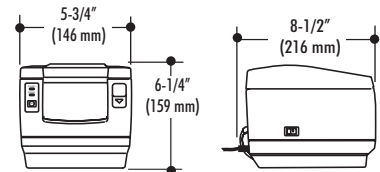
Optional 17" Touch Screen
Point of Sale Terminal and Cash Drawer



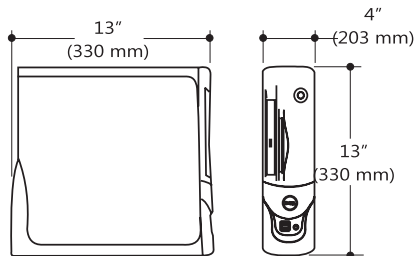
Optional 19" Touch Screen
Point of Sale Terminal and Cash Drawer



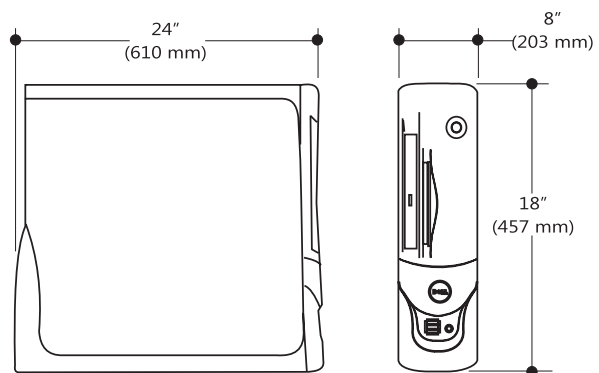
Customer Display



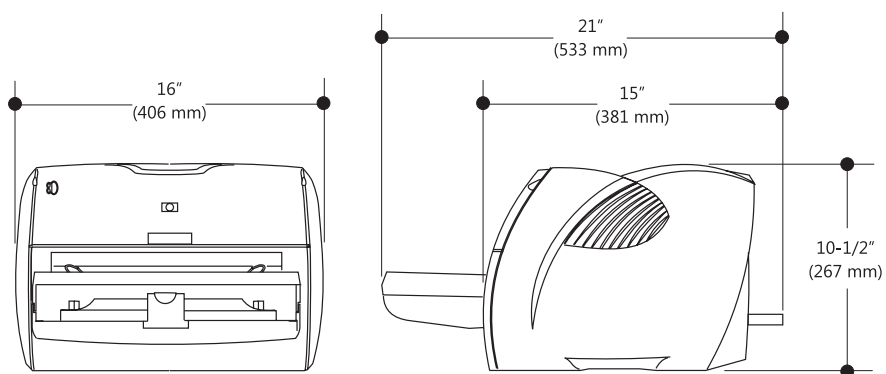
Receipt Printer



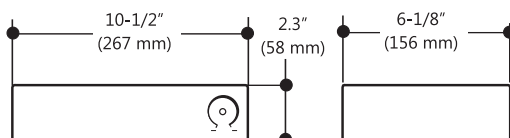
Client Computer



Server Computer

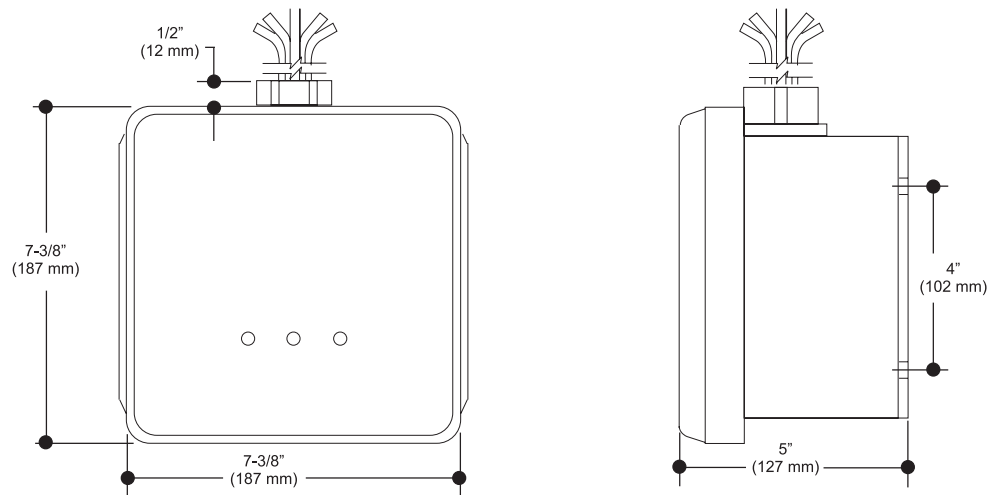


Scoresheet Printer

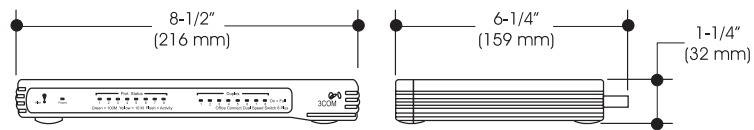


Audio/Video Interface Box

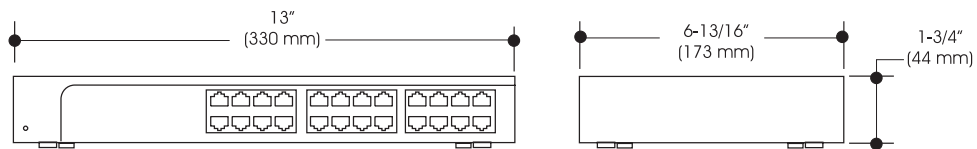
MISCELLANEOUS



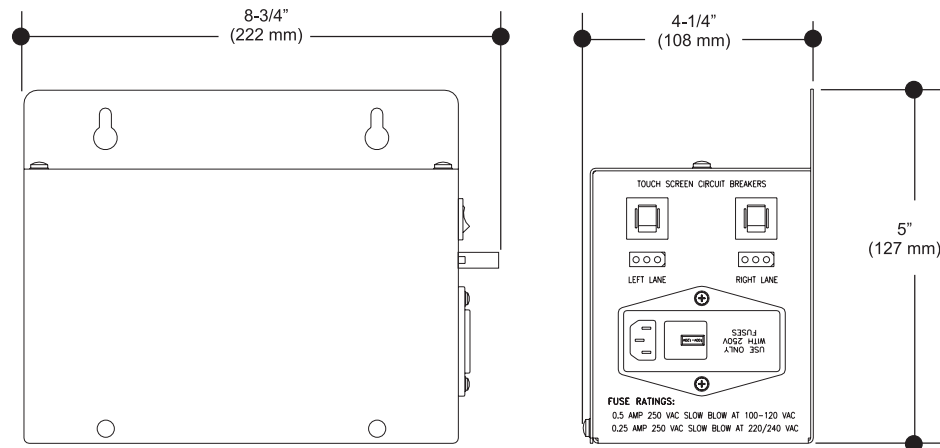
Surge Suppressor



8 Port Ethernet Switch



24 Port Ethernet Switch



LCD Touchscreen Power Supply

Intentionally Blank

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

