

Athletic Field Turf Committee
Report to the Board of Education
December 21, 2004

- 1. Committee Membership:** Frank Francese, Gretchen Reison; Co-Chairs
Tracey Bilski; Member
Ed Bosco; Member
Paul Guillaro; Member
Sam Goldfarb; Member
Ed Haberman; Member
Marty Hewitt; Member
Paula Petito; Member
Wendy Scherl; Member

2. Charge from the Board of Education to the Committee

On January 20, 2004, the Chappaqua Board of Education passed a resolution to appoint a committee to explore the concept of installing artificial turf on the competition field at Horace Greeley High School. According to the resolution, “the role of the Athletic Field Turf Committee is to provide information and advice, but not to make specific recommendations.” The committee’s role is primarily that of information gathering.

The specific request of the Board included:

In-depth review of artificial turf available;

- Pros and cons of natural grass and artificial turf;
- Analysis of present and future field usage by the Chappaqua school district athletic programs and by community athletic organizations;
- Potential safety issues for artificial turf in youth sport settings;
- Environmental issues that the school district would need to consider relating to turf installations and to the Greeley competition site;
- Estimates of costs for artificial turf including site preparation, initial installation, payments over the useful life of the turf, annual maintenance, and replacement at the end of the useful life;
- Examination of artificial turf installations in area athletic field sites;
- Analysis of funding options use by other school districts for athletic field projects, such as referendums and community fundraising;
- Experiences of other school districts and municipalities which have installed or are installing artificial turf;
- Other budgetary or programmatic implications, such as lights for night games, security fencing, chaperones for events.

3. Review of current facilities district wide with special emphasis on Horace Greeley High School field facilities.

3a. Inventory of Field Facilities District Wide

Greeley

Competition Field
Field Hockey Fields (east and west)
Soccer/lacrosse Field
Varsity Baseball Field
Softball Fields (3)
JV Baseball Field
Practice Field adjacent to soccer/lacrosse field
Practice Field adjacent to JV baseball field

Bell

Baseball Fields (3), one field also used as practice field for football and lacrosse
Playing Field between two baseball fields

Seven Bridges

Soccer Fields (2)
Baseball Field

Westorchar

Soccer Field
Baseball Field

Roaring Brook

Baseball Field
Playing Field

Grafflin

Baseball Field
Playing Field

3b. Statement about general condition of high school fields

There are currently 11 fields at the high school used by students participating in sports. Although no team has to travel to another site to practice, the fields are in constant use during spring and fall by 19 interscholastic teams. These fields are also used by the Recreation Department and affiliated organizations. While the overall condition of the fields is good, some fields have drainage problems and many would benefit from rest for a season. Weather conditions such as excessive rain or drought can adversely affect field conditions.

3b i. Horace Greeley High School Competition Field Condition:

In the summer of 2003, there was an extensive restoration of the Competition Field. In order to improve drainage, the restoration included injecting sand into the field resulting in a sand-dirt base. In addition, more drainage pipes were installed and new seed was put down. The project cost was approximately \$60,000. The life span of this restoration is unknown at this time because it depends upon weather conditions and the use of the field.

Since the restoration, the field was used in Fall 2003, Spring 2004 and Fall 2004. During the first year after the restoration, the field experienced poor grass growth and was in only fair condition during the 2003-04 school year. It is reported that the field held up well in the fall of 2004. All events went off as scheduled this season. At the end of the season the field was in good condition. It should be noted, however, that the spring and summer growing season had optimal weather and that rainfall was below average in Fall 2004.

3b. ii. Safety

The committee asked Steve Young, district Athletic Director to report on injuries due to field conditions. In his response Mr. Young stated, "injuries are usually attributed to a game situation as opposed to a facility problem." He reported only one injury in the last 3 years attributed to field conditions. This occurred during a football game in the fall of 2002.

3b. iii. Maintenance

In the fall and spring, all fields, including the competition field, are mowed twice per week. Field Hockey fields are mowed 3 times per week. Independent contractors, not district staff, do all mowing. Fields are checked and lined before every game and sometimes more often if necessary. The district maintenance crew performs this job.

The Competition Field is watered by a built in sprinkler system set to come on automatically. Well water is used for irrigation. As part of general maintenance, crews fill in holes that occur as normal wear and tear on the field.

