On-Site Testing
GMAX Impact Evaluation

New England Turf Management

## Project Information

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|---|---|---|---|
| **Project Name:** | Stellos Stadium | | |
| **Client Info:** | Town of Nashua | **Site Info:** | 23 Stadium Dr Nashua, NH 03062 |
| **Report Date:** | 7/15/2024 | **Test Date:** | 7/12/2024 |
| **Report Status:** | Complete | **Job #:** | 188311 |
| **Prepared by:** | Roger Clough | | |
| **Checked by:** | James Leszuk | | |

Notes:
1. This report has been prepared by New England Turf Management with all reasonable skills, care and diligence within the terms of the contract with the Client and within the limitations of the resources devoted to it.
2. This report is confidential to the Client and New England Turf Management accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.
3. This report shall not be used for engineering or contractual purposes unless signed by the Author and the Checker and unless the report status is "Final".

## Summary

New England Turf Management was commissioned to perform on-site Gmax impact testing per ASTM F1936. A complete test was performed in accordance with the ASTM F1936 Standard. The results have been summarized in the quick reference table below. Complete results and background can be found in the subsequent sections of this report.

### Quick Reference Results Summary

| | Average | (min) | Range | (max) | Max per ASTM |
|---|---|---|---|---|---|
| **Gmax (g's)** | 184 | 136 | to | 259 | 200 |
| **Infill Depth (mm)** | 31.4 | 19 | to | 34 | n/a |

## Table of Contents



## General Information

| | | | |
|---|---|---|---|
| **Testing Device** | ASTM F1936 Apparatus<br>TRIAX 2010 Data Acquisition | **Test Method** | GMAX |
| **Install Date** | 2012 | **Test Date** | 7/12/2024 |
| **Field Orientation** | Drop 9 = south | **Primary Sport** | football |
| **Product Info** | FTOMP | **Infill System** | rubber |
| **Underlayment** | gravel | **Air Temp (°F)** | 81 |
| **Turf Cover %** | 100 | **Soil Moisture %** | |
| **Humidity %** | 62 | **Weather Conditions** | Sun |
| **Misc. Field Notes** | | **Technician** | Roger Clough |

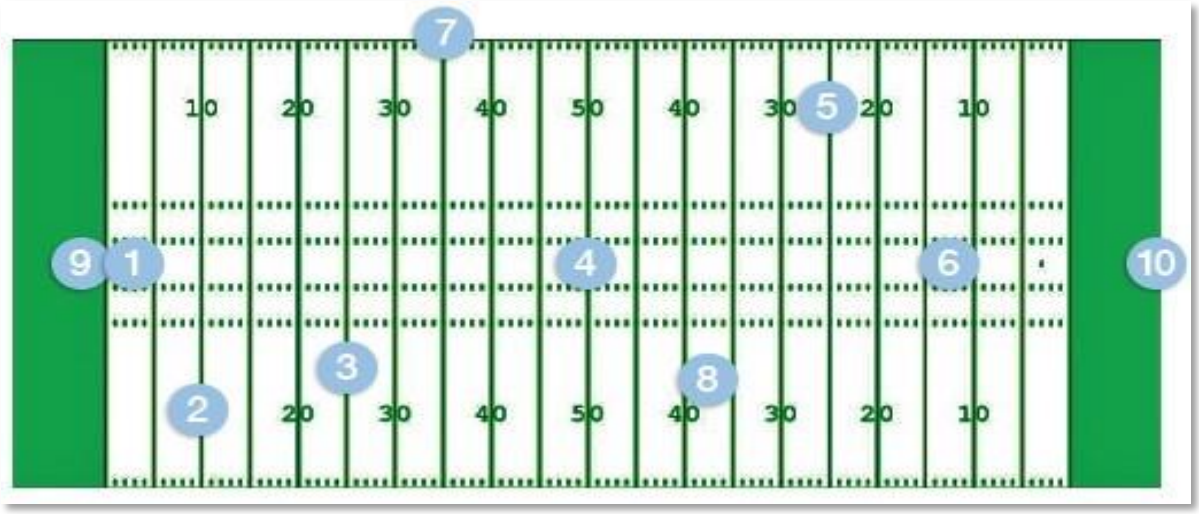
## Method

Method Background ASTM F355 Procedure A and ASTM F1936 are test methods used to measure the impact attenuation properties of synthetic turf playing systems. ASTM F355 Procedure A covers the overall test method and ASTM 1936 specifies the method for measurement in the field on an installed synthetic turf playing surface.

