

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 1- Request for Determination of Applicability

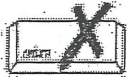
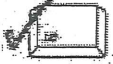
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

City/Town

A. General Information

Important:

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Recreation Committee (Town of Sturbridge) recreation@town.sturbridge.ma.us
Name E-Mail Address

308 Main St
Mailing Address

Sturbridge
City/Town

MA
State

01566
Zip Code

508-347-2041
Phone Number

Fax Number (if applicable)

2. Representative (if any):

Firm

Contact Name

E-Mail Address

Mailing Address

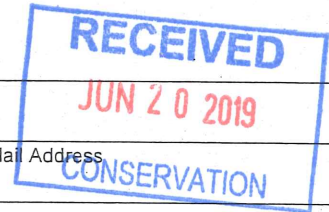
City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)



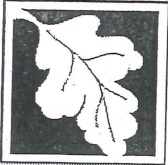
B. Determinations

1. I request the Sturbridge Conservation Commission make the following determination(s). Check any that apply:

- a. whether the **area** depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.
- b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.
- c. whether the **work** depicted on plan(s) referenced below is subject to the Wetlands Protection Act.
- d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any **municipal wetlands ordinance or bylaw** of:

Sturbridge
Name of Municipality

- e. whether the following **scope of alternatives** is adequate for work in the Riverfront Area as depicted on referenced plan(s).



C. Project Description (cont.)

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)

Lighting Project at Town Barn Field, Sturbridge MA

The goal of this project is to install 4 pole lights at the Town Barn Little League Field to provide lighting for night games per current building codes and specifications. The area of disturbance will include 4 holes for the poles that will be 42 inch in diameter with 2 holes at 12' deep and 2 poles at 14' deep drilling using an auger. A silt fence will be used to protect the poles around the wetlands unless otherwise directed.

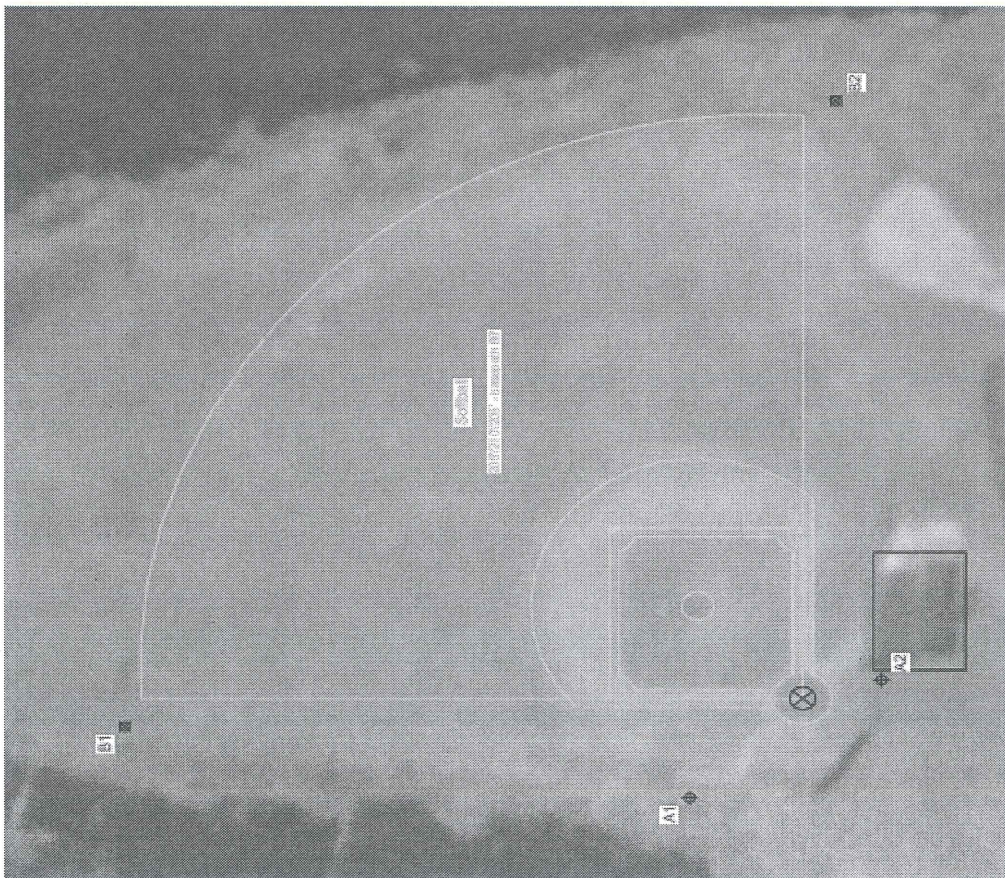
The scope of the work is to:

