



# Athletic Field Needs Assessment Town of Harvard Harvard, MA

September 7, 2023

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Gale JN 719240

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## **SECTION 1.0 – INTRODUCTION AND PURPOSE**

Gale Associates, Inc. (Gale) was engaged by The Town of Harvard (Town) to assist with the development of an Athletic Fields Needs Assessment. The goals of the Needs Assessment were:

- *To evaluate the physical characteristics, field conditions, and venue inventory of nine (9) athletic field venues selected by the Town for renovation, upgrade, and/or redevelopment.*
- *To quantify the field demand use at each of the Town's athletic field venues versus capacity.*
- *To evaluate and program the Town's need for upgraded, redistributed, or new athletic field facilities.*
- *To provide master planning services, resulting in a renovation strategy for the athletic programs and venues to address the needs of the community.*

## **SECTION 2.0 – BACKGROUND EVALUATION AND EXISTING FACILITIES ASSESSMENT**

Gale was requested to conduct an existing conditions evaluation for each of nine (9) selected Town athletic field and recreation parcels, and to provide evaluation forms and base maps as part of this report. The nine (9) existing parcels to be evaluated included:

- Ann Lee's Softball Field
- Harvard Park
- Charlie Waite Fields
- Ryan Land Park
- Depot Street Fields
- Bromfield School Hardcourts
- Bromfield School Front Field
- Pond Road Fields
- Hildreth Elementary Field

Additionally, the Town requested that Gale also evaluate the development potential of the open, grassed area located southeast of the Harvard Public Library.

An Athletic Field Evaluation Form was used to log existing field conditions, present equipment, and current site amenities at each of the parcels, and to provide a general opinion of field condition. Evaluation items listed relative to the project include, but are not limited to, field size and solar orientation, team benches, dugouts, backstops, spectator seating (bleachers), fences and gates, permanent field equipment, grounds, irrigation, pedestrian and athletic lighting, structures, surfaces, and ADA accessibility.

## **Section 2.1 – Background Evaluation and Base Plan Development**

Gale compiled base maps for each of the nine (9) Town-owned venues and have provided them within this report as Enclosure 1 – Town Wide Field Location Maps. Typically, in developing a Needs Assessment Report, Gale will utilize as much public information as possible, such as assessor’s maps, Town GIS data, aerial maps, FEMA floodplain maps, and any “as built” drawings for existing drainage and utility systems available. Although this information is not suitable for detailed design, it provides a basis on which planning can be developed.

## **Section 2.2 – Facilities Evaluation**

Gale conducted a facilities inventory and condition assessment of the existing athletic field facilities on June 28, 2023. The average score within the Athletic Field Evaluation Forms rates the condition of the fields and the presence of equipment as they relate to adequacy, safety, serviceability, turf grass, and field compliance with applicable geometry standards. It should be noted that these evaluations took place outside of the regular playing season for the fields, and that these evaluations are only representative of the fields at the time they were evaluated.

Based on Gale’s field evaluations, we have indicated that the Town’s playing fields are generally in **fair** condition. Their uses require redistribution among the available fields, along with renovations in most of the areas addressed in the Category Items, as evidenced by ratings between 1.0 and 3.0 (e.g., 4.0 = excellent, 1.0 = poor, NR = Not Rated). The evaluation forms and site photos are provided in Enclosure 2 – Evaluation Forms and Site Photos.

A brief summary of observations and deficiencies noted in the evaluation forms in Enclosure 2 or were discussed with user groups, as follows:

- Ann Lee’s Softball Field – Recently renovated softball diamond used by youth groups and high schoolers (Score = 2.8). The field is oriented to the southwest, which is sub-optimal. The chain link fencing and backstop are in good condition, as is the portable outfield fence. Outfield grass is in fair condition and has a large percentage of weeds, as well as planarity issues. The batting cage and storage sheds are in good to excellent condition. The parking lot is gravel and not well-defined. The field’s proximity to wetlands, as well as a lack of electrical and irrigation infrastructure, limit maintenance options. There is also minimal spectator seating.
- Harvard Park – Synthetic running track with enclosed grass rectangular field (Track Score = 2.6, Field Score = 3.0). The running track was built in 2002, resurfaced in 2015, and is in fair condition. The surfacing has moderate wear, and the base has some cracking that has yet to reflect into the surfacing. Some of the slot drains around the D-areas were clogged with sand and/or surfacing, and evidence of puddling was observed in multiple locations along the inside edge of the track. The perimeter fencing is in good condition, although a few of the posts in the southwest corner have heaved. The grass field had some areas of bare surface, and some evidence of poor drainage was present. According to user questionnaires, drainage is an issue at the

field and moderate rain can close the field for multiple days. Parking and spectator seating at the park are in fair condition, lacking paved surfaces and permanent seating. No athletic or site lighting exists. There is a throwing area east of the track for javelin, discus, and shotput, which experiences drainage issues according to questionnaire responses received.

- Charlie Waite Fields – Two (2) youth rectangular fields (Score = 2.7). The field area lacks a solid border and transitions sharply from mowed field runoff area to tall grasses and vegetation, presenting safety issues for players and resulting in lost balls. Support equipment was observed to be in fair condition, with limited team or spectator seating. The turf grass was in overall fair to good condition. However, large areas of bare ground were observed in high traffic areas, mainly in the southern field. There was puddling observed, indicating possible drainage issues. No athletic or site lighting was observed.
- Ryan Land Park – Two (2) 60'/70' diamonds, one with a fully skinned infield. (Average Score = 2.7). The southern field (Ryan Land 1) is in good condition, with only minor issues that included some displaced/heaved fence posts and areas of compacted earth by the dugouts. Spectator seating is located on a slope and lacks an access path to parking. The parking lot is poorly defined and appears to have drainage issues.

The northern field (Ryan Land 2) is oriented to the southwest, which is sub-optimal. The infield was recently converted to a fully skinned condition, and related construction efforts left the third base foul area in poor condition. The dugouts lack covering, but are otherwise in good condition. Drainage issues were observed in the vicinity of the first base line and dugout, resulting in potential safety concerns. The two fields share a batting cage/bullpen area to the northwest, which is in overall poor condition. No athletic or site lighting was observed.

