HUNNEWELL FIELDS
ATHLETIC GROUNDS MASTER PLAN REPORT

WELLESLEY, MASSACHUSETTS

Prepared for

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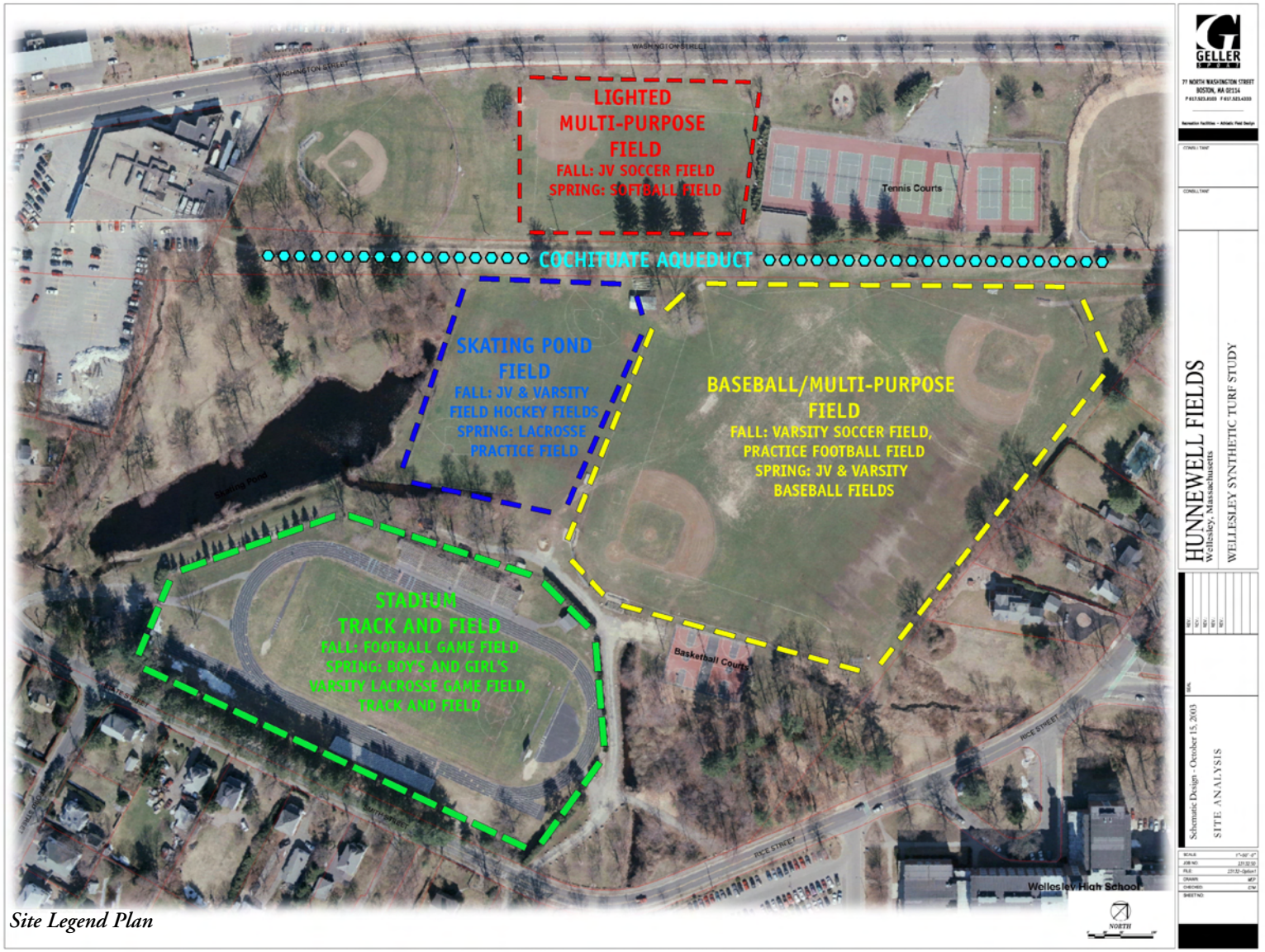
SITE ANALYSIS

Most athletic fields are judged simply by the way they look. Although the statement, "Fields that look good are better than fields that don't look good," is generally true, there are other aspects that need to be considered when evaluating an athletic facility. By assessing the way each field was constructed, used and has been maintained; and the effect each field has on performance, ball response and player and spectator safety, Geller Sport makes a recommendation at the end of this report which addresses the Town of Wellesley's athletic needs at Hunnewell Fields. The Site Legend Plan (page 3) and the Site Analysis Plan (page 12) illustrates how the existing facility is used. The following is Geller Sport's evaluation of Hunnewell Fields existing outdoor athletic facilities.



Site Legend Plan

STADIUM TRACK AND FIELD

Design Issues:

The Wellesley High School Stadium is used primarily for football games in the fall and Boy's and Girl's lacrosse games and track and field meets in the spring. There is a 400 meter six-lane track with a natural grass infield. "D" areas are the areas inside the track beyond the end zones where track field events take place. In the Northeast "D" area there is a long/triple jump runway with a sand jump pit. In the Southwest "D" area there is a synthetic surfaced high jump apron, a long/triple jump runway with a sand jump pit and a pole vault runway. There is a shotput area located outside the track near the visiting team bleachers. The stadium is fenced in with a 6' galvanized chain link fence with barbed wire on the top. The track is also enclosed with a 4' galvanized chain link fence. New home and visitor bleachers have recently been erected on opposite sides of the field.

One section at the existing running track appears to be larger then necessary. A long portion of a straightaway extends farther than needed, according to high school track and field regulations (Figure 1). Although the area can be used by athletes practicing block starts, this extended length is taking up space which could be used for other track and field events to incorporate them into the stadium. The surfacing on the track is worn. Small chunks of resilient surfacing have peeled up and are missing from the track surface. The holes in the surfacing are a trip hazard for athletes competing or practicing on the track (Figure 2). The numbers along the track are also beginning to fade as are a majority of the markings and lane lines. The track drains into perimeter drains at the sidelines of the infield. Around the curves of the track, water drains to catch basins located at the low points in the infield beyond the end zones.

The track infield is natural grass with an automatic irrigation system. The middle of the field has recently been re-sodded and there is a noticeable difference in the type and quality of turf between the sides and middle of the field between the football hash marks (Figure 3). The field has a significant crown that drains water from the middle of the field to the perimeter drains at the sidelines. Surface water from the two end-zone-areas drains towards the respective low points where catch basins outlet the water to manholes located outside the track area.

The stadium infield is used for football games in the fall and Varsity Boy's and Girl's lacrosse games in the spring. Track and field events take place in the "D" areas beyond the end zones. In the fall the field is only used for 4-5 home football games. In the spring the field is used for 12-15 home varsity lacrosse games. In an effort to maintain proper playing conditions at the stadium infield, use is restricted. However, by restricting the use of the stadium field other fields are affected with increased use, wear and abuse. The other fields at Hunnewell Fields, which support both practices and games, quickly become compacted resulting in poor turf cover and unsafe playing surfaces. If the stadium infield remains natural grass, practices should still be restricted and the abuse of the practice fields will remain.

The track and field event "D" areas located beyond the end zones are in poor condition. The long/triple jump pits were once rectangular with timber edging.

Figure 1 – The track extends farther than necessary and takes up space which could be used for other track events.

Figure 2 – Chunks of surfacing are missing from the track. These areas are a hazard for athletes.

Figure 3 – The area that has been re-sodded in the infield of the track is very noticeable. The grass type is different when comparing the middle to the sidelines.

Figure 4 – The jump pits are overgrown with weeds and are uncovered all the time allowing the sand to become wet, contaminated and compacted.

Over the years, grass and weeds have grown over the edging and the pits no longer have a defined edge (Figure 4). The pits do not have any covers so rain and debris have mixed in with the sand making it dirty and compacted. The resilient surfacing at the high jump apron, long/triple jump runways and pole vault runway are also overgrown by weeds and grass. The straight edge of the runways has been lost due to the growth of grass and weeds. These areas look sloppy and take away from the pristine look that a stadium, as the focal point of an athletic complex, should have.

The scoreboard and a monument are located in the track infield. The scoreboard appears to be in very good condition although the location in the infield is not ideal (Figure 5). By moving the scoreboard and the monument outside of the infield there would be more space for the track and field events held behind the end zones.

There are large grassy areas near the home and away bleachers currently used as gathering areas. At the visitors side of the field a large equipment trailer sits in the corner, but there is still track equipment strewn all over the area (Figure 6). Loose athletic equipment with weeds and grass growing over them takes away from the appearance of the stadium. Equipment should always be stored in an area that is protected from the elements. This will keep athletic equipment in good condition and prevent vandalism. A large swale is located at the opposite corner of the visiting side of the field. The swale is used to drain water from under the bleachers and the surrounding areas into a catch basin. Behind the visitor's bleachers is a slope vegetated with trees leading up to the road. A chain link fence encloses the area.

The visiting team bleachers have recently been installed and are in good condition. However, there are no areas designated for handicap seating. There are also no walkways leading to the visitor's bleachers. The only access is across the resilient track surface from the main entrance to the stadium. During football games the track should not be open to spectators, making the visiting team bleachers non-accessible and incompliant with state and federal handicap codes.

At the home team side of the stadium, the main entrance and the concession stand are positioned on the East side of the bleachers and there is a large gathering space on the West side. A large tree shades the gathering area. This is a good place for people to watch games in the shade or to meet people inside the stadium. The home bleachers have also been recently installed. The bleachers are elevated and a ramp near the entrance provides handicap accessibility. The bleachers sit on a concrete pad surrounded by a 2' strip of bituminous concrete. The new bituminous concrete apron slopes down to meet the existing bituminous concrete walk. The walk then slopes down to the track and extends to the end of the bleachers. The old bituminous walk is old and full of cracks with weeds growing up through them. The bituminous apron and walk do not match the older material and the area in front of the bleachers is visually undesirable (Figure 7). Since the pavement slopes down towards the track but meets below the track lip, this could cause a drainage problem with water puddling where the pavement and track meet. Water should never be drained across an athletic surface from spectator or other adjacent areas. Water that sheds down the walk brings leaves and trash with it, which gets caught in the fencing around the track.

Figure 5 – The scoreboard and monument are behind the east end zone in the infield of the track. This is an awkward location and should be relocated.

Figure 6 – An equipment trailer sits in the corner of the stadium, but equipment still is left outside and is overgrown by weeds.

Figure 7 – The bituminous patch from the bleacher pad to the existing bituminous is not ideal. Also the existing pad is full of cracks and weeds.

Figure 8 – The existing fence around the track is showing signs of wear with bent fabric and broken posts.

The condition of the fence around the track varies. Rust is forming on many portions of the fence and the fabric knuckles are bent in (Figure 8). Due to the previously mentioned drainage problems, the space between the fencing and the synthetic surfacing acts as a trap for trash and dirt. This creates an unattractive edge. Weeds growing in these areas are growing over onto the track surfacing. The perimeter fencing around the stadium site appears to have been recently replaced in some areas and not in others. The 6' galvanized chain link fencing is extremely rusted in some areas and is an eyesore when seen from the street or the gravel access road (Figure 9). Although some trees hide the fencing from the inside, the rust can be seen when looking into the site. The gates at the fencing all need to be replaced. They are rusted and extremely worn from years of use. The fence along the access road is sitting in grass which creates a difficult mowing edge. If the fence were placed in the gravel rather than grass, maintenance would be easier and long grass would not grow at the bottom of the fence.

The main entrance to the stadium is located near the concession stand (Figure 10). People who park at the high school must walk around the stadium to the home team side to enter. There is no handicap parking near the entrance. The entrance consists of a gate and walkway towards the concession stand. There are no signs welcoming fans to the stadium as they walk in or even displaying the name of the stadium. The gathering area outside the gates is at the gravel access road and behind the Varsity baseball backstop (Figure 11). There is no formal approach to the stadium or gathering space at the entrance. Most of the monuments at the stadium are hidden from view or are not easily accessible (Figure 12). Placing monuments as part of a formal entrance provides spectators with an opportunity to see them. The main entrance should display any monuments at the field and welcome people to the site. There is no formal ticket booth at the entrance either. A ticket booth is helpful when weather conditions are unfavorable and can add to the aesthetic quality of the stadium entrance.

Due to the lack of sports lighting at the stadium, night games cannot be held. Since only one team in the fall and two teams in the spring use the field for games, there should not be any scheduling conflicts. If more teams were allowed to play on the stadium field, lights would significantly ease scheduling demands. Night games also draw larger crowds to the games, which can bring in more revenue for the School and generate greater school spirit.

Overall the stadium should be the focal point of the athletic complex at the high school and Hunnewell Fields. Even minor details such as undefined edges and mismatched pavement can take away from the atmosphere and aesthetic quality of the stadium.

BASEBALL/MULTI-PURPOSE FIELDS AND THE SKATING POND FIELD

Design Issues:

The large area of Hunnewell Fields to the east of the aqueduct serves as an athletic complex for many teams. The area is currently set up with two (2) baseball fields facing each other. The space between and surrounding the baseball fields are used as multi-purpose fields in the fall and spring.

Figure 9 – ***The 6' perimeter CLF is an eyesore for the entire stadium and should be replaced with a fence that blends in with the landscape.***

Figure 10 – The entrance is plain and unwelcoming. An entrance should make people want to go into the stadium. It should draw attention inside.

Figure 11 – The gathering area outside the entrance to the stadium is uninviting.

Figure 12 – Monuments are hidden inside the stadium. A formal entrance area would allow these monuments to be displayed.

In the fall as many as five (5) different teams are practicing on the fields at once: football and Varsity Boy's and Girl's soccer play on the Baseball/Multi-Purpose Field (BB/MP) and the Varsity and Junior Varsity field hockey teams play on the Skating Pond Field (SPF). The JV Boy's and Girl's soccer teams play on the North side of the Cochituate Aqueduct at the Lighted Multi-Purpose Field (LMPF). The football team plays games on the stadium field, but the other four teams play games on the fields they practice on. The full-size football practice field is set up at the eastern corner of the site in left field of the JV baseball field and right field of the Varsity baseball field. The Varsity and JV teams both practice on this field and the JV team plays games on the field as well. Since football is so demanding on turfgrass the field begins showing signs of excessive wear early in the season. In early September the field is already showing signs of fatigue. The middle of the football field receives the most wear and dirt patches and torn up sections of turf are noticeable. Athletic surfaces in this condition can prove detrimental to an athlete. Constant use will cause the field to compact leading to numerous types of injuries to shins, knees and ankles. The non-uniformity and lack of resiliency in the playing surface can also lead to athletes tripping, rolling ankles or worse. There is one goal post set up in the east end zone of the field. Since the goal post is set up in the corner of the site, it is a permanent fixture, but it is showing signs of age and beginning to lean. The goal post should be replaced. The field appears to drain towards the surrounding neighbors yards and towards the basketball courts. The field does not have a subsurface drainage or automatic irrigation system to help maintain the field.

