APPENDIX 2

HOCKEY5s BOARD ANALYSIS

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Overview

Hockey5s boards bring a unique and exciting component to the game; however they also bring logistical challenges.

The first step is to determine the purpose of the boards: Are the boards only there to keep the ball from going out of play? Or are they there to be a strategic part of the ball movement during the game? Nearly everyone participating in Hockey5s, speaks of the boards as if they are a strategic and integral part of the game that allows players to pass and hit the ball off of them.

If the boards are going to be incorporated into the game, it is important to develop a clear specification for tournament organizers to follow when providing the boards so there is a basic standard of consistency for the game.

Comparison of Current Board Specifications

Hockey5s specifications:

1.4 Boundary-boards with a height of 25 cm mark the side-lines and back-lines but not the goallines; the boards are placed against the outside of the lines.

Indoor specifications:

1.3 Pitch side-boards :

(a) mark the 36.00 to 44.00 metres long perimeter of the pitch

(b) are based on a square 100 mm cross-section

(c) the upright surface facing the pitch is inclined by 10 mm towards the pitch.

Side-boards must be made of wood or materials with similar physical properties. They must not have fittings or supports which are dangerous to players or umpires.

Summary of Hockey5s Board Characteristics

- Purpose → It is important to make clear the purpose of the boards. There was some discussion on whether the boards are solely there to keep the ball in play, or if they are instead to be used as a "6th man" that provides a good playing surface for strategic ball movement.
- **Uniformity** → to provide predictably and reduce risk of injury from uneven surfaces and trip hazards
- **Stability** → boards must be constructed so as not to fall over when struck with the ball or stepped on by players and umpires
- Safe Construction Materials → free of splinters, sharp edges, screws/nails, & hazardous chemicals
- Solidity/Resiliency → rebound/bounce of the ball is important need standard thickness and density so bounce is more consistent from one facility to another. This is especially important if the boards are to be used as part of the ball movement strategy of the game, rather than just as a retaining wall to keep the ball in bounds
- Vertical or downward angle of playing surface → boards should not lean backwards and create a surface that directs the ball to pop upwards when it strikes the boards. Ideal boards angle slightly downward towards the pitch to ensure the ball stays in play.
- **Height** → the 25 cm height specification seems to be an arbitrarily precise height that determines which lifted balls are kept in the pitch by the board & which are allowed to escape.
 - The board height should not be increased above the 25cm, as that height already creates many safety and financial challenges.
 - Perhaps the height dimension can be lowered to a height similar to indoor boards to provide for multi-use.
 - Or perhaps a range of acceptable heights can be provided so that tournament organizers can choose the best height to use with consideration of the standard construction materials available to them, as this may help reduce costs.
 - Umpires who did not do intensive pretournament leg workouts, reported sore thighs after the second day of matches from having to frequently lift their legs high as they repeatedly traversed the boards.
- Locking mechanisms or sheer pins → sections should not move independently of one another
- Ability to drain water → boards must not create a "swimming pool effect" when used on a
 water based pitch or during rain storms. A method is needed to automatically drain water
 under the boards, or otherwise provide an easy way to lift them to drain the water from the
 playing surface
- Water resistance → rain or water on pitch must not cause boards to warp or rot; wooden boards should be painted or treated with polyurethane
- Affordability → needs to be accessible to all countries and levels of hockey
- **Mobility** \rightarrow easy to disassemble and move away from the pitch
- Flexibility/Multi-use → ability to use the same boards both indoor and outdoor may reduce cost requirements on organizations

Special Circumstances

1 - **A large wind and rainstorm** created havoc between games on the first day of matches. The officials returned from the mid-day break to find the field drained of the water, but the sand from the sand based pitch had become suspended in the storm water and it left large mounds of sand against the boards as the water slowly drained below the boards. The sand had to be squeegeed and shoveled off the pitch to make the boards playable again. No photos were taken at the time, as the focus was on preparing the pitch for play, but the photos below provide some insight into the situation.



The rainwater lifted sand from the pitch and then deposited it against the boards in 5 - 10 cm high mounds as the water slowly seeped out under the boards. These photos were taken after a smaller overnight storm.



The picture on the left shows the remains after the sand was shovelled out of the corners.

The picture on the **right** shows the quantity of sand that was shovelled off the playing surface.

2 – **Heavy rain** during a match resulted in water pooling/ponding against the boards on one sideline. The side board became unplayable for a bounce, and one corner of the pitch became unplayable as the ball nearly floated in the water and the players splashed in the water. As the match was nearly complete when the rain became heavy, and there was no danger to anyone, the match was finished under these conditions. Eventually the rain stopped, but the pitch had to be cleared of water in order to start the next match.

