

# **Field Installation Mandate** **& Certification Manual**



## **AstroTurf ‘Certified Installer’ Field Manual**

### **Introduction**

We’d like to announce the introduction of the AstroTurf Installer Certification Program. AstroTurf is one of the most iconic brands in American sports- the inventor of synthetic turf. The brand that created the category is once again the leading innovator in synthetic turf. AstroTurf products benefit from proprietary innovations in manufacturing, extrusion, installation and recycling that are outpacing industry trends. Guided by the philosophy of “More Fiber, Less Fill”, AstroTurf is producing superior products that perform more like natural grass, and bring new advances to the market faster than the competition.

In order to maintain our leadership position in the industry, AstroTurf has developed this training and certification program. This program establishes the minimum requirements for technical proficiency, product knowledge, installation procedures, equipment needs and customer service for installation crews who are authorized as a “Certified AstroTurf Installer”.

The course covers instruction in the material in this manual, hands-on demonstration sessions for the various seaming and infill techniques, and a proficiency examination at the conclusion of the training. The Certification process includes attending and satisfactorily completing the Certification course and having at least three (3) crew members pass the examination at the conclusion of the course

This mandate should be considered the “Installation Bible” and should be in the hands of every crew member on the job site.

We encourage every member of your crew to attend the Certification Class when it is offered in your region. A certified AstroTurf Certified crew receives preference in our criteria for determining project selection.

We look forward to your participation. Any questions please let us know.

AstroTurf, LLC

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## 1. Project Work Rules

<b>Description</b>	Work Rules and Standards of behavior which apply to all companies and workers on every AstroTurf project.
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	All Employees
<b>Equipment</b>	None
<b>Materials</b>	Signs, banners and shirts- supplied by AstroTurf;
<b>Duration</b>	Entire Project

All subcontractors who install turf for AstroTurf will be required to agree to adhere to the following jobsite work rules:

1. Keep Daily Reports and progress photos and turn in to AstroTurf at end of project.
2. Install project signs and banners at commencement of project. The signs and banners will either be supplied by the Project Manager, or will be delivered with the turf materials.
3. Project to be thoroughly cleaned daily, and materials well organized and secure.
4. Comprehensive Safety program must be documented, in place and enforced.
5. Drug and alcohol tests will be required of any project worker involved in a lost time accident. Furthermore, AstroTurf may require testing of any worker on a project at any time. (For these discretionary tests, AstroTurf will pay for all testing costs and lost work time if test produces negative results.)
6. Proper attire to be worn at all times- including AstroTurf t-shirt or vest, and all protective gear and clothing as may be required.
7. Only the Project Foreman is permitted to Interact with the public and project Owner (or agent) about any aspect of the project. Any such interaction is to be immediately reported to AstroTurf Project Manager.
8. No tobacco products, alcohol or illegal drugs are permitted on the project site. Chewing tobacco, sunflower and the like are prohibited while working on the surface of any AstroTurf project.
9. Fueling of equipment is to either take place off the turf surface, or over temporary protection which would prevent fuel spills from contact with the turf or infill. The temporary protection is to be removed once fueling is complete, in order to avoid heat or mechanical damage to turf fibers..
10. No loud, or profane talk or music allowed on the project site
11. Cell phone use by anyone but the Foreman during work times is restricted to emergencies only.
12. Earphones are not permitted to be used on the project site
13. All packing slips and bills of lading to be retained, and handed over to AstroTurf manager at end of project.

### Related Attachments Included:

- Daily Report Form



August 11, 2011 (Rev.)

## PROJECT DAILY REPORT

DATE: \_\_\_\_\_

PROJECT NAME/SITE: \_\_\_\_\_ PROJECT #: \_\_\_\_\_

TEMPERATURE:

H-\_\_\_\_\_ L-\_\_\_\_\_

WEATHER: \_\_\_\_\_

PRECIPITATION:

\_\_\_\_\_Inches GROUND CONDITIONS: \_\_\_\_\_

ROUTING - To: AstroTurf: \_\_\_\_\_

From: Contractor name/field rep: \_\_\_\_\_

CREW SIZE: \_\_\_\_\_ HOURS WORKED: start \_\_\_\_\_ stop: \_\_\_\_\_ total hours \_\_\_\_\_

VISITORS ON SITE: ☐Yes ☐No COMPANY: \_\_\_\_\_

MATERIAL RECEIVED/QUANTITY: \_\_\_\_\_

EQUIPMENT ARRIVAL/DEPARTURE: \_\_\_\_\_

DESCRIPTION OF DAILY CONTRACTOR ACTIVITIES: \_\_\_\_\_

FIELD DIRECTIVE/ADDITIONAL WORK: \_\_\_\_\_

CONFLICTS/DELAYS: \_\_\_\_\_

QUALITY ISSUES: \_\_\_\_\_

CLEAN UP: \_\_\_\_\_

Have you accumulated and properly disposed of the spoils from today's work activities? ☐Yes ☐No

SAFETY ACCIDENTS OR INCIDENTS: ☐Yes ☐No If yes explain: \_\_\_\_\_

Information included on this form shall not constitute the required notification of delay, disruption, or claim. Notification and requests for additional costs and/or time shall be submitted in accordance with the terms of the contract.

## 2. Safety

<b>Description</b>	Safety Rules and Standards of behavior which apply to all companies and workers on every AstroTurf project.
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	All Employees
<b>Equipment</b>	None
<b>Materials</b>	First Aid Kit; MSDS information, Personal Protective Equipment
<b>Duration</b>	Entire Project

AstroTurf requires a safe work environment for every employee, client, subcontractor, and any other individuals that are exposed to the work place we control. AstroTurf is committed to ensuring that our jobsites and operations are as safe as possible. Construction projects by their nature present an environment where people can and do get injured, however, incidents can be prevented, or at a minimum, be reduced to those of a minor nature. Individuals that are safety aware may avoid injury to themselves and their fellow workers.

Our Health and Safety Program is outlined in the following statements:

- AstroTurf intends to comply with all Federal, State, and local safety laws and ordinances.
- The personal safety of our employees, clients, subcontractors, workers, visitors, and the general public is of paramount importance to AstroTurf.
- The importance of safety takes precedence over scheduling and profit at AstroTurf.

### **JOB SITE SAFETY RULES**

The following safety rules are noted in order to highlight the most common situations that may arise on the job site:

1. Injuries, accidents, incidents, and fires shall be reported immediately to the Project Manager.
2. No machines, tools, etc shall be operated unless guards are in place.
3. Defective machines, tools, drop cords, etc. shall be reported and taken out of service.
4. Know the location and proper use of fire extinguishers on the job site.
5. Do not allow equipment to be left unattended while in operation or motion.
6. Portable electric equipment shall be unplugged when not in use.
7. Air tools shall have air shut off when not in use. Air hoses shall not be crimped or kinked for the purpose of changing tools or equipment.
8. Loose or torn clothing shall not be worn around moving equipment and shall be discouraged on the job site.
9. Running, horseplay, fighting, gambling, loud, and abusive language are not permitted.
10. All hazardous conditions shall be reported to the Project Manager.
11. Appoint one crew member to give and receive signals to the hoisting/lifting equipment operators.
12. Flammable or hazardous materials shall not be stored in appropriate containers and safely secured.
13. The project site shall be visually inspected regularly for any hazardous conditions.
14. Possession or evidence of the use of intoxicants or illegal drugs shall not be tolerated, and shall result in immediate removal from the job site, and other putative actions.
15. Smoking may or may not be allowed on the job site, depending on the nature of the project. If smoking is allowed, it shall be in designated smoking areas only. Proper disposal of cigarette butts and matches is required.
16. Unauthorized personnel shall not be allowed on the job site.
17. All work areas shall be posted and barricaded if required to maintain the safety of the general public, clients, visitors, etc.

18. Firearms shall not be allowed on the job site.
19. If a hazardous material is stored or to be used on site, obtain and post in the construction trailer the material safety data sheets for any and all substances. Note the location of the MSDS's in the weekly job meeting.
20. Provide a first-aid kit the work trailer that complies with OSHA standards.
21. Provide a minimum of four (4) hard hats on the job site, for use by clients and visitors.
22. If the facility is open and operational, meet with the operating manager and discuss the client's safety rules, such as the need for security badges, security check-ins, hot-work permits, access to secure area, etc., and location of hazards and hazardous materials. Obtain copies of all Material Safety Data Sheets and post in the construction trailer.
23. Review any safety related item at the weekly construction job meeting.
24. Conduct weekly "Tool Box" talks with trade foreman as a means of promoting and discussing job safety. Record the content of the meeting on the Tool Box Meeting form and have each person in attendance sign the form. At each meeting discuss at least one focused topic of interest (such as proper use of ladders, electrical cords etc.) and ongoing important items like equipment safety, location of the first aid kit, fire extinguishers, drinking water, eye wash fountains, etc. "Tool Box" talks should be happening daily prior to the start of any work.
25. Post the telephone numbers of emergency services in the area, such as police, fire, EMT.



**Related Attachments Included:**

- Toolbox Meeting Attendance Form

## Tool Box Safety Talk Sign-In Sheet

<b>Description</b>	Daily Tool Box Talks should be conducted with entire crew present.
<b>Responsible Party</b>	Installation Company assigned Lead Foreman

**DATE:** \_\_\_\_\_

## CONTENT REVIEWED:

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### QUESTIONS DISCUSSED:

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## ATTENDEES

[illegible]



### 3. Base Inspection

<b>Description</b>	Method to determine if the base stone resilience and planarity is acceptable for turf installation
<b>Responsible Party</b>	Turf Installation Company and AstroTurf
<b>Manpower</b>	Minimum of 3 Employees
<b>Equipment</b>	String Lines, Tape Measures, Paint, 10' Straight Board , Gator, Small Roller
<b>Materials</b>	N/A
<b>Duration</b>	½ day

#### A. Verify Base Resilience and Access Conditions:

1. Verify existing conditions of track surface, construction entrances and any areas that will be disturbed by construction of new synthetic fields. Make photographic record.
2. Walk around to check the ability of the base surface to withstand the activities of turf installation. General, basic rule of thumb- if foot prints show in the base then the base requires additional work by base contractor before it is ready for turf installation. Drive a gator or small roller on the base- if this produces visible ruts, then the base is not suitable for turf installation.
3. Conduct or confirm infiltration test to insure a minimum drainage of 20 inches of water an hour (or as specified)
4. Check vulnerable areas that are commonly overlooked - edge of the field and adjacent to access boxes, goal posts, concrete curb, sprinkler boxes and manholes.



Access to the jobsite with equipment and dumpster is critical to determine before work begins.