The soccer field is set up next to the football field and is located in the centerfields of both baseball fields. One end line sits about 1' off the edge of the Varsity baseball infield (Figure 13). The Varsity Boy's and Girl's soccer teams practice and play on this field every day of the week. With the two teams practicing and playing on the field everyday, the grass quickly shows signs of wear. At the center of the field and at the goalmouths dirt patches show up early in the season (Figure 14). If the athletic fields were properly rested and maintained it would be rare to see the fields with this amount of wear this early in the athletic season. All high traffic areas on the field will be extremely damaged by the end of the season due to the extensive use of the fields. The field drains out towards the sideline and down towards the aqueduct. The field does not have a subsurface drainage system to collect water or an automatic irrigation system to help maintain the field.

The Varsity field hockey game field is next to the soccer field and imposes on the third base side of the Varsity baseball infield. The field overlaps the infield of the baseball field to such an extent that an athlete dribbling towards the sideline must cross over grass to infield mix to grass again (Figure 15). The change in surface conditions and the lip that exists between the grass and the infield mix could cause injury to an athlete if the ball were to hit off the lip and fly into the air. If possible all multi-purpose athletic fields should be kept off the skinned infield areas of baseball and softball. Since this field is only used for games, the grass is in relatively good condition. Wear around the goalmouths is not that apparent, but the middle of the fields does appear more worn than the rest of the field (this is to be expected). The field drains towards the JV field hockey field and eventually to the ponds surrounding the area. There is no subsurface drainage system or automatic irrigation system in this field.

Figure 13 – The Varsity soccer field sits in right field of the Varsity baseball field. It does not infringe on the baseball infield, but comes very close.

Figure 14 – The soccer goalmouths are already beginning to wear down. Later in the season this area will become more bare and dusty from all the use.

Figure 15 – The Varsity field hockey field overlaps onto the Varsity baseball field at the third baseline. The field overlaps onto the infield grass.

Figure 16 – The JV field hockey field is not regulation size. The slope down towards the water channel keeps the field from being larger.

The field hockey practice field, which is also the JV field hockey game field, is tucked in the southwest corner of the site. One end line of the field is about 10 to 15-yards away from the brook and the other end line aligns with the slope at the aqueduct (Figure 16). The surface of the field undulates severely. Throughout the field, high and low points are very obvious. A playing field this uneven can be detrimental to an athlete. The uniformity of a playing surface is essential in preserving the health of athletes. The field area slopes down gradually towards the brook. If the grades were slightly raised near the brook with Conservation Commission approval, the field could be enlarged. Currently it is not regulation size. At the western sideline of this field there is a 4' chain link fence with green PVC coated fence fabric. The fence is old with many dents in it. The fence provides a poor mowing edge and the bottom of the fabric has long grass and weeds growing up through it (Figure 17). There are permanent team benches at the field's sideline. Since most of the other fields in the area drain towards this field, it appears to receive an adequate amount of water even though the field does not have an automatic irrigation system. The grass remains green through the summer months when conditions are dry.

In the spring, scheduling demands on the fields remain constant. As many as five (5) teams are practicing on the Baseball/Multi-Purpose Field and Skating Pond Field at once: Varsity and JV baseball, Varsity and JV Girl's lacrosse, and track and field events. The Varsity and JV Boy's lacrosse teams travel to the middle school to practice due to lack of field space at the high school fields. The JV Boy's lacrosse team plays games at the middle school while the Varsity team plays games on the stadium field. Girl's lacrosse practices on Skating Pond Field, which is used by field hockey in the fall. Varsity games are played in the stadium. The Varsity and JV baseball teams play at the same time on the fields facing each other. The Varsity field is closest to the stadium entrance, while the JV field is out in the far corner of the site. The shotput and javelin are thrown in the field area during track meets. If there is not a JV baseball game being played, javelin is thrown in right field. Otherwise (if there is no softball game) javelin is thrown in left field of the softball field, which is located on the north side of the Cochituate Aqueduct. A discus cage is set up near the grove of trees beyond the JV Baseball right field foul pole.

Because of the heavy use placed on these fields in the fall, there is no time for the fields to rest and recover before the spring season begins. The practice lacrosse field remains severely worn from being the field hockey practice field. Both soccer and football are also played there in the fall. The only time these fields have to rest is in the winter and summer, which are not optimal growing or rejuvenating seasons. The prime growing seasons for turfgrasses are the spring and fall. Unfortunately, the prime growing seasons coincide with the busiest seasons for outdoor athletics.

The equipment at both baseball fields needs to be replaced. The backstop at the Varsity baseball field is a galvanized chain link fence backstop with a wooden baseboard. Although the backstop is of adequate size and height, it is old and rusting (Figure 18). The fence fabric has many dents in it from years of use and should be replaced. The wooden baseboards are not properly attached to the backstop and could be a hazard for catchers going after a passed ball. The team bench areas consist of a bench on a bituminous concrete pad. The bleachers sit on the same pad and

Figure 17 – The fence at the JV field hockey field is a poor mowing edge with grass growing up into the fabric.

Figure 18 – The Varsity baseball backstop is regulation size, but is completely rusted with huge dents in the fabric and a baseboard that is falling apart.

Figure 19 – The team bench areas are not protected from foul balls nor separated from the spectator seating.

Figure 20 – The JV baseball backstop is not regulation and is totally rusted. The team areas are dirt patches that have been worn in by use.

are located about 10' behind the benches (Figure 19). There is no protective fencing in front of the team areas. The infield of the Varsity baseball field appears to be in good condition. Since the outfield of the baseball field is used by so many other sports, the grass is damaged especially in left/center field where the soccer field is in the fall. Along the right field foul line there is a batting cage which is in fair condition. The Varsity baseball field appears to drain properly out of the infield towards the first and third baselines. At the first baseline, water sheds down towards the basketball courts to the outlet area beyond. At the third baseline, the water sheds over towards the Skating Pond Field and to the pond. There is no automatic irrigation system in the infield or the outfield to help maintain the field.

The backstop at the JV baseball field is in poor condition and is not the regulation size or height (Figure 20). The backstop does not have an overhang and the galvanized chain link fencing fabric is rusting and has many dents throughout the fabric. The team areas consist of a team bench and a worn dirt spot in front of the area rather than a concrete pad. There is also no protective fencing in front of the team benches. The infield of the JV baseball field is also in poor condition and the skinned infield is infested with weeds (Figure 21). In the outfield, since fall teams use the area, the grass tends to be worn and the soil compacted, especially in left field where the football team practices. There is a wear path in the grass, in the corner of the site near the aqueduct, leading to the team area located at the first baseline. The JV baseball field is not handicap accessible and the field does not have designated areas for fans to sit. The field drains out towards the first and third baselines. At the third baseline, water sheds towards a neighboring yard. At the first baseline water sheds to a swale and is collected at the low point by a catch basin.

The track and field events held at these fields are javelin, shotput and discus. The discus cage is set up to the north of the brick building by the Cochituate Aqueduct (Figure 22). Whether it be on the softball field or the JV baseball field, javelin is thrown wherever there is not a game or practice being played. Having these events so far from the stadium can be a nuisance for coaches. The cages and pads at the event areas are in need of replacement.

Currently there are no access paths for maintenance vehicles to travel on. It seems that the vehicles cut directly across the fields as evidenced by the tire marks worn into the surface. Another problem with not having true paths around the complex is handicap accessibility. There is no access from the gravel access drive near the stadium and basketball courts to the remainder of the athletic complex. Pedestrian pathways are worn into the fields because there is no designated route or paved path to get to different areas on the site. The fields do not meet current state and federal handicap accessibility codes.

The fencing around the perimeter of the site is inconsistent. There is fencing near the basketball courts, at the west and south sides of the Skating Pond Field and at the southeast side of the Baseball/Multi-Purpose Field, but nowhere else. At the JV baseball field there is no fence at the third baseline area to keep balls from going into an abutter's yards (Figure 23). The slope at the aqueduct provides a barrier to keep balls on the site, but it does not limit access to the fields. The fencing at the basketball courts is 6' galvanized chain link fence and it follows the contours around the courts (Figure 24). The fence

Figure 21 – The infield of the JV baseball field is overgrown with weeds. This can create an unsafe playing surface.

Figure 22 – The discus cage is in poor condition and far away from the track. It is a headache for coaches during meets to come and watch events away from the track.

Figure 23 – There is no fence to keep foul or overthrown balls out of the neighbors yard at the JV baseball third base line.

Figure 24 – The fence around the basketball courts acts as a barrier for athletes from the slope and so balls from the fields will not disturb people playing basketball.

protects athletes in the field areas from falling down the slope onto the basketball courts. The fencing near the JV baseball field is in poor condition and trees from an abutting yard are growing over the fence and could affect play. The fencing should be replaced with a type of fencing that blends in better with the landscape rather than galvanized fencing.

Currently there is no site lighting or athletic lighting at the field areas. Lack of site lighting can be a safety concern at night. At a minimum, a complex of this size should have some sort of safety lighting so police can see onto the site at night. The brick building, located at the midpoint of the aqueduct, contains restrooms and is used for storage (Figure 25). The brick building is located in a central area for the teams playing on these fields and teams playing on the fields on the North side of the Cochituate Aqueduct. However, because there are no paths around the site, the bathrooms in this building are not accessible for all people. Along the same side of the site is a storage box which doubles as a soccer backboard. At the south side of the site near the entrance to the football stadium, equipment such as goals and a portable track event cage are stored underneath the grove of trees in the corner (Figure 26). Near these trees there are two storage containers, one permanent and one temporary. The permanent storage container appears to be used for maintenance equipment. Leaving equipment out in the open will reduce its operational life. All equipment should be stored inside a storage unit to protect it from weather, theft and/or vandalism.

LIGHTED MULTI-PURPOSE FIELD

Design Issues:

Currently there is a lighted multi-purpose field to the north of the Cochituate Aqueduct. This field is used as the JV soccer field in the fall and the Varsity softball field in the spring. The field is also used by adult softball leagues throughout the summer. The field is bordered by the Cochituate Aqueduct, the Hunewell Tennis Courts, Washington Street and the Little League Field fence. There are trees in the area which were specially planted and act as a boundary for the field. New athletic lighting has recently been installed at this field and has been a tremendous improvement over the previous lighting in the area. The improved lighting now allows the space to be used more times during the day and evening and eases scheduling conflicts.

Since this field is the only lighted field in the area, it receives significant use. Both soccer and softball are playing on the field non-stop although currently the soccer field is not regulation size so it cannot be used for Varsity games. With the use the field receives, the outfield/multi-purpose field turf becomes easily worn out in high traffic areas such as the middle of the soccer field and at the goalmouths (Figure 27).

The softball field has a fully skinned infield. Since the outfield is bound by the aqueduct, the tennis courts, the Little League Field and Washington Street, a large corner of the soccer field runs onto the softball infield to make the soccer field as large as possible (Figure 28). Whenever possible, a change in surface should be avoided for soccer fields. The change in surface to a skinned infield can be a tripping or slipping hazard for a soccer player, especially during

Figure 25 – The building has bathrooms, but is not HC accessible. Since the building is in a central area many teams can store equipment in the shed.

Figure 26 – Equipment that is not stored is going to last a shorter time than equipment that is stored, especially metal benches.

Figure 27 – The grass is almost completely worn away in high traffic areas such as at the soccer goalmouths.

Figure 28 – A large area of the soccer field runs onto the softball infield. This can be unsafe for athletes tripping over the lip of the infield.

wet weather when the infield can become muddy very quickly and become prone for slipping.

The team areas which are located near the aqueduct, are shaded by the large trees behind them. Due to the shade these trees create, grass does not grow well in this area. With the teams using this sideline during the game, the area also become extremely muddy during the soccer season (Figure 29). The team area is generally not a hazard for an athlete, but takes away from the aesthetic quality of the area.

The equipment at the softball backstop is in fairly good condition, but locates the team areas in the wrong position. There should be protective fencing in front of the team areas (Figure 30). Team areas should be centered on the respective baseline between home plate and the base. Team areas should always have 8' fencing in front to protect players and coaches from foul balls.

Without the help of an automatic irrigation system or a subsurface drainage system and with soccer playing in the fall and softball playing in the spring and summer, there is no time to rest the field and allow the turf to rejuvenate. Constant maintenance is required to help the field withstand the stress placed on the field. Abuse and wear will becomes worse with time and the field will need to be reseeded often to try and minimize the bare patches throughout the field.

ACCESS DRIVE

Design Issues:

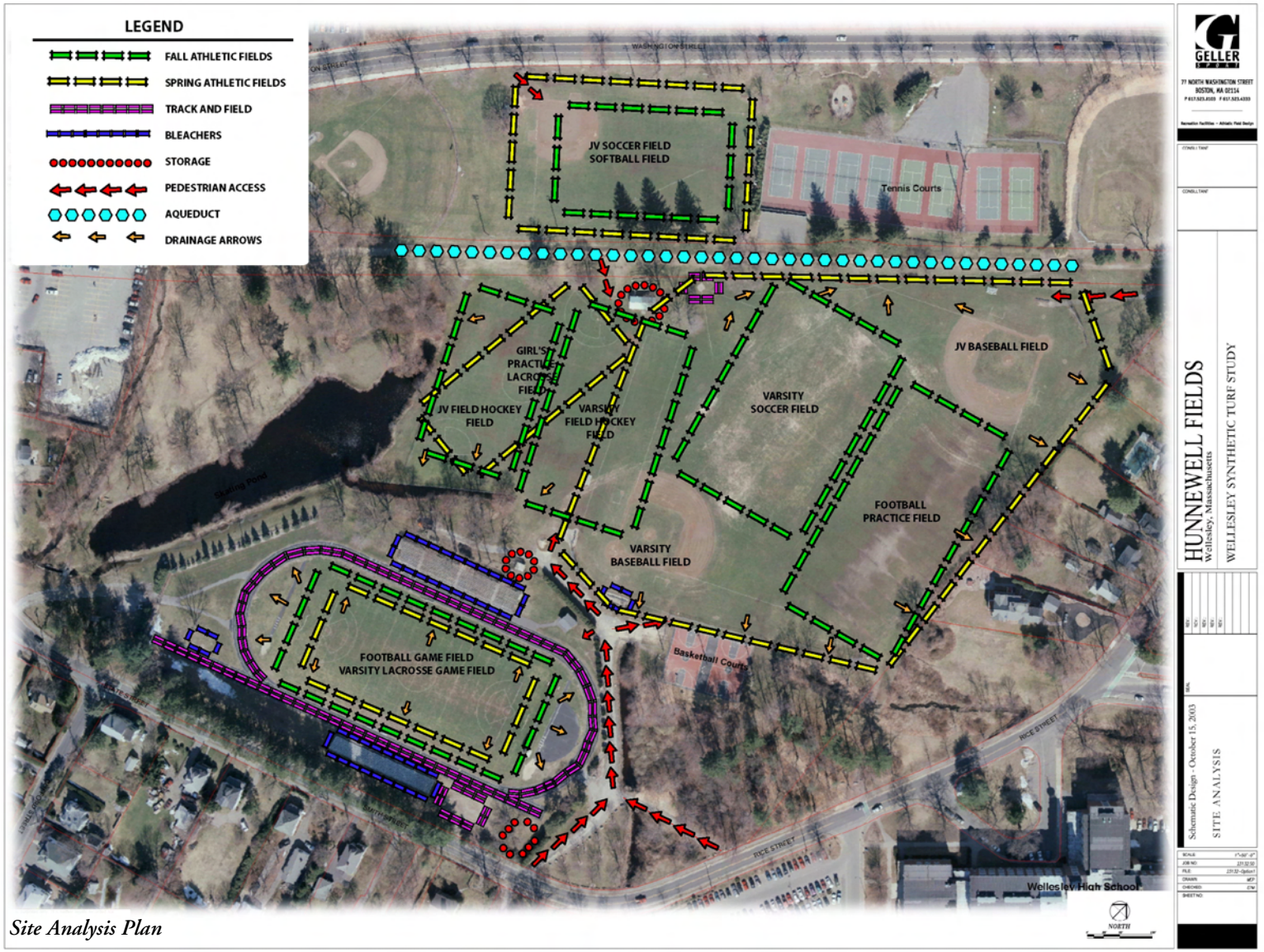
The current access drive to the stadium entrance and to the base of the Hunnewell Fields is a 12'-wide gravel road. From Rice Street the gravel road is blocked off by large boulders and by a swinging gate to allow maintenance and emergency vehicles through (Figure 31). As the site is entered, there is a water channel to the right of the gravel road and the stadium fence to the left. The road continues it curve around the stadium fencing towards the storage area just outside the fence. There is a gravel space outside the basketball courts that appears to be a turn around or possibly a place to park (Figure 32). Concrete bollards and the bleachers at the Varsity baseball field's first baseline are located adjacent to the road to keep cars from driving onto the fields. The bollards are old with paint chipping off and are an eyesore. The gravel road terminates behind the baseball backstop and there is no clear definition between the end of the road and the grass. Since the access roads do not continue throughout the site, maintenance vehicles must drive across the athletic fields. The access drive also connects with a nature path which runs throughout the property and crosses over Rice Street.