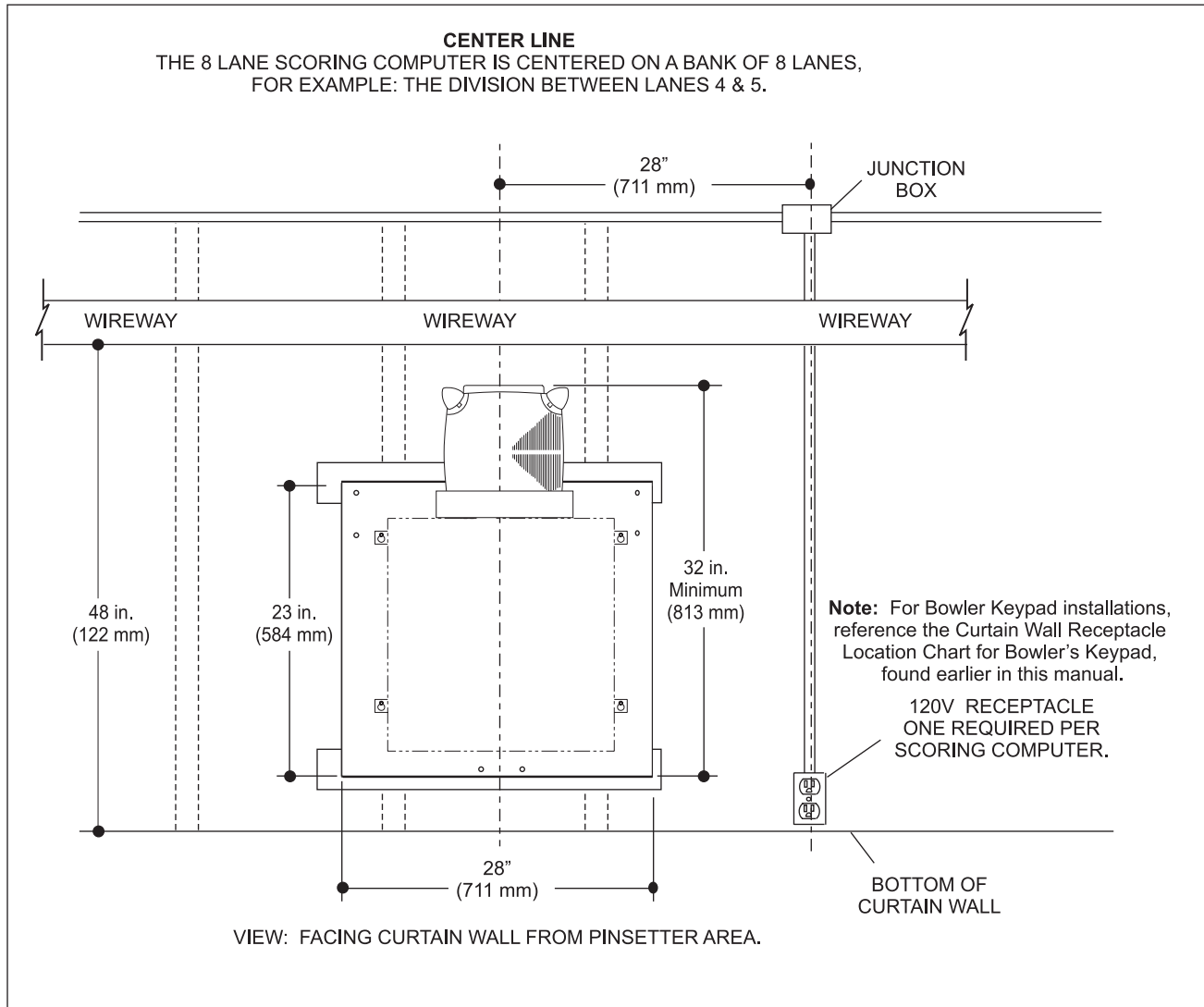
Signature

Title

Date

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

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

Brunswick® Wide Screen LED Overhead Video Display Structure Certification

NUMBER OF SINGLE WELDMENTS					NUMBER OF DOUBLE WELDMENTS					NUMBER OF TRIPLE WELDMENTS				
MONITOR SIZE	QTY	LBS	KG	TOTAL WEIGHT	MONITOR SIZE	QTY	LBS	KG	TOTAL WEIGHT	MONITOR SIZE	QTY	LBS	KG	TOTAL WEIGHT
32"		102.0	46.3		32"		135.6	61.6		32"		177.6	80.6	
40"		110.4	50.1		40"		159.6	72.5		40"		202.8	92.1	
46"		117.0	53.4		46"		174.0	79.0		46"		224.4	101.9	
55"		134.4	61.0		55"		180.0	81.7		55"	N.A.			
TOTAL					TOTAL					TOTAL				

Figure 1. LED and Wide Screen Structure Type.

i **NOTE:** It is the Brunswick salesman's responsibility to verify the quantity column(s) in Figure 1.

Certification & Release of Brunswick by Architect/Structural Engineer

I, by signing this document, certify to Brunswick Bowling & 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 the additional static weight for each LED Overhead Video Display unit as indicated in **Figure 1**. 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.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal

Date

Certification & 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 LED Overhead Video Display units selected in **Figure 1** 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 LED Overhead Video Display units indicated in **Figure 1**, 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 LED Overhead Video Display units indicated in **Figure 1** and 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