#### B. Check Base Planarity and Slope:

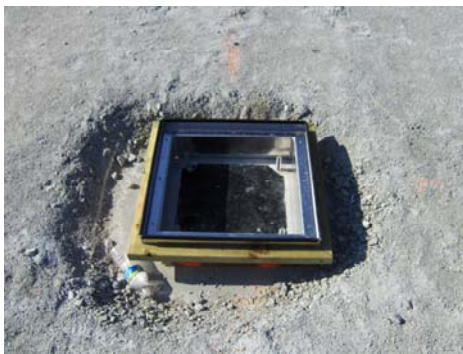
1. String line down the crown of the field (goal post to goal post for football) to check planarity tolerance of the crown : maximum deviation of ¼" in 10', or as noted in the Specifications..
2. String line base from the crown of the field to the sideline (or break in grade if there is a sideline valley). Make sure the string is pulled tight, use a tape measure to measure any gap beneath the string, planarity tolerance ¼" in 10' grid, unless noted otherwise in the Project Specifications.
3. If the field has yard lines (i.e. football), string line the yard lines and two places in between each yard line (every 5'), use this process for the entire field.

4. If the field has sidelines, string line where the sideline will be to check planarity.
5. Isolate the areas that are out of tolerance by checking at closer intervals.
6. Check for constant ridges in the base that might be caused from dragging.
7. Mark with paint any deviations that need to be fixed.
8. String a line along any deviations that have been fixed to confirm planarity tolerance.
9. Use a 10' straight board or string line to check around goal posts or access lids
10. Measure percent slope of base to sideline from crown of field – confirm against design slope percentage (Typical 0.5%)



### C. Inspect Edge Detail

1. Check that the nailer board is securely attached around the field.
2. Check that the height between the nailer board (or curb if no nailer board) and the finished surface elevation is between 1 ¼" and 1 ½", or as specified or needed for turf being installed.
3. Report any concerns or questions to an AstroTurf representative.



*Checking all edge details to verify AstroTurf termination is adequate.*

## 4. Receive and Inspect Materials

<b>Description</b>	The unloading and inspection process of supplied materials
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Minimum of 2 Employees
<b>Equipment</b>	Lull/Reach Fork, Cables, Chains, Tow Straps, Clean Up Equipment (blower, broom, shovel, etc)
<b>Materials</b>	Turf, Infill Material
<b>Duration</b>	1 day

### A. Unloading Staging Area: Confirm and Inspect

1. Confirm with Owner where to stage trucks to unload the material before the trucks arrive.
2. Check to see if any existing areas will be disturbed during the unloading process.
3. Document existing conditions with photographs and notes
4. If there is a chance that existing conditions could be damaged due to the unloading process, notify the owner and the AstroTurf Project Manager (PM) before unloading material.
5. If the owner is fine with the chance of disturbing an existing area during the unloading process, get this authorization in writing from the Owner.



*Example of well organized and clean material lay-down area*

### B. Material Staging Area: Confirm and Inspect

1. Discuss with owner where the material can be stored during the duration of the project.
2. Check to see if any existing areas will be disturbed transporting to the staging area or from storing the material.
3. If existing conditions will be disturbed either by transporting the material to the staging area or storing the material, get this authorization in writing from the Owner.
4. Find the access to the field from the staging area. Check to see if any existing conditions will be disturbed transporting material from the staging area to the field, get in writing a notice to proceed from the owner if existing conditions will be disturbed.



*Confirm staging area is acceptable, and document.*

### C. Off Loading Turf : Procedure

1. Artificial turf comes in rolls that are 15 feet wide and in lengths that run from sideline to sideline (200 feet plus lengths ). They are extremely heavy therefore having enough working crew and/or equipment on site to offload the delivery trucks is critical
2. Inspect the cables, chains or tow straps that will be used to unload the turf. Repair or replace if necessary.
3. Wrap the cable or tow strap around a roll of turf and pull tight.
4. Attach the other end of the cable/tow strap to the lull/reach fork. Make sure all employees are out of the truck and away from the lull.
5. Pull the roll of turf out of the truck, leaving one end still in the truck. (this makes it easier to pick up for transport)
6. Remove the cable/tow strap from the lull and roll of turf.
7. Pick up the roll of turf and transport to the staging area.
8. Unload the rest of the truck using this process.



*Off loading material should always take a minimum of two (2) people.*

### D. Inspection of Turf

1. Report any damage during transport to AstroTurf PM.
2. Check for the correct roll numbers compared to the shipping manifest.
3. Check for the correct number of rolls compared to the shop drawings.
4. Check for the correct number of hash marks, in bound marks and media lines.
5. Check for the correct number package, letter package, logo package and multi sport package. (if applicable)

6. Check for the correct pile height, yarn color and yarn type.
7. Check the primary and secondary backing, stitch rate and gauge and the perforations for consistency.
8. Check for the correct amount of seam tape and adhesive.
9. Check for the correct maintenance equipment if applicable.
10. Report any concerns to an AstroTurf representative.



*Turf Quality needs to be reported IMMEDIATELY to AstroTurf Operations Team.*

#### E. Off Loading Infill: Procedure

1. Use the forks on the lull/reach fork to pick up the pallets.
2. When removing the pallets ensure that the forks do not extend into the next pallet and cause damage.
3. Tilt the forks back so that the bag rests on the rack during transport.
4. Transport slowly to staging area.
5. Unload the rest of the truck using this process.

#### F. Inspection of Infill

1. Report any damaged during transport to AstroTurf PM.
2. Check for uniformity, cleanliness, bag quality, pallet quality, and strap quality.
3. Check for the correct number of bags compared to the shipping manifest.
4. Report any concerns to AstroTurf PM.
5. Collect a 3lb sample from random super sack and send to AstroTurf Corporate office for QC Testing. The sample needs to be take from bottom, center, and top of super sack for a combined total of 3lbs.



*Inspecting and reporting infill quality is a priority before starting the infill process.*

## 5. Field Lay Out

<b>Description</b>	The process of laying out a field for turf installation
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Minimum of 4 Employees
<b>Equipment</b>	String Lines, (2) 25', (2) 100' and (1) 300' Tape Measures, Paint, Hammer, Nail (painted), Magic Marker
<b>Materials</b>	Shop Drawings
<b>Duration</b>	½ day

### Laying out Field Measurements (Football):

1. The site contractor/survey engineer will establish a base line (Datum) and bench mark at the site from which the artificial turf contractor will complete the field layout. The Turf Installation Contractor/Subcontractor will use these control points to establish all field layout lines. General sequence of laying out football field markings is noted below- other sports use similar techniques.
2. Insure you are working from Architect/Owner approved shop drawings.
3. Check to insure goal posts are in the proper location.
4. Run a string line from goal post to goal post and stretch tight. This will give you a straight line to work off- the 'centerline string'.
5. Measure from front center of goal post to front center of goal post. This is a way to double check that the goal posts are put in the correct dimensions. Either a 6' (372') or 8' (376') goose neck. This will confirm overall field length. Also check the side to side measurement of each goal post as double check.
6. From the front, center of each goal post, mark a point on the centerline string which is 186' out. Half the distance between the two marks along the center line is the center of the 50 yard line of the field.
7. If there are no goal posts to measure off of, then take measurements on both ends from the turf limits and create a center point on each end. Run the string line from both these points to get your straight line to work off. Use the shop drawings for the sport dimensions to find your center point of the field.
8. For the end zones, measure 150' from the center point of the field- this is the face of the goal line. The inside back of the end zone will be 30' back from that point (the face of the goal line).
9. Once you have the center point of the field, mark a point on the centerline string that is 60' from the center point. Drive a nail into the base and mark the measurement on the head of the nail- this is the 60' nail. Do this process on both sides.
10. Hold a 100' tape on the field center nail and measure out 80' toward the sideline, at the same time hold a 100' tape on the 60' nail and measure 100' toward the other tape. Where the 80' and 100' measurement meet, drive a nail into the base and mark it. Take the tape from the 60' nail and move it to the other 60' nail and do the same process.
11. Move to the other side of the field going toward the other sideline and do the same process.
12. Repeat this same process at the goal lines, to establish sideline points at the goal lines.
13. The center of the field is now established, along with, three control points on each sideline, goal line and back line.
14. Measure down the middle and both sidelines every 15', drive a nail and mark the measurement. You should have 3 nails across the field for every yard line.



## 6. Products and Installation Mandates

<b>Description</b>	The Installation Methods to be used on each of the various AstroTurf products.
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Complete, qualified installation crew
<b>Equipment</b>	See specific Installation procedure descriptions in the following chapters
<b>Materials</b>	See specific Installation procedure descriptions in the following chapters
<b>Duration</b>	See specific Installation procedure descriptions in the following chapters

### Installation Mandate for AstroTurf products:

	<b>Turf Type: MT; XPe; Q4</b>	<b>Premium Turf Systems-all 3D products</b>
<b>Main Panel Seams</b>	Sewing: selvedge to selvedge (unless specifications mandate glue- AstroFusion preferred- otherwise, hotmelt)	AstroFusion (or hotmelt)
<b>Inlays</b>	Cut and hotmelt glue with seam tape	Cut and hotmelt glue with seam tape
<b>Infill</b>	All Rubber (unless required or requested by client)	Sand (35%); Rubber (65%) [varies by sport and end user request]
<b>Repairs</b>	Hotmelt	Hotmelt

No other installation methods or materials are acceptable on any AstroTurf project, without specific written directive from AstroTurf.

## 7. Top Stitch Installation

<b>Description</b>	The process of sewing selvage to selvage utilizing a sewing machine with a two needle sewing head.
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Two (2) Skill Sewers, Four (4) Laborers
<b>Equipment</b>	Variable Reach Fork Lift, Double Drum Roller (2,000lb), Sewing Machine (Single Head Double Needle), Air Compressor, Measuring Tape, Sheep Shears, Scissors for Cutting Thread, Turf Grippers, Repair Needle, Protective Boards for Sewing Machine, turf layer
<b>Materials</b>	Turf panels, Thread, Approved Shop Drawings
<b>Average Duration</b>	5 days (80,000SF)

### A. Pre-Seaming

- Continuing from completion of proper layout of the sport field, begin by organizing and placing the panels on the field.
- Check that the pile lay (the direction in which the fibers are laying down when the panel is unrolled) will be laying in the direction of the home side or home stands. In the case it is a baseball/softball field then the pile lay will be laying in the direction of home plate or specified by owner.
- Panel Installation Sequence – Required starting in one endzone and completing in the opposite endzone. This helps with white line placement and excess trimming.
- Unroll the first panel according to the shop drawings so that it lays flat on the base.
- Once the first panel is set in place, nail it down to the base every 3' along both ends and the side that is not being sewn so it doesn't move.
- Unroll the next panel directly on top of the first panel with the fibers facing down so that the fibers on both panels are touching one another. Make sure that the white line is on top on the side that you are sewing.
- Measure and shear off the correct number of fiber rows to allow sewing and to have the correct measurement according to the shop drawings. Shearing should take place on the green fibers only. (sew selvage to selvage if no shearing is needed)
- Use a vacuum to clean up the shaved fibers. Doing this on every panel before sewing the seam helps keep the field clean.
- Align the panels to where the shaved fiber rows are flush, and the panels are flat against one another as they run through the sewing machine head.
- Set up the sewing machine and protective boards on the end of the panel where sewing is going to begin.
- Ensure that any small rocks or material are not in the seam, by utilizing air compressors before sewing begins.