- Depot Street Fields – Two (2) field areas (Upper and Lower Depot), consisting of two full size fields and one youth field (Average Score = 2.7). These fields were both closed for Summer 2023 to allow for field rest and maintenance, with Lower Depot being closed for the 2023 calendar year. Both fields have large bare patches, with evidence of reseeding. No drainage issues were observed. Both fields lack a complete border fence, presenting a possible safety hazard and resulting in lost balls. Spectator seating is limited, and site access is non-existent. There is minimal storage or other support structures on site. No athletic or site lighting was observed.
- Bromfield School Hardcourts – One (1) basketball court and four (4) tennis courts (Average Score = 2.5). The five courts consist of a bituminous pavement base with an acrylic surfacing system. The basketball court is in fair to poor condition, with significant cracking of the pavement and wear on the surfacing. The basketball perimeter fence is incomplete and close to the edge of the playing surface, presenting a potential safety hazard. The west edge of the fence also has a moderate amount of vegetation intrusion.

The tennis court surfaces are in overall good condition, although some minor cracking was observed. From past aerial imagery, it appears the courts were resurfaced in or around Summer 2020, at which point crack sealing was performed on the base pavement. Some of these sealed cracks have reopened, revealing the fabric-based repair system. Permanent pickleball lines were added around the time of the 2020 resurfacing. The perimeter fencing is in overall good condition, although moderate vegetation intrusion was observed along the majority of the perimeter. Court lighting appears to be outdated and in poor condition, although lit conditions were not observed by Gale.

- Bromfield School Front Field – Full-size, multi-purpose rectangular field (Score = 2.8). The playing surface at the field is in good to fair condition, while the venue is lacking in support equipment and amenities. Some heaves and divots were observed, as well as a few areas of bare earth. The playing field lacks a discrete border, and is bordered by MA State Route 111 to the east and the access road for the Middle/High School to the north. This lack of border and storage spaces makes it hard to maintain a designated athletic facility. Per the Town, multiple events are held on this field, including school graduation, farmers' markets, and town festivals. These events negatively impact both the athletic schedule of the field, as well as the overall condition of the surface. No athletic or site lighting was observed.
- Pond Road Fields – Full-size, multi-purpose rectangular field that overlaps with the outfield of a 90' baseball diamond. (Average Score = 2.4). The rectangular field is in overall good to fair condition, with evidence of drainage issues observed and substantiated via questionnaire responses. The field lacks a complete fence border and is situated at the bottom of a large slope, making site access difficult. Support equipment (goals, spectator seating etc.) is limited and in good to fair condition. During the spring, a temporary outfield fence is utilized, which cuts the rectangular field roughly in half.

The baseball field is in fair condition and has multiple areas for improvement. The field is facing mainly south, which is a sub-optimal orientation, and the left field line is ~270 ft, which is below the National Federation of State High School Associations' (NFHS) standard of 300' for a high school field. Per questionnaire responses, the skinned infield has drainage issues, while the pitcher's mound and batter's boxes are in poor condition. Like the rectangular field, the baseball outfield appears to have drainage issues. There appears to be constant standing water in the left field corner, which also impedes mowing and presents a safety hazard. The dugouts consist of only uncovered benches in low areas where ponding water was observed, while the existing batting cage is in disrepair and appears to no longer be usable. The chain link backstop and fencing around home plate is in fair to poor condition and lacks coverage, reportedly leading to a large number of lost foul balls during regular usage. Athletic lighting was not observed.

- Hildreth Elementary Field – Open space in front of the newly constructed elementary school, with playable area measuring roughly 120' x 200'. (Score = 3.0). This field does not currently experience any organized uses, as the stand of grass is still being

established. The surface appears generally flat, and the available size appears to be able to accommodate a youth practice field. The lack of site security (e.g., fencing and proximity to Route 111) will most likely preclude large scale usage.

- Library Field – Open space adjacent to the Town Library and the Bromfield Field, measuring roughly 135' x 200' (Score = 1.5). At the Town's request, Gale performed a cursory evaluation of this space to determine if it had potential for organized athletic use. The Town also shared that a pavilion is proposed in the southwest corner, with its installation expected in the near future. The space has a relatively consistent 5-10% slope running in a westerly direction, which is not conducive with organized athletics. Numerous rocks/boulders (greater than a foot in diameter) are strewn across the potential playing area, which would be safety hazards. There also appear to be several recently planted trees that limit the potential playing area. Given these factors, it is Gale's opinion that this area has limited to no potential for organized athletic use without large scale regrading/earthmoving.

### **Section 2.3 – Permit Regulations**

Gale conducted general research into the Town Bylaws and Regulations to determine applicable ordinances that may impact renovations/improvements to the Town's fields. Based on prior research performed under Section 2.1, the following natural resources impact one or several sites in the Needs Assessment, including bordering vegetated wetlands, FEMA flood zones, and wellhead protection zones.

The Town of Harvard Conservation Commission has established and enforces wetland regulations with the following guidelines:

- Wetlands
  - *50-foot No-Disturbance Zone: No disturb zone in which there shall be undisturbed natural vegetation.*

Some of the Town fields in this study have portions that fall within the 50 ft. no disturbance zone and 100 ft. Massachusetts Department of Environmental Protection (MassDEP) buffer. However, in Gale's experience, since these areas have been previously disturbed, some Conservation Commissions have shown leniency in these areas. All other resources have regulations as established by MassDEP.

Town Zoning Bylaw dictates a maximum building height of 35 ft. Therefore, a special permit or variance may need to be obtained from the Zoning Board for the installation of athletic lights, which usually rise ~70 – 80 feet in height.

The lighting section in the Town Zoning Bylaw also mandates that all outdoor lighting fixtures be full cutoff fixtures and that direct rays from the light source are confined to the property boundaries. The bylaw also prohibits metal halide light sources. There are athletic lighting options available that can meet these standards.