In exploring the maintenance issues and cost of a grass field as well as cost of replacing a grass field, it became apparent that there is great variation in numbers. Because weather conditions can vary widely in terms of both rainfall and temperature, costs to grow and maintain grass fields can vary from year to year. The quality of the field also changes with weather conditions as mentioned in other sections. If the field is used in less than ideal conditions, it may stress the grass and cause the poor growth that in turn could lead to need for costly replacement projects. Therefore it is difficult to give one specific maintenance number for keeping the field in ideal playing condition. The cost could range from \$23,500 per year as noted in Table 4.b.4 to a need for total replacement of the sod at a cost of \$90,000.

3c. Analysis of current field usage on grass and expected usage on artificial turf.

The tables below describe current usage on grass and expected usage on turf of the competition field by season. The district Athletic Director provided the data for both tables. Usage charts are based on a 10-week regular season, which includes 2 practice weeks and 8 game weeks. Play-off games would result in additional usage of the fields. The difference between current scheduled usage and expected usage on turf is based on allowing the grass field to “rest” or recover between events. A turf field adds the ability for a team to practice every weekday, alleviating pressure on the other fields. Teams can practice in more inclement weather. The large number of additional practices on an artificial turf field assumes use of the field for 3 games on Saturday, back-to-back practices, and dividing the field in half to allow more than one team to practice at the same time.

GREELEY COMPETITION FIELD

Field Usage by Season

FALL SEASON (2004-2005 School Year)

TEAM	Scheduled Use on Grass*		Expected Use on Turf**	
	GAMES	PRACTICE	GAMES	PRACTICES
Varsity Football	4 (plus 1 play-off game)	8 (plus 1 practice for play-off game)	4 (plus 1-2 play-off games)	18 (plus 2-3 practices per play-off game)
JV Football	4	0	4	4
Freshman Football	3	0	3	3
Varsity Boys Soccer	6 (plus 1 play-off game)	0	9 (plus 1-2 play-off games)	8 (plus 2-3 practices per play-off game)
JV Boys Soccer	3	0	2	2
Freshman Boys Soccer	1	0	2	2
Varsity Girls Soccer	6 (plus 1 playoff game)	0	8 (plus 1-2 play-off games)	8 (plus 2-3 practices per play-off game)
JV-A Girls Soccer	0	0	0	2
JV-B Girls Soccer	0	0	0	2
Varsity Field Hockey	0	0	8 (plus 1-2 play-off games)	2 (plus 2 practices per play-off game)
JV Field Hockey	0	0	2	2
TOTAL	27 (plus 3 play-off game)	8	42 (plus 4-8 play-off games)	53 (plus 2-3 practices per play-off game/sport)

*Actual usage is often less due to unplayable field conditions

**This is a sample schedule subject to change based on availability and scheduling of games.

WINTER SEASON

The field is currently not used during the winter. A turf field could potentially be available for informal soccer, lacrosse, field hockey and football practices and intramural play.

SPRING SEASON (Projected 2004-2005 School Year)

TEAM	Scheduled Use on Grass*		Expected Use on Turf**	
	GAMES	PRACTICE	GAMES	PRACTICES
Varsity Boys Lacrosse	9	3	9 (plus 1-2 play-off games)	18 (plus 2-3 practices per play-off game)
JV Boys Lacrosse	1-2	0	9	9
Freshman Boys Lacrosse	0	0	3-4	9
Varsity Girls Lacrosse***	0	0	9 (plus 1-2 play-off games) subject to coach's preference	18 (plus 2-3 practices per play-off game)
JV Girls Lacrosse	0	0	2	2
Freshman Girls Lacrosse	0	0	3-4	9
Varsity Spring Track	2	0 ¹	2	0
Modified Track	2	0	2	0
TOTAL	14-15	3	39-41 (plus 2-4 play-off games)	65 (plus 2-3 practices per play-off game/sport)

* Actual use is often less due to unplayable conditions

** There can be more spring practices than shown since teams have generally not been able to utilize the fields at the start of league permitted practice times. For example, during the spring of 2003 the lacrosse teams were not able to get on to the fields for approximately one month after they were allowed by league rules due to unplayable fields.

***Varsity Girls Lacrosse has their own field, which they prefer to use over the Competition Field

3d. Affect of demographic projections of field usage.