### B. Seaming

- Begin sewing the material keeping the material as "tight" as possible to reduce wrinkles from forming within the panel. Using an air compressor to blow out the fibers in front of the sewing machine will help to reduce trapped fibers.



2. While sewing panel, carefully watch stitch pattern and straightness of the sewn seam.
3. Stitch rate no closer together than a ¼”.
4. Needle thread tension adjustment to be approximately six times greater than looper thread tension.
5. Once sewing is complete check stitch to make sure there are no loose spots or glitches.
6. Pull back the turf back two (2) feet to inspect both sides of the turf selvage to verify stitch consistency.
7. Stitch required to be within ¼” from the first stitch to the first bead row on both sides of the selvage.
8. Rake and roll sub base to eliminate any footprints or deviations in the base before flipping the panel.
9. In order to flip panel over entire crew must be involved in flipping the panel with carpet pullers. They will spread across the entire panel evenly to keep tension consistent across the panel.
10. With the double drum roller, start on one end of the panel and simultaneously pull the panel tight while rolling the seam flat.
11. After sewn panel is in place, then re-roll the panel again to remove any footprints or divots in the top course of the stone.
12. Once the panel has been rolled, put nails in along both ends every 3’ to prevent wind rollup.
13. After every two (2) panels check dimensions to the reference point to verify alignment of layout.
14. Installing the body of the sewn field will be done in this routine through all panels.
15. The base should be periodically rolled, or inspected for high or low spots out of tolerance.
16. All quarter turned panels are to be glued. (Unless specified otherwise.) Seam tape is required to be utilized in this case.
17. Edge Detail: Recommended 2” x 4” composite nailer attached to concrete curb around perimeter. Attached turf to nailer utilizing staple gun every four (4”) inches. Depending on turf type, infill method, and base, nail only one side of field before infill starts. Complete nailing work after first lift or two of infill is completed.

#### **TOP STITCH CART MACHINE HAND HELD BAG STITCH MACHINE**



## 8. Butt Stitch Installation (Only for A12 Product)

<b>Description</b>	The process of sewing two (2) trimmed edges of A12 turf with no selvedge.
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Two (2) Skilled Sewer and Four (4) Laborers
<b>Equipment</b>	Variable Reach Fork Lift, Double Drum Roller (2,000lb), Sewing Machine (Cart with Single Head Butt Stitch), Air Compressor, Measuring Tape, Scissors for Cutting Thread, Turf Grippers, Repair Needle, Protective Boards for Sewing Machine, Turf Cutters, Long Narrow Seam Rubber (3/4" Diameter Pipe with a flat plate collar fabricated with rounded edges), turf layer
<b>Materials</b>	Turf panels, Thread, Approved Shop Drawings
<b>Average Duration</b>	5 days (80,000SF)

**General Note:** Butt Stitch sewing is approved only for use on AstroTurf A12.turf.

### A. Pre Seaming

1. After proper layout of the sport field begin by organizing and placing the panels on the field.
2. Check that the pile lay (the direction the fibers are laying down when the panel is unrolled) will be laying in the direction of the home side or home stands. In the case it is a baseball/softball field then the pile lay will be laying in the direction of home plate.
3. Before unrolling the panels, make sure that the base is free of foot prints or other deviations that might have been caused by laying out the field using a landscape rake and roller.
  4. Panel Installation Sequence – Required starting in one endzone and completing in the opposite endzone. This helps with white line placement and excess trimming.
5. Unroll the first panel according to the shop drawings so that it lays flat on the base.
6. Once the first panel is set in place, nail it down to the base every 3' along both ends and the side that is not being sewn so it doesn't move.
7. Measure and trim off the edge including the selvedge on the first panel so that the correct measurement is achieved according to the shop drawings. This will give you a straight sewn line. (use a new blade in the knife or carpet tool to make cuts)
8. Excess or scrap should be discarded or put to the side away from the installation area to provide a safe work environment.
9. Unroll the next panel directly on top of the first panel with the fibers facing down so that the fibers on both panels are touching one another. Make sure that the white line is on top on the side that you are sewing.
10. Measure and trim off the edge including the selvedge on the second panel so that the correct measurement is achieved according to the shop drawings. This will give you a straight sewn line. (use a new blade in the knife or carpet tool to make cuts)
11. Align the panels to where the edges are flush, and the panels are flat against one another.
12. Set up the sewing machine and protective boards on the end of the panel where sewing is going to begin.
13. Ensure that any small rocks or material are not in the seam, by utilizing air compressors before sewing begins.

### B. Seaming

1. Begin sewing the material keeping the material as "tight" as possible to reduce wrinkles from forming within the panel. Using an air compressor to blow out the fibers in front of the sewing machine will help to reduce trapped fibers.

2. While sewing panel, carefully watch stitch pattern and straightness of the sewn seam.
3. Stitch rate no closer together than a 3/8".
4. Thread tension to be carefully adjusted and monitored so seams abut tightly, but do not overlap when turned over flat.
5. Loop tension adjustment to be approximately six times greater than needle thread tension.
6. Pull back the turf back two (2) feet to inspect the stitch consistency and trapped fibers.
7. At this time the seam is required to be rubbed flat using the seam rubbing tool.
8. After seam is rubbed flat, entire crew to use long narrow flat headed screw driver to pushed excess fibers back through stitch.
9. Ensure there are no unstitched areas (top or bottom). Machine re-stitching a seam should only be done maximum of one (1) time. If a third re-stitch is required, then it needs to be done with a hand needle sewn into the second or third tufted row.
10. Once sewing is complete check stitch to make sure there are no loose spots or glitches.
11. Rake and roll sub base to eliminate any footprints or deviations in the base before flipping the panel.
12. In order to flip panel over entire crew must be involved in flipping the panel with carpet pullers. They will spread across the entire panel evenly to keep tension consistent across the panel.
13. After sewn panel is in place, then re-roll the panel again to remove any footprints or divots in the top course of the stone.
14. Pick fibers from seams using hook tool. Note- this work can take place on weather days or as labor available, but must be done before infill placement.
15. Once the panel has been rolled, put nails in along both ends every 3' to prevent wind rollup.
16. Installing the body of the sewn field will be done in this routine through all panels.
17. The base should be periodically rolled, or inspected for high or low spots out of tolerance.
18. Trim final excess around the perimeter and attach turf to the nailer board using staples not more than 4" apart.

#### **BUTT STITCH MACHINE – ACCEPTABLE ONLY FOR ASTROTURF 12 PRODUCTS**



## 9. Glued Seam Installation

<b>Description</b>	Seaming main panels together using AstroTurf approved adhesive
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Two (2) Skilled glue applicators and Four (4) Laborers
<b>Equipment</b>	<p>Lull/Reach Fork, Roller, Grippers, Vacuum, Dumpster, Paint, Carpet Knife, Loop Pile Cutter, Tape Measures, Clean Up Equipment (blower, broom, shovel, etc), weighted spiked roller, water filled roller, turf layer</p> <p><u>Solvent Glue</u>: Glue Box, Notched Trowels (1/4"), weighted spiked roller; lacquer thinner, rags</p> <p><u>Hot Melt</u>: Hot melt equipment (heater box, gun, hoses); Generator; notched trowel (1/4"); Weighted spiked roller</p> <p><u>AstroFusion</u> : Infrared heating cart; Weighted spiked roller</p>
<b>Materials</b>	Turf panels, Seaming tape (12" – Solvent & Hotmelt; 5"- AstroFusion System), Adhesive, Approved Shop Drawings. Note: ONLY use adhesive materials provided by AstroTurf, or specifically approved for use in writing by AstroTurf.
<b>Average Durations</b>	<p>Solvent Adhesive (80,000 sf): 7 days</p> <p>Hot Melt (80,000 sf): 7 days</p> <p>AstroFusion Seaming Process (80,000 sf): 2 days</p>

### Pre Seaming

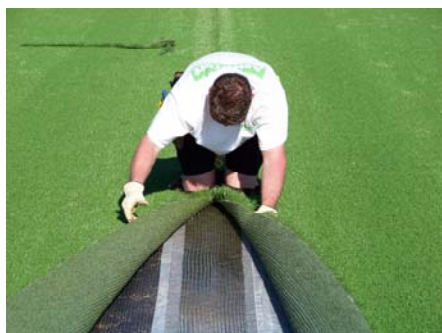
1. Continuing from completion of proper layout of the sport field begin by organizing and placing the panels on the field.
2. Check that the pile lay (the direction the fibers are laying down when the panel is unrolled) will be laying in the direction of the home side or home stands. In the case it is a baseball/softball field then the pile lay will be laying in the direction of home plate.
3. Before unrolling the panels, make sure that the base is free of foot prints or other deviations that might have been caused by laying out the field using a landscape rake and roller.
4. Unroll the panels according to the shop drawings so that they lay flat on the base.
5. Align the rolls and spike to verify in the correct placement according to the shop drawings.
6. Once the rolls are in place and spiked, trim off both edges to allow for a straight, tight seam.
7. Turf must be dry prior to application of any adhesive- solvent, hot melt or AstroFusion.

### • Solvent Adhesive

1. Fold back one edge of turf. Measure and mark with spray paint, line at 6" (or, half the width of seam tape using) from edge of turf. This is the alignment mark for the edge of seaming tape.
2. Fold back remaining turf edge.
3. Pull seaming tape through glue box out onto the crushed stone, with tape gray side up. Drive one nail in on each side of the seaming tape to keep the seaming tape from shifting. Ensure seaming tape is clear of

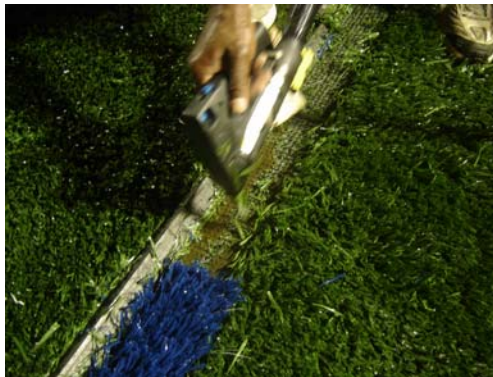
all debris..