Figure 29 – The team areas do not grow grass well due to the shade in the area. The area becomes extremely muddy due to teams using the sidelines during games.

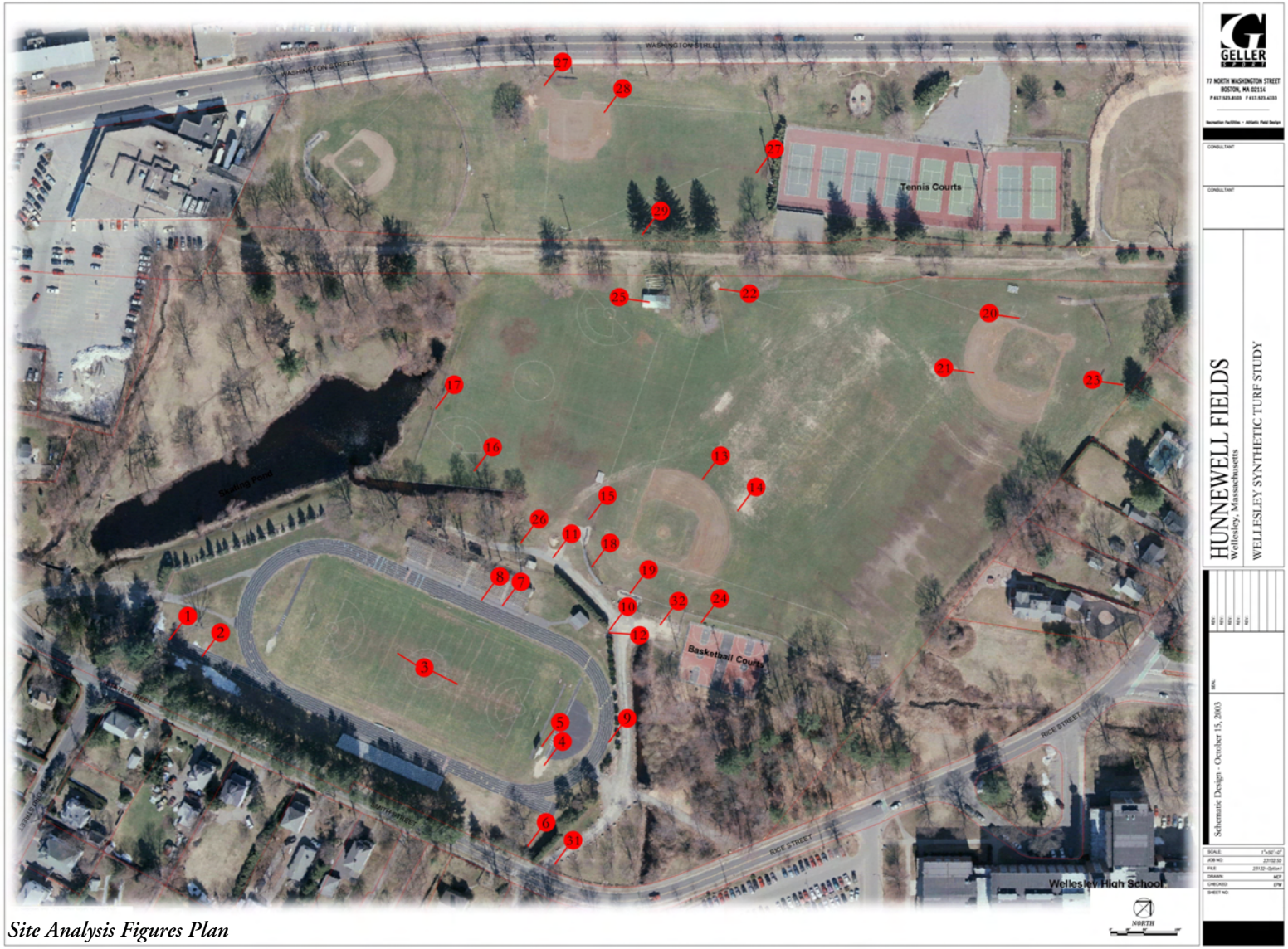
Figure 30 – The softball backstops are in fairly good condition, although the protective fencing does not extend in front of the team areas.

Figure 31 – The entrance to the site from Rice Street is blocked with a gate and by boulders.

Figure 32 – The area near the basketball courts could be used for HC parking. The bollards are used to keep cars off the fields, but are in poor condition.



Site Analysis Plan



Site Analysis Figures Plan

ATHLETIC GROUNDS MASTER PLANS

The following Athletic Grounds Master Plans have been developed in conjunction with Geller Sport Inc. and the Town of Wellesley Department of Public Works. The proposed schemes have been developed to meet the following goals and objectives established by the Town for current and future athletic use:

- Maximize use of the site for athletic programming
- Provide full size, regulation athletic fields

GENERAL INFORMATION

Track and Field

In both Master Plan Schemes A and B, Geller Sport proposes resurfacing the existing track and constructing resilient surfaced "D" areas surrounding a new infilled synthetic turf playing surface. The addition of the "D" areas will allow more track and field events to be held within the stadium making it easier for coaches to see all the events during a track meet. By renovating the stadium infield the Town of Wellesley will dramatically increase the flexibility of its athletic facility. The stadium will become a focal point for the Wellesley High School outdoor athletic complex and a source of athletic pride. It will also provide the Town with the opportunity to rent the stadium to other organizations for independent track meets and other athletic competitions and to use the facility for community recreation programs.

Infilled Synthetic Turf Fields

Infilled synthetic turf is an artificial grass carpet composed of polyethylene fibers and a rubber and/or sand infill, which simulates the feel and playing characteristics of natural grass. Across the country, the number of infilled synthetic turf installations has grown rapidly in the past few years due to the benefits and extra flexibility infilled synthetic turf can provide a recreational facility or athletic program. This synthetic system is a non-abrasive product that can be installed for nearly half the cost of previous artificial turf systems and manufacturers typically warrantee the product for 8-10 years. In high use situations, infilled synthetic turf is a viable option for increasing the safety and playability of athletic fields while drastically lowering the amount of required maintenance and scheduling headaches. With the addition of sports lighting to an infilled synthetic turf, the facility's use is only limited by severely inclement weather.

Studies have been conducted to analyze the impact infilled synthetic turf surfaces have on athletes in terms of injuries. Dr. Bill Barnhill, an orthopedic surgeon in Texas, compared an infilled synthetic turf product to natural grass (refer to website: www.fieldturf.com/news/Barnhill.shtml). The study took place over a three-year period using four different high school teams. The results showed the synthetic turf surface to have the smallest percentage of injuries occur on it over the three-year period. It was concluded that the reason there were fewer injuries on the infilled synthetic surface was due to the consistency of the surface throughout the season. As a football season goes on, a natural grass field can become hard and compacted. These conditions can result in injuries such as concussions, ACL tears and other knee injuries. However, an infilled synthetic turf surface should have the same safety and playability characteristics at the end of the season as it did at the beginning of the season.

The addition of infilled synthetic fields to the Town of Wellesley's outdoor athletic facility will exponentially increase scheduling options for the other natural grass fields at the Hunnewell Fields complex, while also providing safer playing surfaces for the young athletes using the fields. By adding one synthetic field the Town effectively gains two to three fields because synthetic fields can be played on non-stop in all types of weather and do no require rest and regular maintenance. This gives the Town's natural grass fields time for rest and recovery from the stress of athletic competitions thereby keeping the fields safer for the athletes.

Natural Grass Athletic Fields

The single most important part of constructing an athletic field is providing proper drainage. The recommended athletic field profile, which includes the respreading of the existing topsoil with amendments over a new subsurface drainage system, will drastically increase the existing athletic field's capacity to drain. By stripping the existing soil and amending it with organic matter and sand, the porosity and structure of a soil can be significantly altered to help a field drain and resist compaction. This adds to the field's playability in the wetter months of early spring and late fall and will also reduce existing field compaction problems.

Another key contributor to a healthy natural grass athletic field is the installation of an irrigation system. The most effective and efficient way to promote a deep rooted, healthy turf is to install an automatic irrigation system. Geller Sport recommends that all renovated fields be irrigated with head to head, low flow, low pressure irrigation systems designed specifically for sports field applications, such as the systems manufactured by Hunter or RainBird. Although slightly more expensive than a portable irrigation system, an installed system provides an even distribution of water and considerable savings in maintenance labor costs.

High School Baseball

The two existing baseball fields require renovation. The fields and all associated equipment are completely outdated compared to NFSHSA (National Federation of State High School Associations) rules, regulations and recommendations. Geller Sport recommends the backstop be replaced with a regulation black fusion bond chain link backstop located a distance of 40-feet from the back of home plate because of the tight space of the fields.

The team areas need to be repaired. The home and visiting team bench areas should be comparable. Team areas should be fenced in to protect players from foul balls or overthrown balls. Geller Sport recommends an 8' fusion bond chain link fence extending from the backstop to the end of the infield with gates for players to pass through. This also allows for a clearer designation of dead ball areas. It is recommended that the outfield have a permanent fence, but due to the outfields being multi-purpose fields, semi-permanent fence could be considered in this situation.

Bullpens for both the home and visiting teams are also recommended by the NFSHSA. The setup of the bullpens is usually along the team sideline with the pitcher pitching in the general direction he would in a game. Each bullpen should be comparable to the other.

High School Softball

The construction of a High School softball field is based on the requirements of female fast pitch. Typically the entire infield is skinned. Bases are sixty-feet apart and the pitching mound is forty-feet from home plate and is flush with the infield. The backstop should be a minimum distance of twenty-five feet back from the apex of home plate and a maximum of thirty feet. The outfield should be a minimum of 185' and a maximum of 225'. A permanent outfield fence with foul poles is highly recommended. If there is no outfield fence then there should not be foul poles.

High School softball can be played on a field with a grass infield like a little league field, but it is not recommended.

High School Soccer

According to NFSHSA regulations the maximum size soccer field should be 225'x360' and the minimum size should be 165'x300' (MIAA minimum is 195'x330'). Geller Sport recommends using the maximum size if possible (a maximum sized soccer field is large enough to accommodate football, lacrosse and field hockey). If it is not possible then 210'x330' is considered a good size. Ideally a field would have a 15' to 20' buffer zone, but that can be reduced to 10' if necessary. Team and spectator areas should be kept behind this buffer zone to ensure the safety of the athletes playing on the field.

Typically a natural grass soccer field should drain from the middle out using a crown to make the goal areas drain off the endlines. A subsurface drainage system helps drain the water to keep the field from puddling. If a crowned field is not possible, care should be taken to keep water from puddling in the middle of the field and around the goalmouths. Water should always shed to the sidelines to a low point where it can be caught by a catch basin or a swale to take it away from the field area.

Site Fencing

Geller Sport recommends all fencing on the site be black fusion bond/powder coated fencing. This type of fencing is more aesthetically pleasing and has a longer life expectancy than galvanized fence. This type of fencing will not rust and can be easily touched up if there is a scratch or any other type of mark.

Site Walkways and Access Driveways

To keep the proposed athletic fields in good condition, the addition of access drives throughout the site is highly recommended. By providing these drives, maintenance vehicles will stay off the fields and keep the possibility of compaction at a minimum. In areas where access drives can not be constructed and maintenance vehicles need to drive over athletic surfaces, maintenance personnel should vary the path of travel to reduce compaction of the athletic field surfaces.

Site walkways should also be added throughout the site to provide pedestrian access to all the fields and buildings. Providing paths for people to walk and run on will also help minimize compaction in high traffic areas. These paths should be 6-8 feet wide and made of an accessible material such as stabilized stone dust, bituminous concrete or cement concrete. Pathways should also be developed based upon handicap accessibility guidelines. Care should be given to make the paths handicap accessible in order for all people to utilize them.

SCHEME A

Scheme A reconstructs the four areas of the site using two infilled synthetic turf systems and the re-location of the softball field.

Reconstruct the Stadium field using an infilled synthetic turf system and modify the track layout and surrounding areas.

- Replace the existing natural grass field with an infilled synthetic turf field.
- The fields can be lined with a full size football field, full size Girl's lacrosse field and a 195' wide soccer field.
- Construct "D" areas beyond the end zones of the field for track events.
- In the "D" areas include two (2) new long/triple jump pits and runways, a high jump area, a shotput area and a discus area with cage.
- Respray the existing track surface to match the new "D" areas and repaint all lines.
- Using the soil excavated from the infield create mounding around the perimeter of the track area to create a "bowl" effect in the stadium. This will make the Stadium feel like a more private venue when games are being played.

Reconstruct the Skating Pond Field to include a softball field and use of the outfield as a multi-purpose field.

