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GAMECOURT® PVC INSTALLATION INSTRUCTIONS

NOTE: THIS GUIDE PROVIDES A FUNDAMENTAL REFERENCE FOR THE INSTALLATION OF THE GAMECOURT® PVC SYSTEM. THESE INSTRUCTIONS ARE FOR INFORMATIONAL PURPOSES ONLY. WHILE MOOSE SPORTS SURFACES, LTD. BELIEVES THAT FOLLOWING THESE INSTRUCTIONS WILL RESULT IN THE BEST INSTALLATION, IT MAKES NO WARRANTY OR REPRESENTATION OF ANY NATURE, TYPE, OR DESCRIPTION EXPRESSED, IMPLIED, OR PROVIDED BY LAW RESPECTING THE INSTALLATION PROCESS OR THE RESULTS ACHIEVED. ALTHOUGH VALUABLE INFORMATION IS PROVIDED IN THIS GUIDE, IT IS NOT INTENDED AS A SUBSTITUTE FOR ON SITE TRAINING BY QUALIFIED AND EXPERIENCED PERSONNEL.

1. PROJECT / SITE CONDITIONS

- A. Jobsite to be clean, secure, weather tight. All permanent windows and doors shall be installed prior to the installation.
- B. Concrete sub floors on or below grade shall be adequately waterproofed beneath and at the perimeter walls and on earth side of below grade walls. It is the responsibility of the architect/engineer to determine the extent of this need. Notify Moose Sports Surfaces, Ltd. when installing over a lightweight concrete.
- C. The general contractor shall furnish and install the concrete sub floors, depressing the slab sufficiently to accommodate the floor system. Slab depression shall be determined by the system thickness.
- D. It is NOT recommended to use any concrete curing agents or hardening / parting compounds. If used, it may be necessary to sand, grind or shot-blast the concrete for the adhesive to bond to the concrete substrate. A bond test is also recommended.
- E. The slab shall be steel troweled and finished smooth to a tolerance 1/8" in any 6' radius or 3/16" in any 10' radius. This tolerance should be measured in accordance with ASTM E1155. F-Number system: Overall values of FF 36/FL20 may be appropriate for resilient floor coverings. High spots shall be ground level, and low spots filled in with an approved leveling compound. Filling low spots is cosmetic only, not considered a structural repair.
- F. Cracks, grooves, voids, saw cuts, saw joints, and expansion joints need to be filled with joint filler to provide a smooth surface. Joints should be flush with the floor. If joint filler is higher than the floor, scrape or sand accordingly. Do NOT use Gypsum based joint filler. Expansion joint covers designed for use with resilient floorings should be used.
- G. Permanent light and electrical power shall be installed and operating prior to the installation.
- H. HVAC shall be installed and operating two weeks prior to installation, during and after installation. The temperature must be between 65-70° F., maximum humidity at 70% (50% is preferable). Once the installation is complete, the temperature must not exceed 85 degrees F.
- I. Do not install athletic flooring over new concrete until concrete has been cured and is dry. A minimum of 90 days is required. Typically, a new concrete slab will not meet the vapor emissions requirements listed below unless the slab has been installed and the area is sealed off to outside air (all windows, doors, roof, etc. are installed) for approximately 6 months or more.

- J. Prior to vapor emission / moisture testing, the HVAC must be up and running for a minimum of 72 hours (one week preferable) to condition the building.
- K. Vapor emission / moisture testing MUST be performed prior to installation. Either the Calcium Chloride or the Relative Humidity (RH) tests may be performed. For the Calcium Chloride test, the vapor emission of the concrete slab should not be greater than 5 lbs./1000 SF/24 hours when tested per ASTM F1869. For the Relative Humidity test, moisture content must be less than 95% RH (4100 Acrylic Adhesive) or 98% RH (Multipoxy Adhesive) when tested per ASTM F2170. If both tests are performed, the higher value must be respected. NOTE – when moisture tests are conducted, it indicates the conditions only at the time of the test.
- L. Installation shall not begin until all masonry, painting, plaster, tile, marble and terrazzo work is completed, and overhead mechanical trades and painters have finished in the floor areas. All sub-contract work which would cause damage, dirt, dust or interruption of normal installation will be completed prior to the installation. Suspension of other trades' work may be authorized providing their work will not interfere with the installation or damage the newly installed flooring.
- M. The installation area shall be closed to all traffic and activity for a period to be set by the flooring contractor.
- N. Sub floors shall be clean, dry, and free from dirt, dust, oil, grease, paint, alkali, concrete curing agents, hardening and parting compounds, old adhesive residue or other foreign materials.
- O. Concrete subfloor surface pH level to be within the 7 to 10 range

2. FLOOR PREPARATION

Inspect jobsite to see if area to receive synthetic flooring is ready as per the previously mentioned Project / Site Conditions. Necessary measures, such as scraping, sanding and grinding must be performed to remove all dirt, paint, drywall compound or anything that will prevent the adhesive from bonding the basemat to the substrate.

