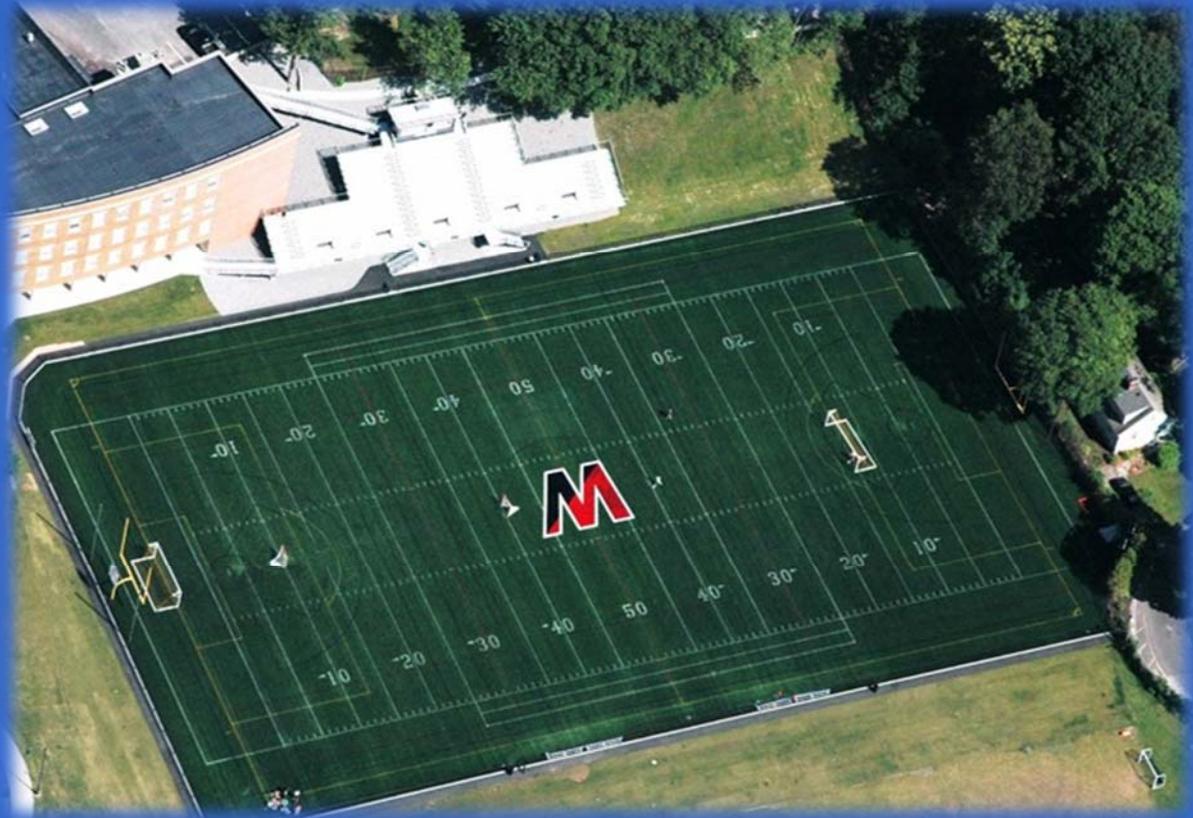


Athletic Field Lighting Feasibility Study

Manchester Field, Winchester MA

Presented by:
Gale Associates, Inc.
MUSCO Lighting, LLC

November 12, 2014



Manchester Field

Existing Athletic Facilities



Manchester Field

Existing Athletic Facilities



GALE

Manchester Field

Existing Conditions



Manchester Field

Existing Conditions

- Existing Grandstands situated in slope of hill.
- Main Street and residential areas are between 20' and 30' in elevation higher than field.



Manchester Field

Existing Conditions



- Field's southern endzone adjacent to property line of abutting residential property off of Manchester Road.
- Abutting property directly behind endzone separated by 8' high chain link fencing with screening and 30' high protecting netting.



Manchester Field

Existing Conditions



- Field's southwestern corner adjacent to property line off of Manchester Road.
- Entrance/walkway along western edge of turf field connecting Manchester Road to the Middle School.



