

# Using a Lightweight Deflectometer to Evaluate Sports Surfaces

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# Falling weight device



# Why FWD



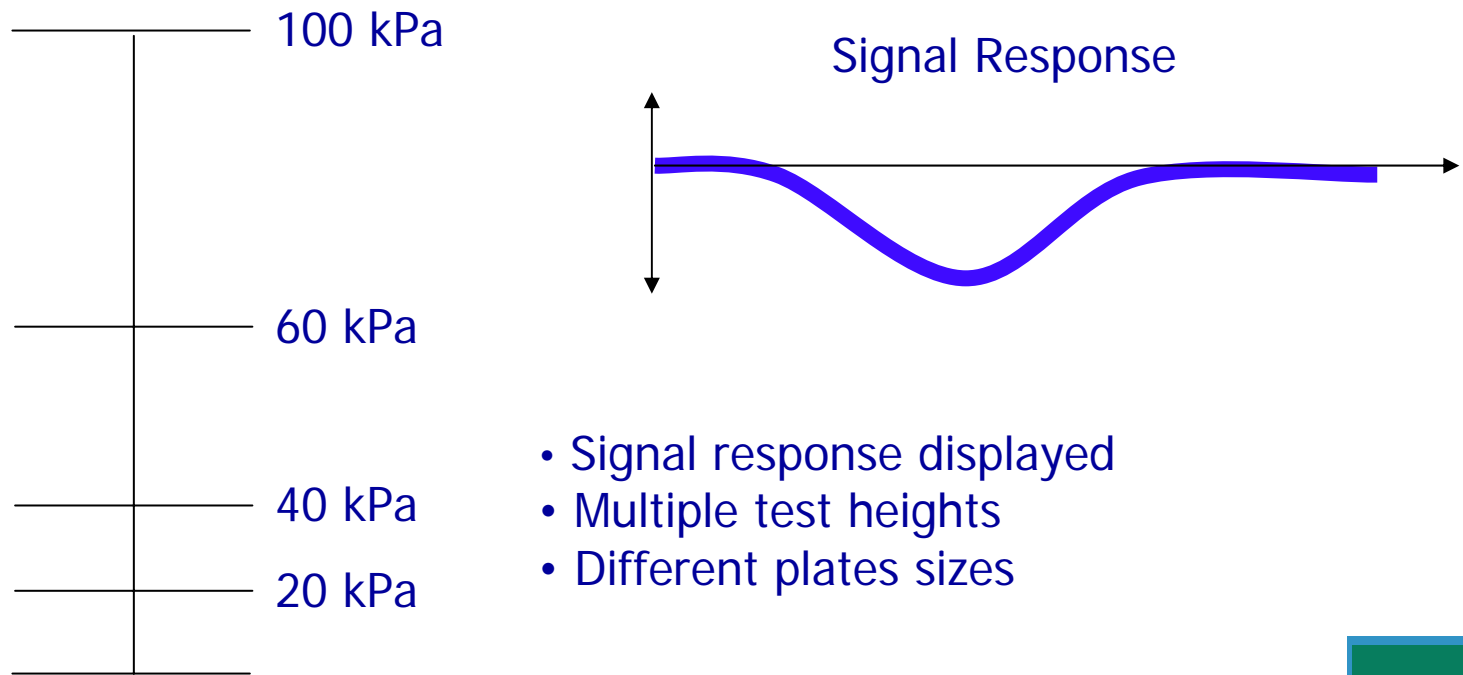
- Current no or little testing takes place on sports pitch bases
- It is known that existing pitch refurbishment results in remedial works to the base
- Contractor design warranties require better guarantees on long term construction performance
- Governing Body performance specifications demand higher tolerances for sports surfaces
- Generally more testing is occurring in the sports pitch construction sector