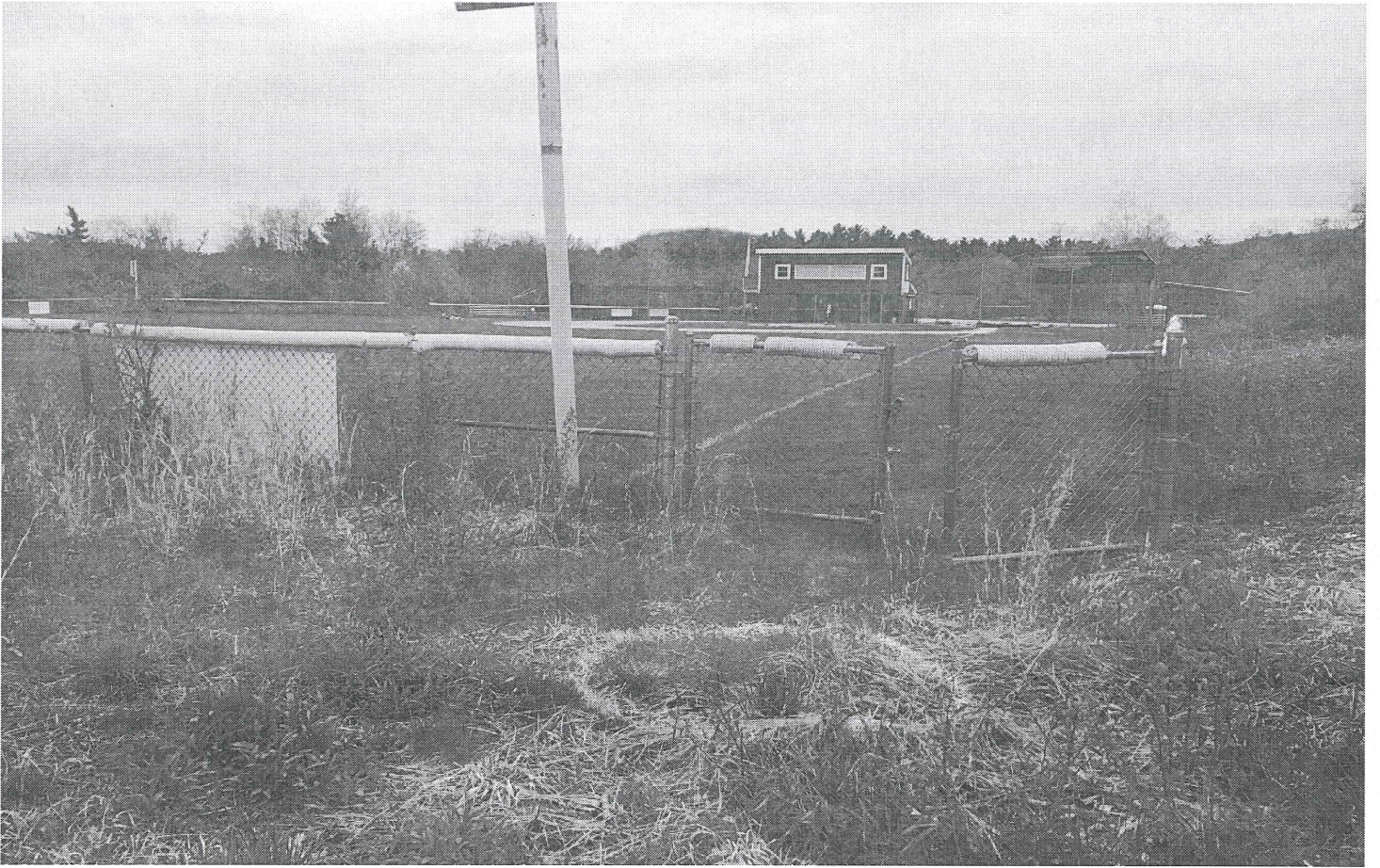
1. Auger (4) Drilled Shafts for pre-cast bases Assume: 30" X 14'
2. Assemble and Erect (4) Poles with Fixtures
3. Furnish and Install conduit and wiring to each light pole Price includes excavation and backfill
4. Furnish and Install new 200A Service adjacent to existing transformer NEMA3 Equipment mounted to wood backboard