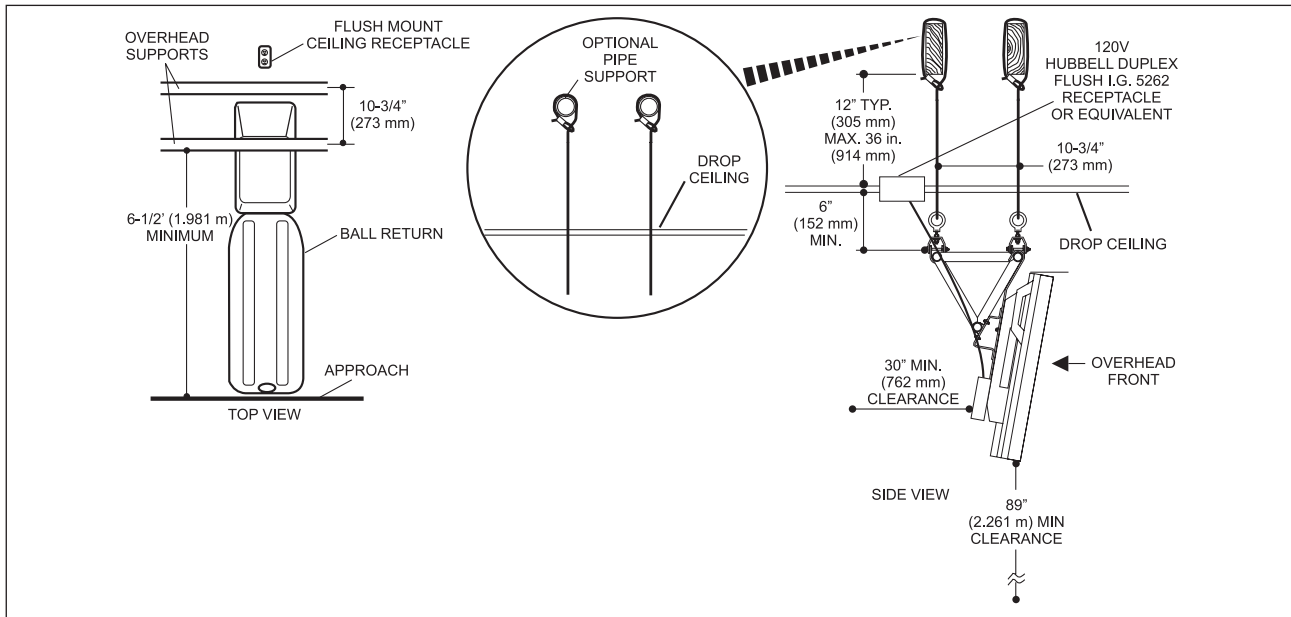
Title

Date

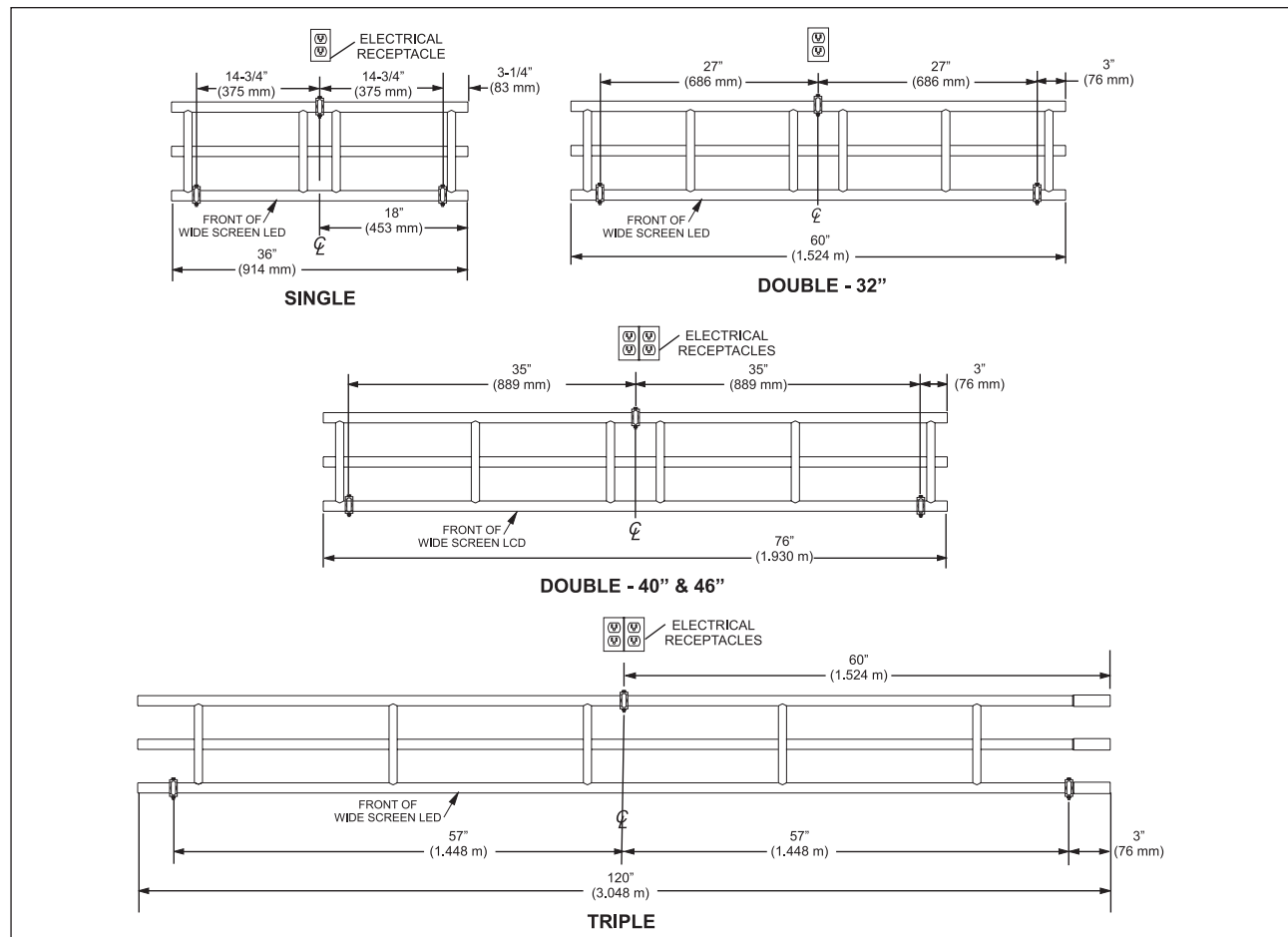
Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364

