



Gale Associates, Inc.

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March 1, 2007

Hans Larsen, Executive Director
Town of Wellesley Selectmen's Office
Wellesley Town Hall
525 Washington Street
Wellesley, MA 02482

Re: Sprague Fields Complex
Gale JN 712210

Dear Mr. Dinwoodey & Members of the Commission:

Environmental site assessment studies completed to date have not identified a significant risk to Sprague Field users based on toxicity due to soil contamination. However, there remains a physical hazard associated with deleterious materials migrating upward, largely due to frost action, through the natural turf. These materials, primarily metal and glass fragments placed in the historical landfill, can be found in the natural turf fields each spring, and represent a significant threat to facility users. The Massachusetts Department of Environmental Protection (MADEP) has mandated that this hazard be mitigated/remediated under the Massachusetts Contingency Plan (MCP).

Gale has identified two approaches to the resolution of this hazard, the development of two high-end natural turf fields, or the development of two synthetic turf fields. According to the Licensed Site Professional (LSP) of Record for this site, Mr. James Luker, either approach will fully resolve the safety hazard and allow for formal closure of the site with the MADEP. Gale has been requested to provide this letter which attempts to differentiate between these two approaches and to qualitatively comment on which may provide a more effective solution to the safety hazard.

As reflected in the cross section provided as SK-1, the natural turf field would be constructed by:

1. Removal of the top soil/loam layer.
2. Grading and compacting the existing base material.
3. Placement of additional fill to raise the grade and provide additional buffer to deleterious materials.
4. Placement of a geo-textile fabric.
5. Placement of a 6-inch deep processed stone drainage layer with plastic flat panel drains.
6. Placement of irrigation piping.
7. Placement of a 6-inch coarse sand-top soil rootzone mix and irrigation piping.
8. Placement of 2-inch thick athletic turf sod.

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This results in a total depth of approximately 18 inches of new, "clean" material, and a geotextile fabric above the deleterious material. Again, the LSP of Record has opined that this constitutes a sufficient barrier for limiting the migration of undesirable materials from the landfill deposits below.

As reflected in the cross section provided at SK-2, the synthetic turf field has a very different cross section, which includes:

1. Removal of the top soil/loam layer.
2. Removal of the underlying sub-base material to the intended base elevation.
3. Grading and compacting the existing sub-base material.
4. Placement of a geo-textile fabric.
5. Placement of a 12-inch deep processed stone drainage layer with trenched in underdrain pipes (or plastic flat panel drains).
6. Placement of a thin top stone layer for fine grading.
7. Placement of a heavy carpet with a 3-ply fiberglass and urethane backing and a 2.5" tufted fiber height.
8. Installation of 2 inches of sand and rubber infill on top of the carpet between the tufted fibers.

The synthetic turf cross section affords several obvious advantages as it relates to mitigation of the safety hazard resulting from the migration upward of undesirable material. They are as follows:

- Given the required over-excavation to reach the proposed subgrade to construct the synthetic turf cross section, more undesirable material; potentially containing hazardous objects, will be removed in its excavation and construction.
- The natural turf stone drainage layer and the synthetic turf stone base are made of similar materials, but have two significant differences. First, the synthetic turf stone base is twice as deep as the natural turf drainage layer and is therefore twice as heavy, and any migration path through it is twice as long. One could reasonably assume that it is twice as effective as a barrier. Secondly, the synthetic turf stone base is virtually free (less than 1%) of fines (silt material passing the 200 openings per inch sieve size). As a result, this strata is much more non-frost susceptible, and it is primarily frost action that causes the upward movement of objects to the surface.
- Perhaps the most formidable aspect of the synthetic turf system in limiting the potential for contamination of the playing surface with undesirable objects is the turf carpet itself. As noted previously, the carpet is backed by a heavy 3-ply carpet backing constructed of fiberglass and polyurethane. It is unlikely that foreign objects which do make their way through the barriers



discussed previously would penetrate the carpet and 2 inches of infill material.

- The surface of the carpet is typically 10 degrees or more warmer than the ambient temperature due largely to the black infill. As a result, the carpet and underlying substrate are not likely to experience as many freeze-thaw cycles each winter. It is these cycles that "work" the substrate and result in the migration of stones and other undesirable objects to the surface.

While we are unable to model or otherwise quantify the difference in the behavior of the two systems (natural grass versus synthetic turf) as it relates to the provision of an effective barrier to the movement of objects to the surface, for the reasons noted above, it is our judgment that the synthetic turf system would provide a more effective barrier.

If you have any further questions after reviewing the above information, please do not hesitate to contact me.

Very truly yours,

GALE ASSOCIATES, INC.

A handwritten signature in black ink that reads "William J. Seymour". The signature is written in a cursive style with a large, prominent initial "W".

