Final Report

January 19, 2017

Scotia-Glenville Central School District

Athletic Fields Master Plan

Prepared for

Scotia-Glenville Central School District
900 Preddice Parkway
Schenectady, New York 12302

Prepared by

Chazen Engineering, Land Surveying & Landscape Architecture Co., D.P.C.
547 River Street
Troy, New York 12180
(518) 273-0055

Chazen Project No. 31688.00

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1.0 INTRODUCTION

1.1 Project Intent

The Scotia-Glenville Central School District expressed interest in developing a plan to undertake strategic efforts to improve the quality and availability of athletic fields within the District. As part of these efforts, The Chazen Companies has been asked to create an athletic field master plan that assesses existing and future recreation needs and evaluates existing and proposed fields. Based on this request, Chazen has addressed the following tasks to prepare this master plan:

- Provide an inventory of the district's fields
- Assess condition of the fields and their supporting infrastructure
- Review Access to Athletic Fields
- Identify and describe recommended improvements with associated costs
- Identify short term and long term improvement goals

2.0 INVENTORY AND EVALUATION

In the fall of 2016, Chazen performed a field inventory and evaluation of existing athletic fields in the District. The facilities evaluated ranged from open space passive recreation areas used for recess and physical education classes to existing athletic fields used for both practices and games. The inventory focused on gathering and categorizing conditions of existing athletic fields, and evaluating the opportunities for potential new athletic fields including existing practices associated with use, maintenance and future needs. The evaluation consisted of a physical assessment to help determine the opportunities and constraints associated with each field.

2.1 Field Locations

During our site visit, Chazen examined the active recreation areas listed below. We organized areas into numerical groups for reference. **Figure 2.1** below illustrates each of these groups.

Figure 2.1

2.2 Existing Field Use

In general, the District has indicated the existing fields (location and quantity) are adequate for the fall & spring sports programming. The following is a list of sports which utilize the outdoor fields broken down by season. Please see existing field use diagram in Appendix A for team level usage (varsity, junior varsity and modified) and their respective practice & game locations.

2.2.1 Fall Field Sports (August – November)

- Football
- Soccer
- Field Hockey

2.2.2 Spring Field Sports (March – June)

- Baseball
- Softball
- Lacrosse
- Track and Field

2.3 Inventory and Evaluation

Based on the results of the field inventory and evaluation, Chazen has summarized our Findings for each athletic field and this information is illustrated in sections 2.3.1 through 2.3.6., and the table in section 2.3.7 provides a matrix outlining common deficiencies or obstacles that will be further discussed for the needs individual field areas. In addition, please find drawings A1 – A3 in Appendix A depicting the existing conditions.

2.3.1 Fields 1A & 1B

Field Use

Field 1A (Main Field):

- Football Games (All levels)
- Track and Field Meets and Practices (All levels)
- Varsity Boys Lacrosse
- Varsity Sports Special Events (Girls and Boys)
  - Once per season all soccer, and girls lacrosse and field hockey teams play a single game on the main field.

Field 1B (Practice Field):

- Varsity Football Practices
- Varsity Boys Lacrosse Practices

Existing Conditions Evaluation

Overall

- The turf main field (1A) is in fair condition due to having an irrigation system though there are several areas which are not level and/or have turf which is worn.
- The turf of Practice Field (1B) is not irrigated and the turf is patchy to poor and shows significant wear.
- The crown of the main field is inconsistent and is not optimal.
- There is a drainage system (catch basins) at the 25 yard-line between the track and football field and in the track D-zones), however this system is not operating properly.
- The irrigation system on the main field is operational however in order to amend the soil and re-grade the surface for optimal playing conditions would require replacement.
- The lighting of the main field is adequate and in good condition.
- The existing scoreboard is in poor condition.
- Track is in good condition for practices and meets however will eventually require resurfacing.
- The Home Grandstands and press box are in good condition. Visitor bleachers are in good condition.
- Perimeter fence is inconsistent, varying from good to poor condition.
- Storage was noted as adequate for all user groups.

Field Access

Controlled access to the main field for events is not optimal, and there is no accessible route for physically impaired guests to the seating areas.

2.3.2 Field 2

Field Use:

- Physical Education for High School
- Field Hockey (All levels) games and practices
- Girls and Boys Lacrosse (All levels) games and practices

Existing Conditions Evaluation

Overall

The turf is in poor condition and comprised primarily of non-grass species that show patches of bare sandy soil. The grading of the fields is generally good except for the northern field hockey goal locations where the goalie zone is lower than the surrounding field play area. Overall the area lacks a perimeter fence for controlled access. Field area is generally void of bleacher / spectator seating, given orientation changes desirable to be portable. Given orientation of fields for lacrosse the potential exists for property damage and / or game delays due to errant balls on the east side of the property. There currently is no permanent scoreboard for either lacrosse or field hockey, one currently on the corner face of the school is old, doesn't function and will be removed.

Field Access

There is no controlled access to the field for practice or games. For games, the absence of controlled access points caused ticket sale issues and / or makes crowd control impractical.

2.3.3 Fields 3A & 3B

Field Use

Field 3A:

- Varsity Soccer Practices and Games (Girls and Boys)
- Varsity Baseball Practices and Games

Field 3B:

- Football Practice
- Lacrosse Practice
- Track and Field Meets and Practice

Existing Conditions Evaluation

Overall

- The turf on Field 3A is in fair condition due to having an irrigation system though there are several areas which are not level and/or have turf which is worn.
- The irrigation system on Field 3A is older, partially functional and would require replacement with grading improvements.
- The turf on Field 3B is not irrigated and the turf is patchy to poor and shows its wear with some sections of bare sand.
- The baseball field is currently is poor overall condition, with several grading issues. The interface between the grass areas and clay/dirt infield has lips and dips which is potentially hazardous. There is a significant grading difference between the infield and outfield on the first base side.
- The baseball backstop is in poor condition.
- The temporary spectator bleacher seating located on the baseball infield is not optimal leading to poor viewing opportunities for varsity soccer events (see photo above).
- The north-west to south-east orientation of the baseball field is not ideal due to sun glare.
- The barbed wire fence that borders the industrial park exhibits a negative aesthetic for students, spectators or athletes.

Constraints

A barbed wire perimeter fence that borders the industrial park, a drainage swale on the south side and the placement of the baseball field are all spatial limiting factors.

2.3.4 Field 4

Field Use

- Middle School Physical Education
- Softball games and practices (All levels)
- Baseball (JV and Modified)
- Modified Soccer (Girls and Boys)

Existing Conditions Evaluation

Overall

Turf is not irrigated thus is in poor condition and comprised primarily of non-grass species that show patches of bare sandy soil. Grading issues are common in this area, particularly the infield / outfield conditions of the baseball diamond and eastern softball field with grade differences of almost 2' in spots between the diamond and outfield areas. The soccer play area is located in the outfields of the baseball and softball practice fields and is poorly graded with significant variations in grade throughout. The bleachers, backstop and dugouts are in good condition for the baseball diamond. The south east softball field is void of dugouts, the backstop is in poor shape and the spectator seating is deficient. The western softball field has new dugouts, but the backstop is in poor condition and there isn't a permanent outfield fence.

2.3.5 Field 5

Field Use:

- Elementary school recess
- Modified Football

Existing Conditions Evaluation

Overall

Turf is not irrigated thus is in poor condition and comprised primarily of non-grass species that show patches of bare sandy soil. Grading and drainage of the field appeared to be in good condition. The southern edge is bordered by a pedestrian sidewalk parallel to Wren Street, presenting the need for a safety barrier / fence to limit potential conflict with game and practice events.