Manchester Field

Proposed Electrical Infrastructure

- The proposed athletic lighting system will require 225 ampere, 480 volt, three phase power.
- There is currently a spare circuit breaker within the main distribution board located within the Middle School's addition.
- A new branch service will be run from the building to a new exterior lighting control cabinet that will house the lighting control equipment and related electrical system controls.
- Additional spare conduits will be installed for future power requirements as well as potential needs for CCTV, communications, etc.



Manchester Field

Proposed Lighting Conditions

- Synthetic Turf Field will be lighted by four (4) light pole structures, each approximately 70 feet high and with approximately 11 fixtures.
 - Poles will be located outside the field's playing area in the general location of the 15 yard lines.
 - The lighting system will be capable of providing an average of 50 footcandles of constant illumination within the playing areas, meeting the recommended levels by NFHS and MIAA for competition play.
 - The lighting system can set up to have dual lighting levels with 30 footcandles for practices and 50 footcandles for games.
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- Footcandle (Fc) is the amount of light falling on the surface equivalent to 1 square foot illuminated by 1 candle at a distance of 1 foot.



Manchester Field

Proposed Lighting Conditions



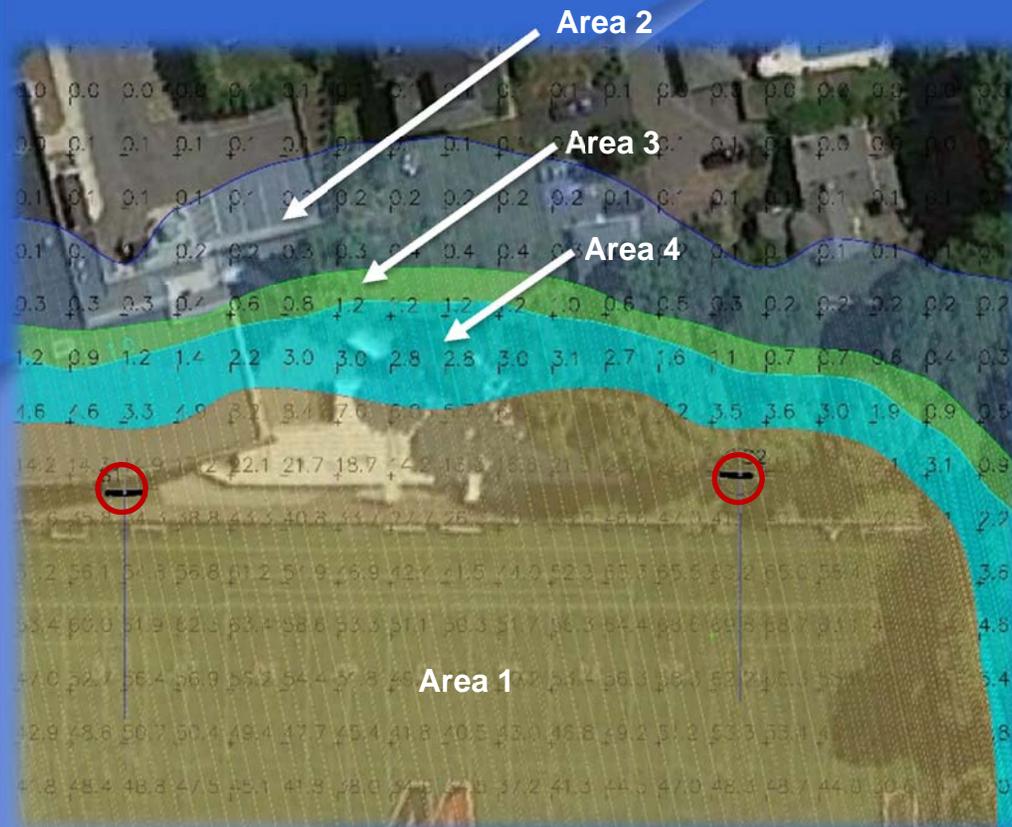
Footcandles (Fc)

- Area 1 = 50 avg. (area shaded orange)
- Area 2 = 5 to 1 (area shaded turquoise)
- Area 3 = 1 to 0.5 (area shaded green)
- Area 4 = 0.5 or less (area shaded blue)



Manchester Field

Proposed Lighting Conditions at Main St.



