The Hong Kong Cricket Club Ground Reconstruction

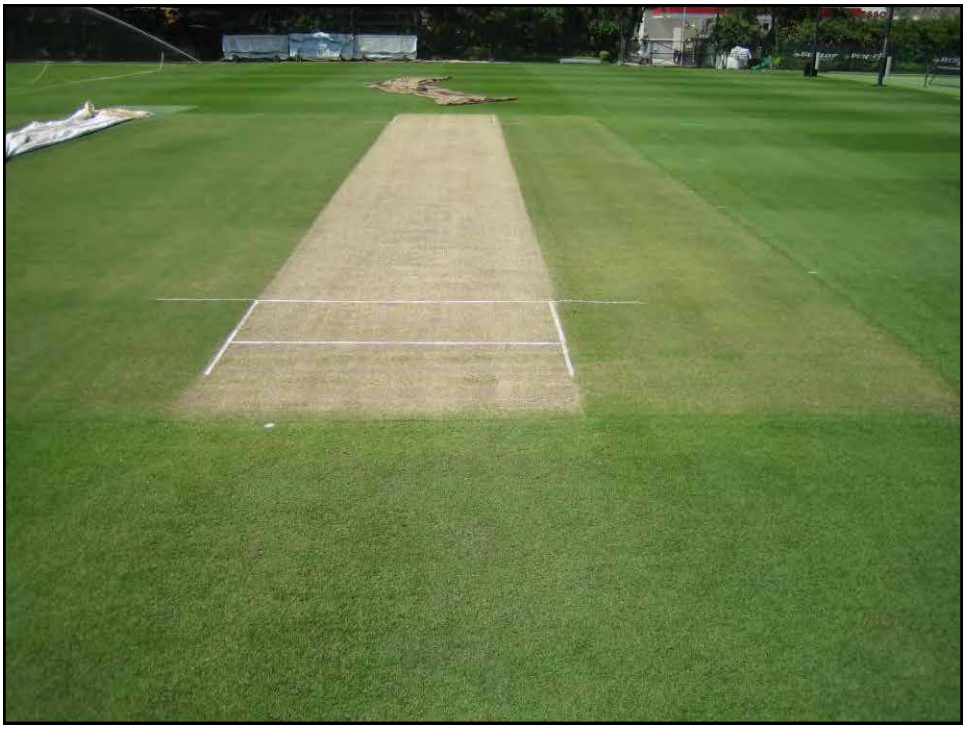
Club Introduction

- 155 years old
- Two sites throughout it's history
- 31 years in current location
- 124 years in Central

- Approximately 1900 members
- Whole range of facilities & sporting activities
- Predominately a cricket club
- Club has 9 cricket teams
- Membership of the club identify the ground as their most important asset

Ground introduction/uses

- Ground usage is broken into two seasons, cricket season and non-cricket season
- The cricket season runs from September – April
- Approximately 100 days cricket a year
- Junior cricket programs (Underage & Gappers)



May to August

- Lawn Bowling Green, Netball, Tennis Courts & Various other sports during off season
- Other users include, multisport, children's birthday parties, School sports days, Cocktail parties
- Annual Garden Party

Ground Reconstruction Project

- During the winter of 2004, a proposal was made to fully reconstruct the ground
- Increased membership, increased usage
- The existing surface had provided good service and had reached it's used by date

Problems being experienced with the existing ground were:

-Unsuitable grass species

-Restricted drainage

-Undesirable surface levels

-Irrigation upgrade

Re-construction considerations

- Identifying a suitable grass species
- Establishing an ideal growing medium
- Designing a suitable drainage system
- Choosing & designing an appropriate irrigation system

- USGA type construction
- Full amended growing medium
- Soil stabilizers

- Replacement system
- Rebuilding the cricket square
- Rebuilding the Lawn Bowling Green

Identifying a suitable grass species

- Good wear tolerance
- Good recovery abilities
- Good Low light tolerances

- Short dormancy period
- Ability to handle a wide range of temperatures
- Good presentation ability