## **Section 2.4 – Annual Field Use Demand**

As part of the needs assessment process, Gale distributed questionnaires to major stakeholders of Town athletics. One of the purposes of these questionnaires was to obtain data for the fields to quantify and qualify the use each field undergoes during an average playing year. Representatives from youth soccer, youth baseball/softball, adult soccer, and numerous school coaches completed these questionnaires and, where applicable, provided schedules. Additionally, questionnaires were received from Harvard Parks and Recreation and the Department of Public Works. These questionnaires can be found in Enclosure 3.

A summary of the responses to these questionnaires and related field use is provided below:

Bromfield Middle/High School (Bromfield) accounts for roughly 35% of the field usage, including baseball, softball, soccer, field hockey, and girls' lacrosse. These teams use almost every venue in Town, with the exception of the Ryan Land diamonds. Per the Bromfield Athletic Director, most of the Town fields have drainage issues and are usually behind on maintenance. Spring sports are slow to start, as fields are often too waterlogged to sustain play. Harvard Park is the main game venue for many Bromfield sports, but is located 2.5 miles away from the school, making student transportation an issue. Furthermore, the running track at Harvard Park is reaching the end of its usable life and also has some drainage issues.

Soccer (including adult leagues) accounts for roughly 30% of the field usage in Town, and most recently had 35+ teams year-round. Most practices and games are held at Harvard Park, Charlie Waite Fields, Depot Street Fields, and Pond Road Fields. Per the Harvard Soccer Club President, maintenance and schedule congestion/field availability are the biggest issues. The lack of a well-established maintenance plan leaves fields with poor grass coverage and leaves team coaches/parents to perform last minute maintenance.

Youth baseball and softball face similar issues to youth soccer, also dealing with fields that are at or above capacity and maintenance issues. Practices and games are held at Ann Lee's Softball Field and Ryan Land Park, with the recent elementary school renovations resulting in the loss of two softball diamonds. Maintenance issues are compounded by the fact that both venues border wetlands, which limits the ability to perform weeding, insect control, and fertilization. Practice duration and frequency are already limited with current numbers, and future growth is expected to follow trends at the elementary school.

Youth lacrosse accounts for roughly 5% of town field usage, mainly at the Bromfield Field, with some uses at Depot Street Fields. As their main field (Bromfield Field) has poor drainage and is used for other events (e.g., graduation, farmers' markets, etc.), scheduling and field conditions are difficult to maintain. Per the youth lacrosse respondents, both Town and Bromfield lacrosse users are at a "significant competitive disadvantage" compared to other towns due to the lack of a synthetic turf playing field.

The schedules provided by these stakeholders were used in tandem with reservation data provided by the Town to develop as complete a picture as possible on field uses. Per a conversation with the Bromfield School Superintendent and Athletic Director, Boys'

Middle/High Lacrosse was discontinued in recent years, but is expected to be reinstated in the near future.

The total number of “uses” each field hosts per year was determined through the following methodology. First, the amount of Time Per Event (TPE) was set at 1.5 hours, as a typical amount of time for a game or practice event of baseball, softball, football, soccer, lacrosse, or field hockey, or other field event listed by a User Organization. The TPE is an average time used to estimate total annual field use. Second, a Frequency of Use (FOU) was determined per field event, per week, per season, and per year. For example, if we assume Adult Soccer meets for two (2) hours (equating to approximately 1.3 scheduled uses), one (1) day per week for 10 weeks in the spring/summer season, the Field Use (FU) of that event is then calculated:  $1.3 \text{ uses} \times 1\text{-day} \times 10 \text{ weeks} = 13.3 \text{ field uses/year}$ . This procedure is done for each recreation and athletic playing field listed in the Town’s field use program. These numbers were cross-referenced with the reservation data provided by the Town. The quantification of field use demand is provided in Enclosure 5 – Field Use Data, Demand Analysis, and Field Deficiencies. It provides a summary of the annual team and organization uses for the Town’s existing recreation and athletic fields. It also documents the teams that utilize each field.

The results of the Current Use demand quantification indicate that the Town’s fields are being used to accommodate approximately 3,600 team events per year (Enclosure 5). This number is based on scheduled events only and does not include undocumented uses. From this data, it appears that all town venues, other than the Pond Road Fields, currently experience more than 250 scheduled team uses per year (refer to the Field Users Bar Chart provided in Enclosure 5). The fields that currently experience the most use are Upper and Lower Depot, as well as the Bromfield Field. The Pond Road Fields appear to be underutilized. However, the data table doesn’t show that the full-size, multi-purpose rectangular (MPR) field can only be used in the fall, as the baseball outfield fence cuts the area in half in the spring.

A well maintained and irrigated natural turf field that is properly rested can typically sustain between 200-250 team-uses per year. To sustain high quality, safe athletic natural turf under the maximum volume of use is dependent upon how well the field is built, to what degree the fields are maintained, and if an Inclement Weather Policy is enforced. As a comparison, a synthetic turf field has an all-weather playing surface without the general use constraints of a typical natural grass field. A synthetic turf field with lights ends up being limited more by time in the day than by field condition, and can typically sustain up to 750 uses per year when fully utilized.

### **Section 2.5 – Equivalent Field Use Analysis**

When comparing the field uses on the fields, one must consider that different sport activities result in different levels of stress and wear on the playing field. Some fields are primarily used for high/medium contact sports, where play is more aggressive, increasing the stress loads on the field and the rate of field wear and deterioration. Other fields are primarily used for low-contact sports and the stress on the field is not as detrimental. While the “Current Use” (Enclosure 5) is a good indication of scheduled team-uses, the “Equivalent Use” (Enclosure 5) is a better indicator of stress imposed on the field.



Based on our experience, we have applied an equivalent use factor of 1.0 to youth soccer as the baseline of field impact and deterioration. Gale estimates that youth lacrosse is more damaging to the turf and, as such, assign it a 1.25 equivalent use factor. Similarly, baseball and softball are not as damaging and are assigned a factor of 0.75. Other equivalent use factors for various sports were assigned based on estimated turf impact, and then multiplied by the number of scheduled uses for each type of activity to yield the Equivalent team-uses in terms of turf impact and damage (Enclosure 5).

