
BATTERBOARDS™
INLINE DASHER SYSTEM SPECIFICATION

The following pages contain specifications, for one of the safest, most durable board system made for an outdoor application. It is important to review the complete document and delete, or clearly mark, the features desired for your facility. The specifications are arranged to accommodate virtually every type of mounting system, assorted upper containment systems, and enhancement features such as independent handrails caps, and replaceable kickplates.

Only the unique design of the BatterBoard™ system provides the advantage for customers with an austere budget to install the BatterBoards™ without a separate handrail or replaceable kickplate. Some competitors frequently raise confusion about this issue stating that BatterBoards™ do not have a replaceable handrail and kickplate which simply is not accurate. These specifications permit you the option of stipulating the features needed for your particular client and their application. By including all of the features in the following specifications, all customers can receive the product they need to match their needs and budgeting allocations.

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ROUSTAN UNITED ARENA SOLUTIONS D/B/A DASHER SYSTEMS will complete custom design and layout drawings for your BatterBoard™ system which can be used in the procurement process at no cost to your organization. Standard drawings showing the basic design and assembly details can also be provided electronically in a PDF format. Should you have any questions regarding how to modify the attached specifications or if we can customize them for you, please do not hesitate to contact a Roustan United Arena Solutions customer service representative at 1-800-768-7826.

All persons or organizations with intention to use these documents for the purpose of procurement have automatic license from ROUSTAN UNITED ARENA SOLUTIONS D/B/A DASHER SYSTEMS to use any copyrighted documents for such intentions with any modification needed for the particular project.

PLEASE NOTE: *THE PRODUCTS DESCRIBED HEREAFTER HAVE BEEN DESIGNED TO FACILITATE THE INTENDED DUTIES FOR THE LIFE OF THE COMPLEX. NORMAL MAINTENANCE AND WEAR ARE TO BE EXPECTED, BUT THE SYSTEM IS DESIGNED FOR MINIMAL MAINTENANCE AND EASY REPLACEMENT OF THOSE PARTS WHICH MAY WEAR OVER THE YEARS, SUCH AS UPPER SHIELDING OR SCREENING, AND ALL DOOR HARDWARE; KICKPLATE AND HANDRAIL.*

GENERAL SCOPE: Roustan United Arena Solutions d/b/a Dasher Systems shall furnish, and at the buyer's option, install, to the required dimensions and facility requirements, one (1) entire BatterBoards™, high strength, resin composite alloy system. The entire BatterBoard™ panel shall be fully formed from the resin composite alloy material, including the facing and all structural support members in accordance with the specifications designated hereafter. BatterBoards™ are a Patented Product of Roustan United Arena Solutions Johnstown, Pennsylvania, telephone 1-800-768-7826.

The system shall encompass all mandatory features required of hockey activities in conformance with USA Hockey, and Roller/Dek Hockey International Association standards. In the event a conflict between such organizations' regulations exists, the owner shall specify which rules and requirements shall be followed by the dasher contractor.

All components shall be pre-engineered and pre-fabricated prior to delivery to the job site in order to allow immediate installation upon arrival at the project site.

Systems which require screws penetrating the facing for attachment, polyethylene sheeting, FRP sandwich panels, and wood materials, or systems which require separate steel or aluminum framing for strength, will not be acceptable and are strictly prohibited.

SUBMISSION FOR REVIEW: As the manufacturer, Roustan United Arena Solutions d/b/a Dasher Systems shall provide, upon receipt of order from the owner or duly authorized representative of the owner, a complete set of shop drawings, customized for the specific installation in reference. Drawings showing the entire structure and mounting design will also be made available on disk, or by E-mail formatted in AutoCAD 2000 and/or Adobe Acrobat Reader (.PDF) Format.

Detailed construction methods, materials used, and all matters referring to installation procedure will be clearly noted. All submittals must be presented to the owner for verification of dimensions and character of engineering prior to commencement of construction. Any changes from the drafted plans desired by the owner must be made in writing to the manufacturer upon receipt of submittal.

GUARANTEE: The quality of the materials and workmanship employed in the BatterBoard™ manufacturing process shall be new virgin materials of the finest grade available for the given component. Roustan United Arena Solutions d/b/a Dasher Systems guarantees the BatterBoard™ product line for three (3) years from the date of shipment. Any failure caused by accident, abnormal or non-recommended practices does not apply. Should tempered glass, acrylic, or polycarbonate be the selected options for the upper shielding, ROUSTAN UNITED ARENA SOLUTIONS D/B/A DASHER SYSTEMS cannot guarantee the shielding against normal glass breakage. Guarantee is null and void to any party other than the original owner.

QUALIFICATION OF SYSTEM: All designs must be from sound engineering practice accepted within the Ice & In-Line Hockey Rink, and/ or Soccer Industry in strict compliance with the specifications of Roustan United Arena Solutions d/b/a Dasher Systems. The dasher manufacturer shall produce, upon request of the owner, no less than ten (10) references of successful dasher installations performed by the contractor.