Pedestrian Access

Easily accessible for students and nearby residents, perhaps too accessible for residents as there is no perimeter fence to control access.

2.3.6 Field 6

Field Use

- Recess and Physical Education for Lincoln Elementary
- Soccer (Girls and Boys JV) Games and Practices
- Lacrosse (Girls JV) Games and Practices

Existing Conditions Evaluation

Overall

Turf is not irrigated however it is in fair condition with some non-grass patches visible. Some edge ponding is present on the southern side parallel to the road. The area between the field play area and roadway on the north and south sides is void of a barrier. There is a lack of a safety zone in the south east of the area beyond the end line of the field which is currently very close to the abutting parking lot. There is a small set of bleachers for seating but it is understood that this is adequate for the game needs.

2.3.7 Summary of Field Conditions Inventory Table

Criteria	Field 1A	Field 1B	Field 2	Field 3A	Field 3B	Field 4	Field 5	Field 6
Field Overuse								
Turf Conditions								
Field Orientation								
Irrigation								
Fencing / Controlled Access								
Insufficient Bathroom Facilities								
Pedestrian Access / Sidewalks								
ADA Access								

Low / Non-Issue
Moderate Issue
Critical Issue

2.4 Summary of Findings

General

- Most fields support multi-use activities, regardless of the season.
- The existing athletic fields are generally grouped together, providing convenient access.
- Pedestrian access was available for many locations; however, some areas require improvements for proper pedestrian access and enhanced connectivity to the facilities. Most sidewalks adjacent to and near the fields meet the accessibility requirements, but enhancements are needed to provide access to the spectator seating areas to comply with ADA standards.

Field Conditions

- There is a high demand for field space from school athletics, with the District essentially using as every available piece of open space for recess & physical education and athletic practices & games. This intensity of use and overall lack of irrigation causes the wearing of the existing fields and die-back of preferred grass species with promotion of weeks and non-turf grass species to predominate. With limited space and the high demand, it is unrealistic to restore the turf with simple soil amendments and re-seeding without resting the fields.
    - Most of the fields which aren't irrigated have had non-turf species infill where grass can't survive. These fields often also have patches of bare earth which is generally considered unsafe, particularly for contact sports.
    - The Fields are generally well drained due to sandy soils. This is a benefit from this perspective, but sandy soils are typically nutrient poor and this has contributed to poor turf conditions.
    - The current field conditions as they stand will continue to have difficulty sustaining the ongoing level of use. Therefore, the fields need maintenance and rest and ideally restoration including irrigation, establishment of optimum field grades, proper soil and turf composition and additional field maintenance above current levels.

Field Orientation

- Fields generally fall within an acceptable orientation ranges to prevent / minimize sun glare. The varsity baseball field and the varsity soccer surfaces (Field 3A) as well as the modified soccer surface (Field 4) are the exceptions.
    - To minimize sun interference for the players, especially the batter and the pitcher, the ideal field should be oriented so that the setting sun is generally at a right angle to the imaginary line between home plate, the pitching rubber, and second base (ie. S-SW to N-NE alignment or vice versa)[1]
    - If soccer play primarily occurs in fall, orient the length of the soccer field along a northwest-southeast axis.[2]

Amenities

- While many of the existing athletic fields have supporting infrastructure and amenities (fencing, dugouts, seating etc.) often these facilities are antiquated and should be improved and/or reinforced with additional facilities.
- A new public restroom facility would increase accessibility and the level of service for field users and spectators in contrast to the current use of porta-john units near various events.

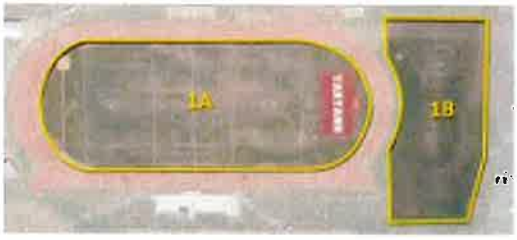
3.0 RECOMMENDATIONS

Based on the items identified in the Inventory and Analysis section of the report and summarized in Section 2.4, Chazen has developed a series of recommendations to increase the quality and function of existing fields. These recommendations include various items for infrastructure improvements with a focus on turf management, grading and drainage improvements, irrigation, upgrades for site amenities, and in some cases re-orienting existing fields. With historically and projected high rate of sports play use the recommendations for each field area have a consistent theme for recommending irrigation systems whether for sod or seeded areas.

Identified improvements for each field area described below are correlated to previous sections and are presented with an accompanying Master Plan figure contained in Appendix B.

3.1 Capital Improvements

3.1.1 Field 1: Varsity Main Field



Base Recommendations

Field 1A - The major objective for the varsity field area is to raise the level of quality and performance of what is the most prominent facility in the School District to levels commensurate with its expectations.

The most significant upgrade would be the field itself. Given the grading issues and the age of the current irrigation system Chazen recommends field reconstruction consisting of amending the soil, grading and re-crowning of the field as per the standard set by the NFHS (National Federation of State High School Associations) and sodding. We recommend installing sod vs. seeding the field which would result in reduced loss of play associated with turf establishment. Concurrent with the re-grading and sodding of the field, Chazen recommends removing

[1] From BRC Field and Court Orientation Guide (http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20030561.pdf)

[2] See reference 1

and replacing the current irrigation system as well as inspecting/cleaning the existing drainage structures to ensure their proper operation for conveying surface water runoff.

Outside of the field play area, several functional and aesthetic upgrades would be beneficial and increase the quality of the spectator experience. The recommended improvements include patching and repairing the perimeter fence surrounding the field, particularly along the main entry area (bordered by the Elementary School and parking lot). We recommend that the District consider removing (or at least de-commissioning) the chain link gate entrance from near the visitor parking lot and install a new accessible concrete walk (see figure 1) to the existing Hitchcock Field ornamental gate entry point. Currently, there is not a convenient ADA accessible route to the grandstands from a designated handicapped parking area. The Hitchcock Field entry point is attractive, well positioned near the home grandstands (with built in accessible features), and if utilized effectively offers an advantageous ticketing and crowd control portal.

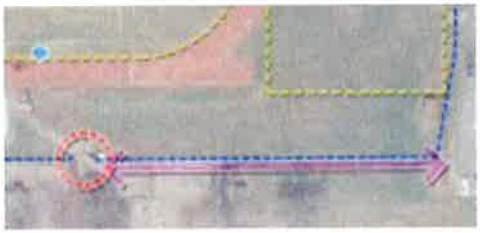


Figure 1 - Location for Accessible Walk

Ornamental Gate Entry Point

Other notable improvements identified by the District are replacing the current scoreboard with a modern multi-sport scoreboard, and installing an additional set of visitor bleachers (40-70 set capacity).

Track surround – Although not thoroughly evaluated as part of the athletic field master plan, a representative of Copeland Coating Company (track installer) has provided the District with recent information regarding the current state of condition and future recommendations for maintenance. They indicated that the "Maintenance Cycle" rule of thumb is to take a look at the condition of the running track in years 5-7 after installation to monitor how the overall condition, wearing course and base mat are holding up (approximately 6 track seasons have occurred since the installation. Copeland recommended visiting the site again in the fall of 2017 for a reassessment - and budgeting maintenance for the Summer of 2018 (which would put you on or ahead of the average maintenance cycle) or, if needed, the following season.

Field 1B - Chazen also recommends that the practice field to the East of the main field also receive soil amendments as well as a new irrigation system to maintain health of the turf during periods of heavy use. With the ability of this practice area to have practice activities relocated elsewhere and/or rested it is a viable option to seed this area vs. sod as a cost-savings measure.

