Nesra Engineering, LLC
111 Washington Street
Plainville, MA 02762

MARSHALL SIMONDS MIDDLE SCHOOL ATHLETIC FIELD RENOVAITON PROJECT
ALTERNATIVES ANALYSIS

Project Overview

The proposed project at Marshall Simonds Middle School involves the replacement of the existing natural grass athletic field(s) with new synthetic turf athletic fields, installation of athletic field lighting, terraced spectator seating, ADA-compliant parking, and accessible routes. The site is constrained by resource areas on three sides, including an intermittent stream to the north and wetlands to the east and southeast.

Regulatory Framework

Massachusetts Regulations

- **310 CMR 10.58(1) – Intermittent Streams:**
  According to 310 CMR Section 10.58 – 1, intermittent streams are not classified as rivers because they do not contain surface water year-round. Therefore, there is no riverfront protection requirement for these streams.

- **Town of Burlington Wetlands Protection Bylaw:**
  The stream adjacent to the site is mapped as a "Regulatory Stream" under the Town of Burlington's Wetlands Protection Bylaw (map dated 12/12/2013), with a 200-foot riverfront area. This provides additional stream protection in accordance with local regulations.

- **Outstanding Resource Water (ORW):**
  According to Massachusetts GIS (MassMapper), the site is mapped as part of an Outstanding Resource Water (ORW) area. While not all areas within this delineated region are classified as ORWs, certain waters, such as Class A public water supplies and their tributaries, are afforded protection under 314 CMR 4.06. This project will aim to maintain and protect the quality of these waters in accordance with state regulations.

Project Impacts and Compliance with Performance Standards

Protection of Resource Areas

The proposed work will be designed to meet all relevant performance standards for the Riverfront Area and other protected resource areas. This includes minimizing impacts to wetlands, streams, and surrounding ecosystems.

Protection of Rare Species

The proposed project is not located within a designated habitat area as indicated by Natural Heritage and Endangered Species Program mapping, nor is it near a certified vernal pool.

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Practicable and Substantially Equivalent Alternatives

Definition of Practicable Alternative
In accordance with 310 CMR 10.58, a practicable alternative is one that is economically feasible, considering costs, technology, logistics, and the overall project purpose. The alternative must also be capable of being implemented while considering the environmental and resource constraints at the site.

Existing Conditions
The project site has been disturbed since the construction of the original natural grass athletic fields sometime between 1950 and 1960. The area includes historically filled wetlands, as well as existing sewer and drainage infrastructure crossing the adjacent stream. The athletic fields have additional infrastructure, such as fencing, goalposts, and electrical lines, which will be maintained as part of the project.

Alternatives Considered
Based on a comprehensive **Athletic Facilities Assessment and Master Plan** conducted by Nesra Engineering, LLC in 2023, several alternatives were evaluated for the athletic field replacement. The Master Plan included an assessment of current conditions, demographic projections, and an analysis of the town's growing demand for athletic facilities. The recommendations prioritized renovations and improvements to the town's fields, with a focus on synthetic turf installation at key sites to maximize usage.

- **Synthetic Turf Fields** were selected as the most viable and cost-effective solution. Synthetic turf fields can withstand more than 500 hours of play annually, whereas natural grass fields are limited to approximately 100 hours of use per year. Given the high demand for athletic facilities and limited land for expansion, upgrading to synthetic turf is the only viable alternative.

- **Natural Grass Fields** are not feasible due to their limited durability, high maintenance costs, and inability to accommodate increasing usage demands. Maintaining natural grass fields would involve significant ongoing costs for mowing, fertilizing, aeration, irrigation, and potential herbicide treatments.

- **Alternative Land Acquisition** was considered but deemed not feasible due to financial and logistical constraints in acquiring new land for athletic facilities.

Cost Comparison
The following table summarizes the cost comparison for the various alternatives:

Alternative Type	Cost Estimate	Comments
SBR Infills for Synthetic Turf	$107,640	Cost-effective, minimal environmental impact
Alternative Infill with Pad	$430,050	Significant increase in costs due to base pad requirement
Natural Grass Field	High Maintenance	Higher ongoing maintenance costs; limited use capacity

Based on the above cost comparison, natural grass fields and more expensive infill options are not considered practicable alternatives due to prohibitive costs and environmental constraints.

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Final Selected Alternative

The selected alternative for the athletic fields at Marshall Simonds Middle School is the installation of **synthetic turf** fields. This alternative offers the best combination of cost-effectiveness, durability, and sustainability, meeting both the athletic needs of the community and regulatory requirements for environmental protection.

