

Agreement for Construction Services

This Agreement (“Agreement”) between Williamson County, Texas, a political subdivision of the State of Texas (“Owner”) and BJI, Inc. dba BJ Electric Company (“Contractor”) is entered into in accordance with the following terms and conditions:

ARTICLE 1 SCOPE OF WORK: The Owner desires to retain Contractor for replacement of field lighting to the Southwest Regional Park Athletic Fields (hereinafter called the “Project”). The Contractor shall have the overall responsibility for and shall provide complete construction services and furnish all materials, equipment, tools, and labor as necessary or reasonably inferable to complete the Project, or any phase of the Project, in accordance with the Owner’s requirements and the terms of this Agreement (hereinafter collectively referred to as the “Work”).

ARTICLE 2 CONTRACT PRICE: Owner agrees to pay to the Contractor, for the satisfactory performance of the Work, the sum of **One Million Twenty-Five Thousand Seven Hundred and Ten Dollars (\$1,025,710.10)** in accordance with the terms and conditions of this Agreement.

ARTICLE 3 PLANS AND SPECIFICATIONS: The Work shall be performed pursuant to and in accordance with the following plans and specifications attached hereto as **Exhibit “A”**, as well as any revisions made thereto.

ARTICLE 4 CONTRACT TIME:

4.1 Contractor shall commence the Work upon instruction to do so from the Owner and shall achieve Substantial Completion within **One Hundred Eighty (180) calendar days** from the date the Work is commenced; provided, however, Owner may extend said time period in the event bad weather affects the progress of the Work. Unless otherwise specified in writing, Contractor shall achieve Final Completion within **Thirty (30) calendar days of Substantial Completion**. Owner shall determine when the Project has been fully and finally completed to its satisfaction. The time set forth for completion of the work is an essential element of the Agreement.

4.2 Liquidated Damages.

Contractor acknowledges and recognizes that Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time and that Owner has entered into, or will enter into, binding agreements upon Contractor's achieving Substantial Completion of the Work within the Contract Time. Contractor further acknowledges and agrees that if Contractor fails to complete substantially or cause the Substantial Completion of any Phase

of the Work within the Contract Time, Owner will sustain extensive damages and serious loss as a result of such failure. In the cases of missed scheduled events, which incur exact losses of revenue and exact expenses for fees and other cancellation costs, Contractor shall be responsible for the exact amount of damages sustained by Owner. In other cases, the exact amount of such damages will be extremely difficult to ascertain. Therefore, Owner and Contractor agree as set forth below:

- 4.2.1** Subject to the other terms and conditions herein, if Substantial Completion is not achieved by the date specified above or by such date to which the Contract Time may be extended, the Contract Price shall be reduced by **One Hundred Dollars (\$100) per calendar day** as liquidated damages and not as a penalty, until the date of Substantial Completion. Force majeure shall apply relative to both rain/snow delays (acts of nature) and/or supply delays over which Contractor has no control, and such force majeure delays shall not be subject to such reduction of the Contract Price.
- 4.2.2** Owner may deduct liquidated damages described herein from any unpaid amounts then or thereafter due Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due Contractor shall be payable by Contractor to Owner at the demand of Owner, together with the interest from the date of the demand at a rate equal to the prime interest rate as published by the Wall Street Journal on the **first (1st) business day** after such amounts are demanded.
- 4.2.3** Notwithstanding anything to the contrary in this Agreement, if Owner is unable to recover any portion of liquidated damages in accordance with the terms and conditions herein because it is found to be unenforceable or invalid as a penalty or otherwise, then, Owner shall be entitled to recover from Contractor all of Owner's actual damages in connection with the failure by Contractor to achieve Substantial Completion of the Work within the Contract Time, including, without limitation, direct, indirect, or consequential damages.

ARTICLE 5 PAYMENT:

5.1 Schedule Of Values

Contractor shall submit to the Owner, before the first Application for Payment, a schedule of values allocating the entire Contract Price to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Owner may require. This schedule, unless objected to by the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

5.2 Applications For Payment

- 5.2.1** Contractor shall submit to the Owner an itemized Application for Payment prepared in accordance with the schedule of values for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner may require, such as copies of requisitions from subcontractors and material suppliers and shall reflect retainage if provided for in the

Contract Documents.

5.2.1.1 Such applications may include requests for payment on account of changes in the Work that have been properly authorized by written Change Orders.

5.2.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a subcontractor or material supplier unless such Work has been performed by others whom the Contractor intends to pay.

5.2.1.3 If requested by Owner or required elsewhere in the Agreement, each Application for Payment shall be accompanied by the following, all in a form and substance satisfactory to the Owner:

- a. With each Application for Payment: a current Sworn Statement from the Contractor setting forth all subcontractors and all material suppliers with whom the Contractor has subcontracted, the amount of each such subcontract, the amount requested for any subcontractor or material supplier in the Application for Payment, and the amount to be paid to the Contractor from such progress payment;
- b. With each Application for Payment: a duly executed Conditional Waiver and Release on Progress Payment from the Contractor and subcontractors establishing receipt of payment or satisfaction of the payment requested by the Contractor in the current Application for Payment;
- c. Commencing with the second Application for Payment submitted by the Contractor, a duly executed Unconditional Waiver and Release on Progress Payment from Contractor and all subcontractors, material suppliers and, where appropriate, lower tier subcontractors that have billed more than five thousand dollars (\$5,000) on a single application of payment, establishing receipt of payment or satisfaction of payment of all amounts requested on behalf of such entities and disbursed prior to submittal by the Contractor of the current Application for Payment;
- d. With the Final Application for Payment: Contractor shall submit a Conditional Waiver and Release on Final Payment as required by Texas Property Code, §53.284. Upon receipt of final payment, Contractor shall submit an Unconditional Waiver and Release on Final Payment as required by Texas Property Code, §53.284; and
- e. Such other information, documentation, and materials as the Owner, or the title insurer (if any) may require in order to ensure that Owner's property is free of lien claims. Such other documents may include, without limitation, original copies of lien or bond claim releases suitable for filing with the County Clerk in Williamson County, Texas.