4. A proper tack must develop in the glue before it is ready to receive the turf. The time for proper tack to develop varies depending on weather and temperature. Proper tack is achieved when the glue is sticky to touch, viscous, and pulls up 4-6 strings of glue when spike head is dabbed in glue- but all per manufacturer's instructions.
5. Note that one side of turf fibers will be leaning away from the seam and the other side of turf fibers will be leaning in towards the seam. This is important because one side must lay before the other so no adhesive sticks to the fibers and the seam is clean.
6. Install side leaning away from the seam "first", this will keep the fibers up and out of the adhesive,
7. Next, set the other side into the adhesive. This will be the side where the fibers overhang the edge.
8. At this point, a weighted spiked roller is used for initial set to compress the seams and spread the glue evenly. After glue has achieved initial set, keep rolling seam periodically with water filled roller until the adhesive has reached full set. (Read instructions on adhesive for drying time. Always follow the manufacturer's instructions.)
9. Once the seam has been rolled, put nails in along both ends every 3' to prevent wind rollup.
10. Placing weights on seam may be necessary in some conditions where full glue set is delayed due to climactic conditions. Suitable weights include boards with concrete blocks (generally anything of the like which will not leave rust on the turf).
11. The next day remove weights from seams. And re-roll the panel seams.
12. Continue installing the rest of the main seams on the field using the above mentioned methods.
13. Head seams require special care to achieve suitable durability. Head seams require weighting down after gluing, because of the tendency of the ends of rolls to curl.
14. Sidelines: Prior to gluing sideline panels, cut in and install the sideline hash marks. These hash marks must set overnight before proceeding with sideline installation.
15. When attaching the sidelines to the playing field or any other place where the seam tape overlaps itself separate the white backing from the gray side of the seam tape and discard the white backing so that you glue the new seam glue side to gray side.
16. Trim final excess around the perimeter and attach turf to the nailer board using staples not more than 4" apart.



- **Hotmelt Adhesive:**

1. Fold back one edge of turf. Measure and mark with spray paint, line at point half the width of the seam tape being used. This is the alignment mark for the edge of seaming tape.
2. Fold back remaining turf edge.
3. Roll out seaming tape over the crushed stone gray side up. Drive one nail in on each side of the seaming tape to keep the seaming tape from shifting. Ensure seaming tape is clear of all debris.
4. Apply hotmelt adhesive to seaming tape. Apply enough volume of glue to allow for 6" wide, ¼" notch trowel glue coverage. Glue must be worked with a notched trowel.
5. Note that one side of turf fibers will be leaning away from the seam and the other side of turf fibers will be leaning in towards the seam. This is important because one side must lay before the other so no adhesive sticks to the fibers and the seam is clean.
6. Install side leaning away from the seam "first", this will keep the fibers up and out of the adhesive,
7. Next, set the other side into the adhesive. This will be the side where the fibers overhang the edge.
8. At this point, a weighted spiked roller is used to compress the turf backing into the glue, without pressing fibers into the glue
9. Once the seam has been rolled, put nails in along both ends every 3' to prevent wind rollup.
10. Continue installing the rest of the main seams on the field using the above mentioned methods.
11. Sidelines: Prior to gluing sideline panels, cut in and install the sideline hash marks.
12. When attaching the sidelines to the playing field or any other place where the seam tape overlaps itself separate the white backing from the gray side of the seam tape and discard the white backing so that you glue the new seam gray side to gray side.
13. Trim final excess around the perimeter and attach turf to the nailer board using staples not more than 4" apart.
14. NOTE: Hot melt glue is NOT approved for use on concrete.





## AstroFusion

### AstroFusion™ Seaming Process- General Outline:

1. Equipment Required:
  - AstroFusion Cart, including fully charged battery, two (2) -20 gallon Propane tanks
  - AstroFusion pre-glued tape
  - Cart accessories: viewing mirror, IR temperature gun, allen key, fire extinguisher, propane torch; battery charger.
  - Protective gear: leather gloves, eye protection, fire extinguisher
  - Two (2)- ton double drum roller
2. Cut and prepare panels for glued seam. Fold back one edge of turf.
3. Slip Pre-glued tape under turf edge, aligning centerline marker in the glue-tape with the turf edge.
4. Fold back remaining turf edge.
5. Pull off protective film in front of advancing heater cart
6. Heat the glue – using patented, self-propelled infrared heater.
7. Insure heater is at proper operating temperature, and that the AstroFusion glue-tape is heated to the noted optimal temperatures: hand
  - As tape exits from back end of cart: glue to be between **350 and 400 degrees F.**
  - As Turf is laid into glue: glue to be between **240 and 260 degrees F.**
8. Fold the turf into the heated glue
  - Lay turf into glue at consistent distance of approximately 5' behind the cart.
  - Note that one side of turf fibers will be leaning away from the seam and the other side of turf fibers will be leaning in towards the seam. This is important because one side must laid in the glue before the other, so no adhesive sticks to the fibers and the seam is clean. The cart guides the turf to a position where it is just about to lay into the glue joint. One installer guides the final insertion of the turf into the glue.
  - Install side with turf fibers leaning away from the seam first- \_this will keep the fibers up and out of the adhesive.
9. Roll the joint with double drum roller ~~or wheels of gator~~ immediately behind the setting of the turf into the glue.
10. Continue installing the rest of the main seams on the field using the above mentioned methods.
11. Sidelines:
  - Previously glued ends of the main panels may soften when rolled back in preparation for adjoining sideline panels. It is recommended that either clamps on the main seams be installed, or this part of the work be done during the cooler hours of the morning or late evening.
  - Prior to gluing sideline panels, cut in and install the sideline hash marks, using conventional hotmelt adhesive. If present, remove film off back of seam tape at all hash marks prior to gluing in the sideline panels.
12. Trim final excess around the perimeter and attach turf to the nailer board using staples not more than 4" apart.
13. When storing AstroFusion tape- protect from direct sunlight and excess heat.

### Special Notes for the AstroFusion Equipment and Installation Process:

- A. The AstroFusion cart is the property of AstroTurf, and is leased to subcontractors only for use on approved AstroTurf projects. All subcontractors using the AstroFusion process must sign the attached 'Confidentiality and Nondisclosure Agreement' before they will be permitted to use this system.
- B. **Cart Preparation:**

1. Check Battery – insure adequate charge. Best to recharge overnight and start each day with fully charged battery.
2. Check Propane tank for sufficient gas supply. Insure tanks are well into the green of the fill gauge.
3. Check all gas hoses – insure all slack secured, and hoses routed as far from heat sources as possible..
4. Check for any loose parts or fittings.
5. Set idler guide roller arms so that the arm facing the panel to be laid in second (see item 7., above) is extended further than opposite arm.
6. Daily Leak Check before initial startup:
  - Close heater valves
  - Open both propane tank valves and wait for 15 seconds for system to pressurize.
  - Make note of location of fill gauges on both propane tanks
  - Shut valves of propane tanks.
  - Check for any movement in propane tank fill gauges for 15 minutes- any movement indicates a leak in the system- correct and repeat test before lighting and operating the unit.

**C. Lighting Instructions for Heater Units:**

**General Description of Heating System:**

- There are two (2) each, Heater Units mounted on the AstroFusion Cart. Each Heater Unit has three (3) burners on the bottom, facing down. Two (2) Heater Units, three (3) burners per Heater Unit= six (6) total burners on the Cart.
- Each Heater Unit has a regulator valve- the round knob with low-to-high settings. The gas line from a Propane tank is routed to this regulator valve
- From the regulator valve, gas is fed to the manifold mounted on the heater body.
- At the Heater Unit manifold, the following components are provided for each of the three burners on the Heater Unit:
  1. Thermocouple wires going to heater unit thermocouple from the Combination Valve
  2. Combination valves: Includes a Primer, Safety shutoff and gas feed for each of the three burners on each Heater Unit

**Steps to Light Heater Units:**

- **Perparation before lighting:**
  - Unit fully assembled and checked for any loose/improperly fitting parts
  - Leak test performed (see B.3., above)
  - Check to make sure all gas lines are clear of hot areas around the burners.
  - Turf seams prepared and seam tape laid out and staked properly
  - Battery charge checked
  - Tools ready and on hand: Temperature reading gun; Propane torch with adequate gas in cylinder; mirror for checking underside of burners; Fire Extinguisher
  - Adequate number of properly trained workers available and ready.
- **Lighting Sequence- Cold Start:**
  - Insure propane tank valves and Regulator valves are closed. If one was open, close and wait 30 seconds for dispersal of any gas which may be present.
  - Open valve on one of the propane tanks.
  - Turn 'On' the Regulator Valve fed by that propane tank to the Medium setting.
  - Place lighted propane torch below one of (the three) burners fed by the open Regulator valve..
  - Immediately depress and hold the valve button for the burner being lit. Hold valve button in for 30 seconds, then release the valve button slowly. CAUTION: Do NOT push in the valve button before placing the torch flame in front of the burner being lit.
  - Once one burner is lit, repeat this same procedure for the other two burners on that Heater Unit.
  - Using mirror, check to ensure each burner element is fully lit (will burn very bright, with no air cavitation noises).
  - Troubleshooting for Lighting:



- If air cavitation or popping noises experienced: Briefly cover vent holes in tube supporting bleeder valve with fingers, then immediately release.
- Metal 'groan' noise is normal, and will end when Heater is warmed up.
- If above does not eliminate problem, close Regulator and Propane tank valves and restart lighting sequence.
- If no gas at element and propane tank is not empty, check that valves are open. If open, but no gas, then emergency valve in Propane tank may have been activated.
  - To reset the Propane Tank emergency valve: Close the Propane tank valve; Unscrew hose from tank and wait 15 seconds; re-attach hose to tank.
- Repeat Steps 3 through 7 for the second Heater Unit
- Check to make sure all six (6) heating elements are lit and glowing red.
- Once all heating elements are on, turn heater control knobs to the 3<sup>rd</sup> (high) position to allow unit to get to operating temperature.
- Allow cart to heat up for 30 to 60 seconds before starting a seam.
- **Lighting Sequence- Warm/Hot Start:**
  - Insure propane tank valves and Regulator valves are closed. If one was open, close and wait 30 seconds for dispersal of any gas which may be present.
  - Open valve on one of the propane tanks.
  - Note: Different sequence for Hot Start: If unit is hot enough, the thermocouple may allow gas to flow through the combination valve as soon as the Regulator is turned on. This could result in the activation of the safety valve in the Propane tank. Therefore, the following revised sequence:
  - Before turning on Regulator Valve, hold torch flame below one burner element.
  - Turn Regulator valve for the burner to low, then move the torch to each of the other two burner elements on that Heater Unit. Check to insure all burner elements are lit. There should be no need to depress the valve buttons for each of the burner elements. If the valve button does need to be depressed-CAUTION- it will be very hot, use leather gloves.
  - Repeat this same procedure for the other Heater Unit, then turn Regulator Valve to desired operating temperature.
  - Using mirror, check to ensure each burner element is fully lit. Trouble shoot per above, but use caution, as all surfaces will be very hot.