Species considerations

- 419 Bermuda Grass
- Tiffdwaff Bermuda Grass
- Zoysia

- Seashore Paspalum
- Turf was grown in China
- Contract specified cutting heights, weed free, insect free

Establishing the Growing Medium

- Greenway Solutions provided recommendations
- Looking to establish a well balanced soil
- Presented good biological characteristics
- Physically well balanced

- Chemically sound
- Custom blend to be mixed off site
- U.S.G.A spec sand
- Three amendments were used

Profile 'Greens'

- A porous ceramic product
- The base mineral is lillite clay & amorphous silica
- Balanced pore space, 50% Capillary & 50% Non Capillary
- High CEC
- Excellent Stability
- U.S.G.A particle size

Enviroganics

- Fully Composted organic fertilizer
- Cattle manure as its primary source
- Rich form of organic matter
- Very stable

Humate

- Concentrated Humic Acid product
- Readily available carbon source
- High Concentrate of Organic Matter
- Stable form

- Profile – 10%
- Enviroganics – 5%
- Humate – 1%

Greenway Solutions

Email :paul@greenwaysolutions.biz

ROOT-ZONE CONSTRUCTION BLEND

Reconstruction Area	7500 m^2
Reconstruction Depth	5 inches
Calc Volume of Materials(Sand + Amendments)	952.5 m^3
Actual Volume of Materials(Sand + Amendments)	1100 m^3
Estimated % Loss During Blending	20%

31 December 2004 **Hong Kong Cricket Club**

Amendment Material	% by Volume	Amount Required	Sand Component (m^3)	Total Material (m^3)
Profile Greens™ - must fit within USGA particle size	0.10	110.00 m^3 74.40 t	924.00	1,100.00
S.L.S Humates	0.01	11.00 m^3 10.96 t		
Enviroganics™	0.05	55.00 m^3 52.80 t		

Bulk Density	Profile	563.6 kg/m3
	Humate	930 kg/m3
	Enviroganics	800 kg/m3
	Sand	1350 kg/m3

- Mixed off site
- Pre-mix first
- Mixed three times through blender
- Transported on site
- 250mm growing medium
  - -125mm amended growing medium
  - -125mm unamended sand


ROYER

Designing the Drainage system

- Create a drainage system that could cope with any amount of rainfall
- A design rate was established of 25mm/hour
- Hooghoudt's formula was used to determine the drainage pipe spacing
- Hooghoudt's formula takes into consideration, the rootzone depth, rootzone infiltratation rate, and required drainage rate

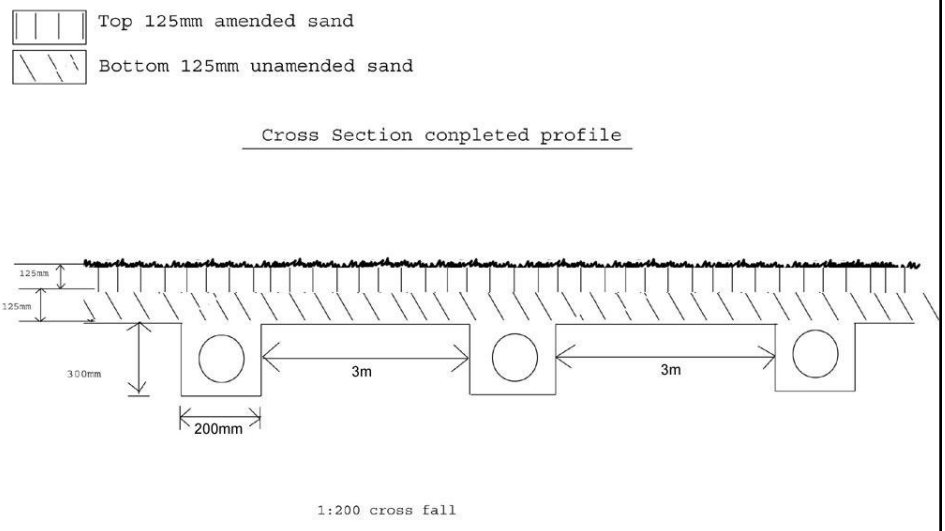
Hooghoudt's formula

$$\text{Pipe spacing (in metres)} = \sqrt{\frac{\text{Profile depth}^2\text{(m)} \times 4 \times \text{Infiltration rate (mm/hr)}}{\text{Drainage rate (mm/hr)}}}$$