Alternative Recommendations

During the master plan process discussions occurred with the District representatives as to the value of installing synthetic turf for the varsity field in lieu of natural grass. It is generally understood that using synthetic turf vs. natural turf offers advantages in increased play time, field use for more sports than just football and homecoming lacrosse and soccer contests, and immediate use upon installation - with a more consistent, attractive and uniform play surface as compared to traditionally maintained natural turf fields. The offset of installing synthetic turf are additional initial installation and life-cycle costs. Although synthetic turf was not at the forefront of the field master planning effort in order to assist the District in contemplating the benefits and drawbacks of synthetic turf we have included a comparative analysis, published by the 2008 NRPA Congress #225, as an example for additional industry opinion/information on the topic (Appendix C), and rough cost projections at the end of the report.

Field 1: Varsity Main Field	
Recommendations	·Installation of new Irrigation System ·Amendment of Soil (following soil testing) ·Re-crowning of playing surface to NFHS Standards ·Repair Field storm drainage system ·Installation of New Multi-Sport Scoreboard ·Rerouted Spectator entry and Installation of ADA accessible walk ·Additional Set of Visitor Bleachers ·Patch and Repair Perimeter Fence ·Sodding of Varsity play field surface within track
Advantages	·Irrigation system will aid in maintaining optimal play surface and reduce wear on turf ·Extended play on the field can be achieved ·Grade will be uniform and drain efficiently ·Field Accessibility will be improved ·Visitor Experience will be improved
Drawbacks	· Reconstruction of the fields with new sod will require a minimum of 8 weeks of rest (desirable to be one full year) following installation prior to regular use for establishment of root system. Seeding would have a minimum of one-year of play loss. The District should consider the likely scenario of having to relocate varsity sport contests from this field for an entire school season

3.1.2 Field 2: Multi-Use Field

Chazen assessed several options for improving the multi-sport (field hockey and lacrosse) and physical education field. The major objective is to repair and establish viable turf which is currently in poor condition.

Field area - The current field is very heavily used, therefore Chazen recommends soil amendments and the installation of an irrigation system. Although the grades of the fields are not poor there are a few locations where the goals are not located on level planes with the surrounding shooting area – these areas should be re-graded with minimal fill to provide a more uniform, consistent pitch. Due to the heavy use of the field we also recommend the use of sod as that will allow a quicker return to use after the turf establishes.

Field surround – We recommend the installation of a 4' perimeter fence along the parking area to control access (given that this field hosts field hockey and lacrosse sporting events which require paid admission) and provide increased safety between the vehicular area and the play area. The east and south sides of the field are void of a perimeter fence separating the fields from the neighboring residential properties. It is recommended that a 4'-6' high chain link fence be installed with a single gate location along each leg for protection against errant balls and potential

unknowing trespass beyond the school property line. Other notable improvements which Chazen recommends is the purchase of 4 new 4-row portable 14' aluminum bleachers (capacity 40 each), and the purchase of 2 new portable scoreboards for field hockey and lacrosse.

Alternative Recommendations

A higher cost alternative to portable scoreboards would be the installation of a permanent scoreboard to be placed near the parking lot between the two fields and just inside the perimeter fence.

Field 2: Multi-Use Field	
Recommendations	·Installation of new Irrigation System ·Amendment of Soil (following soil testing) ·Spot grade and general leveling ·Chain Link Perimeter fence for Controlled Access ·(4) Portable 14' Aluminum Bleachers ·(2) New Portable Scoreboards ·Alternate: Installation of Permanent Dual Event Scoreboard
Advantages	·Irrigation system will aid in maintaining optimal play surface ·Grade will be uniform and drain efficiently ·Field Accessibility and Spectator Admissions will be improved ·Visitor and Athlete Experience will be improved
Drawbacks	·New sod will require a minimum of 8 weeks of rest prior to regular use for establishment of root system

3.1.3 Field 3: Varsity Baseball / Soccer (3A) and Track / Football Practice Field (3B)

Chazen assessed several options for improving the Varsity baseball and soccer field (3A) and the adjacent Track Field Event and Football practice Field (3B). Initially, our analysis of the baseball and soccer fields was undertaken to ascertain what the recommendations should be for betterment of play and condition. However, during the planning process and with dialogue from the District our analysis shifted to analyzing the field for optimal play and orientation – leading to our recommendations below for relation of the fields.

Field 3A (Varsity Baseball and Boys Soccer):

As mentioned in Existing Conditions Evaluation several items require addressing for these fields. First and foremost several deficiencies related to grade of the play surface and general wear and tear should be remedied. The turf for the soccer field is in comparatively better condition than other fields on campus (due to having an irrigation system) however multiple grading issues exist on these fields that would require significant costs for earthwork, irrigation repair and turf establishment.

Chazen recommends a complete replacement and reconstruction of the baseball and soccer fields for optimal play and solar orientation (shown on the figure to the right and in Appendix B). Generally speaking the entire baseball portion of the field is showing wear, has significant grading issues, and undesirable North-West orientation (see 'Field Orientation' in Section 2.4). Chazen concluded that it is best to relocate the baseball field to the west side of the field area and reoriented to the optimal Northeast alignment. This is a complete overhaul consisting of a new beam clay infield, dugouts, backstop and fencing. Along the western property line of the industrial park it is recommended that an extended ballstop netting be installed to protect batted balls from falling on the industrial park access road and buildings.

The existing chain link fence with barb wire at the top, bordering the industrial park, is unattractive and is recommended to be replaced with a new 8' high black PVC coated chain link fence with privacy slats. We recognize there is a potential fence ownership issue we are aware of that would need to be negotiated with the industrial park for this to occur.

The recommendations for the baseball field would require that the soccer field shift to the east while maintaining its current alignment. Similar to the existing condition the outfield of the baseball field would coincide with the soccer field location however improve the spectator locations to allow for permanent bleacher installation and remedy the current situation of bleachers being placed on/near the baseball clay infield.

We recommend the purchase of two 3-row portable aluminum bleachers for soccer spectators.

Alternative Recommendations

Field 3B:
The main need for field 3B is the installation of an irrigation system as the turf is inadequate due to the sandy soils found throughout the site. Some spot grading would also be beneficial, and finally the replacement of an antiquated field goal post with a modern design would be beneficial as one of the main uses of the field is for football practice.

Pedestrian Access:
Outside of the scope of "field improvements" it is important to note that currently there is no student access walkway between the middle school and high school. It is advantageous for increased student safety to have a new walkway installed between the schools on the school property side of the Access Blvd. fence line – eliminating potentially liabilities associated with students walk along the industrial park access road (graphically illustrated on the Field 3 figure in Appendix B).

Field 3: Varsity Baseball & Soccer / Track and Football Practice Field	
Recommendations	·Installation of new Irrigation System ·Amendment of Soil (following soil testing) ·Spot grade and general leveling ·8' Vinyl Perimeter fence for improved aesthetics ·(2) Portable 14' Aluminum Bleachers ·Relocate Varsity Baseball field to establish optimal Northeast orientation ·Replace football practice upright with a modern design
Advantages	·Irrigation system will aid in maintaining optimal play surface and reduce wear on turf ·Baseball field will have optimal orientation ·Conflict between soccer spectator seating and baseball diamond eliminated ·Visitor and Athlete Experience will be improved
Drawbacks	·New sod will require a minimum of 8 weeks of rest prior to regular use for establishment of root system ·Capital construction cost associated with field relocation

3.1.4 Field 4: Varsity Softball (4A) and JV Baseball, JV Softball & Modified Soccer (4B)

Field 4A – Varsity Softball Field: The field is in fair condition, therefore the major objectives of the recommendations are to repair and establish a better grass turf as well as enhance the surroundings of the field. Similar to other fields, in order to establish a quality turf outfield, Chazen recommends installing a permanent irrigation system in the outfield, amending the existing topsoil and installing sod. For the infield portion of Chazen recommends re-installing a beam clay surface as well as installing a new backstop to complement the new dugouts recently installed. In addition, a 4' chain link fence along the western tree line (along the parkway) would be beneficial for the safety of the athletes as the grade drops off substantially in that area.