#### D. AstroFusion Seaming Process

- **Manpower:** Requires 4 to 5 workers: 1-Cart driver- guides cart along centerline of AstroFusion tape (can also pull protective tape film off top of AstroFusion glue once level of proficiency attained); moves cart from seam to seam; 1-Turf setter- follows cart about 5' behind, and lays turf into heated AstroFusion tape; 1-Roller operator- follows closely behind Turf setter and rolls seam with 2-ton double drum roller; 1-Lead - monitors proper and safe operation of all aspects of the work- checking temperatures, checking for proper turf lay in and rolling; monitor cart speed and performance; ensure next joints are properly set up and ready.
- **Seaming with AstroFusion::**
  1. Engage drive with the on/off switch. Cart is direct drive and will immediately move.
  2. Cart has pre-set speed which is not adjustable. Cart operator is only to guide the cart along the center of the AstroFusion tape, and insure turf panels are properly guided through the idler guide rollers NOTE: The cart speed is pre-set to perform with the AstroFusion system. The only adjustment is the heater temperature. **Do not pull the cart** when heating tape for a seam. Any adjustments needed to obtain proper glue temperatures are to be made with the Regulator valves.
  3. Turf setter is on knees following as close to the cart as necessary to lay turf into the AstroFusion tape at the ideal temperature. Turf setter lays in the side of the turf with fibers

- laying away from joint first, then lays in other side- being very careful to not trap fibers in the glue.
4. Turf setter presses the turf into the glue with hand and knee pressure in a consistent, uniform manner.
  5. The 2-ton double drum roller follows right behind the Turf setter- rolling each seam approximately 5 ' behind the Turf setter. Check to insure no glue is pushed up and catching fibers.
  6. Once the cart is fully past the end of the seam, turn off the drive switch, turn heater switches to 'off' position, and close valves on propane tank. Note: if next seam is prepared and ready, the cart heater does not need to be turned off- just proceed directly to next seam.
  7. Pull cart to next seam and repeat the process.
  8. Important Notes:
    - Minimize panel adjusting once AstroFusion cart has started on a seam- this may result in glue being too cool for optimal set
    - For sidelines, avoid having folded-back glued main seams exposed to the heat, as the glued joint will separate with the stresses of folding back, then in. It is recommended that sideline panels be done in the cooler morning hours. It is also recommended that the glued main seam side be left down, letting the cart pick up the turf in the idler guide bars as it moves along the seam. This limits exposure of the previously glued joints to the heat of the day.
    - **IF PROBLEM DEVELOPS MID-SEAM-** Take the following Immediate Action:
      - i. Turn off Propane gas at both tanks
      - ii. Turn off Cart motor
      - iii. Remove the cart from the affected area- preferably three worker to use handles on the Cart, and lift cart well above the turf surface, and place on gravel or protected surface. NOTE- there will still be enough radiant heat on the burners to MELT the turf on the field- DO NOT place the removed cart on or near any turf.
      - iv. Repair the issue that caused the stoppage.
      - v. Light the cart burners from off the seam and on a protected surface- allow cart to get to full operating temperature.
      - vi. Use hand holds to move the cart back to the repaired area, and immediately turn on the drive motor and commence seaming again.
      - vii. NOTE: There will be an open section of tape between the completed seam and the back of the cart that the cart can not heat. This area will need to be repaired with a conventional hot melt and seaming tape repair seam.

**Related Attachments Included:**

- Confidentiality and Nondisclosure Agreement- AstroFusion system

## CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT

This Confidentiality and Nondisclosure Agreement (the “Agreement”) is made and entered into on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ (the “Effective Date”), by and between AstroTurf, LLC, a Michigan limited liability company, having its principle place of business at 2680 Abutment Road, Dalton, Georgia 30721, United States (“ASTROTURF”), and \_\_\_\_\_ (“\_\_\_\_”), located at - \_\_\_\_\_ (“RECIPIENT”). ASTROTURF is willing to disclose to RECIPIENT certain confidential and proprietary information related to seaming adhesive technology, processes, and equipment in order to permit RECIPIENT to install the ASTROFUSION™ System. The disclosure of such information is subject to the terms and conditions described in this Agreement.

NOW THEREFORE, in consideration of the foregoing premises and mutual promises hereinafter contained, RECIPIENT agrees as follows:

1. **DEFINITIONS.** As used in this Agreement, the words below are defined as follows:

A. **Affiliate** of a party means any other entity directly or indirectly controlling, controlled by or under common control with that party as of the date of this Agreement, e.g., a subsidiary or parent corporation.

B. **Confidential Information** means and refers to all confidential or proprietary information, documents, and materials, whether printed or in machine-readable form or otherwise, including, but not limited to, processes, hardware, software, inventions, trade secrets, ideas, designs, research, and know-how; business methods, production plans, marketing and branding plans, and merger plans; and identity of shareholders, directors, or employees; programs, and procedures relating to the business operations of ASTROTURF, including, but not limited to organizational structure, management, marketing and branding strategies, products and services, customer service, human resource and employee benefit policies, programs, and services, and internal communication processes and technology tools; all inventions (whether patentable or unpatentable and whether or not reduced to practice), all improvements to any such inventions, and all patents, including, patent applications, and patent disclosures, both domestic and foreign, together with all reissues, continuations, continuations-in-part, revisions, extensions, and re-examinations thereof. Such inventions include, but are not limited to, all products created, designed, and marketed by ASTROTURF, its successors or assigns and any parent, subsidiary or affiliate ASTROTURF; including seaming adhesive technology, processes, and equipment for the ASTROFUSION™ System all marks, whether protected under federal, state, provincial, local, or international law or international treaty, including trademarks, service marks, logos, slogans, trade names, and corporate names. Writings and other works subject to copyright protection under any federal, state, provincial, or local, or international copyright act or other law or international treaty, including, without limitation, the U.S. Copyright Act. All trade secrets and confidential business information (including, without limitation, ideas, research and development, know-how, formulas, compositions, manufacturing and production processes and techniques, technical data, designs, drawings, specifications, customer information and lists, and supplier information and lists, current and potential customer or client information and lists, current and potential product information and lists, pricing and cost information, business and marketing plans and proposals, and financial information and forecasts); all computer software; all other proprietary and intangible rights, property, and assets, whether actual or potential; all web sites and domain names; and all copies and tangible embodiments thereof (in whatever form or medium).

Confidential Information shall include all information that should reasonably have been understood by RECIPIENT, because of legends or other markings, the circumstances of disclosure, or the nature of the information itself, to be proprietary and confidential to ASTROTURF, regardless of whether such information is marked “Confidential” or “Proprietary.” The term **Confidential Information** shall *not* include information which: (i) was or is obtained by RECIPIENT from a third party which third party, to the actual knowledge of RECIPIENT, was or is lawfully in possession of such information and was or is not in violation of any contractual or legal obligation to ASTROTURF or other third party with respect to such information; (ii) is or becomes part of the public domain through no fault of

RECIPIENT or its Representatives; (iii) was or is independently ascertained or developed by RECIPIENT or its Representatives; or (iv) is approved for disclosure and release by written authorization of ASTROTURF.

C. **Control** means (i) the legal, beneficial or equitable ownership, directly or indirectly, of at least a majority of the equity interests of an entity; or (ii) the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of an entity or the election of a majority of the board of directors or comparable governing body of an entity, whether through the ownership of voting securities, by contract or otherwise

D. **Recipient** ("RECIPIENT") refers to the person or enterprise named above and who has executed this Agreement in connection with its receipt of any written or oral proprietary or other Confidential Information from ASTROTURF.

E. **Representatives** refers to the directors, officers, employees, agents or other representatives, including, without limitation, attorneys, accountants, consultants, investment bankers, financial advisors and lenders of RECIPIENT and its Affiliates.

F. **Review Material** refers to reports, notes, analyses, compilations, files, data, forecasts, studies, memoranda or other documents which contain or otherwise reflect Confidential Information, including, without limitation, materials created by RECIPIENT.

2. **CONFIDENTIALITY OF DISCUSSIONS AND RELATIONSHIP.** Except as required by law or as permitted by Paragraph 7 of this Agreement, neither RECIPIENT nor its Representatives will, without the prior written consent of ASTROTURF, disclose to any person the fact that Confidential Information has been made available to RECIPIENT.

3. **DUTY OF CARE.** Subject to Paragraphs 5 and 7 of this Agreement, RECIPIENT agrees to use the same degree of care in protecting and using the Confidential Information received pursuant to this Agreement as RECIPIENT would use in protecting its own Confidential Information. In no case will RECIPIENT use less than a reasonable degree of care to maintain the confidentiality of the Confidential Information received.

4. **TIME LIMIT OF CONFIDENTIALITY.** Both any Review Material and the Confidential Information will be kept confidential for a period of three (3) years from the date of disclosure of the same. Neither RECIPIENT nor any of its Representatives will, without the prior written consent of ASTROTURF, disclose the Review Material or the Confidential Information, in whole or in part, in any manner whatsoever.

5. **LIMITATIONS ON USE OF INFORMATION.** RECIPIENT agrees that with respect to ASTROTURF'S Confidential Information RECIPIENT will:

A. Not use the Review Material or the Confidential Information other than for the purpose described in or otherwise intended by this Agreement.

B. Not use the Review Material or the Confidential Information to compete, either directly or indirectly, with ASTROTURF, notwithstanding the provisions of Paragraph 7 below or any other provision of this Agreement to the contrary.

C. Reveal the Review Material and the Confidential Information only to its Representatives who need to know the same for the purpose of installing the ASTROFUSION™ System for ASTROTURF and who are informed by RECIPIENT of the confidential nature of the same; and

D. At ASTROTURF's request, promptly return to ASTROTURF any and all Confidential Information disclosed under this Agreement (including copies forwarded to Representatives), together with all copies thereof, and destroy all Review Material (and confirm such destruction in writing to ASTROTURF). Alternatively, at ASTROTURF's sole discretion, RECIPIENT may destroy all Confidential Information and Review Material and confirm such destruction in writing to ASTROTURF. Provided, however, that RECIPIENT may retain one copy of any Review Material in its confidential, restricted access files for archival purposes, which copy shall be maintained in accordance with the provisions of this Agreement.

E. Not use the Confidential Information or Review Information to recruit, solicit, retain, or hire employees of ASTROTURF.

**6. LIABILITY FOR REPRESENTATIVES.** RECIPIENT will be responsible for any breach of this Agreement by its Representatives.

**7. LEGALLY ORDERED DISCLOSURE.** If RECIPIENT or anyone to whom it transmits Review Material pursuant to this Agreement is requested or required to disclose any Confidential Information, any of the Review Material, or any other factor matter disclosure of which is prohibited by this Agreement, by administrative or judicial action (including without limitation by deposition, interrogatory, request for information in legal proceedings, subpoena, civil investigative demand, order, statute, rule, request or other requirement promulgated or imposed by a judicial, regulatory, self-regulatory, legislative body or governmental agency), RECIPIENT, if legally permitted, will promptly after notice of such action notify ASTROTURF of such action to give ASTROTURF the opportunity to seek any legal remedies available to it for the purpose of maintain Review Material, Confidential Information and any other matter disclosure of which is prohibited by this Agreement, in confidence. If such protective order or other remedy is not obtained, or ASTROTURF waives compliance with the provisions of this Agreement, RECIPIENT will furnish only that portion of the Confidential Information, Review Material or other information which is required or requested, and RECIPIENT will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded to all such documents, data, or information which is disclosed.