5.2.2 Unless otherwise provided in the Agreement, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon

compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

5.2.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, bond claims, claims, security interests or encumbrances in favor of the Contractor, subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

5.2.3.1 The Contractor further expressly undertakes to defend Owner, at the Contractor's sole expense, against any actions, lawsuits, or proceedings brought against Owner as a result of liens filed against the Work, the site of any of the Work, the Project site and any improvements thereon, or any portion of the property of any of Owner (referred to collectively as "liens" in this paragraph), provided the Owner has paid Contractor pursuant to the requirements of the Agreement. The Contractor hereby agrees to indemnify and hold Owner harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits, or proceedings.

5.2.3.2 The Owner shall release any payments withheld due to a lien or bond claims if the Contractor obtains security acceptable to the Owner, however, the Contractor shall not be relieved of any responsibilities or obligations under this paragraph, including, without limitation, the duty to defend and indemnify Owner.

5.2.3.3 Retainage. The Owner shall withhold from each progress payment, as retainage, five percent (5%) of the total earned amount. Retainage so withheld shall be managed in conformance with Texas Government Code, Chapter 2252, Subchapter B. Any request for reduction or release of retainage shall be accompanied by written consent of the Contractor's Surety. No such request shall be made until the Contractor has earned at least sixty-five percent (65%) of the total Contract Price.

5.2.3.4 For purposes of Texas Government Code, §2251.021 (a)(2), the date the performance of service is completed is the date when the Owner's representative approves the Application for Payment.

5.3 Certificates For Payment

5.3.1 The Owner will, within seven (7) business days after receipt of the Contractor's Application for Payment, issue a Certificate for Payment, with a copy to the Contractor, for such amount as the Owner determines is properly due, or notify the Contractor in writing of the Owner's reasons for withholding certification in whole or in part as provided.

5.3.2 The issuance of a Certificate for Payment will constitute a representation by the Owner, based on the Owner's evaluation of the Work and the data comprising the Application for Payment,

that, to the best of the Owner's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Agreement. The foregoing representations are subject to an evaluation of the Work for conformance with the Agreement upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Agreement prior to completion and to specific qualifications expressed by the Owner. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Owner has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Price.

5.4 Decisions To Withhold Certification

5.4.1 The Owner may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner's opinion the representations to the Owner required herein cannot be made. If the Owner is unable to certify payment in the amount of the Application, the Owner will notify the Contractor. If the Contractor or Contractor and Owner, as the case may be, cannot agree on a revised amount, the Owner will promptly issue a Certificate for Payment for the amount that can be certified. The Owner may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Owner's opinion to protect the Owner from loss for which the Contractor is responsible because of:

5.4.1.1 defective Work not remedied;

5.4.1.2 third party claims filed or reasonable evidence indicating probable filing of such claims;

5.4.1.3 failure of the Contractor to make payments properly to subcontractors or for labor, materials or equipment;

5.4.1.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

5.4.1.5 damage to the Owner or a separate contractor;

5.4.1.6 failure to maintain the scheduled progress, or reasonable evidence that the Work will not be completed within the Contract Time;

5.4.1.7 failure to comply with the requirements of Texas Government Code, Chapter 2258 (Prevailing Wage Law);

5.4.1.8 failure to include sufficient documentation to support the amount of payment requested for the Project;

5.4.1.9 failure to obtain, maintain, or renew insurance coverage, payment/performance

bonds or warranty bond required by the Agreement; or
5.4.1.10 repeated failure to carry out the Work in accordance with the Agreement.

5.4.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

5.5 Progress Payments

5.5.1 The Owner shall make payment in the manner and within the time provided in the Agreement and in accordance with Texas Government Code, Chapter 2251.

5.5.2 The Contractor shall pay each subcontractor and material and equipment suppliers no later than ten (10) calendar days after receipt of payment from the Owner the amount to which the subcontractor or material and equipment suppliers is entitled. Payments to subcontractors may reflect the percentages actually retained from payments to the Contractor on account of the subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each subcontractor, require each subcontractor to make payments to Sub-subcontractors in a similar manner.

5.5.3 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven (7) calendar days, the Owner shall have the right to contact subcontractors to ascertain whether they have been properly paid. The Owner shall not have an obligation to pay or to see to the payment of money to a subcontractor, except as may otherwise be required by law.

5.5.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Agreement.

5.6 Failure Of Payment

5.6.1 If the Owner is required to issue Certificates for Payment and, through no fault of the Contractor, the Owner fails to timely issue Certificates for Payment in the time permitted in the Agreement, or if the Owner does not pay the Contractor by the date established in the Agreement, then the Contractor may, upon twenty-one (21) business days written notice to the Owner, stop the Work until payment of the amount owing has been received.

5.6.2 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Agreement, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Agreement to the contrary, if the Contractor fails to promptly make any payment due the Owner, or if the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective work, the Owner shall have an absolute right to offset such amount against the Contract Price and may, in the Owner's sole discretion, elect either to (1) deduct an amount equal to that which the Owner is entitled from

any payment then or thereafter due the Contractor from the Owner, or (2) issue a written notice to the Contractor reducing the Contract Price by an amount equal to that which the Owner is entitled.

5.7 Substantial Completion

- 5.7.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Agreement so that the Owner can occupy or utilize the Work for its intended use; provided, however, that as a condition precedent to Substantial Completion, the Owner has received all certificates of occupancy and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project.
- 5.7.2** When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner a comprehensive list of items to be completed or corrected prior to final payment (punch list). Failure to include an item on the punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the Agreement.
- 5.7.3** Upon receipt of the Contractor's punch list, the Owner will examine the Work to determine whether the Work or designated portion thereof is substantially complete. If the Owner's examination discloses any item, whether or not included on the Contractor's punch list, that is not sufficiently complete in accordance with the Agreement, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Owner. In such case, the Contractor shall then submit a request for another examination by the Owner to determine Substantial Completion.
- 5.7.4** When the Work or designated portion thereof is substantially complete, the Owner will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Unless otherwise provided, Contractor shall complete all items on the punch list within thirty (30) calendar days of Substantial Completion. Warranties required by the Agreement shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.
- 5.7.5** The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate of Substantial Completion. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage.

5.8 Partial Occupancy or Use

- 5.8.1** The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor,

provided such occupancy or use is consented to by the insurer, the surety, and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Agreement. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Owner as provided herein. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

- 5.8.2** Immediately prior to partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
- 5.8.3** Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Agreement.