William J. Seymour
Director, C/E/T Division

WJS/gmc

cc: David Dinwoodey, Chair-Wellesley CPC
Michael C. Jennings, PFTF

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SYNTHETIC TURF CURB DRAIN DETAIL

SPRAGUE FIELDS COMPLEX
 WELLESLEY, MA 02482

PROJ. NO:
 712210

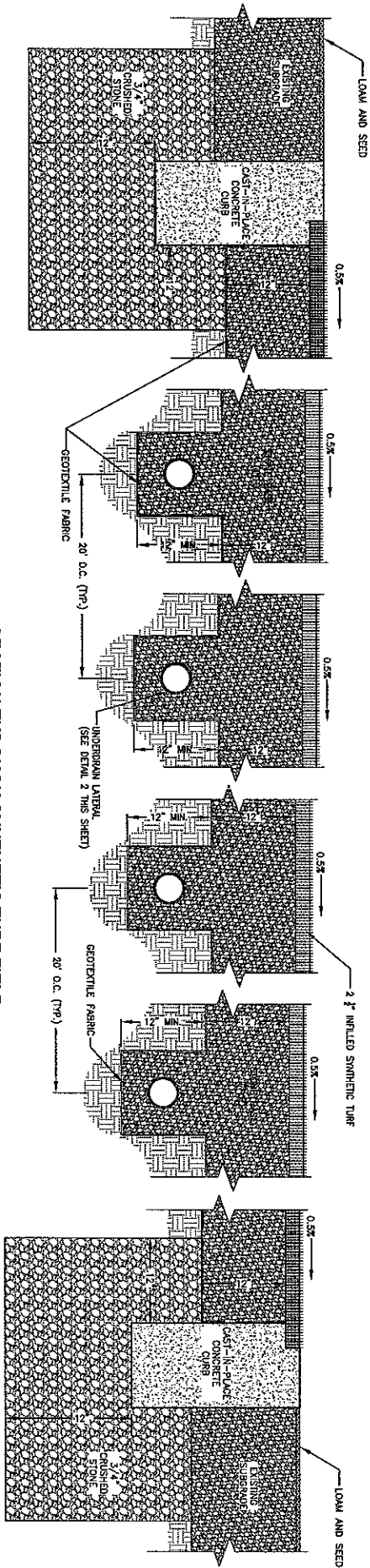
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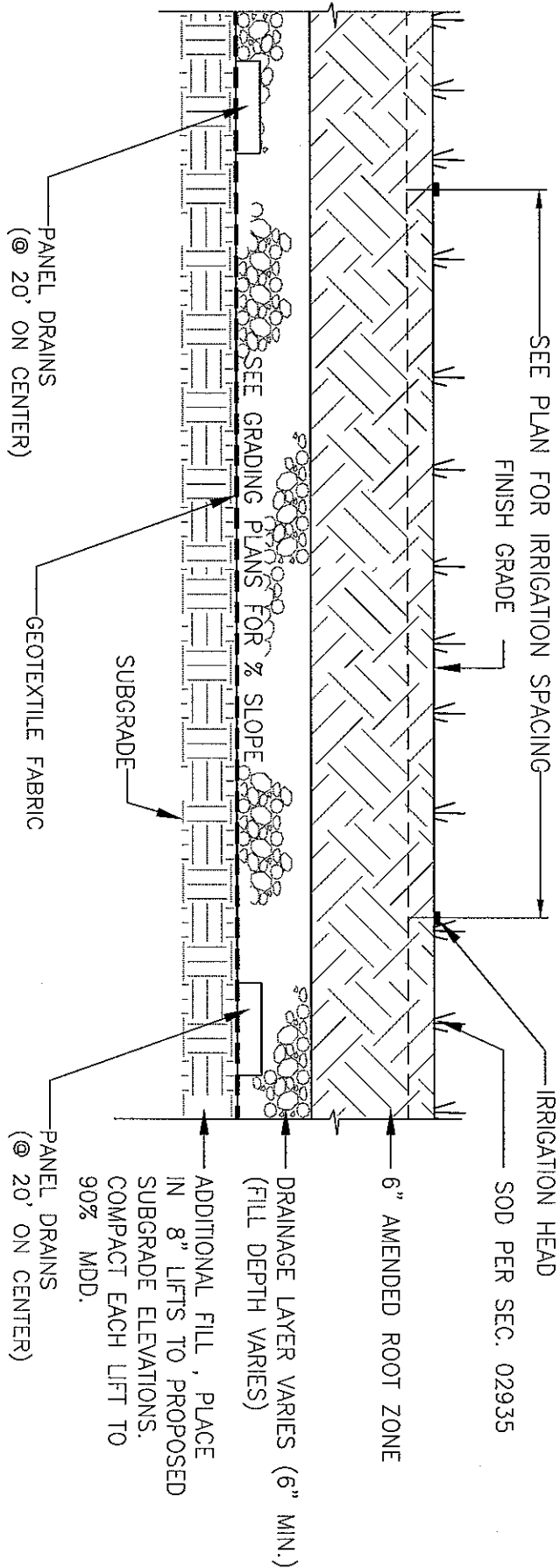
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CADD FILE
 712210

DATE:	3/1/07
SCALE:	NOT TO SCALE
REVISION:	
SK1	
SHEET	1 OF 1

SECTION THROUGH SYNTHETIC TURF FIELD





TYPICAL NATURAL ATHLETIC TURF SECTION

NATURAL TURF SECTION DETAIL



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SPRAGUE FIELDS COMPLEX
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SK2

SHEET	1	OF	1
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