SAFETY FACE DESIGN: The system must feature a safety face panel design meaning that no screws or fasteners of any type are permitted to penetrate the facing system in the fabrication process. Any system which does not feature a safety face panel design will not be accepted.

All sub-components incorporated into the construction process must have a successful field performance for a minimum of five (5) years. Products shall be manufactured as represented on Roustan United Arena Solutions d/b/a Dasher Systems promotional literature and/or in the proposal drafted to the owner. Manufacturer must have proper representation in the job region in order to provide prompt service to the owner if and when required. All manufacturing must be accomplished in the United States. Any deviation from the specifications shall be made apparent and approved by the owner prior to commencement of construction.

MANUALS AND SUPPORT: Contractor will supply detailed manual and complete system drawings illustrating the entire process of installation, inspection, and maintenance of the BatterBoard™ system. This information provides an easy-to-follow guide for the entire installation process should the owner decide to self-install. The entire system is designed for easy installation by in-experienced personnel.

SHIPPING: Shipment of the dasher system and components shall be in a protected manner to prevent the system from dirt contamination during transit.

SYSTEM OPTIONS TO BE DETERMINED BY THE OWNER

The following specifications include all of the options summarized under this section. Depending on the intended use, the owner shall select the system that best meets their operational requirements. These primary system options include:

INDOOR OR OUTDOOR

BatterBoards™ are designed for indoor or outdoor applications in the harshest extremes of temperature or sunlight. Unlike other manufacturers' systems, the indoor or outdoor use is not relevant with the selection of BatterBoards™.

MOUNTING CONFIGURATIONS - Flush Mount or Elevated Design.

Flush Mount Design: Flush mount design is to be provided by the contractor when surface DOES NOT include a plastic In-Line floor system, or a soccer turf which would extend beneath the bottom of the BatterBoard™ system. The flush mount design is used for uncoated concrete or asphalt floors, or floors which have an acrylic, urethane, or like coating applied to them. Flush mounted BatterBoard™ shall be designed to permit rainwater runoff from the playing surface.

Elevated Design: The contractor will provide elevated BatterBoard™ installations whenever a plastic in-line floor is used on the playing surface. The system shall be suspended in the air creating a gap of approximately 3/4", or that dimension as specified by the owner, to provide free movement of the flooring system. The entire board will be suspended on the main support posts without the need to shim underneath the BatterBoard™ panels. The mounting configuration will be designed to provide the required amount of travel space for the expansion and contraction properties of the flooring used for the project. Unless otherwise specified, a travel distance of 4" will be provided from the inside edge of the BatterBoards™, to the support post located behind the BatterBoard™ panels.

This project shall be installed with a _____ type mounting system. (Insert Flush or Elevated Mount)

MOUNTING METHODS: BatterBoards™ will be equipped with an assortment of mounting methods for the easy adaptation to any pre-existing site condition. These standard installation options include:

- 1) Concrete Curbing/Slab Mounting
- 2) Concrete Pier Mounting
- 3) Direct Fence Mounting
- 4) Direct Wall Attachment
- 5) Portable - "Fold-In/Fold-Up" Mounting Brackets
- 6) Custom Mount - Available for Unique Applications

This project requires the mount to be in accordance with the specifications for Item _____ as noted above and further detail below.

UPPER CONTAINMENT SYSTEM OPTIONS

BatterBoards™ will be provided with one of the following upper containment system options.

- A) None
- B) Support Posts Only (owner to supply upper containment system)
- C) High Strength Netting Containment System With Support Posts
- D) Vinyl-Coated Fence With Support Posts
- E) Acrylic Shielding With Aluminum Glass Supports
- F) Tempered-Glass Shielding With Aluminum Glass Supports

This project requires an upper containment system in accordance with the specifications for Item Letter _____ as noted above and further detail below.

MATERIAL PROPERTIES: BatterBoard™ resin composite alloy shall be thermal, and UV stable. The material shall remain free from warping, swelling, rotting, or corrosion over the entire life of the product. The BatterBoard™ alloy shall be impervious to atmospheric conditions and solid white in color. The BatterBoard™ alloy shall contain no less than 80% glass reinforcing mass volume.

Tensile strength of the alloy shall be no less than 30,000 psi in accordance with ASTM D638, which is 4.6 times stronger than 3/8" polyethylene-type systems. Coefficient of Thermal Expansion shall be no more than 2.9×10^{-6} in accordance with ASTM D696. Linear thermal expansion shall not exceed 0.0025" per 8'-0" linear feet of BatterBoards™ subject to a 75 degree F. temperature change. Polyethylene does not comply with this requirement and shall not be accepted.

The material shall provide performance characteristics which make it ideal for outdoor direct sunlight applications without deterioration, and loss of structural properties resulting from UV Exposure.

The low expansion properties of the BatterBoard™ material shall be such that no waving, buckling, or visible movement of the structure will occur during the hottest weather day. Nor, will the system shrink during the coldest weather day, which would create visible gaps between each BatterBoard™ panel.