The test procedure involves dropping a 20 lb impacting missile three times at each location from a consistent height of 24 inches. The test is typically performed at 10 locations. The locations are based on the primary sport and the discretion of the tester. The first drop conditions / compacts the loose infill. This value is recorded but not included in the location average. The second and third drops are recorded and averaged for the location average. The location averages are used to determine the field average.

The impacting missile contains an accelerometer sensor that measures the magnitude of deceleration (measured in units of gravity or g's) for the duration of impact. The deceleration measured during impact creates a curve. The peak of that curve is referred to as the "Gmax". This is the primary value measured with this test. The maximum allowable Gmax as specified in the current ASTM F1936 test specification is 200 g's.

## Location Map




## Results Table

| Loc# | Drop # | Gmax (g's) | Location Description | Gmax Avg (g's) | Infill Depth (mm) | Surface Temp (°F) |
|---|---|---|---|---|---|---|
| 1 | 2 | 191 | | | 34 | 94 |
| 1 | 3 | 197 | | 195 | 34 | 94 |
| 2 | 2 | 150 | | | 35 | 94 |
| 2 | 3 | 148 | | 149 | 35 | 94 |
| 3 | 2 | 174 | | | 32 | 94 |
| 3 | 3 | 182 | | 178 | 32 | 94 |
| 4 | 2 | 259 | | | 19 | 94 |
| 4 | 3 | 255 | | 257 | 19 | 94 |
| 5 | 2 | 168 | | | 30 | 94 |
| 5 | 3 | 173 | | 171 | 30 | 94 |
| 6 | 2 | 218 | | | 31 | 94 |
| 6 | 3 | 216 | | 217 | 31 | 94 |
| 7 | 2 | 166 | | | 32 | 94 |

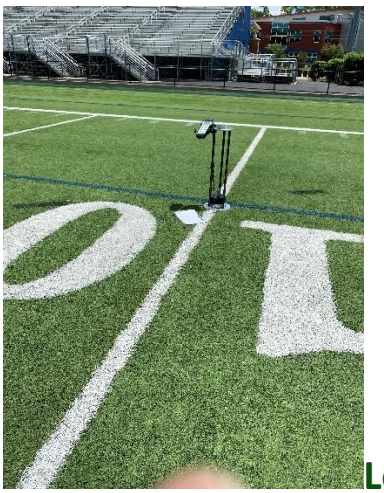
| Loc# | Drop # | Gmax (g's) | Location Description | Gmax Avg (g's) | Infill Depth (mm) | Surface Temp (°F) |
|---|---|---|---|---|---|---|
| 7 | 3 | 170 | | 168 | 32 | 94 |
| 8 | 2 | 169 | | | 34 | 94 |
| 8 | 3 | 175 | | 172 | 34 | 94 |
| 9 | 2 | 154 | | | 33 | 94 |
| 9 | 3 | 136 | | 148 | 33 | 94 |
| 10 | 2 | 184 | | | 34 | 94 |
| 10 | 3 | 187 | | 185 | 34 | 94 |

The above table outlines your Gmax score for the second and third drop at each location on the field and an average Gmax score for both drops. The location numbers correspond to the above field map. It also includes an infill depth reading. Per ASTM standards your Gmax score should be under 200.

**This field tested at an average score of 184. This is near the limit of safe play. Certain test locations on the field are over 200 G's, which is unsafe.**

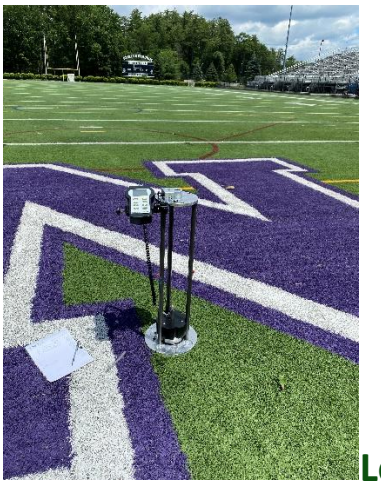
## Location Photos

Location #1



Location #2

Location #3



Location #9