- Regrade the existing area to allow for more field space closer to the brook and skating pond.
- Construct a regulation size softball field with a skinned infield and new backstop in the southern corner of the field. This field will be oriented in a proper north-south direction.
- Construct team areas on a concrete pad complete with benches and fencing in front to protect the players in the bench area. All fencing should be black fusion-bond/powder-coated.
- Line the football practice field in the outfield from the first base foul line into center field near the aqueduct.
- The javelin can be thrown in the area beyond the outfield of the softball field if a temporary fence is used during softball games.
- It is strongly recommended that an irrigation system as well as an underdrainage system be installed in the field area.

Reorganize and renovate the existing baseball and multi-purpose fields.

- Pull back the existing Varsity baseball infield so it is 40' in front of the backstop.
- Replace the existing backstop with a new fusion bond/powder coated backstop with a baseboard.
- Construct new team areas with new benches on concrete pads at both sides of the field.
- Renovate the existing JV baseball field and push the backstop towards the home plate area so it is 40' away.
- Construct new dugout areas complete with benches and an overhang.
- Make this baseball field into the Varsity baseball field and the other field the JV field (the other field cannot have dugouts due to space constraints).
- Line a full size 225'x360' soccer field in the east corner of the site. The field will be oriented in a good north-south direction.
- To the west of that field line a 210'x330' soccer field, which can also be used as a full size field hockey field.
- It is strongly recommended that an irrigation system as well as an underdrainage system be installed in the field area.

Install a synthetic turf field at the Lighted Multi-Purpose Field.

- Remove the existing softball field and all associated equipment.
- Install a 215'x360' infilled synthetic turf system.
- The field will allow for a full size field hockey field, Boy's and Girl's lacrosse fields and a 195'x340' soccer field.
- Maintain the existing lights on the field and have the foot-candles tested throughout the field to ensure there is proper light on the entire field to allow for soccer, field hockey and lacrosse night play.

In the fall, Scheme A provides the High School with many different options for scheduling. The Varsity soccer teams have the option of practicing on the Stadium synthetic turf field or the full size natural grass soccer field. The JV soccer teams have the option of practicing on the smaller natural grass soccer field or the full size field if the Varsity is not using it. The Varsity field hockey team will play on the infilled synthetic turf Lighted Multi-Purpose field. The JV field hockey team can play on the synthetic

field or the full sized natural grass field hockey field if not used by the soccer teams. The football team always will practice at the Skating Pond field and play games on the Stadium synthetic turf field.

In the spring the baseball teams and the softball team will all play on their respective fields. The Girl's lacrosse team will practice and play on the Stadium synthetic turf field and the Boy's lacrosse team will play on the Lighted synthetic turf field. Care will need to be taken to ensure that there is not a lacrosse practice or game going on when a track meet is scheduled.

With the addition of two synthetic turf fields and the relocation of the softball field, scheduling hassles will become much easier because there are now two fields which never need to be rested or maintained and one of those field can be used at anytime because of the athletic lighting.

The existing storage structure can remain in Scheme A.

SCHEME B

Scheme B reconstructs the four areas of the site using two infilled synthetic turf systems and renovates the softball field in the infilled synthetic turf.

The renovation of the Stadium area is the same as in Scheme A. The infield will be infilled synthetic turf with the new "D" areas and associated track equipment.

Regrade the Skating Pond field to maximize the amount of usable athletic field space.

- Regrade the areas near the pond and brook areas to have steeper slopes in order to maximize the usable athletic field space in the area.
- The field can be lined as the practice football field in the fall and the practice women's lacrosse field in the spring.
- The field will not be a full size football field, but there will be plenty of space to store all the equipment in the area.
- A small field hockey field will be next to the football practice field.
- It is strongly recommended that this area be irrigated and have an underdrainage system to keep the field in good condition since a team will need to play on it in the spring.

Reorganize and renovate the existing baseball and multi-purpose fields.

- Renovate the two baseball fields and switch the JV and Varsity fields as done in Scheme A.
- Line a full size 225'x360' soccer field in the eastern corner of the site as done in Scheme A.
- To the west of the soccer field, line a 190'x305' soccer field.
- To the west of the small soccer field line a 180'x280' field hockey field. A small corner of the field will be on the baseball infield.
- It is strongly recommended that this area be irrigated and have an underdrainage system to keep the fields in good condition.

Install an infilled synthetic turf field along with a softball field at the Lighted Multi-Purpose field.

- Install a 215'x360 synthetic' turf system with a cutout for the softball home plate area.
- The field can fit a full size field hockey field, full size, Boy's lacrosse field and a smaller than desired Girl's lacrosse field.
- The softball infield will be synthetic grass as will the pitcher's mound.
- Maintain the existing lights on the field and have the foot-candles tested throughout the field to ensure there is proper light on the entire field to allow for soccer, field hockey and lacrosse night play.
- Install a new backstop so field can be used as an alternative softball field.

In the fall Scheme B creates an extra playing field for the high school teams even though two of the fields are not regulation or recommended sizes. The JV and Varsity soccer teams have three fields to use for practices and two fields to use for games, the full size natural grass field and the stadium field. The field hockey team has the lighted turf field and the small natural grass field to use for games and practices. The football team can always practice on the Skating pond field and play games on the Stadium turf field. With the use of the lighted multi-purpose field

In the spring the Stadium can be used for Boy's and Girl's lacrosse with proper scheduling. The Skating Pond field can also be lined as a practice field for lacrosse. The baseball teams will use the Multi-Purpose fields and softball will use the Lighted Multi-Purpose field. Since the Lighted Multi-Purpose field can essentially be played on at any point in time, this field can also be used for Boy's lacrosse games an practices with the proper scheduling. The field could

be used for Girl's lacrosse too, but the field would be smaller than desired (180'x360'), but would still meet the minimum requirements (180'x330').

With the addition of the two synthetic turf fields scheduling during the fall will be easier because of he addition of one field and being able to use one of the fields at anytime without worrying about overusing it. In the spring with the additon of the Stadium field, Boy's lacrosse will no longer need to go to the Middle school for practice. There will always be a place for practice and games will always be on one of the synthetic fields with the use of the lights.

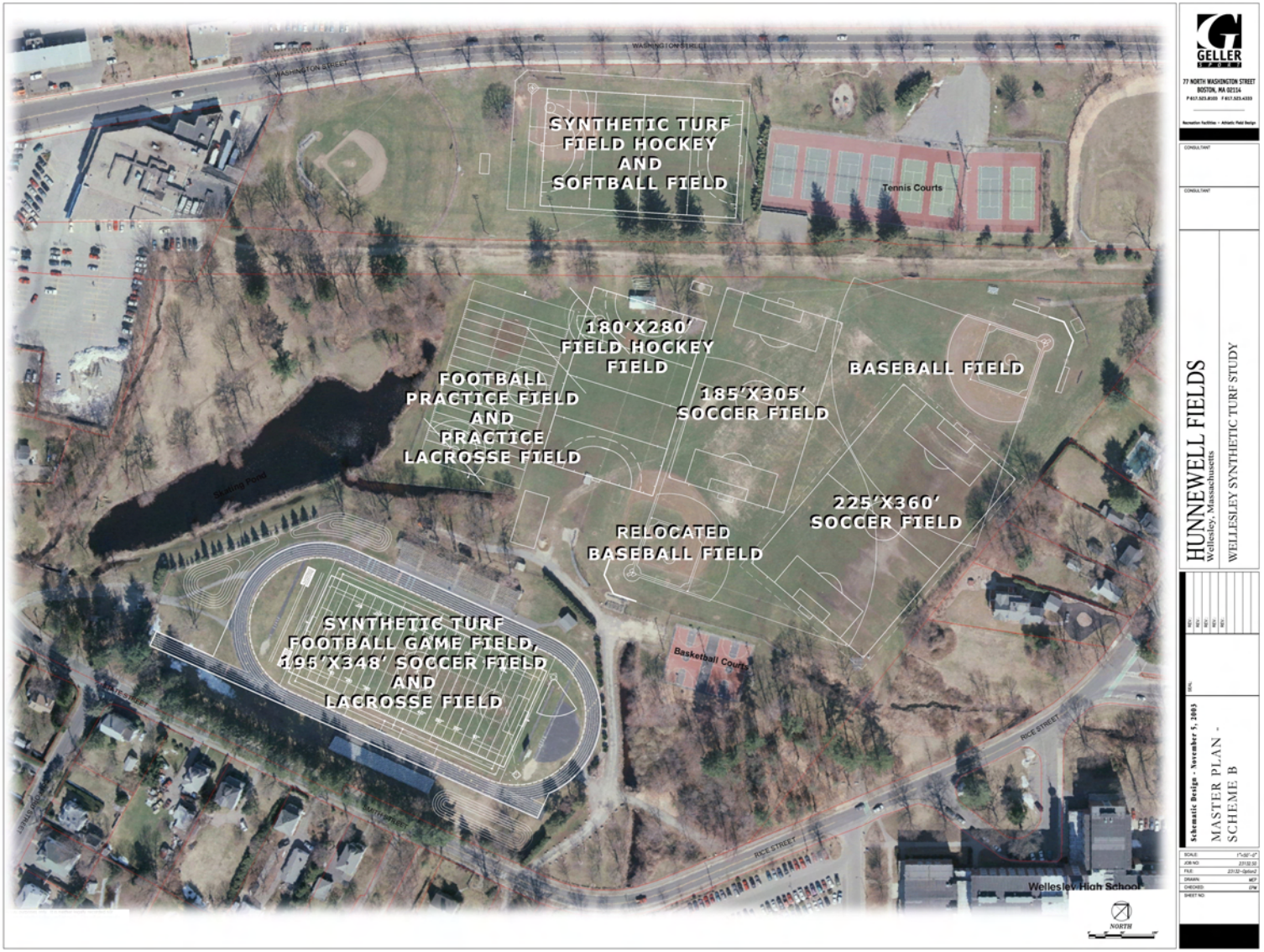
SUMMARY

Based on the high volume of athletes using the fields at the Hunewell Fields complex, the addition of two infilled synthetic turf fields will benefit the Town immensely. The synthetic fields can always be used because there is no required maintenance or rest period required for field recovery. The natural grass fields in the area will be able to receive the rest needed to keep them in good condition.

When considering the Town of Wellesley's athletic needs, Geller Sport believes Scheme A will work the best for the Town. With the relocation of the softball field and the use of both synthetic turf fields at all times, there will not be a need for any teams to go to the Middle School for practices or games. The natural grass fields will be spaced out enough to allow for field rotation from year to year to rest more areas. This design also removes the feeling of all teams being crammed into one area to practice and play games. Overall Scheme A will work the best for the Town in terms of scheduling in both the fall and the spring and will help keep all fields in good condition thereby helping to keep athletes healthy and safe from injury.

Scheme A

Scheme B



COST ESTIMATES

SCHEME A

- Stadium
- Baseball Multi-Purpose Field
- Skating Pond Field
- Lighted Multi-Purpose Field

SCHEME B

- Stadium
- Baseball Multi-Purpose Field
- Skating Pond Field
- Lighted Multi-Purpose Field

SCHEME A

NOTE:
Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Project	Subtotal
00001	**Wellesley High School Stadium Renovations**	$1,723,435.00
00002	**Athletic Field Renovations at Baseball and Multi-Purpose Fields**	$2,414,906.00
00003	**Athletic Field Renovations at Skating Pond Field**	$715,818.00
00004	**Lighted Multi-Purpose Field Renovations**	$1,029,534.00
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS	**$5,883,693.00**

STADIUM RENOVATION - INFILLED SYNTHETIC TURF FIELD, RESILIENT TRACK IMPROVEMENTS AND ASSOCIATED SITE IMPROVEMENTS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	15,000.00	$15,000.00
2	Remove/Dispose of Resilient Surfacing at High Jump	4,225	SF	0.25	$1,056.25
3	Remove Runways and Associated Sand Pits/ Equipment	3	EA	500.00	$1,500.00
4	Remove/Dispose of Existing Perimeter Fence	2,000	LF	10.00	$20,000.00
5	Remove/Dispose of Existing Field Fence (3' high)	1,570	LF	6.00	$9,420.00
6	Remove/Dispose of Existing Goal Posts	2	EA	750.00	$1,500.00
7	Abandon Existing Drainage System	1	LS	10,000.00	$10,000.00
	Subtotal				**$58,476.25**
00002	**Earthwork**				
1	Strip and Mound Existing Topsoil from Infield (12" depth)	3,776	CY	8.00	$30,208.00
2	Compact Subgrade at Infield	78,720	SF	0.11	$8,659.20
3	Compact Subgrade at Track "D" Areas	27,458	SF	0.11	$3,020.38
4	Rough Grade	45,000	SF	0.10	$4,500.00
	Subtotal				**$46,387.58**
00003	**Multi-Purpose Infilled Synthetic Turf Infield**				
1	Infilled Synthetic System	78,720			
	Geotextile Fabric		SF	0.15	$11,808.00
	12" Perimeter Drain/6" Flat Perforated Drain (20' o.c.)		SF	1.50	$118,080.00
	8" Crushed Stone Drainage Layer		SF	0.60	$47,232.00
	2" Choker Layer (including laser grading)		SF	0.40	$31,488.00
	Synthetic Carpet with Sand/Rubber Infill and 10mm Pad		SF	5.00	$393,600.00
2	Concrete Nailer at Track "D" Areas	420	LF	12.00	$5,040.00
3	Conduit for Future Sports Lighting	1	ALLOW	15,000.00	$15,000.00
4	Removable Football Field Goal Posts	1	PR	6,000.00	$6,000.00
	Subtotal				**$628,248.00**

00004	**400 Meter Resilient Track**				
1	Resilient Urethane Track Surface at "D" Areas	3,060			
	Bituminous Concrete Track Base		SY	12.00	$36,720.00
	Urethane Track Surface (Paved Mat with Structural Spray)		SY	24.00	$73,440.00
2	Repair and Re-Spray Existing Track Surface	1	LS	60,000.00	$60,000.00
3	Premanufactured Track Channel Drain at "D" Areas	592	LF	30.00	$17,760.00
4	Athletic Equipment				
	Long/Triple Jump Pits	2	EA	10,000.00	$20,000.00
	Sand at Jump Pits	1	ALLOW	500.00	$500.00
	Take-off Boards	4	EA	250.00	$1,000.00
	Shot Put Circle	1	EA	1,000.00	$1,000.00
	Shot Put Toe Board	1	EA	200.00	$200.00
	Discus Circle	1	EA	1,000.00	$1,000.00
	Discus Cage	1	EA	5,000.00	$5,000.00
	Subtotal				**$216,620.00**
00005	**Site Improvements and Utilities**				
1	Loam and Seed Disturbed Areas	1	ALLOW	7,500.00	$7,500.00
2	Replace Existing Scoreboard	1	ALLOW	15,000.00	$15,000.00
3	Replace Existing Catch Basin Lids with Manhole Covers	4	EA	250.00	$1,000.00
4	Clean Existing Utility System	1	ALLOW	2,500.00	$2,500.00
5	8' Black Powder Coated Chain Link Fence (at Perimeter)	2,000	LF	37.50	$75,000.00
6	4' Black Powder Coated Chain Link Fence (at Field)	1,570	LF	25.00	$39,250.00
7	Bituminous Concrete Walkways	12,000	SF	4.00	$48,000.00
8	Landscape	1	ALLOW	20,000.00	$20,000.00
	Subtotal				**$208,250.00**
00006	**Structural Development**				
1	Maintenance, Storage, Restroom and Concession Facility	1	ALLOW	100,000.00	$100,000.00
	Subtotal				**$100,000.00**
	Subtotal:				**$1,257,981.83**
	10% Contingency				***$125,798.18***
	5% General Conditions				***$62,899.09***