# Why FWD



## Falling Weight Deflectometer



- Signal response displayed
- Multiple test heights
- Different plates sizes

Stop and go technique using 100 kPa



# Typical sub-base platform



Finished sub-base layer paved to final tolerance





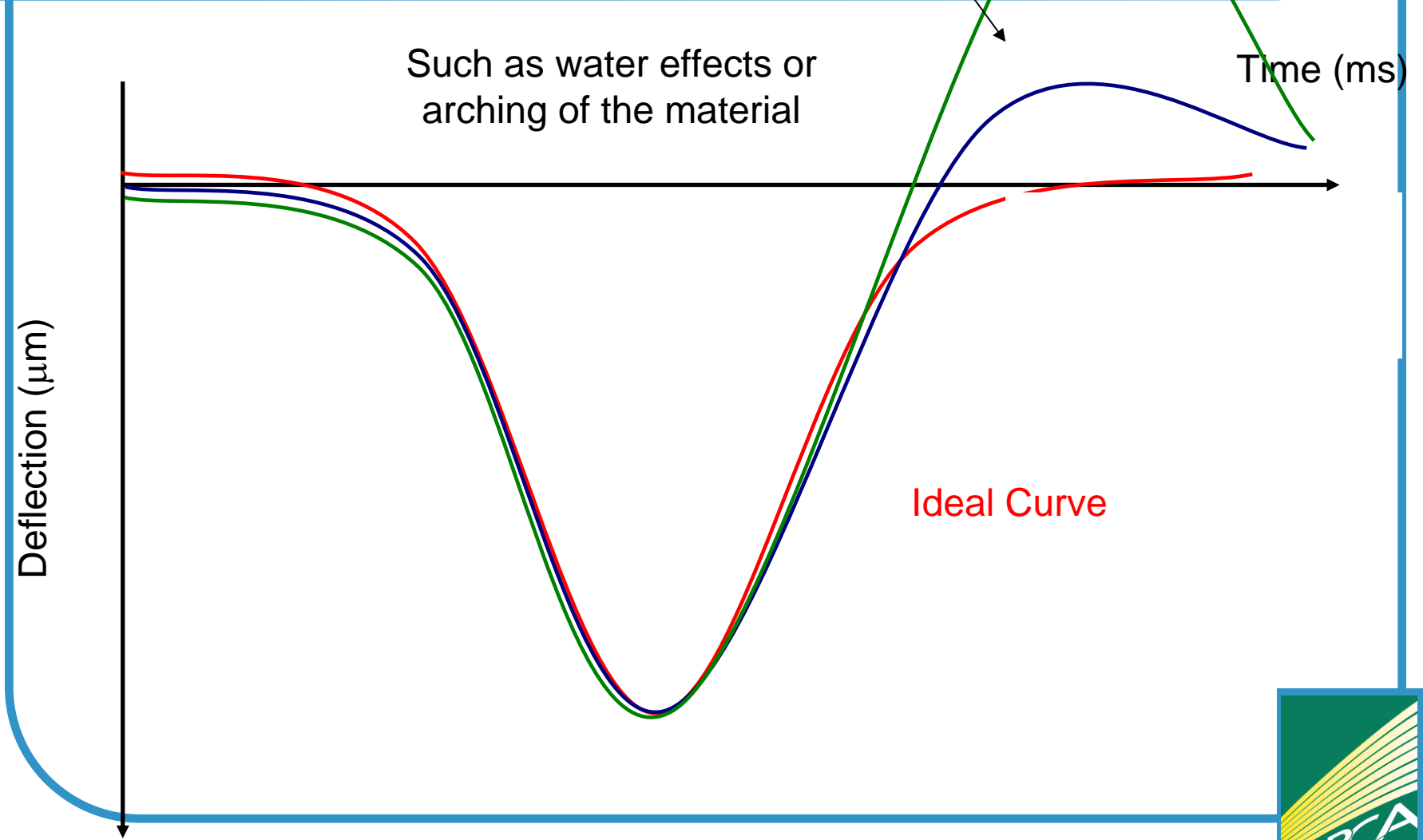
Energy Storage

Such as water effects or arching of the material

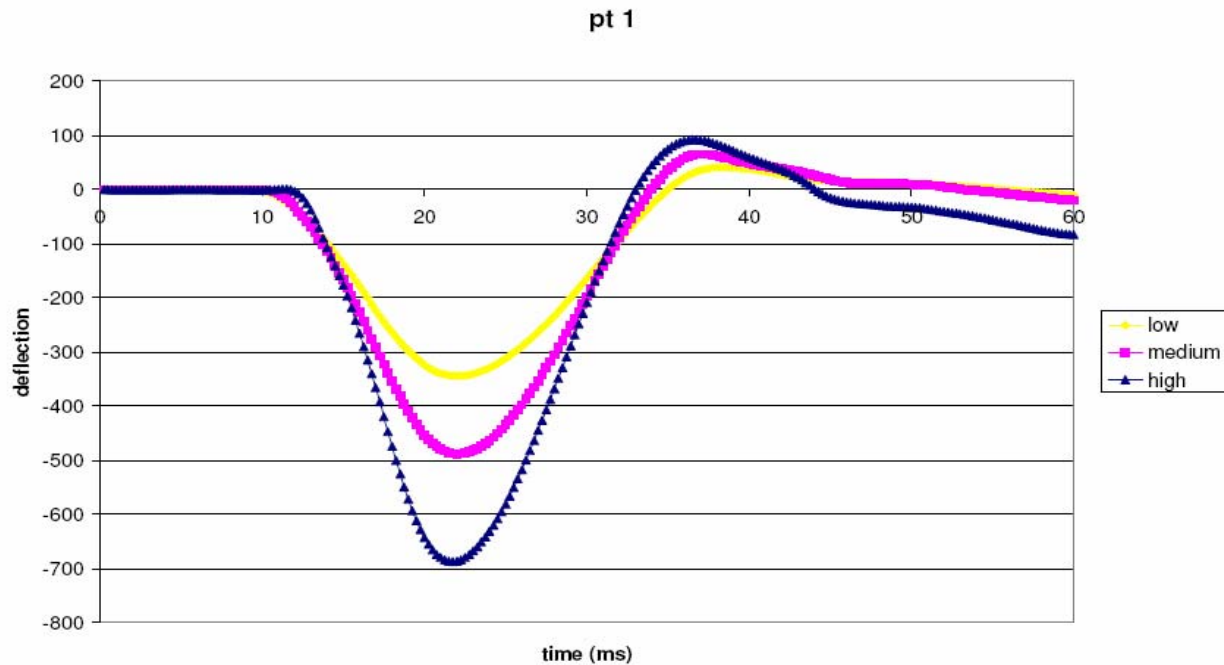
Time (ms)

Deflection ( $\mu\text{m}$ )