The material will provide durable, low-maintenance performance. The BatterBoard™ alloy can be easily painted with commercially available paints, permitting logos to be directly painted to the panels, and/or complete system painting for re-conditioning after many years of service.

ONE PIECE BATTERBOARD™ PANELS: All panels shall be manufactured in nominal 10' sections, wherever possible, in order to permit portability of the entire system and allow for interchangeability of the dasher panels. Each panel shall weigh 118.50 lbs. Panels of custom length can be provided under special request by an owner if required for storage applications. This feature shall also include curved and door sections (no radius doors available with this system). Non-standard length panels shall be used only where rink dimensions require.

Each BatterBoard™ panel frame shall be one completely integrated part, including all horizontal structural members located outside the panel, as well as the panel itself. Each panel will have six horizontal integrally-molded structural members, evenly spaced on the 42" high panel for strength. Each structural member will be 2" wide x 1/4" thick, running continuously on the entire system. The top member will be configured in a "U" shape providing a finished, integrated handrail. One member located 8" from the top of the panel, and one member located 8" from the bottom of the panel, will feature a 2" wide x 1/4" "T" flange, which runs continuously and is integrally molded with the respective structural member. BatterBoard™ panels attach to each other and to the support member by means of the "T" structural member and special BatterBoard™ mounting clips.

All panels, whether straight or radius, shall be fundamentally the same. Minimum radius dimension is 15'-0" with no reinforcing fasteners through face of material. Radii less than 15'-0" can be provided with fasteners.

Radius panels are to be shipped in prefabricated 10' standard sections. Radius panels are to be pre-fabricated with factory-made cuts in the horizontal structural members at a spacing which optimizes strength and assures a smooth radii interior contour. No stepping or mitered angles of the radius panels will be permitted. Steel tubing will be factory-rolled to the appropriate radius and factory installed in BatterBoard™ system radius panels only.

The steel tubing will be designed to snap into the pre-assigned formation of the BatterBoard™ system, thereby maintaining the correct radius dimension for easy installation. The method of installation shall require no more than 2 installers with common hand tools.

The steel tubing used for this process shall be 1-1/4" square 14 gauge carbon steel galvanized, after the rolling process with a coating of zinc not less than 2 ounce per square foot of surface area. These pre-rolled tube sections will span across the panel joints for assured panel alignment.

BATTERBOARD™ MOUNTING CLIPS: A pre-formed steel mounting clip will attach the panels together and to the main support post in one simple operation without any fasteners required from the playing surface. The playing surface is to be totally free of fasteners including any recessed, or countersunk fasteners (except radii panels less than 15' - 0", when required). The BatterBoard™ profile in combination with the BatterBoard™ clip shall provide solid mounting from behind the structure only.

The clip shall be manufactured from 3/32' flat stock steel into a precision pre-formed clip, 4" wide x 3-5/8" high, which fits snugly beneath the "T" support of each BatterBoard™ panel. Two clips are used for each upright support post. After being formed by a CNC machine, each plate is punched with two (2) holes (5/16" dia. each) for the press studs and a 3/8" x 1-1/4" slotted hole for mounting to the main support post. After plating of the mounting clip, two (2) press studs (5/16" dia. each) are fitted to the finished clip. The custom-made press studs are threaded for permanent installations, and smooth with a locking pin hole for portability.

The press pins become permanent to the mounting clip eliminating the need for two wrenches for tightening. These same clips without press studs are used for intermediate and radius support posts.

All bolts are to be of aircraft grade for maximum strength possible. Nylon fitted lock nuts and SAE washers of 5/16" are used for permanent installations to avoid loosening with use.

VERTICAL MOUNTING POSTS: Vertical steel supports shall be located at each end of the BatterBoard™ frames and at 5' intervals on the dasher frame and at vertical midpoint of each frame. Each support post shall be manufactured from 2 x 2 resistance-welded carbon steel tubing for acrylic, tempered glass, or puck-proof poly upper shielding systems. Support posts shall be manufactured from 2" SCH 40 handrail grade steel pipe for fence and netting upper containment systems. Two (2) sets of holes, 3/8" diameter, shall be pre-drilled through the supports for attachment of the BatterBoard™ mounting clips.

Two (2) 5/16" UNC x 3" hex bolts shall be used to attach the mounting clips to the main support posts with the use of 5/16" SAE washers and 5/16" UNC hex lock nuts. The foot plate mount shall be predicated on the type of mount required for the application.

OPTION 1 & 2:

MOUNTING METHOD FOR CONCRETE FLOORS: For Flush or Elevated mounting methods, a steel footplate shall be mounted 5'-0" on center. Door sections shall be equipped with these mounting plates on each side of the door panel in addition to the standard 5'-0" on center support spacing.

Each main support post shall be equipped with a three (3) hole, minimum 3/16" thick, triangular, steel base plate reinforced with a 3/16" thick steel gusset.

Floor drilling for anchoring of each base plate shall occur at the time of installation in order to assure proper alignment and elimination of damage to the concrete curb. Hole placement in the steel base plate shall allow sufficient area to avoid cracking or damaging the concrete rink perimeter. Concrete expansion anchors producing a minimum tensile yield of 11,500 psi will be used.