Field and Layout Modifications

Several modifications to the initial layout have been made in response to site constraints and environmental considerations:

- The **field layout** has been shifted southwest, minimizing disturbance to the adjacent wetlands and resource areas.

- The original **perimeter walkways** have been reduced to lessen the impact on the surrounding environment. While perimeter walkways were desired for ease of access and aesthetics, the revised design strikes a balance between functionality and environmental impact.

- An **emergency access** point, though initially recommended, has been removed to further reduce disturbances to the resource areas.

- The design includes **bioretention areas** around the perimeter to capture and treat surface runoff. For areas where bioretention is not feasible, a **stone diaphragm** will be installed to manage water flow.

Mitigation Measures for Environmental Protection

- **Runoff Management:** Bioretention areas will treat stormwater runoff from the field. These areas will be inspected and maintained as part of the field's regular operations to ensure effective water quality treatment.

- **Crumb Rubber Migration:** While we do not anticipate significant crumb rubber migration, **niche areas** have been incorporated to contain and groom any material that may shift. These zones will be maintained as part of the field's ongoing operations and maintenance plan.

- **Field Usage:** The design includes dedicated gathering spaces for teams and storage areas for sports equipment, ensuring that the field can be used for a variety of athletic events while protecting the integrity of the surrounding environment.

Conclusion

The selected synthetic turf alternative, as refined through careful design modifications, public meetings, and ongoing discussions with the Conservation Commission, is the most suitable and environmentally responsible solution for the Marshall Simonds Middle School Athletic Field Renovation Project. The plan balances the community's needs for expanded athletic facilities, accessibility, and environmental protection while ensuring long-term sustainability. Supplemental information from previous investigations are included as an attachment for your reference.

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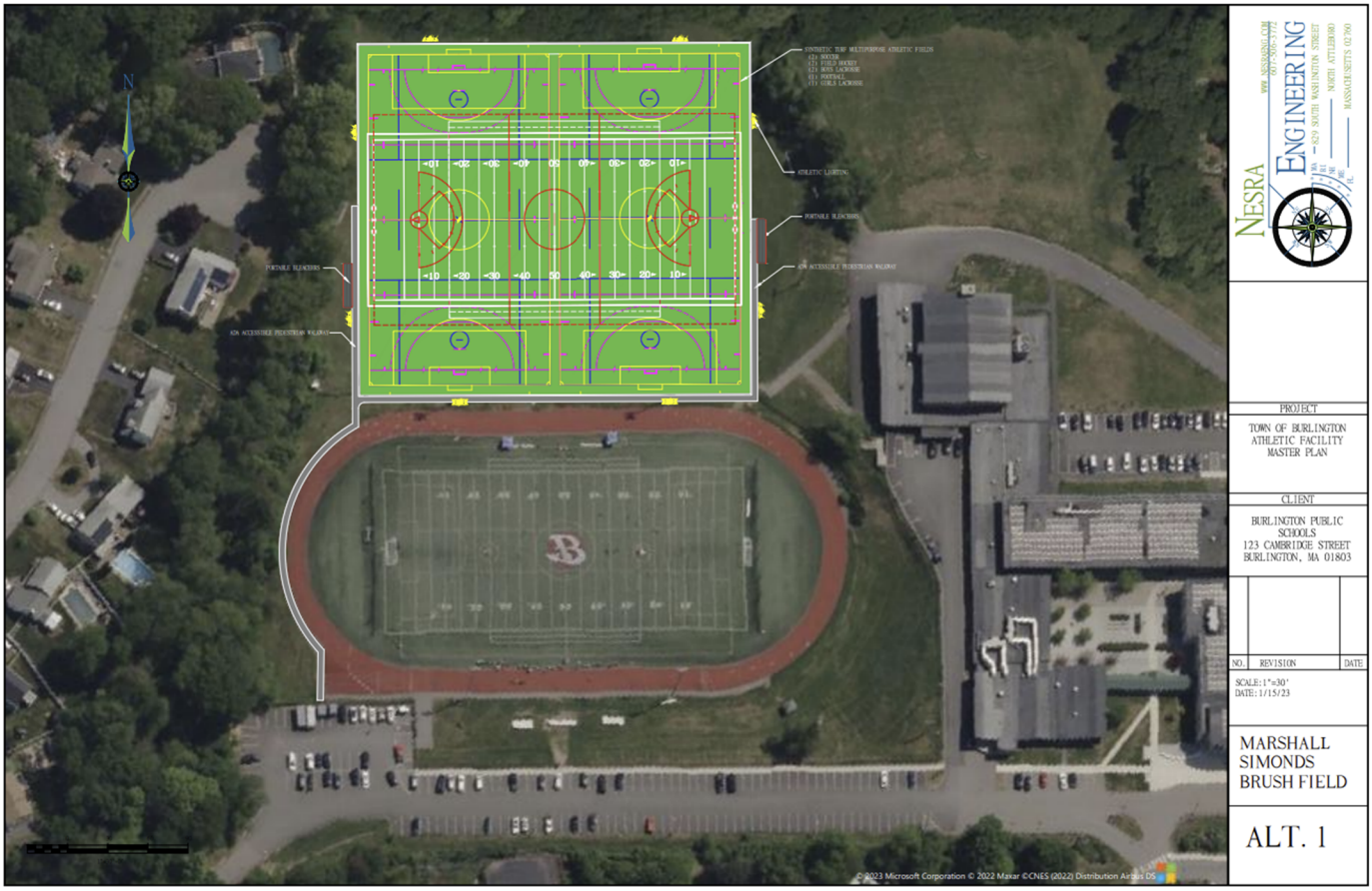
Original Design Alternatives and associated cost estimates included in the 2023 Master Plan