Ideal Curve



# Output

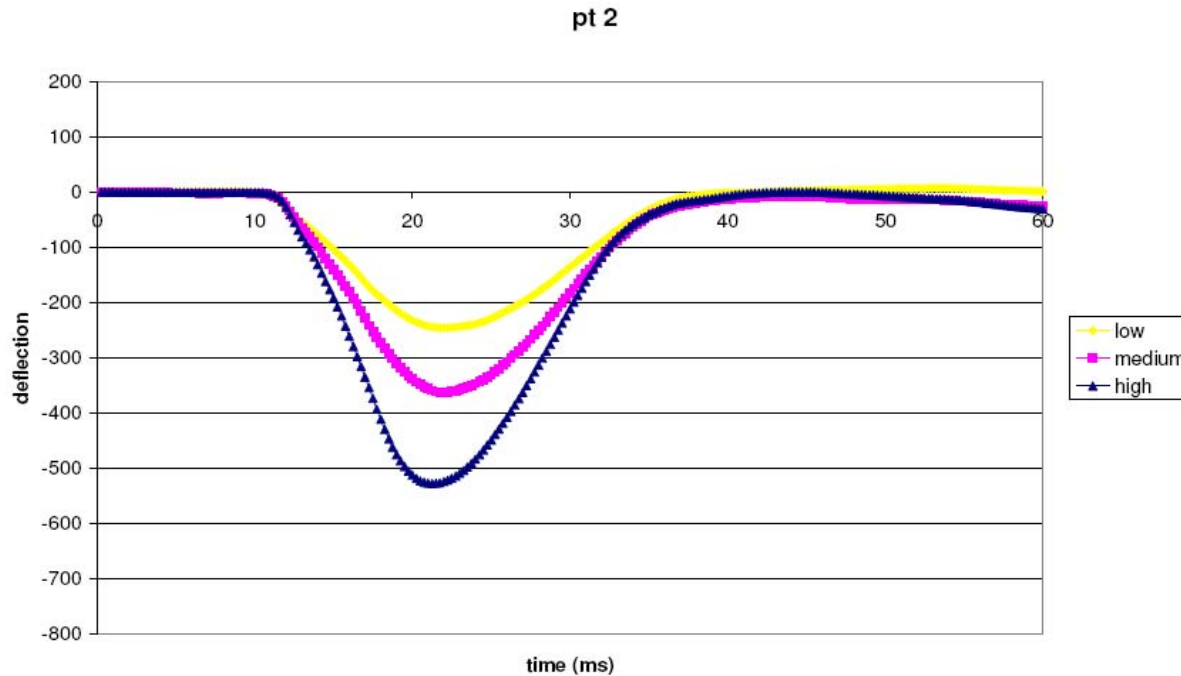


Press (kPa)	E(1) (MPa)
52.4	38
76.1	39
119.2	43

Surface Modulus at 100KPa = 41 MPa



# Output



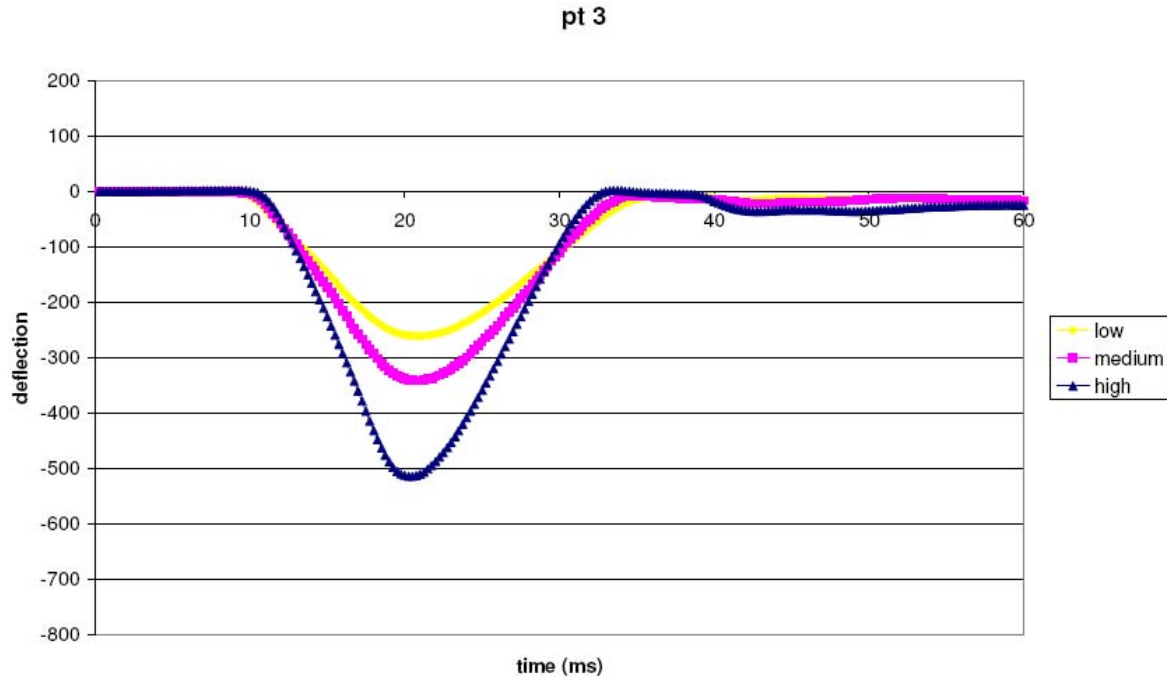
Press (kPa)	E(1) (MPa)
50.8	51
75.9	52
119.6	57