	10% Contractors Overhead and Profit				***$125,798.18***
	12% Soft Costs and Design Fees				***$150,957.82***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$1,723,435.11**

ATHLETIC FIELD RENOVATIONS - BASEBALL AND MULTI-PURPOSE FIELDS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	10,000.00	$10,000.00
	Subtotal				**$10,000.00**
00002	**Baseball and Multi-Purpose Fields**				
1	Earthwork/Drainage				
	Subsurface Drainage System (stone and pipe)	309,000	SF	2.00	$618,000.00
	Rough Grade	309,000	SF	0.07	$21,630.00
2	Surface Construction				
	Strip, Screen and Amend Rootzone Mix	309,000	SF	1.75	$540,750.00
	Laser Grade	309,000	SF	0.15	$46,350.00
	Big Roll Sod	285,000	SF	0.50	$142,500.00
	Irrigation	309,000	SF	0.40	$123,600.00
3	Skinned Infield Mix	24,000	SF	2.00	$48,000.00
4	8' Perimeter/Outfield/Bull Pen Fence	2,410	LF	37.50	$90,375.00
5	Semi-Portable Bleacher	1	EA	5,000.00	$5,000.00
6	Backstop with Overhang (2 backstops)	160	LF	250.00	$40,000.00
7	Dugouts	4	EA	12,500.00	$50,000.00
8	Athletic Equipment				
	Foul Poles	2	PR	2,000.00	$4,000.00
	Portable Soccer Goals and Nets	2	PR	4,000.00	$8,000.00
	Bases, Home Plate and Pitcher's Rubber	2	SET	1,000.00	$2,000.00
9	Scoreboard	1	EA	10,000.00	$10,000.00
10	Drainage and Utility Connections	1	ALLOW	2,500.00	$2,500.00
	Subtotal				**$1,752,705.00**

	Subtotal:				**$1,762,705.00**
	10% Contingency				***$176,270.50***
	5% General Conditions				***$88,135.25***
	10% Contractors Overhead and Profit				***$176,270.50***
	12% Soft Costs and Design Fees				***$211,524.60***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$2,414,905.85**

ATHLETIC FIELD RENOVATIONS - SOFTBALL AND PRACTICE FOOTBALL FIELD ADJACENT TO SKATING POND

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	5,000.00	$5,000.00
	Subtotal				**$5,000.00**
00002	**Softball and Practice Football Field**				
1	Earthwork/Drainage				
	Subsurface Drainage System (stone and pipe)	90,000	SF	2.00	$180,000.00
	Rough Grade	90,000	SF	0.07	$6,300.00
2	Surface Construction				
	Strip, Screen and Amend Rootzone Mix	3,300	CY	2.65	$8,745.00
	Laser Grade	90,000	SF	0.15	$13,500.00
	Big Roll Sod	78,000	SF	2.00	$156,000.00
	Irrigation	78,000	SF	0.40	$31,200.00
3	Skinned Infield Mix	12,000	SF	2.00	$24,000.00
4	4' Perimeter/Outfield/Bull Pen Fence	1,350	LF	25.00	$33,750.00
5	Semi-Portable Bleacher	1	EA	5,000.00	$5,000.00
6	Backstop with Overhang	60	LF	250.00	$15,000.00
7	Dugouts	2	EA	12,500.00	$25,000.00
8	Athletic Equipment				
	Foul Poles	1	PR	2,000.00	$2,000.00
	Portable Football Field Goal Posts	1	PR	6,000.00	$6,000.00

	Bases, Home Plate and Pitcher's Rubber	1	SET	1,000.00	$1,000.00
9	Scoreboard	1	EA	7,500.00	$7,500.00
10	Drainage and Utility Connections	1	ALLOW	2,500.00	$2,500.00
	Subtotal				**$517,495.00**
	Subtotal:				**$522,495.00**
	10% Contingency				***$52,249.50***
	5% General Conditions				***$26,124.75***
	10% Contractors Overhead and Profit				***$52,249.50***
	12% Soft Costs and Design Fees				***$62,699.40***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$715,818.15**

LIGHTED MULTI-PURPOSE FIELD RENOVATIONS - INFILLED SYNTHETIC TURF FIELD AND ASSOCIATED SITE IMPROVEMENTS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	7,500.00	$7,500.00
2	Remove/Dispose of Existing Backstop	50	LF	20.00	$1,000.00
	Subtotal				**$8,500.00**
00002	**Earthwork**				
1	Strip/Mound Existing Topsoil from Existing Field (12" depth)	2,867	CY	8.00	$22,936.00
2	Compact Subgrade at Field	77,400	SF	0.11	$8,514.00
	Subtotal				**$31,450.00**
00003	**Multi-Purpose Infilled Synthetic Turf Infield**				
1	Infilled Synthetic System	77,400			
	Geotextile Fabric		SF	0.15	$11,610.00
	12" Perimeter Drain/6" Flat Perforated Drain (20' o.c.)		SF	1.50	$116,100.00
	8" Crushed Stone Drainage Layer		SF	0.60	$46,440.00
	2" Choker Layer (including laser grading)		SF	0.40	$30,960.00
	Synthetic Carpet with Sand/Rubber Infill and 10mm Pad		SF	5.00	$387,000.00

2	Concrete Nailer	1,150	LF	12.00	$13,800.00
	Subtotal				**$605,910.00**
00004	**Site Improvements and Utilities**				
1	Loam and Seed Disturbed Areas	1	ALLOW	7,500.00	$7,500.00
2	Electronic Scoreboard	1	ALLOW	7,500.00	$7,500.00
3	Clean Existing Utility System	1	ALLOW	2,500.00	$2,500.00
4	8' Black Powder Coated Chain Link Fence (at Perimeter)	1,150	LF	37.50	$43,125.00
5	Bituminous Concrete Walkways	1	ALLOW	20,000.00	$20,000.00
6	Landscape	1	ALLOW	25,000.00	$25,000.00
	Subtotal				**$105,625.00**
00005	**Structural Development**				
1	Storage, Restroom and Concession Structure	1	ALLOW	50,000.00	$50,000.00
	Subtotal				**$50,000.00**
	Subtotal:				**$751,485.00**
	10% Contingency				***$75,148.50***
	5% General Conditions				***$37,574.25***
	10% Contractors Overhead and Profit				***$75,148.50***
	12% Soft Costs and Design Fees				***$90,178.20***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$1,029,534.45**

SCHEME B

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Project	Subtotal
00001	**Wellesley High School Stadium Renovations**	$1,730,285.00
00002	**Athletic Field Renovations at Baseball and Multi-Purpose Fields**	$2,414,906.00
00003	**Athletic Field Renovations at Skating Pond Field**	$705,447.00
00004	**Lighted Multi-Purpose Field Renovations**	$1,159,815.00
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS	**$6,010,453.00**

STADIUM RENOVATION - INFILLED SYNTHETIC TURF FIELD, RESILIENT TRACK IMPROVEMENTS AND ASSOCIATED SITE IMPROVEMENTS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	15,000.00	$15,000.00
2	Remove/Dispose of Resilient Surfacing at High Jump	4,225	SF	0.25	$1,056.25
3	Remove Runways and Associated Sand Pits/ Equipment	3	EA	500.00	$1,500.00
4	Remove/Dispose of Existing Perimeter Fence	2,000	LF	10.00	$20,000.00
5	Remove/Dispose of Existing Field Fence (3' high)	1,570	LF	6.00	$9,420.00
6	Remove/Dispose of Existing Goal Posts	2	EA	750.00	$1,500.00
7	Abandon Existing Drainage System	1	LS	15,000.00	$15,000.00
	Subtotal				**$63,476.25**
00002	**Earthwork**				
1	Strip and Mound Existing Topsoil from Infield (12" depth)	3,776	CY	8.00	$30,208.00
2	Compact Subgrade at Infield	78,720	SF	0.11	$8,659.20
3	Compact Subgrade at Track "D" Areas	27,458	SF	0.11	$3,020.38
4	Rough Grade	45,000	SF	0.10	$4,500.00
	Subtotal				**$46,387.58**
00003	**Multi-Purpose Infilled Synthetic Turf Infield**				
1	Infilled Synthetic System	78,720			
	Geotextile Fabric		SF	0.15	$11,808.00
	12" Perimeter Drain/6" Flat Perforated Drain (20' o.c.)		SF	1.50	$118,080.00
	8" Crushed Stone Drainage Layer		SF	0.60	$47,232.00
	2" Choker Layer (including laser grading)		SF	0.40	$31,488.00
	Synthetic Carpet with Sand/Rubber Infill and 10mm Pad		SF	5.00	$393,600.00
2	Concrete Nailer at Track "D" Areas	420	LF	12.00	$5,040.00
3	Conduit for Future Sports Lighting	1	ALLOW	15,000.00	$15,000.00
4	Removable Football Field Goal Posts	1	PR	6,000.00	$6,000.00
	Subtotal				**$628,248.00**

00004	**400 Meter Resilient Track**				
1	Resilient Urethane Track Surface at "D" Areas	3,060			
	Bituminous Concrete Track Base		SY	12.00	$36,720.00
	Urethane Track Surface (Paved Mat and Structural Spray)		SY	24.00	$73,440.00
2	Repair and Re-Spray Existing Track Surface	1	LS	60,000.00	$60,000.00
3	Premanufactured Track Channel Drain at "D" Areas	592	LF	30.00	$17,760.00
4	Athletic Equipment				
	Long/Triple Jump Pits	2	EA	10,000.00	$20,000.00
	Sand at Jump Pits	1	ALLOW	500.00	$500.00
	Take-off Boards	4	EA	250.00	$1,000.00
	Shot Put Circle	1	EA	1,000.00	$1,000.00
	Shot Put Toe Board	1	EA	200.00	$200.00
	Discus Circle	1	EA	1,000.00	$1,000.00
	Discus Cage	1	EA	5,000.00	$5,000.00
	Subtotal				**$216,620.00**
00005	**Site Improvements and Utilities**				
1	Loam and Seed Disturbed Areas	1	ALLOW	7,500.00	$7,500.00
2	Replace Existing Scoreboard	1	ALLOW	15,000.00	$15,000.00
3	Replace Existing Catch Basin Lids with Manhole Covers	4	EA	250.00	$1,000.00
4	Clean Existing Utility System	1	ALLOW	2,500.00	$2,500.00
5	8' Black Powder Coated Chain Link Fence (at Perimeter)	2,000	LF	37.50	$75,000.00
6	4' Black Powder Coated Chain Link Fence (at Field)	1,570	LF	25.00	$39,250.00
7	Bituminous Concrete Walkways	12,000	SF	4.00	$48,000.00
8	Landscape	1	ALLOW	20,000.00	$20,000.00
	Subtotal				**$208,250.00**
00006	**Structural Development**				
1	Maintenance, Concesssion, Restroom and Storage Structure	1	ALLOW	100,000.00	$100,000.00
	Subtotal				**$100,000.00**
	Subtotal:				**$1,262,981.83**
	10% Contingency				***$126,298.18***

	5% General Conditions				***$63,149.09***
	10% Contractors Overhead and Profit				***$126,298.18***
	12% Soft Costs and Design Fees				***$151,557.82***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$1,730,285.11**

ATHLETIC FIELD RENOVATIONS - BASEBALL AND MULTI-PURPOSE FIELDS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	10,000.00	$10,000.00
	Subtotal				**$10,000.00**
00002	**Baseball and Multi-Purpose Fields**				
1	Earthwork/Drainage				
	Subsurface Drainage System (stone and pipe)	309,000	SF	2.00	$618,000.00
	Rough Grade	309,000	SF	0.07	$21,630.00
2	Surface Construction				
	Strip, Screen and Amend Rootzone Mix	309,000	SF	1.75	$540,750.00
	Laser Grade	309,000	SF	0.15	$46,350.00
	Big Roll Sod	285,000	SF	0.50	$142,500.00
	Irrigation	309,000	SF	0.40	$123,600.00
3	Skinned Infield Mix	24,000	SF	2.00	$48,000.00
4	8' Perimeter/Outfield/Bull Pen Fence	2,410	LF	37.50	$90,375.00
5	Semi-Portable Bleacher	1	EA	5,000.00	$5,000.00
6	Backstop with Overhang (2 backstops)	160	LF	250.00	$40,000.00
7	Dugouts	4	EA	12,500.00	$50,000.00
8	Athletic Equipment				
	Foul Poles	2	PR	2,000.00	$4,000.00
	Portable Soccer Goals and Nets	2	PR	4,000.00	$8,000.00
	Bases, Home Plate and Pitcher's Rubber	2	SET	1,000.00	$2,000.00
9	Scoreboard	1	EA	10,000.00	$10,000.00

10	Drainage and Utility Connections	1	ALLOW	2,500.00	$2,500.00
	Subtotal				**$1,752,705.00**
	Subtotal				**$1,752,705.00**
	10% Contingency				***$176,270.50***
	5% General Conditions				***$88,135.25***
	10% Contractors Overhead and Profit				***$176,270.50***
	12% Soft Costs and Design Fees				***$211,524.60***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$2,414,905.85**

ATHLETIC FIELD RENOVATIONS - SOFTBALL AND PRACTICE FOOTBALL FIELD ADJACENT TO SKATING POND

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	5,000.00	$5,000.00
	Subtotal				**$5,000.00**
00002	**Softball and Practice Football Field**				
1	Earthwork/Drainage				
	Subsurface Drainage System	90,000	SF	2.00	$180,000.00
	Rough Grade	90,000	SF	0.07	$6,300.00
2	Surface Construction				
	Strip, Screen and Amend Rootzone Mix	90,000	CY	1.75	$157,500.00
	Laser Grade	90,000	SF	0.15	$13,500.00
	Big Roll Sod	90,000	SF	0.50	$45,000.00
3	Irrigation	90,000	SF	0.40	$36,000.00
4	8' Perimeter Fence	1,350	LF	37.50	$50,625.00
5	Semi-Portable Bleacher	1	EA	5,000.00	$5,000.00
6	Athletic Equipment				
	Portable Football Field Goal Posts	1	PR	6,000.00	$6,000.00
7	Scoreboard	1	EA	7,500.00	$7,500.00
8	Drainage and Utility Connections	1	ALLOW	2,500.00	$2,500.00

	Subtotal				**$509,925.00**
	Subtotal:				**$514,925.00**
	10% Contingency				***$51,492.50***
	5% General Conditions				***$25,746.25***
	10% Contractors Overhead and Profit				***$51,492.50***
	12% Soft Costs and Design Fees				***$61,791.00***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$705,447.25**