Disc sand entire floor to remove all foreign materials from the concrete subfloor and rough up the surface for proper adhesion. Use 36 grit sandpaper discs. Use these discs on a buffer with a sanding head (the type that has a hub for attaching the sandpaper).

After the floor is disc sanded, remove all dust and debris by first sweeping and then tacking the floor with methanol or water. Vacuum as necessary to remove all dust. This floor prep should be performed prior to unrolling the GAMECOURT® PVC as this will keep it clean.

Expansion joint covers designed for use with resilient floorings should be used.

DOOR OPENINGS - If transition strips are specified and synthetic is to butt to carpet, vinyl or tile - install snap track. Roppe Corporation (800-537-9527 or <http://www.roppe.com>) makes vinyl reducers and metal snap track (for both straight and flexible applications).

GameCourt PVC may be installed over radiant heated floors provided the operating temperature does not exceed 85 degrees F. To allow proper adhesion of the adhesive to the sub floor, the radiant heating system should be lowered, or turned off at least 48 hours prior to installation of flooring material. This is to ensure the surface temperature of the sub floor does not exceed 85 degrees F during the installation of the flooring material. The room temperature must be maintained at a minimum of 70 degrees F prior to, during and after installation for 72 hours after which the temperature of the radiant heating system can be increased. When raising the floor temperature, do so gradually so that the substrate and the flooring material can adapt to the temperature change together. A rapid change could result in bonding problems. Once the installation is complete, the temperature must not exceed 85 degrees F. DO NOT PERFORM RH testing on radiant heated slabs because the drill used for testing may puncture the pipes. For more information, contact Moose Sports Surfaces Ltd.

2. INSTALLATION PREPARATION

Store materials in a secure, clean and dry location maintaining a minimum of 55° F and under 50% relative humidity. Ideal installation and storage conditions are the same as those which prevail when building is occupied. Keep material rolled face out on a sturdy core until time of installation. GameCourt PVC rolls are to be stored vertically (standing on end) and secured to prevent falling. Store adhesive buckets upright.

INVENTORY AND SEPARATE MATERIALS - Check incoming product against the packing slips to ensure proper quantities are delivered. NOTIFY MOOSE SPORTS OF ANY DAMAGED OR SHORT SHIPPED QUANTITIES AS SOON

AS POSSIBLE. This will allow us to get the correct quantities to you in a timely fashion. Check quantities shipped with the floor area square feet to ensure adequate product was shipped. Roll and unit size and approximate coverage rates are:

GAMECOURT® PVC (6.5mm)	Full Roll	291 SF/roll
4100 Acrylic Adhesive	4 gallon pail	500 SF/unit (95% max RH)
Multi-Poxy Adhesive	4 gallon unit	450 SF/unit (98% max RH)
Welding Rod (4mm)	spool	330 lineal feet per spool

3. POSITIONING THE GAMECOURT® PVC

Temperature in room to receive flooring should be at 70 degrees F. for approximately 1-2 weeks prior to installation. Maintain room temperature, flooring and adhesive at 65-85 degrees F. before, during and a minimum of 2 days after completing installation. Once the installation is complete, the temperature must not exceed 85 degrees F.

Flooring material and adhesive must be acclimated to the installation area for a minimum of 48 hours prior to installation.

Ensure that all recommendations for sub floor and job site conditions are met prior to beginning the installation. Once the installation has started, you have accepted the conditions.

For best color match on installations requiring more than one roll, be sure rolls to be used in same area are from the same batch number. It is VERY IMPORTANT to install rolls in numerical order according to sequence number.

Install rolls in sequential order.

Do not reverse sheets for seaming.