System Description [Light-Structure System]

- (4) Pre-cast concrete bases with integrated lightning grounding
- (4) 70' Galvanized steel poles
- Factory wired and tested remote electrical component enclosures
- Pole length, factory assembled wire harnesses
- Factory wired poletop luminaire assemblies
- (18) Factory aimed and assembled luminaries, including BallTracker™ luminaires
- UL Listed as a complete system

The approximate location of the poles from an aerial view is below





Location of B1



Location of B2

TOWN OF STURBRIDGE, MASSACHUSETTS

REQUEST FOR QUOTES

SECTION 16526 – SPORTS FIELD LIGHTING

PART 1 – GENERAL

1.1 SUMMARY

- A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
- B. The purpose of these specifications is to define the performance and design standards for the Little League in Sturbridge, Massachusetts. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth by the criteria set forth in these specifications.
- C. The sports lighting will be for the following fields:
 - 1. Baseball
- D. The primary goals of this sports lighting project are:
 - 1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore the lighting system shall be designed such that the light levels are guaranteed for a period of 10 years.
 - 2. Environmental Light Control: It is the primary goal of this project to not negatively impact this community with excessive spill light or glare.
 - 3. Life Cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated, and the field(s) should be proactively monitored to detect fixture outages over a 10 year life cycle. To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system.
- E. All lighting designs shall comply with any and all lighting ordinances the town of Sturbridge enforces.

1.2 LIGHTING PERFORMANCE

- A. Performance Requirements: Playing surfaces shall be lit to an average constant light level and uniformity as specified in the chart below. Light levels shall be held constant for 10 years. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Measured average illumination level shall be +/- 10% of predicted mean in accordance with IESNA RP-6-01, and measured at the first 100 hours of operation.

Area of Lighting	Average Constant Light Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Infield	50 footcandles	2:1	25	20' x 20'
Outfield	30 footcandles	2.5:1	77	20' x 20'

- B. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, the pole mounting heights from the playing field surface shall be seventy feet.

1.3 ENVIRONMENTAL LIGHT CONTROL

- A. Spill Light Control: Maximum vertical footcandles taken with the meter aimed at the brightest light bank at a distance of 150' feet from the field perimeter shall not exceed 1FC. Maximum horizontal footcandles at a distance of 150' feet from the perimeter of the field shall not exceed .5FC. Footcandle readings shall be taken at 30' intervals along the specified line at approximately 36" from the ground.

- B. Design Approval: The owner / engineer will review pre-bid shop drawings from the manufacturer's to ensure compliance to the specification. If the design meets the design requirements of the specifications, a letter will be issued to the manufacturer indicating approval for the specific design submitted.

1.8 ALTERNATE SYSTEM REQUIREMENTS

- A. Compliance to Specifications: Acceptance of a bid alternate does not negate the contractor and lighting manufacturer's responsibility to comply fully with the requirements of these specifications. Any exceptions to the specifications must be clearly stated in the prior approval submittal documents.
- B. Light Level Requirements: Manufacturer shall provide computer models guaranteeing light levels on the field over 10 years. If a constant light level cannot be provided, a maximum Recoverable Light Loss Factor of 0.70 shall be applied to the initial light level design to achieve the following Initial and maintained light levels. For alternate systems, scans for both initial and maintained light levels shall be submitted.