Based on the results of the Current Use data in Section 2.3, we developed an Equivalent Use Demand matrix. Based on this data, 8 of the 9 athletic venues in Town are overburdened and accommodate more than the suggested 250 uses per year, with three (3) venues accommodating 400+ uses per year. Therefore, the Pond Road Fields are the only venue in Town that are not overused. These fields have significant drainage issues and, as mentioned above, the rectangular field is cut in half in the spring season by the baseball outfield fence. Given these numbers, it is clear that the majority of Town fields are at or above capacity, with minimal/no room for expansion.

Average Use Per Field Type		
Use Type	Total Uses	Avg Use Per Field
60' Diamond	823	274
90' Diamond	130	130
MPR – Full Size	1219	305
MPR – Youth	1307	327

Ideally, heavily used natural turf athletic fields require a thirty to forty-five (30-45) day rest period during an active growth period in the fall or the spring. The Equivalent Use (weighted field use) per field event is provided in Enclosure 5. As shown, it is apparent that the athletic fields are not afforded the consistent and appropriate rest period needed due to their full use schedule throughout the year. A rest period allows the grass field to repair itself by rhizome propagation and “re-knitting” of the root-zone. This process does not take place during the summer, when cool weather grasses like Kentucky blue grass are dormant. This is a significant challenge for virtually all public school and municipal organizations.

**SECTION 3.0 – FIELD USE REDISTRIBUTION/FIELD DEFICIENCIES**

**Section 3.1 – Redistribution of Athletic Programs**

As mentioned above, for each field to achieve a sustainable playing surface, the total number of equivalent uses is suggested to not exceed approximately 250 per year. To accomplish this, uses on fields with higher existing demands would need to be moved to fields with lower existing demands in an attempt to distribute uses more evenly throughout the Town. Considering that all game ready fields experience more than 250 uses per year, it appears that redistribution alone is not a viable solution and additional fields are needed. It is reasonable to conclude that additional fields are warranted to allow for expansion of youth leagues, more opportunity to rest fields, and more opportunity to limit schedule constraints.

Field Deficit Data - Based on Equivalent Use						
Use Type	Total Uses	Avg Use Per Field	Total Fields Needed	Total Fields Needed Rounded	Current No. of Fields	Field Deficit
60' Diamond	823	274	3.3	4	3	1
90' Diamond	130	130	0.5	1	1	0
MPR – Full Size	1219	305	4.9	5	4	1
MPR – Youth	1307	327	5.2	6	4	2

MPR = Multi-Purpose Rectangular Field

Full size field at Pond Road becomes half size during spring season.

Note: *Fields needed and field deficit data are based on natural grass. A synthetic turf with lights equates to three (3) natural turf fields.*

The field deficit data shown above and found in Enclosure 5 shows the number of additional natural turf fields that the Town needs for all fields to have under 250 uses, which includes one (1) 60’ diamond, one (1) full size MPR and two (2) youth MPR. These numbers are based on the equivalent use data derived from the questionnaires and reservation data, and are accurate for 2023. Synthetic turf fields are much more resilient than natural grass fields and are typically restricted by schedule, not by field condition. A well-maintained synthetic turf field can typically sustain 750 uses per year and is a viable option, given space and scheduling restrictions. Essentially, one (1) synthetic turf field equates to three (3) natural grass fields.

At the Town’s request, Gale performed a preliminary study of future deficits that may affect the Town, given population growth and potential additional sports. Per the Bromfield School Athletic Director and Superintendent, Boys’ Lacrosse is expected to return in the coming years. Therefore, the uses of Boys’ Lacrosse was estimated to be similar to the Bromfield School’s Girls’ Lacrosse Team. Town population was estimated using previous census growth at 5% over ten years. Given these two data points, Gale estimates that the field deficit will increase by one full-size multi-purpose rectangular field by the year 2033, assuming the existing field availability remains the same.

**SECTION 4.0 – CONCEPTUAL PLANS AND COST ESTIMATES**

Upon review of the athletic field information, including questionnaires, evaluation forms, and discussions with the fields’ stakeholders (including the Town and Bromfield School), it is apparent that the existing town fields are at or above capacity across the board. The existing venues use all available space, and, at the Town’s request, Gale did not explore possibilities at other undeveloped town-owned parcels. Per comments from the Town, efforts have been made to identify and evaluate parcels that could potentially be purchased by the Town to be renovated as field space, but these efforts have not been successful.

Given these constraints, it is Gale’s opinion that the only option to increase the capacity of the Town fields is synthetic turf conversion(s). As previously mentioned, a synthetic turf field with lights can sustain up to three times the number of uses of a natural grass field. Although the majority of questionnaire respondents and stakeholders voiced support/desire for synthetic turf, it is Gale’s understanding that the issue is more hotly contested among residents of the Town, and that a previous vote for turf conversion of the Pond Road Fields was unsuccessful. Gale has experience working with municipalities and conservation

commissions to implement synthetic turf and, as mentioned above, it is Gale's opinion that this is the most viable option to increase the capacity of the Town's existing venues.

Given these facts, Gale has produced conceptual plans and estimates for a potential synthetic turf conversion at two locations. Location selection and design were based on the following:

- Proximity to environmental areas that may limit development.
- Proximity to populated areas.
- Proximity to the Bromfield School.
- Field deficits identified above.
- Existing use cases of the venues.

The Bromfield Field and Pond Road Fields were considered as potential options for turf conversions. However, due to the former's use as a public gathering area and location in the center of town, and the latter's proximity to wetlands and town wells, neither option was considered feasible for a synthetic turf conversion.

It is Gale's opinion that implementing at least one of these proposed plans will improve the athletic facilities in Town.