New Backstop and Perimeter Fence

Field 4B – JV Softball, JV Baseball and Modified Soccer:
There were various options reviewed for improving the Junior Varsity Baseball and Softball fields as well as the space for the modified soccer field which resides in the depressed outfield areas of the ball fields. There are a couple of obvious issues with the current field conditions that are foundational to our recommendations. The orientation of the JV baseball field is suboptimal (similar to the varsity field) as it is Southwest facing, and there are significant grade issues between the infields and outfields of both the JV Baseball and JV softball resulting in poor quality for play. Also, the modified soccer field is currently in a 'bowl' with grades undulating in excess of 2' from sideline to center of field play.

Since the baseline recommendations for rectifying the significant grade issues would carry a substantial cost for earthwork and turf reconstruction, Chazen recommends relocating the JV baseball field to a location between the Varsity and JV softball fields, oriented home plate to pitcher's mound to the north east and shifting the modified soccer fields to the north. According to the Athletic Director it would be acceptable to have the outfields of the JV ball fields coincide as scheduling of those games and/or practices could eliminate the potential for play overlap. For the JV softball field it has been specifically identified that installing new dugouts and a 4' perimeter fence on the south side of the site above the slope along the tree line would be modest cost additions for JV softball.

Our recommendations also include installing an irrigation system in the soccer field area and JV outfields to maintain an optimal playing surface – it is unknown at this time but likely that water service would need to be extended from the facilities area to this area to supply the irrigation system.

Alternative Recommendations

It is important to note that there are additional costs associated with relocating the JV baseball field for re-construction of the infield, backstop, fencing, bleachers and dugouts – which are above and beyond those to remedy the topographic challenges via earthwork. Therefore, we have presented the option for lowering the JV baseball and softball infield elevations while raising the elevation of the center of the modified soccer field as a lower cost alternative than field relocation (shown on the Appendix B Field 4 figure).

Field 4: Varsity Softball / JV Baseball & Softball, Modified Soccer	
Recommendations	·Installation of new Irrigation System ·Amendment of Soil (following soil testing) ·Install Beam clay infield for Varsity Softball ·Install New Backstop for Varsity Softball ·Spot grade and general leveling ·4' chain link perimeter fences along the southern side of site ·(4) Portable 14' Aluminum Bleachers ·Relocate Junior Varsity Baseball field to establish optimal Northeast orientation ·Install new Dugouts for JV Softball Fields ·Relocate Modified Soccer fields and fix any grading issues
Advantages	·Irrigation system will aid in maintaining optimal play surface and reduce wear on turf ·Baseball field will have optimal orientation ·Fix multiple grade issues for consistent play across field surface ·Visitor and Athlete Experience will be improved
Drawbacks	·Would require moderate grading to create a flat surface ·New sod will require a minimum of 8 weeks of rest prior to regular use for establishment of root system ·Capital construction cost associated with field relocation

3.1.5 Field 5: Modified Football and Elementary School Recess

As discussed in the Existing Conditions Evaluation (2.3.5), the main issue with this field is the condition of the turf, as the existing grades for the field play area are adequate. Given one of the main uses of this field is Modified Football a healthy and sustainable turf is necessary for player safety, for this reason Chazen recommends using a Water Reel Irrigator for this site in addition to soil amendments and replacing the turf with sod over seed as this eliminates the possibility of competing weeds establishing along with the turf. The use of water reels is a lower cost recommendation as compared to in-ground irrigation and is commensurate with the lower intensity of use and wear placed on this field.

Water Reel Irrigation

Fence Removal

Other recommended improvements surrounding the field play area are adding a 4' perimeter fence along the Wren Street sidewalk to alleviate a potential vehicular-pedestrian conflict, and the removal of a portion of chain link fence near the middle school which acts as an inconsequential barrier to the field for student and maintenance staff migration.

Field 5: Modified Football and Elementary School Recess	
Recommendations	·Purchase and use of a Water Reel Irrigator ·Amendment of Soil (following soil testing) ·Replacing turf with Sod ·4' chain link perimeter fence along Wren Street ·Remove unnecessary chain link fence near school
Advantages	·Irrigation system will aid in maintaining safe, optimal play surface and reduce wear on turf ·Pedestrian access will be controlled ·Barriers for recess students will be removed
Drawbacks	·New sod will require a minimum of 8 weeks of rest prior to regular use for establishment of root system ·Potential for temporary impacts to school elementary school recess

3.1.6 Field 6: Recess & Physical Education / JV Soccer, JV Lacrosse

Figure 2 - Conflict

As discussed in the Existing Conditions Evaluation (2.3.6), the turf is in fair condition, but it shows signs of wear. For the field turf area we recommend replacing the turf with sod; however a lower cost alternative to that would be over-seeding grass, allowing it to rest for a couple of months while using a Water Reel Irrigator to help establish and maintain a healthy turf. Chazen also recommends adding trees along the roads to the north and south, supplementing what is there, to act as a passive barrier, provide additional shade for spectators and improve the aesthetics of the field area.

Please note that there is a current potential field play safety condition to consider. Under the current parking layout there is a significant pinch point resulting in undesirable vehicular conflict with the field and athletes (see figure 3). This raises two significant issues, first there isn't adequate run-out space for the athletes who use the field which is a field play/safety concern, and second the potential for property damage exists for any vehicles parked in these spaces as lacrosse practices or games are underway. Re-designing and re-constructing the parking layout to a more efficient design (see figure 4) which focuses on pedestrian safety and vehicular movement seems feasible. This would result in athlete's safe playing conditions by providing a run-off space of 20', increases pedestrian / student safety as the move from the school onto the field for recess and vice versa as entry and exit to the field will be guided towards a gate in a perimeter fence (dashed line). This plan would increase the efficiency and amount of available parking for teachers and visitors while improving the level of safety for the sports field users.

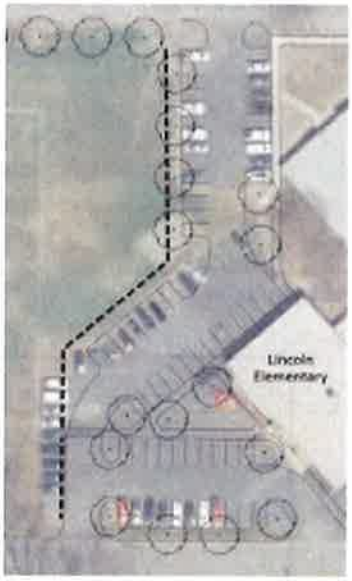


Figure 3 – Alternate Site Design

Field 6: Recess & Physical Education / JV Soccer, JV Lacrosse	
Recommendations	·Purchase and use of a Water Reel Irrigator ·Amendment of Soil (following soil testing) ·Replacing turf with Sod (Alternate: overseed and rest) ·Allay of trees along Meriline Ave and Albermarie Road ·Alternate: Redesign parking layout
Advantages	·Irrigation system will aid in maintaining safe, optimal play surface and reduce wear on turf ·Trees Improve aesthetics and serve as a passive barrier ·Parking redesign improves athlete, student and vehicular safety while improving efficiency of vehicular / pedestrian movement on site
Drawbacks	·New sod will require a minimum of 8 weeks of rest prior to regular use for establishment of root system ·Without eliminating parking the field is located very close to existing parking / paved surface

3.2 Recommendation Comparison – Sod vs. Seed

Sod vs Seed: In contrast to traditional turfgrass seeding sod provides instantaneous turfgrass cover, minimizes potential erosion control and weed competition issues, and eliminates many potential contractor issues with establishing an acceptable turf surface - but at a higher initial cost. Often the decision of sod vs. seed is driven by cost, however the District should balance this reality with the potential phasing and impacts to athletic department operations associated with loss of field play during re-construction (discussed below).