Town of Burlington
Athletic Facility Master Plan
Cost Estimate - Marshall Simonds Brush Field Alt. 1

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST	TOTAL COST	REMARKS
1	**General Conditions**					$ 75,000.00	
A	*Bond, Mobilization and General Conditions*						
2	**Demolition and Site Preparation**					$ 100,000.00	
A	*Temporary Facilities (Fencing, Const. Entrance Portable Toilets, etc.)*						
B	*Demolition and Erosion Control*						
3	**Double Synthetic Turf Multipurpose Field**					$ 2,650,000.00	
A	*Infilled Synthetic Turf, Goalposts, Scoreboard, Walkways, Port. Bleachers*						
4	**Athletic Field Lighting**					$ 850,000.00	
A	*Athletic Field Lighting*						

Subtotal	$ 3,675,000.00
Contingency (10%)	$ 367,500.00
Soft Costs (10%)	$ 367,500.00
TOTAL	$ 4,410,000.00

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Town of Burlington
Athletic Facility Master Plan
Cost Estimate - Marshall Simonds Brush Field Alt. 2

NESRA ENGINEERING

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST	TOTAL COST	REMARKS
1	**General Conditions**					$ 75,000.00	
A	*Bond, Mobilization and General Conditions*						
2	**Demolition and Site Preparation**					$ 100,000.00	
A	*Temporary Facilities (Fencing, Const. Entrance Portable Toilets, etc.)*						
B	*Demolition and Erosion Control*						
3	**Synthetic Turf Baseball Field with Multipurpose Outfield**					$ 2,900,000.00	
A	*Infilled Synthetic Turf, Backstop, Dugouts, Scoreboard, Port. Bleachers*						
4	**Athletic Field Lighting (Double Field)**					$ 850,000.00	
A	*Athletic Field Lighting*						

Subtotal	$ 3,925,000.00
Contingency (10%)	$ 392,500.00
Soft Costs (10%)	$ 392,500.00
TOTAL	$ 4,710,000.00

Alternative 1 was selected and funded by the Town. It should be noted that although the Master Plan includes environmental and permitting information, they are based on preliminary data, and online resources. Action conditions, as stated in the report, are subject to change based on geotechnical investigations, resource delineations, etc.

