



**DOVER SCHOOL
DISTRICT**

JOINT BUILDING COMMITTEE DOVER HIGH ATHLETIC COMPLEX MINUTES

Meeting Type:	Meeting
Meeting Location:	McConnell Center, Room 306 32 St. Thomas St., Dover, NH
Meeting Date:	Tuesday, June 18, 2024
Meeting Time:	6:00 p.m.

I. Meeting called to order at 6:15 PM.

II. ROLL CALL ATTENDANCE

- A. Present: Ronan O'Doherty, Ernie Clark, Fergus Cullen, Michelle Clancy, Craig Flynn
- B. Excused: Linnea Nemeth
- C. Among audience: Consultants Joe Persechino, Neil Hansen, and Ryan Morrison of Tighe & Bond. School district leaders included Christine Boston, Peter Driscoll, Mike Limanni, and Morgan Lyon

III. APPROVAL OF MEETING MINUTES

- A. June 11, 2024 regular meeting, approved as presented

IV. FINANCIAL REPORT

- A. \$3,050,000 allocated; \$150,000 encumbered, \$2.9 million balance; no changes since our last meeting.

V. PUBLIC FORUM

- 1) Christine Baber, Gerry's Lane, looks forward to design charrettes and further discussion. Hopes one of the interactive discussions will be held prior to field surface decision.
- 2) Eric Aberly, Riverside Dr, Scotts lawncare professional, played football, rugby, baseball and T&F, has coached track & field; experienced injuries from his athletics days, suggested natural grass can work if layered with good drainage.
- 3) Joe Salsbury, Waterloo Cir, doing nothing not really an option, concerned about heat levels on synthetic, thinks it is possible to guarantee natural grass performance
- 4) Gary Dickerman, Sandra's Run, first priority should be safe playing fields, NCAA-level fields not needed, sports secondary to academics, asked how many DMS and DHS students use the fields.
- 5) Emily Murphy, Shaws Ln, didn't realize how poor the existing fields are, worried about microplastics, heat, injuries on synthetic. Deserve good grass fields.
- 6) Peter Schmidt, Fourth St, not hostile to quality playing fields. Focused comments on costs, thinks synthetic more expensive than natural
- 7) Elizabeth Rogers, Middlebrook, called synthetic a quick fix but not necessarily the best option, supports natural grass
- 8) Alex Barbehenn, biz owner in Dover at 835 Central Ave , Concerned about PFAS, skeptical about how PFAS is measured, has heard good things about natural grass fields in Florida.



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VI. NEW BUSINESS

This was a workshop meeting focused on playing field surface options – natural grass and synthetic turf – led by Ryan Morrison of Tighe & Bond.

A) Introduction: Ryan has 12 years of experience designing natural grass and synthetic fields in the Northeast. Observed area high school fields are both natural grass and synthetic; DHS athletes often play on synthetic fields for away games.

B) NATURAL GRASS

- 1) Three levels of grass playing fields – A, B, C – with different standards of maintenance. A-level fields are stadium quality with modern construction, drainage, and irrigation. C-level fields might be used for youth recreation purposes such as T-ball. Different levels of athletes play on each level of field. Presumes a new DHS field would be an A-level field.
- 2) Grass requires strong root zone growth to sustain use by bigger, heavier, cleat-wearing athletes.
- 3) Common question: If it rains, how long until the field is playable? Depends on drainage. Catch basins outside playing field & underdrainage under field allow shorter time after rain before able to use.
- 4) Grass height: Cutting short makes it harder for grass to recover especially in heat. Also leads to more weeds.
- 5) The more uses, the more maintenance and rest fields need.
- 6) If you add lights, usage will be higher, lends to overuse. If you're going to light the field, **need to have a use-management plan**, easy to overuse.
- 7) Will uses of field be managed?
- 8) Will field be maintained organically or non-organically?
- 9) Install sod or plant grass? Difference in growing periods:
 - a. **Sod: Needs one full growing seasons (spring or fall). Lay sod in August, play the following spring.**
 - b. **Seeded: Recommend three growing seasons. Seed in August, not playing for 1.5 years, two springs away. (August 2025 seeding, April 2027 ready for play.)**
- 10) Subgrade / what goes under the grass: 24-30 inches of installed material for drainage. Bottom up: Existing base soil, perforated pipes, ¾ inch crushed zone, sand layer, sod / top soil. Irrigation pipes in sand layer. Existing material would be removed first; field is dug



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down not built on top of existing.