Even though sodding results is an 'instantaneous' appearance of readiness for use, obtaining sufficient root development prior to field use can be a problem which can result in excessive divoting and poor playing surface quality (such as poor traction and an uneven playing surface) so therefore Chazen recommends planning for a period of rest of a minimum of 8 weeks from installation of the sod to field use would be a desirable, estimated timeframe for sufficient rooting to produce a quality and durable playing surface[3]. In order for seeded turf to establish to the same level it could take from 1-2 years of rest before play is recommended to resume.

3.3 Maintenance

Regardless of which recommended field improvements are considered and selected by the District we believe that maintenance considerations be carefully contemplated and budgeted for long-term success of Scotia-Glenville's athletic fields. We recommend that the District review their current maintenance plan and develop a revised plan for scheduled maintenance associated with maintaining their turf (grass or artificial) fields – actions and costs. The maintenance plan should include, but may not necessarily be limited to:

- Mowing equipment, operations and timing.
- Irrigation schedules, monitoring and maintenance.
- Fertilizer and/or herbicide applications, procedures and timing.
- Lawn aeration and fall over-seeding/inter-seeding.
- Monitoring and maintenance of storm drainage and potable water systems.
- Field lining and striping activities.
- Baseball/softball infield maintenance.
- Field amenity upgrades and/or replacements (fences, dugouts, bleachers, goals, etc.).

[3] http://sturf.lib.msu.edu/article/2011jun8a.pdf

4.0 PROJECT SUMMARY

4.1 Summary of Recommended Improvements

Chazen, working with the District Athletic Director, Facilities Director and District Architect, have provided a comprehensive Master Plan level evaluation of the suite of recommended improvements for the School District's athletic fields. The aforementioned recommendations in Section 3 are accompanied by figures for the correlated field areas which are contained in Appendix B. We have also included associated itemized costs in the Appendix figures to aid in the initial decision making process for selecting which recommendations are prioritized, endorsed and presented throughout the District for funding - recognizing the need for further detailed evaluation in order to determine more specific recommendations and associated costs. We anticipate that the re-construction of the fields will most likely be accomplished in a phased sequence, budgeted over a period of years.

The following tables summarize the recommended improvements, sorted by Field Area:

Baseline Recommendations

Field	Improvements	Cost
1A	Field restoration, irrigation, fencing, drainage, scoreboard, bleachers and access improvements	$245,000
1B	Field restoration -soil amendments, seeding and irrigation	$37,000
2	Field restoration – sod, irrigation, fencing, bleachers	$239,000
3A	Relocate V baseball and soccer fields, fencing, field reconstruction, sod, irrigation, baseball infield amenities, bleachers	$386,000
3B	Field restoration - seeding, irrigation, football goal	$75,000
4A	Field restoration – sod, irrigation, fencing, backstop	$78,000
4B	Relocate JV Baseball and modified soccer fields, fencing, field reconstruction, sod, irrigation, baseball infield amenities, bleachers	$430,000
5	Field restoration – sod, irrigation, fencing	$90,000
6	Field restoration – sod, irrigation, plantings	$104,000

Sub-Total Cost for Base Recommendations:	$1,684,000
Soft Costs - Design and Engineering (10%)	$168,000
Design Contingency (20%)	$336,000
Total Cost for Base Recommendations	**$2,188,000**

Alternative Recommendations

Field	Improvement	Cost
1A	Football Field – Synthetic Turf in lieu of natural turf	+$1,200,000
2	Permanent scoreboards in lieu of portable	+$30,000
3A	Addition of walkway along fence bordering industrial park	+$50,000
4B	Maintain current orientation of fields *-delta with extracting cost saving of not doing base rec.*	-$190,000
6	Re-constructing parking lots for increased efficiency/safety	+$150,000

4.2 Next Steps

Following the District's review and acceptance of the Athletic Fields Master Plan Chazen recommends that the District move forward with the preliminary design phase for prioritized initial phase improvements – prior to presentation to the public for a referendum vote. This recommendation is based on the need for additional evaluation (ex. soil testing, irrigation water service study), permitting and confirmation of project costs tailored to specific tangible and measureable initial phase goals.

APPENDIX A

EXISTING CONDITIONS FIGURES

THE Chazen COMPANIES
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Scotia-Glenville Athletic Fields Master Plan

A1 - Existing Field Use Diagram

Appendix A

N

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Scotia-Glenville Athletic Fields Master Plan

A2 - Existing Conditions Inventory

Appendix A

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A3 - Existing Utilities

Appendix A

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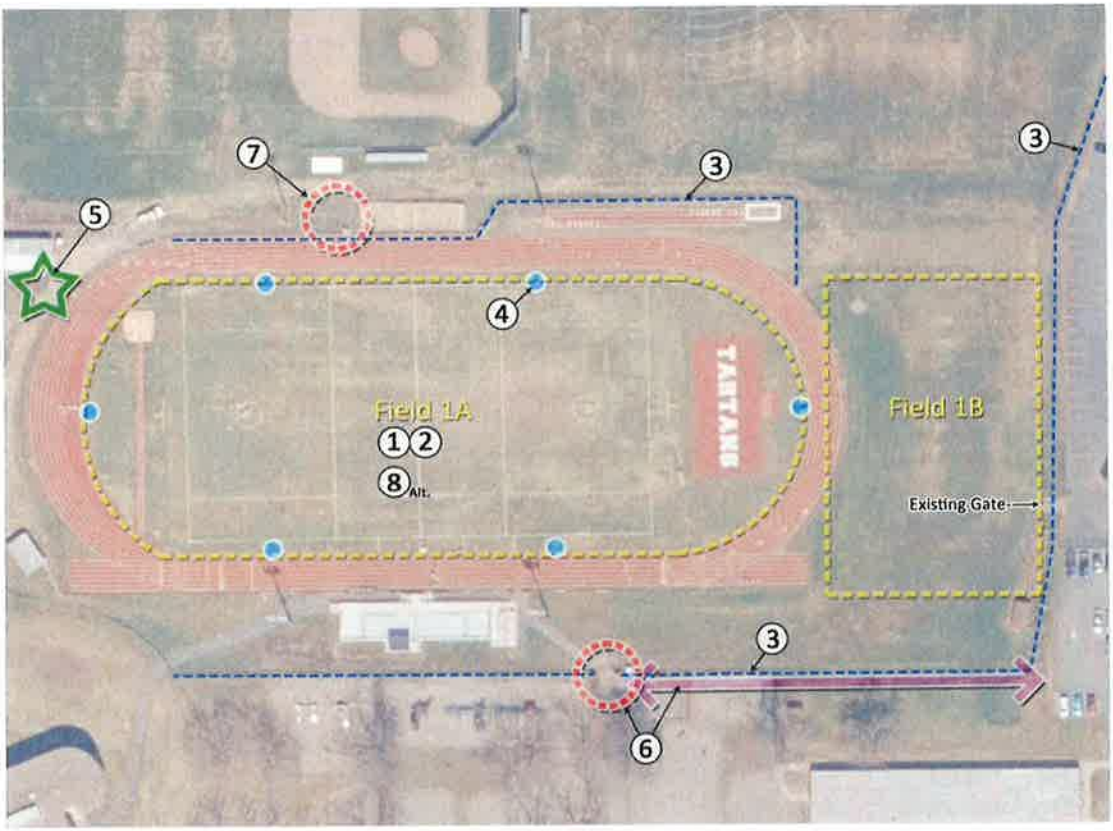
APPENDIX B