LIGHTED MULTI-PURPOSE FIELD RENOVATIONS - INFILLED SYNTHETIC TURF FIELD AND ASSOCIATED SITE IMPROVEMENTS

NOTE:

Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

ESTIMATE OF PROBABLE PROJECT COSTS

Item #	Item/Remarks	Quantity	Unit	Unit Cost	Subtotal
00001	**Demolition and Site Preparation**				
1	Site Preparation and Erosion Control	1	LS	7,500.00	$7,500.00
2	Remove/Dispose of Existing Backstop	50	LF	20.00	$1,000.00
	Subtotal				**$8,500.00**
00002	**Earthwork**				
1	Strip/Mound Existing Topsoil from Existing Field (12" depth)	2,867	CY	8.00	$22,936.00
2	Compact Subgrade at Infield	77,400	SF	0.11	$8,514.00
	Subtotal				**$31,450.00**
00003	**Multi-Purpose Infilled Synthetic Turf Infield**				
1	Infilled Synthetic System	77,400			
	Geotextile Fabric		SF	0.15	$11,610.00
	12" Perimeter Drain/6" Flat Perforated Drain (20' o.c.)		SF	1.50	$116,100.00
	8" Crushed Stone Drainage Layer		SF	0.60	$46,440.00
	2" Choker Layer (including laser grading)		SF	0.40	$30,960.00
	Synthetic Carpet with Sand/Rubber Infill and 10mm Pad		SF	5.00	$387,000.00
2	Concrete Nailer	1,210	LF	12.00	$14,520.00
3	Backstop with Overhang	60	LF	200.00	$12,000.00
4	Skinned Infield Mix	500	SF	2.00	$1,000.00

5	Athletic Equipment				
	Removable Foul Poles	1	PR	2,000.00	$2,000.00
	Bases, Home Plate, Pitcher's Rubber	1	SET	1,000.00	$1,000.00
	Subtotal				**$622,630.00**
00004	**Site Improvements and Utilities**				
1	Loam and Seed Disturbed Areas	1	ALLOW	4,000.00	$4,000.00
2	Electronic Scoreboard	1	ALLOW	7,500.00	$7,500.00
3	Clean Existing Utility System	1	ALLOW	2,500.00	$2,500.00
4	8' Black Powder Coated Chain Link Fence (at Perimeter)	2,000	LF	37.50	$75,000.00
5	Bituminous Concrete Walkways	1	ALLOW	20,000.00	$20,000.00
6	Landscape	1	ALLOW	25,000.00	$25,000.00
	Subtotal				**$134,000.00**
00005	**Structural Development**				
1	Storage, Concession and Restroom Structure	1	ALLOW	50,000.00	$50,000.00
	Subtotal				**$50,000.00**
	Subtotal:				**$846,580.00**
	10% Contingency				***$84,658.00***
	5% General Conditions				***$42,329.00***
	10% Contractors Overhead and Profit				***$84,658.00***
	12% Soft Costs and Design Fees				***$101,589.60***
	TOTAL ESTIMATE OF PROBABLE PROJECT COSTS				**$1,159,814.60**

COST COMPARISONS

ATHLETIC GROUNDS MASTER PLAN COST COMPARISON – NATURAL GRASS vs. INFILLED

NOTE:
Due to the inflationary and unpredictable construction climate, this estimate may not represent the actual cost of construction.

Stadium Field: 10-Year Cost Comparison

Note:

All costs shown are on a per field basis.

For additional project costs, please refer to enclosed Estimate of Probable Construction Costs.

Item	***Natural Grass***	***Infilled Polyethylene***
Field Size (s.f.) (1)	78,720	78,720
Earthwork / Drainage Cost / s.f. (2)(3)	$2.65	$2.65
Surface Installation Cost / s.f.	$2.65 (4)	$5.00 (5)
Initial Cost	*$417,216*	*$602,208*
Maintenance Cost / s.f.	$0.42 (6)	$0.04
Annual Maintenance - *Year 1*	$33,062	$3,149
10 Year Maintenance Costs (7)	*$379,023*	*$36,097*
10-Year Total	***$796,239***	***$638,305***
Average Annual Cost	***$79,624***	***$63,831***
10-Year Savings over Natural Grass		***$157,934***
Uses per Week	9 (8)	18 (9)
Weeks of Use per Year	33 (10)	41 (11)
Uses per Year	*297*	*738*
Cost per Use	***$268***	***$86***

(1) Infield of track at Wellesley High School Stadium

(2) Assumes similar subgrade preparation for both field types

(3) Assumes similar subgrade construction for both field types

(4) 12" sandy loam rootzone - laser graded with head to head irrigation and big roll sod

(5) Infilled Polyethylene Field price for Sand and Rubber Infill with 10 mm Pad for added player safety

(6) Assumes excellent maintenance of natural grass field including periodic resodding

(7) Assumes 3% inflation per year

(8) Assumes 1 practice or game per weekday and 4 games per weekend for Natural Grass

(9) Assumes 2 practices or games per weekday and 8 games per weekend for Infilled Polyethylene

(10) April 15 through November 30 for Natural Grass (due to mud and frost)

(11) March 1 through December 15 for Infilled Polyethylene (play is limited only by snow)

Stadium Field: 24-Year Cost Comparison

Note:

All costs shown are on a per field basis.

For additional project costs, please refer to enclosed Estimate of Probable Construction Costs.

Item	***Natural Grass***		***Infilled Polyethylene***	
Field Size (s.f.) (1)	78,720		78,720	
Earthwork / Drainage Cost / s.f. (2)(3)	$2.65		$2.65	
Surface Installation Cost / s.f.	$2.65	(4)	$5.00	(5)
Initial Cost	*$417,216*		*$602,208*	
Maintenance Cost / s.f.	$0.42	(6)	$0.04	
Annual Maintenance - *Year 1*	$33,062		$3,149	
24 Year Maintenance Costs (7)	*$1,138,222*		*$108,402*	
12 Year Replacement (7)			$544,834	(8)
24 Year Replacement (7)	$823,412	(9)	$776,804	(8)
Total Replacement Costs	*$823,412*		*$1,321,638*	
24-Year Total	***$2,378,850***		***$2,032,248***	
24-Year Savings over Natural Grass			***$346,601***	

(1) Infield of track at Wellesley High School Stadium

(2) Assumes similar subgrade preparation for both field types

(3) Assumes similar subgrade construction for both field types

(4) 12" sandy loam rootzone - laser graded with head to head irrigation and big roll sod

(5) Infilled Polyethylene Field price for Sand and Rubber Infill with 10 mm Pad for added player safety

(6) Assumes excellent maintenance of natural grass field including periodic resodding

(7) Assumes 3% inflation per year

(8) For Infilled Polyethylene assumes removal and replacement of carpet and infill only, not drainage system or pad.

(9) For Natural Grass assumes complete reconstruction including base and drainage (due to contamination with silt)

Stadium Field: Maintenance Costs

Note:

All costs shown are on a per field basis.

Assumes 3% inflation.

Year	*Natural Grass*	*Infilled Polyethylene*
1	$33,062	$3,149
2	$34,054	$3,243
3	$35,076	$3,341
4	$36,128	$3,441
5	$37,212	$3,544
6	$38,328	$3,650
7	$39,478	$3,760
8	$40,663	$3,873
9	$41,882	$3,989
10	$43,139	$4,108
11	$44,433	$4,232
12	$45,766	$4,359
13	$47,139	$4,489
14	$48,553	$4,624
15	$50,010	$4,763
16	$51,510	$4,906
17	$53,055	$5,053
18	$54,647	$5,204
19	$56,287	$5,361
20	$57,975	$5,521
21	$59,714	$5,687
22	$61,506	$5,858
23	$63,351	$6,033
24	$65,252	$6,214
Total	***$1,138,222***	***$108,402***

Mowing Labor	200 hours @ $25 / hour	$5,000
Gasoline	lump sum	$200
Equipment Depreciation	lump sum	$500
Fertilization	$0.05 / s.f.	$3,935
Overseeding	4 lbs/1000 = $0.03 / s.f.	$2,360
Sodding	between hash marks	$3,000
Core Aeration	3 / yr = $0.09 /s.f.	$7,085
Topdressing	1/8" / yr = 33 c.y. @ $30	$990
Thatch Removal	$0.02 / s.f.	$1,575
Irrigation Water Cost	1" / week for 33 weeks	$5,362
Irrigation Repairs	lump sum	$500
Striping	lump sum	$3,000
		$33,507
	cost per s.f.	0.426

Stadium Field: Replacement Costs

Note:

All costs shown are on a per field basis.

Assumes 3% inflation.

Replacement Year

Year	*Natural Grass*	*Infilled Polyethylene*
1	$417,216	$393,600
2	$429,732	$405,408
3	$442,624	$417,570
4	$455,903	$430,097
5	$469,580	$443,000
6	$483,668	$456,290
7	$498,178	$469,979
8	$513,123	$484,078
9	$528,517	$498,601
10	$544,372	$513,559
11	$560,703	$528,965
12	$577,525	$544,834
13	$594,850	$561,179
14	$612,696	$578,015
15	$631,077	$595,355
16	$650,009	$613,216
17	$669,509	$631,612
18	$689,594	$650,561
19	$710,282	$670,078
20	$731,591	$690,180
21	$753,539	$710,885
22	$776,145	$732,212
23	$799,429	$754,178
24	$823,412	$776,804

Lighted Multi-Purpose Field: 10-Year Cost Comparison

Note:

All costs shown are on a per field basis.

For additional project costs, please refer to enclosed Estimate of Probable Construction Costs.

Item	***Natural Grass***		***Infilled Polyethylene***	
Field Size (s.f.) (1)	77,400		77,400	
Earthwork / Drainage Cost / s.f. (2)(3)	$2.65		$2.65	
Surface Installation Cost / s.f.	$2.65	(4)	$5.00	(5)
Initial Cost	*$410,220*		*$592,110*	
Maintenance Cost / s.f.	$0.43	(6)	$0.04	
Annual Maintenance - *Year 1*	$33,282		$3,096	
10 Year Maintenance Costs (7)	*$381,541*		*$35,492*	
10-Year Total	***$791,761***		***$627,602***	
Average Annual Cost	***$79,176***		***$62,760***	
10-Year Savings over Natural Grass			***$164,159***	
Uses per Week	9	(8)	18	(9)
Weeks of Use per Year	33	(10)	41	(11)
Uses per Year	*297*		*738*	
Cost per Use	***$267***		***$85***	

(1) The Lighted Multi-Purpose Athletic Field at the Hunnewell Fields Athletic Complex

(2) Assumes similar subgrade preparation for both field types

(3) Assumes similar subgrade construction for both field types

(4) 12" sandy loam rootzone - laser graded with head to head irrigation and big roll sod

(5) Infilled Polyethylene Field price for Sand and Rubber Infill with 10 mm Pad for added player safety

(6) Assumes excellent maintenance of natural grass field including periodic resodding

(7) Assumes 3% inflation per year

(8) Assumes 1 practice or game per weekday and 4 games per weekend for Natural Grass

(9) Assumes 2 practices or games per weekday and 8 games per weekend for Infilled Polyethylene

(10) April 15 through November 30 for Natural Grass (due to mud and frost)

(11) March 1 through December 15 for Infilled Polyethylene (play is limited only by snow)

Lighted Multi-Purpose Field: 24-Year Cost Comparison

Note:

All costs shown are on a per field basis.

For additional project costs, please refer to enclosed Estimate of Probable Construction Costs.

Item	***Natural Grass***		***Infilled Polyethylene***	
Field Size (s.f.) (1)	77,400		77,400	
Earthwork / Drainage Cost / s.f. (2)(3)	$2.65		$2.65	
Surface Installation Cost / s.f.	$2.65	(4)	$5.00	(5)
Initial Cost	*$410,220*		*$592,110*	
Maintenance Cost / s.f.	$0.43	(6)	$0.04	
Annual Maintenance - *Year 1*	$33,282		$3,096	
24 Year Maintenance Costs (7)	*$1,145,782*		*$106,584*	
12 Year Replacement (7)			$535,699	(8)
24 Year Replacement (7)	$809,605	(9)	$763,778	(8)
Total Replacement Costs	*$809,605*		*$1,299,476*	
24-Year Total	***$2,365,606***		***$1,998,171***	
24-Year Savings over Natural Grass			***$367,436***	

(1) The Lighted Multi-Purpose Athletic Field at the Hunnewell Fields Athletic Complex

(2) Assumes similar subgrade preparation for both field types

(3) Assumes similar subgrade construction for both field types

(4) 12" sandy loam rootzone - laser graded with head to head irrigation and big roll sod

(5) Infilled Polyethylene Field price for Sand and Rubber Infill with 10 mm Pad for added player safety

(6) Assumes excellent maintenance of natural grass field including periodic resodding

(7) Assumes 3% inflation per year

(8) For Infilled Polyethylene assumes removal and replacement of carpet and infill only, not drainage system or pad.

(9) For Natural Grass assumes complete reconstruction including base and drainage (due to contamination with silt)

Lighted Multi-Purpose Field: Maintenance Cost

Note:

All costs shown are on a per field basis.

Assumes 3% inflation.

Year	*Natural Grass*	*Infilled Polyethylene*
1	$33,282	$3,096
2	$34,280	$3,189
3	$35,309	$3,285
4	$36,368	$3,383
5	$37,459	$3,485
6	$38,583	$3,589
7	$39,740	$3,697
8	$40,933	$3,808
9	$42,161	$3,922
10	$43,425	$4,040
11	$44,728	$4,161
12	$46,070	$4,286
13	$47,452	$4,414
14	$48,876	$4,547
15	$50,342	$4,683
16	$51,852	$4,823
17	$53,408	$4,968
18	$55,010	$5,117
19	$56,660	$5,271
20	$58,360	$5,429
21	$60,111	$5,592
22	$61,914	$5,759
23	$63,772	$5,932
24	$65,685	$6,110
Total	***$1,145,782***	***$106,584***

Mowing Labor	200 hours @ $25 / hour	$5,000
Gasoline	lump sum	$200
Equipment Depreciation	lump sum	$500
Fertilization	$0.05 / s.f.	$3,870
Overseeding	4 lbs/1000 = $0.03 / s.f.	$2,322
Sodding	between hash marks	$3,000
Core Aeration	3 / yr = $0.09 /s.f.	$6,966
Topdressing	1/8" / yr = 33 c.y. @ $30	$990
Thatch Removal	$0.02 / s.f.	$1,550
Irrigation Water Cost	1" / week for 33 weeks	$5,362
Irrigation Repairs	lump sum	$500
Striping	lump sum	$3,000
		$33,260
	cost per s.f.	0.430

Lighted Multi-Purpose Field: Replacement Cost

Note:

All costs shown are on a per field basis.

Assumes 3% inflation.