Once the rolls are all laid out, the installer should review the entire floor for consistency of pattern and color. If there is a color or sheen difference between rolls, DO NOT GLUE, CUT ROLLS OR BEGIN INSTALLATION. Additionally, for “wood patterned” GameCourt PVC only, thoroughly inspect the pattern to make sure that the “wood design” patterned boards are parallel with the long edge seams. The board pattern should be printed straight on the roll and should match up with the edges. If the board pattern is skewed and does not match up, DO NOT GLUE, CUT ROLLS OR BEGIN INSTALLATION. Call Moose Sports immediately for any of the above reasons.

“IMPORTANT NOTE” – MATERIAL WARRANTY
Any material installed with visual defects will NOT be considered a legitimate claim.

GameCourt PVC can be installed starting at a side wall or from the room’s centerline, at the installer’s discretion.

Allow the material to run up the end and side walls to ensure there is enough material to cover the floor.

Let the GameCourt PVC relax for at 24-48 hours before beginning to adhere. During this time, the gym must be kept within the temperature range specified above. Relative humidity should be below 75%. This means that ventilation (and in cold weather, the heating system) must be running constantly during installation.

On occasion, the roll ends may not lay down flat to the floor. You can remove the curve by heating the PVC side with an electric heat gun @ the “low” setting. To prevent damage, determine the distance between the heat gun and the PVC roll on a scrap PVC piece before attempting this procedure on the laid rolls.

Do not compression fit seams. Leave an approximate 1mm gap between rolls.

4. GLUING THE GAMECOURT® PVC

Recommended Adhesives: 4100 Acrylic Adhesive is the recommended standard adhesive. Acrylic Adhesive is used with seam / perimeter and 100% full spread installation methods. Multi-poxy Adhesive or Mapei G-21 Adhesive (2-part

SOLVENT FREE polyurethane adhesive) must be used under bleacher areas and spread over 100% of the bleacher area. Please purchase Mapei G-21 from a local distributor.

Do not apply adhesive too heavy. Moose Sports Surfaces, Ltd. will not accept responsibility for flooring problems caused by excessive adhesive application or the use of a non-recommended adhesive.

Adhesive Bond Test - in several locations throughout the area to receive the flooring, glue down 3' x 3' pieces of flooring with the recommended adhesive. Bond tests give the installer the opportunity to evaluate the porosity of the sub floor and determine the correct timing for application of the flooring material. Allow the bond test to set for 72 hours before attempting to remove. It is also a good practice to place your bond test over some areas where a patching compound has been used in order to check the bond strength of the patching compound. When removing the bond tests, check for looseness around the edges of the material, moisture always takes the path of least resistance. A proper bond test should show no signs of moisture and it will restrict the movement of the material. When peeling back the material you should see proper transfer of adhesive between the sub floor and the flooring material. If there are any doubts as to the results of the bond test you should always call the manufacturer.

After the rolls have been rolled out and relaxed for 24-48 hours, apply the adhesive using the "fold" or "roll up half of the roll" methods. WHEN FOLDING - DO NOT CREASE THE MATERIAL. Avoid moving the rolls from their original positions.

Apply glue to the uncovered half of the sub-floor for 100% glue down.

Spread the glue using above recommended 1/16" X 1/32" X 1/32" U notched trowel at a 45 degree angle to the substrate. Back roll the adhesive with a short nap roller to reduce telegraphing of adhesive ridges. Do not spread adhesive over existing adhesive (double adhesive thickness). Using incorrect trowel size/too much adhesive will cause trowel notch telegraphing, a change in color to the floor, seam contamination and will affect the normal indentation resistance of the floor.

Coverage rate, flash time and working time may vary based on temperature, humidity, substrate porosity, jobsite conditions and application practices. Areas with lower than normal relative humidity will result in a reduced working time.

In order to ensure that the glue is properly transferred to the back of the floor covering, do not glue too large an area at one time.

Adhesive with a porous substrate - Flash time (the waiting time required before installing the floor covering) is 10-20 minutes. Working time (the window of time for the adhesive to accept floor covering) is 60 minutes.

Adhesive with a non-porous substrate - Flash time (the waiting time required before installing the floor covering) is 30-60 minutes. Working time (the window of time for the adhesive to accept floor covering) is 60 minutes.

Allow the adhesive to become tacky before positioning the flooring (follow the recommended adhesive manufacturer's instructions on the adhesive container. Flooring must be placed into adhesive within 30 minutes after becoming tacky.

Apply the glue to the sub-floor in even coats, do not overlap.

Lay (do not flop) the GameCourt PVC into the adhesive after the setting time specified by the glue manufacturer has passed.

Continually roll the surface parallel and perpendicularly to the seams with a 100 lb. roller to eliminate any bubbles that might form between the sub-floor and the flooring material.