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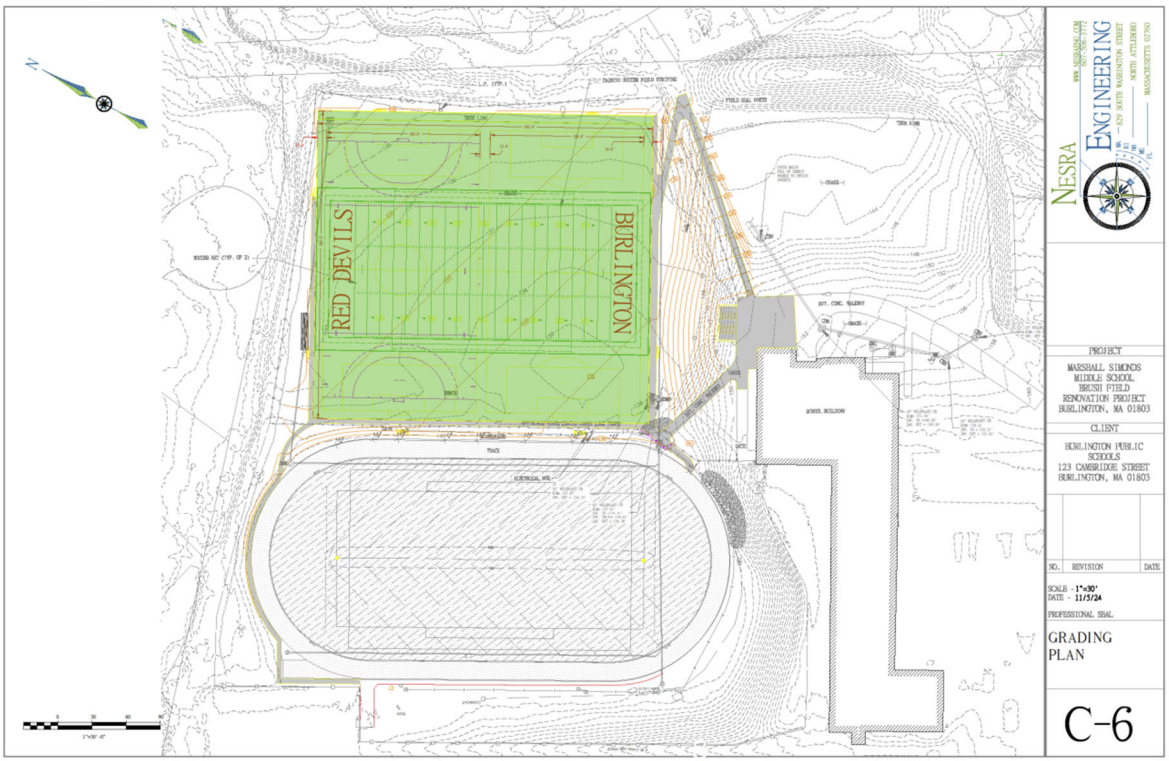
When the project was selected to move forward, site investigations were conducted including survey, resource area delineation, additional schematic design alternatives, and alternative analysis of various infill systems.