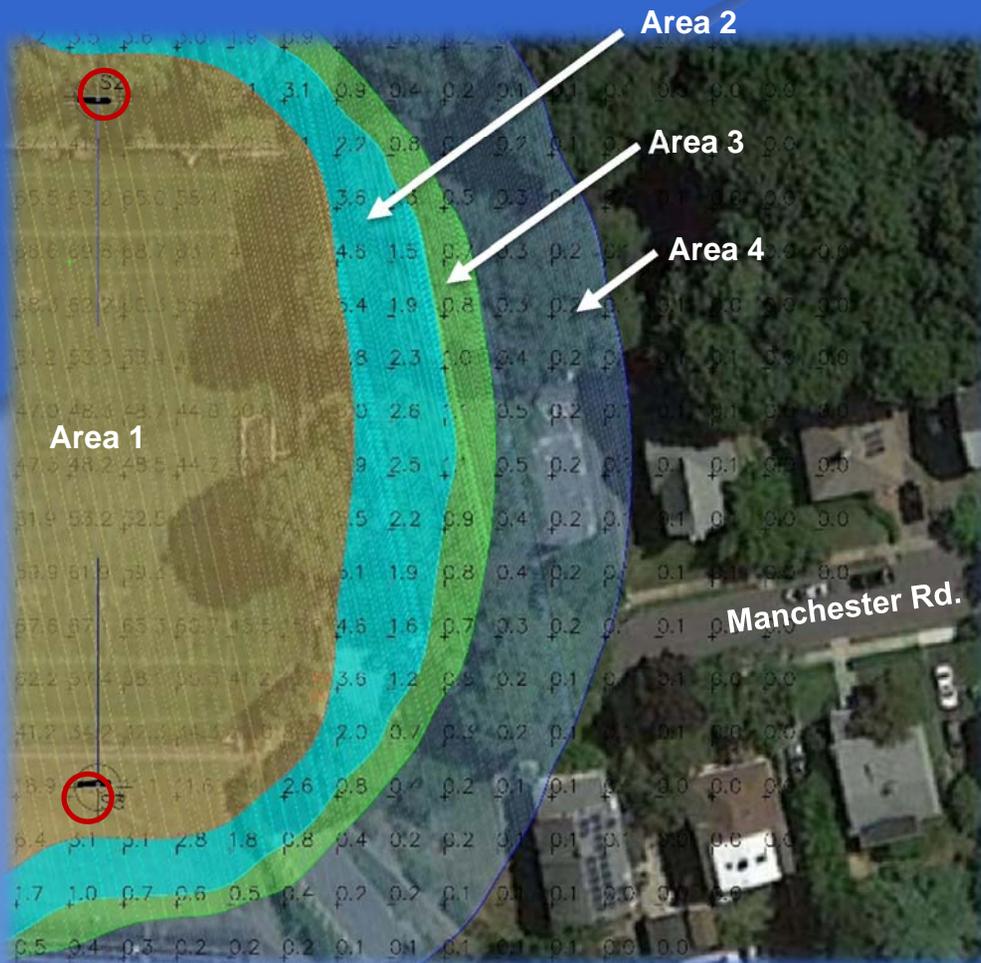
- The proposed lighting levels at the southeastern area at the grandstands will be range from approximately 20 to 7 footcandles.
- The lighting levels will drop off to approximately 5 footcandles just behind the grandstands and press box limits.
- The lighting levels will further drop off to approximately 1 footcandle at a distance of approximately 40 feet off of the southeastern light pole.
- These are horizontal lighting levels and do not take into consideration any light buffering provided by elevation differences (over 25 feet) and/or vegetative cover.

Footcandles (Fc)

- Area 1 = 50 avg. (area shaded orange)
- Area 2 = 5 to 1 (area shaded turquoise)
- Area 3 = 1 to 0.5 (area shaded green)
- Area 4 = 0.5 or less (area shaded blue)

Manchester Field

Proposed Lighting Conditions at Manchester Rd.



- The proposed lighting levels at the southern endzone area will be approximately 40 footcandles.
- The lighting levels will drop off to approximately 5 footcandles at a distance of 15 feet off the playing limits.
- The lighting levels will further drop off to approximately 1 footcandle at a distance of approximately 40 feet off of the playing limits.
- These lighting levels do not take into consideration any light buffering provided by screened fencing and/or vegetative cover.

Footcandles (Fc)

- Area 1 = 50 avg. (area shaded orange)
- Area 2 = 5 to 1 (area shaded turquoise)
- Area 3 = 1 to 0.5 (area shaded green)
- Area 4 = 0.5 or less (area shaded blue)

