TECHNICAL SPECIFICATIONS FOR:

MONTCLAIR STATE UNIVERSITY
DIOGUARDI FIELD
FIELD LIGHTING AND SCOREBOARD IMPROVEMENTS
MSU PROJECT NO. 18C043

OUR FILE No.: SCE-R09019.021

TOWNSHIP OF LITTLE FALLS, COUNTY OF PASSAIC, STATE OF NEW JERSEY

JUNE 2018
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## APPENDICES TO SUPPLEMENTARY SPECIFICATIONS

APPENDIX A – LIGHTING DESIGN DOCUMENTATION

APPENDIX B – SCOREBOARD DOCUMENTATION
GENERAL NOTES

1. The contract for this project is authorized by the provisions of Local Public Contracts Law, NJSA 40A:11-1 et seq.

2. In case of conflict between these general notes and/or special provisions and general notes or bidder information prior to this section, prior information shall prevail.

3. Reference in these Specifications to Engineer and Owner shall mean SUBURBAN CONSULTING ENGINEERS, INC. (SCE) and Montclair State University authorized representative, Engineer, respectively.

4. The Standard Specifications for Road and Bridge Construction, 2007 Edition and the supplementary specifications for State Aid Projects, the most recent revisions as published by the New Jersey State Highway Department, the Plans, Technical Specifications, Advertisement, Contractor’s Proposal and including but not limited to the amendments and revisions hereinafter shall comprise the Contract. In case of conflict between the amendments and revisions hereinafter and the Standard Specifications for Road and Bridge Construction, 2007, the amended specifications shall govern. Any items not covered in the amended specification shall be governed by The Standard Specifications for Road and Bridge Construction 2007.

It is the responsibility of prospective bidders to familiarize themselves with these Standard Specifications, copies of which may be examined at the office of the Engineer and may be obtain, upon payment of the cost thereof, from:

State of New Jersey
Department of Transportation
P.O. Box 600
1035 Parkway Avenue
Trenton, New Jersey 08625
Telephone No. (609) 530-5587   FAX No. (609) 530-6626

3. Should labor, materials or equipment not provided for in the Technical Specifications be required for the completion of the project described by the Plans and Contract documents, clarification or interpretations as the Engineer may issue, shall govern and prevail.

4. The work to be performed under this contract consists of the furnishing of all equipment, material, labor and supervision to properly construct this project, together with all the appurtenances and related items of work as shown and described in the accompanying Plans, Specifications and Details.

5. The Contractor shall be responsible for protecting areas outside the limits of the work against damage as a result of the Contractor's work. Any damage to existing utilities, curbs, fences, shrubbery, vegetation, signs, trees, steps, structures, lawns, guardrails, paving, sidewalks, inlets, manholes, etc., caused by deliveries, diversion, or by his workers or equipment, shall be repaired and restored by the Contractor at no cost to the Owner, to a condition equal to that which existed prior to the construction and to the satisfaction of the Engineer.

6. Prior to the start of any work at the construction site, the Contractor shall inform the Engineer in writing of the name of manufacturer of the sports lighting system and all else required the Contractor proposes to use and will submit for approval purposes, three (3) copies of Drawings and/or catalog cuts. No material will be delivered to the job site until the Contractor has in possession, an approved copy of the Drawings or catalog cuts.

7. During the course of construction all efforts shall be made to maintain a neat and orderly project. Cleanup shall be pursued on a regular basis and in conjunction with the construction. The Contractor shall be responsible for cleanup during the life of the Contract. Upon completion of all construction, final cleanup shall include removal of all excess material, equipment, backfill, etc., and the site shall be restored to a condition equal to or better than that existing prior to construction. Should the Contractor fail to remove such material, equipment and supplies, the Owner shall have the right to remove them at the expense of the Contractor.

8. At the completion of construction, the Contractor shall tear down and remove all temporary structures unless expressly directed otherwise and shall remove remaining rubbish of all kinds from all Contract structures and from the site occupied during the progress of the work. The Contractor shall remove all concrete and ballast droppings and shall
leave site and the adjacent property which may have been affected by his operation in a neat and satisfactory condition. All structures and parts thereof constructed by the Contractor shall be thoroughly cleaned up and left in first-class condition.

9. Following completion of channels and other drainage facilities and prior to final progress estimate, all silt and other foreign material that may have deposited in channels, structures and pipelines during the construction period shall be removed.

10. During the course of construction, the Contractor shall provide trash receptacles at all work areas and each working day shall clean up all litter and debris generated by construction crews.

11. The Contractor shall at all times after regular working hours including weekends and holidays, maintain a telephone where the Contractor or a representative can be reached on an emergency basis. The Contractor or representative shall be prepared to act to correct conditions on the site deemed to constitute an emergency by either the Owner, its agent, the Engineer, or local authority but shall not wait for instruction before proceeding to properly protect both life and property. If a condition on the site requires attention after working hours, either the Owner's agent, Engineer, or local authority may call the Contractor or the Contractor's representative at the emergency telephone number, identify themselves and describe the emergency condition. The Contractor is expected to dispatch workers and equipment to adequately institute corrective measures within two (2) hours. If for some reason the Contractor or respective agent cannot be reached at the emergency number after a reasonable time (2 hours), the Owner shall have the right to immediately initiate corrective measures in accordance with the General Provisions, and the Contractor shall have been considered to waive any right to perform emergency services. The cost of these emergency corrective services shall be at the Contractor's expense.

12. The Contractor and respective subcontractors are required to submit each week, certified payroll records for work performed as mandated under the Regulation N.J.A.C. 12:60-6.1 8 of the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq.

13. The work shall be completed within consecutive calendar days specified elsewhere in these documents and shall begin upon the date specified in the Notice to Proceed issued by the Owner to the successful Bidder. Failure to complete any of this work by the date specified herein shall subject the successful Bidder to liquidated and direct damages as described in the Contract Documents.

14. Payment for any bid item, if applicable, will be withheld by the Owner until all tracking forms for recyclable material are received and accepted by the Engineer.

15. The Contractor shall pay not less than the prevailing wage rates to workers employed in the performance of any contract for the project, in accordance with the rate determined by the Commissioner of New Jersey Department of Labor pursuant to N.J.S.A. 34:11-56.25 et seq. OR the United States Secretary of Labor pursuant to 29 CFR Part 5, whichever is greater. State wage rates may be obtained from the New Jersey Department of Labor (telephone: 609-292-2259). The state wage rates in effect at the time of award will be made a part of this contract, pursuant to chapter 150, laws of 1963 (NJSA 34:11-56.25 et seq.). In the event it is found that any employee of the Contractor or any subcontractor covered by the contract, has been paid a rate of wages less than the minimum wage required to be paid by the contract, the Owner may terminate the Contractor's or subcontractor's right to proceed with the work, or such part of the work, as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise. The Contractor and his sureties shall be liable to the Owner for any excess costs occasioned thereby.

16. The Contractor shall submit a major equipment and material schedule listing all sources of materials with their proposal at time of bid. Any major equipment and material used on the project from a non-approved New Jersey Department of Transportation source will be considered non-participating.

17. Award of contract and subletting will not be permitted to, materials will not be permitted from, and use of equipment will not be permitted that is owned and/or operated by firms and individuals included in the report of suspensions, debarments and disqualifications of firms and individuals as maintained by the Department of the Treasury, Division of Property Management & Construction, (Telephone: 609-292-5347).
18. Payment for a pay item in the proposal includes all the compensation that will be made for the work of that item as described in the contract documents unless the "measurement and payment" clause provides that certain work essential to that item will be paid for under another pay item or lump sum.

19. Whenever any section, subsection, subpart or subheading is amended by such terms as changed to, deleted or added, it is construed to mean that it amends that section, subsection, subpart or subheading of the 2007 Standard Specifications unless otherwise noted.

20. Materials or assemblies as specified will be accepted on the basis of Certificates of Compliance stating that such materials or assemblies fully comply with the requirements of the contract. Payment for any bid item, if applicable, will be withheld by the Owner until all tracking forms for recyclable material are received and accepted by the Engineer.

21. Materials or assemblies used on the basis of Certificates of Compliance may be sampled and tested at any time and if found not to be in conformity with the contract requirements, will be subject to rejection whether in place or not. The Contractor shall require the manufacturer or supplier to furnish three copies of Certificates of Compliance with each delivery of materials, components and manufactured items that are acceptable by certification. Two copies shall be furnished to the Engineer and one copy shall be retained by the Contractor.

22. Certificates of Compliance shall contain the following information:
   A. Project and location to which the material is consigned.
   B. Name of the Contractor to which the material is supplied.
   C. Kind of material supplied.
   D. Quantity of material represented by the certificate.
   E. Means of identifying the consignment, such as label marking, seal number, etc.
   F. Date and method of shipment.
   G. Statement that the material has been tested and found in conformity with the pertinent contract requirements stated in the certificate.
   H. Signature of a person having legal authority to bind the supplier.
   I. Signature attested to by a notary public or other properly authorized person.

23. Payments relative to materials specified to be accepted on the basis of Certificates of Compliance shall not be made until the Engineer has in his possession an acceptable certificate of compliance.

24. The Contractor shall comply with all laws, ordinances, rules, orders and regulations relating to the performance of the work, the protection of adjacent property and the maintenance of passageways.

25. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.

26. The requirements outlined in statues LPC (N.J.S.A.) 40A11-, N.J.A.C. 7:22-, and 7:14-, applicable to the bidding and contractual process, shall take precedence to any conflicting requirements of the bid documents.

27. The Contractor will be furnished with three (3) sets of plans and specifications. One (1) copy of the plans and specifications furnished to the Contractor must be kept constantly on the project site. Anything shown on the plans and not mentioned in the specifications, or mentioned in the specifications and not shown on the plans, and all work and materials necessary for the completion of the work according to the intent and meaning of the Contract Documents, shall be furnished, performed and done, as if the same were both mentioned in the specifications and shown on the drawings. Any conflict or inconsistency between the plans and specifications, or any discrepancy between the figures and scale of drawings shall be submitted by the Contractor to the Engineer, whose decision thereon shall be conclusive. The decision of the Engineer as to which document will govern will be conclusive and final.

28. The Contractor shall prepare red line record drawings to the Owner per conditions stipulated in N.J.A.C. 7:14-2.2.
29. In the event a situation arises in which materials not specified on the plans are to be used for extra work, then the *Standard Specifications for Road and Bridge Construction 2007* will be used.

30. The Contractor's attention is specifically directed to General Provisions, which requires that he post a one (1) year Guaranty (Maintenance) Bond, prior to final payment, effective from the date of Substantial Completion.

31. Signs removed by the Contractor for construction shall be reset no later than the end of that same working day.

32. The Contractor's attention is directed to the General Notes contained on the Plans. Said notes are considered a vital part of the Contract and are binding upon the Contractor.

33. The Contractor shall be responsible for the legal disposal of all excess materials excavated of whatever nature at his own expense. The Owner is not obligated to supply a disposal site. The Contractor must not deposit the excess materials within the University limits without express permission of the Owner.

34. The Contractor is hereby notified that all work under this contract must be completed **within 90** calendar days from notice to proceed.

35. The Contractor will be assessed liquidated damages for failure to complete the project within the specified contract time.

36. The Contractor is responsible to obey all the safety and health regulations. Montclair State University assumes no responsibility for safety during the performance of the work.

37. The Contractor shall provide construction layout. Separate payment will not be made for construction layout, monuments or monument boxes. Contractor is responsible for setting construction stakes, establishing lines and continuous profile grade. All costs shall be included in the price bid for the contract.

38. Excavated trenches for piping, drainage structure, conduits, etc. within the project shall be filled in by the end of the workday. No open trenches, holes, etc. within the project area shall remain overnight. The Contractor shall account for adverse weather conditions when scheduling paving operations.

39. The Owner shall secure all permits except for those which by law are required to be obtained by the Contractor and per conditions stipulated in N.J.A.C. 7:14-2.3.

40. The Contractor must submit a preexisting conditions photo log or video to the Owner prior to the start of the construction, document all preexisting conditions along the entire project alignment. The pre-existing conditions photo log or video will be submitted to the Engineer for approval prior to the start of construction.

41. Any requirements and information for items that are not covered in the technical specifications are located within the plans.

42. A schedule of values is to be included with the bid, see form in appendix.

43. Contractor to submit the qualification form as mentioned in Section 601 and included in the appendix.

44. Contractor to furnish and install proper track protection at the location shown on the plans and specified in these technical specifications for the duration of the contract.
DIVISION 100 – GENERAL PROVISIONS
SECTION 101 – GENERAL INFORMATION

101.01 INTRODUCTION

This subsection is supplemented as follows:

Whenever any section, subsection, subpart or subheading is amended by such terms as but not limited to changed to, supplemented, replaced, added or deleted, it is construed to mean that it amends that section, subsection, subpart or subheading of the New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, 2007 Edition, the most recent revisions to that edition, and the supplemental specifications for State Aid Projects.

101.03 TERMS

This subsection is supplemented as follows:

Whenever the following terms, or pronouns in place of them, are used, the intent and meaning, unless a different intent or meaning is clearly indicated, shall be interpreted as set forth in the following:

COMMISSIONER: Shall mean the Project Owner, in this case the Montclair State University

COUNTY: Passaic County

DEPARTMENT: Shall mean the Project Owner, in this case the Montclair State University

ENGINEER: The word "Engineer" shall mean SUBURBAN CONSULTING ENGINEERS, INC. or properly authorized agent acting within the scope of the particular duties entrusted to them.

NOTE: In order to avoid cumbersome and confusing repetition of expressions in these Specifications, it is provided that whenever anything is or is to be done, if, as, or when "contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, accepted, acceptable, unacceptable, suitable, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned," it shall be understood as if the expression were followed by the words "by the Engineer" or "to the Engineer".

“OWNER” Montclair State University

“MUNICIPALITY” Township of Little Falls, New Jersey

“TOWN” Township of Little Falls, New Jersey

“SPECIFIED COMPLETION DATE”: The date on which the contract work is specified to be completed.

“STATE”: The State of New Jersey
SECTION 105 – CONTROL OF WORK

105.01 AUTHORITY OF THE DEPARTMENT

This subsection is supplemented as follows:

In the performance of the Work, the Contractor shall abide by all orders, directions and requirements of the Engineer issued within the limitations of the current Documents.

The Engineer shall in all cases, subject to the power and authority of the Owner, determine classifications, quantities, quality, acceptability and fitness of the several kinds of work which are to be paid for under the Contract; he shall interpret the Plans and Specifications, and all extra work order and shall determine all questions in relation to the Work and the construction thereof.