GRADING PLAN VI

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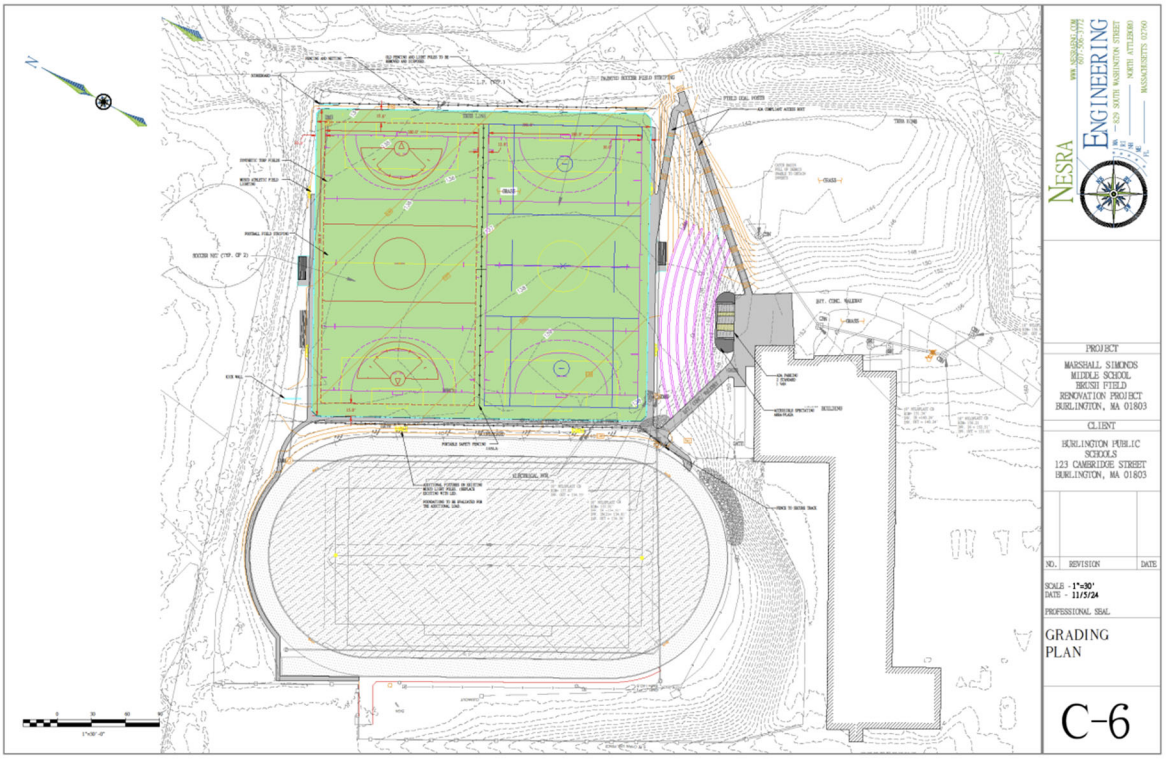
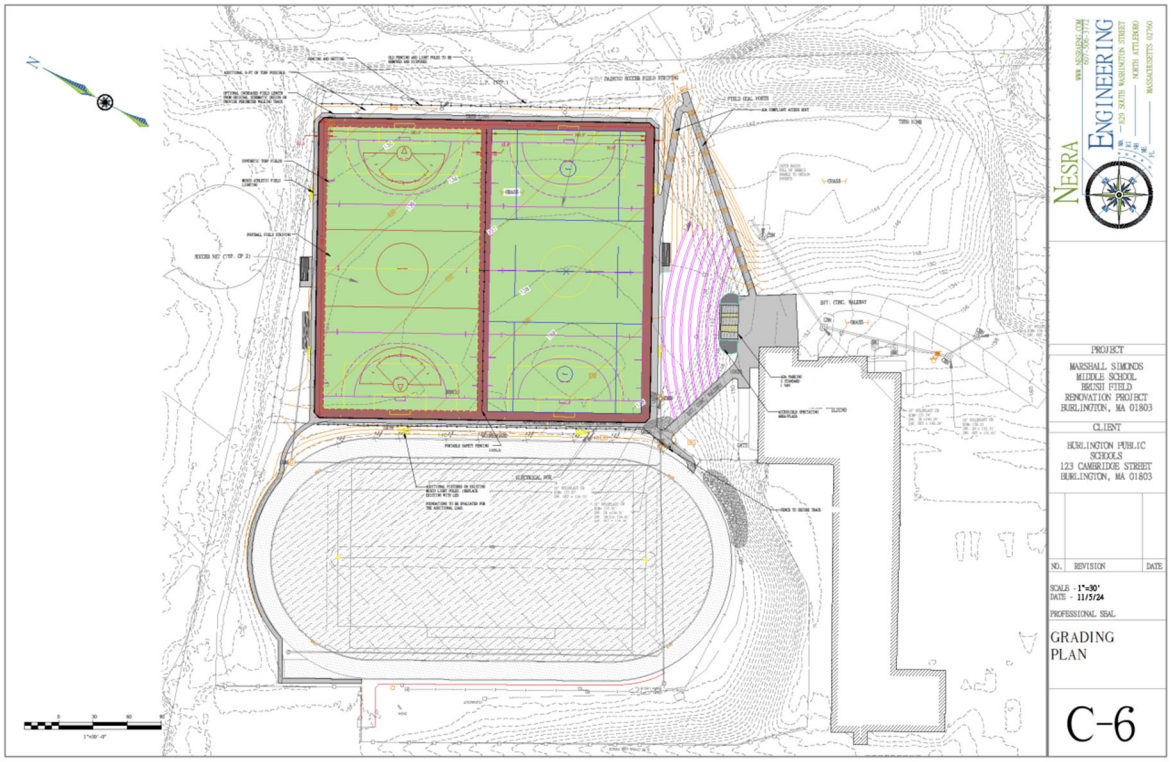


GRADING PLAN V2



GRADING PLAN V3

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Several site seating alternatives were evaluated, and to minimize impact, natural terraced seating with a retaining wall system with a mix of natural grass and ADA concrete design was selected.

Alternative infills were evaluated, and a cost estimate comparison was provided.