The best solution for clearing the water was to use a strong shovel as a wedge to shove it under the boards and then to gently push down on the handle of the shovel which would act as a lever and lift the boards a couple centimeters off the pitch to allow the water to be squeegeed underneath the boards and off the playing surface. There was some concern that this method of using a metal shovel under the boards had the potential to damage the pitch beneath the boards which would damage the surface for the outdoor game when the boards were removed.

Montevideo, Uruguay - Design 2



- Specifications:
 - Constructed of wooden boards in a 3 sided box design
 - 25 cm high by approximately 25 cm wide
- Positives:
 - Boards were uniform so the trip hazard was consistent and easier to anticipate the only trips on the boards occurred during the pre-tournament fitness test when umpires were doing drills to familiarize themselves with traversing the boards
 - \circ $\;$ Very wide so players and umpires could stand or sit on them
- Negatives:
 - Bounce was not very resilient, so the boards did not play as much of a strategic part in the passing game as they might have with better boards.
 - Boards were all screwed to one another. As a result they could not be disassembled easily and it was very difficult to lift the boards to release water trapped against them.
 - The wide board design was labor and material intensive to construct
 - Should have been painted to protect against water which caused some boards to swell and a uniform solid paint color would have helped make the 11 meter marks stand out – two different colors of paint (red & yellow) were used to help the 11 meter marks stand out in changing sunlight conditions

Montevideo, Uruguay - Design 1



- Specifications:
 - Constructed of wooden boards, approximately 5 cm wide
 - Supported by triangle wooden brackets
- Positives:
 - o Boards are locked together which minimizes independent movement of sections
- Negatives:
 - Triangle supports create dangerous trip hazard
- Comments:
 - "The current design of the boards in Uruguay is not safe. The triangle supports create an unpredictability that requires umpires to look away from the match to ensure their own safety when they step off the pitch and out of the way of the ball and players. Player safety is also compromised when the players run fast during substitutions and when their momentum follows a ball over the sidelines & endlines. If a player or umpire steps on a triangle support, there is potential for ankle injury or more." Lurah Hess (TD)

San Juan, Puerto Rico





- Specifications:
 - Single narrow wooden boards
 - Joined together with metal plates & bolts
 - o 4" x 4" boards added in some places to provide stability
- Positives:
 - Meets 25 cm specification
 - o Interlocking
- Negatives:
 - Protruding metal bolts on back side of boards provide potential for scrapes or poking injuries
 - Boards had to be lifted with a lever/wedge to release standing water from the pitch

Mexico City, Mexico



- Specifications:
 - Pine, approximately 2.5 meters long sections
 - Assembled using approximately 2.5 cm wide boards
 - \circ Constructed as 3-sided box, with open face directed away from the field of play
- Positives:
 - Uniform construction creates predictability for athletes & officials when they step over the boards without looking or while moving fast
- Negatives:
 - The thin 2.5 cm boards are not structurally resilient, they absorb the force of the ball and do not provide a good bounce for passing or collecting rebounds – the ball is slowed down dramatically when it is played off the boards.
 - Board sections are light and do not lock together and so the individual sections move easily and independent of one another.
- Comments:
 - "The issue is stability, length, thickness and strength. The boards are not strong enough to hit or sweep with any power against. They do not bounce off like they should and effect (slow down) the game as it was intended. "
 - Mike Whitehead (VCRD team manager Moorpark, USA)

Chula Vista, USA





- Traditional manufactured aluminum Indoor Boards
- Positives
 - Uniform, Locking, Water resistant
- Negatives
 - Doesn't meet 25 cm height specification
- Comments:
 - "Feedback I have received from all involved currently in Moorpark, Puerto Rico and at the OTC with aluminum is that the aluminum is the most consistent with rebound, wear and tear and overall performance. Our boards are 4x4 so not up to full specifications but do a good job for what we need and what we already had on hand - we had to purchase more to make the full set." – Chris Clements (USA coach)

Moorpark, USA



- Specifications:
 - Solid wooden uniform piece
 - See page 12 for design details
- Positives:
 - \circ $\;$ Self-supporting no need for additional structural support $\;$
 - Players & umpires are able to stand on them
 - o Uniform, predictable construction reduces trip hazards
 - Slight downward angle on playing surface to keep ball from popping up
 - Thick boards create good rebound of ball
- Negatives:
 - Weight two people required to move each section
 - Not locked or pinned together so some independent movement is possible, but the weight & mass of the boards overcomes most of this and minimal movement has been seen so far
- Comments:
 - "Since they were made in this country [USA], they do not precisely meet the FIH dimensions which are in centimeters. Notice that they are slanted to minimize the upward rebound of the ball. They cost us about \$5,000 for the 16 that we purchased [for the end lines only]."
 - Tom Harris (board designer USA)

