

# Budgeting for Sports Field Construction

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In the past year, the Town of Oakville has undertaken construction of four soccer fields that will collectively form one of the Town's primary locations for tournaments. Field construction began in late winter 2001 with the fields anticipated being open in May 2002. Three fields were topsoil fields with each field measuring 100 m x 64 m and one field measured 105 m x 73 m. This article will discuss the costs associated with constructing quality athletic soccer fields along with some helpful hints to save money and potential headaches.

The costs associated with quality athletic fields is significant, not only in the initial construction but also later in terms of ongoing maintenance. Financial and land decisions with regard to the size and number of fields usually must be made several years in advance of actual field and park construction. The key is to develop a plan and remain true to your vision because there will be many bumps along the path to success.

With losing the ability to purchase park-land under the Development Charges Act, most municipalities do not have the luxury to purchase additional land for major sports parks. Hence obtaining enough parkland for a major sports park with only the 5% parkland dedication available under the Planning Act often means amassing land from several landowners. These negotiations, discussions with your finance staff to ensure the funding is in place, and ultimately, the approval by

elected officials can prove challenging and difficult. However, if one remains focused on the quality of the fields and venue, the results can be most gratifying.

In planning athletic fields, the use of the fields should govern the type of construction and follow-up maintenance program. Are you constructing fields to be used for a couple of days per week, or daily? If your requirements dictate a need for fields for use during weekends, it is difficult to justify spending the approximate \$250,000 premium for a sand base field. If you are planning to install lights so the field can host two games per evening, plus weekend play and tournaments, the additional costs associated with proper drainage, irrigation and a modified root zone are well worth the extra money. Another critical planning decision is whether you can afford the follow-up maintenance program. This program must be geared to the type of field constructed. A sand base field, complete with lighting and irrigation, will require significantly more maintenance dollars than a topsoil field without lights or irrigation. Do not construct a field you cannot afford to maintain following construction!

Another important decision is tendering the field(s) for construction. Do you want to tender through a public tender or through the developer? Typically we have achieved good success by tendering large park and athletic field construction projects through the developer. All bidders are pre-qualified to ensure they have the

experience and expertise to construct quality athletic fields. We have also identified qualified sub-contractors to ensure that drainage, irrigation and electrical elements are installed by quality trades. Ensure quality sub-trades are hired for the project that includes a soil agronomist who can recommend proper sand and soil and thoroughly interpret a soil analysis.

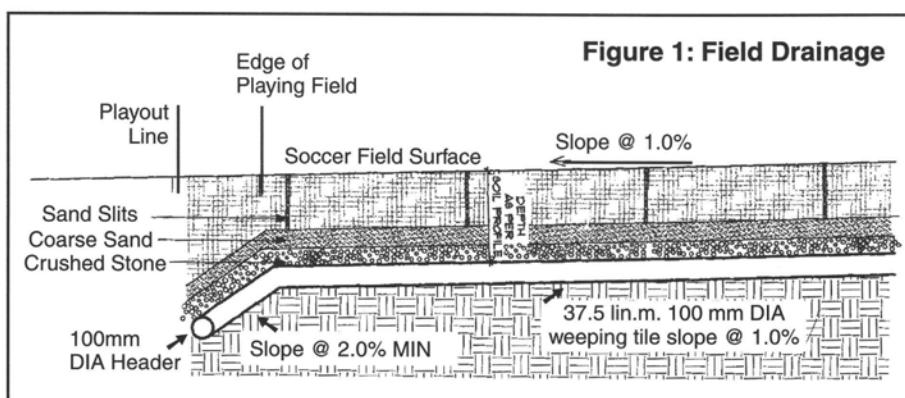
*Field Sub-Grading* \$5,500/field

Park pre-servicing costs are minimized by having the developer undertake the grading and servicing at the same time they are performing similar work in the surrounding subdivision. Typically the developer will have large earthmovers and scrapers already on site so partner with them to have the park block graded by this equipment. Bringing such equipment back at a later date will cost 2-3 times more than undertaking the grading in tandem with the subdivision. If water, sanitary and electrical services are required for the park, coordinate their installation at the same time these services are being installed in the surrounding subdivision. Once again, the savings will be substantial.