#### Harvard Park

This venue has an existing natural grass rectangular field and surfaced 400 meter running track. The running track surfacing is beginning to show wear, and the pavement base is cracking in numerous locations, indicating that it is reaching the end of its usable life. The natural grass field is used primarily as a game field for soccer and lacrosse, both by the Town and the Bromfield School. The field has drainage issues and bare spots in high traffic areas. To accommodate the needs identified in this report, Gale is proposing a multi-purpose rectangular (MPR) synthetic turf field, athletic lighting, and reconstruction of the existing track and D-areas. These improvements will increase both the quality and quantity of athletic events played at this venue, as the increased durability and drainage of a synthetic turf field means less maintenance with more usable hours. The athletic lighting will further increase the usable hours of the field, such that this facility would be capable of hosting multiple games and/or practices a day. This plan also includes small renovations to the existing shotput landing area, perimeter fence, and the installation of a scoreboard, which will help the venue serve the community's needs more effectively.

It should be noted that, due to the proximity to the wetlands, it is anticipated that the proposed improvements under this option may require a Notice of Intent (NOI) or a Request for Determination of Applicability (RDA) from the Town's Conservation Commission. Per available GIS data, a small portion of the existing and proposed running track is within a 100' wetland buffer zone. A Special Permit or variance from the Zoning Board of Appeals (ZBA) may be required for the proposed 70-80 ft. athletic lights. Also, with the installation of the synthetic turf field, a soil removal permit may be required by the Zoning Board. The cost for these improvements is estimated at ±\$3.4 million (refer to Enclosure No. 6 for the Conceptual Plan and itemized Conceptual Cost Estimates).

The information regarding major maintenance activities and replacement for synthetic turf fields and running tracks provided below is intended to paint a clear picture of upkeep requirements for the proposed improvements. Costs are based on the work being performed in 2023:

- Typical Full-Size Rectangular Synthetic Turf Field
  - Year 0 – Installation
  - Yearly Routine Maintenance (grooming, etc.) – \$7,500/year
  - Years 0 - 8 – Typical 8-Year Warranty Period
  - Year 11 - 13 – Turf Replacement +/- \$600,000
  
- Typical 8-Lane Polyurethane Running Track with Surfaced D-Areas
  - Year 0 – Installation
  - Years 0 - 5 – Typical 5-Year Warranty Period
  - Year 8 - 10 – Recoating and Restriping – \$250,000
  - Year 18 - 22 – Replacement/Reconstruction – \$1,000,000

Gale understands that the existing running track at Harvard Park was installed in 2002 and recoated in 2015. Based on this information, as well as observations made on site during this project, it is Gale's opinion that the track is approaching the end of its usable life and should be replaced/reconstructed as soon as funding is available.

#### Upper Depot Field

This venue has an existing open natural grass playing area that can sustain multiple fields of different orientations. The field is in fair condition, with numerous bare spots in high traffic areas from high usage. Site amenities are slightly lacking. To accommodate the needs identified in this report, Gale is proposing a combined multi-purpose rectangular (MPR) and 60' diamond turf field with athletic lighting. The nature of synthetic turf allows for the overlap of rectangular and diamond sports, such that a diamond can be added for both softball and little league. The proposed field would be situated perpendicular to the existing fields to maintain a youth sized grass area to the north, as well as to keep the proposed field outside of the wetland buffer zone that may impact permitting of the project. These improvements will provide a more durable playing surface that can withstand higher uses than the existing fields, and the athletic lighting will allow for increased and more flexible scheduling.

A Special Permit or variance from the Zoning Board of Appeals (ZBA) may be required for the proposed 70-80 ft. athletic lights. Also, with the installation of the synthetic turf field, a soil removal permit may be required by the Zoning Board. The cost for these improvements is estimated at ±\$2.5 million (refer to Enclosure No. 6 for the Conceptual Plan and itemized Conceptual Cost Estimates).

## **SECTION 5.0 – DECISION MATRIX**

Gale’s evaluation of the Town’s current athletic and recreational field use program has established the demand for additional athletic fields and renovations to the existing athletic fields throughout the Town. Based on the field use needs identified and other input proposed by the stakeholders, Gale has proposed two (2) potential designs for a synthetic turf conversion that will address most of the deficiencies associated with the Town’s field usage. These plans propose conversion at Harvard Park and/or Upper Depot Field. The decision matrix below provides a summary of the pros and cons of each.

	<u>Harvard Park</u>	<u>Upper Depot</u>
Meets identified demand for MPR fields	<b>Yes</b>	<b>Yes, but with minimal room for expansion</b>
Meets identified demand for ballfields	<b>No</b>	<b>Yes</b>
Proximity to Bromfield School	<b>Furthest</b>	<b>Moderate</b>
Change from existing use	<b>Medium</b>	<b>High</b>
Relative Construction Cost	<b>Most (\$3.5 mil)</b>	<b>Moderate (\$2.6 mil)</b>

## **SECTION 6.0 – OVERALL CONCLUSIONS**

This needs assessment is the first step in identifying inventory constraints, community needs, and a planning program to help the Town of Harvard better meet the recreational needs of the community. Gale determined the level of use for each athletic facility in the Town and formulated a planning program based on these use levels. As a result of these assessments and meetings with stakeholders, this report finds that eight of the nine game ready venues are currently overused (averaging greater than 250 uses per year). Based on these findings, it is reasonable to conclude that additional field space is warranted. However, as the existing venues do not have unprogrammed space and Gale was instructed not to explore other Town-owned parcels, it is Gale’s opinion that the Town should consider the conversion of at least one existing field into a synthetic turf playing field, potentially paired with athletic lighting. Gale’s Needs Assessment provides a planning program that will assist the Town of Harvard in its goal to provide adequate and safe athletic fields to its community.