OPTION 3:

DIRECT FENCE MOUNTING: For retrofit applications, BatterBoard™ panels shall be directly mounted to existing 2" dia. sch 40 steel fence support posts by means of direct through-bolting of the BatterBoard™ clips. Alternatively, 2" x 2" steel tube extensions may be attached horizontally to the existing fence post by means of a 1/4" UNC x 2-3/8" ID U-bolt. Opposite end of the 2" x 2" extension is through-bolted to a separate BatterBoard™ support. Two (2) extensions shall be provided per support. In this fashion, the BatterBoard™ panels shall be directly attached and contact the existing fence posts. Depending on the condition of the existing fence system, and location of fence posts, additional support of the BatterBoard™ system may be required. The system may be installed as a flush mount or an elevated application as described above. One or more of the other BatterBoard™ mounting methods described in this specification may be used for this purpose.

OPTION 4:

DIRECT WALL ATTACHMENT: In retrofit applications, BatterBoard™ panels may be directly mounted to existing concrete or concrete block walls, such as those constructed for roller rinks. A 2" x 2" x 14ga. steel tube support shall have two 1/4" thick x 1-1/2" x 3" steel mounting tabs welded in place to permit anchoring the steel support to the existing block wall by means of bolting to two 3/8" UNC female socket type epoxy anchors. Epoxy anchors shall be installed with screen tubes to retain the epoxy in hollow block walls, and shall be of a system designed by Hilti, Inc. or equal. Each tab shall be connected to the wall with 3/8" UNC x 1-1/4" hex tap bolts and 3/8" SAE washers.

The 2" x 2" steel support shall have two BatterBoard™ mounting clips, as described above, permanently riveted to the rink side of the support to permit the BatterBoards™ to be "hung" upon the mounting clips after the steel vertical supports are fastened to the block wall. A 1/8" thick steel shim shall be placed between the mounting clip and 2" x 2" steel support to allow sufficient tolerance for the BatterBoard™ panels to drop into place. The vertical steel support in this application shall not require a bottom base plate. The entire completed assembly shall be hot-dip galvanized for corrosion protection.

As previously described, the BatterBoard™ mounting clips attached to certain vertical supports shall feature two 5/16" press studs for location at each BatterBoard™ panel juncture to prevent separation of the panels. Between these locations, the mounting clips shall not require press studs. Vertical supports shall be located 5'-0" on center. If the system does not have an upper containment system, the owner may elect to attach a separate cap rail material over the existing concrete block wall cap to cover the 2" x 2" steel supports, and rest on the top BatterBoard™ handrail surface so as to completely conceal the steel supports.

When an upper containment system is required, vertical supports shall extend above the BatterBoard™ panel height as required for attachment of the containment material. See upper containment system sections for additional detail on support methods.

OPTION 5:

PORTABLE FOLD-OUT SUPPORT: For portable applications, the BatterBoard™ system shall be supported by means of a 1-1/2" x 1-1/2" x 3/16" thick square aluminum tube fastened to the upper Tee member on each BatterBoard™ panel by means of a swivel connector bolted to the tee member. Fasteners shall not pass through the face of the BatterBoards™, but shall only be attached to the rear structural members of the panel. The swivel connector and square aluminum tube shall be fastened to gather by means of a 1" x 1" stainless steel hinge, which will allow the tube to be positioned at an approximate 45 degree angle toward the floor. At the floor elevation, an additional 1-1/2" x 1-1/2" x 3/16" thick

square aluminum tube shall be connected to the first, angled section of aluminum tube in such a fashion that it will rest upon the bottom lip of the BatterBoard™ panel, running horizontally along the floor. On the bottom of the horizontal tube, a 1/4" thick x 1-1/2" wide white EPDM rubber strip shall be attached to increase friction, preventing the support assembly from sliding on the floor surface. Together, the two hinged aluminum tubes shall form a triangular structure when viewed from the side.

On the bottom lip of the BatterBoard™ panel, a 1-1/2" x 3/16" thick aluminum plate shall be attached to the BatterBoard™ panel by means of 5/16" UNC x 1" plough bolts from the underside of the panel lip. Fasteners shall not pass through the face of the BatterBoards™. The aluminum plate shall have two stainless steel hinges attached, to which an inverted U-shaped aluminum retaining bracket shall be attached. In the center of the U-Bracket, and attached to the 1-1/2" x 3/16" thick plate, a 3/8" dia x 2" long aluminum pin shall be located. A 1/2" dia hole drilled through the bottom horizontal aluminum tube described above, shall allow the tube to drop over the pin, holding the entire hinged support in a triangular shape, and keeping it from moving away from the BatterBoards™. The retaining U-bracket shall then fold down over the horizontal tube, keeping it perpendicular to the BatterBoard™ panel and locking the entire assembly into place. No additional fasteners shall be required for field assembly of the portable support structure.