The Contractor shall employ no plant, equipment, materials, methods or men to which the Engineer objects, and shall remove no plant, materials, equipment or other facilities from the site of the Work without the Engineer's permission.

Engineer will have authority to disapprove or reject Work which is "defective", which term is hereinafter used to describe Work that is unsatisfactory, faulty or defective, or does not conform to requirements of the Contract Documents or does not meet the requirements of any inspection, test, approval, has been damaged prior to approval of final payment.

Whenever, in Engineer's reasonable opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work, whether or not such Work be then fabricated, installed or completed.

Engineer will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder. In his capacity as interpreter and judge he will endeavor to secure faithful performance by both Owner and Contractor. He will not show partiality to either and will not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the Work or the interpretation of or performance under the Contract Documents shall be referred to the Engineer for a decision which he will render in writing within a reasonable time.

Neither the Engineer's authority to act under this Subsection or elsewhere in the Contract Documents nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any material man, fabricator, supplier or any of their agents or employees or any other person performing any of the Work.

Engineer will not be responsible for or have control or charge over the acts or omissions of Contractor, or any Subcontractors, or any of his or their suppliers, agents, or employees or any other persons at the site or otherwise performing any of the Work, and he will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

105.04 PLANS AND SPECIFICATIONS

This entire subsection is deleted and replaced with the following:

The Contractor will be furnished with three (3) sets of Plans and Contract Documents & Specifications. It is the responsibility of the Contractor to acquire at his own cost a copy of “Standard Specifications for Road and Bridge Construction 2007” which is available from the cashier of the New Jersey Department of Transportation office at 1035 Parkway Avenue, Trenton, New Jersey 08625. One (1) copy of the Plans and Specifications furnished to the Contractor shall be kept constantly at the site of the Work. Anything shown on the Plans and not mentioned in the Specifications, or mentioned in the Specifications and not shown on the Plans, and all work and materials necessary for the completion of the Work according to the intent and meaning of the Contract Documents, shall be furnished, performed, and done, as if the same were both mentioned in the Specifications and shown on the Drawings. Any conflict or inconsistency between the Plans and Specifications, or any discrepancy between the figures and scale of drawings shall be submitted in writing by the Contractor to the Engineer, whose decision thereon shall be conclusive. In case of conflict or inconsistency, the more stringent and demanding requirement will be interpreted and payment rendered accordingly.
In the event the meaning of any portions of the Specifications or Drawings or any supplementary drawings or instructions of the Engineer is doubtful, the same shall be understood to call for the best type of construction, both as to materials and workmanship, which reasonably can be interpreted.

The Engineer will make all necessary explanations as to the meaning and intent of the Plans and Specifications, and shall give all orders contemplated therein or thereby or in every case in which a difficult or unforeseen condition shall arise in the performance of the Work.

The Table of Contents, titles, headings, running headlines and marginal notes contained in the Contract Documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

All materials and workmanship shall be strictly in accordance with the Plans and Specifications. When applicable and when the requirements are more strict, more detailed, or of a higher quality that the Plans and Specifications, the Manufacturer’s specifications and drawings shall govern.

The plans show the approximate size, arrangement and location of the Work. During construction, exact lines, grades, shapes, and dimensions will be established, and the Contractor shall construct the Work exactly in accordance therewith, subject however to changes as provided for in CHANGES IN PLANS AND SPECIFICATIONS AND EXTRA WORK.

The figures shown on the Plans after the word "elevation", or abbreviation of it, shall mean the distance in feet above the datum adopted by the Engineer. If the Contractor has any doubt or question as to such datum, he shall ascertain the datum being used, from the Engineer.

Any errors or omissions in the Plans and Specifications may be corrected by the Engineer, when such corrections are necessary for the proper fulfillment or their intentions as construed by him.

Any work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be provided whether or not specifically called for. Work, materials or equipment described in words which so applied have a well known technical or trade meaning shall be deemed to refer to such recognized standards.

The Drawings show the sizes, materials, elevation and locations of underground and exposed utilities, structures and other physical features, upon which Engineer has relied in the preparation of the Drawings and Specifications, and which have been determined from the best available information, by actual surveys or furnished and taken from the records of utility companies and drawings of existing facilities. Neither Owner nor Engineer assumes responsibility for the possibility that utilities, structures and objects other than those shown on the Drawings may be encountered or that actual sizes, materials, elevations and locations may be different from those shown. It is the Contractor's sole responsibility to coordinate all conflicts with utilities. Neither the Owner nor Engineer will assume liability for conflicts, delays, damages, or other impacted costs arising out of conflicts with utilities or coordination problems with utilities.

Where detailed information may be required for the Work, Contractor shall, at his expense, furnish all labor, tools, equipment and all other items and do whatever is necessary to verify and substantiate the conditions and to definitely establish the information required. Because of the nature of the Work, minor adjustments may be required in the Work to meet existing conditions. Contractor shall make such adjustments at no additional cost to Owner.

The Drawings indicate the extent and general arrangement of the Work. Any proposed departures from the Drawings, deemed necessary by Contractor to accommodate the materials and equipment he proposes to provide, shall be submitted to Engineer as soon as practical with complete details, designs, reasons for the departure and any other information Engineer may require. Departures from the Drawings without Engineer's approval are not permitted. All costs associated with proposed changes shall be borne by Contractor.

If any part of the Contract Documents is in conflict with the requirements of a public authority having jurisdiction over the Work, then the public authority's requirements shall govern. However, where the requirements of the Contract Documents exceed the public authority, then the Contract Document shall govern.

The organization of the Specifications into sections, and subsections, and the arrangement of the Drawings shall not control Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade,
or any individual Contractor in the case of multiple contracts. Whenever the provisions of the Contract Documents may conflict with any agreement or regulations of any kind in force among, members of any trade association, union or council which regulates or distinguishes that work shall or shall not be included in the work of any particular trade. Contractor shall make all necessary arrangements on his own to reconcile any such conflict of provisions without recourse to Engineer or Owner.

105.06 COOPERATION WITH OTHERS

The heading and entire text of this of this subsection is deleted and replaced with the following:

105.06 COOPERATION BY CONTRACTOR

105.06.01 Cooperation with Owner

The Contractor shall be conclusively presumed to be acquainted with all existing conditions and to guarantee that all work materials and equipment shall, upon final completion of the Work, be turned over to the Owner in a complete and perfect condition. The Contractor shall be responsible for the proper care, maintenance and protection of all work, materials and equipment, until the entire Contract is completed and all work, materials, and equipment are found in good condition and accepted. The Contractor shall be responsible for the entire Work until completed and accepted by the Engineer and the Owner.

The Contractor shall, at all times, provide the Owner, the Engineer, assistants and inspectors under him, and all state and federal agencies having jurisdiction, with necessary facilities for determining both on the work and at the places of manufacture, that all work being performed and all materials and equipment being manufactured are strictly in accordance with the Contract Documents. A seven (7) day notification in writing, stipulating the time and place where the manufacturing is to be done, shall be given the Engineer prior to the commencement of manufacture of any materials and equipment, in order that a representative of the Owner may be present, if so desired, to observe and inspect the operations.

Until acceptance of the Work by the Owner, the Contractor shall be responsible for all damage to the Work, including action of the elements and all other causes. The Contractor shall continuously and adequately protect the Work against damage from any cause.

If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions as the Engineer may deem necessary to given to any foremen or other employee about the Work, and the Engineer may order the Work stopped until a duly authorized representative of the Contractor appears and receives his instructions. No claim for damages nor any extension of time in which to complete the Work by reason of such delay will be allowed the Contractor.

The employment of a competent superintendent, foreman, and experienced mechanics and laborers and others skilled in the particular duties entrusted to them is required. When requested, the Contractor shall furnish to the Engineer, the qualifications of the superintendent, foreman, or any other individuals delegated with important functions connected with the Project.

Whenever the Engineer informs the Contractor or his representative in charge that any man on the Work is incompetent or disorderly, or is working contrary to the Specifications or the instructions of the Engineer, or that the Engineer knows that the man has been incompetent or disorderly on this or any previous work, or is objectionable, that man shall thereupon be immediately dismissed from the job and shall not be given employment on any work connected with the Contract.

When requested, the Contractor shall deliver to the Engineer each week a record of the numbers and classifications of men employed upon the Work each day of the previous week. The Contractor shall not permit the use of intoxicating liquors on or about the Project nor shall he permit anyone suffering from the effects thereof to remain on the Work.

The Contractor shall give preference in employment to local labor whenever qualified local labor is available, and he shall be the judge of the qualifications of local labor.
105.06.02 Cooperation with Others

The Owner reserves the right at any time to contract for and perform other or additional work on or near the work site covered by this Contract.

When separate contracts are let within the limits of the Project, or in areas adjacent thereto, each Contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. Moreover, the Contractor assumes the positive obligation of cooperating with such other contractors and coordinating his activities with theirs. If there is a difference of opinion as to the respective rights of the Contractor and others doing work within the limits of or adjacent to the Project, the Engineer will decide as to the respective rights of the various parties involved in order to secure the completion of the Owner's work in general harmony and in a satisfactory manner. His decision shall be final and binding on, and shall not be cause for claims by the Contractor for additional compensation.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his contract and hereby waives any and all claims against the Owner for additional compensation that may arise because of inconvenience, delay or loss experienced by him because of the presence and operations of other contractors working within the limits of or adjacent to the Project.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operation of the other contractors within the limits of the Project or adjacent thereto. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

The Contractor will not be held responsible for damage to work performed on the Contract or on other contracts within or adjacent to the site of the Project that may be caused by or on account of the work of other contractors. The Contractor will be held responsible for any damage done or caused by his work or forces to the work performed by other contractors within or adjacent to the site of the Project and he shall repair or make good any such damage in a manner satisfactory to the Engineer and without cost to the Owner.

If any portion of the Work of the Contractor or any of his Subcontractors depends for proper execution or results upon the work of any other Contractor, the Contractor shall inspect same and promptly give to the Engineer notice of all defects in the work of such other Contractor as renders it unsuitable for proper execution and completion of the Work. The Contractor shall further notify the Engineer of all delays by such other Contractor, in the performance of his work, as will affect the timely performance of the work. The failure of the Contractor to so inspect and give notice shall constitute an acceptance by him (but not by the Owner) of the work of such other Contractor as fit and proper for the reception of the work, except as to defects developing in the work of such other Contractor after the execution of the work, and an acknowledgment of the timely performance of such other Contractor of his work.

The provisions of this Subsection shall also apply to utilities and their contractors working on the Project site and adjacent thereto.

The following subsection is added:

105.11 OBSTRUCTIONS ENCOUNTERED

The drawings show certain information, which has been obtained from various sources regarding various structures, which exist at the location of the Project both below and at the surface of the ground. The Owner and the Engineer expressly disclaim all responsibility for the accuracy or completeness of the information given on the Drawings with regard to existing structures and pipelines, and the Contractor will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information, said structures and pipelines being shown only for the convenience of the Contractor, who shall verify the information to his own satisfaction.

The provision of this information within the Contract Drawings does not relieve the Contractor of his obligation to support and during the Construction of the Work, and to make good all damages due to such pipelines and structures, as provided in these Specifications.
The following subsection is added:

**105.12 WORKING HOURS - HOLIDAYS AND OVERTIME**

The work day for the Engineer and his staff shall begin at 8:00 a.m. and end at 5:00 p.m. on Mondays through Friday, except Sundays, and State Holidays. If the Contractor wishes to prosecute any portion of the Work beyond these hours, he shall notify the Engineer each time in advance, giving him ample time in which to produce an Engineer and/or Inspector (or Survey as required) for the overtime work and notify the Owner for his representative to be present. The Contractor shall compensate the Owner for Engineering, Inspection, and Surveying overtime and such compensation shall be deducted from the Contractor's monthly payment. Said compensation will be in the exact sum billed to the Owner by the Engineer or others.
SECTION 107 – LEGAL RELATIONS

107.11 RISKS ASSUMED BY THE CONTRACTOR

This subsection is supplemented as follows:

The Contractor shall, in furtherance of the above paragraphs, but not by way of limitation, at the Contractor’s expense, provide suitable drainage for the Project and erect such temporary structures where necessary to protect the Work from damage. The Contractor shall assume the risks for failure to take such actions.

In case of suspension of the Work from any cause whatever, the Contractor shall continue to be responsible for the Project as provided above and shall take such precautions as may be necessary to prevent damage to the Project, provide for drainage, and shall erect any necessary temporary structures, signs, or other facilities. During such period of suspension of the Work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established seedings furnished under the Contract and shall take adequate precautions to protect important vegetative growth against injury. If ordered by the Engineer, the Contractor shall properly store, during such suspension of the Work, materials which have been partially paid for or furnished by the Department. The Department will be entitled to the possession of such materials, and the Contractor shall promptly return the same to the Project site when requested. The Contractor shall not dispose of any of the materials so stored except on written authorization. The Contractor shall be responsible for the loss of or damage to such materials.
SECTION 108 – PROSECUTION AND COMPLETION

108.01 SUBCONTRACTING

The following is added before the first paragraph:

There are no Specialty Items in this Project.

108.02 COMMENCEMENT OF WORK

This subsection is supplemented as follows:

Construction operations shall not begin until the Contractor has supplied and the Engineer accepted, the preliminary schedule and other certifications, forms, schedules and any other information required by the contract documents.

108.07 TRAFFIC CONTROL

108.07.02 Changes to the Traffic Control Plan (TCP)

The heading and entire text of this subsection is deleted and replaced with the following:

108.07.02 Traffic Control Plan (TCP)

The TCP provides for the treatment of conditions caused by or encountered during the Work on the Project should this be deemed necessary by local police and/or the Engineer. The Contractor shall be responsible for the preparation of the TCP, submit to the Engineer for approval applicable jurisdictional authority and the Contractor shall be solely responsible to perform the Work in accordance with the TCP.

The TCP shall be based on the requirements provided in the current Manual on Uniform Traffic Control Devices (M.U.T.C.D.). The Contractor shall work in accordance with the provisions of the traffic control or detour plan and shall only deviate from the plan if approved by the Engineer and applicable jurisdictional authority.

108.11 MODIFICATIONS TO CONTRACT TIME

This subsection is supplemented as follows:

All work on this contract must be completed within ninety (90) calendar days from the notice to proceed. If the work exceeds ninety (90) calendar days, in addition to the liquidated damages as outlined below the Contractor shall also be responsible for all Engineering and Inspection services after this date. This cost will be deducted from the Contractor’s final payment(s) along with any/all liquidated damages.

108.11.01 Extensions to Contract Time

A. Qualifications for Extensions

This subpart is supplemented as follows:

Extension of contract time for the reasons set forth in this Subsection 108.11 will not be granted unless the Contractor has notified the Engineer in writing of the causes of delay within ten (10) State Business days from the beginning of any such delay.