There are currently 51 inter-scholastic teams at HGHS of which 19 use, or could potentially use, the competition field. Approximately 65% of all students participate in an inter-scholastic sport. Demographic projections show that the current enrollment is 1230 students with a peak enrollment of 1446 students in 2007. Greater numbers of students could put greater pressure on the fields.

¹ Jumpers use the jumping areas behind end zones for practice and runners use field for stretching and warm-up

4. Options: Turf Surface vs. Grass Surface

a. General Advantages and Disadvantages

i. Use:

An artificial surface can theoretically be used 24 hours a day and 7 days a week. Turf can also be used throughout the year. Use of grass surfaces must be restricted due to impact of weather and concerns of wear and tear. For instance, field use for practices is limited by need to preserve optimal field condition for competition.

ii. Impact of Weather:

Rain:

Weather has no affect on playability of an artificial turf surface. Turf fields are designed to drain 4” of rain per hour. The field would not be damaged by play under wet conditions.

In contrast, play on a grass field varies depending on quantity of rain and ambient temperature. 1” of rain may prevent safe use of the field. The likelihood of field damage is significant if play takes place under wet conditions. Typically, play is restricted to avoid damage.

Snow/Cold Weather:

Artificial turf can be used safely, for both the field and the athletes, in freezing temperatures because the surface does not freeze. In addition, snow can be removed from the surface without any damage.

On grass surfaces, freezing temperatures increase risk of both damage to the playing field and of injury to players because the underlying soil loses flexibility. Snow removal is difficult and may cause damage to the grass.

Heat:

When the atmospheric temperature exceeds 90F, there is an increased temperature on an artificial turf field that could lead to increased risk of heat stress, blisters and dehydration. There is a potential need to irrigate a turf field on a very hot day in order to keep the field temperature down. In our climate this would have a minimal affect on usage of the field, but could cause a practice to be moved to a grass field on a very hot day.

iii. Playing Season:

Because of durability under adverse weather conditions, the playing season can be longer with artificial turf. This is especially true for the spring season when both school and recreational teams could begin practice at the earliest permissible time if they had access to a usable field.

The playing season for a grass field is shorter due to limitations mentioned above.

- iv. Safety: According to recent studies, the rates of orthopedic injury on an artificial surface and a well-constructed natural grass field are not significantly different. A more detailed description of safety considerations and injuries can be found in section 5 of this report.

- v. Environmental Impact:

Artificial turf eliminates the need for water, pesticides, herbicides, and fertilizers. There is a potential savings of up to 1,500 gallons of water per week. Artificial surfaces do not need mowing, reducing pollution and contamination from mowers. Many turf products are made from recycled materials.

Concerns about artificial turf systems include possible heavy metal contamination of soil and ground water upon disposal. Many manufacturers claim low levels of heavy metals in their product. See appendix for description of metals found in turf. Silica dust from sand/rubber mixture could be released into the atmosphere during play. Artificial surfaces may require use of cleaning products. Experience and testing have shown the above not to be a practical problem at this time.

Grass surfaces may require use of pesticides, herbicides and fertilizers. These chemicals can be potentially harmful to the water supply. Chappaqua Central School District policy is to use the minimum amount of chemicals that will still allow for a playable field. As an example, pesticides are not used on school athletic fields.

- vi. Maintenance

Artificial surfaces require no mowing, watering and re-lining. Bi-monthly they need to be mechanically raked and fluffed to maintain a smooth surface. Debris such as leaves is removed on an as needed basis. Substances such as sports drinks, soft drinks, gum, oil and paint are potentially harmful to artificial surfaces and may require repair. These items can normally be removed with cleaning products such as detergent, hydrogen peroxide, and water. Burns from items such as cigarettes could also result in need for repairs. If repairs are necessary, an area as small as 3"x3" can be removed and replaced with new turf that is glued into place. See appendix for a sample maintenance manual.

Grass surfaces require significant weekly maintenance including twice weekly mowing, watering, and re-lining before a game. Problems such as holes in the field or worn spots in the grass lead to need for additional maintenance. Grass is, however, a “self cleaning” surface and items mentioned in the above paragraph will not cause permanent damage.