With overall park grading completed by large earthmovers and scrapers, the rough grading is completed using dozers equipped with laser levels. Sub-grades for the fields is 1% and in our most recent fields, the sub-grade was completely flat.

*Field Drainage* \$25,000/field  
*(4 in. O-Pipe)*

## Figure 1: Field Drainage



Drainage is an area where if you cut costs initially, it can increase ongoing maintenance costs at a later date. The fields were drained with 4 inch O-pipe without a filter sock. The drainage was installed upon completion of the sub-grading and all material from the trenches was removed off-site. The tile was laid on approximate 20 ft. centres across the entire field (including sideline areas where players benches will be placed) with the tile

graded at a 1% slope across the field and then 2% into the header trench (see Fig. 1). All tile was installed using laser controlled equipment which ensured the work was done accurately and quickly. Extreme care was taken to ensure no native soil migrated into the trenches.

On the topsoil fields, the trenches were filled with 10 mm of gravel followed by 100 mm of sand. It was important to select a stone that did not allow the topsoil fines to move down into the tile and potentially leading to a blockage. On the sand base field, the trenches were filled with gravel followed by a 100 mm blanket layer of gravel across the entire field followed by 12 inches of sand.

<b>Field Drainage</b>	<b>\$17,000/field</b>
(Slit Drainage)	

On the topsoil fields, it was decided to include slit drainage as well as the 4 in O-pipe drainage. The slits are approximately 2-3 inches wide and are filled with coarse sand. The slits extend down the length of the field and are installed to the depth of the O-pipe. This work is done when the fields are sodded and well rooted. It is anticipated the slit drainage will be installed in fall 2002.

#### Field Profile

<b>Sand Base</b>	<b>\$250,000/field</b>
<b>Topsoil Base</b>	<b>\$100,000/field</b>

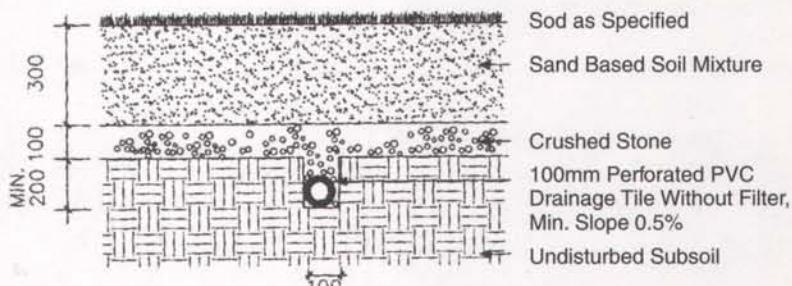
As one can see, the premium cost for a sand base field profile is significant. In both cases, the field profile was 12 inches/300 mm. The individual field profiles are listed as Fig. 2 and Fig. 3. For specific information with regard to the sand and topsoil specification, the author may be contacted, or consult the Sports Turf Association publications *Understanding Turf Management* or *Constructing the Sports Field*.

#### Irrigation

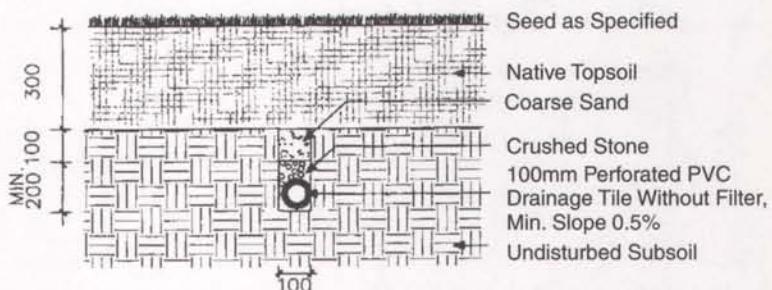
<b>Irrigation System</b>	<b>\$14,000/field</b>
<b>Irrigation Building</b>	<b>\$10,000 lump sum</b>

In Oakville, we use pre-cast concrete buildings that serve as both irrigation and electrical buildings. One of the critical design criteria was to ensure the water

**Figure 2: Sand-based Field**



**Figure 3: Soil-based Field**



service and pipe sizing permitted all four fields to be watered in one night. (ie. begin irrigation at 11:30 pm and be completed by 6:30 am) Another important design element was ensuring that each field system could be isolated for repairs or different shut down schedules in the fall. Since we seeded the fields, it was critical to have the system installed prior to the actual seeding. We have had good success with both Rainbird and Toro irrigation systems.