108.20 LIQUIDATED DAMAGES

The entire text of this subsection is deleted and replaced with the following:

Liquidated Damages shall be in accordance with the standards, requirements and schedules as established by Montclair State University.
SECTION 109 – MEASUREMENT AND PAYMENT

109.01 MEASUREMENT OF QUANTITIES

This subsection is supplemented as follows:

All work completed under the Contract shall be measured by the Engineer according to United States Standard Measures using the units scheduled in the Proposal. Whenever requested by the Engineer, the Contractor shall provide the necessary capable assistance together with suitable facilities for weighing, measuring or otherwise determining the quantities of materials used in the work.

109.01.01 Before and During Construction

All dimensions shall be obtained or verified by the Contractor for the accommodation of equipment and/or materials furnished by the Owner and/or the Contractor and installed by the Contractor. Dimensions on the drawings indicate nominal sizes under ideal conditions and shall not under any circumstances be so concerned as to relieve the Contractor of the responsibility of taking measurements in the field and furnishing material of the correct dimensions.

109.01.02 After Construction

All work completed under this Contract will be measured for payment by the Engineer according to Unites States Standard Measures.

109.01.03 Adjustment of Estimated Quantities

The quantities shown are approximate only, and the Owner (Montclair State University) reserves the right to increase or decrease them at the unit price bid. Such change, however, will be only upon the written order of the Engineer. The Owner reserves the right to omit any items in the Proposal if deemed to the best interest of the Owner to do so. The Owner reserves the right to purchase materials directly from the manufacturer and have them installed by the Contractor. The Owner reserves the right to arrange for the disposal of existing on-site materials and have the Contractor perform the removal or excavation required and transport such materials off the site.

END OF SECTION
DIVISION 150 – CONTRACT REQUIREMENTS
SECTION 157 – CONSTRUCTION LAYOUT AND MONUMENTS

157.03 PROCEDURE

This entire subsection is deleted and replaced with the following:

The Contractor is responsible for setting construction stakeout and establishing lines.

The Contractor will meet with the Engineer prior to construction layout being performed to discuss the layout and any possible conflicts that may occur. The Engineer shall provide the Contractor with CAD files of the construction plans for the Contractor’s use in survey layout and stakeout.

The Contractor shall be held responsible for the preservation of all stakes and marks. If any of the construction stakes or marks are destroyed or disturbed by the Contractor, the costs for replacing the construction stakes or marks will be paid for by the Contractor at no additional cost to the Owner and shall be deducted from the awarded contract total.

After stakeout is prepared by Contractor, it is the Contractor’s responsibility to verify the locations, dimensions, and inverts of the marked-out items in relation to the contract drawings. It is the Contractor’s responsibility to notify the Engineer with any questionable stake placements or callouts.

Any marking devices used by the Contractor for project management during construction shall be temporary in nature and removed prior to final acceptance. Any permanent devices used shall be removed at the Contractor’s expense prior to final acceptance. If such devices are not removed, the cost to remove them shall be deducted from final payment.

The Contractor shall submit to the Engineer the file type and version of any electronic data required to operate laser-guided grading equipment, as well as, an example and description of the Contractor’s preferred methodology. It also must be noted that Contractor through its licensed Land Surveyor shall be responsible for any As-Built information as identified in these specifications for review and approval of the Engineer in accordance with timeframes specified.

Working hours for the surveyor are described in Subsection 105.12.

157.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Construction layout and other related surveying tasks shall be included in the various bid items. The Contractor shall coordinate all construction layout activities with the Engineer. The Contractor shall efficiently schedule stakeout in a manner such that stakes will not be damaged, removed, or misaligned. No separate payment will be made for resetting of stakes. The Contractor shall notify the Engineer a minimum of three (3) days prior to any required stakeout work.
SECTION 158 – SOIL EROSION AND SEDIMENT CONTROL
AND WATER QUALITY CONTROL

158.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Work shall include all labor, materials, and equipment necessary for the furnishing and installation of soil erosion and sediment control devices. This includes but is not limited to installation of control devices and the maintenance of the devices until completion of the project.

Soil Erosion and Sediment Control will not be measured and payment will be included in the Clearing Site made on a lump sum basis. Measurement and Payment for Soil Erosion and Sediment Control shall not be paid for under the appropriately base bid item Soil Erosion and Sediment Control. Partial payment during construction will be made on the following schedule: 50% of lump sum at completion and acceptance of installation, next 25% at 50% completion of overall contract value and the remaining 25% with final acceptance and final payment.
SECTION 161 – FINAL CLEANUP

161.02 MATERIALS

The Contractor will provide the materials, labor and equipment to conduct a final cleanup of the project site, including existing and newly constructed items and the surrounding area including sidewalks, curbs, fencing, roadways and all areas affected by the construction.

161.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Measurement and payment for Final Cleanup will not be made; the cost(s) will instead be included in the lump sum cost.

END OF SECTION
DIVISION 200 – EARTHWORK
SECTION 201 – CLEARING SITE

201.01 DESCRIPTION

This subsection is supplemented as follows:

Clearing Site shall also include the removal, relocating, resetting or protection in place of any fences, signs, pavement, inlets, subsurface irrigation system piping, valves, sprinkler heads and controls, or other items which are in conflict with construction whether or not they are designated to be removed or reset in the plans. This work shall also include the resetting of any and all utility castings and boxes within the work zone whether they are designated on the plan or not, including but not limited to inlets, manholes and water valve boxes. The contractor is encouraged to walk the site to make his/her own determination of the items which are in conflict with construction and which must be removed and/or reset. No additional payment will be given for items removed or reset by the contractor during the course of construction which have not been identified in the plans and were not brought to the attention of the engineer prior to removal.

Clearing Site shall also include the bracing of utility poles in accordance with the utility owner(s) requirements and all coordination with the utility owner(s).

Clearing Site shall also include the saw cutting and removal of existing pavement and running track material in areas effecting proper installation of proposed features. In performing the work, should any damage occur to the line striping on the existing track the Contractor shall repaint the stripes on the existing track for all lanes with appropriate line paint striping paint utilized for running track surfaces in accordance with NCAA requirements and as directed by the Engineer, at the Contractor's sole expense and with no additional cost required of the Owner.

Although limited in nature, Clearing Site shall also include the trimming of tree limbs, either within or adjacent to work area, which are in conflict with construction. Every effort shall be made by the contractor to minimize removal of trees and limbs. No tree or shrubbery removal or trimming shall take place unless specifically authorized by the Engineer. All trees or shrubs not designated for removal or trimming that are damaged by the contractors operations shall be treated to prevent tree or shrub loss in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey and common industry standards. All work associated with the trimming of trees and the treatment of damaged specimens shall be performed by a professional forester or certified tree expert.

Clearing Site shall also include the restoration in kind of all disturbed finished grade surfaces, including but not limited to asphalt, lawn areas and track surfacing.

The Owner reserves the right to retain items that exist on the site that will be removed by the Contractor as part of Clearing Site. These items may be utilized elsewhere by the Owner. The Contractor will remove such items and store on the site for removal or storage by the Owner. The Contractor shall be notified of all items at the commencement of construction of all items that the Owner will retain and the Contractor shall not remove from the site.

Clearing Site shall also include the removal, protection and re-installation of the existing chain link fence for construction access as indicated on the construction drawings. The contractor is responsible for removing the existing chain link fence (including fabric and posts as necessary) in order to provide adequate construction access to the site. Contractor is responsible for removing existing chain link fence fabric and posts (as necessary) without damaging them, ensuring that they are stored in a safe and secure location during construction until they are ready to be re-installed. Any damage or replacement consequent to the removal and storage of the existing chain link fence will be the responsibility of the contractor; the fencing will be repaired or replaced at no additional cost to the owner.
201.03 CONSTRUCTION

201.03.09 Disposal of Materials and Debris

This subsection is supplemented as follows:

All items scheduled for removal that are of value shall be stored by the Contractor for inspection by the Owner. The Contractor shall provide a list of items kept for inspection and submit to the Owner and Engineer for review. Should any material be selected to be salvaged by the Owner, the Contractor shall provide a safe storage location onsite.

Removed items and debris under Clearing Site not selected for salvaging by the owner shall be recycled/disposed of by the Contractor at sites outside the Campus. Disposal shall be in conformance with all Federal, State and Local Laws.

Recyclable components of those materials removed under Clearing Site shall be recycled and written documentation of the tonnage of material recycled shall be provided to the owner. Documentation shall be in the form of accurate weight slips or other form acceptable by the Municipalities’ Recycling Coordinator as will satisfy the State’s requirements for municipal eligibility for state tonnage grants. Recycling components shall be any NJDEP Class “B” recyclable material, including but not limited to concrete, brick, block, and tree stumps/trunks or any other components identified by the Municipalities Recycling Coordinator as having an NJDEP approved recycling facility capable of accepting said material. The owner shall make available, on request, a listing of NJDEP approved Recycling Facilities for Class “B” Recycling Materials, including the company names, NJDEP Identification Numbers, phone numbers, locations and material types accepted.

201.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Clearing Site items will not be measured, and payment shall be on the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements.
SECTION 202 – EXCAVATION

202.01 DESCRIPTION

This subsection is supplemented as follows:

The work shall consist of stripping existing topsoil and other ground cover and excavation for the installation of the electrical components, conduit and scoreboard/lighting foundations.

Any unsuitable material for backfill shall be disposed off-site by the Contractor at no additional cost to the Owner.

Excavated materials shall be moved from the site to a designated area on campus and protected in accordance with appropriate soil erosion and sediment control measures. The designated area for stockpile of excavated soils shall be near Yogi Berra Stadium.

The work shall also include the core drilling of rock within the shaft embedment of the sport lighting poles.

202.02 MATERIALS

This subsection is supplemented as follows:

Import Certified clean and compactable fill meeting the soil characteristics below with supporting source and analytical data verifying to its cleanliness to boring area up to subgrade. The contractor shall provide all load tickets of imported fill.

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 2” inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.

E. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

202.03 CONSTRUCTION

202.03.03 Excavation Unclassified Material

This subsection is supplemented as follows:

Excavation shall be performed under the base bid contract. The Contractor shall provide for smooth grading transitions from proposed areas to the surrounding existing grade. The Contractor shall include the cost for this work in the appropriate contract item in the contract. Not separate payment will be made for these transitions.

The Contractor shall provide for appropriate excavation protection, temporary security fencing at least six feet (6’) high, safety signage and site security for personnel utilizing the facility. Contractor shall make notice of work restrictions while construction is underway.

The Contractor shall move all material excavated and not scheduled for reuse immediately to the designated area on campus. Stockpiles on-site should be limited to topsoil and suitable fill. The University shall provide an on-site location
near Yogi Berra Stadium for storage of excess spoils. The costs associated with the hauling of the excess spoils to any part of the campus as directed by the University shall be included in lump sum cost for the project, specifically in the Grading and Earthwork item. No soil shall leave the campus without specific approval of the University and in accordance with the applicable local, state and federal requirements.

Rock core drilling (If and where directed) shall be initiated only upon the direction of the engineer upon review of the Rock core drilling of the shafts of individual light poles. This item will involve the mobilization of the rock core drilling equipment, drilling of rock to achieve the required grades for the sports lighting poles foundations as shown in the construction plans. This work shall only be necessary when it is agreed that the rock encountered cannot be removed with conventional drilling/excavation. The core drilling equipment shall have sufficient torque and auger bits to ensure the existing track is not undermined.

202.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Measurement and Payment for Rock Core Drilling shall be paid for under the appropriately awarded base bid items. All soil shall not be measured and cost for disposal shall be made on the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements.

Grading and Earthwork shall not be measured and payment shall be made on the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements.

Measurement and Payment for Rock Core Drilling (If and where directed) shall be measured and paid on a linear foot basis with the total length included in the base bid price for Dioguardi Field Lighting and Scoreboard Improvements. For this item in the schedule of values shall only be paid if initiated as per all if and where directed items. The work shall include all necessary equipment, materials and labor to achieve the necessary grades and clearance for the embedment of the foundations for sports lighting and scoreboard. The linear feet will only be measured for the excavation to achieve the required depth of the bottom of the light pole stanchion.

END OF SECTION
DIVISION 300 – SUBBASE AND BASE COURSES
SECTION 302 – AGGREGATE BASE COURSE

302.01 DESCRIPTION

This subsection is supplemented as follows:

This work shall also consist of the construction and grading of the paved areas as shown on the plans and repair of subgrade as necessary to meet compaction requirements for the paved areas noted as compacted subgrade in plans and details. Work to include excavation of soils which are soft and must be removed as determined by the Engineer to up four feet (4’) below the required subgrade. Import of clean fill to be compacted in eight-inch (8’’) lifts and installation of crushed stone and geogrid as shown in project details. Compaction testing to demonstrate compliance with these specifications shall be provided by Contractor at their expense.

This work shall also consist of the construction and grading of the paved areas as shown on the plans.

302.03 CONSTRUCTION

This subsection is supplemented as follows:

Base courses for paved areas shall utilize dense graded aggregate (Section 900 of the 2007 NJDOT Specifications) as detailed on the plans.

For repair of subgrade the fill shall be placed in even horizontal lifts not exceeding eight inches (8’’) loose thickness before compaction.

302.03.01 Aggregate Base Course

E. Compaction Acceptance Testing

This subpart is supplemented as follows:

The compaction requirements in this subsection are waived. The base course shall be placed and compacted according to subsection 203.03.02.D (95% Compaction). Compaction testing results shall be provided by the Contractor to the Engineer prior to acceptance of the subgrade for pavement, and field areas, including nuclear density testing. Minimum testing requirements as follows by an independent third-party consultant:

- Three (3) tests around each subsurface structure within the field area and within synthetic turf surface.

Contractor to contract with and provide third-party, certified testing consultant as approved by the Engineer with the proper equipment to determine the compaction results for review by the Engineer. Acceptance of the testing results of subgrade by the Engineer is required prior to placement of pavement.

302.04 MEASUREMENT AND PAYMENT

This subsection is supplemented as follows:

Measurement of aggregate base course will not be made including the compaction testing; the cost(s) for aggregate base course will be included under the various bid items requiring same as detailed on the plans.

END OF SECTION
DIVISION 400 – PAVEMENTS
SECTION 401 – HOT MIX ASPHALT (HMA) COURSES

401.01 DESCRIPTION

This subsection is supplemented as follows:

The work shall include the installation of the HMA for the restoration of existing paved areas.