4b. Cost Comparison Artificial Turf to Grass

Table 4.b.1: Total Cost comparison of Artificial Turf and Grass

	Artificial Turf	Natural Grass
Installation Cost (See table 4.b.2 below)	\$658,500-\$744,000 (90,000 sq ft.) \$572,700-\$646,800 (78,000 sq ft)	Not Applicable
Annual Maintenance	\$2,500 See table 4.b.3	\$23,500 See table 4.b.4
Replacement (see section 5 for description)	½ the initial installation cost	\$78,000-90,000 to re-sod*
Cost of Maintenance Equipment	\$2,500-3,000 Surface Maintenance Machine	Outsourced

*Time frame for replacement is unpredictable

Table 4.b.2 Installation Costs for Artificial Turf Field

Activity	Cost/square ft.	Total cost Based on 90,000 sq feet	Total Cost Based on 78,000 Sq feet *
Excavation and Base Construction (includes drainage system)	\$2.50-\$3.00	\$225,000-\$270,000	\$195,000-\$234,000
Installation of Synthetic Grass System	\$3.85-4.30	\$346,500-\$387,000	\$300,300-\$335,400
Underlying Pad (if applicable)	\$.80	\$72,000	\$62,400
Lining/Logos	\$3,000/set of lines	Estimate of \$15,000	Same
Total		\$658,500-\$744,000	\$572,700-\$646,800

***78,000 Square Feet based on leaving natural grass oval for track and field events**

Table 4.b.3: Annual Maintenance Cost of Artificial Turf Field*

Raking, top dressing, bi-monthly fluffing 5 hours x 20 weeks x \$25	\$2,500
Repair of worn/damaged areas	Unknown- incident based**
Cleaning (gum, oil, paint)	Included in first line
Total	\$2,500

***Amortization of replacement cost is not included above; the district might consider setting aside funds for this purpose**

****Repairs could be negotiated as part of the warranty**

Table 4.b.4

Estimated Annual Maintenance Costs of Natural Grass Field

Maintenance costs include	Source: CCSD Maintenance Director
Lining fields, minor repairs 12 hours/week x 20 weeks x\$25 =	\$6,000
Lining Materials/equipment costs for all sports	3,500
Contract Mowing/Trimming/Aeration	6,000
Twice yearly over seeding @ \$2,500/application	5,000
Sprinkler repairs, labor/materials	2,000
Total yearly natural turf costs at Competition Field	\$23,500*

* Total does not include water cost since well water is used to irrigate fields

4C. Assumptions used in making comparisons

Cost data for installation and maintenance was prepared assuming a field of 90,000 square feet except where specifically indicated in the table as 78,000 square feet.

Usage of field assumes a non-lighted field. Installation of lights would increase usage (see section 8: ancillary items)

5. Analysis of suitability of artificial turf surfaces and comparison of different types of artificial turf

a. Historical Perspective-original surface vs. those available now

To most people, artificial turf is synonymous with Astroturf. This system, which consisted of a 1/2" knitted nylon fabric carpet spread over concrete, had obvious problems. The carpet had a coarse texture similar to indoor/outdoor carpet and the surface was hard. Common injuries included turf burn and turf toe (caused when the toe was jammed into the hard surface). International soccer soon banned championship play on Astroturf-like surfaces. Professional football stadiums have replaced all previous old style Astroturf surfaces.

Second generation synthetic turf systems were developed in the late 1970's with applications for golf and tennis areas. The design was for short synthetic grass fibers over padding, sand, and or sand/cork mix. There were no installations in large sports

arenas because of major problems including firmness and the separation of the sand/cork mix.

Third generation or the infill concept originally started with a sand infill around loosely woven fibers. Over time, the infill evolved to a mixture of sand and rubber pellets, and in some cases 100% rubber infill. The fibers became longer (2 inches) and denser, providing a forgiving surface that provided the required support for athletic movements involved in soccer, lacrosse and football. A typical infill system has a tufted polyethylene fiber of approximately 44oz per square yard infilled with approximately 31 pounds of cryogenic rubber infill (heavier if rubber/sand mixture). The infill carpet sits on top of a fine stone aggregate base with embedded perforated pipes for drainage. The system provides a more level, playable surface with little “mixture creep” that could create holes.

b. Types of turf surfaces available.