5.9 Final Completion and Final Payment

- 5.9.1** Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner will make such inspection and, when the Owner finds the Work acceptable under the Agreement and the Agreement fully performed, the Owner will issue a final Certificate for Payment for the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. All warranties and guarantees required under or pursuant to the Agreement shall be assembled and delivered by the Contractor to the Owner as part of the final Application for Payment. The final Certificate for Payment will not be issued by the Owner until all warranties and guarantees have been received and accepted by the Owner.
- 5.9.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied, within the period of time required by Texas Government Code, Chapter 2251, (2) a certificate evidencing that insurance required by the Agreement to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) business days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Agreement, (4) consent of surety to final payment, (5) a warranty bond in a form acceptable to Owner, and (6) other data establishing payment or satisfaction of obligations, such as receipts, unconditional full and final releases and waivers of liens, claims, security interests or encumbrances arising out of the Agreement, to the extent and in such form as may be designated by the Owner.
- 5.9.3** Acceptance of final payment by the Contractor, a subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and

identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 6 CONTRACTOR'S GENERAL RESPONSIBILITIES AND COVENANTS:

6.1 Contractor shall render, diligently and competently in accordance with the highest standards used in the profession, all Contractor services which shall be necessary or advisable for the expeditious, economical and satisfactory completion of the Project. Contractor agrees to use its best efforts, skill, judgment, and abilities to perform its obligations and to further the interests of Owner in accordance with Owner's requirements and procedures.

6.2 Contractor's duties as set forth herein shall at no time be in any way diminished by reason of any approval by the Owner nor shall the Contractor be released from any liability by reason of such approval by the Owner, it being understood that the Owner at all times is ultimately relying upon the Contractor's skill and knowledge in performing the services required hereunder.

6.3 Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

6.4 Contractor shall be responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work. The Contractor shall keep the Owner informed of the progress and quality of the Work.

6.5 Insurance. Contractor shall carry insurance in the types and amounts indicated below for the duration of the Agreement, which shall include items owned by Owner in the care, custody and control of Contractor prior to and during construction. Contractor must also complete and file the declaration pages from the insurance policies with Owner whenever a previously identified policy period expires during the term of the Agreement, as proof of continuing coverage. Contractor shall update all expired policies prior to submission of any payment requests hereunder. Failure to update policies shall be reason for payment to be withheld until evidence for renewal is provided to the Owner. If the Contractor fails to obtain, maintain or renew any insurance required by this Agreement, the Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner. All policies of insurance provided by the Contractor must comply with the requirements set forth herein, the Agreement and the laws of the State of Texas.

6.5.1 The Contractor shall provide and maintain, until the Work covered in the Agreement is completed and accepted by the Owner, the minimum insurance coverages in the minimum amounts as described below.

| Type of Coverage | Limits of Liability |
|--------------------------|---------------------|
| .1 Worker's Compensation | Statutory |

- .2 Employer's Liability
 Bodily Injury by Accident \$500,000 Ea. Accident
 Bodily Injury by Disease \$500,000 Ea. Employee
 Bodily Injury by Disease \$500,000 Policy Limit
- .3 Commercial general liability including completed operations and contractual liability insurance for bodily injury, death, or property damages in the following amounts:

| COVERAGE | PER OCCURRENCE |
|----------|----------------|
|----------|----------------|

| | |
|--|-------------|
| Commercial General Liability (including premises, completed operations and contractual) | \$1,000,000 |
|--|-------------|

| | |
|--------------------------|-------------|
| Aggregate policy limits: | \$2,000,000 |
|--------------------------|-------------|

- .4 Comprehensive automobile and auto liability insurance (covering owned, hired, leased and non-owned vehicles):

| COVERAGE | PER PERSON | PER OCCURRENCE |
|----------|------------|----------------|
|----------|------------|----------------|

| | | |
|------------------------------------|-------------|-------------|
| Bodily injury (including death) | \$1,000,000 | \$1,000,000 |
|------------------------------------|-------------|-------------|

| | | |
|-----------------|-------------|-------------|
| Property damage | \$1,000,000 | \$1,000,000 |
|-----------------|-------------|-------------|

| | | |
|-------------------------|--------------------|--|
| Aggregate policy limits | No aggregate limit | |
|-------------------------|--------------------|--|

- .5 Builder's Risk Insurance (all-risks)

An all-risk policy, in the amount equal at all times to 100% of the Contract Price or Contract Sum. The policy shall include coverage for loss or damage caused by certified acts of terrorism as defined in the Terrorism Risk Insurance Act. The policy shall be issued in the name of the Contractor and shall name its Subcontractors as additional insureds. The Owner shall be named as a loss payee on the policy. The builders risk policy shall have endorsements as follow:

- a. This insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the present premises. If off-site storage is permitted, coverage shall include transit and storage in an amount sufficient to protect property being transported or stored.

- b. For renovation projects and or portions of work contained within an existing structure, the Owner waives subrogation for damage by fire to existing building structure(s), if the Builder's Risk Policy has been endorsed to include coverage for existing building structure(s) in the amount described in the Special Conditions. However, Contractor shall not be required to obtain such an endorsement unless specifically required by the Special Conditions in the Contract Documents. The aforementioned waiver of subrogation shall not be effective unless such endorsement is obtained.
- .6. Flood insurance when specified in Supplementary General Conditions or Special Conditions.
- .7 Umbrella coverage in the amount of not less than \$5,000,000.

6.5.2 Workers' Compensation Insurance Coverage:

- 1. Definitions:
 - (a) Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the Project.
 - (b) Duration of the Project - includes the time from the beginning of the work on the Project until the Contractor's/person's work on the Project has been completed and accepted by the Owner.
 - (c) Coverage – Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).
 - (d) Persons providing services on the Project ("subcontractor") - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.
- 2. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, §401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.