401.03 CONSTRUCTION

401.03.03 HMA Courses

H. Air Void Requirements

This entire subpart is deleted and replaced with the following:

The in-place air voids of each mixture in a completed lot shall be a minimum of two percent (2%) and a maximum of eight percent (8%). Conformance will be determined on the basis of the average of five (5) air voids measurements for each lot of approximately 10,000 square yards of pavement surface area. Air voids will be determined from six-inch (6”) diameter drilled cores tested according to AASHTO T166 and T209. The pay quantity for each nonconforming lot will be reduced according to the following table.

<table>
<thead>
<tr>
<th>LOT AVERAGE AIR VOIDS</th>
<th>REDUCTION PER LOT</th>
<th>REDUCTION PER LOT DUE TO NONCONFORMANCE TO AIR VOIDS REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(FIVE (5) SAMPLES)</td>
<td>(PERCENT OF EACH LOT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0 TO 1.4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>1.5 TO 1.9</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2.0 TO 8.0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8.1 TO 9.0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9.1 TO 10.0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>OVER 10.0</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

I. Thickness Requirements

This entire subpart is deleted and replaced with the following:

Upon completion of HMA paving, the Engineer may obtain cores from the finished pavement at random locations.

The thickness requirements contained herein shall apply only when each component hot mix asphalt mixture in the pavement structure is specified to be a uniform thickness, when such uniform thickness hot mix asphalt mixtures are specified, the combined total thickness of the mixture or mixtures shall be measured to determine compliance with the governing acceptance limit shown in Table 404-4. In addition, the surface course shall be measured to determine compliance with a minimum thickness requirement using an acceptance limit of 1¼ inches. Results of this check on surface course minimum thickness will be used solely to determine whether a remove and replace or an overlay condition exists, not for payment reduction.
### TABLE 404-4 THICKNESS ACCEPTANCE LIMITS

<table>
<thead>
<tr>
<th>SPECIFIED OR TOTAL</th>
<th>PLAN THICKNESS (INCHES)</th>
<th>ACCEPTANCE LIMIT (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>1.75</td>
</tr>
<tr>
<td></td>
<td>2.25</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>3.75</td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>4.25</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>4.75</td>
</tr>
<tr>
<td></td>
<td>5.5</td>
<td>5.25</td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>5.75</td>
</tr>
<tr>
<td>OVER 6.0</td>
<td>SPECIFIED THICKNESS LESS 0.25</td>
<td></td>
</tr>
</tbody>
</table>

Conformance to thickness requirements will be determined in lots consisting of approximately 10,000 square yards or less. Areas consisting of different combinations of hot mix asphalt mixtures or thickness will not be included in the same lot.

A thickness lot shall have not more than 25% of the lot area, as determined from Table 404-5, less than the governing acceptance limit for total thickness shown in Table 404-4.

The acceptance of a thickness lot will be determined from thickness measurements of five (5) drilled cores obtained by the Engineer for each lot. Each core will be removed from a random location within each lot and shall be a minimum of four inches (4") in diameter. The total core thickness and the thickness of each component hot mix asphalt mixture contained therein will be determined in accordance with Section 990, NJDOT B-4.

When variations in total thickness cause more than 25% of the areas of a lot to be less than the governing acceptance limit shown in table 404-4, the lot is unacceptable and shall be removed and replaced or overlaid. However, should the percent of lot deviating from the thickness acceptance limit not exceed 45%, upon written request, the lot may be left in place without being overlaid provided that the lot payment will be reduced in accordance with Table 404-5.

The percent of lot area less than the applicable acceptance limit shall be determined from the calculated value for the term QL.

The term QL is here defined as:

\[
QL = \frac{\text{AVERAGE LOT THICKNESS} - \text{THICKNESS ACCEPTANCE LIMIT}}{\text{RANGE}}
\]

Where average lot thickness is the average of the total thickness measurements obtained from the five (5) lot cores and range is the absolute difference between the smallest and largest total thickness measurements obtained from the five (5) lot cores.

### TABLE 404-5 REDUCTION PER LOT DUE TO NONCONFORMANCE TO THICKNESS REQUIREMENTS

<table>
<thead>
<tr>
<th>QL</th>
<th>EQUAL TO OR GREATER THAN</th>
<th>LESS THAN</th>
<th>PERCENT OF LOT AREA OUTSIDE THICKNESS ACCEPTANCE LIMIT</th>
<th>REDUCTION PER LOT, PERCENT (SEE Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.30</td>
<td>--</td>
<td>0-25</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>0.23</td>
<td>0.30</td>
<td>26-30</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>0.17</td>
<td>0.23</td>
<td>31-35</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>0.11</td>
<td>0.17</td>
<td>36-40</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>0.06</td>
<td>0.11</td>
<td>41-45</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>--</td>
<td>0.06</td>
<td>GREATER THAN 45</td>
<td>50</td>
<td>(SEE Note 2)</td>
</tr>
</tbody>
</table>

**Note 1** – Percent reductions are not applicable when the term QL is calculated to determine if the surface course complies with the minimum thicknesses.
Note 2 – Remove and replace or overlay.

The term QL shall also be calculated for the HMA surface course of each lot independently using the core thickness values for that course and a minimum thickness acceptance limit of 1 ¼ inches. When the QL value, so calculated, is less than 0.23 indicating that more than 30% of the surface course is outside the minimum thickness acceptance limit of 1 ¼ inches, the surface course in that lot shall be removed and replaced or overlaid, and any reduction for that lot based on total thickness requirements shall not be applied.

When an unacceptable lot is overlaid, the overlay shall be of the surface course mixture specified for that lot and shall be a minimum of 1 ½ inches thick if that mixture is hot mix asphalt surface course mix 9.5M64 Surface Course or as designated on the plans.

The overlaid or replaced lot is only that material placed up to the specified total thickness of the combined mixtures. For an overlaid or replaced lot, the quantity of material shall be determined using the computed average weight of the mixture, the area of the lot and the difference between the specified total thickness and the average thickness of the five (5) lot cores.

401.04 MEASUREMENT AND PAYMENT

This subsection is supplemented as follows:

Measurement and payment for gravel removal will not be made; the cost will instead be included in the base bid item for Clearing Site for each Contract.

Measurement and payment for Hot Mix Asphalt Driveway, 5 ½” Thick shall not be made; the cost will be included in the lump sum bid Dioguardi Field Lighting and Scoreboard Improvements.

Measurement and payment for tack coat, tack coat 64-22 and prime coat, as applicable will not be made; the cost(s) will instead be included in the lump sum bid.

END OF SECTION
DIVISION 600 – MISCELLANEOUS CONSTRUCTION
SECTION 606 – SIDEWALKS, DRIVEWAYS AND ISLANDS

606.01 DESCRIPTION

This subsection is supplemented as follows:

This work shall consist of all labor, materials and equipment necessary for the furnishing and installation of Concrete Sidewalk, 4" Thick and Concrete Sidewalk, 4” (If and where directed) as shown on the plans and details, including but not limited to ADA ramps and walkways. This shall include but not be limited to all necessary excavation, installation of materials, base courses, fabric, placement of forms & wire mesh reinforcement, pouring of concrete, finishing and final curing to the dimensions as shown on the plans and as specified herein and related items as shown on the plans and as specified herein, including saw-cutting, removal, and repairs to adjoining surfaces and pavements damaged during construction.

606.02 MATERIALS

606.02.01 Materials

This subsection is supplemented as follows:

Concrete shall be Class B, 4000 PSI as specified in Subsection 914 and shall be air entrained. When air temperatures are below 40°F or when air temperatures are expected to fall below 40°F within a 24-hour period, then the Engineer may specify Type III cement to be used in the Mix. No additional payment will be made for this substitution.

Concrete: NJDOT class "B" and shall attain a minimum of 4000 psi at 28 days. Slump shall not exceed four inches (4”). The same brand and type of concrete shall be used throughout the project.

Reinforcement: Refer to plan details for the reinforcement requirements.

Expansion joint filler: Bituminous pre-molded cellular joint filler.

Pattern: All concrete walkways shall be scored in accordance with the construction details.

Detectable Warnings: Concrete Aprons shall be furnished with detectable warnings to meet ADAAG requirements.

606.03 CONSTRUCTION

606.03.01 HMA Sidewalks, Driveways and Islands

This subsection is supplemented as follows:

Dense-graded aggregate base course shall be according to Section 302.

606.03.02 Concrete Sidewalks, Driveways and Islands

This subsection is supplemented as follows:

Unless specified otherwise, sidewalks shall be constructed with a slope of ¼ inch vertically for every one foot (1’) horizontally, and sloped toward the roadway where applicable.

In non-driveway areas, sidewalks shall be constructed of class “B” air entrained concrete, four-inches (4”) thick over dense-graded aggregate base course.

In concrete driveway and parking areas, sidewalks shall be constructed of class “B” air entrained concrete with reinforcement steel, six inches (6") and nine inches (9") thick over dense-graded aggregate base course, six-inches (6") thick.
Prior to removing interfering tree roots, the Contractor shall receive permission for the root removal from the Engineer. The Contractor shall allow sufficient time for the Engineer to examine the exposed roots prior to root removal. If the required root removal is deemed to be excessive by the Engineer, the tree and stump shall be removed by change order.

The surface of the concrete sidewalk through driveways can be depressed up to four inches (4”) to meet as closely as possible, the existing or proposed driveway elevation, unless directed otherwise by the Engineer.

Dense-graded aggregate base course shall be according to Section 302.

Sidewalks to receive a light broom finish.

E. Expansion Joints

This subpart is supplemented as follows:

**Expansion Joints in Concrete**: Transverse expansion joints shall be placed as shown on the plans and details. The joints shall be ½” wide. Joints shall be filled with bituminous pre-molded cellular joint filler cut ½” below top of grade.

Construct ½” wide expansion joints, placed at intervals of approximately twelve feet (12’), filled with preformed joint filler.

Where sidewalk widths exceed five feet (5’), longitudinal scribed joints shall be provided as directed by the Engineer. Such joints shall be a minimum one-inch (1”) deep. See detail for typical joint pattern.

Transverse scribed joints shall be placed at intervals equal to the sidewalk width. These shall be a minimum of one-inch (1”) deep. See detail for typical joint pattern.

606.04 MEASUREMENT AND PAYMENT

This subsection is supplemented as follows:

**Concrete Sidewalk, 4” Thick** shall not be measured and payment shall be on the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements. **Concrete Sidewalk, 4” Thick (If and Where Directed)** shall be measured and paid on square yard basis with the total quantity included in the base bid lump sum price. Measurement and payment shall only be made for actual constructed quantity for areas requiring same and as directed by the Owner/Engineer.

The bid shall include all costs to construct concrete sidewalks, pads, aprons, including all labor, sealants, admixtures, reinforcement, as well as costs of any appurtenant work, including pavement sawcutting, removal and repair necessary for construction of the bid items listed herein.
SECTION 607 – CURB

607.01 DESCRIPTION

The first sentence is changed to:

This work shall consist of the installation of nine inch by eighteen inch 9”x18” Concrete Vertical Curb (If and where directed) in various locations as identified on the plans. This curb is to be constructed as detailed on the plans and to the grades specifically identified on the site utility plan.

607.03 CONSTRUCTION

607.03.02 Concrete Vertical Curb and Concrete Sloping Curb

This subsection is supplemented as follows:

Nine-inch by eighteen-inch (9”x18”) Concrete Vertical Curb (If and where directed) shall be constructed in accordance with the contract plans and these specifications.

Curb construction shall include the various designs as depicted on the plans. All exposed surfaces shall be smooth and all exposed corners filleted.

All exposed nine-inch by eighteen-inch (9”x18”) Concrete Vertical Curb (If and where directed) shall be N.J.D.O.T. class “B” air entrained, 4,000 psi.

The Contractor is directed to the plans for specific requirements of curb expansion joints.

607.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Measurement and payment for 9”x18” Concrete Vertical Curb (If and where directed) shall not be measured, but rather paid under the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements. Cost shall include the excavation, bedding, joint material, reinforcement, and all else necessary for the installation will be made by the linear foot of curb installed.
The following section is added to the standard specifications:

SECTION 613 – SCOREBOARD

613.01 DESCRIPTION

The work in this section includes furnishing of an electronic scoreboard for use at the multi-use sports facility including construction of footings to support the scoreboard.

613.02 MATERIALS

The scoreboard shall meet the following specifications:

The scoreboard shall be Model MS-2002 with optional wireless 2.4 GHz spread spectrum radio that features 64 non-interfering channels and eight (8) broadcast groups (see SL-04370). The options mentioned herein as manufactured by Daktronics or approved equal are as follows: segment timer mode, time of day mode and service access from the front. Scoreboard shall be wired and also have an optional wireless feature with wireless controller.

Scoreboard shall provide scoring capabilities for two (2) teams. All 100% solid state electronics shall be housed in an all aluminum cabinet. Scoreboard is shipped in one (1) section. Scoreboard power is to be provided on a dedicated circuit to prevent loss of game information due to failure of another component on the circuit.

613.03 CONSTRUCTION

Scoreboard shall be mounted on two (2) vertical beams. Hardware to mount scoreboard on two (2) beams is to be included, including hardware. Standard mounting uses I-beam clamps. Mounting to be as shown on construction plans.

613.04 MEASUREMENT AND PAYMENT

Measurement shall not be made and payment shall be paid under the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements. Price to include the scoreboard meeting features identified above including controller, warranty and manuals.
SECTION 614 – SPORTS LIGHTING SYSTEM

614.01 DESCRIPTION

The work in this section includes furnishing of a sports lighting system for use at the multi-use sports facility.

Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

The purpose of these specifications is to define the lighting system performance and design standards for Montclair State University Dioguardi Field using an LED Lighting source. The manufacturer / Contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.

The sports lighting will be for the following venues:

- Soccer

The primary goals of this sports lighting project are:

A. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for a period of 25 years.

B. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to the players, spectators and neighbors. The LED design should provide better control than a good HID design.

C. 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 for the duration of the warranty.

D. Control and Monitoring: 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. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.

614.01.01 Lighting Performance

Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Appropriate light loss factors shall be applied and submitted for the basis of design. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

<table>
<thead>
<tr>
<th>Area of Lighting</th>
<th>Average Target Illumination Levels</th>
<th>Maximum to Minimum Uniformity Ratio</th>
<th>Grid Points</th>
<th>Grid Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer</td>
<td>50</td>
<td>2.0 : 1.0</td>
<td>77</td>
<td>30.0’ x 30.0’</td>
</tr>
</tbody>
</table>

Hours of usage: Designs shall be based on the following hours of usage

<table>
<thead>
<tr>
<th>Area of Lighting</th>
<th>Annual Usage Hours</th>
<th>25 year Usage Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer</td>
<td>300</td>
<td>7,500</td>
</tr>
</tbody>
</table>
Color: The lighting system shall have a minimum color temperature of 5700K and a CRI of 75.

Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be as described below. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum of ten degrees (10°) below horizontal.

<table>
<thead>
<tr>
<th># of Poles</th>
<th>Pole Designation</th>
<th>Pole Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>S1 – S4</td>
<td>80’</td>
</tr>
</tbody>
</table>

614.01.02 Environmental Light Control

Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. No symmetrical beam patterns are accepted.

Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Average</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>150’ from Playing Surface Line Maximum Vertical Footcandles</td>
<td>0.57 fc</td>
<td>3.65 fc</td>
</tr>
<tr>
<td>150’ from Playing Surface Horizontal Footcandles</td>
<td>0.17 fc</td>
<td>1.13 fc</td>
</tr>
<tr>
<td>150’ from Playing Surface Max Candela</td>
<td>33,410 Cd</td>
<td>222,175 Cd</td>
</tr>
</tbody>
</table>

Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be taken 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 of lights. Illumination level shall be measured in accordance with the IESNA LM-5-04 after one (1) hour warm up.

The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified independent testing laboratory with a minimum of five (5) years experience or by a manufacturer’s laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.

614.01.03 Life-Cycle Costs

Manufacturer shall submit a 25-year life cycle cost calculation as outlined in the required submittal information.

Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

614.02 MATERIALS

614.02.01 Sports Lighting System Construction

Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.

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 with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

System Description: Lighting system shall consist of the following:

- Galvanized steel poles and cross-arm assembly.
- Pre-stressed concrete base embedded in concrete backfill allowed to cure for twelve to twenty-four (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 is located a minimum of eighteen inches (18”) above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied unless shorter cure time approved by structural Engineer of record. Direct bury steel and concrete poles are not allowed.
- All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
- Manufacturer will supply all drivers and supporting electrical equipment
- Remote drivers and supporting electrical equipment shall be mounted approximately ten feet (10’) above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure.
- Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
- All luminaires, visors, and cross-arm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment
- Control cabinet to provide remote on-off control and monitoring of the lighting system. Cabinet shall be constructed of aluminum and be rated NEMA Type 4. 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.
- Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A. 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 eight feet (8’) long, with a minimum of ten feet (10’) 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.
- GFCI with in-use cover to be installed on S1 and S4.
- Push-button control unit with strobe to installed on S4.

Safety: All system components shall be UL listed for the appropriate application.

614.02.02 Electrical

Electric Power Requirements for the Sports Lighting Equipment:

- Electric power: 480 Volt, 3 Phase
- Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three percent (3%) of the rated voltage.

Energy Consumption: The kW consumption for the field lighting system shall be 62.62 kW.
614.02.03 Structural Parameters

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 115 mph and exposure category C.


Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report <Johnson Soils Company, Report 18-245, June 5, 2018.>

Foundation Drawings: Project specific foundation drawings stamped by a registered Engineer in the State of New Jersey is required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

614.02.04 Control

Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

Remote Lighting Control System: System shall allow Owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten (10) years in advance. Manufacturer shall provide and maintain a two (2)-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The Owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute “early off” commands by phone. Scheduling tool shall be capable of setting curfew limits.

Controller shall accept and store seven (7)-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the Owner.

- Cumulative hours: shall be tracked to show the total hours used by the facility
- Report hours saved by using early off and push buttons by users.

Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.
614.03 CONSTRUCTION

614.03.01 Soil Quality Control

It shall be the Contractor’s responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. The Engineer will direct the Contractor to employ rock excavation in accordance with section 202 to achieve design grades of the light pole footings.

The Engineer shall review and approve alternate designs which must have no additional cost to the base bid lump sum item. The Contractor shall be responsible for providing the following if an alternative foundation is desired:

- Providing engineered foundation embedment design by a registered Engineer in the State of New Jersey for soils other than specified soil conditions;
- Additional soil investigation and analysis as necessary to demonstrate code compliance;
- Additional materials required to achieve alternate foundation;
- Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

614.03.02 Delivery Timing

Delivery Timing Equipment On-Site: The equipment must be on-site six to eight (6-8) weeks from receipt of approved submittals and receipt of complete order information.

614.03.03 Field Quality Control

Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

Field Light Level Accountability

- Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 25 Years.
- The Contractor/manufacturer shall be responsible for an additional inspection one (1) year from the date of commissioning of the lighting system and will utilize the Owner’s light meter in the presence of the Owner.
- The Contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.

Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

614.03.04 Warranty And Guarantee

25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.

Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.
614.03.05  Design Approval

Pre-Bid Submittal Requirements (Non-Musco)

Design Approval: The Owner / Engineer will review bid submittal per section 614.03.06 from all the manufacturers to ensure compliance with the specifications as part of an alternate brand substitution following the bid. Alternate products must be identified at the time of bid to be considered. If the design meets the design requirements of the specifications, the Engineer will notify the bidder as part of the submittals process.

Approved Product: Musco’s Light-Structure System™ with TLC for LED™ is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section. Special manufacturing to meet the standards of this specification may be required.

Bidders are required to bid only products that have been approved by this specification or addendum by the Owner or Owner’s representative. Bids received that do not utilize an approved system/design, will be rejected.

614.03.06  Required Submittal Information For All Manufacturers (Not Pre-Approved)

All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements. Complete the Yes/No column to indicate compliance (Y) or noncompliance (N) for each item. Submit checklist below with submittal.
<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Tab</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Letter/Checklist</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Equipment Layout</td>
<td>Drawing(s) showing field layouts with pole locations</td>
<td></td>
</tr>
</tbody>
</table>
| C | On Field Lighting Design | Lighting design drawing(s) showing:
  a. Field Name, date, file number, prepared by
  b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x & y), Illuminance levels at grid spacing specified
  c. Pole height, number of fixtures per pole, horizontal and vertical aiming angles, as well as luminaire information including wattage, lumens and optics
  d. Height of light 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 (CV), coefficient of utilization (CU) uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor. |
| D | Off Field Lighting Design | Lighting design drawing showing initial spill light levels along the boundary line (defined on bid drawings) in footcandles. Light levels shall be taken 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 of lights. |
| E | Environmental Light Control Design | Environmental glare impact scans must be submitted showing the maximum candela from the field edge on a map of the surrounding area until 500 candela or less is achieved. |
| F | Photometric Report | Provide first page of photometric report for all luminaire types being proposed 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 five (5) years experience. |
| G | 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 to not fall below target levels for warranty period. |
| H | Structural Calculations | 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 New Jersey. |
| I | Control & Monitoring System | Manufacturer of the control and monitoring system shall provide written definition and schematics for automated control system to include monitoring. They will also provide ten (10) references of customers currently using proposed system in the state of New Jersey. |
| J | Electrical Distribution Plans | Manufacturer bidding an alternate product 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 New Jersey. |
| K | Warranty | Provide written warranty information including all terms and conditions. Provide ten (10) references of customers currently under specified warranty in the state of New Jersey. |
| L | Project References | Manufacturer to provide a list of ten (10) projects where the technology and specific fixture proposed for this project has been installed in the state of New Jersey. Reference list will include project name, project city, installation date, and if requested, contact name and contact phone number. |
| M | Product Information | Complete bill of material and current brochures/cut sheets for all product being provided. |
| N | Delivery | Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information. |
| O | Non-Compliance | Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted. |
| P | Life-cycle Cost Calculation | Document life-cycle cost calculations as defined in the specification. Identify energy costs for operating the luminaires. Maintenance cost for the system must be included in the warranty. All costs should be based on 25 Years |
614.04 MEASUREMENT AND PAYMENT

Measurement shall not be made and payment shall be on the lump sum bid price Dioguardi Field Lighting and Scoreboard Improvements.

END OF SECTION
DIVISION 700 – ELECTRICAL
SECTION 701 – GENERAL ITEMS

701.01 DESCRIPTION

This subsection is supplemented as follows:

All electrical work outlined on the plans and specifications shall be covered by the standard specifications, utility requirements, and applicable codes. The work shall include installation of conduit and pull boxes for lighting of the field. In addition, work shall include the disconnect of the existing emergency call boxes on the existing sports lighting poles and the reinstallation on six inch by six inch (6” x 6”) pressure treated posts.

701.02 MATERIALS

This subsection is supplemented as follows:

Conduit and Fittings

The Contractor shall furnish and install all new materials require for the complete electrical conduit system as indicated on the Drawings and otherwise required to provide the projects complete future electrical power delivery requirements in accordance with the following:

Rigid Nonmetallic Conduit: PVC Type II conduit made from virgin polyvinyl resins conforming to ASTM D 1784, Class 12454-B, UL 651, and NEMA TC 2.

- Schedule 40 for direct burial underground in grass and/or berm areas
- Schedule 80 under roadways.

Fittings: high-impact PVC, socket type, joined to the conduit using PVC solvent cement. Conform to NEMA TC 3. Solvent cement shall be heavy-bodied cement complying with ASTM D 2564 and apply with a natural bristle or nylon brush.

Electrical Junction Box (Vault)

Electrical Junction boxes shall be installed as identified on the Utility Plan. Junction boxes are to be installed in various surfaces including, natural turf, asphalt, concrete and rubberized asphalt.

Electrical Junction boxes shall be manufactured by Pentell Specialties or approved equal similar to Phase II Various models as specified on the plans shall be as follows or approved equal. All shall be locking type.

1. Pencell PCL 1218 Assembly; Includes Factory Installed Black Mat for Concrete by Contractor.

Emergency Call Box

Emergency call boxes shall be installed as identified on the Utility Plan. Emergency call boxes are to be installed on 6” x 6” pressure treated post using stainless steel tamper resistant fasteners. Wiring shall be rerouted within new conduit in the same trench but separate from conduit used for the sports lighting and backfilled.

701.03 CONSTRUCTION

The following section is added to the standard specifications:

701.03.16 Codes and Procedures

The Contractor and his Subcontractor shall abide by and comply with the following:

ANSI/NFPA 70National Electrical Code (NEC)
NECA – Standard of Installation
National Electrical Manufacturers Association (NEMA)
Insulated Power Cable Engineers Association (IPCEA)
Occupational Safety Hazards Act (OSHA)

In addition to the above, the Contractor shall furnish to the proper authorities having jurisdiction, the required electrical permits, and application with all necessary drawings as required, and shall pay all fees in connection therefore. In particular, the Contractor shall file an electrical construction/inspection permit with the local sub code department with accompanied fee if required. During the prosecution of Work, the Contractor shall maintain all required permits, licenses and certificates of inspection.

The drawings are for engineering and general requirement purposes only, are diagrammatic and are not intended to depict all necessary fittings, boxes, supports, conduit penetration or locations, wires, etc., required for a complete and accessible installation. The Contractor shall provide his own workings drawings for the final installation and these shall be on certified manufacturer’s shop drawings for the electrical equipment, fixtures, and devices to be installed under this Contract.

The locations of equipment, conduits, junction boxes and other devices shown on the drawings are approximate only. Drawings are to be modified by the Contractor and approved by the Engineer to comply with the actual equipment furnished. Vendor systems and equipment furnished shall require interconnecting wires and cables and the Contractor shall be responsible for determining and furnishing these required connections.

Where certain kinds, type, brand, or manufacturers of materials or equipment are named, they are regarded as a standard of quality and performance. The electrical materials, equipment, and vendor systems approvals shall be made by the Engineer based on the review of the submittals and descriptive data. The Engineer shall require the Contractor to supply whatever data and design computations the Engineer considers necessary to determine equal equipment of systems.

The following section is added to the standard specifications:

701.03.17 Rigid Nonmetallic Conduit

The Contractor shall install and make all conduit connections to equipment, including excavation, bedding and backfill in accordance with the Drawings and as required by the utility having jurisdiction of the service installation. All of the conduit shall be installed complete with necessary fittings and supports. All bends shall be gradual and smooth to permit the pulling of insulated electrical wires and cables without stress to the insulation of cable sheath. All conduit runs and bends shall be free from kinks, indentations or flattened surfaces.

Nonmetallic conduit field bends shall be made with an industry accepted flameless bender with internal supports installed as necessary to prevent deformation of the conduit.

All threaded connections shall be made tight. Where physical restraints prevent conduit from being tightened, union fitting shall be used.

All threads shall be coated with a liberal application of a conductive sealant such as Thomas & Betts Kopr-Shield before make-up.

The following section is added to the standard specifications:

701.03.18 Rigid Nonmetallic Conduit

Acceptable Manufacturers

- Rigid galvanized steel conduit - Allied Tube & Conduit Corporation or equal.
- Rigid PVC Schedule 40; Carlon or equal.
- Conduit Accessories - Crouse-Hinds; Appleton Electric; or equal.
• Provide products that are free from defects impairing performance, durability, or appearance, and of the
  commercial quality best suited for the purpose shown on the Contract Drawings or specified herein.

The Contractor shall be responsible for the installation conduit as designated on the plan. The end of the conduit run shall
be terminated with the appropriate style of pullbox as specified on the plans.

The Contractor shall make special notice of the requirement for spare conduit installation. No existing conduit found
onsite shall be utilized for proposed installation unless approved by the Engineer.

701.04 MEASUREMENT AND PAYMENT

This subsection is supplemented as follows:

Site Electric will not be measured and payment will be made on a lump sum basis. Measurement and Payment for furnishing
and installation of all conduit, excavation, bedding, backfill, pull boxes, electrical enclosures, and all other items required
for full operation of all base bid items will not be made; the cost(s) will instead be included in the lump sum bid price,
Dioguardi Field Lighting and Scoreboard Improvements.

Refer to the Utility plan for installation of pull boxes, com boxes, and conduit.

END OF SECTION
DIVISION 800 – LANDSCAPING
SECTION 804 – TOPSOILING

804.01 DESCRIPTION

This subsection is supplemented as follows:

This work shall consist of all labor, materials, and equipment necessary for the furnishing and placement of topsoil. This includes but is not limited to the preparation of areas to receive topsoil, screening of topsoil (if needed), and the delivery & placement of topsoil. Topsoil available from the site as a result of clearing site operations shall be evaluated for use on the site.

The Contractor shall submit samples of the topsoil to the Engineer for approval.

1. Topsoil shall be amended as required to meet the specifications. Following the incorporation of amendments and additives, the Contractor shall provide a minimum of one (1) six-inch (6”) depth by three-inch (3”) diameter core sample for every 1000 cubic yards of soil material. The samples shall be taken for testing, analysis, and approval. The cost of all testing shall be the responsibility of the Contractor. No final grading or seeding operations shall occur until acceptance of the soil samples has been obtained. Contractor shall deliver samples to testing laboratories and shall have the testing report sent directly to the Owner’s Designated Representative (the Engineer or Landscape Architect).