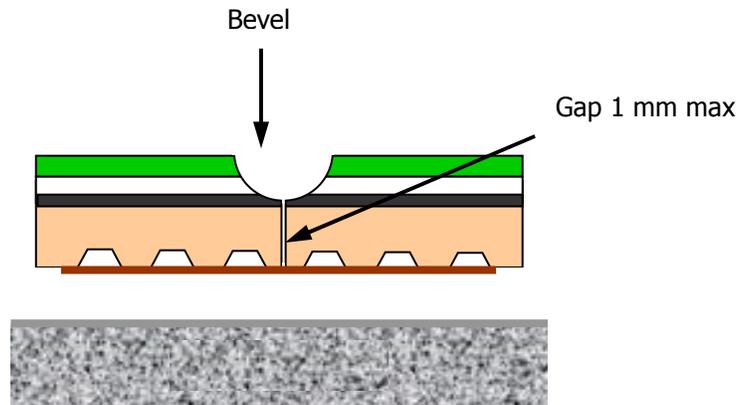
After gluing, wait a minimum of 12 hours before starting to heat weld the seams.

If adhesive gets on the PVC surface, remove with warm soapy water while adhesive is still wet. For dried adhesive removal contact Moose Sports Surfaces @ 773-477-4664.

5. HEAT-WELDING SEAMS

All seams must be heat welded. Equipment for welding can be purchased at Winkelman Sales in Buffalo, NY (800-929-4326). Four pieces of equipment are necessary for installation: (1) automatic router/groover/miller (2) automatic welding machine (3) hand welding machine (4) hand grooving machine. Total cost for equipment is estimated at \$7,000.

A curved blade should be used for milling to ensure proper contact between the welding beads and the covering. Remove all impurities caused by milling.



6. MILLING (ROUTERING)

Milling (Routing) must be performed only with an electric tool using a curved blade.

It is highly RECOMMENDED to practice on a scrap piece of material first to ensure the milling/router machine is set to the proper depth.

Do not route into foam layer.



Milling/Router machine



Automatic welding machine

Don't cut seams too tight or an automatic groover can travel "off track".

Make sure that Welding Rod does not BURN when coming out of tip.

Temperature on welder should be set $\frac{3}{4}$ of the way up (60-75%). Depends on quickness of installer. The higher the temperature, the faster the installer has to go.

An automatic welder can seam 125' in about 12-15 minutes.

Make sure that there is enough length in the welding rod spool because you would rather not run out in the middle of a seam.

Welding of 12,000 SF should take 1 day using 3 guys if they have experience installing heat-welded PVC flooring.

When welding, stop 1' from the wall and leave a 2" tail for trimming.

Use a clean white rag with cold water and dish detergent and run over the welded seam line.

Flat trim welded seam with turbo trimmer by putting a knife into a twin-plate. Still make sure to trim in 2 passes.

The key to welding is to be as smooth as possible and not start and stop in the middle of the seam.

Sinclair – equipment used for “vinyl heat welding” - www.sinegco.com. Sinclair manufactures a kit that has the hand welder and hand groover in it and Winkelman sells the kit. Winkelman Sales is located in Buffalo, NY and the phone # is 800-929-4326. All equipment to install GameCourt PVC can be purchased at Winkelman (automatic welder, automatic groover, hand welder, and hand groover).

See the automatic welder video link - <https://www.youtube.com/watch?v=vSe94CQzRS4>

See the electric groover video link - <https://www.youtube.com/watch?v=Jm4QXmTF3x0>

Turbo Trimmer and the Turbo Groover which are hand tools that are a little more expensive but work great (the Trimmer trims all at one time instead of going back twice).

7. WELDING

Heat welding provides for strong, watertight, and hygienic seams.

The welding cord is made from pure PVC, which is designed to melt at the same temperature as the PVC of the sheet flooring. This is why you should never use welding rods other than those specified for the product you are installing.

Although welding can be performed manually, we strongly recommend using an automatic welding machine, which will produce more regular, professional quality welds. A hand welder will need to be used in areas that the automatic cart cannot reach (i.e.: walls). When hand welding, it is very important to watch the temperature and the speed of application.

Heat weld seams 24 hours after gluing the GameCourt PVC.