Area of Lighting	Average Initial Light Levels	Average Target/Maintained Light Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Infield	72 footcandles	50 footcandles	2:1	25	20' x 20'
Outfield	43 footcandles	30 footcandles	2.5:1	77	20' x 20'

- C. Revised Electrical Distribution: Manufacturer shall provide revised electrical distribution plans to include changes to service entrance, panel, and wire sizing.

1.9 ELECTRICAL SYSTEM REQUIREMENTS

- A. Contractor Responsibility: The installing contractor shall be responsible for providing the equipment and installation of a complete and operational system commencing from the load side of the service transformer and terminating at the safety disconnect within the electrical enclosure, 10' above grade, on each lighting pole. The electrical contractor shall coordinate the transformer and switchgear locations, as well as identifying the voltage and phase of the service, with the local power company and the Owner's representative before any equipment is installed.
- B. Electric Power Requirements for the Sports Lighting Equipment:
Electric power: TBD
- C. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.
- D. System Design
 - 1. The electrical system equipment shall consist of:
 - a. Conductors and conduit from the main service transformer to the service entrance panel board.
 - b. The service entrance panel board with appropriate individual circuit over-current protection. The panel board shall meet local and National Electrical Code (NEC) requirements for the size of the service, AIC rating, and the type of the environment to which it will be exposed. All feeder breakers shall be bolt on type.
 - c. Conductors and conduit for the feeder circuit from the service entrance panel board (or from the contactor panel if applicable) to the safety disconnect mounted in the electrical enclosure on each lighting pole 10' above grade.
 - d. Grounding conductors and grounding methods for the following:
 - (1) The main service entrance panel board. (per NEC or local codes)
 - (2) The lighting contactor enclosure. (per NEC or local codes)

2. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 12-24 hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation be located a minimum of 18 inches above final grade. Anchor bolt foundation concrete must cure for a minimum of 28 days before the pole stress is applied.
 3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
 4. Manufacturer will remote all ballasts and supporting electrical equipment in aluminum enclosures mounted approximately 10' above grade. The enclosures shall include ballast, capacitor and touch-safe fusing to indicate when a fuse is to be replaced for each luminaire. Safety disconnect per circuit for each pole structure will be located in the enclosure.
 5. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
 6. Controls and Monitoring Cabinet to provide on-off control and monitoring of the lighting system, constructed of NEMA Type 4 aluminum. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual Off-On-Auto selector switches shall be provided.
- B. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated for protection against corrosion and stress corrosion cracking. All wiring shall be enclosed within the crossarms, pole, or electrical components enclosure.
1. Lightning Protection: Manufacturer shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
 - a. Integrated grounding via concrete encased electrode grounding system.
 - b. If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.
- C. Safety: All system components shall be UL Listed for the appropriate application.

2.2 STRUCTURAL PARAMETERS

- A. Wind Loads: Wind loads shall be based on the 2015 International Building Code. Wind loads to be calculated using ASCE 7-10, an ultimate design wind speed of 120mph and exposure category C.
- B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).
- C. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report. If no geotechnical report is available, assume Class 5 standard soils.

PART 3 – EXECUTION

3.1 CONTRACTOR'S DUTIES

- D. Codes, Permits and Licenses: All work shall comply with the applicable rules of the National Electrical Code, the National Electrical Safety Code, the National Fire Codes, (published by the National Fire Protection Association), state and local codes and ordinances, and the terms and conditions of the services of the electrical utility, as well as any other authorities that may have lawful jurisdiction pertaining to the work specified. None of the terms or provisions of this specification shall be construed as waiving any of the rules, regulations or requirements of these authorities. The contractor shall procure all necessary permits or licenses to carry out his work, and shall pay the lawful fee therefore, as well as for any inspection fee or the cost of a certificate of approval.