2. Mechanical gradation (sieve analysis with no particles over ½”) and chemical (pH soluble salts) shall be performed by public extension agency or a certified private testing laboratory in accordance with the current standards of the Association of Official Agricultural Chemists. A hydrometer shall be used to determine percent of clay and silt.

3. Percent of organics shall be determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 110 ºC, plus or minus five degrees Celsius (5 ºC).


5. Tests, as specified, for gradation, organics, soil chemistry and pH shall be performed by a qualified testing laboratory acceptable to the Owner’s Designated Representative.

6. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for fertilizing and liming applications to support successful turf growth.

7. All tests shall be performed in accordance with the current standards of the Association of Official Agricultural Chemists.

804.03 CONSTRUCTION

This subsection is supplemented as follows:

Topsoil shall not be placed until it has been screened and the area to be topsoiled has been approved. All stones one inch (1") or larger in any dimension, and other debris such as wires, cables, tree roots, pieces of concrete, clods, and lumps shall be removed.

For lawn areas: Provide imported topsoil to meet material specifications. After spreading topsoil, rake up large stiff clods, hard lumps, roots, litter, other foreign matter and stones larger than one inch (1") in greatest dimension. Remove from the premises or dispose where directed, in a satisfactory manner. Apply topsoil to lawn areas to provide a four-inch (4") depth of topsoil.

No greater than one inch (1") of depth shall be lost to natural settlement, picking of rocks and final preparation of seed beds. If any area is found to have lost greater than one inch (1”), additional topsoil shall be spread to raise depths to the original minimum depth.

Fine grade and rake topsoiled areas to a smooth, uniform surface. Compact with an approved roller weighing approximately 500 pounds. Regrade and reroll until satisfactory grades as shown are obtained with the required depths of topsoil. Do not
finish grade during unsuitable weather. If soil tests indicate organic matter content below the required levels, humus shall be applied to the surface of the spread topsoil and worked into the mix during raking operations. Apply quantity of organic amendments, either humus or mushroom compost, as necessary to meet the organic matter content specified. Submit soil test results demonstrating compliance with the requirements.

Topsoil spreading shall be performed in such a manner that seeding can proceed with a minimum of additional soil preparation and tillage. Irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or crowns. Topsoil shall not be placed while the ground is frozen or muddy, or in a condition that may otherwise be detrimental to proper grading. After the topsoil has been spread and the final grade is established, the area shall be cleared of all grade stakes, surface trash and debris.

The Contractor shall, wherever possible, conduct topsoiling immediately upon completion of approved subgrade preparation. The Contractor shall commence seeding, or other finished surfacing operations immediately upon completion of approved topsoil installation.

In no case shall completed topsoiled field surfaces or lawn areas outside of field, which have been topsoiled, stand for more than two (2) days prior to commencement of seeding.

Excess topsoil which is not used on the job site shall be stockpiled and stabilized by the Contractor onsite as directed by the Engineer.

804.04 MEASUREMENT AND PAYMENT

*This entire subsection is deleted and replaced with the following:*

Measurement and payment for Topsoiling will not be made; all costs will instead be included in the **Clearing Site** base bid item. Measurement and payment for all labor, materials, and equipment necessary for the furnishing and installation of Topsoiling including any necessary excavation, subgrade preparation, soil amendments, fertilizers, placement, rolling, dragging, dressing, and all materials and all else necessary therefore and incidental thereto will not be made; the costs will instead be included in the appropriate bid item.
SECTION 806 – FERTILIZING AND SEEDING

The heading of this section is changed to:

SECTION 806 – FERTILIZING, SEEDING AND MULCHING

806.01 DESCRIPTION

This entire subsection is deleted and replaced with the following:

This work shall consist of furnishing and placing pulverized limestone, fertilizer, seed mixtures and straw mulch. This includes but is not limited to the installation of topsoil, preparation of the seed bed, incorporation of fertilizer, placement of seed and watering as shown on the plans and as specified herein. The Contractor shall be responsible for the repair/replacement of natural turf disturbance, leaving greater than a 1/4” depression.

806.03 CONSTRUCTION

806.03.01 Turf Seeding

This subsection is supplemented as follows:

Planting Season

Seeding operations shall be carried out between April 1 to May 15th and August 15 and September 30. In no event shall seeding take place later than October 31 for non-field areas and no seeding shall be done on frozen ground or when the temperature is 32 ºF or lower. No changes or extensions of the above seeding periods will be made unless approved in writing by the Engineer.

Seedbed Preparation

Provide fine grading, addition of soil amendments and raking as specified under Section 804 Topsoiling.

Dry Application Method of Lime, Fertilizer and Seed

Lime, seed, fertilizer and mulch shall be applied in dry form for all fields and margin areas. Lime shall be applied at the rate of 4,000 pounds per acre (or as necessary to adjust soil pH to 6.0-6.5) and shall be applied separately and prior to fertilizing and seeding on prepared seedbeds.

The lime shall be spread evenly and worked into the upper five inches to six inches (5”-6”) of the soil after which the seedbed shall have the proper, smooth grade. Commercial fertilizer of analysis 10-20-10 as previously specified herein, shall be applied at the rate of between 600 and 800 pounds per acre. Apply the specified seed mix evenly at a rate of 300 pounds per acre immediately after fertilizing.

Provide seed mix per standard NJDOT specifications and Soil Erosion and Sediment Control Plans.

Seeding Method for areas with less than three to one (3:1) Slope:

For areas outside the athletic fields, seed may be broadcast using cyclone type spreaders, drop spreaders or hydro-seeders. Seed shall be applied in two (2) perpendicular courses. After the seed has been properly applied, the seedbed shall be immediately mulched. Mulch seedbed as specified, to establish a uniform complete coverage and to ensure optimal moisture retention. Maintain optimal watering schedules throughout the seeding process.

Mulch Seeded Areas

Spread straw mulch with a properly equipped mulcher blower, run by an experienced operator. Mulch shall be evenly spread to a uniform 1-1½” depth loose measurement and tacked in place.

Provide watering of all lawn areas as required to promote growth.
Seeding Method for sloped areas three to one (3:1) slope or greater

For all areas with a three-foot (3') horizontal to one-foot (1') vertical slope or greater shall be seeded with the Flexterra High Performance-Flexible Growth Medium (HP-FGM) material with hydro-spray equipment.

This section specifies a hydraulically-applied, 100% biodegradable, High Performance-Flexible Growth Medium (HP-FGM) that is manufactured in the United States and is composed of 100% recycled thermally refined (within a pressure vessel) wood fibers, crimped interlocking man-made biodegradable fibers, mineral activators, naturally derived crosslinked biopolymers and water absorbents. The HP-FGM is phytosanitized, free from plastic netting, requires no curing period and upon application forms an intimate bond with the soil surface to create a continuous, porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth.

Manufacturer of the HP-FGM is PROFILE Products LLC, 800-366-1180, www.profileproducts.com or approved equal.

Establish the application rates as recommended by the manufacture and install the HP-FGM in accordance with manufacturer’s specifications for Erosion Control and Revegetation. To ensure proper application rates, measure and stake area. For maximum performance, apply HP-FGM in a two (2) step process:

1. Step One: Apply fertilizer with specified prescriptive agronomic formulations and 50% of seed with a small amount of HP-FGM for visual metering.

2. Step Two: Mix balance of seed and apply HP-FGM at a rate of 50 lb per 125 gallons (23 kg/475 liters) of water over freshly seeded surfaces. Confirm loading rates with equipment manufacturer. Do not leave seeded surfaces unprotected, especially if precipitation is imminent.

Establishment Period

Until the project is substantially completed, and accepted by the Engineer, the Contractor shall be required to maintain all field turf between two (2) and four (4) inches in height. (Depending upon prevailing weather conditions at the time of turf establishment, the Contractor may maintain longer shoot heights, providing that mowing operations remove no more than 1/3 the length of the shoot). The Contractor is required to repair or replace, or both, all seeding and mulching that is defective or becomes damaged. For the purpose of establishing compliance with the incentive clause described herein, for turf establishment, the Contractor shall maintain the seedbed, and seeding operation, including watering, fertilizing, re-seeding and mulching, until a uniform, vigorous stand of turfgrass, having a minimum seedling count of six (6) plants per square inch, uniformly distributed, is established to the satisfaction of the Engineer. Localized areas which must be re-seeded will be justification for withholding payment for this item, until entire area has been satisfactorily established.

Guarantee

Seeded area shall obtain 100% coverage by the end of one (1) year, or two (2) full, growing seasons; or the Contractor shall reseed the areas. Replacement seeding shall be done not later than the proper planting season following the end of the guarantee period. All replacement seeded areas are subject to the same guarantee from the time they are seeded.

Maintenance

The Contractor’s responsibility for maintenance shall be continuous until acceptance of the work. The Contractor shall submit a lawn maintenance schedule to the Engineer for review and approval no later than two (2) weeks after the award of the contract. Maintenance shall include, but not be limited to watering, reseeding, and reworking as follows:

- checking the seeded areas before watering to avoid excessive moisture.
- refilling of rain-washed gullies and rutted areas.
- reworking and reseeding of any areas which fail to show a uniform stand of grass.
- weeding, cultivating, control of insects, fungus, and other diseases by means of spraying with an all-purpose insecticide and fungicide.
Grass shall be mowed as many times as necessary during the maintenance period in order to maintain a maximum height of four inches (4”) as measured from the top of the ground. No more than 1/3 of the grass height shall be removed during any one (1) mowing.

Watering

The Contractor shall maintain all new lawn areas including watering until date of substantial completion.

Refertilization

At the completion of the second mowing, fertilize the grass with complete specified fertilizer at the rate of ten (10) pounds per 1,000 square feet.

Re seeding

Reseeding of any areas which fail to show a uniform stand of grass, shall be accomplished without additional cost to the Owner using originally specified materials and methods. Reseeding shall be repeated until all lawn areas are covered with a satisfactory stand of grass. A satisfactory stand of grass, as described above, shall be required.

Clean-up

The Contractor shall dispose of excess materials and debris, including but not limited to branches, paper, leaves, and rubbish resulting from this work.

All areas shall be kept neat and clean and upon completion of work, the site shall be left in an orderly condition satisfactory to the Engineer.

Approval and Acceptance

An inspection of turf shall be made by the Engineer 30 calendar days after completion of seeding and mulching on all fields. Calendar day count shall commence only after the total completion of all fields. Random test locations representative of the overall turf density shall be selected by the Owner’s Landscape Architect based upon one (1) test location per 15,000 square feet. Blade counts should be recorded for each test location. Criteria shall be met when all locations equal or exceed the minimal uniform plant count specified herein.

Seeding Type B shall be placed in all grass areas surrounding the facility.

E. Turf Establishment

The second sentence of the first paragraph of this subpart is deleted and replaced with the following:

Any damage to seeded areas caused by pedestrian or vehicular traffic or other causes shall be repaired at no cost to the Owner.

806.04 MEASUREMENT AND PAYMENT

This entire subsection is deleted and replaced with the following:

Measurement and payment for Fertilizing, Seeding and Mulching will not be measured and payment will instead be included in the Clearing Site base bid item. Measurement and payment all labor, materials, and equipment necessary for the furnishing and installation of Fertilizing, Seeding and Mulching. This includes but is not limited to any necessary excavation, subgrade preparation, fertilizers, placement of mix, rolling, dragging, dressing, all materials, and seed and mulch application as shown on the plans and all else necessary therefore and incidental thereto will not be made; the costs will instead be included in the appropriate bid item.

END OF SECTION
Attachment 1

LIGHTING DESIGN DOCUMENTATION
Montclair State University Dioguardi Field
Montclair, NJ

Lighting System

<table>
<thead>
<tr>
<th>Pole / Fixture Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole ID</td>
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<tr>
<td>---------</td>
</tr>
<tr>
<td>S1-S4</td>
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<tr>
<td></td>
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Circuit Summary

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<tr>
<td>B</td>
<td>Security</td>
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Fixture Type Summary

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<th>L80</th>
<th>L70</th>
<th>Quantity</th>
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<tr>
<td>CREE OSQ</td>
<td>LED 5700K - 70 CRI</td>
<td>130W</td>
<td>17,000</td>
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Light Level Summary

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<td>Soccer Spill</td>
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<td>Track</td>
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</tbody>
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| ENGINEERED DESIGN | By: Jake Van Polen • File #188958D • 01-Jun-18 |
EQUIPMENT LIST FOR AREAS SHOWN

<table>
<thead>
<tr>
<th>Pole</th>
<th>Location</th>
<th>Size</th>
<th>Grade</th>
<th>Elevation</th>
<th>Mounting Height</th>
<th>Luminaire Type</th>
<th>Qty / Pole</th>
<th>This Grid</th>
<th>Other Grids</th>
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</thead>
<tbody>
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<td>S1-S4</td>
<td>80'</td>
<td>-15'</td>
<td>45'</td>
<td>15'</td>
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**GRID SUMMARY**

| Name: Soccer |
| Size: 330' x 200' |
| Spacing: 30.0' x 30.0' |
| Height: 3.0' above grade |

**ILLUMINATION SUMMARY**

| Guaranteed Average: | 50 |
| Scan Average: | 50.78 |
| Maximum: | 57 |
| Minimum: | 47 |
| Avg / Min: | 1.09 |

**Guaranteed Max / Min:**

Max / Min: 1.22
UG (adjacent pts): 1.17
CU: 0.60
No. of Points: 77

**LUMINAIRE INFORMATION**

- Color / CRI: 5700K - 75 CRI
- Luminaire Output: 121,000 / 52,000 lumens
- No. of Luminaires: 52
- Total Load: 55.2 kW

**Lumen Maintenance**

<table>
<thead>
<tr>
<th>Luminaire Type</th>
<th>L90 hrs</th>
<th>L80 hrs</th>
<th>L70 hrs</th>
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<tbody>
<tr>
<td>TLC-LED-1150</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
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<tr>
<td>TLC-BT-575</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
</tr>
</tbody>
</table>

Reported per TM-21-11. See luminaire datasheet for details.