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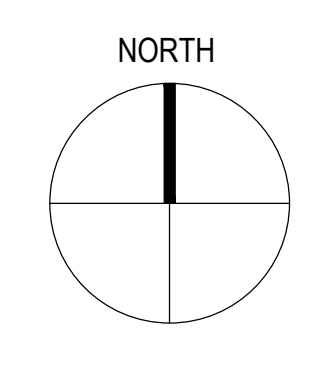
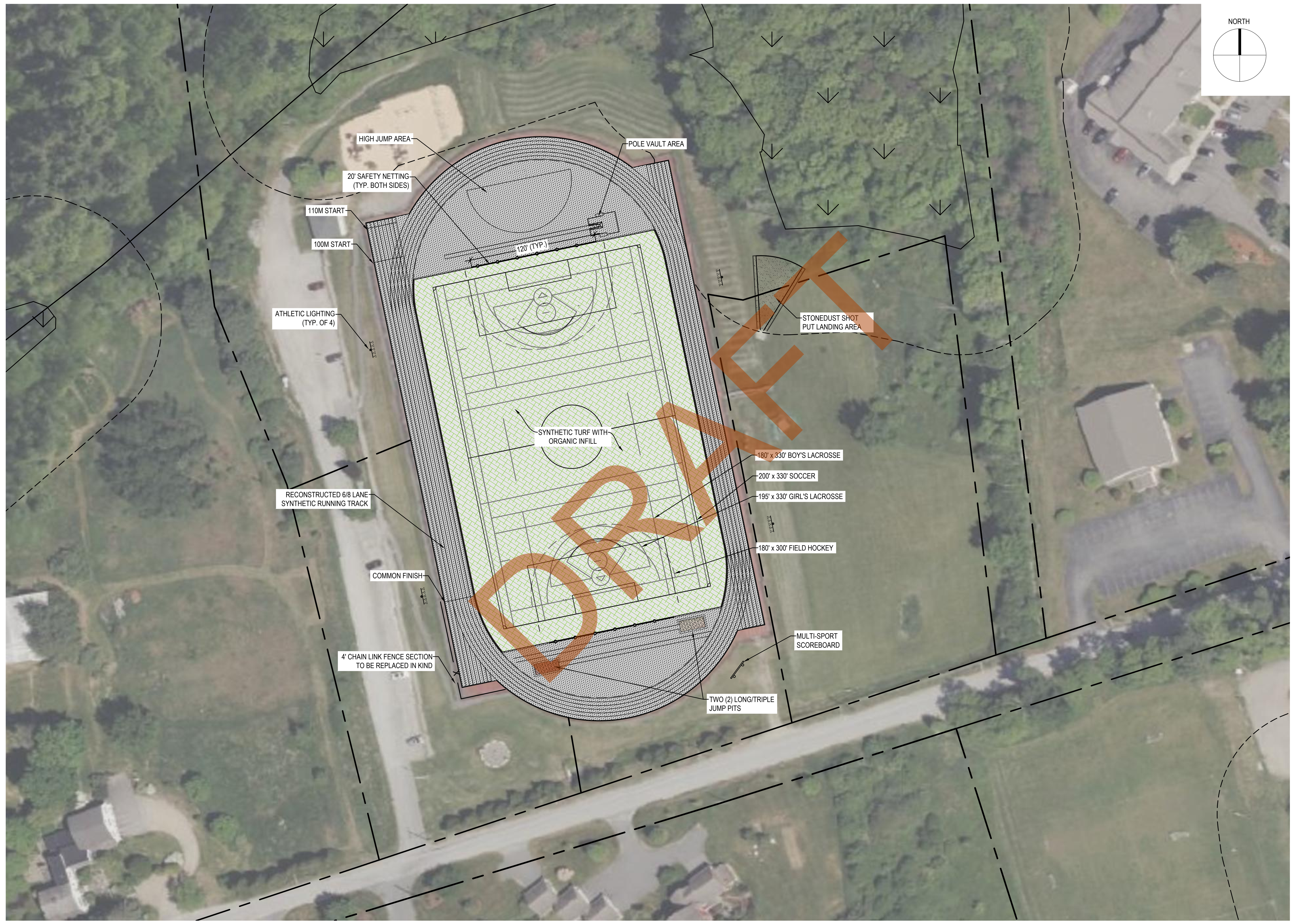
**ENCLOSURE 6**

**Conceptual Plans and Cost Estimates**

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**GALE**  
 Gale Associates, Inc.  
 Engineers and Planners  
 300 LEDGEWOOD PLACE | SUITE 300  
 ROCKLAND, MA 02370  
 P 781.335.6465 F 781.335.6467 www.gainc.com  
 Boston Baltimore Orlando Hartford Bedford

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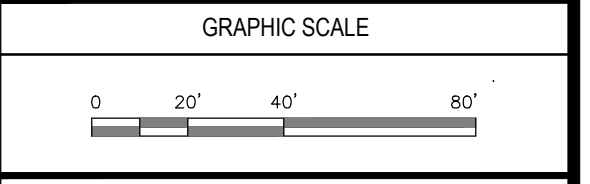
**CONCEPTUAL**

PROJECT  
**RECREATIONAL FIELD NEEDS ASSESSMENT  
 TOWN OF HARVARD**

OWNER  
**HARVARD  
 MASSACHUSETTS, 01451**

TOWN OF HARVARD  
 13 AYER ROAD  
 HARVARD, MA 01451

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	719240		
CADD FILE	719240_C101		
DESIGNED BY	RDY		
DRAWN BY	RDY		
CHECKED BY	KDH		
DATE	8/18/2023		
DRAWING SCALE	1" = 40'		