In any instance where these specifications call for materials for construction of a better quality or larger size than required by the codes, the provisions of these specifications shall take precedence. The codes shall govern in the case of direct conflict between the codes and the plans and the specifications.

3.2 MATERIALS

- A. Approved Materials: All materials supplied by the contractor under the provisions of these specifications and plans shall be new materials of the kind and character called for by the specifications. Defective equipment or material damaged in the course of installation or tests shall be replaced or repaired in a manner satisfactory to the owner. All materials and equipment to be furnished under these specifications shall be the standard product of a manufacturer regularly engaged in the production of such material and shall be the manufacturer's current standard design.
- B. Alternate Materials: The materials specified have been determined to have characteristics appropriate for the purposes of this project. Alternate materials will only be considered as a substitute bid on a separate substitution sheet. No bid will be approved which proposes to use a non-approved substitute. Substitutions will not be considered in determining the lowest responsive bid. The owner reserves the right to reject any or all bids.

3.3 SITE ACCESS

- A. Contractor Access: For the performance of the contract, the contractor will be permitted to occupy such portions of the site as shown on the plans, or as permitted by the owner or his representative. A reasonable amount of tools, materials or equipment for construction purposes may be stored in such place, but not more than is necessary to avoid delays in construction. Excavated and waste materials shall be piled or stocked in such a way as to not interfere with spaces that may be designated to be left free and unobstructed, not to inconvenience other contractors or the owners.

Upon completion of the work and before acceptance and final payment is made, the contractor shall clean and remove from the site of the work, surplus and discarded materials, temporary structures and debris of every kind. The contractor shall leave the site of work in a neat and orderly condition equal to that which originally existed. Surplus and waste materials removed from the site of the work shall be disposed of at locations satisfactory to the owner.

- B. Owner's Access: The owner's representative shall at all times have access to the work site. The contractor shall keep the owner advised of the progress of the project and shall provide opportunity for the owner or his representative to inspect each phase of the project. The contractor shall provide proper and safe facilities for such access and for inspection.

3.4 REPLACEMENT OF DAMAGED PROPERTY

- A. The contractor shall replace all property damaged by him including fences, trees, plants, grass, walks, drives, building surfaces, etc.

3.5 INSTALLATION

- A. Manufacturer's Instructions: Written instructions for the installation of the sports lighting equipment shall be provided by the manufacturer. The contractor shall review the instructions prior to beginning installation and review any areas of concern with the manufacturer.

SUBMITTAL CHECKLIST

Design Submittal Data Checklist and Certification

All items listed below are mandatory, shall comply with the specification, and be submitted 10 days prior to bids

Tab	Item	Description
A	Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
B	Equipment Layout	Drawing(s) showing field layouts with pole locations.
C	On Field Lighting Design	Lighting design drawing(s) showing: a. Field Name, date, file number, prepared by, and other pertinent data b. Outline of field(s) being lighted, as well as pole locations referenced to (x & y), home plate.. Illuminance levels at grid spacing specified c. Pole height, number of fixtures per pole, as well as luminaire information including wattage, lumens and optics d. Height of light level test meter above field surface e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance and uniformity gradient; number of luminaires, total kilowatts, average tilt factor; light loss factor. f. Alternate manufacturers shall provide both initial and maintained light scans using a maximum 0.70 Light Loss Factor to calculate maintained values.
D	Off Field Lighting Design	Lighting design drawing showing initial vertical spill light levels along the boundary line (defined on bid drawings) in footcandles. Vertical levels shall be at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank lights.
F	Photometric Report	Provide photometric report for a typical luminaire used showing candela tabulations as defined by IESNA Publication LM-35-02. Photometric data shall be certified by laboratory with current National Voluntary Laboratory Accreditation Program or an independent testing facility with over 5 years experience.
G	Luminaire Aiming Summary	Document showing each luminaire's aiming angle and the poles on which the luminaires are mounted. Each aiming point shall identify the type of luminaire.
H	Structural Information	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of MA
I	Control & Monitoring System	Manufacturer shall provide written definition and schematics for automated control system to include monitoring. They will also provide examples of system reporting and access for numbers for personal contact to operate the system.
J	Electrical Distribution Plans	If bidding an alternate system, manufacturer must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of MA.
K	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed per specification for 10 years.
L	Warranty	Provide written warranty information including all terms and conditions.
M	Project References	Manufacturer to provide a list of project references of similar projects completed within the past three years.
N	Product Information	Complete set of product brochures for all components, including a complete parts list, UL Listings, and Manufacturers Certificate of Corrosion Protection.
O	Delivery	Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information.
P	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted.