- 11) Hybrid fields with synthetic and natural grass (using netting) exist but not found at high school level due to costs. Is used at Lambeau Field / home of Green Bay Packers.
- 12) Impact attenuation: GMAX testing measures G-forces sustained in an impact with the playing surface using a weight dropped on a field from a height. Grass gets more inconsistent results, depending on maintenance and construction. Synthetic field GMAX levels are warranted (typically for 8 years), so it is tested regularly; grass isn't typically warranted so generally isn't tested.
- 13) Rest periods and shut downs – **Recommend 30 day shut down in a growing season** to allow root zone to recover. Aeration & fertilization during this time.
- 14) **Problem: At a school, field is typically in use during the growing seasons.**
- 15) Weather: **Need an inclement weather policy.** A natural grass field can be destroyed in a day. Tear up root zone, expose bare soil. Just because it has stopped raining doesn't mean field is ready for play later that day. How much rain, at what rate, causes an inclement rain event? Hard to say, can vary from field to field. Designate a manager and it's that person's call when a field is OK for play.

C) SYNTHETIC FIELDS

- 1) Evolution: Have evolved over the last 50-60 years. Original Astroturf was not an infilled product. Hard. Modern infilled systems came out in early 2000s. Started with sand and crumb rubber, tall 2-2.5 inch pile height. Around 2010s added shock pads – an attenuation device to combat GMAX measures declining over life of field. Shock pads provided more attenuation than infill, which allowed for less infill and shorter pile heights. Gen4 multi-sport fields today more likely to have 2 inch pile heights
- 2) Field construction: Membrane at bottom onto which polyethylene fibers are stitched using same process used by carpet manufacturers, often located in Georgia. Slit film (fibers can separate) hold infill better. Mono (single stands) stands up a bit better which helps with ball movement. Multi-sport fields typically use a hybrid so they perform well for different sports.
- 3) Subgrade: About 12 inches at center of field, more like 20-24 inches at sides. Bottom up: Existing soils, ¾ inch plastic drains, ¾ inch crushed stone, layer of finer choker stone which can be graded, shock pad, backing for carpet, infill on top of that.
- 4) Stormwater: managed onsite. Fields are typically considered impervious. Stormwater is backed up into crushed stone and held, released at a slow pace. Track runoff can also be directed to this reservoir. **This is why a synthetic field is playable almost immediately after or even during a heavy rain event.** Can handle 11 inches of rain per hour. Existing subsoils also impact this; compacted soils require a thicker layer of crushed stone.