**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

**Field Measurements:** Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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**Montclair State University Dioguardi Field Montclair, NJ**

*(Image of the ILLUMINATION SUMMARY page with diagrams and tables)*

**Engineered Design:** By Jake Van Polen • File #188958D • 01-Jun-18

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ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Guaranteed Average: 30
Scan Average: 22.45
Maximum: 46
Minimum: 3
Avg / Min: 6.72
Guaranteed Max / Min: 4
Max / Min: 13.75
UG (adjacent pts): 0.00
CU: 0.16
No. of Points: 46

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 52
Total Load: 55.2 kW

Lumen Maintenance

Luminaire Type L90 hrs L80 hrs L70 hrs
TLC-LED-1150 >63,500 >63,500 >63,500
TLC-BT-575 >63,500 >63,500 >63,500

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.
EQUIPMENT LIST FOR AREAS SHOWN

<table>
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<tr>
<th>Pole</th>
<th>Luminaire Type</th>
<th>QTY</th>
<th>Pole</th>
<th>Grid</th>
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</table>

TOTALS: 55 4 12

SCALE IN FEET 1: 120

Montclair State University Dioguardi Field
Montclair, NJ

GRID SUMMARY

Name: Security
Spacing: 10.0' x 10.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

| Entire Grid | 0.34 |

Scan Average:
Maximum: 1
Minimum: 0
Avg / Min: 6.84
Max / Min: 28.54
UG (adjacent pts): 2.20
CU: 0.95
No. of Points: 1818

LUMINAIRE INFORMATION

Color / CRI: 5700K - 70 CRI / 5700K - 75 CRI
Luminaire Output: 17,000 / 121,000 lumens
No. of Luminaire: 4
Total Load: 0.52 kW

Lumen Maintenance

<table>
<thead>
<tr>
<th>Luminaire Type</th>
<th>L90 hrs</th>
<th>L80 hrs</th>
<th>L70 hrs</th>
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<tbody>
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</table>

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ± dimensions are relative to 0.0 reference point(s) ☞
Montclair State University Dioguardi Field
Montclair, NJ

GRID SUMMARY
Name: D Zones
Spacing: 20.0' x 20.0'
Height: 3.0' above grade

MAINTAINED HORIZONTAL FOOTCANDLES
Scan Average: 16.79
Maximum: 33
Minimum: 4
Avg / Min: 4.12
Max / Min: 8.03
UG (adjacent pts): 1.80
CU: 0.09
No. of Points: 80

LUMINAIRE INFORMATION
Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 52
Total Load: 55.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Reported per TM-21-11. See luminaire datasheet for details.
EQUIPMENT LIST FOR AREAS SHOWN

<table>
<thead>
<tr>
<th>QTY</th>
<th>LOCATION</th>
<th>SIZE</th>
<th>ELEVATION</th>
<th>MOUNTING HEIGHT</th>
<th>LUMINAIRE TYPE</th>
<th>QTY / POLE</th>
<th>OTHER GRIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>S1-S4</td>
<td>80'</td>
<td></td>
<td>15'</td>
<td>TLC-BT-575</td>
<td>2 / 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45'</td>
<td>CREE OSQ</td>
<td>1 / 1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>80'</td>
<td>TLC-LED-1150</td>
<td>11 / 11</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>TOTALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56 / 56</td>
<td>0</td>
</tr>
</tbody>
</table>

SCALE IN FEET 1 : 150

Pole location(s) + dimensions are relative to 0,0 reference point(s) ☑

ILLUMINATION SUMMARY

Montclair State University Dioguardi Field
Montclair, NJ

GRID SUMMARY

Name: Soccer Spill
Spacing: 30.0'
Height: 3.0' above grade

MAINTAINED HORIZONTAL FOOTCANDLES

Scan Average: 0.1568
Maximum: 1.03
Minimum: 0.00
No. of Points: 78

LUMINAIRE INFORMATION

Color / CRI: 5700K - 70 CRI / 5700K - 75 CRI / 5700K - 75 CRI
Luminaire Output: 17,000 / 121,000 / 52,000 lumens
No. of Luminaires: 56
Total Load: 55.72 kW

Lumen Maintenance

<table>
<thead>
<tr>
<th>Luminaire Type</th>
<th>L90 hrs</th>
<th>L80 hrs</th>
<th>L70 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREE OSQ</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>TLC-LED-1150</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
</tr>
<tr>
<td>TLC-BT-575</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
</tr>
</tbody>
</table>

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.
EQUIPMENT LIST FOR AREAS SHOWN

<table>
<thead>
<tr>
<th>POLE LUMINAIRES</th>
<th>QTY</th>
<th>LOCATION</th>
<th>SIZE</th>
<th>GRADE</th>
<th>ELEVATION</th>
<th>MOUNTING HEIGHT</th>
<th>LUMINAIRE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>51-54 60</td>
<td>80'</td>
<td>15'</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>TLC-BT-575</td>
</tr>
<tr>
<td>4</td>
<td>45'</td>
<td>45'</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>CREE OSQ</td>
</tr>
<tr>
<td>4</td>
<td>80'</td>
<td>80'</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>TLC-LED-1150</td>
</tr>
</tbody>
</table>

TOTALS 4

SCALE IN FEET 1 : 150

Montclair State University Dioguardi Field
Montclair,NJ

GRID SUMMARY

Name: Soccer Spill
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

Scan Average: 0.5159
Maximum: 3.32
Minimum: 0.01
No. of Points: 78

LUMINAIRE INFORMATION

Color / CRI: 5700K - 70 CRI / 5700K - 75 CRI / 5700K - 75 CRI
Luminaire Output: 17,000 / 121,000 / 52,000 lumens
No. of Luminaires: 56
Total Load: 55.72 kW

Lumen Maintenance

CREE OSQ -- -- --
TLC-LED-1150 >63,500 >63,500 >63,500
TLC-BT-575 >63,500 >63,500 >63,500

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.
EQUIPMENT LIST FOR AREAS SHOWN

<table>
<thead>
<tr>
<th>QTY</th>
<th>LOCATION</th>
<th>SIZE</th>
<th>ELEVATION</th>
<th>MOUNTING HEIGHT</th>
<th>LUMINAIRE TYPE</th>
<th>QTY / POLE</th>
<th>THIS GRID</th>
<th>OTHER GRIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>S1-S4</td>
<td>80'</td>
<td>15'</td>
<td>15'</td>
<td>TLC-BT-575</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>45'</td>
<td>1</td>
<td>CREE OSQ</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>S3</td>
<td>80'</td>
<td>6</td>
<td>80'</td>
<td>TLC-LED-1150</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

TOTALS: 4

**SCALE IN FEET 1 : 150**

Pole location(s) + dimensions are relative to 0,0 reference point(s) ☺

Montclair State University Dioguardi Field
Montclair, NJ

GRID SUMMARY

| Name: Soccer Spill |
| Spacing: 30.0' |
| Height: 3.0' above grade |

ILLUMINATION SUMMARY

MAINTAINED CANDELA (PER FIXTURE)

Scan Average: 30374.0449
Maximum: 201979.91
Minimum: 633.99
No. of Points: 78

LUMINAIRE INFORMATION

| Color / CRI: 5700K - 70 CRI / 5700K - 75 CRI / 5700K - 75 CRI |
| Luminaire Output: 17,000 / 121,000 / 52,000 lumens |
| No. of Luminaires: 56 |
| Total Load: 55.72 kW |

Lumen Maintenance

<table>
<thead>
<tr>
<th>Luminaire Type</th>
<th>L90 hrs</th>
<th>L80 hrs</th>
<th>L70 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREE OSQ</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>TLC-LED-1150</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
</tr>
<tr>
<td>TLC-BT-575</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
<td>&gt;63,500</td>
</tr>
</tbody>
</table>

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.
Montclair State University Dioguardi Field
Montclair,NJ

**EQUIPMENT LAYOUT**

**INCLUDES:**
- D Zones
- Security
- Soccer
- Track

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

**EQUIPMENT LIST FOR AREAS SHOWN**

<table>
<thead>
<tr>
<th>Pole Luminaires</th>
<th>Pole Location</th>
<th>Size</th>
<th>Grade Elevation</th>
<th>Mounting Height</th>
<th>Luminaire Type</th>
<th>Qty / Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 S1-S4</td>
<td>80'</td>
<td>15'</td>
<td>45'</td>
<td>80'</td>
<td>TLC-BT-575</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CREE O5Q</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TLC-LED-1150</td>
<td>12</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>

**SINGLE LUMINAIRE AMPERAGE DRAW CHART**

<table>
<thead>
<tr>
<th>Ballast Specifications (.90 min power factor)</th>
<th>Line Amperage Per Luminaire (max draw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Phase Voltage</td>
<td>208 (W) 220 (W) 240 (W) 277 (W) 347 (W) 380 (W) 480 (W)</td>
</tr>
<tr>
<td>Cree O5Q</td>
<td>6.8 6.5 5.9 5.1 4.1 3.7 3.0</td>
</tr>
<tr>
<td>TLC-LED-1150</td>
<td>3.2 3.0 2.8 2.4 1.9 1.7 1.4</td>
</tr>
<tr>
<td>TLC-BT-575</td>
<td>3.2 3.0 2.8 2.4 1.9 1.7 1.4</td>
</tr>
</tbody>
</table>
Montclair State University Dioguardi Field
Montclair, NJ

**GLARE IMPACT**

**Summary**

Map indicates the maximum candela an observer would see when facing the brightest light source from any direction.

A well-designed lighting system controls light to provide maximum useful on-field illumination with minimal destructive off-site glare.

**GLARE**

**Candela Levels**

- **High Glare: 150,000 or more candela**
  Should only occur on or very near the lit area where the light source is in direct view. Care must be taken to minimize high glare zones.

- **Significant Glare: 25,000 to 75,000 candela**
  Equivalent to high beam headlights of a car.

- **Minimal to No Glare: 500 or less candela**
  Equivalent to 100W incandescent light bulb.
SEQQUENCE OF OPERATION (Control—Link):
1. The ODA needs to be in the AUTO position. A schedule begins and the REC closes the I/O relay which sends control power to the pushbutton.
2. The pushbutton is pressed to turn on the lights. The contactors pull in, which also activates the holding circuit. The lights remain ON for the preset amount of time dictated by the timer dial T1 (Bottom Dial).
3. The timer times out and performs 2 functions:
   3.1. Power from the timer is sent to the strobe as a warning that the lights will extinguish in ‘X’ amount of time (dictated by dial T2 (Top Dial)).
   3.2. The timer activates a count down for the circuit to turn off.
4. If the pushbutton is pressed again, before the strobe turns off, the lights will remain ON for another cycle.
5. If the pushbutton is NOT pressed again the strobe and lights will extinguish.

TIMER SETTINGS:
- Mode: A
- T1: (Time setting for Strobe Light)
  - Range: 1H (5 min to 6 hr)
  - Turn dial to 1 (1 hr)
- T2: (Time setting for Strobe Light)
  - Range: 1H (5 min to 6 hr)
  - Turn dial to 5 (5 min)

WARNING:
If light turns off and will require toner wheel to re-tune and adjust.

WALKING TRACK
PUSH BUTTON ONCE TO TURN LIGHTS ON
FLASHING STROBE INDICATES LIGHTS ARE ABOUT TO TURN OFF
- Button is depressed a new cycle will begin
- Button is not depressed lights will turn off.

Dimensions in Inches
- Color: Black bezel and housing, Silver actuator
- Material: Machined SS actuator, Malleable iron housing
- Contact Current Rating: 15A (125VAC)
- Torx Cover Screws [T-10]
POLES S1 - S3 FOUNDATION SCHEDULE

POLE DESIGNATION
FORCES (1)

POLE MOMENT (M) FORCES SHEAR (V) DRILLED PIER VERTICAL (P)
FT-LBS LBS DIAMETER INCHES EMBEDMENT DEPTH (D)
CONCRETE BACKFILL YO2 (L)
S1 - S3 141,565 2,523 3,965 30 16'-0" 1.7

1. ADD LOAD COMBINATION 0 + 0.6W
   VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT).
2. MINIMUM CONCRETE BACKFILL VOLUME; SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.
3. BASE ROCK WAS ENCOUNTERED AT 7'-2" - 7'-5", AND 8'-4" BELOW GRADE AT S1 - S3 LOCATIONS.
   AUGERING EQUIPMENT MUST BE CAPABLE OF SINKING INTO BASE ROCK AS REQUIRED.

PRECAST BASE IDENTIFICATION

PRECAST TYPE PRECAST BASE WEIGHT PRECAST BASE LENGTH PROJECTION ABOVE GRADE STANDARD EMBEDMENT OUTSIDE DIAMETER
SB 4,560 LBS 23'-11" 7'-11" 16'-0" 18.25" -

POLE IDENTIFICATION

POLE DESIGNATION POLE TYPE PRECAST BASE TYPE FIXTURE CONFIGURATION (FIX. PER XARM) FIXTURE AND ACCESSORIES (EPA FT) (1)
S1 - S4 LS350B SB 11 (65) 38.9

- EACH POLE HAS (1) CREE OSG FIXTURE AT 45'-0" AGL INCLUDED ABOVE.
- EACH POLE HAS (2) MUSCO LED FIXTURES AT 15'-0" AGL INCLUDED ABOVE.

CONCRETE/REINFORCEMENT NOTES

CONCRETE SHALL COMPLY WITH THE FOLLOWING ASTM STANDARDS:
MIXTURE WITH ASTM C-54, PORTLAND CEMENT WITH ASTM C-150 TYPE 1-A, AGGREGATES (0.75" MAX) WITH ASTM C-33 AND BE IN CONFORMANCE WITH ACI 318.
CONCRETE SHALL BE AIR-ENTRAINED (COMPLY WITH ASTM C-260), HAVE A MAXIMUM WATER-CEMENT RATIO, w/c = 0.45 AND HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
DESIGN SLUMP LIMITS ARE 4" MINIMUM AND 6" MAXIMUM. THE JOB SITE SLUMP MAY BE INCREASED BY THE USE OF A WATER REDUCING AGENT MEETING ASTM C494-92.
CONCRETE REINFORCEMENT SHALL COMPLY WITH ASTM A615 GRADE 60 AND BE IN CONFORMANCE WITH ACI 315 & 318.
CONCRETE DRILLED PIERS MUST ATTAIN 3,000 PSI STRENGTH PRIOR TO POLE INSTALLATION AND FIXTURE MOUNTING.
THE DEPTH EQUAL TO THE PRECAST BASE EMBEDMENT SHALL BE THOROUGHLY CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACEMENT.

DESIGN NOTES

DESIGN PARAMETERS:
W0 = 0.75, V = 115 MPH, S = 89 MPH (EXPOSURE C, RISK CATEGORY II), PER INTERNATIONAL BUILDING CODE, 2015 EDITION (ASCE 7-10). DESIGN WIND PARAMETERS ARE AS NOTED. ACTUAL EXPOSURE MUST BE VERIFIED FOR THE SITE BY THE PROPER GOVERNING OFFICIAL.

GEOTECHNICAL PARAMETERS:
ALLOWABLE END BEARING SOIL PRESSURE: 4,000 PSF.
ALLOWABLE LATERAL SOIL BEARING PRESSURE AS PROVIDED IN SOIL REPORT IN ACCORDANCE WITH THE 2015 EDITION OF THE INTERNATIONAL BUILDING CODE, CHART 18.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE SOILS AND FOUNDATION REPORT.
JOB NO. 18-245, PREPARED BY JOHNSON SOILS COMPANY, GLEN ROCK, NJ.