FIELD MASTER PLAN FIGURES



Recommended Improvements	Associated Costs
Field 1A - Base Recommendations	
1. Installation of Irrigation System	$25,000
2. Re-grade & Crown Field, add soil amendments and Sod	$90,000
3. Patch Repair Perimeter Fence	$25,000
4. Clean out / repair storm drainage system	$20,000
5. Install New Scoreboard	$50,000
6. New Accessible Concrete Walkway to Reassigned Field Entrance near grandstand	$20,000
7. Additional Set of Visitor Bleachers (40-70 capacity)-no concrete pad	$15,000
Total for Field 1A Base Recommendations:	**$245,000**
Field 1A - Alternate Recommendations	
8. Alternative: Synthetic Field Enhancement	$900,000
Field 1B	
1. Installation of Irrigation System	$12,000
2. Amend soil and seed	$25,000
Total for Field 1B Base Recommendations:	**$37,000**

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Field 1: Varsity Main Field

Appendix B

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Recommended Improvements	Associated Costs
Field 2 - Base Recommendations	
1. Re-grade, amend soil and Sod	$150,000
2. Installation of Irrigation System	$35,000
3. Installation of Perimeter Fence	
a. 4' Ht. Along parking lot for controlled access	$25,000
b. Increase to 6' Ht. Along residential boundary for ball stop protection	$15,000
4. (4) New 4 Row, 15' Length Aluminum Bleachers (capacity: 40 each)	$10,000
5. (2) New Portable Scoreboards	$4,000
Total for Field 2 Base Recommendations:	**$239,000**
Field 2 - Alternate Recommendations	
6. Alternative: Permanent Scoreboard	$30,000

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Field 2: Multi-Use Field

Appendix B

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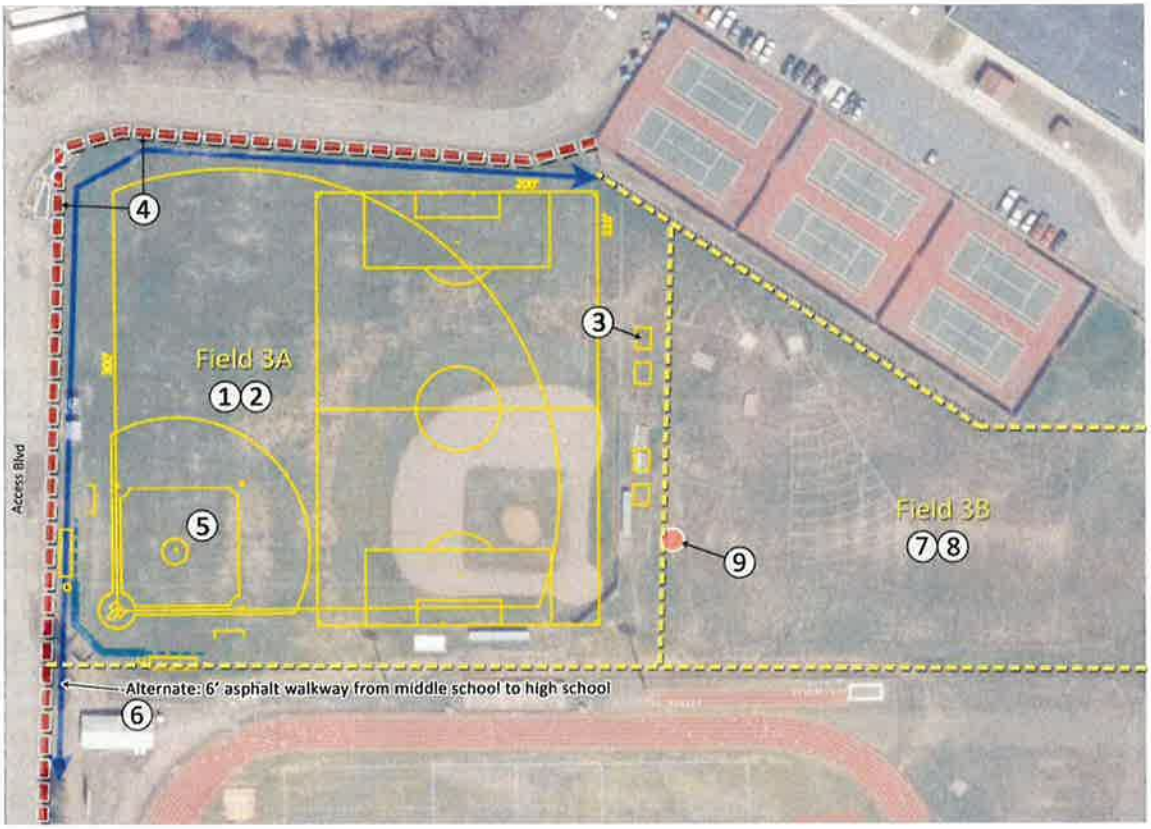

Recommended Improvements	Associated Costs
Field 3A - Base Recommendations	
1. Installation of Irrigation System	$35,000
2. Re-grade, amend soil and Sod	$150,000
3. (2) New 3 Row, portable Aluminum Bleachers	$6,000
4. 8' Privacy Fence to replace chain link / barbed wire along industrial site	$35,000
5. Relocate Reorient Varsity Baseball Field	
a. New Backstop	$25,000
b. New Dugouts	$40,000
c. Beam Clay Infield and Pitches Mound	$50,000
d. Ball Stop Netting	$25,000
e. Earthwork & Grading at home plate	$20,000
Total for Field 3A Recommendations:	**$386,000**
Field 3A - Alternate Recommendations	
6. Install new 6' wide asphalt walkway between middle school and high school on interior (school property) side of fence	$50,000
Field 3B - Base Recommendations	
7. Installation of Irrigation System	$20,000
8. Re-grade, amend soil and Seed	$45,000
9. Replace Football Goal Post (for practice)	$10,000
Total for Field 3A Recommendations:	**$75,000**

Recommended Improvements	Associated Costs
Field 4A - Base Recommendations	
1. Install permanent 4' chain link perimeter fence	$6,000
2. Install a New Backstop	$20,000
3. Installation of Irrigation System	$12,000
4. Amend Beam-Clay Infield	$10,000
5. Re-grade add soil amendments and Sod outfield	$30,000
Total for Field 4A Base Recommendations:	**$78,000**
Field 4B - Base Recommendations	
6. Relocate Reorient JV Baseball Field	
a. New Backstop	$20,000
b. New Dugouts	$30,000
c. Beam Clay Infield and Pitches Mound	$50,000
7. Relocate Modified Soccer field and re-grade	$125,000
8. Installation of Irrigation System	$60,000
9. Amend Soil and Sod	$90,000
10. New Dugouts JV Softball	$30,000
11. Install new 4' Fence at Preddice Pkwy	$10,000
Field 4 - General	
12. (4) 4 Row, 15' Length Aluminum Bleachers	$15,000
Total for Field 4B Base Recommendations:	**$430,000**
Field 4B - Alternate Recommendations	
13. Fix Grading Issues	
a. Lower Baseball / Softball Infields	$20,000
b. Raise outfield Grade with Imported Fill	$40,000
c. Installation of Irrigation System	$45,000
d. Beam Clay Infield	$35,000
e. Amend soil & sod	$90,000
f. New 4' Fence at Preddice Pkwy	$10,000
Total for Field 4B Alternate Recommendations:	**$240,000**