Replacement Year

Year	*Natural Grass*	*Infilled Polyethylene*
1	$410,220	$387,000
2	$422,527	$398,610
3	$435,202	$410,568
4	$448,258	$422,885
5	$461,706	$435,572
6	$475,557	$448,639
7	$489,824	$462,098
8	$504,519	$475,961
9	$519,654	$490,240
10	$535,244	$504,947
11	$551,301	$520,096
12	$567,840	$535,699
13	$584,876	$551,769
14	$602,422	$568,323
15	$620,495	$585,372
16	$639,109	$602,933
17	$658,283	$621,021
18	$678,031	$639,652
19	$698,372	$658,842
20	$719,323	$678,607
21	$740,903	$698,965
22	$763,130	$719,934
23	$786,024	$741,532
24	$809,605	$763,778

DEFICIENCY ANALYSIS AND PLAN SUMMARY

HIGH SCHOOL STADIUM TRACK AND FIELD

TRACK SURFACE

Deficiencies:

1.) Extended length of the track straight-away is taking up valuable space which can be used for other track and field events.
2.) The resilient surfacing on the track is worn. Small chunks of resilient surfacing have peeled up and are missing from the track surface creating a trip hazard.

Recommendations:

Areas of the existing track that are peeling up and creating holes in the resilient surfacing should be cut out and repaired. After repairs have been made to failing areas of the track, it is recommended that the track receive a new coat of structural spray and lines, marking and numbers be repainted.

Estimated Renovation Costs:

$60,000.00* (refer to the Wellesley High School Stadium Renovations Estimate of Probable Construction Costs)

TRACK INFIELD

Deficiencies:

1.) In the Fall the track infield is only used for 4-5 home football games.
2.) In the Spring the track infield is only used for 12-15 home varsity lacrosse games.
3.) By restricting use of the stadium infield other fields are affected with increased use, wear and abuse.
4.) The middle of the track infield requires frequent resodding.
5.) The track infield requires a significant crown which drains water from the middle of the field to the perimeter drains located at the sidelines.

Recommendations:

The addition of an infilled synthetic turf system at the stadium infield will benefit the Town of Wellesley and the Wellesley High School in several ways:

1.) Scheduling. An infilled synthetic turf field is designed to be played upon non-stop without showing signs of wear. Factors which will limit play on this field would be darkness and extreme weather conditions.
2.) Maintenance. Maintenance of an infilled synthetic turf field is minimal. It is recommended that the field be brushed a couple times a month. In comparison to a natural grass field, maintenance savings will be significant (refer to the cost comparison of natural grass vs. infilled synthetic turf).
3.) Flexibility. With the addition of an infilled synthetic turf field to an outdoor athletic complex, less activity and stress is placed on the natural grass playing fields. If a majority of the activity can be place on the synthetic surface, natural grass fields are given a longer amount of time to recover from the stresses of athletic competition.
4.) Playability. Infilled synthetic turf systems are playable in almost all types of weather conditions. The drainage system is capable of draining massive amounts of water off of a flat field. A crown is not needed with a synthetic field creating a more preferable playing surface.

Estimated Renovation Costs:

$628,428.00* (refer to the Wellesley High School Stadium Renovations Estimate of Probable Construction Costs)

TRACK AND FIELD EVENTS

Deficiencies:

1.) Track and field events, javelin, shot put and discus, are located away from the track and field. It is not ideal locating events so far from the stadium where a majority of the track and field events take place.
2.) Grass and weeds have grown over the edging and the jump pits no longer have a defined edge.
3.) The jump pits do not have covers so rain and debris have mixed with the sand making it dirty and compacted.
4.) Straight edge of the runways has been lost due to the growth of grass and weeds.

Recommendations:

With the addition of resilient track surfacing at the "D" areas of the existing track, the track program will gain an enormous amount of flexibility. It will enable shot put and discus to be located inside the track and field complex. Although the

javelin will still be located outside of the stadium, Geller Sport recommends locating it closer to the stadium. By surfacing the "D" areas, problems with over-growth on runways and jump pits will be alleviated. Also, previously dead space will become usable, resilient surfaced space for athletes to stretch and warm-up for various events.

Estimated Renovation Costs:

$182,630.00* (refer to the Wellesley High School Stadium Renovations Estimate of Probable Construction Costs)

WALKWAYS

Deficiencies:

1.) There are no walkways leading to the visitor's bleachers.
2.) The older bituminous concrete walks are full of cracks and have weeds growing through them.
3.) Existing pavement slopes down towards the track but meets below the track lip causing a drainage problem. Water should never be drained across an athletic surface from spectator or other adjacent areas.
4.) Due to drainage problems with the existing walks, the areas between the fence and the track surface acts as a trap for trash and dirt.

Recommendations:

Geller Sport recommends the construction of new handicap accessible walkways around the entire stadium complex. All walks shall conform to ADA and MAAB regulations. Drainage issues will also be resolved through proper grading of walks and the addition of trench drains.

Estimated Renovation Costs:

$48,000.00* (refer to the Wellesley High School Stadium Renovations Estimate of Probable Construction Costs)

FENCING

Deficiencies:

1.) The condition of the fence around the track varies. Rust is forming on many portions of the fence and the fabric knuckles are bent in.
2.) The 6' perimeter galvanized chain link fence is extremely rusted in some areas.
3.) Gates at the perimeter fence need replacing. They are worn from years of use.
4.) Location of the existing perimeter fence in grassed areas does not provide an appropriate mowing edge.

Recommendations:

All new fencing is recommended at the stadium. With a new field, track and walkways, the existing fencing will detract from the overall appearance of the complex if it is not replaced. Replacing the existing fence with black fusion bonded/powder coated fencing will allow the fence to blend into the surrounding landscape better than galvanized fencing.

Estimated Renovation Costs:

$122,100.00* (refer to the Wellesley High School Stadium Renovations Estimate of Probable Construction Costs)

OTHER DESIGN SUGGESTIONS

1.) Provide handicap parking near the stadium entrance.
2.) Provide signage.
3.) Provide a formal approach to the stadium and gathering space at the entrance.
4.) Monuments should be located in an accessible area for viewing by all spectators.
5.) Provide a ticket booth at the entrance.
6.) Relocate the scoreboard out of the track infield.
7.) Provide a structure for the storage of track and field equipment.
8.) Provide designated handicap seating at the visitor's bleacher.
9.) Reduce the length of the existing track straightaway. The area gained can be used for other track and field events.

BASEBALL AND MULTI-PURPOSE FIELDS

ATHLETIC FIELDS

Deficiencies:

1.) As many as five (5) different teams practice and play on these fields in the fall and spring months.
2.) Heavy use is placed on the field in the fall and spring. The winter and summer months are not prime growing seasons and the fields do not have an opportunity to properly recover.
3.) Practice football field:
    a. Football is so demanding on turfgrass that the practice football field shows signs of excessive wear early in the season.

b. The middle of the football field receives the most wear. Dirt patches and torn up pieces of turf are noticeable early in the season. Athletic surfaces in this condition can prove to be detrimental to an athlete's health.
c. Continued constant use of the field will cause further compaction of the field's soil. Lack of uniformity and resiliency in the playing surface can lead to athletic injuries.

4.) Soccer field:
a. Soccer (Varsity boys and girls) practice or play on the soccer field, located between the two baseball infields, everyday of the week.
b. Grass at the soccer field shows signs of wear early in the fall season.
c. The center of the soccer field and the goal mouths have been reduced to dirt patches.
d. All high traffic areas will be extremely damaged by the end of the season due to excessive use.

5.) Field hockey field:
a. The existing field hockey field imposes on third baseline of the Varsity baseball field. If a player was dribbling towards the sideline they would travel across grass to infield mix and back to grass surface. Change in surface conditions and the lip that forms at the edge of an infield is a safety hazard.
b. The middle of the field hockey field is more worn than the rest of the field.

6.) Baseball fields:
a. The benches at the JV baseball field are located on worn out dirt patches.
b. The skinned infield of the JV baseball field is infested with weeds.
c. There is no designated area for spectators to sit and watch a game at the JV or Varsity baseball fields. There are also no accessible paths or walks to the fields.

7.) These fields do not have a subsurface drainage system and they do not have an automatic irrigation system.

Recommendations:

The introduction of an infilled synthetic turf product at other fields will drastically reduce the amount of use and stress placed on the natural grass baseball and multi-purpose athletic fields. The addition of the synthetic fields gives the natural grass fields a longer opportunity to rest and recover from the abuse of competitive play. Maintenance of the natural grass fields will also be increase. The maintenance requirements of a synthetic field are minimal therefore allow the maintenance department to focus more time, effort and resources on the natural grass fields.

The proposed options recommend the reorganization of the athletic fields to maximize and make efficient use of the usable athletic field space. This was done in an attempt to give the maintenance and athletic departments the flexibility of slightly rotating and moving fields to avoid excessive wear in areas of the fields.

The addition of a subsurface drainage system and an automatic in-ground irrigation system are two major components to the renovation of the existing natural grass athletic fields. As outlined in the Athletic Grounds Master Plan Report, the addition of subsurface drainage and irrigation will promote a healthy, deep rooted turf and will greatly reduce compaction problems.

The baseball fields are to be completely renovated. If there is additional room after the fields have been accurately laid out, Geller Sport recommends the addition of dugouts and bullpens.

The options presented in the Athletic Grounds Master Plan do not overlap a multi-purpose playing field and the infield mix of one of the baseball fields. It is extremely important to maintain a consistent playing surface on all athletic fields.

A cultural maintenance program tailored to the design of the renovated fields (refer to the Maintenance Program in the Athletic Grounds Master Plan Report) is also recommended.

Estimated Renovation Costs:

$1,593,292.00* (refer to the Athletic Field Renovations at Baseball and Multi-Purpose Fields Estimate of Probable Construction Costs)

FENCING

Deficiencies:

1.) The backstop at the existing Varsity baseball field needs to be replaced. It is old and rusting and the fabric has many dents in it. The wooden baseboard for the backstop also needs to be replaced. Currently, the

baseboard is not attached to the backstop and is a safety hazard.

2.) There is no protective fencing in front of the team benches.

3.) The backstop at the JV baseball field is in poor condition and is not regulation size. It does not have an overhang and the fabric is rusted with many dents in it.

4.) Fencing at the perimeter of the site is inconsistent. At the existing JV baseball field there is no fencing at the third baseline to prevent ball from going onto abutter's property.

5.) The existing galvanized fence does not blend with the surrounding landscape.

Recommendations:

All new black fusion bonded/powder coated fencing is recommended for a perimeter fence, backstop and fencing in front of team areas. Not only will the black fence blend with the surrounding landscape, the fusion bonded/powder coated material will last longer than a galvanized chain link fence.

Installing new fencing at the baseball fields is extremely important. The backstops at the baseball fields should both be regulation size and there should always be fencing in front of team areas to protect athletes from foul balls.

Estimated Renovation Costs:

$130,375.00* (refer to the Athletic Field Renovations at Baseball and Multi-Purpose Fields Estimate of Probable Construction Costs)

OTHER DESIGN SUGGESTIONS

1.) The existing bathrooms are not handicap accessible because there are no handicap accessible paths leading to it. Geller Sport recommends accessible walkways around the site which will allow spectators and maintenance vehicles to travel to the various components of the outdoor athletic complex.

2.) Goals and track and field equipment are currently stored underneath a grove a trees. All equipment should be stored in an enclosed container or structure to prevent vandalism and damage from the elements. Geller Sport also recommends replacing all existing athletic equipment.

MULTI-PURPOSE FIELD AT SKATING POND

ATHLETIC FIELD

Deficiencies:

1.) The surface of the field undulates severely. High and low points are very visible. A non-uniform playing surface can be detrimental to an athlete.

2.) The field hockey field is not regulation size.

Recommendations:

By renovating this area of the Hunnewell Field complex, the Town of Wellesley has an opportunity to slightly expand the field and gain some valuable athletic field space. By expanding the field the Town has the option to relocate the softball field to this area. Renovating the field will also eliminate problems with the undulating surface. Like the other natural grass fields, the field at the skating pond will gain from the addition of synthetic turf at the stadium and the lighted multi-purpose field. The amount of stress place upon the field will be reduced and the amount of maintenance attention will be increased.

Two development options have been proposed for this field. The first option relocates the softball field to the Skating Pond field with a practice football/multi-purpose practice field overlapping in the outfield. Locating the softball field in this area enables the lighted multi-purpose field to expand to fit a regulation size soccer field. The existing location of the softball field backstop restricts the expansion of the lighted multi-purpose field. Geller Sport recommends the softball field, if constructed at the Skating Pond field, be developed with dugouts and bull pens. The second development option looks at continuing to use the Skating Pond Field as a multi-purpose practice field.

In both options the fields should be installed with a subsurface drainage system and an automatic in-ground irrigation system. As outlined in the Athletic Grounds Master Plan Report, the addition of subsurface drainage and irrigation will promote a healthy, deep rooted turf and will greatly reduce compaction problems.

A cultural maintenance program tailored to the design of the renovated fields (refer to the Maintenance Program in the Athletic Grounds Master Plan Report) is also recommended.

Estimated Renovation Costs:

Softball Field Option

$465,745.00* (refer to the Athletic Field Renovations at Skating Pond Field Estimate of Probable Construction Costs)

Multi-purpose Practice Field Option

$465,745.00* (refer to the Athletic Field Renovations at Skating Pond Field Estimate of Probable Construction Costs)

FENCING

Deficiencies:

1.) Located at the west and south ends of the field is a 4' chain link fence with green vinyl coated fabric that is old, dented and needs to be replaced.

Recommendations:

All new black fusion bonded/powder coated fencing is recommended for a perimeter fence, backstop and/or fencing in front of team areas. Not only will the black fence blend with the surrounding landscape, the fusion bonded/powder coated material will last longer than a galvanized chain link fence.

Estimated Renovation Costs:

Softball Field Option (Scheme A)

$54,500.00* (refer to the Athletic Field Renovations at Skating Pond Field Estimate of Probable Construction Costs)

Multi-Purpose Practice Field Option (Scheme B)

$50,625.00* (refer to the Athletic Field Renovations at Skating Pond Field Estimate of Probable Construction Costs)

LIGHTED MULTI-PURPOSE FIELD

ATHLETIC FIELD

Deficiencies:

1.) It is the only athletic field at the Hunnewell Fields complex that has sports lighting and it only supports soccer and softball.
2.) The soccer field is not regulation size.
3.) Constant use of the field does not allow the turf to recover properly. The middle of the field and the goal mouth areas are extremely worn.
4.) The field does not have a subsurface drainage system.
5.) The field does not have an automatic in-ground irrigation system.