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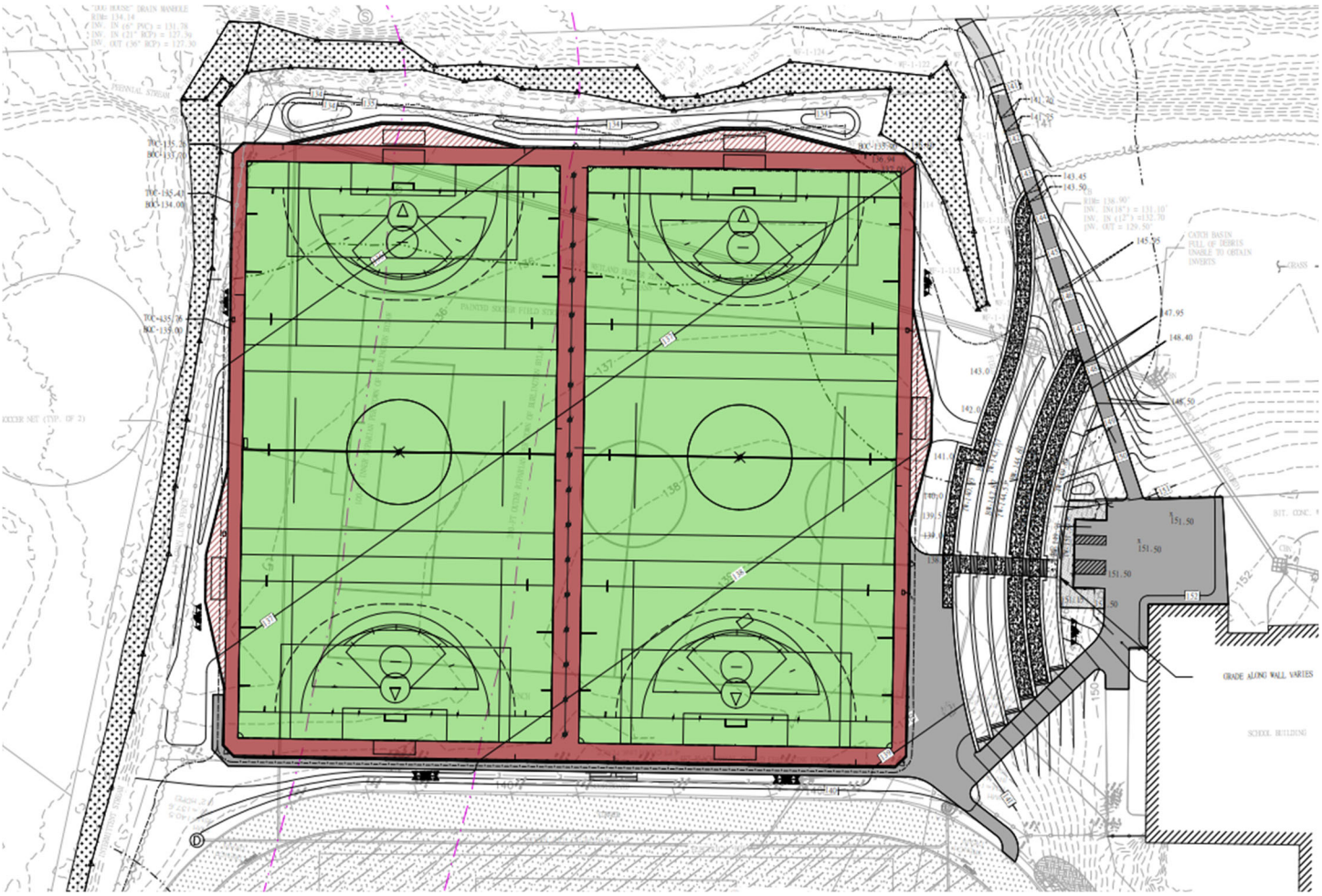
Town of Burlington
Alternative Infill and Padding
Cost Estimate - Marshall Simonds Brush Field

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST	TOTAL COST	REMARKS
1	**Brock Fill**					$ 430,050.00	
A	*Brock Pad*	*SF*	*141000*	*$ 1.75*	*$ 246,750.00*		SP-17
B	*Brock Fill*	*LB*	*141000*	*$ 0.90*	*$ 126,900.00*		1 LB/SF ESTIMATED
C	*Additional Sand*	*LB*	*282000*	*$ 0.20*	*$ 56,400.00*		2 ADDITIONAL LBs
2	**TPE**					$ 630,270.00	
A	*Brock Pad*	*SF*	*141000*	*$ 1.75*	*$ 246,750.00*		SP-17
B	*TPE Infill*	*SF*	*141000*	*$ 2.72*	*$ 383,520.00*		
3	**EPDM**					$ 838,950.00	
A	*Brock Pad*	*SF*	*141000*	*$ 1.75*	*$ 246,750.00*		OPTIONAL
B	*EPDM*	*SF*	*141000*	*$ 4.20*	*$ 592,200.00*		

Cost of SBR for the same size field included in the original estimate is $107,640

The latest design alternative is below:



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