“IMPORTANT NOTE” – AUTO WELDER SET-UP

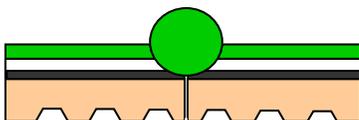
It's always a good idea to practice on a scrap piece of material first to ensure the automatic welding machine is set to the proper temperature and speed.

8. TRIMMING THE WELD

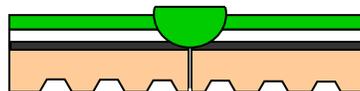
Tool required for trimming: “Quarter-moon” or “crescent” knife with trimming guide. Welds should be trimmed in two stages; the first trim while the weld rod is still warm using the above specified knife with trimming guide.

When welding rod is heated it expands, when it dries and cools, it contracts.

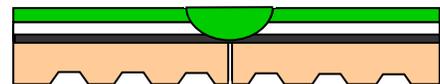
Once seaming is complete, wait at least 30-45 minutes before trimming the seam, because when it starts to cool it shrinks, cutting a hot seam will create a cupped seam that will collect dirt.



Weld is hot



1st trim **before** cooling



2nd trim **after** cooling

9. PAINTING GAME LINES

IMPORTANT NOTE – Pre-alert the GC/Owner the game lines/logos/borders/keys will look the worst at this time! Debris (lint, bugs, etc...) are certain to be visual in the paint since the paint is slow curing. Use and cleanings will remove the topical debris over time.

Apply game lines at least 8-12 hours after welding the seams, check to ensure the surface is dry, clean and free of dust and grease. If not striping the GameCourt PVC within 8-12 hours of the installation OR if the GameCourt PVC is not clean, wipe the area to be stripied with an acetone-dampened rag.

Endura EX-2C Topcoat Game line coating is a flexible two-component type polyurethane paint. Its properties of high gloss, flexibility, color(s) and excellent gloss retention make this coating ideally suitable for **GAMECOURT PVC** sport floor surfaces.

Coverage on the **GAMECOURT PVC** sport floor surface is approximately 400 linear feet of 2" wide game lines per unit of paint. (Unit consists of 1 quart of EX-2C Topcoat Game line Component A mixed with 1 pint of Special Component B)

Surface Preparation - Ensure that the floor is thoroughly scrubbed and free of any wax, oil, or lint. Mark off the gymnasium floor in accordance with game requirements as shown on architectural drawings. Game lines shall be accurate to layout and width of lines as indicated on plans. Apply solvent resistant masking tape, 3M 233+ is recommended tape, and roll the tape very firmly to ensure the best adhesion and to minimize any paint bleeding under the tape.

Scuff the line surface area with 100–120 grit sandpaper. Use clean compressed air or a clean water dampened lint free rag to remove any abrasive particles or surface debris.

Endura Prepare Thinner II is an adhesion promoter designed to ensure adhesion on vinyl or linoleum surfaces.

Apply Endura Prepare Thinner II to the sanded and cleaned game line surface with a clean lint free rag or paint brush. The application must be **THOROUGH** and **WET** the entire game line surface. Care should be taken to ensure the Prepare Thinner II not be applied to areas not to be painted. The Prepare Thinner II must be allowed to dry for at least one hour before the first coat of Endura game line paint is applied. Paint should NOT be applied for at least 1 hour.

Note: If the prepared surface is allowed to dry longer than 24 Hours an additional application of the Prepare Thinner II must be re-applied as noted. Failure to do so will result in compromised adhesion and adhesion failure of the game lines.

Application Temperatures - Use the onsite HVAC unit to maintain ambient temperature and flooring surface temperature at normal application conditions of 18°C (65°F) to 24°C (75°F) at 50% Relative Humidity. For higher humidity above 85% use EX-2C Slow Thinner (5-15%) and/or Endura Retarder. It is important that the temperature of the mixed paint be between 20-24 °C (72° F - 75° F) as it greatly affects viscosity.

Temperatures above or below recommended conditions will decrease or increase the length of drying time. **Surface must be completely dry** -Do not apply over moist or damp surfaces. Do not mix more than is required for a 3-6 hour period. We suggest that the two-part paint be mixed with a power drill. Let it stand for half an hour before application.

Game Line Application Equipment - Pure bristle brush or foam brush is recommended. 2 THIN COATS, going in one direction only will ensure no air bubbles.

Borders/Keys/Large Logos Application Equipment - For large jobs a short 1/8" nap roller is used taking caution to prevent air entrapment between the paint and the floor. 2 THIN COATS, going in one direction only will ensure no air bubbles.