A GEOTECHNICAL ENGINEER OR REPRESENTATIVE OF IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE DESIGNED PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.

ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARE ENCOUNTERED, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A LICENSED ENGINEER.

ALL EXCAVATIONS MUST BE FREE OF LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE BACKFILL PLACEMENT. TEMPORARY CASINGS OR DRILLERS SLURRY MAY BE USED TO STABILIZE THE EXCAVATION DURING INSTALLATION. CASINGS MUST BE REMOVED DURING CONCRETE BACKFILL PLACEMENT. CONCRETE BACKFILL MUST BE PLACED WITH A TRENCH WHEN SLURRY OR WATER IS PRESENT IN THE EXCAVATION OR WHEN THE FREE DROP EXCEEDS 6'-0".

CONTRACTOR MUST BE FAMILIAR WITH THE COMPLETE SOIL INVESTIGATION REPORT AND BORINGS, AND CONTACT THE GEOTECHNICAL FORM IF NECESSARY TO UNDERSTAND THE SOIL CONDITIONS AND THE POSSIBILITY OF GROUND WATER PUMPING AND EXCAVATION STABILIZATION OR BRACING DURING PRECAST BASE INSTALLATION AND PLACEMENT OF CONCRETE BACKFILL.

GENERAL NOTES:
FIXTURES MUST BE LOCATED TO MAINTAIN 10'-0" MINIMUM HORIZONTAL CLEARANCE FROM ANY OBSTRUCTION. ENGINEER MUST BE NOTIFIED IF FOUNDATIONS ARE NEAR ANY RETAINING WALLETS OR WITHIN / NEAR ANY SLOPES STEEPER THAN 1:3:1; POLES FIXTURES, PRECAST BASES, ELECTRICAL ITEMS AND INSTALLATION PER MUSCO LIGHTING.

USE OR REPRODUCTION OF THIS INFORMATION OTHER THAN INTENDED PURPOSE FOR THIS PROJECT IS PROHIBITED WITHOUT WRITTEN CONSENT FROM MUSCO SPORTS LIGHTING, LLC.

LACINA ENGINEERING, LLC
114 NICHOLAS DRIVE
MARSHALLTOWN, IA 50158
OFFICE NUMBER: 641-752-6334
EMAIL: MLS.INFO@SEPC.BIZ
CERTIFICATE OF AUTHORIZATION NUMBER: 24GA28209700

DATE: 15 JUNE 2018
DRIVING NUMBER: C1

DUGOYARD FIELD UNIVERSITY CREST (STAMP)
POLE S4 FOUNDATION SCHEDULE

<table>
<thead>
<tr>
<th>POLE DESIGNATION</th>
<th>FORCES (1)</th>
<th>DRILLED PIER</th>
<th>REINFORCING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MOMENT [M] FT-LBS</td>
<td>SHEAR [V] LBS</td>
<td>VERTICAL (P) LBS</td>
</tr>
<tr>
<td>S4</td>
<td>141,588</td>
<td>2,523</td>
<td>3,965</td>
</tr>
</tbody>
</table>

1. ASD LOAD COMBINATION D = 0.9W. VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT).
2. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.
3. CORE DIAMETER EQUAL TO INSIDE DIAMETER OF TIES.
4. BASALT ROCK WAS NOT IDENTIFIED AT S4 LOCATION, BUT IS LIKELY TO BE ENCOUNTERED. AUGERING EQUIPMENT MUST BE CAPABLE OF SOCKETING INTO BASALT ROCK AS REQUIRED.

POLE S4 FOUNDATION SCHEDULE

POLE S4 PIER DETAIL

INSTALLATION NOTE (S4 ONLY): CONCRETE TO BE PLACED IN A CONTINUOUS POUR OR A COLD JOINT WILL BE ACCEPTABLE AT THE BOTTOM OF THE PRECAST BASE. TWO POURS WITH THE REINFORCEMENT IN PLACE, THE CONCRETE BELOW THE BOTTOM OF THE PRECAST BASE MAY BE Poured AND ALLOWED TO SET UP LONG ENOUGH TO SUPPORT WEIGH T OF PRECAST BASE, THEN THE PRECAST BASE MAY BE SET IN PLACE AND THE REST OF THE CONCRETE CONCRETE BACKFILL Poured. DEPENDING ON THE DEPTH TO GROUND WATER AT THE TIME OF INSTALLATION, THE TWO POUR METHOD UTILIZING A COLD JOINT MAY NOT BE FEASIBLE.

SOIL BACKFILL NOTE: THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1006.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 85% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).
Attachment 2

SCOREBOARD DOCUMENTATION
**HALF QTR**

Choose one of three vinyl captions (optional changeable caption panels also offered)

This outdoor LED multisport scoreboard displays period time to 99:59, HOME and GUEST scores to 99 and PERIOD (or HALF or QTR) to nine. When period time is less than one minute, the scoreboard displays time to 1/10 of a second. Scoreboard shown with optional striping and amber PanaView® digits.

### VINYL CAPTIONS (STANDARD) & TNMCS & VINYL CAPTIONS

<table>
<thead>
<tr>
<th>POWER (120 VAC)*</th>
<th>VINYL CAPTIONS (STANDARD)</th>
<th>TNMCS &amp; VINYL CAPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red/Amber Digits</td>
<td>150 Watts, 1.3 Amps</td>
<td>220 Watts, 1.9 Amps</td>
</tr>
<tr>
<td>White Digits</td>
<td>320 Watts, 2.7 Amps</td>
<td>480 Watts, 4.0 Amps</td>
</tr>
<tr>
<td>UNCRATED WEIGHT</td>
<td>275 lb (125 kg)</td>
<td>355 lb (161 kg)</td>
</tr>
<tr>
<td>DIMENSIONS</td>
<td>4'1&quot; H x 16'-0&quot; W x 8&quot; D (1.27 m, 4.88 m, 203 mm)</td>
<td></td>
</tr>
</tbody>
</table>

*Scoreboard requires a dedicated circuit. Models with 240 VAC power at half the indicated amperage are also offered (International Use Only).

### POWER
- **PERIOD** digit is 18" (457 mm) high. All other digits are 24" (610 mm) high.
- Select red, amber, or white LED digits.
- Scoreboard features robust weather-sealed digits (see DD2495646).
- Digits may be dimmed for night viewing.

### CAPTIONS
- HOME and GUEST captions are 12" (305 mm) high. PERIOD caption is 10" (254 mm) high.
- Standard captions are vinyl, applied to the display face.
- Optional TNMCs are 10.6" (269 mm) high.

### DISPLAY COLOR
Choose from 150+ colors (from Martin Senour® paint book) at no additional cost.

### CONSTRUCTION
Alcoa aluminum alloy 5052 for excellent corrosion resistance

### PRODUCT SAFETY APPROVAL
ETL-listed to UL 48, tested to CSA standards, and CE-labeled

### OPERATING TEMPERATURES
- Display: -22° to 122° Fahrenheit (-30° to 50° Celsius)
- Console: 32° to 130° Fahrenheit (0° to 54° Celsius)
**SEGMENT TIMER MODE**
The segment timer mode is ideal for keeping practices on schedule. The horn at the end of a segment allows coaches and athletes to focus on the practice and to listen for the horn when it is time to change drills (see SL-04004).

**TIME OF DAY MODE**
This scoreboard features a Time of Day (TOD) mode that allows it to act as a clock when the control console is unplugged or off. Refer to the scoreboard installation manual for instructions on how to enable the Time of Day mode.

**MOUNTING**
Scoreboard is typically mounted on two vertical beams or poles. Hardware to mount scoreboard on two beams is included; hardware for more beams is at additional cost. Standard mounting uses I-beam clamps. Optional mounting method using angle brackets is also offered; maximum beam width is 12" (305 mm) and maximum beam depth is 22" (559 mm). Refer to attached drawings for more information on mounting methods.

**SERVICE ACCESS**
Digit panels and electronics are serviced from the front of the scoreboard.

**GENERAL INFORMATION**
Scoreboard provides scoring capabilities for two teams. 100% solid state electronics are housed in an all aluminum cabinet. Scoreboard is shipped in one section. Scoreboard power is to be provided on a dedicated circuit to prevent loss of game information due to failure of another component on the circuit. Specifications and pricing are subject to change without notice.

**ADVERTISING/IDENTIFICATION PANELS**

- **Backlit & Non-Backlit:**
  - 1'6" H x 16'0" W (457 mm, 4.88 m)
  - 2'0" H x 16'0" W (610 mm, 4.88 m)
  - 2'6" H x 16'0" W (762 mm, 4.88 m)

  For additional non-backlit panel sizes, see SL03761.
ALTERNATE CAPTIONS & SCORING MODES

Optional Vinyl Captions on Reversible Panel

**Baseball Mode**

<table>
<thead>
<tr>
<th>HOME</th>
<th>INNING</th>
<th>GUEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

**Soccer Mode**

<table>
<thead>
<tr>
<th>HOME</th>
<th>HALF</th>
<th>GUEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>

Optional Vinyl Captions on Reversible Panel

**Football Mode**

<table>
<thead>
<tr>
<th>HOME</th>
<th>QTR</th>
<th>GUEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>3</td>
<td>14</td>
</tr>
</tbody>
</table>

**Soccer Mode**

<table>
<thead>
<tr>
<th>HOME</th>
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<th>GUEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>
TABLE A — MOUNTING

<table>
<thead>
<tr>
<th>DISPLAY HEIGHT (FT)</th>
<th>DESIGN WIND VELOCITY 115 MPH</th>
<th>DESIGN WIND VELOCITY 150 MPH</th>
<th>DESIGN WIND VELOCITY 170 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
</tr>
<tr>
<td>8</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
<td>COLUMN FOOTING 2.0'x2.0'</td>
</tr>
<tr>
<td>10</td>
<td>COLUMN FOOTING 3.0'x3.0'</td>
<td>COLUMN FOOTING 3.0'x3.0'</td>
<td>COLUMN FOOTING 3.0'x3.0'</td>
</tr>
<tr>
<td>12</td>
<td>COLUMN FOOTING 3.0'x3.0'</td>
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<tr>
<td>14</td>
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</tr>
<tr>
<td>16</td>
<td>COLUMN FOOTING 3.0'x3.0'</td>
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<td>COLUMN FOOTING 3.0'x3.0'</td>
</tr>
</tbody>
</table>

FOOTING DIMENSIONS = DIAMETER X DEPTH
* DENOTES BUCKLING BRACE REQUIRED

NOTES:
1. BOSSING AND COLUMN SIZES ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES. THE DESIGN MUST BE CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE INSTALLATION BEFORE THEY CAN BE USED FOR FABRICATION OR EXECUTION.
2. INTERNATIONAL BUILDING CODE 2012 USED IN DESIGN OF COLUMNS AND FOOTINGS WITH PERFORMANCE FACTOR 0.60, W 100.0, W 100.0, 100.0. RESIDUAL DESIGN WAS NOT CONSIDERED.
3. COLUMNS ARE BASED ON ASSUMED SOIL CLASS C (ALLOWABLE LATERAL BEARING PRESSURE OF 1500 SF/PSF).
4. STRUCTURAL STEEL IS GRADE 4900 (50 KSI) STEEL. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMpressive STRENGTH OF 2000 PSI.
5. THE AVERAGE DISPLAY WEIGHT FOR A LAYOUT CAN NOT EXCEED 8 PDS.
6. DAKTRONICS INC. IS NOT RESPONSIBLE FOR STRUCTURES DESIGNED AND INSTALLED BY OTHERS.
7. LOCAL BUILDING OFFICIALS SHOULD BE CONTACTED TO DETERMINE THE WIND SPEED AND EXPOSURE CATEGORY FOR THE PROPOSED SIGN LOCATION. THE EXPOSURE CATEGORY C IS

EXPOSURE B — URBAN AND SUBURBAN AREAS, OR OTHER TERRAIN WITH NUMERICAL SPACED OBSTACtIONS HAVING THE SIZE OF SINGLE-FAMILY DWELLINGS OR LARGER. THESE CONDITIONS MUST PREVAIL FOR A DISTANCE FROM THE SIGN OF AT LEAST 2500 FT OR 25 TIMES THE SIGN HEIGHT, WHICHEVER IS GREATER

EXPOSURE C — OPEN TERRAIN WITH SCATTERED OBSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 20 FT. THIS CATEGORY INCLUDES OPEN COUNTRY, GRASSLANDS, AND ALL WATER SURFACES IN HURRICANE PRONE REGIONS.
8. FOR SPECIFIC PRODUCT DETAILS ON WEIGHT, MOUNTING, ETC. REFER TO THE INDIVIDUAL PRODUCT SPECIFICATION SHEETS.
STANDARD MOUNTING METHOD

MOUNTING INSTRUCTIONS:
1. PLACE SPRING NUTS INTO SCOREBOARD CHANNEL IN APPROXIMATE LOCATION OF VERTICAL BEAMS
2. LIFT SCOREBOARD INTO POSITION
3. MAKE SURE THE 1/2-13 BOLTS ARE AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE
4. WHEN SCOREBOARD IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN BOLTS FIRMLY
5. IF FLANGE THICKNESS IS MORE THAN 3/4" THICK LONGER BOLTS WILL BE REQUIRED AT THE CUSTOMER'S EXPENSE.

STRUCTURAL NOTES

ALLOWABLE CAPACITY PER EACH CLAMP:
SHEAR = 160 LBS
TENSION = 2300 LBS

SHEAR AND TENSION LOAD DIRECTION ARE AS INDICATED ON REAR ISOMETRIC VIEW
NOTES:
- Threaded rods run along both sides of beam
- Rods do not pass through the flanges of the beam
- No drilling necessary
- Make sure spring nut is perpendicular to channel opening on scoreboard

**CRITICAL**
- Make sure spring nut is turned to vertical position inside scoreboard channel

**CRITICAL**
- Do not use any lubricant on any mounting hardware or warranty will be voided
**NOTES:**

1. **A^1** = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
2. **B** = DIGIT SIZE
3. **A1** = DRIVER NUMBER

**PRIMARY DRIVER (A1)**

KNOCKOUTS FOR 1/2" CONDUIT

SIGNAL OPTION ON THIS DRIVER (WIRE, FIBER, OR RADIO)

**OPTIONAL TNMCS**

8x32-34mm

**OPTIONAL HORN**

**OPTIONAL RADIO**

**FRONT VIEW**

**MS-2002-R/A**
NOTES:

A1 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

A1 = DRIVER NUMBER