The entire assembly shall create a rigid triangular shaped support which will not pivot, fold, or unlock once in place. For removal of the assembly, the above process shall simply be reversed. All components shall remain affixed to the BatterBoard™ panel, so that fasteners and support parts are a permanent, integral part of the support. The hinges described above shall permit the U-bracket to be folded up within the thickness of the BatterBoard™ panel, the bottom horizontal aluminum tube lifted from the retaining pin, and the hinged tube structure folded up into the upper portion of the BatterBoard™ panel. When retracted into storage position, the two aluminum tube sections shall pivot to a position parallel to the face of the BatterBoard™ panel, and simply clip into place for storage.

Portable BatterBoard™ supports shall be located 5'-0" on center around the entire circumference of the system. Where panels are adjoined, a loose BatterBoard™ mounting clip featuring press studs shall be placed in the top and bottom tee structures, as described above, effectively connecting and

OPTION 6:

CUSTOM SUPPORTS: In special applications where none of the above supports meet the full requirements of the installation, or where unique conditions require attention to additional design factors, the BatterBoard™ system shall be conducive to many varying support designs, mounting methods, etc. When required by the owner, the system shall be provided on a design-build basis.

FUSION LAMINATED HANDRAIL: Handrails shall be a color of the owner's choice. Standard colors for the handrail are red and blue.

BatterBoard™ systems shall be manufactured with a handrail material, which becomes integral to the panel itself. A weather-proof, impact resistant, resin epoxy shall be fusion laminated directly to the pre-formed BatterBoard™ panel for a handrail which becomes part of the BatterBoard™ panel. The fusion process is done on all BatterBoard™ panels during the manufacturing process to provide a completely finished product when arriving to the owner's site.

The handrail shall be manufactured to provide a consistent uniform color. The handrail will be fabricated 1" thick and 2" wide around the entire playing surface. The handrail will extend over the front facing as well as the back frame to provide a safe, finished, smooth surface. The handrail shall also be of such a design that no fasteners of any type will be required to hold it in place. It will become a permanent part of the BatterBoard™ structure by nature of the fusion process. The epoxy and fusion process will produce a surface 10 times harder and more resistant to wear than the polyethylene type handrail. Mechanically attached, separate handrail materials shall not be accepted.

The handrail can be easily and in-expensively re-coated/re-finished if required by the owner after many years of abuse and performance.

FUSION LAMINATED KICKPLATE: Kickplate shall be a color of the owner's choice. Standard colors for the kickplate are canary yellow and light blue.

BatterBoard™ systems shall be manufactured with a kickplate material, which becomes integral to the panel itself. A weather-proof, impact-resistant, resin epoxy shall be fusion laminated directly to the pre-formed BatterBoard™ kickplate for a kickplate, which becomes part of the BatterBoard™ panel. The fusion process is done on all BatterBoard™ panels during the manufacturing process to provide a completely finished product when arriving to the owner's site.

The kickplate shall be manufactured to provide a consistent uniform color. The kickplate will be fabricated 8" high standard around the entire playing surface. The kickplate will provide a safe, finished, smooth surface, which is extremely hard and abrasion-resistant. The epoxy and fusion process will produce a surface 10 times harder and more resistant to wear than the polyethylene type kickplates. Mechanically attached, separate kickplate materials shall not be accepted.

The kickplate shall also be of such a design that no fasteners of any type will be required to hold it in place. It will become a permanent part of the BatterBoard™ structure by nature of the fusion process. The kickplate can be easily and in-expensively re-coated/re-finished, if required by the owner, after many years of abuse and performance.

REPLACEABLE KICKPLATE (Optional):

For Indoor Applications:

Kickplate shall be manufactured of virgin, extruded, high-density polyethylene. Each kickplate shall originate from the same manufacturing lot to eliminate color variation. Color shall be by owner selection. Cell-cast or un-buffered polyethylene shall not be acceptable. Kickplate size shall be .220" thick x 8" wide x 120" long to assure coverage of the entire length of each dasher section. The top edge of each kickplate shall feature a 45-degree bevel to enhance even hockey-puck rebound and to prevent skaters from standing atop the kickplate.

Kickplate shall be fastened to BatterBoard™ systems using a 1/4" - 20 Phillips countersunk flathead machine bolt, 1/4" - 20 hex lock nut, and 1/4" SAE washer. Each screw head shall be factory painted to professionally color match the kickplate color. Plain zinc color, hand-painted, or poorly-matched screw color shall not be acceptable.

For Outdoor Applications:

Kickplate shall be manufactured of virgin polyester-based fiberglass sheet material. Each kickplate shall originate from the same manufacturing lot to eliminate color variation. Standard color is canary yellow. Acrylic based FRP material is not acceptable. Glass content of sheet shall be no less than 80% reinforced glass material. All glass material shall be manufactured for UV resistance and use processes, which will eliminate blooming with extended period of direct sunlight exposure.

Kickplate size shall be .1875" thick x 8" wide x 120" long to assure coverage of the entire length of each dasher section. The top edge of each kickplate shall feature a 45-degree bevel to enhance even hockey-puck rebound and to prevent skaters from standing atop the kickplate.