Application Procedure – Check to see if color is correct before combining EX-2C Component A and Special Component B. Apply by brush if possible, **rollers may cause air entrapment. A Unit represents 1 quart of EX-2C Component A combined with 1/2 quart of Special Component B.**

Apply two thin wet coats with each coat at a wet film thickness of 50-60 microns (2- 2 ½ mils). Drying time in between coats should be a minimum of 30 minutes.

Masking tape should be removed while the paint is still wet. Remove the tape by pulling it back across itself slowly. The tape will be difficult to remove if paint is allowed to cure and ragged line edges will occur.

If Endura EX-2C FC Topcoat is allowed to dry longer than 24 hours at normal temperatures, abrade with sandpaper or scotch bright scuff pad before additional applications of topcoat.

Clean up drips or spills **QUICKLY** with acetone, as they are easily removed when wet.

Curing Rate - (Normal temperature 20 °C (70°F) to 50% R.H.) No traffic should be permitted on the newly applied coating for at least 72 hours. Only light traffic without footwear should be permitted for the first 7 days.

After 7 days and up to 30 days the floor may only be dust mopped or lightly damp mopped to remove dust, light debris, etc.

Scrubbing - Do not scrub the floor for at least 30 days after the application of the Endura EX-2C FC Topcoat Game lines

Note: The cleaning solution should be a non-abrasive, phosphate free, biodegradable type and diluted to the manufacturers' recommended directions.

Note: Take time and be prepared before starting the job. A proper work schedule that meets all the job requirements is very important.

IMPORTANT NOTE – GAME LINE PAINT

Correcting problems with game line application after the installation can be very difficult, expensive and time consuming.

For technical assistance, please contact Moose sports Surfaces @ 773-477-4664.

LINE PAINT PHYSICAL PROPERTIES

Resistance to:

- Solvents: Excellent
- Organic chemicals: Very good
- Acids and alkalis: Excellent
- Temperature variations: Excellent

Temperatures:

- 40°C to 200°C maximum
- 40°F to 390°F maximum

Flash point:

- 4°C (25°F)

Colors:

- Available in 9 high gloss solid colors. Special matched colors also available in when requested.

Viscosity of the mix:

- 20-30 sec. #4 Ford Cup.

Pot life:

- 3 to 6 hours. Note: Once mixed, adding solvent cannot extend pot life.

Clean Up:

- EX-2C Thinner.

Shelf Life:

- Endura EX-2C FC Topcoat Component A will keep indefinitely. Special Component B will keep at least 12 months in original unopened containers depending on storage conditions. Store in cool dry place.

TOOLS – GAME LINES

- Game line taping machine
- Masking tape (3M 233)
- Mixing drill and mixing paddle
- Bristle/foam brush that is solvent resistant and high quality
- ½" nap roller for larger areas that is solvent resistant and high quality
- Acetone or mineral spirits
- Scotch bright scuff pad

IMPORTANT NOTE – Many stocked GCPVC solid colors can be used as border, keys, and free throw lanes rather than game line paint.

10. INSTALLING GAMECOURT PVC OVER A VAPOR BARRIER UNDERLAYMENT

A vapor barrier underlayment/Multi-Poxy adhesive system is recommended when “high moisture” content exists in the concrete substrate.

The sub-floor must be carefully swept and dusted. Unroll the underlayment on the clean sub-floor as per manufacturer’s recommendations.

The GAMECOURT PVC is 100% glued to the vapor barrier underlayment. The vapor barrier underlayment is loose laid onto the concrete/substrate. Under bleachers, 100% glue the vapor barrier underlayment to the concrete

Be particularly careful cutting around sleeves, anchor boxes and the boundary of the gym. **For technical assistance, please contact Moose sports Surfaces @ 773-477-4664.**

11. OTHER INSTALLATION “TIPS” AND GENERAL INFORMATION

Occasionally, butt seams (end seams) may require the area to be weighted down overnight.

Do not use the last 6” of material length on the roll when end seams are needed.

12. FINAL WALK THROUGH

Pre-schedule the final walk through with the GC/owner. Handle any punch list items at this time to prevent a remobilization at a later date.

Remind GC/Owner to stay off the floor for 3 days to allow the game line paint to dry and see above for light traffic/heavy traffic and cleaning time periods.

Remind GC/Owner the game lines/logos/borders/keys will look the worst at this time! Debris (lint, bugs, etc...) are certain to be visual since the paint is slow curing. Use and cleanings will remove the topical debris over time.