3. The Contractor must provide a certificate of coverage prior to execution of the Agreement/Contract, and in no event later than ten (10) days from Notice of Award. Failure to provide the insurance in a timely fashion may result in loss of Contractor's bid bond.
4. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.
5. The Contractor shall obtain from each person providing services on a project, and provide to the Owner:
 - (a.) a certificate of coverage, prior to that person beginning work on the Project, so the Owner will have on file certificates of coverage showing coverage for all persons providing services on the Project; and
 - (b.) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.
6. The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.
7. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.
8. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
9. The Contractor shall contractually require each person with who it contracts to provide services on a project, to:
 - (a) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;
 - (b) provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;
 - (c) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;
 - (d) obtain from each other person with whom it contracts, and provide to the Contractor:

- i. a certificate of coverage, prior to the other person beginning work on the Project; and
 - ii. a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;
 - (e) retain all required certificate of coverage on file for the duration of the Project and for one year thereafter;
 - (f) notify the Owner in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and
 - (g) contractually require each person with whom it contracts, to perform as required by paragraphs (a)-(g), with the certificates of coverage to be provided to the person for whom they are providing services.
10. By signing the Agreement/Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the Commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.
11. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the Agreement/Contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Owner.
- 6.5.3** If insurance policies are not written for the amounts specified herein, Contractor shall carry Umbrella or Excess Liability Insurance for any differences in amounts specified. If Excess Liability Insurance is provided, it shall follow the form of primary coverage.
- 6.5.4** Insurance coverage required hereunder shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A- or better by A.M. Best Company, or otherwise acceptable to Owner.
- 6.5.5** **The Owner ("Williamson County, Texas"), its officials, employees and volunteers shall be named as an additional insured on all required policies.** These insurance policies shall contain the appropriate additional insured endorsement signed by a person authorized by that insurer to bind coverage on its behalf.
- 6.5.6** The furnishing of the above listed insurance coverage, as may be modified by the Contract Documents, must be tendered prior to execution of the Agreement/Contract, and in no

event later than ten (10) days from Notice of Award. Failure to provide the insurance in a timely fashion may result in loss of Contractor's bid bond.

- 6.5.7** Owner reserves the right to review the insurance requirements set forth herein during the Agreement and to make reasonable adjustments to the insurance coverage and their limits when deemed necessary and prudent by the Owner based upon changes in statutory law, court decisions, or the claims history of the industry as well as the Contractor.
- 6.5.8** Owner shall be entitled, upon request, and without expense, to receive complete copies of the policies with all endorsements and may make any reasonable requests for deletion, or revision or modification of particular policy terms, conditions, limitations, or exclusions, except where policy provisions are established by law or regulation binding upon the Parties or the underwriter of any of such policies. Damages caused by the Contractor and not covered by insurance shall be paid by the Contractor.
- 6.5.9** Contractor shall be responsible for payment of premiums for all of the insurance coverages required hereunder. Contractor further agrees that for each claim, suit or action made against insurance provided hereunder, with respect to all matters for which the Contractor is responsible hereunder, Contractor shall be solely responsible for all deductibles and self-insured retentions. Any deductibles or self-insured retentions over \$75,000 in the Contractor's insurance must be declared and approved in writing by Owner in advance.
- 6.5.10** Contractor shall contractually require each person or entity with whom it contracts to provide services in relation to the Work, to comply with every insurance requirement that Contractor must comply with hereunder. More specifically, each person or entity with whom Contractor contracts to provide services on the in relation to the Work must comply with each insurance requirement hereunder just as if such person or entity was the Contractor. Thus, every reference to Contractor under each insurance requirement hereunder shall mean and include each person or entity with whom Contractor contracts to provide services in relation to the Work. If any such person or entity with whom Contractor contracts to provide services in relation to the Work fails to obtain, maintain or renew any insurance required by this Agreement, Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

ARTICLE 7 INDEMNITY:

7.1 INDEMNIFICATION - EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, Contractor SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") AND SHALL ASSUME ENTIRE RESPONSIBILITY AND LIABILITY (OTHER THAN AS A RESULT OF INDEMNITEES' GROSS NEGLIGENCE) FOR ANY CLAIM OR ACTION BASED ON OR ARISING OUT OF THE PERSONAL INJURY, OR DEATH, OF ANY EMPLOYEE OF CONTRACTOR, OR OF ANY SUBCONTRACTOR, OR OF ANY OTHER ENTITY FOR WHOSE ACTS THEY MAY BE LIABLE, WHICH OCCURRED OR WAS ALLEGED TO HAVE OCCURRED ON THE PROJECT SITE

OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK. CONTRACTOR HEREBY INDEMNIFIES THE INDEMNITEES EVEN TO THE EXTENT THAT SUCH PERSONAL INJURY WAS CAUSED OR ALLEGED TO HAVE BEEN CAUSED BY THE SOLE, COMPARATIVE OR CONCURRENT NEGLIGENCE OF THE STRICT LIABILITY OF ANY INDEMNIFIED PARTY. THIS INDEMNIFICATION SHALL NOT BE LIMITED TO DAMAGES, COMPENSATION, OR BENEFITS PAYABLE UNDER INSURANCE POLICIES, WORKERS COMPENSATION ACTS, DISABILITY BENEFITS ACTS, OR OTHER EMPLOYEES BENEFIT ACTS.

INDEMNIFICATION - OTHER THAN EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR ALLEGED TO BE RESULTING FROM THE PERFORMANCE OF THIS AGREEMENT OR THE WORK DESCRIBED HEREIN, TO THE EXTENT CAUSED BY THE NEGLIGENCE, ACTS, ERRORS, OR OMISSIONS OF CONTRACTOR OR ITS SUBCONTRACTORS, ANYONE EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY A PARTY INDEMNIFIED HEREUNDER.

7.2 Except for the obligation of Owner to pay Contractor the Contract Price pursuant to the terms of this Agreement, and to perform certain other obligations pursuant to the terms and conditions explicitly set forth herein, Owner shall have no liability to Contractor or to anyone claiming through or under Contractor by reason of the execution or performance of this Agreement. Notwithstanding any obligation or liability of Owner to Contractor, no present or future partner or affiliate of Owner or any agent, officer, director, or employee of Owner, Williamson County, or of the various departments comprising Williamson County, or anyone claiming under Owner has or shall have any personal liability to Contractor or to anyone claiming through or under Contractor by reason of the execution or performance of this Agreement.

ARTICLE 8 WARRANTY:

8.1 Contractor hereby warrants that the materials and equipment provided for the Work will be of good quality and new unless otherwise required or permitted by the Owner; that the construction will be free from faults and defects; and that the construction will conform with the requirements of the plans, specifications, drawings and the terms of this Agreement.