SHEET TITLE  
**HARVARD PARK  
 CONCEPTUAL LAYOUT**

DRAWING NO.  
**C101**  
 OF

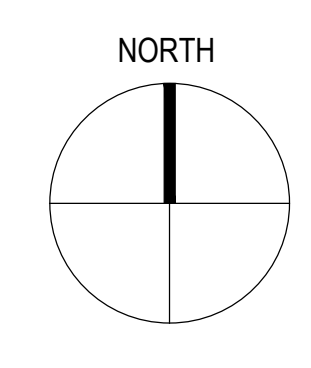
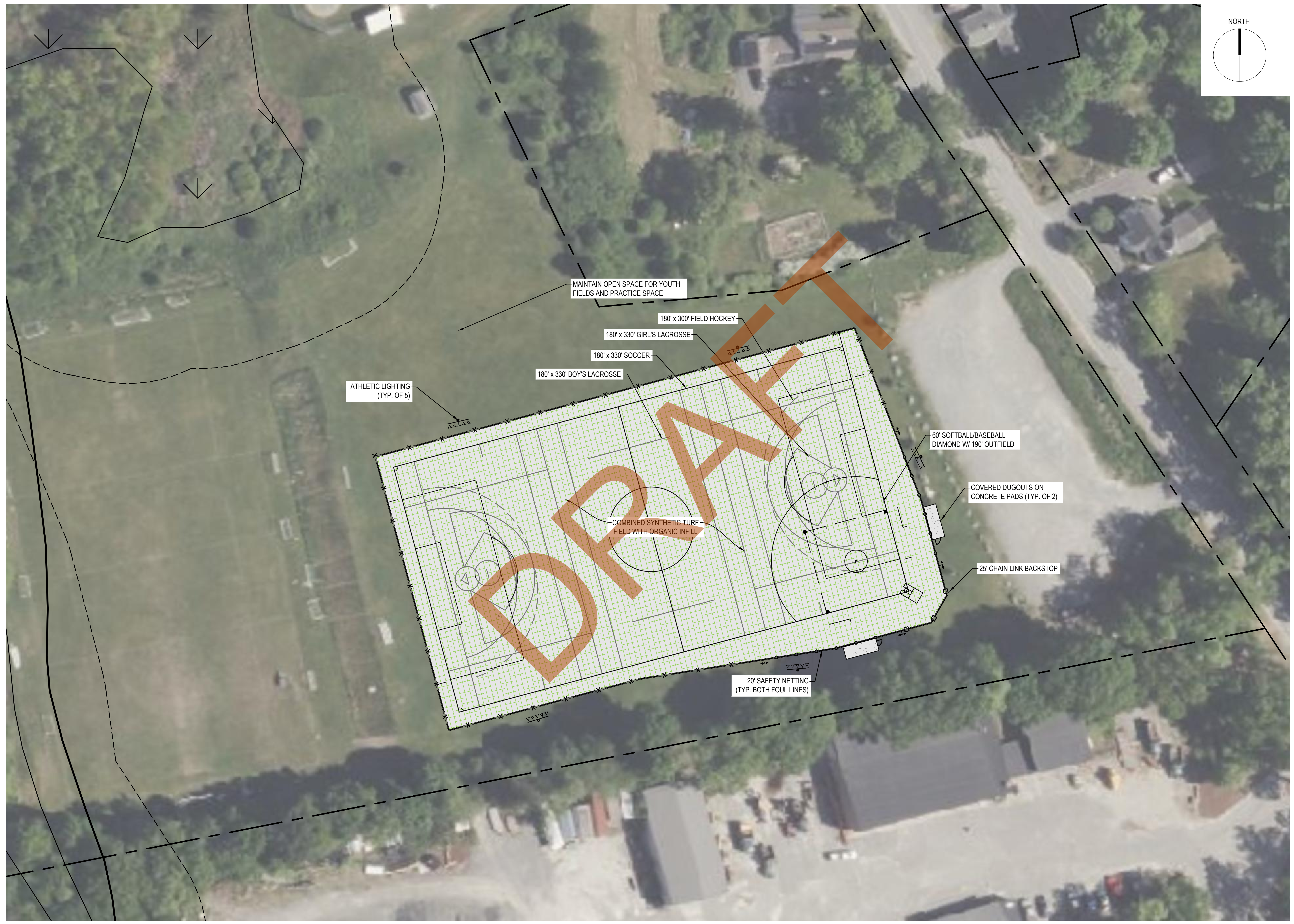
Conceptual Cost Estimate

HARVARD FIELD NEEDS ASSESSMENT - Harvard Park

Gale JN: 719240 (8/28/2023)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST	TOTAL COST
<b>1</b>	<b>GENERAL CONDITIONS</b>					\$ 298,834.22
a	General Conditions/Bonds and Insurance (10%)	LS	1	\$ 223,834.22	\$ 223,834.22	
b	Mobilization / Demobilization	LS	1	\$ 75,000.00	\$ 75,000.00	
<b>2</b>	<b>EROSION CONTROL / SITE PREPARATION / DEMOLITION</b>					\$ 146,427.78
a	Site Protection	LS	1	\$ 10,000.00	\$ 10,000.00	
b	Strip and Haul Topsoil (Assume 12")	CY	3,196	\$ 12.00	\$ 38,357.78	
c	Remove and Dispose of Existing Track Surfacing	LS	1	\$ 15,000.00	\$ 15,000.00	
d	Reclaim Existing Track Pavement	SY	6,807	\$ 10.00	\$ 68,070.00	
e	Existing Irrigation and Drainage Demolition	LS	1	\$ 15,000.00	\$ 15,000.00	
<b>3</b>	<b>SYNTHETIC TURF CONSTRUCTION</b>					\$ 738,418.01
a	Prepare Sub-base, Shape and Compact	SY	9,589	\$ 2.25	\$ 21,576.25	
b	Crushed Stone Base Under Field (10")	TON	3,996	\$ 38.00	\$ 151,832.87	
c	Synthetic Turf w/ Organic Infill	SF	86,305	\$ 6.00	\$ 517,830.00	
d	Turf Striping Sports	EA	4	\$ 7,000.00	\$ 28,000.00	
e	Geotextile Separation Layer	SY	9,589	\$ 2.00	\$ 19,178.89	
<b>4</b>	<b>CURBING</b>					\$ 130,159.80
a	Cast-in-Place Concrete Turf Anchor Curb	LF	441	\$ 42.00	\$ 18,517.80	
a	Cast-in-Place Concrete Curb w/ ACO 2000 Slot Drain	LF	573	\$ 80.00	\$ 45,816.00	
a	Cast-in-Place Concrete Curb w/ ACO 4000 Trench Drain	LF	731	\$ 90.00	\$ 65,826.00	
<b>5</b>	<b>TRACK SURFACE CONSTRUCTION</b>					\$ 493,831.64
a	Prepare Sub-base, Shape, and Compact	SY	6,807	\$ 2.25	\$ 15,315.75	
a	Pavement (1.5" Binder Course and 1.5" Wearing Course)	TON	1,013	\$ 170.00	\$ 172,200.89	
a	Track Surfacing and Striping (BSS-100, Red)	SY	6,807	\$ 45.00	\$ 306,315.00	
<b>6</b>	<b>TURF FIELD DRAINAGE</b>					\$ 91,000.00
a	Drainage Allowance	LS	1	\$ 91,000.00	\$ 91,000.00	
<b>7</b>	<b>FENCING</b>					\$ 42,505.00
a	4' Chain Link Fence	LF	137	\$ 65.00	\$ 8,905.00	
b	20' Safety Netting	LF	240	\$ 140.00	\$ 33,600.00	
<b>8</b>	<b>ATHLETIC EQUIPMENT</b>					\$ 20,000.00
a	Sport Goals	LS	1	\$ 20,000.00	\$ 20,000.00	
<b>9</b>	<b>TRACK AND FIELD EQUIPMENT</b>					\$ 26,000.00
a	Shot Put Landing Area	LS	1	\$ 7,500.00	\$ 7,500.00	
b	Pole Vault Box	LS	1	\$ 500.00	\$ 500.00	
c	Jump Pits with Sand Catchers and Covers	EA	2	\$ 9,000.00	\$ 18,000.00	
<b>10</b>	<b>SCOREBOARD</b>					\$ 50,000.00
a	Scoreboard	EA	1	\$ 50,000.00	\$ 50,000.00	
<b>11</b>	<b>LIGHTING</b>					\$ 500,000.00
a	MUSCO Package w/ Four Poles	LS	1	\$ 500,000.00	\$ 500,000.00	
					OVERALL SUBTOTAL:	\$ 2,537,176.45
					CONTINGENCY (25%):	\$ 634,294.11
					ENG/CPS SERVICES (10%):	\$ 253,717.65
					TOTAL:	\$ 3,425,188.21