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Scotia-Glenville Athletic Fields Master Plan

Field 4: Varsity Softball (4A) and JV Baseball, JV Softball & Modified Soccer (4B)

Appendix B

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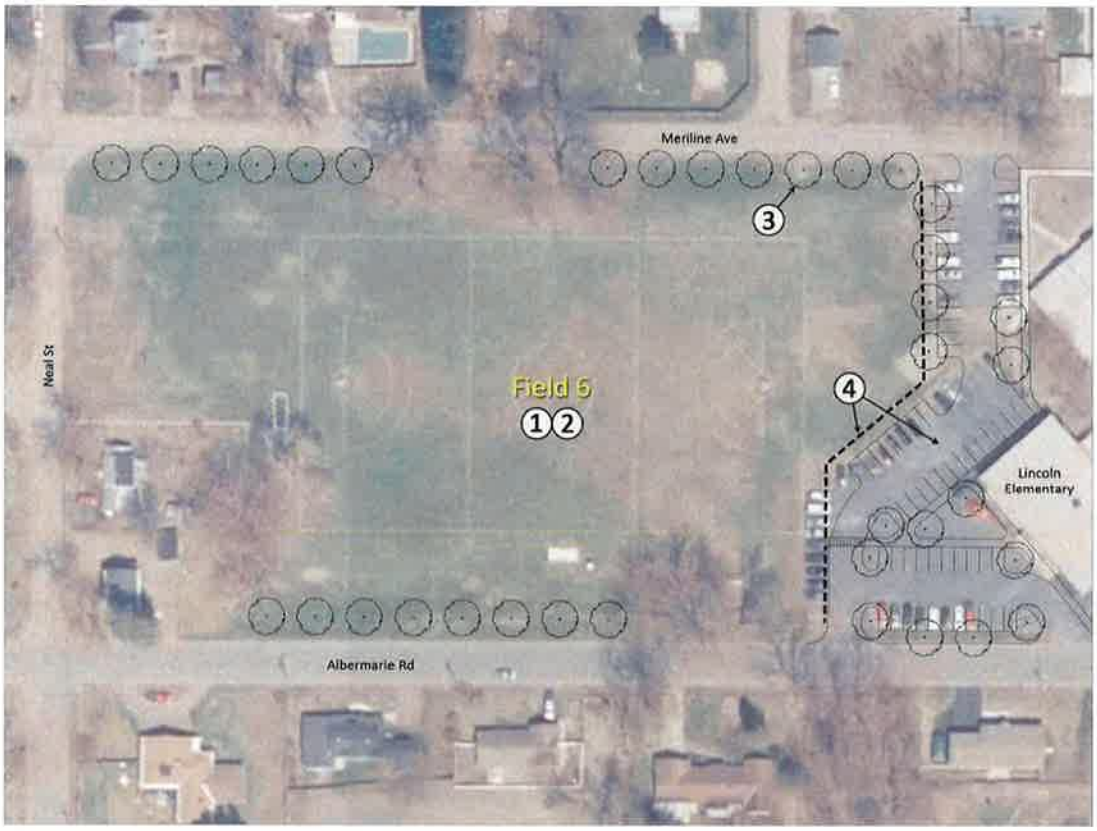
Recommended Improvements	Associated Costs
Field 5 - Base Recommendations	
1. Replace turf with soil amendments and sod	$60,000
2. Installation of irrigation System (Field area only)	
a. Mobile Water Reel Irrigator	$10,000
3. Perimeter fence along Wren Street	$15,000
4. Remove / relocate boundary fence at Junior High Wing	$5,000
Total for Field 5 Base Recommendations:	**$90,000**



Recommended Improvements	Associated Costs
Field 6 - Base Recommendations	
1. Replace turf with soil amendments and sod	$80,000
2. Installation of Irrigation System	
a. Mobile Water Reel Irrigator	$12,000
3. Aesthetic Improvements: Tree alley along Albermarie Rd and Meriline Ave	$12,000
Total for Field 6 Base Recommendations:	**$104,000**
Field 6 - Alternate Recommendations	
4. Re-design Parking layout / Construct barrier at parking near entrance	$150,000

APPENDIX C

SYNTHETIC FIELD/NATURAL TURF COMPARISON

SYNTHETIC TURF
Athletic Field Surface

2008 NRPA Congress #225

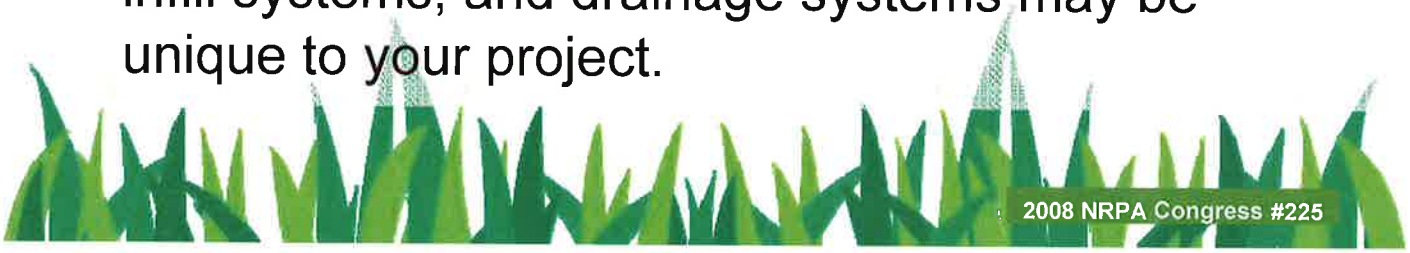
Natural Turf vs. Synthetic Turf

2008 NRPA Congress #225

Synthetic Turf Solution

- Synthetic turf fields have essentially become a viable and practical option for developing athletic fields, serving participants at the professional, collegiate, secondary education, municipal, and athletic youth league levels.

- Synthetic turf fields have similar construction processes, though product and material types, infill systems, and drainage systems may be unique to your project.



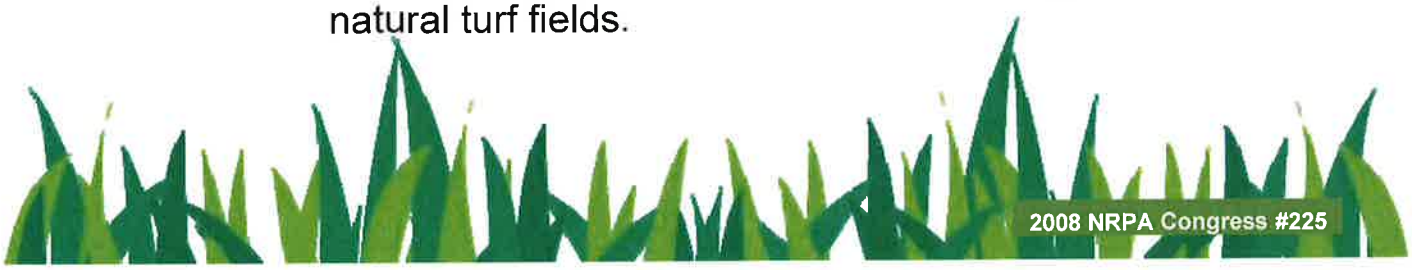
Synthetic Turf Benefits

❖Increased Playability

- Estimated to increase playing capacity by 62% in conjunction with the addition of lights, when compared to natural turf. Increases capacity on lighted *existing* field sites lessening the need for constructing additional fields.