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- 5) Fields are crowned to mimic natural grass fields, not for drainage; baseball fields are graded flat.
- 6) Shock pad: Provide impact attenuation. Some with 16-25 yr warranties (idea is two carpet lifecycles). Can be virgin material or include up to 80% recycled content including using recycled turf. Other shock pads can be recycled.
- 7) Sustainability issues: Manufacturers are developing options for recycling or use of recycled products, hard to say what will be available 10 years from now. Not aware of a manufacturer today that will promise to take back a carpet in the future and recycle it into new carpet. Are being taken back and used for other products, including shock pads or carpets pads used in residential settings.
- 8) Infill options: Some are more abrasive. Some organics float and can migrate in rain events. All material breaks down, requires maintenance. Wear patterns common around goal areas, batters boxes, between hashes on football field. Treat by top-dressing – add new infill, even out wear areas.
- 9) Crumb rubber and sand is most common in Northeast, used an estimated 70-80% of time. Black rubber typically comes from recycled tires. 50-50 blend rubber / sand blend. Affected by type of pile infill by different manufacturers. Crumb rubber can be coated to encapsulate hazards. There is a product called Envirofill that can be re-used for two carpet cycles.
- 10) Natural infill options include pine wood, walnut shell (doesn't float), cork (light and likes to move, T&B tends to not recommend cork), coconut shell, hybrids. Are cooler but can be more humid. Typically still used with about a 50-50 mix with sand.
- 11) Sand infill used in part to weigh down carpet so it doesn't shift or wrinkle.
- 12) Heat considerations: Do play hotter than natural grass, infill choice matters. But in northeast, not typically on fields during hottest times of year. Can get on synthetic earlier, crumb rubber warms faster, melts snow.
- 13) Freeze considerations: Organic infills that hold water may freeze. Impact attenuation goes up if it freezes, has less playability. Sand and crumb rubber doesn't hold water, doesn't freeze, impact attenuation can be maintained.
- 14) Plowing possible but increases chances of a seam failure.

D) MAINTENANCE

- 1) Natural grass: Maintenance plan should be data-driven each year with soil analysis, not just the same as we did last year. Soil sampling results used to guide fertilizer, weed and pest control, and pesticide. Lime to treat pH. May need a natural grass management consultant. Spring inspection of irrigation system for servicing (ongoing maintenance contract). Aeration in spring, top dressing with topsoil and overseeding. Do this 2-4x per year. Collect



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plugs when aerated, top dress with sand to fill plugs by dragging sand over field to get air down to roots. Break up thatch layer. **30 day rest period around March / April.** Mow and stripe weekly, more or less depending on growth. Don't cut too much at one time (not more than 30% of length of blade). Keep grass at 2 – 2.5 inches. Avoid getting into “We mow every Friday regardless” schedule. Higher grass, less weed growth, healthier for root structure.

- 2) Organic management: Organically managed grass should be an inch higher, like 3 – 3.5 inches with less frequent cutting, like bi-weekly, to manage weed growth. This can be an issue for different sports as the grass is longer and a ball rolls differently. Still need soil sampling, bacterial biomass measures. Weed and pest control materials cost more, some think organic weed control options are less effective. Pest control via worms has been tried. Organic slow-release nitrogen can be used. Can cut shorter, but be aware it will take more recovery time, higher risk of burning out grass.
- 3) Synthetic: Remove gum, seeds, drag monthly to weekly with a broom with steel tines; top dress areas low on infill; joints where 10-20 foot wide sheets of fabric are stitched together can fail (warrantied), batters box areas probably not warrantied. Do a circular pattern so you can replace batters boxes every 2-4 years with a patch. Ask for extra carpet / extra stock to be left at facility so you have repair stock available. Can be placed over batters boxes for practices.
- 4) Labor: 80-150 hours for annual field maintenance for natural grass; 120-180 hours if organic. 50-80 hrs per year for synthetic. **Synthetic fields are not “no maintenance.”**

E) USAGE

- 1) Frame in terms of number of uses, not hours. Not all uses are equal in terms of impact. A two-hour period is a use. Two uses a day for six months is about 330 uses per year. If you light the field, can double that to four-five uses a day or about 700 uses annually.
- 2) Natural turf: Can sustain 200-250 uses per year if maintained well. Field will open later. Still recommend a 30 day rest period. Some communities limit use to games only.
- 3) Synthetic: Can support the maximum uses available (700 per year). Fibers do not deteriorate from play. Infill will need more top dressing with more use.