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**CONCEPTUAL**

PROJECT  
**RECREATIONAL FIELD NEEDS ASSESSMENT  
 TOWN OF HARVARD**

OWNER  
**TOWN OF HARVARD  
 13 AYER ROAD  
 HARVARD, MA 01451**

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	719240		
CADD FILE	719240_C101		
DESIGNED BY	RD		
DRAWN BY	RD		
CHECKED BY	KDH		
DATE	8/18/2023		
DRAWING SCALE	1" = 40'		

GRAPHIC SCALE

SHEET TITLE

**UPPER DEPOT FIELD  
 CONCEPTUAL LAYOUT**

DRAWING NO.

**C102**

OF

**Conceptual Cost Estimate**

**HARVARD FIELD NEEDS ASSESSMENT - Upper Depot**

Gale JN: 719240 (8/28/2023)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST	TOTAL COST
<b>1</b>	<b>GENERAL CONDITIONS</b>					\$ 236,830.01
a	General Conditions/Bonds and Insurance (10%)	LS	1	\$ 161,830.01	\$ 161,830.01	
b	Mobilization / Demobilization	LS	1	\$ 75,000.00	\$ 75,000.00	
<b>2</b>	<b>EROSION CONTROL / SITE PREPARATION / DEMOLITION</b>					\$ 43,021.78
a	Site Protection	LS	1	\$ 10,000.00	\$ 10,000.00	
b	Strip and Haul Topsoil (Assume 12")	CY	2,752	\$ 12.00	\$ 33,021.78	
<b>3</b>	<b>SYNTHETIC TURF CONSTRUCTION</b>					\$ 690,148.34
a	Prepare Sub-base, Shape and Compact	SY	8,255	\$ 2.25	\$ 18,574.75	
b	Crushed Stone Base Under Field (10")	TON	3,440	\$ 38.00	\$ 130,711.20	
c	Synthetic Turf w/ Organic Infill	SF	74,299	\$ 6.00	\$ 445,794.00	
d	Turf Striping Sports	EA	4	\$ 7,000.00	\$ 28,000.00	
e	Geotextile Separation Layer	SY	8,255	\$ 2.00	\$ 16,510.89	
f	Turf Perimeter Curb	LF	1,124	\$ 45.00	\$ 50,557.50	
<b>4</b>	<b>TURF FIELD DRAINAGE</b>					\$ 79,000.00
a	Drainage Allowance	LS	1	\$ 79,000.00	\$ 79,000.00	
<b>5</b>	<b>FENCING</b>					\$ 133,880.00
a	Perimeter Fencing and Gates	LF	1,124	\$ 80.00	\$ 89,880.00	
b	25' Chain Link Backstop	LS	1	\$ 20,000.00	\$ 20,000.00	
c	20' Safety Netting	LF	200	\$ 120.00	\$ 24,000.00	
<b>6</b>	<b>ATHLETIC EQUIPMENT</b>					\$ 20,000.00
a	Sport Goals	LS	1	\$ 20,000.00	\$ 20,000.00	
<b>7</b>	<b>BASEBALL EQUIPMENT</b>					\$ 52,250.00
a	Bases	LS	1	\$ 750.00	\$ 750.00	
b	Portable Pitcher's Mound	LS	1	\$ 10,000.00	\$ 10,000.00	
c	Portable Foul Poles	EA	2	\$ 750.00	\$ 1,500.00	
d	Covered Dugouts with Concrete Pads	EA	2	\$ 20,000.00	\$ 40,000.00	
<b>8</b>	<b>ATHLETIC LIGHTING</b>					\$ 600,000.00
a	MUSCO Package w/ Five Poles	LS	1	\$ 600,000.00	\$ 600,000.00	
						<b>OVERALL SUBTOTAL: \$ 1,855,130.13</b>
						<b>CONTINGENCY (25%): \$ 463,782.53</b>
						<b>ENG/CPS SERVICES (10%): \$ 185,513.01</b>
						<b>TOTAL: \$ 2,504,425.68</b>