I understand that the information supplied herein shall be used for the purpose of complying with the specifications for Town of Sturbridge. By signing below I agree that all requirements of the specifications have been met and that the manufacturer will be responsible for any future costs incurred to bring their equipment into compliance for all items not meeting specifications and not listed in the Non-Compliance section.

Manufacturer: _____ Signature: _____

Contact Name: _____ Date: ____/____/____



MASSWILDLIFE

DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

May 30, 2019

Annie Roscioli
Town of Sturbridge Recreation Department
308 Main Street
Sturbridge MA 01566

RE: Project Location: Town Barn Little League Field
 Project Description: Installation of four (4) pole lights
 Town: STURBRIDGE
 DEP Wetlands File No.: 300-0908
 NHESP File No.: 10-28195

Dear Applicant:

The Natural Heritage & Endangered Species Program of the MA Division of Fisheries and Wildlife (the "Division") has received and reviewed the revised project narrative and plans entitled "LIGHTING PROJECT AT TOWN BARN FIELD, STURBRIDGE MA" for the subject project.

The Division finds that the revised plans do not change our previous determination that this project **must be conditioned to avoid adverse effects** the actual Resource Area Habitat of state-protected rare wildlife species and **must be conditioned to avoid a prohibited Take** of state-listed rare species (Division letter dated 10/13/15, attached) and that previous determination stands. Issuance of an Order of Conditions approving the project as currently designed is consistent with the Interests of the WPA strictly related to rare species, provided the conditions in the Division's previous determination letter are included. A copy of any final Order of Conditions shall be mailed or hand delivered to the Division simultaneous with sending to the applicant as required pursuant to 310 CMR 10.05(6)(e)).

We note that all work is subject to the anti-segmentation provisions (321 CMR 10.16) of the MESA. Any activity not included in the current filing and located within *Priority Habitat* may require an additional filing with the Division for review if not otherwise exempt. If no physical work is commenced on the above proposed project within five years from the date of issuance of our original letter or there is a material change in the plans that were submitted to the Division, updated information and/or plans must be sent to the Division for review prior to any work.

Please contact Melany Cheeseman, Endangered Species Review Assistant, at (508) 389-6357 with any questions or comments.

Sincerely,

Everose Schlüter, Ph.D.
Assistant Director

MASSWILDLIFE



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Jack Buckley, *Director*

October 13, 2015

Lynne Girouard
Town of Sturbridge Recreation Department
308 Main Street
Sturbridge MA 01566

Sturbridge Conservation Commission
301 Main Street
Sturbridge, MA 01566

RE: Applicant: Town of Sturbridge Recreation Department
 Project Location: T Barn Recreational and Athletic Fields, STURBRIDGE
 Project Description: Construction of a soccer field, baseball field, two basketball courts, two bocce ball courts, a children's playground, and a concession stand with a portable restroom

 DEP Wetlands File No.: 300-0908
 NHESP File No.: 10-28195

Ms. Girouard and Commissioners:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") previously received a Notice of Intent with site plans entitled "Sturbridge Recreation Fields Town of Sturbridge" (dated July 29, 2014, "Permitting Submission") in compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.58(4)(b), 10.59). Additionally, the Division previously received supporting documentation for review pursuant to the MA Endangered Species Act Regulations (321 CMR 10.18). The Division requested additional information and clarification in a letter dated August 22, 2014. Since the issuance of the August 22, 2014 letter, the Division has received and reviewed a habitat assessment conducted by Oxbow Associates, Inc. dated July 22, 2015 and additional information from Jacob Murray (Waterfield Design Group) by letter dated July 23, 2015 and through several emails and phone calls.