F) DISCUSSION

1. PFAS: It's found all around us. Used in non-stick cook wear, make-up, shampoo, dental floss, many other consumer products. Sources of contamination are all over. Synthetic carpet can get certified as PFAS-free in manufacturing process. But trace amounts of PFAS can get



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picked up in transit and from the rest of the environment, so fields can't get certified as being PFAS-free. Infill crumb rubber could have it from environment, too. Cullen: It's been suggested that the only exposure a person might have to PFAS is from time spent playing athletics. Is that accurate? A: No, it's all around us already. Cullen: Is there any reason to think PFAS exposure is any higher from playing on synthetic surfaces than from other activities? A: No, it's all around us already. Cullen: Some in community have suggested PFAS is ingestible or inhalable from the playing surface. A: It is not more present in the carpet than it is in everyday life.

2. Injuries: Two categories of injuries: Those caused by collisions (attenuated by shock pads), and injuries to the lower extremities. Study of studies concludes most find no difference between grass and synthetic in the rate of injuries. On balance, grass found slightly more likely to yield injuries, synthetic slightly more likely to yield foot and ankle injuries.
3. Heat: Crumb rubber can be 20-30 degrees hotter at surface (different air temperature at head level). Q: How many days a year when a field is compromised due to heat more than it might otherwise be? A: Not certain, but more than zero. O'Doherty clarified that Dover High protocols prohibit practices or games based on wet bulb readings of heat and humidity. No activity is permitted when temps are above 92.1 degrees regardless of humidity.
Suggestions that Dover High athletes would be exposed to field temperatures of 130 degrees or more is simply not true. Driscoll noted NHIAA policies for games also apply in heat conditions, with things like mandatory breaks. Lights allow practices to be moved to less hot times, times when sun is down. There is also an upside to warmer fields, in that they are more comfortable / more playable on cooler days in shoulder seasons. This is part of why synthetic fields are playable nearly year-round in our climate.
4. Clancy noted we may need to revisit our heat protocols if we install synthetic turf.
5. Driscoll commented that NHIAA also has heat protocols.
6. Infill allergies: Are possible for latex, walnuts, etc.
7. Sustainability: A Weymouth, MA recycling facility is being developed for synthetic turf. Infill is not recyclable. Shock pads and turf can be. At replacement, carpet and infill both come out; infill gets vacuumed out and goes to landfill; carpet can get recycled with certification.
8. Cost: Natural grass is about \$4-5 per square foot or \$350-400K per field, plus \$20-25K annual maintenance. Synthetic is about \$200-\$250K for subgrade work and anchor wall; carpet & infill alone (replacement costs) \$6.90 per square foot or around \$600K today. Other infills are more expensive.
9. O'Doherty: What happens when you pair an A-grade field with C-grade maintenance? A: It will become a C-grade field. A new field will last a year or two but will degrade quickly.
10. The Miami Dolphins play on natural grass. They also own an 80 acre sod farm used to re-



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sod the field frequently. Lambeau Field (hybrid) is used for just nine regular season games a year plus any playoff games.

11. Stormwater: What can leach? What could be found in stormwater that would be different due to synthetic? A: Low levels of heavy metals from non-encapsulated crumb rubber is possible at stormwater outfalls. With natural grass, extra phosphorus and nitrogen can come off the fields from fertilizer and grass clippings.
12. Clancy asked about how many maintenance hours we use now, trying to identify how much more resources we need allocate for this purpose. District staff uncertain. Mike Limanni will make an effort to identify some of that related data.

VII. CONFIRM NEXT MEETING DATES/TIMES

- A) Joe Persechino provided an update from Tighe and Bond. They are consolidating input from the listening session as they work on concepts. Environment scientists are being scheduled. Expects soil sampling drilling to take place in late July, though needs some guidance for placing things like light pole locations. Will take another month to get full results. Looking at the existing buildings, Persechino suggested a workshop to focus on the building parts of the project, with Banwell Architects. This would include the maintenance facility. Cullen raised need to have school department leaders involved in this discussion. Clark asked about the status of state permitting. A: We're several weeks out from that.
- B) This workshop meeting will take place Thursday June 27 at 6:00 p.m. in McConnell Room 306.

VIII. ADJOURNMENT: Meeting adjourned at 8:45.