Recommendation:

The addition of a second infilled synthetic turf system at the lighted multi-purpose field will benefit the Town of Wellesley and the Wellesley High School in several ways:

1.) Scheduling. An infilled synthetic turf field is designed to be played upon non-stop without showing signs of wear. The only factors which would limit play on this field would be extreme weather conditions. By adding a synthetic surface at a lit athletic field, the athletic department gains an exponential amount of flexibility in the way they schedule use of fields.
2.) Maintenance. Maintenance of an infilled synthetic turf field is minimal. It is recommended that the field be brushed a couple times a month. In comparison to a natural grass field, maintenance savings will be significant (refer to the cost comparison of natural grass vs. infilled synthetic turf).
3.) Flexibility. With the addition of a second infilled synthetic turf field to an outdoor athletic complex, even less activity and stress is placed on the natural grass playing fields. If a majority of the activity can be place on the two synthetic surfaces, natural grass fields are given a longer amount of time to recover from the stresses of athletic competition.
4.) Playability. Infilled synthetic turf systems are playable in almost all types of weather conditions. The drainage system is capable of draining massive amounts of water off of a flat field. A crown is not needed with a synthetic field creating a more preferable playing surface.

This field will be expanded through renovation to maximize the amount of usable athletic field space. There are two different options for the development of this field. The first options which relocated the softball field to the Skating Pond Field, looks at expanding the field to a regulation sized soccer field. A field this size can be used for soccer, field hockey, football practice, lacrosse and even informal baseball and softball practices. The second option renovates the softball field and includes a synthetic turf infield. The only portion

of the field that would be skinned is the batter's box which would be located off of the playing surface for other sports.

Estimated Renovation Costs:

Multi-purpose Field Option (Scheme A)
$605,910.00* (refer to the Lighted Multi-Purpose Field Renovations Estimate of Probable Construction Costs)

Multi-purpose/Softball Field Option (Scheme B)
$619,630.00* (refer to the Lighted Multi-Purpose Field Renovations Estimate of Probable Construction Costs)

* Renovation costs do not include Contingency, General Conditions, Contractor's Overhead and Profit or Soft Costs and Design Fees.

* Some renovation costs may include additional costs for site preparation and earthwork operations.

ATHLETIC GROUNDS MAINTENANCE PROGRAM

The following program is intended to assist The Town of Wellesley in refining its existing program for athletic turf maintenance. It should be recognized that this is a general guideline towards achieving high quality well groomed athletic turf. The grounds staff must recognize the shortcomings of a general maintenance program such as this, and modify and/or augment it based on daily, weekly, monthly, and yearly observations. In order to assure the highest quality field conditions, the staff must also recognize and appreciate the need to be aware of the constantly changing conditions of the fields and be able to respond to them on a daily basis.

SUGGESTED EQUIPMENT REQUIREMENTS

Efficient and properly maintained equipment designed to perform specific functions is an important component in quality athletic field maintenance. Equipment alone however will not produce properly groomed athletic fields. Skilled individuals who are knowledgeable and capable of effectively using and maintaining the sophisticated equipment are equally important.

It is assumed that the Town currently owns much of the following equipment necessary for the care of premium athletic fields. This list is intended only as a guide by which the Town can assess and plan for future purchases to augment the existing equipment fleet.

(1) Utility Vehicle - Most utility vehicles have the capability of functioning not only as transportation/dump type vehicles, but can be outfitted with a number of attachments to work as fertilizer spreaders/aerifiers/sprayers, etc. Each should be investigated to see if one specific vehicle meets the Town's needs from a standpoint of performance and budget.

Suggested manufacturers and models:

Toro Workman 4000 (*www.toro.com*)
Jacobsen SV-3422 (*www.jacobsen.textron.com*)
John Deere Gator 6x4 Utility Vehicle (*www.deere.com*)

* (A small tractor with special low compaction tires may also be considered instead of or in addition to a utility vehicle.)

(1) Front mounted three to five gang reel type mower for mowing of playing surface. If turf 'striping' is desired, such a unit can be equipped with turf rollers.

Suggested manufacturers and models:

Toro Reelmaster 2600D (*www.toro.com*)
Jacobsen Tri-King (*www.jacobsen.textron.com*)
John Deere 2653 or 2653A Utility Mower (*www.deere.com*)
National Mower 70" Sportsturf Triplex

(1) Front mounted rotary deck mower for outlying areas

Suggested manufacturers and models:

Toro Groundsmaster 300 (*www.toro.com*)
Jacobsen Turfcat (*www.jacobsen.textron.com*)
John Deere F1145 Front Mower (*www.deere.com*)

(2-3) Powered 20-24" rear bagging walk behind rotary mowers for mowing around trees and other trim areas

Suggested manufacturers and models:

Toro Proline 21" Heavy Duty Walk Behind (*www.toro.com*)
Honda 21" Commercial Walk Behind
John Deere JE75 Walk Behind Mower (*www.deere.com*)

(1) Fertilizer spreader - large capacity utility vehicle (or tractor) mounted or pulled centrifugal (broadcast) type

(3-4) Walk behind centrifugal (broadcast) spreaders

(1) Powered aerator - utility vehicle (or tractor) pulled type

(1) Powered walk behind aerator

(1) Powered top dressing unit (walk behind or utility vehicle mounted)

(1) Utility vehicle mounted drag mat or front mounted mower brushes for topdressing and core sweeping

(1) Powered utility vehicle mounted slice seeder

(1) Powered walk behind slice seeder

(2-3) Power nylon string trimmers

(1) Powered steam cleaner for vehicles and equipment

SUGGESTED FERTILIZATION PROGRAM

With the exception of wetland resource areas/sensitive environmental receptors, the following program in conjunction with a proper liming program, which keeps the soil pH between 5.8 and 7.5, is applicable.

Initial Growing Season

April 1-15

Depending on weather conditions apply a starter fertilizer with an NPK ratio of approximately 1:2:1. Apply micronutrient fertilizer if necessary. The rate will vary based upon the manufacturer's normal rate calibrated for the particular spreader used.

May 1-30

After receiving soil test analysis and recommendations, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2. Application timing and rate will be based upon timing of initial starter fertilizer application, weather conditions since application, and manufacturer's normal rate calibrated for the particular spreader used.

June

Approximately 6-8 weeks after May feeding, or as needed based upon visual observation of turf conditions, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2 at one half the manufacturer's normal rate calibrated for the particular spreader used.

August

Approximately 6-8 weeks after June feeding, or as needed based upon visual observation of turf conditions, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2 at one half the manufacturer's normal rate calibrated for the particular spreader used.

Late September/Early October

After receiving soil test analysis and recommendations, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2. Apply micronutrient fertilizer if necessary. Application timing and rate will be based upon timing of previous fertilizer application, weather conditions since application, and manufacturer's normal rate calibrated for the particular spreader used.

Subsequent Seasons

May 1-30

Apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2. Apply micronutrient fertilizer if necessary. Application timing and rate will be based upon visual observations, weather conditions, and manufacturer's normal rate calibrated for the particular spreader used. The application of a selective pre-emergent crabgrass control may be considered at this time. (Note: Research by B.J. Johnson at the University of Georgia indicates that decreasing the application rate in successive years to ½ and then ¼ rate can prove as effective as full rate applications by year 3 and beyond.)

Late June/Early July

Approximately 6-8 weeks after May feeding, or as needed based upon visual observation of turf conditions, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2 at one half the manufacturer's normal rate calibrated for the particular spreader used.

Mid-Late August

Approximately 6-8 weeks after June/July feeding, or as needed based upon visual observation of turf conditions, apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2 at one half the manufacturer's normal rate calibrated for the particular spreader used. Selective broad leaf weed control may be considered at this time, perhaps in conjunction with the fertilizer as a weed and feed application.

Late September/early October

Apply a slow release, polymer-coated fertilizer product with an NPK ratio of approximately 6:1:2. Apply micronutrient fertilizer if necessary. Application timing and rate will be based upon visual observations, the timing of previous fertilizer application, weather conditions since application, and manufacturer's normal rate calibrated for the particular spreader used.

All Seasons (Resource Areas)

Areas where fertilization, pesticides and other mechanical techniques may alter or effect ground conditions within a defined wetland, buffer zone, rare species habitat or sensitive environmental resource area, management techniques should be altered to conform to applicable state, local and federal code for protection of these resource areas.

Fertilization of the athletic fields adjacent to the Dog River must be performed within manufacturers labeling instructions and shall not exceed an NPK ration of 1:1:1 (i.e. Triple 10 fertilizer mix) considered a low nitrogen mixture. Additionally, the fertilizer should include a slow release element.

SUGGESTED IRRIGATION PROGRAM

In the New England area, the normal watering/growing season is generally from May 1st to September 30th. Annual variations can swing this period two to three weeks or more in either direction.

Athletic fields require regular watering throughout the growing season to insure a safe and attractive playing surface. The plans will provide for a state of the art head to head automatic irrigation system. However, keeping the field properly irrigated is not as simple as setting the irrigation clocks and walking away. The system must be carefully observed, adjusted and maintained based on soil and microclimatic conditions to determine the irrigation quantity and timing needs of the turf.

How much water and how often it is applied depends on the amount of rainfall, evapotranspiration rates, and the ability of the soil profile to retain moisture. Athletic fields typically require between 1 and 1.5" of water a week including rainfall. Slightly more water will be required during the first year while the seed or sod begins to establish and root. More water will also be required during periods of high evapotranspiration - when the weather is hot and dry and perhaps windy. Quick coupling valves will be provided to augment automatic cycles in localized dry spots, or to cool the turf during periods of high heat stress (±85 F and above) with light syringing.

Irrigation should be applied evenly throughout the growing season to augment rainfall and can take place at any time of the day or night. However, due to field use schedules, weather conditions and the needs of the turfgrass, watering most often occurs during the early morning hours. Night irrigation as stated can occur, but is not recommended as it creates greater potential for the occurrence of fungal turf diseases. Ideally, irrigation cycles should not take place immediately prior to an athletic event with the exception of a light syringe cycle which helps to stabilize the field surface.

Initially, the newly established field will require a few light irrigation cycles on a daily basis until the seed or sod begins to root. This is also typical of early season irrigation. As the season continues, cycles should become deeper and less frequent. At the onset of and during particularly moist periods, irrigation should be applied cautiously, as too much water is as bad or worse than too little. An exceptionally wet field profile is more susceptible to compaction and better suited for the onset of fungal turf disease. Excess water also leads to faster breakdown of fertilizer resulting in the leaching of nutrients and loss of money.

SUGGESTED MOWING PROGRAM

Mowing has a dramatic effect on the appearance and playability of an athletic field. It is also directly related to the general health of the turf. It is not uncommon for a field to be severely damaged by mowing mistakes such as mowing too low, too infrequently, or using a dull mower.

In New England, an athletic field consisting of Kentucky bluegrass and perennial ryegrass should be mowed to a height 2-2.5" during the summer and extended periods of inactivity and 1 -1.5" during the playing season. The height of the turf should be gradually reduced beginning approximately three weeks prior to the first athletic event.

The frequency of mowing also is very important. Too often, turf is mowed too infrequently and then mowed too low. This usually results in damage to the turf crown rendering the turf incapable of recovery during periods of stress. For best appearance and health of the turf, fields should be mowed at least 3 times per week during the heavy growing period and at least two times per week when the field is not under heavy use or during periods of slower growth. Care should be taken to avoid having to mow more than 1/3 of the leaf blade surface at any one time. Generally, this means that a turf maintained at 1.5" should be cut before it reaches 2", and turf maintained at 2.5" should be cut before it reaches 3.25".

A common mowing problem which can lead to poor appearance and increased susceptibility to disease is mowing turf with a dull rotary mower. It is assumed that the Town either owns or will purchase a three to five gang reel type mower for the maintenance of new athletic facilities. Each individual mowing unit should have as many blades as possible, usually 5 to 7. The units should be steam cleaned and back-lapped after each mowing and should be sharpened and adjusted by a professional at least once every 3 to 4 cuts and

more frequently after aeration or topdressing operations.

SUGGESTED OVERSEEDING PROGRAM

Generally, an athletic field can handle between 20 and 25 events before it begins to exhibit wear. Between 30 and 50 events, the field will exhibit significant wear with the exposed surface turning muddy after rain and irrigation events. More than 50 events will result in an unstable playing surface and severe loss of turf over the majority of the field. The frequency of the overseeding program will therefore vary based on the amount of use the facility receives during a particular season.

Overseeding is best accomplished by using a slice seeding machine which cuts into the soil 1/4" to 3/4" and deposits the seed in a single operation. To ensure maximum coverage, overseeding should occur at half rates in at least two passes at directions perpendicular to one another. In addition to slice seeding, overseeding can be done by broadcasting the seed across the surface followed by a light topdressing with sand based soil medium similar or identical to the existing medium.

As part of a normal program, the entire facility should be overseeded once in early May and again in mid September using a slice seeder with a seed mix consisting of 20% perennial ryegrass and 80% Kentucky bluegrass. The seed should be applied at a rate of 2-3 lbs./1000 s.f. followed by a broadcast application at the rate of 2-3 lbs/1000 s.f.

Overseeding also can and should be performed at any point during the growing season in spots which exhibit thin or poor growth or wear such as goal areas, sidelines and players' bench areas. A slice seeder should be used in thin areas to apply 2-3 lbs of seed per 1000/s.f. followed by a broadcast application at the rate of 2-3 lbs/1000 s.f.

If goal mouth areas exhibit critically poor turf conditions during the playing season, thick sod replacement should be considered as an alternative to overseeding. Sod blocks should be cut from the area behind the goal (within the limits of the field construction) to a thickness of 6", placed, top-dressed, rolled or tamped and followed by a thorough hand watering. The thickly cut sod will provide greater stability during play than washed or thin cut sod.

SUGGESTED AERATION PROGRAM

Depending on the intensity of use, it can be expected that each field will need aeration to reduce compaction at least once and more likely two to three times per year. The first operation should occur in late May following the spring season and the second in November following the fall season. Methods of reducing compaction will vary based on the nature of the compaction. Compaction on newly established fields is generally limited to the top 2-3" and can be alleviated using hollow core or thin tine aeration methods.

The spring aeration should consist of two passes at opposite directions with 1/4" hollow core tines penetrating 3-5" into the soil profile. The fall aeration should consist of three passes at overlapping directions with 1/4" hollow core tines penetrating 3-5" into the soil profile. Aeration should occur when the soil is moist but not saturated. The cores should be shattered in place and dragged or swept back into the turf to control thatch. If desired the cores may also be removed and the field top-dressed with sand or sandy loam. If the field drains on average too slowly, the topdressing should contain a higher percentage of sand. If it is draining on average too quickly, the top dressing should contain a higher percentage of soil and organic matter.

In-season aeration is good cultural practice, and is recommended whenever feasible. It should be accomplished with a solid thin tine aeration method to reduce disruption to the playing surface. The depth of solid tine aeration is similar to core type, but should be performed when the soil is somewhat drier for a greater overall effect. Ideally, the timing of the operation should allow for the facility to rest for 2-3 days prior to the nest athletic event.

After several seasons, as fines begin to migrate to the lower portion of the field profile, it may be advisable to break up subsurface compaction using a deep drill or deep tine aeration method. These methods re-mix the profile and allow for better rooting and increased subsurface drainage. In fields that are constructed with a gravel drainage blanket, care should be taken not to aerate so deep as to mix the gravel base and root zone mix.