8.2 Contractor shall provide warranty services for the Work for 1 year following Final Completion and final payment. Just before the warranty period expires, Contractor shall attend an on-site meeting with the Owner to ensure that all warranty issues have been identified and properly remedied.

ARTICLE 9 PREVAILING WAGE RATE:

9.1 Duty to Pay Prevailing Wage Rates. The Contractor shall pay not less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule", as defined below. The specified wage rates are minimum rates only, and are not representations that qualified labor adequate to perform the Work is available locally at the prevailing wage rates. The Owner is not bound to pay—and will not consider—any claims for additional compensation made by any

Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Agreement. The “Prevailing Wage Schedule” is not a representation that quantities of qualified labor adequate to perform the Work may be found locally at the specified wage rates.

9.1.2 For classifications not shown, workers shall not be paid less than the wage indicated for Laborers. The Contractor shall notify each worker commencing work on the Project of the worker’s job classification and the established minimum wage rate required to be paid, as well as the actual amount being paid. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the monetary wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by Owner, competent evidence of compliance with the Texas Prevailing Wage Law shall be furnished by Contractor.

9.1.3 A copy of each worker wage rate notification shall be submitted to the Owner with the Application for Payment for the period during which the worker began on-site activities.

9.2 Prevailing Wage Schedule. Pursuant to Texas Government Code Section 2258.022(2), the general prevailing rate of per diem wages for each craft or type of worker needed to execute the Contract and the prevailing rate for legal holiday and overtime work shall be the most recent prevailing wage rate for Williamson County, Texas for building construction as determined by the United States Department of Labor in accordance with the Davis-Bacon Act (40 U.S.C. Section 276a et seq.), and its subsequent amendments, which are published and can be obtained online at <https://sam.gov/search/?index=dbra> (the “Prevailing Wage Schedule”). Should the Contractor at any time become aware that a particular skill or trade not reflected on the Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a subcontractor, the Contractor shall promptly inform the Owner and shall specify a wage rate for that skill or trade, which shall bind the Contractor.

9.3 Penalty for Violation. The Contractor and any Subcontractor shall pay to the Owner a penalty of sixty dollars (\$60.00) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule or any supplement or update thereto pursuant to provisions above. The Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all workers employed in connection with the Work, and showing the actual per diem wages paid to each worker, which records shall be open at all reasonable hours for the inspection by the Owner.

9.4 Complaints of Violations of Prevailing Wage Rates. Within thirty-one (31) days of receipt of information concerning a violation of Texas Government Code, Chapter 2258, the Owner shall make an initial determination as to whether good cause exists to believe a violation occurred. The Owner’s decision on the initial determination shall be reduced to writing and sent to the Contractor or Subcontractor against whom the violation was alleged, and to the affected worker. When a good cause finding is made, the Owner shall retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing

Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

9.5 Arbitration Required if Violation not Resolved. After the Owner makes its initial determination, the affected Contractor or Subcontractor and worker have fourteen (14) days in which to resolve the issue of whether a violation occurred, including the amount that should be retained by Owner or paid to the affected worker. If the Contractor or Subcontractor and affected worker reach an agreement concerning the worker's claim, the Contractor shall promptly notify the Owner in a written document signed by the worker. If the Contractor or Subcontractor and affected worker do not agree before the fifteenth (15th) day after the Owner's determination, the Contractor or Subcontractor and affected worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Chapter 171, Tex. Civ. Prac. & Rem. Code. The parties to the arbitration have ten (10) days after the expiration of the fifteen (15) days referred to above, to agree on an arbitrator; if by the eleventh (11th) day there is no agreement to an arbitrator, a district court shall appoint an arbitrator on the petition of any of the parties to the arbitration.

9.6 Arbitration Award. If an arbitrator determines that a violation has occurred, the arbitrator shall assess and award against the Contractor or Subcontractor the amount of penalty as provided herein and the amount owed the worker. The Owner may use any amounts retained hereunder to pay the worker the amount as designated in the arbitration award. If the Owner has not retained enough from the Contractor or Subcontractor to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor and Subcontractor as appropriate, and the surety of either to receive the amount owed, attorneys' fees and court costs. The Contractor shall promptly furnish a copy of the arbitration award to the Owner.

9.7 Prevailing Wage Retainage. Money retained pursuant to this section shall be used to pay the claimant or claimants the difference between the amount the worker received in wages for labor on the Project at the rate paid by the Contractor or Subcontractor and the amount the worker would have received at the general prevailing wage rate as provided by the agreement of the claimant and the Contractor or Subcontractor affected, or in the arbitrator's award. The full statutory penalty of sixty dollars (\$60.00) per day of violation per worker shall be retained by the Owner to offset its administrative costs, pursuant to Texas Government Code, §2258.023. Any retained funds in excess of these amounts shall be paid to the Contractor on the earlier of the next progress payment or final payment. Provided, however, that the Owner shall have no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award as provided in this section.

9.8 No Extension of Time. If the Owner determines that good cause exists to believe a violation has occurred, the Contractor shall not be entitled to an extension of time for any delay arising directly or indirectly from of the procedures set forth in this section.

ARTICLE 10 BONDS:

10.1 Performance Bond. Upon execution of this Agreement, Contractor shall provide a Performance Bond in the amount of 100% of the Contract Price. The surety for a Performance Bond shall meet the requirements of Texas law and the requirements set forth in the Agreement.

10.2 Payment Bond. Upon execution of this Agreement, Contractor shall provide a Payment Bond in the amount of 100% of the Contract Price, as security for the true and faithful payment in full of all subcontractors and persons performing labor, services, materials, machinery, and fixtures in connection with the Work. The surety for a Payment Bond shall meet the requirements of Texas law and the requirements set forth in the Agreement.

10.3 Warranty Bond. Upon Final Completion, Contractor shall provide a Warranty Bond in the amount of 20% of the Contract Price, as security for the true and faithful performance of all warranties set forth in the Agreement.

ARTICLE 11 MISCELLANEOUS PROVISIONS:

11.1 Interest and Late Payments. Owner's payment for goods and services shall be governed by Chapter 2251 of the Texas Government Code. Interest charges for any overdue payments shall be paid by Owner in accordance with Texas Government Code Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of Owner's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one percent (1%); and (2) the prime rate published in the Wall Street Journal on the first day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice/application for payment submitted by Contractor, Owner shall notify Contractor of the error not later than the twenty first (21st) day after the date Owner receives the invoice/application for payment. If the error is resolved in favor of Contractor, Contractor shall be entitled to receive interest on the unpaid balance of the invoice/application for payment submitted by Contractor beginning on the date that the payment for the invoice/application for payment became overdue. If the error is resolved in favor of the Owner, Contractor shall submit a corrected invoice/application for payment that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by Chapter 2251 of the Texas Government Code if the corrected invoice/application for payment is not paid by the appropriate date.