$$\text{Pipe spacing} = \sqrt{\frac{0.25\text{m}^2 \times 4 \times 900\text{mm/hr}}{25\text{mm/hr}}}$$

$$\text{Pipe spacing} = \sqrt{\frac{0.0625 \times 4 \times 900}{25}}$$

Pipe spacing = 3 metres



Choosing and Designing an appropriate Irrigation system

- Increased water availability
- Increased water requirement
- Include the Lawn Bowling Green
- User friendly, Maintenance friendly

- Rain Bird 7005's on the ground
- Rain Bird 1150's on the Lawn Bowling Green
- Specifications were finalized and were binded into a contract document and put out to tender

Project Operations

- Three month contract period
- The lawn Bowling Green & Cricket square was not included
- 2500m3 of soil excavated and taken off site
- The sub-base was shaped to have a 0.5% fall


BATSMAN
RUNS
TOTAL
WICKETS
OVERS
LAST WKT
LAST MAN
RUNS REQUIRED

- The drainage was ‘cut in’ to the sub – base at 45 degrees & backfilled with 5-7mm aggregate
- Lateral pies were 100mm ADS Perforated pipe, Collector drain was 200mm ADS Perforated pipe
- All trenches and pipes were individually checked to ensure right falls


BATSMAN
RUNS
TOTAL
WICKETS
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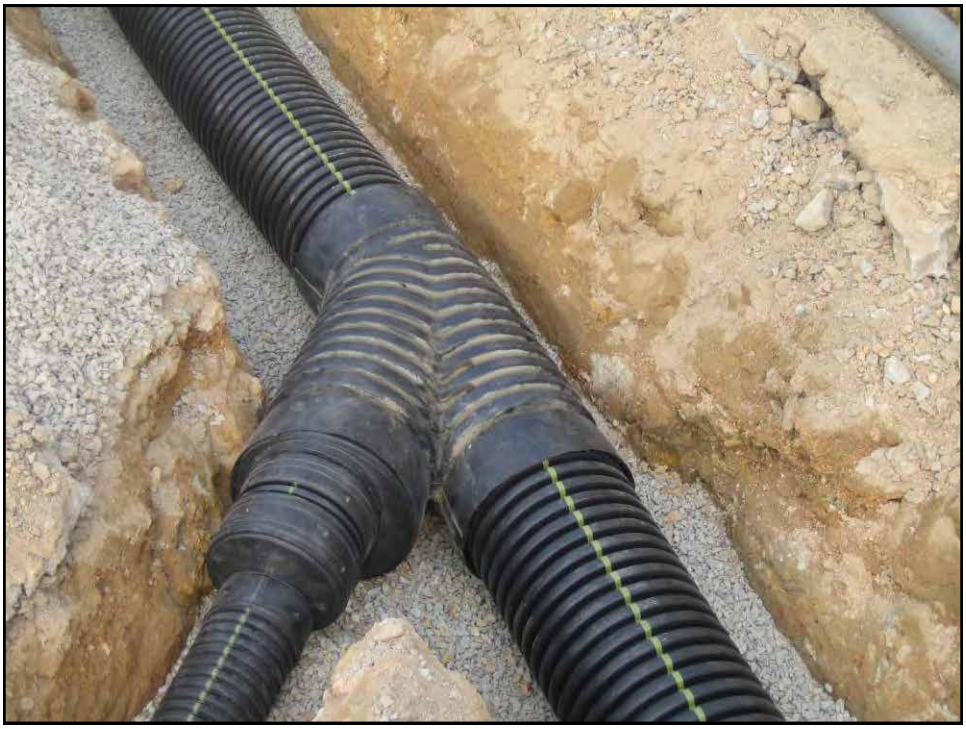
RUNS REQUIRED