There are 23 brands of turf available. However, schools in the Westchester area selected only 4 of these brands: Sprinturf, Fieldturf, Aturf (formerly Astroplay), and Prograss. All brands can be installed over sand or a sand/rubber mixture.

c. Safety Issues

I. Shock Absorbency

Shock absorbency of any field, be it natural grass or artificial turf, is measured by the GMAX level. Much of the basic work on shock absorbency in the US relates to protection from head injury and focuses on trauma from major impacts. This impact model is most often that of a single blow or rapid deceleration. The impact is reported in units of gravity (g) or deceleration performance, or GMAX levels. This measurement is approved by the American Society of Testing and Materials (ASTM) and the Consumer Product Safety Commission (CPSC) as the best way to test the safety of a playing field. The method used to measure for shock absorbency of the playing system is ASTM F-355, Procedure A* and ASTM F-1936-98. According to

ASTM standards and the US Consumer Product Safety Commission, a playing field whose GMAX level is approaching 200 or more should be replaced in full or part.

A GMAX level of under 200 is considered generally safe. As a reference key, here are different surface types and their approximate GMAX levels:

- Muddy Grass - 75
- Natural Grass (dense, good condition) - 80
- Synthetic infill turf with standard padding - 110
- Packed clay baseball infield - 175
- Frozen natural grass - 200

An infill artificial turf system provides consistent GMAX throughout the field in any type of weather.

* Procedure A calls for a missile weighing 20 pounds, approximating the weight of the human head and neck. The missile has a circular, flat face with an area of 20 square inches, about the same as the area of a human facial plane. The resulting static load is one pound per square inch. The drop height used for quality control testing and field monitoring is 24 inches, giving an impact velocity of 135 inches per second, or 7.74 mph. Impact energy is 40 ft. lbs. Extensive test work done at Northwestern University indicates that 85% of the impacts to the head of a middle linebacker in American football as played in the Big 10 Conference were 40 ft lbs. or less.

5c II. Injuries.

Orthopedic injuries (both traumatic and chronic) were a problem with the original turf fields, but current research shows no difference in injury rates between turf and grass fields.

A study was recently published in *The American Journal of Sports Medicine*. It is important because the article reported on a prospective study of 5 years of football injuries on both Artificial Turf and natural grass. The study includes 240 games played, which is a good sample size. The results were gathered from reports of full time certified athletic trainers, orthopedic surgeons, and team physicians.

The authors concluded the following:

- The rate of injuries on modern turf fields and on well maintained grass fields is essentially equal
- There was a higher injury time loss from injuries on grass vs. turf fields.
- There was a higher incidence of concussion on grass vs. turf fields.
- There was a higher incidence of ligamentous tears on grass vs. turf fields.
- There was a greater incidence of ACL injuries on grass vs. turf fields.
- There was a higher incidence of superficial surface epidermatitis and non-contact injuries on turf vs. grass
- The incidence of recurrent injuries reported in other studies (college football, lacrosse and soccer) was slightly higher on grass vs. turf.
- More minor injuries occurred on artificial turf vs. grass
- Other studies suggest that the more consistent surface of turf fields enhances the speed at which a game is played and, therefore, increases fatigue potential of muscles as players perform at a greater acceleration, speed and torque
- Elevated surface temperature may play a role in the type of injury sustained.
- Safety of turf vs. a good natural grass field has been relatively well established as comparable
- Many factors that play a role in athletic injuries that are not affected by either artificial turf or grass. Such factors are beyond the scope of this discussion, but sports participation involves some inherent risks

The safety of modern artificial turf has been demonstrated. Both surfaces, artificial turf and natural grass, exhibit unique injury patterns related to multiple factors. No pattern of significant injury was observed in the studies of artificial turf vs. natural grass and in some studies turf produced fewer severe injuries than grass

5d. Cost Issues

Installation and maintenance costs are outlined in Table 4.b.2. The figures used in the table were taken from discussions with turf manufacturers such as Sportexe, Sprinturf, and Aturf. These numbers are in line with cost figures given to us by districts in the area that have installed turf.

Replacement cost: The replacement time frame or life of the artificial surface can be approximated based on the warranty provided by the manufacturer. These range between 8-10 years. The first systems using the current infill technology were installed in 1997 and as a result, there is no data on the actual lifespan. Replacing a synthetic grass system involves only the carpet and infill, not the underlying drainage, etc. Therefore, the replacement cost would be approximately half of the initial installation or about \$350,000-\$400,000 without inflation.