<b>Seeding</b>	<b>\$10,500/field</b>
<b>Sodding</b>	<b>\$17,000/field</b>

Seeding or sodding the fields is an important decision for the turf manager. One is more expensive than the other, but cost alone should not be the only consideration. Expected use of the field following construction will also have to be considered when deciding whether to seed or sod. The general rule of thumb for field use following completion is six months for seed and six weeks for sod. In Oakville, we prefer to seed the fields if time permits to incorporate the best sport field blends at the outset. For the topsoil fields,

we used 75% bluegrass (varieties of Washington, Alpine and Touchdown) and 25% turf-type perennial rye (Cutter). For non-irrigated fields, we have specified 50% Mustang tall fescue with 40% Kentucky blue and 10% Shortstop tall fescue.

<b>Electrical Lighting</b>	<b>\$110,000/field</b>
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On average, \$110,000 per field is needed for lighting, that includes bringing the power from the local utility to your on-site electrical building. All fields were lit with 1,000 watt metal halide fixtures with full cut-off controls with minimal light spillage. Field lighting uniformity is absolutely critical. Do not try and save money by using fewer poles and shorter poles. The fields were lit with either 70 ft. or 80 ft. poles. Due to the significant lead time required for pole delivery (4-6 months), we ordered the poles separately from the contract to ensure delivery coincided with the contract tender award. Push button controls are installed at each field for users to turn on/off the lights. Receptacles are also installed in each power control post for PA systems, portable generators, etc. for tournaments.

This sports park is located near a residential community. The fields will be lit nightly from May to September. We made sure the developer building the homes backing directly onto the lit sports park included a warning clause in each sales agreement. This warning clause indicated they had purchased a home adjacent to a lit park facility. It is also helpful to install the lights prior to building permit issuance.

*Fencing* \$20,000/field

For premier fields, we fence the entire field to restrict access to users with a facility permit. It costs approximately \$42.50/linear meter (6 ft. high) using Schedule 40 pipe, 9 gauge fabric. Double gates are installed at both ends of the field on both sides for maintenance equipment. One of the design criteria was ensuring a bucket truck could drive down the sidelines of the field to service the lights without crossing the field. In many cases, we increase the height of the fencing behind goal nets to 10 ft. in an attempt to keep

balls in play (and out of neighbours yards).

*Misc. Items* \$20,000/field  
(bleachers, goal posts, benches, waste receptacle)

Our typical bleachers are aluminum, 4 rows and just under 4 feet in height. The ends of the bleachers are painted yellow for greater visibility to avoid accidents from glare. Benches are anodized aluminum. Players' benches are also aluminum, 5 meters long and installed permanently in the ground. Goal posts are 8 feet high x 24 feet wide painted white with an epoxy powdercoat finish. Waste receptacles that have been very successful are the deep below ground 300 gallon units that hold large volumes of garbage and do not need frequent pickups.

#### Final Costs

In conclusion, costs associated with athletic field construction are significant and careful choices and decisions must be

made that have impacts on the initial construction cost and the future maintenance costs. Do not build a field you cannot afford to maintain or build a field that does not coincide with the intended usage.

The average construction cost for a premier sand base field (tile drained, irrigated, lit, fully fenced with bleachers, players bench and goal posts) is approximately \$465,000 for a seeded surface, \$471,500 as a sodded surface. The average cost for a premier topsoil base field (tile drained, slit drained, irrigated, lit, fully fenced with bleachers, players benches and goal posts) is approximately \$332,000 for a seeded surface. As a sodded surface, the cost would be in the range of \$338,500. ■

## Coming Events

### Mark Your Calendar!

STA's Annual Field Day will be moved from August to September this year. Stay tuned for details.



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