Surface Modulus at 100KPa = 55 MPa





# Output

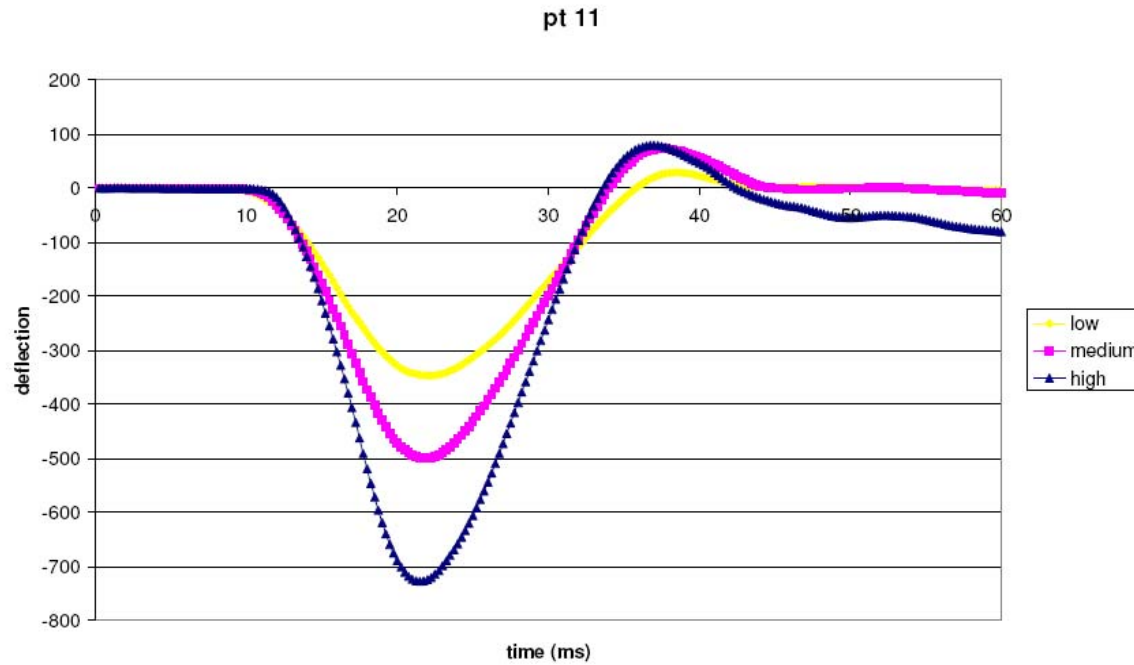


Press (kPa)	E(1) (MPa)
54.3	52
74.7	55
119.4	58

Surface Modulus at 100kPa = 57 MPa



# Output



Press (kPa)	E(1) (MPa)
51.8	37
76.9	38
116.3	40

Surface Modulus at 100KPa = 39 MPa





# Where do we go from here?



- Introduce requirements into specifications for pitch construction
- Criteria can easily be set on typical sub-base used
- Ideally the tool should be used as a QC aid on-site to control compaction
- This should be by Contractors



# Questions



**THANK YOU**  
**Any questions?**