Kickplate shall be fastened to BatterBoard™ systems using a 1/4" - 20 Phillips countersink flathead machine bolt, 1/4" - 20 hex lock nut, and 1/4" SAE washer. Each screw head shall be factory painted to professionally color match the kickplate color. Plain zinc color, hand-painted, or poorly-matched screw color shall not be acceptable.

BOXES (optional):

Boxes for hockey play shall consist of the following:

- Two (2) team boxes
- Two (2) penalty boxes
- One (1) officials' (timekeeper's) box

Dimensions of the boxes shall conform to Roller and Dek Hockey International regulations, unless otherwise directed by owner. Protective shielding shall not be installed in front of team boxes; however, shielding can be installed behind, and on the divider panels between any or all of the boxes, and in front of the officials' box at the owner's request.

Team, penalty, and officials' benches shall be a minimum of 9-1/2" wide and of aluminum, or optional poly (indoors only), construction for durability. Bench supports shall be of welded-steel construction, hot-dip galvanized for corrosion protection. At owner's request, player benches may be located so as to provide an 18" wide, five inches (5") high, elevated "coaches' walkway" behind each bench.

All box floors shall be elevated to a total of exactly seven inches (7") above the rink floor. Box floor materials shall consist of hot-dip galvanized 2" x 4" x 14ga. rectangular steel tubing framework, with 3/4" thick, high grade, pressure treated, yellow pine, plywood flooring.

Plywood shall be fastened by Phillips countersunk flathead self-drilling, self-taping screws. Atop the plywood, a layer of 1/4" thick rubber flooring shall be installed in one (1) continuous piece, the length of the box. The use of wooden box floor framework shall not be accepted.

All players' box floors shall be totally portable for complexes, which require their removal.

STANDARD HEAVY DUTY SCOREKEEPERS TABLE: In the scorers' box, furnish and install one scorers' table. The table shall be constructed of heavy-gauge alloy identical to the alloy used for the BatterBoard™ system. Color shall be white. The table shall be 20" wide x 96" long (or as to confirm with officials' box size). Mounting shall be accomplished by support posts, which mount the BatterBoard™ system with mounting clips. Mounting shall be strong enough to eliminate the need for additional support legs on the front edges of the table where the scorer will sit.

LOCKABLE CONTROL BOX/TABLE (Optional): In the scorers' box, furnish and install one scorers' table with lockable scoreboard control-board compartment. The table shall be constructed of heavy-gauge steel to eliminate vandalism. The control-board compartment will have a sliding access door, which may be locked when the scoreboard is not in use. The compartment must be of sufficient dimensions to accommodate all commonly-used, scoreboard equipment. The table shall include a slanted writing surface adjacent to the control compartment for scorers' use.

Color shall be matched to the BatterBoard™ handrail. The table shall be 20" wide x 48" long. Mounting shall be accomplished by support posts, which mount the BatterBoard™ system with mounting clips. Mounting shall be strong enough to eliminate the need for additional support legs on the front edges of the table with the scorer will sit.

GATES: Gates are to be manufactured from 1-3/4" x 1-3/4" steel tubular inserts. All framing shall be fully welded at all intersecting joints and vented internally for effective internal and external galvanizing after fabrication. All frames are to be equipped with horizontal bolt tabs, which coincide with each horizontal structural support member of the one piece BatterBoard™ Panel. Each tab of the steel door framing will be bolted to the BatterBoard™ horizontal alloy material with the use of a 5/16" UNC x 1" hex bolts, 5/16" SAE washers, and 5/16" UNC hex lock nuts. The material that faces the door framing shall be the same material as the BatterBoard™ framing.

BatterBoards™ design will permit installation of a door at any position within a straight panel in the system. Standard door widths in boxes shall be 30". Standard access gates in all other areas shall be 36" wide; however, owner may select optional 48" or 60" gate widths for specific gate locations. Equipment gates shall be double-door style providing a 10'-0" opening. Hinges on personnel gates shall be removable, full-length, lift-off hinges bolted to both the door and dasher frame for simple adjustment. Hinges shall feature a corrosion-proof UHMW bearing and zinc electroplated steel components for long life. *Welding of hinges to frame and door shall not be acceptable.*

Equipment gates shall have two (2) heavy-duty, strap hinges per gate. Hinges shall be bolted to the dasher frame and gate to permit simple field adjustment. Equipment gates shall have a sliding bar closure manufactured from 2" x 2" x 14ga. rectangular steel tubing with a removable, large-grasp handle for easy operation. Chains with binding closures or "barn door" closures shall not be acceptable. Equipment gates shall be manufactured from the same material as standard BatterBoard™ panels.

Fabricated latch assemblies shall be welded for strength. Spot welding on fabricated materials shall not be acceptable. All man and player gates are to be supplied with a heavy-duty, double lift-latch closure, which self-latches when the door closes. Minimum accepted steel component thickness shall be 1/4". All latches must have a large-grasp handle for ease of operation for persons wearing hockey gloves. The handle shall be welded in a vertical position for simple use. Single lift latches shall not be acceptable.