11.2 Audits. Contractor agrees that Owner or its duly authorized representatives shall, until the expiration of three (3) years after final payment under this Agreement, have access to and the right to examine and photocopy any and all books, documents, papers and records of Contractor which are directly pertinent to the services to be performed under this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions. Contractor agrees that Owner shall have access during normal working hours to all necessary Contractor facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. Owner shall give Contractor reasonable advance notice of intended audits.

11.3 Assignment. This Agreement is a personal service contract for the services of Contractor, and Contractor's interest in this Agreement, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party.

11.4 Governing Law and Venue. This Agreement and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. Williamson County where the Project is located shall be the sole place of venue for any legal action arising from or related to this Agreement or the Project in which the Owner is a party.

11.5 Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

11.6 Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of the Contractor or Owner for whom it is intended; or sent by U. S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last known business fax number of the designated representative. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing.

11.7 Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

11.8 Relationship of the Parties. Contractor shall be an independent contractor under this agreement and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions in this agreement which may appear to give Owner the right to direct Contractor as to details of doing the Work herein covered or to exercise a measure of control over the Work shall be deemed to mean that Contractor shall follow the desires of Owner in the results of the Work only. Owner shall not retain or have the right to control the Contractor's means, methods or details pertaining to the Contractor's performance of the Work described herein, nor shall Owner have the power to direct the order in which Contractor's Work is performed under this agreement. Owner and Contractor hereby agree and declare that Contractor is an Independent Contractor and as such meets the qualifications of an Independent Contractor under Texas Worker's Compensation Act, Texas Labor Code, Section 406.141, that the Contractor is not an employee of Owner for purposes of this Agreement, and that the Contractor and its employees, agents and sub-subcontractors shall not be entitled to worker's compensation coverage or any other type of insurance coverage held by Owner.

11.9 Force Majeure. If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance of this Agreement. The burden of proof for the need of such relief shall rest upon the party obligated

to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

11.10 No Waiver of Sovereign Immunity. Nothing herein shall be construed as a waiver of sovereign immunity by Williamson County.

11.11 Current Revenues. Under Texas law, a contract with a governmental entity that contains a claim against future revenues is void; therefore, each party paying for the performance of governmental functions or services must make those payments from current revenues available to the paying party.

11.12 Compliance with Laws. Contractor shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required, Contractor shall furnish the County with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees above specified.

11.13 Entire Agreement & Incorporated Documents; Conflicting Terms: This Agreement constitutes the entire agreement between the parties and may not be modified or amended other than by a written instrument executed by both parties.

Documents expressly incorporated into this Agreement include the following:

- A. Exhibits referenced herein;
- B. The Bid/Proposal documents defined in Williamson County RFP/IFB # 23RFP-73;
- C. Insurance certificates evidencing coverages required herein above;
- D. Addenda issued prior to the Effective Date of this Agreement; and
- E. All Change Orders and any other Modifications issued after the Effective Date of this Agreement.

In the event a dispute arises between the terms and conditions of this Agreement and the terms of the documents referenced in this section and any other purchase order(s), contract(s), or any document relating to the services and goods subject of this Agreement, the terms and conditions of this Agreement shall control.

BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement to be effective as of the date of the last party's execution hereof.

OWNER:

WILLIAMSON COUNTY, TEXAS,
a political subdivision of the state of Texas

By: Bill Gravell Jr.
Bill Gravell Jr. (Jul 21, 2023 16:28 CDT)

Printed Name: Bill Gravell Jr.

Title: County Judge

Date: Jul 21, 2023

CONTRACTOR:

BJI, INC. dba BJ ELECTRIC COMPANY

By: 

Printed Name: JACK PAYNE

Title: PRESIDENT

Date: 6/30/2023

Exhibit “A”

Plans and Specifications

MUSCO LIGHTING SUBMITTAL FOR APPROVAL

PREPARED FOR:

Williamson County Park Retrofit

Lighting Project
Leander, TX
May 30, 2023

Project #220413

Submitted by:

Musco Sports Lighting, LLC

Attn: Denise Etzel
2107 Stewart Road
Muscatine, Iowa 52761

Toll Free: 800-756-1205
Fax: 800-374-6402





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A. BILL OF MATERIALS

| Equipment Description | |
|-----------------------|--|
| 48 | Light-Structure System™ Retrofit Total Light Control™ TLC-LED-900 luminaires |
| 120 | Light-Structure System™ Retrofit Total Light Control™ TLC-LED-1200 luminaires |
| 8 | Light-Structure System™ Retrofit Total Light Control™ TLC-LED-1500 luminaires |
| 20 | Light-Structure System™ Retrofit Total Light Control™ TLC-BT-575 luminaires |
| ✓ | Factory wired and assembled pole top luminaire assemblies |
| ✓ | Factory wired electrical component enclosures |
| ✓ | Factory built wire harnesses with plug-in connections |
| Controls – 480v/3P | |
| 3 | 24" X 72" Control and monitoring cabinets |
| 1 | 24" X 48" Control and monitoring cabinet |
| ✓ | High/medium/low dimming |
| 44 | 30-amp contactors |
| 7 | On-Off-Auto (OOA) switches |
| Warranty | |
| ✓ | Musco's Constant 25™ product assurance and warranty program that eliminates 100% maintenance costs for 25 years, including labor, materials, monitoring and guaranteed light levels. |