**8. COVENANTS.** ASTROTURF hereby represents to RECIPIENT that the disclosure of the Confidential Information will not violate any proprietary rights of third parties, including, without limitation, confidential relationships, patent and copyright rights, or other trade secrets, and that the disclosure will not violate any contractual obligations which ASTROTURF may have to any third party. ASTROTURF further warrants that it has the right to disclose all Confidential Information that it discloses to RECIPIENT pursuant to this Agreement.

**9. REPRESENTATIONS AND WARRANTIES.** Except as otherwise provided herein, ASTROTURF makes no representation or warranty, express or implied, with respect to any Confidential Information Confidential Information is provided “as is” with all faults and ASTROTURF shall not be liable for the accuracy or completeness of the Confidential Information.

**10. TITLE TO CONFIDENTIAL INFORMATION.** All the Confidential Information disclosed to, delivered to, or acquired by RECIPIENT from ASTROTURF hereunder shall be and remain the sole property of ASTROTURF.

**11. ASSIGNMENT, SUBLETTING, REVERSE ASSEMBLING OR ENGINEERING.** RECIPIENT agrees that it will not (a) assign, sublicense, transfer, lease, rent or share any Review Material, Confidential Information, seaming adhesive technology, processes, and equipment provided by ASTROTURF for the ASTROFUSION™ System, (b) copy, modify, create any derivative work of, or include in any other products any of, or any portion thereof; or (c) reverse assemble, decompile, reverse engineer or otherwise attempt to reproduce the underlying ideas, structure or organization of any of the seaming adhesive technology, processes, and equipment provided by ASTROTURF for the ASTROFUSION™ System.

**12. NO OBLIGATION CREATED BY DISCLOSURE.** Disclosure of the Confidential Information disclosed by ASTROTURF to RECIPIENT shall not constitute any option, grant, or license to RECIPIENT of such Confidential Information under any patent, know-how, or other rights heretofore, now, or hereinafter held by ASTROTURF. It is understood and agreed that the disclosure by ASTROTURF of the Confidential Information hereunder shall not result in any obligation on the part of ASTROTURF to enter into any further agreement with RECIPIENT with respect to the subject matter hereof or otherwise.

**13. EQUITABLE REMEDIES.** RECIPIENT further acknowledges that remedies at law may be inadequate to protect ASTROTURF against breach of this Agreement, and RECIPIENT hereby agrees in advance that ASTROTURF shall be entitled to seek injunctive relief in the event of a breach of this Agreement. Such relief shall not be deemed to be the exclusive relief for a breach by RECIPIENT of this Agreement but shall be in addition to all other remedies available at law or equity to ASTROTURF.



August 11, 2011 (Rev.)

**14. SUCCESSORS AND ASSIGNS.** This Agreement is binding on the parties, their successors and assigns. No modification of this Agreement shall be effective unless in writing and signed by both parties hereto.

**15. NOTICES.** All notices, demands, requests or other communications given under this Agreement shall be in writing and be given by personal delivery, certified mail, return receipt requested, or nationally recognized overnight courier service to the address set forth below or as may subsequently in writing be requested. If to

ASTROTURF:

AstroTurf, LLC.  
Attn.: Legal Department  
2680 Abutment Road  
Dalton, GA 30721

If to RECIPIENT:

\_\_\_\_\_  
[Attention: NAME]  
[ADDRESS]

**16. GENERAL**

**A. Waiver.** ASTROTURF'S waiver of any breach or failure to enforce any of the terms and conditions of this Agreement at any time shall not in any way affect, limit, or waive ASTROTURF'S right thereafter to enforce and compel strict compliance with every term and condition hereof.

**B. GOVERNING LAW.** This agreement as it applies to a breach by either party shall be governed by, and construed in accordance with, the laws of the State of Georgia. Any suit or proceeding relating to this Agreement shall be brought in the courts, state and federal, located in or having jurisdiction over Whitfield County, Georgia. RECIPIENT hereby consents to the exclusive personal jurisdiction and venue of the courts, state and federal, located or having jurisdiction over Whitfield County, Georgia.

**C. COMPLETE AGREEMENT.** This Agreement constitutes the complete agreement between the parties hereto and supersedes and cancels any and all prior communications and agreements between the parties with respect to the disclosure of Confidential Information described herein and the subject matter hereof.

IN WITNESS WHEREOF, the parties hereto by their duly authorized representatives have executed this Confidentiality and Nondisclosure Agreement upon the date first set forth above.

\_\_\_\_\_  
AstroTurf, LLC

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_



## 10. Inlay, Logo and Endzone Installations

<b>Description</b>	Method to install inlays
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Minimum of 4 Employees
<b>Equipment</b>	String Lines, Nails, Templates, Tape Measures, Carpet Knife, Loop Pile Cutter, Double Cutter, Shears, 2' and 10' Straight Board, Vacuum, 1/4" Notched Trowel, Glue Box, Generator, Paint,
<b>Materials</b>	Adhesive, Turf Inlays, seam tape
<b>Duration</b>	3-5 days

### • Cutting in Inlays

1. Use the following process to cut in hash marks, in bound marks, media lines, numbers, letters and logos.
2. Set up string lines to install the inlays according to the measurements on the shop drawings. This will ensure that you are starting with a straight line.
3. The actual letters and logos will be their own template.
4. Set the number or letter (template) in place, brush the fibers out from under the sides of the template ensuring that the fibers are in their finished position before cutting. (this is what it is going to look like once the inlay is installed)
5. Use a carpet knife with a new blade to make a cut in the turf, use a loop pile cutter to finish cutting the turf out where the inlay will be installed.
6. Remove and discard the cut out turf.
7. Install seam tape under cutout area, ensuring it extends at least 4" beyond the cutout opening in all directions
8. Using hot melt adhesive, apply continuous glue bead 1/2" from edge of cutout, and then a zigzag glue area extending 2" into the turf area from the continuous bead
9. Press the green turf into the glue applied above, carefully laying the turf into the glue with rolling motion toward cutout opening
10. Immediately apply bead of glue in center of inlay area, and on any cooled glue which may have oozed into the opening from the application above
11. Lay the inlay piece into the glue, rolling from center toward seam with green turf. Follow ahead with additional glue in same manner until entire inlay piece is placed in continuous operation
12. The tolerance is 1/4" or less between spacing of inlay and turf.
13. Use this process to install the rest of the inlays.



- **Cutting in Multi Sport Packages (long inlays)**

1. Set up string lines to install the inlays according to the measurements on the shop drawings. This will ensure that you are starting with a straight line.
2. Lay a straight board down to match the string line, this allows you to be able to cut a straight line.
3. Brush the fibers out from under the straight board ensuring that the fibers are in their finished position before cutting. (this is what it is going to look like once the inlay is installed)
4. Use a carpet knife with a new blade to make a cut in the turf, use a double cutter to finish cutting the turf out where the inlay will be installed.
5. Steps 6 through 13, from 'Cutting in Inlays', above.



- **Shaved in Inlays and Multi-Sport packages**

Note: Shaving inlays and lines is only permitted when mandated by an AstroTurf client, and for certain repairs, when this method is deemed most suitable. Otherwise, this method is NOT to be used on AstroTurf projects. **Written directive from AstroTurf is required before shaving and hot melting on any AstroTurf project.**

When used in accordance with the note above, Shaving inlays/lines shall be performed as follows:

1. Set up string lines to install the inlays according to the measurements on the shop drawings. This will ensure that you are starting with a straight line.
2. Use the correct template for the inlay that you are installing. The actual letters and logos will be their own template. For lines, use a straight edge as a guide.
3. Set the template/guide in place, brush the fibers out from under the sides of the template ensuring that the fibers are in their finished position before shearing. (this is what it is going to look like once the inlay is installed)
4. Shear out the fibers where the inlays will be installed. On the letters and logos **ONLY** shear 4" around the perimeter, cut along the inside of the shaved fibers leaving the 4"shaved portion to adhere to. Remove and discard the cut out portion.
5. Vacuum up the loose fibers.
6. Using hot melt adhesive, apply enough glue in center of shaved area to fully cover shaved area when inlay piece is pressed into glue.
7. Press the inlay into the glue applied above, carefully laying the turf into the glue with rolling motion, insuring glue fully covers shaved area. Follow ahead with additional glue in same manner until entire inlay piece is placed in continuous operation
8. The tolerance is 1/4" or less between spacing of inlay and turf.
9. Use this process to install the rest of the inlays.





- **End Zone and Logo Installations:**

1. Establish top and bottom control lines, and set letters/logos in place per the shop drawings
2. Request Owner approval of layout prior to cutting any turf.
3. Nail letters/logos in place on turf panel; double check measurements and visual alignment
4. Cut around each letter/logo. Fold half the letter/logo over itself, cut out and remove green turf below.
5. Insert seam tape around cutout; glue, trowel and place folded half onto glue.
6. Repeat for opposite side of letter/logo and all other letters



- **Site Clean Up**

1. Once all inlays have been installed, all inlays are checked for the proper fiber gap between inlays and body of field (1/4").
2. Check for glue slobbers and proper inlay adhering.
3. Clean site up of scraps and debris and dispose in dumpster
4. Roll up and stack extra material to be given to owner in a safe place.
5. Final clean and thorough walkthrough is mandatory to ensure consistent quality throughout the field. Look for trapped fibers, strings, synthetic weeds (fibers that are taller than the intended pile height)
6. Proceed to infill installation if applicable.

## 11. Special Installations

	Indoor Installations
	Baseball – Velcro Installation
	A12 Installation
	Puregrass and other Nylon products

### A. Indoor Installations

On all indoor installations less than 50,000 sf, a tack coat is to be applied before turf is shipped. psf. Not sure what would happen with a lighter infill system though.

#### Tack Coat Formulation and Application:

Applied prior to synthetic turf installation to eliminate turf movement or “creeping” on slick indoor surfaces.

Tools required:

- 1) Concrete primer available at any hardware store
- 2) A straw-type broom
- 3) Crumb rubber

#### Instructions

- a) Mix crumb rubber and concrete primer together. It’s easier and preferable to get the primer in a 5 gallon pail. Mix approximately 1.5 lbs of crumb rubber per gallon of primer. For 5 gallons use approx. 7.5lbs of rubber
- b) Dip straw-type broom into primer / rubber mixture. Swing broom around (like a baseball bat) to spread mixture onto surface. You do not have to cover every square foot. The idea is to sprinkle the mixture over the majority of surface area.
- c) Each gallon should be able to sprinkle an area of approximately 1,500 to 2,000 square feet. For a typical 20,000 square foot installation expect to use about 10 to 15 gallons of the mixture.



## B. Baseball Velcro Installations

Certain applications on baseball fields will require high use areas to have removable panels inserts installed at the beginning of the project.

These inserts will be removable by installing velcro around the perimeter of the insert. This will allow the owner or trained professional to re-move and replace this panel at a later date. This process should be at the complete direction of AstroTurf personnel.