❖Increased Durability

- Reduces field closure due to overuse, allowing fields to remain open for the length of the season. Eliminates divots, bald spots, and uneven terrain of rigorously used natural turf fields.



Synthetic Turf Benefits
(continued)

❖Improved Drainage

- Superior ability to drain water. Fields can be used during or immediately after most rain events. Virtually eliminates the need to reschedule games due to inclement weather.

❖Lower Maintenance Costs

- Requires no mowing, fertilizing, pesticides or re-seeding. Regular maintenance includes grooming and debris removal.

Stormwater Management Benefits of Synthetic Turf

Synthetic turf field drainage systems may be approved as an innovative Best Management Practice (BMP) in your jurisdiction, providing storm-water *quantity* and *quality* controls which benefit existing waterways.

Stormwater Management Benefits of Synthetic Turf (continued)

Quantity

- Synthetic turf reduces the peak storm-water flow into the existing natural storm-water system.
- Storm-water must travel through the entire synthetic turf system before entering an existing natural waterway.
- Peak flow reduction causes less erosion in the existing natural waterway.

Stormwater Management Benefits of Synthetic Turf (continued)

Quality

- Synthetic turf systems provide water quality improvement by reducing phosphorus runoff to nearby streams and tributaries.
- The synthetic turf system acts as a filter, capturing small amounts of physical and chemical contaminants.
- Natural grass athletic fields often do not have healthy stands of grass due to over-use. The lack of healthy stands of grass increases the amount of sediment present in storm-water runoff.
- Synthetic turf fields do not require the use of fertilizer and other chemicals that ultimately enter the natural storm-water system.

Stormwater Management Benefits of Synthetic Turf (continued)

The installation of synthetic turf fields eliminates the need for irrigation systems and fertilization, saving precious water resources and protecting the environment.

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Pros & Cons
Synthetic Turf vs. Natural Turf

Synthetic Turf – PROS & CONS	Natural Turf – PROS & CONS
•Continuous play (even during inclement weather, except for thunder & lightning)	•Rainouts •Delays
•No chemical applications	•Use of fertilizer and pesticides
•Eliminates the need for irrigation	•Irrigation system to provide necessary watering
•Less maintenance •Sweeping •Tining •Grooming	•Seeding •Painting of all lines •Fertilization •Mowing •Aeration
•Consistently uniform playing surface	•Bare spots •Holes •Rocks and/or gravel
•With the exception of monthly painting game lines that are not permanently sewn in, none of this is required on a synthetic field.	•It costs approximately $23,500 annually to maintain a typical rectangular field (this includes twice weekly mowing painting lines and turf maintenance. On heavily used fields irrigation is also essential.

Pros & Cons
Synthetic Turf vs. Natural Turf
(continued)

Synthetic Turf – PROS & CONS	Natural Turf – PROS & CONS
•Quantitive savings on laundering and replacement of uniforms	•Extra laundering due to mud and grass stains
•No downtime regarding use of field after yearly seeding or re-sodding of grass	•Fields have to be re-seeded or sodded
•Ability to host an unlimited amount of community activities, football, soccer, lacrosse, field hockey and rugby	•Due to adverse field conditions, loss of scheduling to give the field a chance to repair
•Potential decrease in transportation costs for transporting students to off-site practice fields	•Transportation costs to transport students to off-site practice fields
•The potential for revenue generation from holding play-off and championship games on synthetic turf fields	•Limited number of games held due to adverse field conditions
•Extended playing season	•Average/below playing season
•Higher surface temperature	•Consistent surface temperature

Annual Maintenance Cost

	Natural Turf	Synthetic Turf
Labor	$ 8,800	$13,000
Materials & Equipment	$ 7,600	$ 500
Contracted Services	$ 1,700	$ 1,200
Lighted	$ 2,900	$ 4,000*
Irrigation	$ 2,500	$ -0-
TOTAL	**$23,500**	**$18,700**

* Additional cost for lighting for Synthetic Turf Fields is due to extending playing seasons for winter use.

Life Span

Synthetic Turf

An industry leader for synthetic turf fields guarnatees their fields for 8 years. Therefore it is reasonable to assume that the fields will last in the range of 8-10 years. At the end of its life span, a new synthetic field would cost significantly less than the original because the basic design, foundation, and drainage would already be provided.

Natural Turf

The life span of a natural turf field varies greatly, depending on the amount of use, turf practices, staffing levels, etc. Given the existing pressure to over-use fields, it is difficult to keep them at a high level of quality. It is reasonable to assume that such highly used fields will need a major overhaul every ten years or so. This would obviously not be a total replacement, but instead of rehabilitation of the soil profile, the grade, the turf, and the irrigation system.

Funding Mechanisms

- Fairfax County Park Authority – Various multi-million dollar bond projects along with several other funding sources including proffers, private-public partnerships which thus far have contributed to 22 synthetic field installations

Construction Process

Stripping Top Soil

Construction Process
(continued)

Laser Grading

Fine Grading and Proof Rolling Subgrade

Fine Grading

Proof Rolling

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Subsurface Drainage Systems

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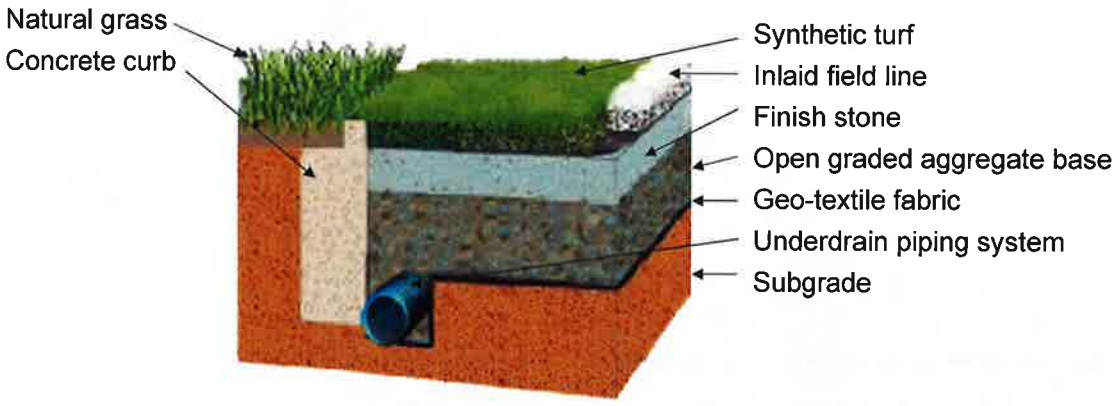
Synthetic Field Development Profile

BASE AND DRAINAGE SYSTEM DETAIL



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Perimeter Curb Installation

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Stone Base Installation

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Final Stone Base Installation

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Synthetic Turf Installation

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Installing Infill Materials

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Brushing Infill Material

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Replacement of Synthetic Turf

- A well engineered sub-surface drainage system should be sustainable for two or three synthetic turf replacements

Completed Field With Inlays

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