Wide Screen LED 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 weight actual/static per lane pair for up to triple overheads.



Side View



Top View

Brunswick® Customer Purchased Overhead Monitor Waiver of Liability and Hold Harmless Agreement

This Waiver of Liability and Hold Harmless Agreement (this “Agreement”) is dated as of _____, by and between Brunswick Bowling & Billiards Corporation, a Delaware corporation (“Brunswick”) and _____ (“Buyer”).

Recitals

WHEREAS, Brunswick and Buyer have entered into that certain Sales Contract No. _____ (the “Sales Contract”);

WHEREAS, Brunswick and Buyer have entered into that certain Installation Contract No. _____ (the “Installation Contract”);

WHEREAS, Buyer has requested that Brunswick permit Buyer to self-install the overheads monitors and hanging support structure purchased to the Sales Contract;

WHEREAS, Brunswick will permit Buyer to self-install such equipment, if Buyer agrees to indemnify Brunswick and waive any claims against Brunswick arising from or related to the installation of such equipment pursuant to this Agreement.

Agreement

FOR VALUABLE CONSIDERATION, the receipt of which is hereby acknowledged, Buyer hereby agrees as follows:

Buyer acknowledges that it has been advised by Brunswick as to the risks involved in self-installing overheads monitors and hanging support structure, and Buyer understands that it is solely responsible for ascertaining the proper installation, accepts the potential risks and waives any warranty claims on such overheads monitors and hanging support structure.

Buyer and its successors, and assigns, assume the entire responsibility and liability for, covenant not to sue, and will protect, indemnify, defend, and hold harmless Brunswick, its officers, directors, employees, agents, representatives, shareholders, insurers, subsidiary and affiliated companies, successors, and assigns from and against all liabilities, losses, expenses, costs, penalties, forfeitures, suits, actions, demands, pending or threatened claims, proceedings or their functional equivalent or causes of action of whatever nature or character as well as all related costs and expenses including, without limitation, reasonable attorneys' fees and court costs, made against Brunswick, its officers, directors, agents, representatives, employees, successors, or assigns for any reason whatsoever including, without limitation, any injury, death, monetary loss or governmental violation, actual or alleged, arising out of or resulting from the installation of the overheads monitors and hanging support structure by Buyer.

This Agreement shall be interpreted under the laws of the State of Illinois.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date and year first written above.

BRUNSWICK BOWLING & BILLIARDS CORPORATION

By: _____

Its: _____

BUYER

By: _____

Its: _____