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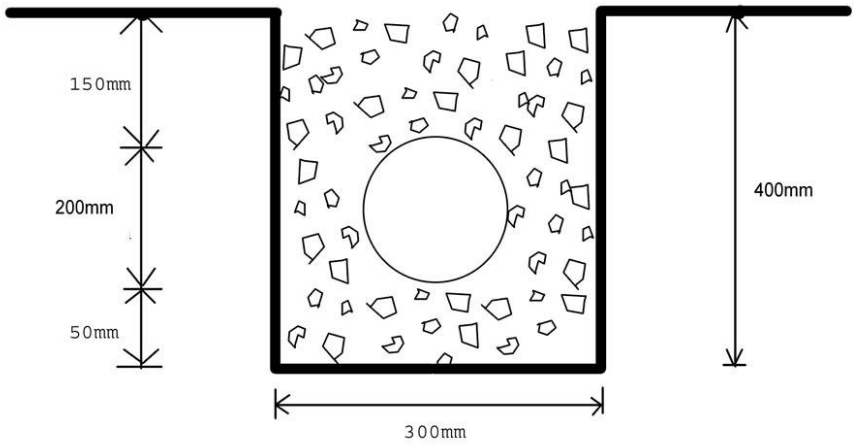
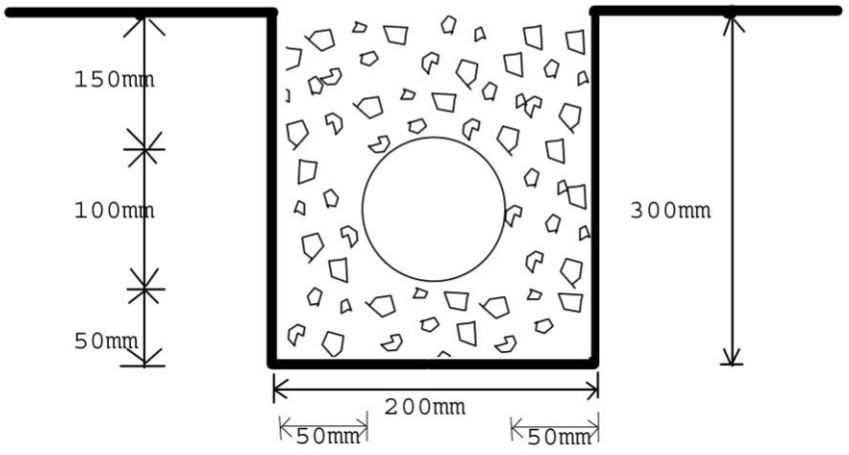
CATCHER DRAIN CROSS SECTION