B. LIGHTING DESIGN

Williamson County Park Relight

Leander, TX

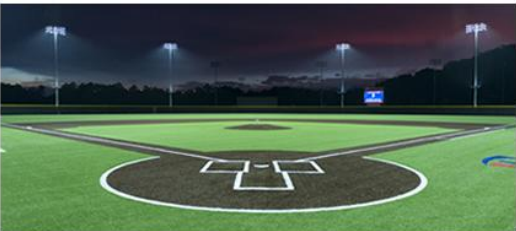
Lighting System

| Pole / Fixture Summary | | | | | | |
|------------------------|-------------|------------|-------------|----------------|-----------|---------|
| Pole ID | Pole Height | Mtg Height | Fixture Qty | Luminaire Type | Load | Circuit |
| 1A1, 1A2 | 60' | 60' | 2 | TLC-LED-1200 | 2.34 kW | E |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | E |
| 1B1, 1B2 | 80' | 80' | 6 | TLC-LED-1200 | 7.02 kW | E |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | E |
| 1C1, 1C2 | 70' | 70' | 4 | TLC-LED-900 | 3.52 kW | E |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | E |
| 2A1, 2A2 | 60' | 60' | 2 | TLC-LED-1200 | 2.34 kW | F |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | F |
| 2B1, 2B2 | 80' | 80' | 6 | TLC-LED-1200 | 7.02 kW | F |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | F |
| 2C1, 2C2 | 70' | 70' | 4 | TLC-LED-900 | 3.52 kW | F |
| | | 16' | 1 | TLC-BT-575 | 0.58 kW | F |
| 6A, 6B, 6C, 6D | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | A |
| | | 70' | 2 | TLC-LED-1500 | 2.82 kW | A |
| | | 16' | 2 | TLC-BT-575 | 1.15 kW | A |
| 7A, 7B, 7C, 7D | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | B |
| 8A, 8C, 8D | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | C |
| 8B | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | D |
| | | 70' | 5 | TLC-LED-1200 | 5.85 kW | C |
| 9A, 9B | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | D |
| 9C | 70' | 70' | 5 | TLC-LED-1200 | 5.85 kW | D |
| | | 70' | 3 | TLC-LED-900 | 2.64 kW | G |
| BA | 70' | 70' | 3 | TLC-LED-900 | 2.64 kW | G |
| BB, BC | 60' | 60' | 3 | TLC-LED-900 | 2.64 kW | G |
| T1A, T1B, T1C, T1D | 40' | 40' | 2 | TLC-LED-900 | 1.76 kW | H |
| T1E, T1F, T1G, T1H | 40' | 40' | 2 | TLC-LED-900 | 1.76 kW | I |
| T2A, T2B, T2C, T2D | 60' | 60' | 2 | TLC-LED-1200 | 2.34 kW | J |
| | | 60' | 1 | TLC-LED-900 | 0.88 kW | J |
| 42 | | | 196 | | 205.42 kW | |

| Circuit Summary | | | |
|-----------------|-------------|----------|-------------|
| Circuit | Description | Load | Fixture Qty |
| A | Field 6 | 39.28 kW | 36 |
| B | Field 7 | 23.4 kW | 20 |
| C | Field 8 | 23.4 kW | 20 |
| D | Field 9 | 23.4 kW | 20 |
| E | Softball 1 | 29.21 kW | 30 |
| F | Softball 2 | 29.21 kW | 30 |
| G | Basketball | 10.56 kW | 12 |
| H | Tennis 1-2 | 7.04 kW | 8 |
| I | Tennis 3-4 | 7.04 kW | 8 |
| J | Tennis 5-8 | 12.88 kW | 12 |

| Fixture Type Summary | | | | | | | |
|----------------------|--------------------|---------|---------|----------|----------|----------|----------|
| Type | Source | Wattage | Lumens | L90 | L80 | L70 | Quantity |
| TLC-LED-900 | LED 5700K - 75 CRI | 880W | 104,000 | >120,000 | >120,000 | >120,000 | 48 |
| TLC-LED-1200 | LED 5700K - 75 CRI | 1170W | 150,000 | >120,000 | >120,000 | >120,000 | 120 |
| TLC-BT-575 | LED 5700K - 75 CRI | 575W | 52,000 | >120,000 | >120,000 | >120,000 | 20 |
| TLC-LED-1500 | LED 5700K - 75 CRI | 1410W | 181,000 | >120,000 | >120,000 | >120,000 | 8 |

From Hometown to Professional



We Make It Happen®

Williamson County Park Relight

Leander, TX

| Single Luminaire Amperage Draw Chart | | | | | | | |
|--------------------------------------|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Driver (.90 min power factor) | Max Line Amperage Per Luminaire | | | | | | |
| Single Phase Voltage | 208 (60) | 220 (60) | 240 (60) | 277 (60) | 347 (60) | 380 (60) | 480 (60) |
| TLC-LED-900 | 5.2 | 4.9 | 4.5 | 3.9 | 3.1 | 2.9 | 2.3 |
| TLC-LED-1200 | 6.9 | 6.5 | 6.0 | 5.2 | 4.2 | 3.8 | 3.0 |
| TLC-BT-575 | 3.4 | 3.2 | 2.9 | 2.5 | 2.0 | 1.8 | 1.5 |
| TLC-LED-1500 | 8.4 | 7.9 | 7.3 | 6.3 | 5.0 | 4.6 | 3.6 |

Light Level Summary

| Calculation Grid Summary | | | | | | | | |
|--------------------------|---------------------------------|--------------|-----|-----|---------|---------|----------|-------------|
| Grid Name | Calculation Metric | Illumination | | | | | Circuits | Fixture Qty |
| | | Ave | Min | Max | Max/Min | Ave/Min | | |
| 150' Spill | Horizontal | 0 | 0 | 0 | 0.00 | | | 0 |
| 150' Spill | Max Vertical Illuminance Metric | 0 | 0 | 0 | 0.00 | | | 0 |
| Basketball | Horizontal Illuminance | 24.6 | 9 | 33 | 3.81 | 2.74 | G | 12 |
| Field 6 | Horizontal Illuminance | 30.1 | 22 | 41 | 1.86 | 1.37 | A | 36 |
| Field 7 | Horizontal Illuminance | 30.3 | 22 | 38 | 1.71 | 1.38 | B | 20 |
| Field 8 | Horizontal Illuminance | 30.1 | 22 | 38 | 1.75 | 1.37 | C | 20 |
| Field 9 | Horizontal Illuminance | 30.1 | 22 | 38 | 1.75 | 1.37 | D | 20 |
| Softball 1 (Infield) | Horizontal Illuminance | 51.9 | 38 | 63 | 1.63 | 1.36 | E | 30 |
| Softball 1 (Outfield) | Horizontal Illuminance | 31.9 | 21 | 49 | 2.38 | 1.52 | E | 30 |
| Softball 2 (Infield) | Horizontal Illuminance | 51.3 | 38 | 61 | 1.61 | 1.35 | F | 30 |
| Softball 2 (Outfield) | Horizontal Illuminance | 31.8 | 20 | 49 | 2.40 | 1.59 | F | 30 |
| Tennis 1-2 | Horizontal Illuminance | 55.6 | 47 | 68 | 1.46 | 1.18 | H | 8 |
| Tennis 3-4 | Horizontal Illuminance | 54.9 | 47 | 66 | 1.41 | 1.17 | I | 8 |
| Tennis 5-8 | Horizontal Illuminance | 50.3 | 32 | 60 | 1.88 | 1.57 | J | 12 |
| Track | Horizontal Illuminance | 20.4 | 7 | 45 | 6.54 | 2.91 | A | 36 |