Therefore, based on a review of the information provided to date, and the information contained in our database, the Division has determined that this project, as currently proposed, **must be conditioned in order to avoid adverse affects to the Resource Area Habitats** of state-listed wildlife species (310 CMR 10.59) **and to avoid a prohibited "take" of Wood Turtle** pursuant to 321 CMR 10.18(2)(a). To avoid a prohibited "take" of state-listed species, the Applicant shall ensure that the following conditions are complied with:

1. Wood Turtle Protection Plan: Prior to the commencement of Work, the Applicant shall submit a detailed protection plan for the Wood Turtle for review and written approval. This document shall consider timing, turtle-barriers, and biologist oversight within the work and staging areas to avoid impacts to Wood Turtles.

www.mass.gov/nhesp

Division of Fisheries and Wildlife

Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7890

An Agency of the Department of Fish and Game

EQUIPMENT LIST FOR AREAS SHOWN									
QTY	Location	Pole size	GRADE	ELEVATION	MOUNTING HEIGHT	LAMP TYPE	Luminaires		
							QTY	THIS QTY	OTHER QTY
2	A1-A2	70"	-	-	70"	1500W NAZ	6	6	0
4	B1-B2	70"	-	-	70"	1500W NAZ	6	6	0
TOTALS							18	18	0



SCALE IN FEET 1 : 80
0 90 180



MY PROJECT
Name: Sturbridge Little League
Location: Sturbridge, MA

GRID SUMMARY
Name: Split at 150'
Spacing: 300'
Height: 50' above grade

CONSTANT ILLUMINATION

PARAMETER	VALUE	HORIZONTAL FOOTCANDLES
Scen Average:	0.11093	
Minimum:	0.18	
Maximum:	0.05	
No. of Poles:	58	
Luminaire Type:	Green Generation	
Design Usage Hours:	5,000 hours	
Design Lumens:	134,000	
Avg Lamp Tilt Factor:	0.995	
No. of Luminaires:	18	
Avg Fc (K):	28.15 (30.6 max)	

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the design usage hours of the system.
Field Measurements: Illumination measured in accordance with IESNA RP-6-15 and CIBSE G4. Individual values may vary. See the Warranty document for details.
Electrical System Requirements: Refer to Appendix Draw Chart and/or the "Musco Control System Summary" for electrical sizing.
Installation Requirements: Results assume +/- 5% nominal voltage at line side of the ballast and structures located within 2 feet (Lm) of design locations.

ENGINEERED DESIGN
By: Markie Roake
File # / Date: 126315C01
16-Oct-18
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ILLUMINATION SUMMARY

Pole locations: Φ Dimensions are relative to 0.0 reference point(s) \otimes



MY PROJECT
 Name: Sturbridge Little League
 Location: Sturbridge, MA

EQUIPMENT LAYOUT

INCLUDES:
 - Little League

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.
 Installation Requirements: Fixtures assume 4'-3 3/8" nominal height at line side of the ballfield and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole Qty	Location	Height	Working Height	Mounting Type	Power
2	A1/A2	70"	70"	1500W MZ	3
2	B1/B2	70"	70"	1500W MZ	6
1500W MZ					

SINGLE LUMINAIRE AVERAGE DRAW CHART

Single Phase Voltage	Line Amps	Line Amps
208	220	240
240	277	314
480	550	628
1500 watt MZ	8.3	7.3
	6.5	5.1
	4.7	3.7



SCALE IN FEET 1 : 60
 0 60 120

Pole location(s) Ⓧ dimensions are relative to 0,0 reference point(s) ⊕

ENGINEERED DESIGN
 By: Marie Rourke
 File # / Date: 126315CR1 16-Oct-18

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EQUIPMENT LAYOUT