## 12. Infill Installation- Lay-More type

<b>Description</b>	Rubber or Sand /Rubber Infill Procedure of AstroTurf XPe and MT products
<b>Responsible Party</b>	Turf Installation Company
<b>Manpower</b>	Minimum of 4 Employees
<b>Equipment</b>	Gator or Tractor, Drop Spreader/Top Dresser (similar to Turfco Mete-R-Matic XL Topdresser- no rotary spreaders ), Lay-Mor (or equal), Lull/Extended Reach Fork lift, Dumpster, Shindawa type power broom, Infill measuring gauge (AstroTurf) Clean Up Equipment (blower, rakes, broom, shovel, etc),
<b>Materials</b>	Infill Material- All Rubber or Sand and Rubber.
<b>Duration</b>	4 days

Obtain the infill material recipe from AstroTurf Project Manager, or as noted in Subcontract Agreement.

### A. Acceptance of Material

1. Inspect and accept infill material
2. Check for: Bill of lading; size; uniformity, cleanliness, bag quality, pallet quality and strap quality
3. Provide 1gallon of infill material to AstroTurf quality control.
4. Report any concerns or questions to AstroTurf Project Manager.

### B. Safety Concerns

1. Check the lull/reach fork capacity chart for machine capabilities before off loading material
2. Inspect the cables, chains or tow straps before off loading materials. Repair or replace if necessary
3. Conduct a safety meeting with all employees before off loading begins. Discuss hand signals, positioning of employees and general safety guidelines

### C. Off Loading Process

1. Remove pallets of infill from truck
2. When removing pallets ensure that the forks do not extend into the next pallet and cause damage
3. Tilt the forks back so that the bag rests on the rack during transport
4. Transport slowly to staging area
5. Process has been successfully completed when all pallets have been off loaded and positioned in the staging area

### D. Pre Infill Field Checklist

1. Perform an inspection of the field
2. Check for wrinkles, loose seams and loose fibers
3. Verify that one end of the perimeter of the turf is fastened to the curb or nailer.
4. Perform an inspection of the track protection
5. Report any concerns or questions to an AstroTurf representative
6. Accept that the field is ready to begin the infill process

### E. Preparation for Infill

1. Brush field in direction of pile lay- cleans field and de-tangles fibers. Going forwards
2. Brush field, going backwards, to stand up fibers. Match brush speed to travel speed.



#### F. Transporting Infill from Staging Area to Field

1. Transport the Top Spreader to the field and adjust the settings to match the infill recipe
2. Before transporting infill to the Top Spreader check for tears, rips and dry rot on the bags
3. Cut the straps that secure the bag to the pallet, extend forks through the ear loops on the top of the bag to transport, use caution to avoid swinging of the bag or tilting of forks that could result in the loops breaking. **GO SLOW; KEEP PEOPLE CLEAR!**
4. Lift the bag of infill so the center of the bottom of the bag is centered in the hopper of the Top Spreader
5. Cut the bottom of the bag so the infill drops into the hopper. Be aware of where other employees are before cutting the bag
6. Properly dispose of the bag and pallet in dumpster
7. Repeat this process until field is complete

#### G. Infill Installation

1. Before starting the infill, take the lay more or power broom and brush the field going against the pile lay so that the fibers stand up
2. Depending on the infill recipe, divide the infill where you install at least 5 separate layers of rubber infill
3. Begin infilling by driving the top spreader across the main body of the field, drive down the end line and come back along the 10 yard line making a big circle and continuing this pattern down the field until one lift has been completed
4. Finish one lift before starting the next
5. Brush the infill into the field going against the pile lay, standing the fibers back up as you go
6. Sand: Must be dry; controlled rate of dropping to not trap fibers; Brush every other sand lift.
7. Rubber Infill: Brush after every lift (Groomer can be attached to back of spreader to eliminate need for brushing every lift)
8. Continue infilling the field using the two previous methods until the body of the field is complete
9. Once the body of the field is complete, use the same methods to infill the sidelines and edges
10. When installing the infill make sure that there are no trapped fibers
11. Provide quality reports to your AstroTurf representative for infill consistency in the field as well as along the edges in 25 locations across the field.
12. Provide a surplus material report to an AstroTurf representative 48 hours prior to your completion

#### H. Final Groom and Site Clean Up

1. Trim, pick up and remove any loose fibers, strings and debris before final groom
2. The final groom should be performed in a uniform pattern to produce an aesthetically pleasing appearance
3. If needed, water and/or water and downy can be used to reduce static and dust from the fiber. This also provides good compaction
4. Clean and dispose of any and all trash/debris left from the infill installation
5. Call off dumpster and equipment
6. Notify an AstroTurf representative that the infill installation is complete and the field is ready for an inspection.



### 13. SandMatic Installation

<b>Description</b>	Rubber or Sand /Rubber Infill Procedure of AstroTurf 3D Products
<b>Responsible Party</b>	Infill Installation Company
<b>Manpower</b>	Minimum of 3 Employees for two (2) Sandmatic machines;
<b>Equipment</b>	AstroGroomer, Lull/Reach Fork, Dumpster, Final Groom Equipment, (TCA 1400, SportsChamp) Shindawa, Infill measuring gauge (AstroTurf) Clean Up Equipment (blower, broom, shovel, etc)
<b>Materials</b>	Infill Material- All Rubber or Sand and Rubber.
<b>Duration</b>	7 days

Obtain the infill material recipe from AstroTurf Project Manager, or as noted in Subcontract Agreement.

#### A. Acceptance of Material

- Inspect and accept infill material
- Check for uniformity, cleanliness, bag quality, pallet quality and strap quality
- Provide 1gallon of infill material to your AstroTurf representative for quality control.
- Report any concerns or questions to an AstroTurf representative

#### B. Site Acceptance

- Inspect and accept site cleanliness
- Locate staging area for material and dumpster
- Locate access to the field

#### C. Safety Concerns

- Check the lull/reach fork capacity chart for machine capabilities before off loading material
- Inspect the cables, chains or tow straps before off loading materials. Repair or replace if necessary
- Conduct a safety meeting with all employees before off loading begins. Discuss hand signals, positioning of employees and general safety guidelines

#### D. Off Loading Process

- Remove pallets of infill from truck
- When removing pallets ensure that the forks do not extend into the next pallet and cause damage
- Tilt the forks back so that the bag rests on the rack during transport
- Transport slowly to staging area
- Process has been successfully completed when all pallets have been off loaded and positioned in the staging area

#### E. Field Acceptance

- Perform an inspection of the field with the Field Installer and AstroTurf Project Manager
- Check for wrinkles, loose seams and loose fibers
- If a sand ballast layer has been installed by the turf installation company, verify that it is level and evenly installed
- Verify that perimeter of the turf is fastened to the curb or nailer
- Perform an inspection of the track protection
- Report any concerns or questions to an AstroTurf representative
- Accept that the field is ready to begin the infill process

#### F. Transporting Infill from Staging Area to Field

- Transport the AstroGroomer to the field and adjust the settings to match the infill recipe
- Before transporting infill to the AstroGroomer check for tears, rips and dry rot on the bags
- Cut the straps that secure the bag to the pallet, extend forks through the ear loops on the top of the bag to transport, use caution to avoid swinging of the bag that could result in the loops breaking. **GO SLOW!**
- Lift the bag of infill so the center of the bottom of the bag is centered in the hopper of the AstroGroomer
- Cut the bottom of the bag so the infill drops into the hopper. Be aware of where other employees are before cutting the bag
- Properly dispose of the bag and pallet in dumpster
- Repeat this process until field is complete

#### G. Infill Installation

- **Tuning in the Sandmatic:** Use back of endzone or Dzone to adjust metering rates of infill. Set up motor speed, travelling speed, drop rate, brush height. Make two passes and measure results- checking for infill depth and trapped fibers.
- Set up string lines as reference for proper width of travel paths
- Drop infill in forward pass; reverse brushes, back up on same path (back up speed is greater than dropping speed); move right to next string line (right side of machine)
- Begin infilling with the AstroGroomer driving with the pile lay
- Second lift: offset string lines from original positions to avoid voids or overfill lines
- When installing the infill make sure that there are no trapped fibers
- Finish installing one lift across the field before starting the next
- Finish the body of the field before starting the sidelines or edges of the field
- If the field is a sand/rubber infill, install all the sand on the bottom layer and all the rubber on the top layer
- Provide quality reports to your AstroTurf representative for infill consistency in the field as well as along the edges in 25 locations across the field.
- Provide a surplus material report to an AstroTurf representative 48 hours prior to your completion

#### H. Final Groom and Site Clean Up

- Trim, pick up and remove any loose fibers, strings and debris before final groom
- The final groom should be performed in a uniform pattern to produce an aesthetically pleasing appearance
- If needed, water and/or water and downy can be used to reduce static and dust from the fiber. This also provides good compaction
- Clean and dispose of any and all trash/debris left from the infill installation
- Call off dumpster and equipment
- Notify an AstroTurf representative that the infill installation is complete and the field is ready for an inspection

## 14. Project Closeout and Owner Maintenance Training

<b>Description</b>	Final Punch of field, Field Sign Off and Owner Training
<b>Responsible Party</b>	Turf Installation Company, Infill Installation Company, AstroTurf Representative
<b>Manpower</b>	Minimum of 2 Employees
<b>Equipment</b>	Vacuum, Knives, Tape Measures, Clean Up Equipment (blower, broom, shovel, etc)
<b>Materials</b>	O & M Manual, Close Out Documents, Shop Drawings
<b>Duration</b>	1 day

### General Overview of Entire Closeout Process:

- Installer and AstroTurf do own punchlist PRIOR to calling Owner or Architect. We want the first inspection by the Owner and/or Architect to be of a 100% field that we can be proud of and that has, ideally, zero punchlist items.
- Inspection conducted with client/client representative. At this Inspection, Maintenance equipment is demonstrated, along with instruction in proper care/maintenance of field. Certificate of Substantial Completion form completed and signed at end of inspection meeting. If punchlist items found, they are on a list, attached to the form. If no punchlist, Final Completion Form signed.
- If punchlist attached, this work is completed, and final inspection scheduled
- Final inspection conducted, and Final Completion form signed.

### A. Internal Pnchlist and Inspection

Upon completion, Installer and AstroTurf project manager conduct thorough inspection and address any item found to be deficient or incomplete. This is to be done prior to scheduling the client inspection, with the goal of zero punchlist items at client walk inspection.

### B. Owner Walk Through

1. Notify AstroTurf PM 48 hours prior to when the walk through needs to take place.
2. Inspect the field with an AstroTurf representative and the owner, and generate punchlist of any items that are incomplete or deficient.
3. At conclusion of inspection, demonstrate the maintenance equipment, conduct maintenance/grooming training, and obtain sign-off on Certificate of Substantial Completion (or Final Completion, if no punch list items).
4. If punch list work required, complete subsequent to meeting, then notify AstroTurf that Final inspection is ready to be scheduled.
5. Conduct Final inspection, and obtain sign-off of Final Completion form
6. Sign over the extra material/attic stock to the owner.

### C. Owner Training

1. In advance of the initial Owner Walk through meeting, assemble and test the maintenance equipment on the owner's equipment.
2. At Owner Training meeting, demonstrate the proper way to clean and groom the field.
  - a. Sweeping: - Used to remove litter from field (trash, leaves, loose fibers, etc.)