Threshold height is as follows:

Players' gates (30") - Eight (8) inches above the floor
Access gates (48" & 60") - 2-1/4" above the floor
Equipment gates (60" & up) - 2-1/4" above the floor

NOTE: Gate-threshold heights shall be adjusted accordingly when a recessed rink floor design is required.

SPECIAL PANELS (Optional): Special panels specifically sized for location of soccer goals, special access areas, etc., shall be made at the owner's request. Panels shall extend the full length of the opening required, without the need for additional adjustment. Location of special panels shall be per owner's instruction.

ACRYLIC PROTECTIVE SHIELDING SYSTEM (Option 1): Acrylic shielding shall be casted clear, smooth, colorless, and free of distortion. Material shall be of 1/2" thickness around the entire rink perimeter. Changes in acrylic thickness will be made only at owner's request. Continuous-cast acrylic or other similar materials are not acceptable. Acrylic shall be Acrylite GP or equivalent.

All acrylic panels shall be factory-cut to the specific dimensions required. Panels shall be shipped to the site with protective lamination undisturbed, and the laminate shall not be removed until the time of actual installation to prevent scratching or damage to the material. In those locations where a change in protective shielding height occurs, the acrylic shall be cut at an angle so as to create a smooth transition between the two (2) height dimensions.

Acrylic panels shall be installed in nominal 5'-0" wide sections and shall not extend over the junction of dasher panels. Non-standard acrylic panels shall not exceed 65" in overall width. The entire protective shielding system shall be mounted on the rear side of the handrail as required by USA Hockey and Roller/Dek Hockey International regulations.

TEMPERED-GLASS PROTECTIVE SHIELDING (Option 2): Tempered glass is to be clear-casted safety glass. Glass shall be free of distortion, wavering, and warping. All glass shall have sufficient impact strength for the hockey-rink application and shall meet minimum specifications of ASTM C 1048-85, ANSI Z97.1-1984, and CPSC 16 CFR 1201 standards for safety-glazing material.

Glass shall be 12mm (1/2") thick around the entire rink perimeter. Other glass thicknesses shall be supplied at the request of the owner. Each lite shall have smooth edges free of sharp or jagged areas and shall have the top two (2) corners "nubbed" to reduce chipping and breakage. Glass shall be cast true to size in accordance with requirements of the project, with all lites ready for immediate installation upon arrival. Lites of glass will be supplied in nominal 5'-0" widths, except where non-standard panels are required. Non-standard lites shall not exceed 65" in width. Glass shall not extend over junctions between dasher panels. All tempered glass must be shipped to the site in specially-packaged crating intended to protect the glass from breakage and shall remain in such crating until the actual installation occurs. Heat-treated glass, unfinished edges, and distortion in the surface shall not be acceptable. In those locations where a change in protective shielding height occurs, the tempered glass shall be cast at an angle so as to create a smooth transition between the two (2) height dimensions.

NOTE: Acrylic or tempered-glass heights shall be _____ on rink ends, and _____ on rink sides. Glass locations and sizes shall be confirmed by the owner.

ALUMINUM GLASS SUPPORTS FOR ACRYLIC AND TEMPERED GLASS OPTIONS

ONLY: Aluminum glass supports shall be extruded aluminum alloy 6061-T6, H-Channel Glass Support, or equal. Construction of the glass support shall incorporate a basic H-Channel design. The aluminum must actually hold the cushion in place in such a fashion that it cannot fall out during transportation or glass removal. H-channel aluminum glass supports shall be attached to 2" x 2" BatterBoard™ supports, which shall extend above the BatterBoard™ panel for this purpose. Attachment shall be made with machine screws.

Specially-formulated, thermoplastic, glass cushions shall be installed in the H-Channel portion of the aluminum glass support in lengths equal to that of the support. These inserts shall firmly hold the glass panel in place while eliminating all contacts between glass and aluminum. Glass cushions which do not cover the entire inside surface of the aluminum support, those materials which become rigid at cool temperatures, cushions which are susceptible to stress

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cracking and/or moisture absorption, and materials which fatigue over time shall not be acceptable.

Glass supports shall be delivered to the job site pre-assembled, ready for immediate installation. Each glass support shall extend to within six inches (6") of the glass height. **Weak supports which must extend within one inch (1") of the top of the glass shall not be accepted.**

BOTTOM CHANNEL: Acrylic shielding installations shall have a special 1" x 1" x 1/8" aluminum C-Channel installed at the handrail elevation to prevent excessive flexing and potential breakage of the acrylic. The bottom channel shall extend, in one (1) continuous piece, from one (1) glass support to the next, and shall actually insert into the aluminum, glass-support frame for a finished appearance and maximum safety. Bottom channels which leave sharp, exposed edges do not extend as a continuous section, and/or do not fit into the glass support as described shall not be acceptable.