Special Equipment needed for maintenance of turf: There is a need to purchase some specialized equipment for maintaining artificial surfaces. The field needs to be cleaned once or twice/week with a lawn leaf sweeper. Approximate cost of equipment is \$500. Once or twice/month turf should be fluffed. Cost of equipment is \$2,500.

5e. Comparison of brands of turf

Each vendor installs different types of turf. There are two basic state of the art systems now being installed; either sand and rubber mixture or rubber only bases. The specific turf brand that the board will select would depend more upon the needs of our district's athletic program than upon differences between brands. For instance, differences lie in the weight and weave of the carpet and the quality of the underlayer. The quality of the contractor and the work they do will have as great an impact as a brand choice.

6. Inventory of Turf Fields in area: The following is a list of Westchester, Putnam, and Rockland school districts with an indication of those that have turf or proposed turf fields.

Putnam Northern Westchester BOCES Districts:

Turf Fields Installed

Bedford- Fox Lane
Croton-Harmon
Katonah-Lewisboro
Lakeland
Mahopac
Putnam Valley
Yorktown

Turf Fields Pending

Carmel
Ossining

No Turf Fields

Brewster
Briarcliff
Chappaqua
Haldane
Hendrick Hudson
North Salem
Peekskill
Somers

Southern Westchester BOCES Districts

Turf Field Installed

Ardasley
Blindbrook
Byram Hills
Dobbs Ferry
Eastchester
Greenburgh-Woodlands
New Rochelle
Pleasantville
Rye
Valhalla

Turf Fields Pending

Scarsdale

No Turf Fields

Bronxville
Edgemont
Elmsford
Harrison
Hastings
Hawthorne
Irvington
Mount Pleasant
Mount Vernon
Pelham
Pocantico
Port Chester
Rye Neck
Tarrytowns
Tuckahoe
White Plains

Rockland BOCES Districts

Suffern High School in the Ramapo School District is the only school in Rockland County with a field pending.

Clarkstown
East Ramapo
Nanuet
North Rockland
Nyack
Pearl River
Ramapo
South Orangetown

7. Fundraising Options for Turf Surfaces

This section describes a number of options for financing an artificial turf field. The options to be discussed will include Community Fundraising, School District Bonding and Corporate Sponsorship. Based on interviews with neighboring districts that installed turf, they used all of the above options individually or in combination.

7a. Community Fundraising:

Community Fundraising or non school district financed can take many forms including:

- i. Personal Donations
- ii. Matching Donations (personal, not corporate)
- iii. Private Corporate Donations
- iv. Payment in kind
- v. Services “In lieu of”

Rye High School is an example of a project completed with personal donations with the additional assistance of local businesses. In Rye, two parents began a fundraising group of 30 interested parents. From this initial group, they raised \$300,000 and at this time approached the Board of Education about installation of the field. The parent group then went on to raise the additional money needed to complete the project. The total cost was \$725,000. The parent group also solicited donated time from local contractors and coordinated community service days for digging trenches, etc. This committee was a 501(c)(3) group with all the work being done outside of school. The school district did not have to put the project out to bid, and this resulted in a price that was 25-40% lower than a bond or school project. It should be noted that the Sports Boosters took responsibility for not only fund raising, but the installation of the project as well. They provided the school with an indemnification agreement as well as insurance coverage for the project. These documents allowed the committee to work freely with the contractors to get the job completed in less than 90 days.

Fox Lane High School used personal donations in combination with matching donations. The fund raising efforts relied on several large initial donations. The committee then leveraged these donations by asking for matching funds before the initial donation would be accepted. The Fox Lane community responded positively and rapidly with matching funds. The committee approached the project as a community project, not just a school project asking for donations from groups such as the Rotary Club. Fox Lane also stressed the “in lieu of” aspect where a contractor can donate their services to a 501(c)(3) non-profit organization (such as the Greeley Sports Boosters) and write a charitable contribution off on their taxes. Private groups can also solicit funds by giving incentives such as placing donor’s names on plaques or bricks displayed in the area.

