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October 15, 2014

Mr. Charles J. Aspinwall
Town Administrator
Town of Millis
900 Main Street
Millis, MA 02054

Subject: Athletic Fields Preliminary Design Phase – Additional Cost Information
High School Stadium and Clyde Brown Recreation Fields

Dear Mr. Aspinwall:

As requested, CDM Smith Inc. (CDM Smith) is pleased to present additional information on alternative infill materials for the proposed synthetic turf fields along with costs for installing natural turf or alternative infill materials at the High School stadium and Clyde Brown recreation fields. Following the NBC story broadcast last week, the Town of Millis (Town) requested additional information on costs for alternative infill material and natural turf fields. CDM Smith has provided a brief discussion of these topics below.

NBC National Story on Synthetic Turf Fields

As you know, the NBC story reported on incidents of cancer in soccer goalies and questioned the risks associated with crumb rubber infill in synthetic turf systems. It was stated in the NBC piece that there is no evidence linking these cases with artificial turf and that further study should be conducted. Following its airing, the Synthetic Turf Council (STC) issued their official response (copy attached) to the NBC story. As stated in the STC's response, there are a significant number of studies available (links to studies provided by the STC) that show no elevated health risk due to exposure to synthetic turf systems.

CDM Smith reviews current information on potential health effects of synthetic turf fields as it becomes available and maintains a library of these studies. We will continue to work closely with Millis to provide current information while also assisting the Town in making informed decisions.

Planning Level Cost Estimates for Natural Turf Fields

Subsequent to the NBC story, the Town requested additional cost estimates for installing natural turf fields at the proposed High School stadium field and the Clyde Brown School recreation field. We have provided the costs below with the understanding that our preliminary design phase focused on synthetic turf fields at these locations, and not natural turf. However, we did complete



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preliminary quantity takeoffs to provide these planning level cost estimates. Should the Town elect to change the recommendations approved by both the Fields Committee and the Board of Selectmen, CDM Smith reserves the right to re-evaluate and modify the costs presented below.

If the Town decides to install natural grass where synthetic turf was proposed, CDM Smith estimates a project cost reduction of \$350,000 to \$400,000 at Clyde Brown and \$450,000 to \$500,000 at the High School stadium, including irrigation and appropriate underdrain systems. While these cost reductions are possible with natural turf installation, this approach may also result in additional costs, mainly due to the likely need to construct an additional natural turf field (e.g., at Oak Grove) to allow proper resting of all fields, and due to increased annual maintenance costs for all new natural fields.

Also, if new natural turf fields are constructed, the Town will be improving existing natural turf fields, which are currently in poor condition due to overuse, significant recent increases in participation, and no available time to schedule field resting. We have therefore listed below additional cost and operational considerations and concerns for the Town's information.

- Capital Costs for New Natural Turf Fields at Oak Grove Farm (an estimated increase in design and construction cost of about \$570,000) to allow resting and rotation of fields.
- New natural turf fields will require yearly maintenance, watering and replacement with ongoing use.
- By maintaining natural turf fields, Town will lose playing time due to the extended time required to reconstruct the fields and establish proper turf growth at the High School and Clyde Brown School recreation fields.
- Potential elevated injuries rates, higher than rates anticipated on artificial turf fields.

While the installation of natural turf at the High School and Clyde Brown will reduce initial capital costs, it is anticipated that the Town would need to spend additional capital funds for additional natural turf fields (e.g., at Oak Grove) and increased project lifecycle costs due to increased operation and maintenance costs associated with natural turf fields.

Alternative Options for Synthetic Turf Infill Materials

Subsequent to the NBC story, the Town requested information on alternative options to the crumb rubber infill material referenced in the report. We have listed below some alternative infill materials that are currently manufactured and available for installation.

- Geofill (Ground Coconut Husks which required installation of a subbase pad)

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- Thermoplastic Elastors (TPE- virgin rubber with no metals, produces highest field temperatures, expensive due to manufacturing process)
- Ethylene Propylene Diene Monomer (EPDM- virgin rubber product with no metals, expensive due to manufacturing process)
- Cushion Fall (Coated rubber infill material to reduce potential volatile organic compounds)

CDM Smith has provided links to these alternative infill materials for the Town to review and learn more about these products. While talking to representatives and researching these alternative infill materials, we have learned that Millis should budget an additional \$2.00 to \$2.50 per square foot for installation. Based on this cost information, CDM Smith anticipates the additional cost for the stadium infill material will be from \$156,000 to \$195,000 and, for Clyde Brown, the added cost would be \$120,000 to \$150,000, depending on the selected alternative infill material.

As mentioned during the Fields Committee meeting last week, CDM Smith typically hosts meetings with artificial turf specialist to present their product information to the Town during the final design phase. These meetings are helpful in educating all interested individuals on current and available synthetic turf systems and alternatives along with any new infill products or technology and associated costs. With input from Millis on needs and preferences, we then determine the product that will be incorporated into final design documents.

We trust that the information presented in this letter addresses your recent inquiries and questions. Should you have any additional questions, please feel free to call me at (508) 505-1056.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'Charles Adelsberger'.

Charles Adelsberger, P.E., BCEE
Associate
CDM Smith Inc.

cc: James McKay (Millis Assistant DPW Director)
Ian Mead, Glenn Howard, Eilish Corey (CDM Smith Inc.)



DATE: October 9, 2014

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**STC Response to NBC National News Story
on Health Effects of Crumb Rubber in Synthetic Turf**

Atlanta, GA – The Synthetic Turf Council (STC) and the synthetic turf industry take the health, safety, and welfare of synthetic turf users very seriously. We sympathize with those individuals who are battling a serious illness. As the industry’s trade association, it is our responsibility to address the issues raised in the NBC story in an objective manner.

The STC believes that reliable scientific data should be the foundation of any discussion regarding the safety of synthetic turf with crumb rubber infill. During the past two decades, there have been more than [60 technical studies](#) and reports that review the health effects of crumb rubber as it pertains to toxicities from inhalation, ingestion and dermal contact, as well as cancer. These studies and reports were performed during the past 22 years by independent organizations such as: Connecticut Department of Health, Hofstra University, New York State Department of Environmental Conservation, The New York City Department of Health and Mental Hygiene and University of California Berkeley. The preponderance of evidence shows no negative health effects associated with crumb rubber in synthetic turf. As NBC factually reported, “there is no research directly linking crumb rubber to cancer.”

According to an EPA report, *Child-Specific Exposure Factors Handbook*, “supplemental chronic risk estimates indicate regular exposure (e.g. regular play on ground rubber filled athletic fields) to ground rubber for the length of one’s childhood does not increase risk of cancer above levels considered by the state of California to be *de minimus*.”

The STC supports the extensive scientific research already performed and any future opportunities for science-based research.

Crumb rubber used in synthetic turf systems should always meet or exceed the Synthetic Turf Council’s [quality guidelines](#).

The STC website, www.syntheticturfCouncil.org, includes [many of the studies](#) on the human health and environmental safety of synthetic turf and crumb rubber.

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