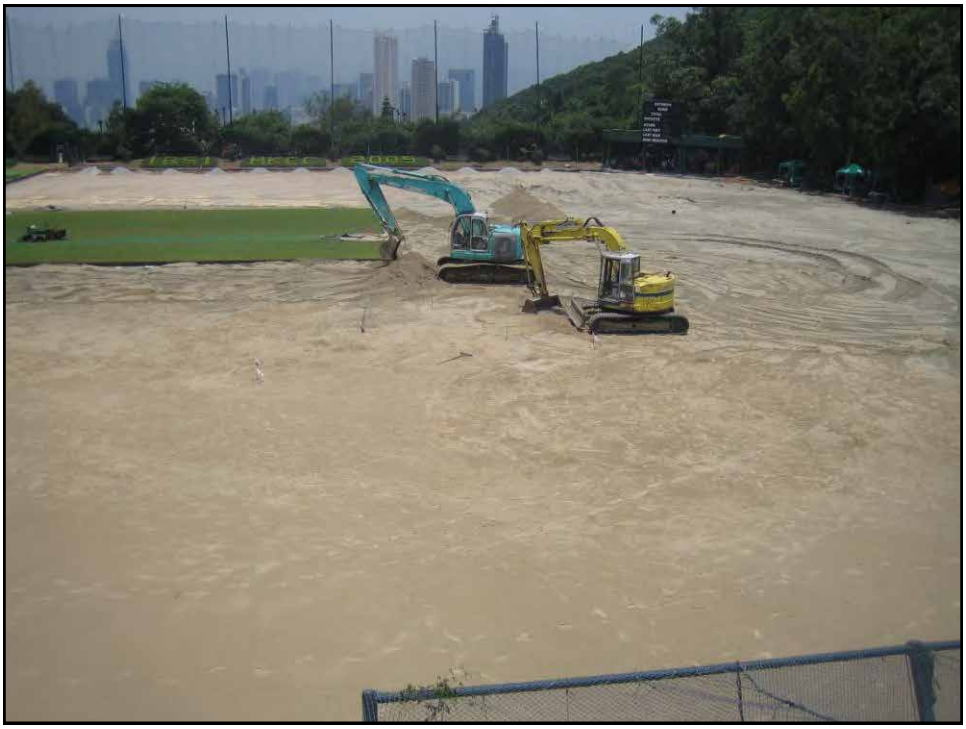


LATERAL DRAIN - CROSS SECTION



- Growing medium laid in two 125mm layers
- Bottom layer unamended, top layer amended
- Consolidated by both machinery & Irrigation
- Final leveled mirrored the sub-base falls
- Finished with excavator