Scarsdale is in the process of raising money through private donations. Once again large donations form the basis of the fund raising with additional money being raised throughout the community. The plan there is to use a combination of private donations and school district funds in a 75:25 private public/ratio. The school district is committed to provide the 25% over a five-year period. Private donations from sports programs are also scheduled for a five-year period. The school district is using a vending machine program to raise money for the school district’s contribution to the field project. This type of vending machine program, where the district is in control of its own revenue stream and vending choices, should be distinguished from a corporate sponsorship program where the district is obligated to one company for several years (see section 7C).

Other districts such as Eastchester and Valhalla agreed to trade off excavation work from a construction company in return for that company’s ability to dump dirt on school grounds. These arrangements led to problems with contaminated fill and excessive dumping.

7 b: School District Financing:

i. Bonding

Many districts opted to use taxpayer money to finance fields through a school district bond issue. Examples of districts that passed bond issues are Ossining, Blindbrook, Dobbs Ferry, New Rochelle, and Yorktown.

In order to obtain accurate information on the potential cost to taxpayers for installation of a turf field, the committee consulted with District Business Administrator Greg Beall. Mr. Beall provided us with numbers obtained from New York Municipal Advisors Corporation (NYMAC) based on a \$700,000 bond issue with an assumed interest rate of 3.5% for a recommended five-year term. Annual debt service would cost approximately \$155,000 per year. The district collects approximately \$750,000 per 1% tax increase. See appendix for debt service chart.

ii. Lease Purchase

Eastchester used an Installment Purchase Agreement to finance their field over 5 years. They set up a leasing company who took ownership of the field and then conveyed it to the school district for \$1. A line item was carried for lease payment in the school budget of \$98,000 for the five years. The district used their vending machine program to generate additional revenue (approximately \$15,000/year) to help offset the additional expense.

It should be noted that this type of lease agreement is being reviewed by the New York State Controller's Office for validity, since IPAs are normally used for the purchase of equipment.

7 c: Corporate Sponsorship

Corporate sponsorship can take the form of a donation or an agreement to buy a product in return for funds. The most common form of sponsorship is with soft drink manufacturers where a donation is backed by an agreement to consume a certain number of cases of drinks annually. The Mahopac school district used this method to finance 50% of the cost of their field. This method of financing locks a district into a multi-year deal.

Many school districts use a combination of methods to finance their fields. They use both public and private funds. In turn, these funds can be raised in any number of the ways described above.

8. Ancillary items and Programmatic Implications

8a. Lights: Since the district currently does not have lights on the competition field, the committee did not include lights in the initial analysis. In order to maximize the benefits of artificial turf, the school board may want to consider extending the field's hours of use through the addition of lighting.

Lighting the Horace Greeley competition field creates the following benefits:

- 1) Increase the ability to use the field by lengthening the day for practices or competitive matches. This would be especially beneficial to the field hockey program. Because of a shortage of referees, many JV games are played after the varsity games until it gets dark. Many times a game cannot be completed, and towards the end of the fall season a game can be as short as 30 minutes.
- 2) Provide for evening games that would draw a larger crowd than after school or weekend games. The benefit here is an increased sense of community and providing a safe healthy environment for families to watch high school sports.
- 3) Provides the community with the ability to utilize the track around the competition field for jogging in the early evening. Currently one or two tennis lights are turned toward the track, however this provides insufficient lighting for the far end. Safe jogging lighting can be accomplished by installing lower level lights to light the track only.
- 4) Practices for some sports could be moved to the early evening alleviating pressure on the fields. Recreation programs could use the fields in the evening.
- 5) Since both high school and community sports take place on high school fields during the day on weekends, this creates massive traffic congestion. If high school games were moved to evenings, this would alleviate some traffic problems.
- 6) Community groups would have access to the field creating another town resource.

Cost: Based on a discussion with Don Rhuda of Musco Lighting, the cost of installing lights on the Competition Field would range from \$175,000 to \$190,000 depending on technology and pole height. There is an average cost to operate these lights of \$22 per hour, assuming \$0.30 per lamp/hour and an average of 72 lights.

Factors to Consider with the installation of lights:

Impact of Light Pollution:

Modern technology such as Total Light Control (TLC) allows limited light spillage. Some of this depends on the pole height, the higher the pole, the more control of the lighting. For example, Hendrick Hudson installed 90 foot poles with TLC technology and houses approximately 50 feet from the field are not affected by the lights.