- Brush should be set so that it barely touches the tips of the turf fibers. Be careful not to dig into the in-fill material ( A small amount of rubber will be swept up with the debris.
- Sweep should be done on an as-needed basis, before special events.
- b. Grooming: Used to keep the infill even and stand the turf fibers up
  - Should be done every 4-6 weeks (more frequent if field is used regularly)
  - Brushes should be just touching the turf, any deeper and it causes premature brush wear
  - Always groom the field in a linear pattern from sideline to sideline
  - Rubber will stick to the fibers immediately after grooming due to friction, making the surface appear black. It will settle after wetting (you can drag a wet piece of turf over the area if needed)
  - Grooming equipment should be operated at approx. 5-7 mph
  - Always remember to lift implements while transporting
  - Always check equipment for dirt, grease, and leaks

#### 4. Repairs

- A) *Minor Repairs*- Cuts, rips and tears in the surface or seams that have come unglued extending a few inches to a few feet can generally be repaired by the Owner's maintenance staff
1. Vacuum fill from the turf to be repaired. Make sure the vacuum container is clean so you can re-use the rubber infill.
  2. Remove debris from the fabrics to be repaired and clean with mineral spirits
  3. Place seaming tape under the repair, coated side down, and place small amount of adhesive on the tape
  4. Place the fabric back down on the seam tape and weigh the area down
  5. Allow to cure for at least 24 hours
  6. Re-spread infill into area by applying several layers of rubber and brushing each layer separately.
- B) *Major repairs*
1. Call your AstroTurf Representative

#### D. Important Administration Requirements:

- a. Must receive Final Completion sign off from Owner/Client
- b. Collect and Return all packing slips to AstroTurf
- c. Daily reports to be submitted to AstroTurf weekly (and this is prerequisite for payment)
- d. Daily job photos required, and copies forwarded to AstroTurf with final payment application.
- e. Samples of carpet and infill to be collected and forward to AstroTurf office in Dalton- prior to final payment application.
- f. Package ready for shipping any excess materials, and contact AstroTurf when ready for pickup.
- g. Dumpsters, toilets and rental equipment called off rent, project site completely cleaned.

#### **Related Attachments Included:**

- Installer Quality CheckList
- AstroTurf Substantial Completion Form
- AstroTurf Final Completion Form
- AstroTurf Owner's Extra Material (Attic Stock/Surplus Material)
- AstroTurf Owner Training Form
- Grooming Diagram

## Installer Quality Inspection Check List

<b>Description</b>	Field Installation check list that the installer turns in for final payment
<b>Responsible Party</b>	Turf Installation Company and/or Infill Installation Company

☐ **Shop Drawings were delivered.**

☐ **Base Inspection**

- ☐ String line base from curb to curb going across the crown of the field, planarity tolerance ¼" in 10' grid. Making sure that there are no ridges or deviations in base. Paint out any deviations and check once corrected.
- ☐ Check for stability of base to accommodate standard installation practices.
- ☐ Check that nailer board (or curb if no nailer board) is attached around perimeter and that it is between 1 ¼" and 1 ½" from matching surface.

☐ **Measurements of the field**

- ☐ Football- Measure from goal post to goal post to make sure the dimensions are correct and the goose necks line up with the back end zone line.
- ☐ Baseball/ Softball- String line home plate to both foul poles to make sure home plate is square and that it lines up with the outside of 1<sup>st</sup> and 3<sup>rd</sup> base. Measure the bases to make sure the dimensions are correct.
- ☐ Soccer- If there is sleeves for the goals, measure to make sure the dimensions are correct.

☐ **Acceptance of turf material delivered on site**

- ☐ Correct number of rolls delivered matching shop drawings.
- ☐ Correct sport package delivered pertaining to the field to be installed (football, soccer, baseball etc) Extra turf for replacement boxes for baseball.
- ☐ Correct number of hash marks, inbound marks and media lines.
- ☐ Correct number package, letter package and logo if applicable.
- ☐ Correct multi sport package delivered if applicable.
- ☐ Correct pile height, yarn color and yarn type.
- ☐ Check for quality of primary and secondary backing, stitch gauge, stitch rate and perforations.
- ☐ Report any damaged material delivered to site.

☐ **Acceptance of infill material delivered on site**

- ☐ Correct type of infill delivered.
- ☐ Correct amount of infill delivered.

- ☐ Report any damaged sacks or pallets delivered to site.
- ☐ 1 gallon infill sample has been taken and shipped to AstroTurf for quality control.
- ☐ **Correct direction of pile lay.** (Pile lay is to home side, pile lay is toward home plate in baseball)
- ☐ **Seaming**
  - ☐ **Glued Installation-**
    - ☐ Base has been fixed of any foot prints or deviations before panel has been rolled out.
    - ☐ All seams are gapped **NO MORE THAN A 3/8"**.
    - ☐ All seams have been rolled to insure adhesive bond.
    - ☐ All seams have been checked for trapped fibers and adhesive slobbers.
    - ☐ All seams or yard lines are straight.
  - ☐ **Sewn Installation-**
    - ☐ All fibers at seams are gapped **NO MORE THAN A 3/8"**.
    - ☐ Panel has been checked for loose stitching.
    - ☐ Base has been fixed of any foot prints or deviations before panel has been flipped.
    - ☐ Seam has been rolled after panel has been flipped.
    - ☐ All seams have been checked for trapped fibers and loose seams.
    - ☐ All seams or yard lines are straight.
- ☐ **Inlay Installation**
  - ☐ All inlays are gapped **NO MORE THAN A 1/4"**.
  - ☐ If shaved, all fibers are cleaned up.
  - ☐ All inlays have been rolled to insure adhesive bond.
  - ☐ All inlays have been checked for trapped fibers or adhesive slobbers.
  - ☐ All adhesive debris has been disposed of.
- ☐ **Infill Installation**
  - ☐ **Power Broom/ Lay more**
    - ☐ Have received the correct recipe for infill installation
    - ☐ Infill has been put in with at least 7 separate lifts, finishing the 1<sup>st</sup> lift before starting the next.
    - ☐ Infill was finished on the body of the field before sidelines or edges.

- ☐ Infill has been put in going with the yard lines.
- ☐ Infill has been checked for consistency in 25 locations across the field.
- ☐ On sand/rubber infill, all sand has been installed on bottom followed by rubber.

☐ **SandMatic**

- ☐ Have received the correct recipe for infill installation.
- ☐ Infill has been put in finishing 1<sup>st</sup> lift before starting next lift.
- ☐ Infill was finished on the body of the field before sidelines or edges.
- ☐ Infill has been put in going with the yard lines.
- ☐ Infill has been checked for consistency in 25 locations across the field.
- ☐ On sand/ rubber infill, all sand has been installed on bottom followed by rubber.

☐ **Attachment of turf**

- ☐ Turf is attached to nailer board using at least 1" staples **NO MORE THAN 4" apart.**
- ☐ Turf is attached to concrete curb using adhesive (NO HOTMELT) and a 1/8" notched trowel.
- ☐ Turf is correctly attached around communication boxes, water/electrical access lids, goal post boxes etc.

☐ **Final clean up**

- ☐ All loose fibers have been trimmed, picked up and removed from the field.
- ☐ The field has been walked and checked for strings, loose seams and any other potential problem areas.
- ☐ All trash/debris has been disposed of properly.
- ☐ All equipment/dumpsters have been called off and removed.

☐ **Maintenance equipment has been provided and put together for owner.**

☐ **Sign Off**

- ☐ An AstroTurf representative has been notified that the field is ready for inspection. Give a 48 hour notice before inspection date.
- ☐ The field has been walked through with an AstroTurf representative and the owner.
- ☐ Obtained the proper close out documents.
  - ☐ Final sign off on field.
  - ☐ Extra material delivered to owner.
  - ☐ Owner training has been gone through with owner.



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## CERTIFICATE OF SUBSTANTIAL COMPLETION

This certificate will confirm that the installation of the **AstroTurf** product located at:

(field name)		(school / city or company name)
Address:		
City, State, Zip		
Tel:		
Fax:		
Contact name:		Email:

has been completed to the satisfaction of the customer.

Date of First use: \_\_\_\_\_ *AstroTurf Project #:* \_\_\_\_\_

Sport Events: \_\_\_\_\_

### Owner Information:

Owner:	
Address:	
City, State, Zip	

Signature : \_\_\_\_\_

Company: \_\_\_\_\_

Print name: \_\_\_\_\_

Title: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

This \_\_\_\_ day of \_\_\_\_\_, 20\_\_

Punch List:	<input type="checkbox"/>	None	<input type="checkbox"/>	Attached	<input type="checkbox"/>	To Follow
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*The client acknowledges that in the event that the Product is used for purposes other than the specific activities it was designed for or any other uses for which **AstoTurf** gives its written authorization, it being understood that **AstoTurf** has tested the Product for use in connection with these activities and may not have tested it for other uses, **AstoTurf** shall not be responsible for any and all damages incurred and any warranties registered will become null and void. By executing this document it will be the date of commencement for the start of the warranty. The official paperwork will follow in our project close-out documents.*

***The Customer undertakes to carry on the proper maintenance of the product as described in the maintenance manual, which will accompany the Warranty in our standard close out package.***



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## CONFIRMATION OF FINAL COMPLETION

**Project Name:** \_\_\_\_\_

**Project Location:** \_\_\_\_\_  
\_\_\_\_\_

The following items have been submitted and/or completed per the Contract Documents:

- ☐ **Punch List Complete**
- ☐ **Attic Stock/Owner Surplus Material Provided**
- ☐ **Maintenance Equipment Provided**

Signature of this form does not release AstroTurf® from their obligations but does confirm that AstroTurf® has completed the Project as specified in the Contract Documents.

**Please confirm completion of all above listed items by signing below:**

**AstroTurf®:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Owner:** \_\_\_\_\_

**CM/GC:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Title:** \_\_\_\_\_



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## Owner's Extra Material Receipt

**Project Name:** \_\_\_\_\_

**Project Location:** \_\_\_\_\_  
\_\_\_\_\_

**Date Material Provided:** \_\_\_\_\_

**Extra Material Description:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Please confirm receipt of extra material by signing below:**

**AstroTurf®:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Owner:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Title:** \_\_\_\_\_





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## Owner Training Confirmation

**Project Name:** \_\_\_\_\_

**Project Location:** \_\_\_\_\_  
\_\_\_\_\_

**Date of Training:** \_\_\_\_\_

**GameDay Grass Product Line:** \_\_\_\_\_

**Approximate Square Footage of Field:** \_\_\_\_\_

**Athletic Field Intended Use:** \_\_\_\_\_

**Training Seminar Participants (Please Print Legibly):**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Please sign to verify that this Training Seminar has been completed in accordance with the Contract Documents:**

**AstroTurf®:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Owner:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Architect:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**CM/GC (If Applicable):** \_\_\_\_\_ **Date:** \_\_\_\_\_



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