NOTE: Bottom channel is not required on tempered glass installations as this material is more rigid than acrylic and will not flex in the same fashion. Tempered glass must be able to move slightly upon impact in order to transfer shock to the glass supports and thus reduce breakage.

VINYL COATED FENCING (OPTION 3): Fencing shall be supported by means of a 2" dia. Sch 40 steel pipe support attached to the dasher at a nominal 5'-0" on center. Each pipe support shall extend from the base of the dasher to the full height of the fencing. Each fence support post

shall be attached with two (2) BatterBoard™ mounting clips in the same fashion previously described for vertical support posts. At door sections, a special steel tube fence support shall be mounted to the gate without interference with the operation of the gate. Special corner support posts shall be made to allow the fencing to turn corners at box areas, as required.

Chain link fence fabric shall be 2" x 2" extruded bonded vinyl mesh, (8 gauge) PVC coated. Fence shall meet/exceed ASTM #F-668 (class 2A specs). A 1-5/8" diameter PVC coated top and bottom horizontal member shall be installed between the 2" dia. vertical supports around the entire rink perimeter. Fence fabric shall be installed in maximum 50'-0" lengths and pulled tightly with a tension bar at each end of each fence section. Fencing shall be installed in front of the 2" dia. pipe supports, so that the fencing appears continuous from the rink proper. PVC coated metal fasteners shall be used to attach the fence to the vertical and top horizontal members. Fasteners will be located at a minimum of 1'-0" on center along both horizontal and vertical pipe support posts.

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The bottom of the fence fabric shall extend a minimum of 1" below the handrail level for safety. All fasteners and components used to assemble the fencing system shall be installed in such a fashion that no sharp or dangerous surfaces are exposed to the rink side of the dashers. Components shall be turned so that they are exposed to the back side of the boards. Any point where the fence must be cut to fit, there shall be no sharp wire ends exposed. The cut wire shall be removed from the fabric.

Height of fencing shall be _____ on rink ends, _____ on box side, and _____ on opposite side.

CONTAINMENT NETTING SYSTEM (OPTION 4): Netting shall be supported by means of a 2" dia. Sch 40 steel pipe support attached to the dasher at a nominal 5'-0" on center. Each pipe support shall extend from the base of the dasher to the full height of the netting. Each netting support post shall be attached in the same fashion previously described for vertical support posts. At door sections, a special steel tube support shall be mounted to the gate without interfering with the operation of the gate. Special corner support posts shall be made to allow the netting to turn corners at box areas, as required.

Two 1/4" diameter holes shall be drilled though both walls of each pipe support; one located 1/2" from the top of the support, and the other 1" below the handrail elevation. A 1/8" dia. clear coated aircraft wire shall be inserted through the holes at top and handrail elevation in maximum 50'-0" lengths. Each length shall be drawn tight with 1/4" UNC turnbuckles.

Protective netting shall be installed using nylon wire tires located on 1'-0" centers along both top and bottom aircraft wires. Nylon wire ties shall be installed 2'-0" on center at main support posts, to tie netting in at each support. All wire ties shall be installed from the rear of the dashers, so that no sharp tie ends are exposed on the rink side. All excess wire tie material shall be trimmed off. Netting shall be _____, manufactured by _____.

Height of protective netting shall be _____ on rink ends, _____ on box side, and _____ on opposite side.

INSTALLATION PROCEDURE:

- 1) The entire system shall be installed by the following measured established lines, and shall be perfectly perpendicular to true horizontal in all locations. Special attention shall be given to proper determination of radius locations. Complete system will be true level around the entire perimeter. Shimming shall be accomplished where necessary to effect the above.
- 2) Main support posts shall be sandwiched between adjacent dasher panels by through-bolting. All base plates shall be firmly anchored to the floor with concrete expansion anchors. Embedment plates or anchors are not acceptable. In the case where it is feasible to utilize existing dasher anchors, special modifications shall be made to the dasher panel design.
- 3) Coordination shall be made with the owner for location of all red and blue hockey lines.
- 4) After assembly, the entire system will be checked for strength and correct support throughout.
- 5) All gates and gate hardware shall be tested for proper anchor, smooth operation, and flush fit.
- 6) The installer shall be required to touch up any blemishes occurring during shipping, handling, and installation. All scraps, dirt, debris common to construction shall be removed from the job site upon completion. The entire dasher system shall be cleaned so as to appear as a new installation.
- 7) The entire dasher installation shall be performed under the supervision of the manufacturer or an authorized, qualified representative thereof to assure compliance with specifications.
- 8) The owner, or authorized representative of the owner, shall be present at the site upon completion of the installation to perform a final inspection and approval of the installation. Work not included within the specifications and/or not agreed upon in advance shall be performed only as a change order issued by the owner.

NOTE: Where the owner is given a color choice, the rink contractor shall make every good faith effort to obtain the material color selected. In some cases, however, the owner understands that certain colors or products may not be available at a given time, or may have extended delivery time requirements. The rink contractor shall notify the owner should such a situation arise, allowing the option of making another selection or accepting the extended delivery time necessary.