Height of Pole:

In order for lights to be effective, the height of the pole is important. Football needs a minimum height of 70 feet and the average installation height is 80 feet.

Increased noise after dark:

New Castle noise ordinance takes effect at 11pm. Most inter-scholastic contests are over by 9:30pm. There would be a limited number of games on week nights.

Increased traffic, crowds, and safety after dark:

It would be necessary to hire security personnel to control crowds and traffic for games that take place at night.

8b. Security Fencing

Security fencing could be installed around the new field. 6 foot fencing runs approximately \$15 per linear foot installed; 8 foot fencing runs approximately \$18. Using some existing fencing the approximate cost would be \$25,000 for a 6-foot high fence and \$30,000 for an 8-foot high fence. This will help secure the field from vandalism. Security Personnel would also be necessary at game time in order to ensure proper use of the field. To our knowledge, other schools have not felt the need to install security fencing. The main purpose of fencing is to keep vehicles off the field. A concern is our district would be to allow continued community access to the track.

8c. Other Costs

To truly monitor attendees, more bleachers could be installed on both sidelines and bathroom facilities would need to be available within the confines of the secured area. A more advanced press box/equipment storage/ first aid area, under and behind the current home bleachers would be a convenient place for restrooms or an expansion of the concession area toward the observatory would be easier (and more easily monitored) area for fans from both sides of the field.

8d. Additional field

The various schools we spoke with said that they had the ability to practice three teams at a time sideways on the turf installations. However, they all agreed that if they could put in another field, they would. There are several areas that would be perfect candidates for another artificial turf field in our district. The next best area would be the upper soccer field, an area that is always wet, due to the directed run-off from the hill between it and the JV Baseball Field. The other area that should be considered for a very interesting design would be both field hockey fields. The infrastructure would encompass a square around both fields and would give basically two turf fields for less than the cost of two separate fields. One other consideration should also be the Bell School field, which has frequent water problems.

9. Use by Community and Youth Organizations

a. Current availability of field to groups other than high school athletes:

There continues to be a shortage of fields in the Town of New Castle for use by the town recreational programs and affiliated organizations such as AYSO Soccer. For purposes of this section the “Town” will refer to the Town of New Castle and affiliated sports organizations. The CCSD rents their facilities to the Town who then allocates their use by Town and affiliated organizations. Currently the Town uses the high school fields whenever they are made available. This includes Saturdays, Sundays, and evenings in the early fall and spring when the daylight hours are longer. Because of the need to rest the field, there is no provision for the Competition Field to be rented to the Town for their use. The field is available only on an ad hoc basis for use by affiliated sports organizations. Also, the Town must limit its use of the high school fields, when a football game or other high school events, such as a softball tournament, are being held on weekends due to limited parking and traffic congestion. School sponsored events have increased in frequency over the past few years.

b. Growth of youth sports programs

The enrollment in Town sports programs over the past 5 years has grown overall by 13%. In a report entitled “Analysis of Present Ball Field Use” in January of 2004, Bob Snyder concludes that town sponsored or affiliated programs have approximately 439 available user hours per week, but they have need for 512 hours/week based on current enrollment numbers. Demand far exceeds supply at this point. User group enrollment in recreation programs continues to grow at a greater rate than the school enrollment.

c. Statement from New Castle Recreation:

Clearly the New Castle Recreation department would welcome any extra hours that could be derived from installation of artificial turf. For instance, if the field were available on Sundays for recreation use it would be of benefit to the program. Since recreation programs are potentially bumped by rescheduled high school practices or games, the predictability of field use afforded by turf, would benefit the recreation program in a “trickle down” effect.

d. Use by other organizations

Other school districts have rented their facilities to outside organizations that are not affiliated with the school or the town such as outside soccer or lacrosse clubs. They have developed a fee schedule and this helps defray some of the cost of the artificial turf. Outside groups would have to adhere to school district policies to continue to use the field.

10. Appendix --- all appendices are available in the District Clerk’s office.

- 1. Interviews with area athletic directors**
- 2. Maintenance Manual**
- 3. Letters from Recreation Department and sports organizations**
- 4. Sample of specifications**
- 5. Heavy Metals**
- 6. Debt Service Chart**