BATSMAN
RUNS
TOTAL
WICKETS
OVERS
LAST WKT
LAST MAN
RUNS REQUIRED



- Turf laid as each area was ready
- Ground opened four weeks after the last area of turf was laid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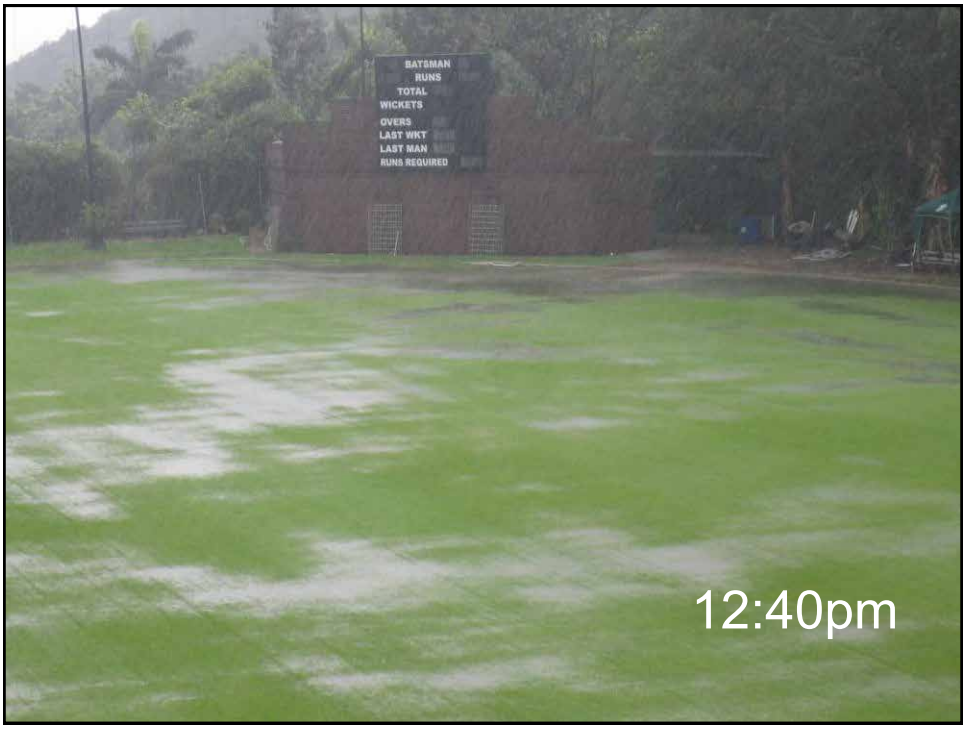
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WICKETS
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LAST MAN
RUNS REQUIRED
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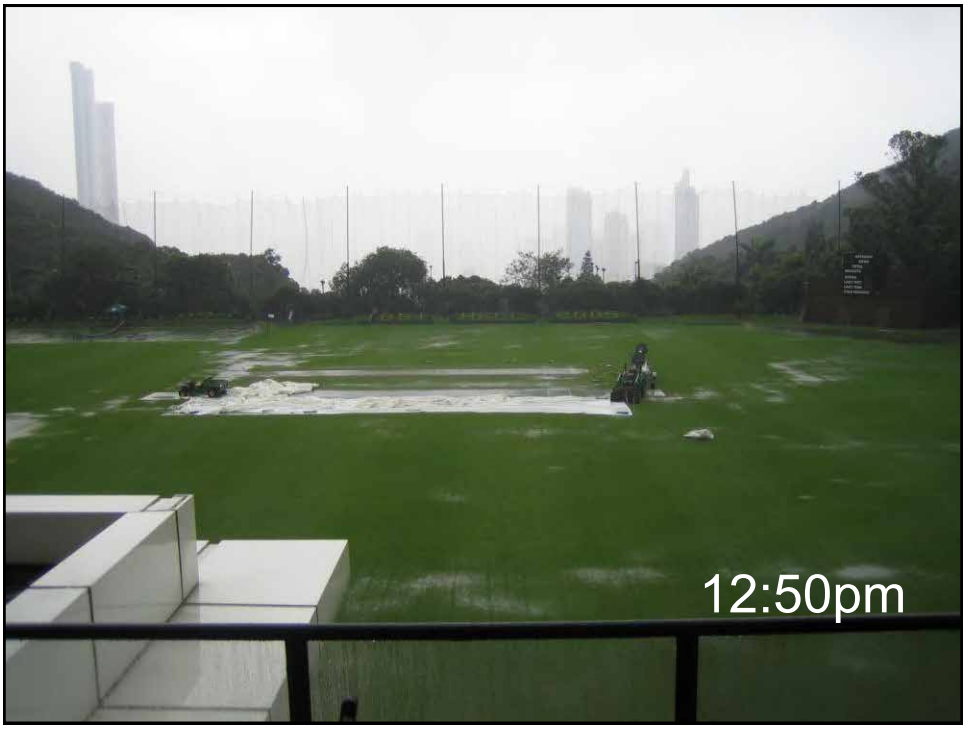
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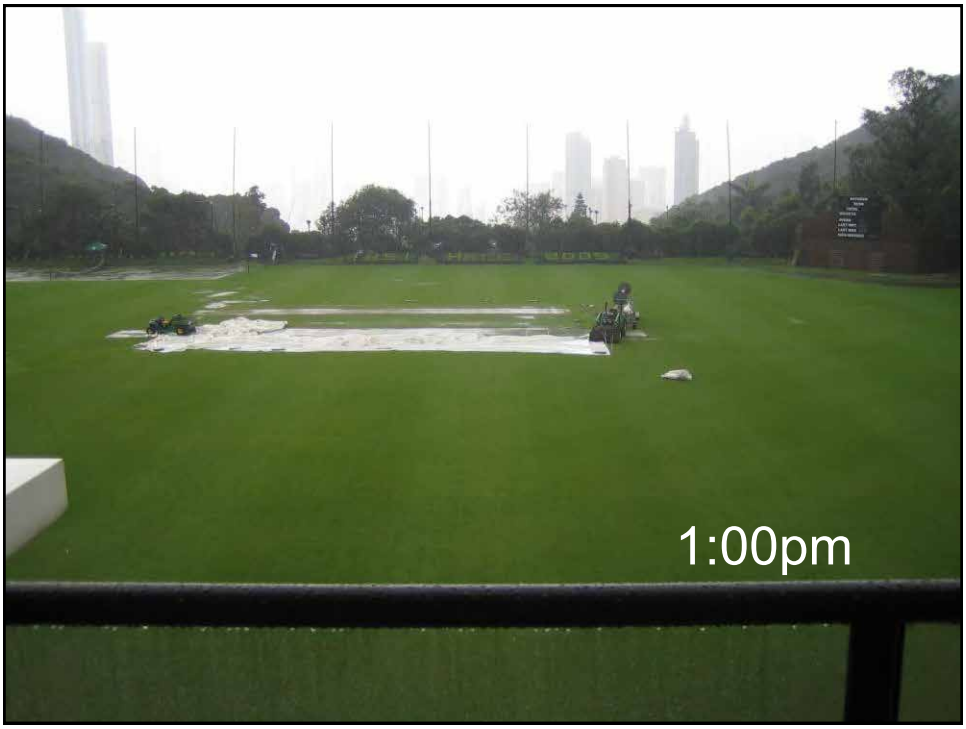
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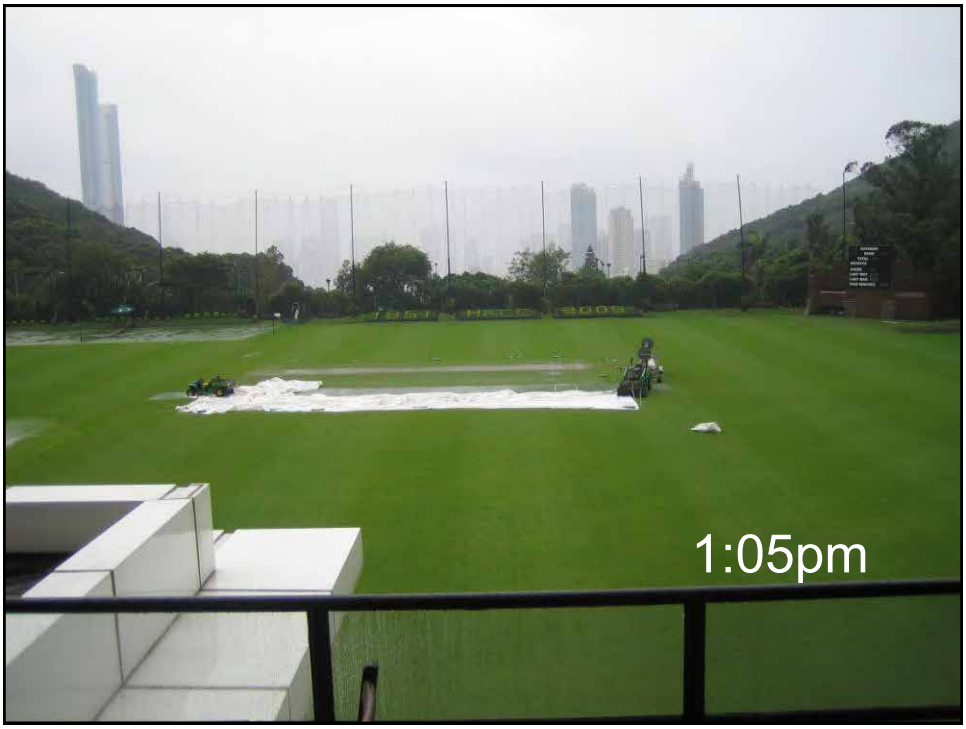
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Would we do anything different?

- Different drainage design
- Spent more time on surface levels
- Rebuilt the cricket square
- Rebuild L.B Green
- Higher grade drainage gravel
- Better water storage facility

Ongoing Maintenance

- Intense maintenance program
- Monthly aeration program
- Verticutting as required
- Regular topdressing

- Cutting ranging between 4-6 times per week, 12mm during the summer months, and 16mm during the winter
- Weekly applications of K,N,Mn,FE,Auxin, zinc
- Monthly Applications Calcium, Magnesium, Fully decomposted Organic fertilizers
- Irrigation as required

Insect damage has been excessive

-Bill Bug

-Armyworm

-Cutworm

-Sod Webworm

- Progress has been slow in first year
- Wear tolerance has not met expectations
- Density has been below Par
- Long Dormancy
- Machinery damage
- Isolated wear areas