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| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|------------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 6A, 6B, 6C 6D | 70' | - | 15.5' | TLC-BT-575 | 2 | 2 | 0 |
| | | | | 70' | TLC-LED-1500 | 2 | 2 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 4 | TOTALS | | | | | 36 | 36 | 0 |

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Field 6 |
| Size: | 360' x 160' |
| Spacing: | 30.0' x 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 30 |
| Scan Average: | 30.13 |
| Maximum: | 41 |
| Minimum: | 22 |
| Avg / Min: | 1.37 |
| Guaranteed Max / Min: | 2.5 |
| Max / Min: | 1.86 |
| UG (adjacent pts): | 1.28 |
| CU: | 0.40 |
| No. of Points: | 72 |

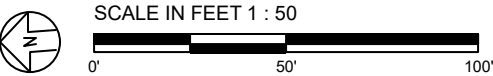
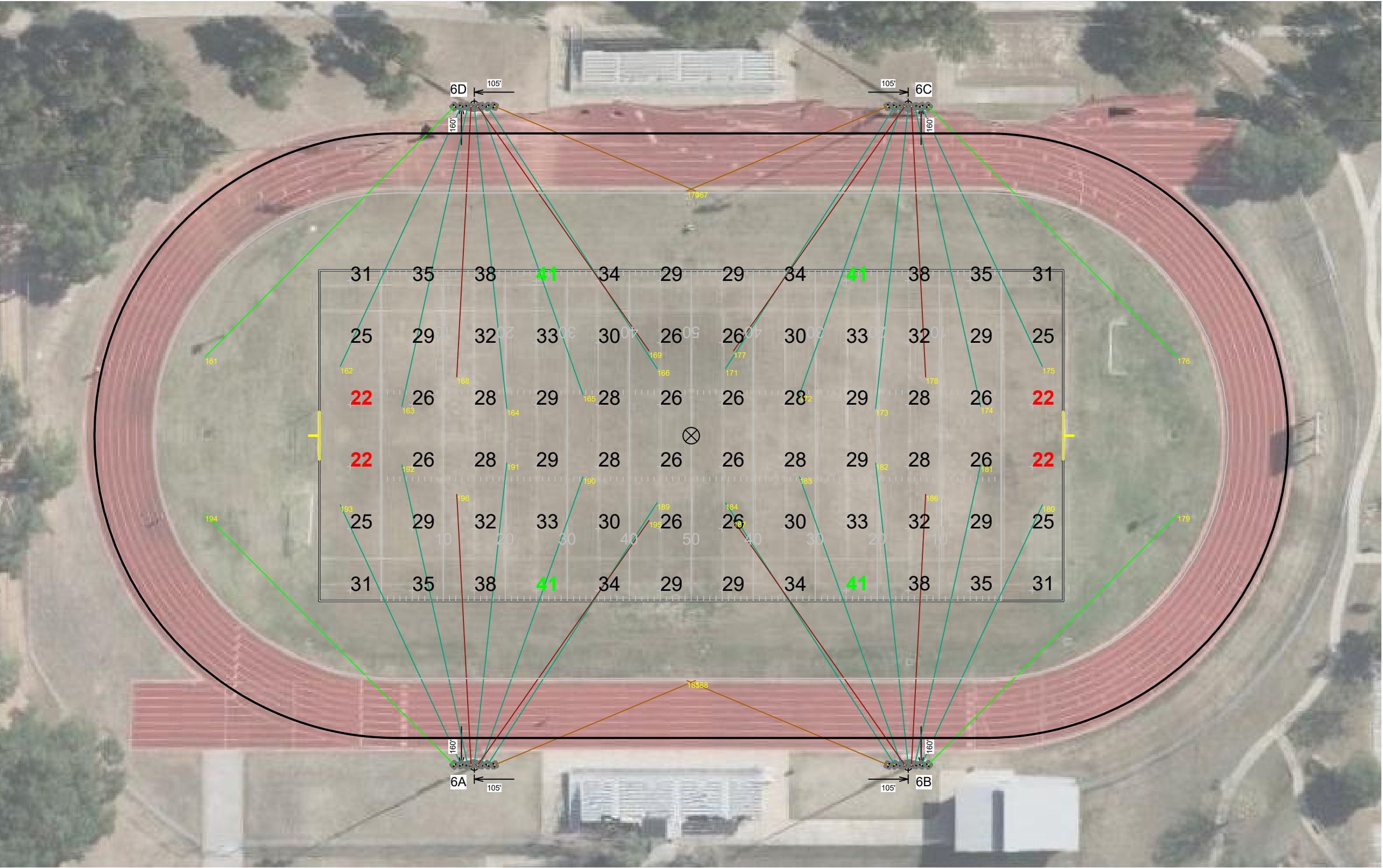
| LUMINAIRE INFORMATION | |
|-----------------------|----------|
| Applied Circuits: | A |
| No. of Luminaires: | 36 |
| Total Load: | 39.28 kW |

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.



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗



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| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|------------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 6A, 6B, 6C 6D | 70' | .05' | 15.55' | TLC-BT-575 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1500 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1200 | 5 | 5 | 0 |
| | | | | TOTALS | | | | |

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Track |
| Size: | Irregular |
| Spacing: | 30.0' x 30.0' |
| Height: | 3.0' above grade |

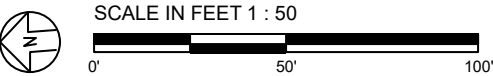
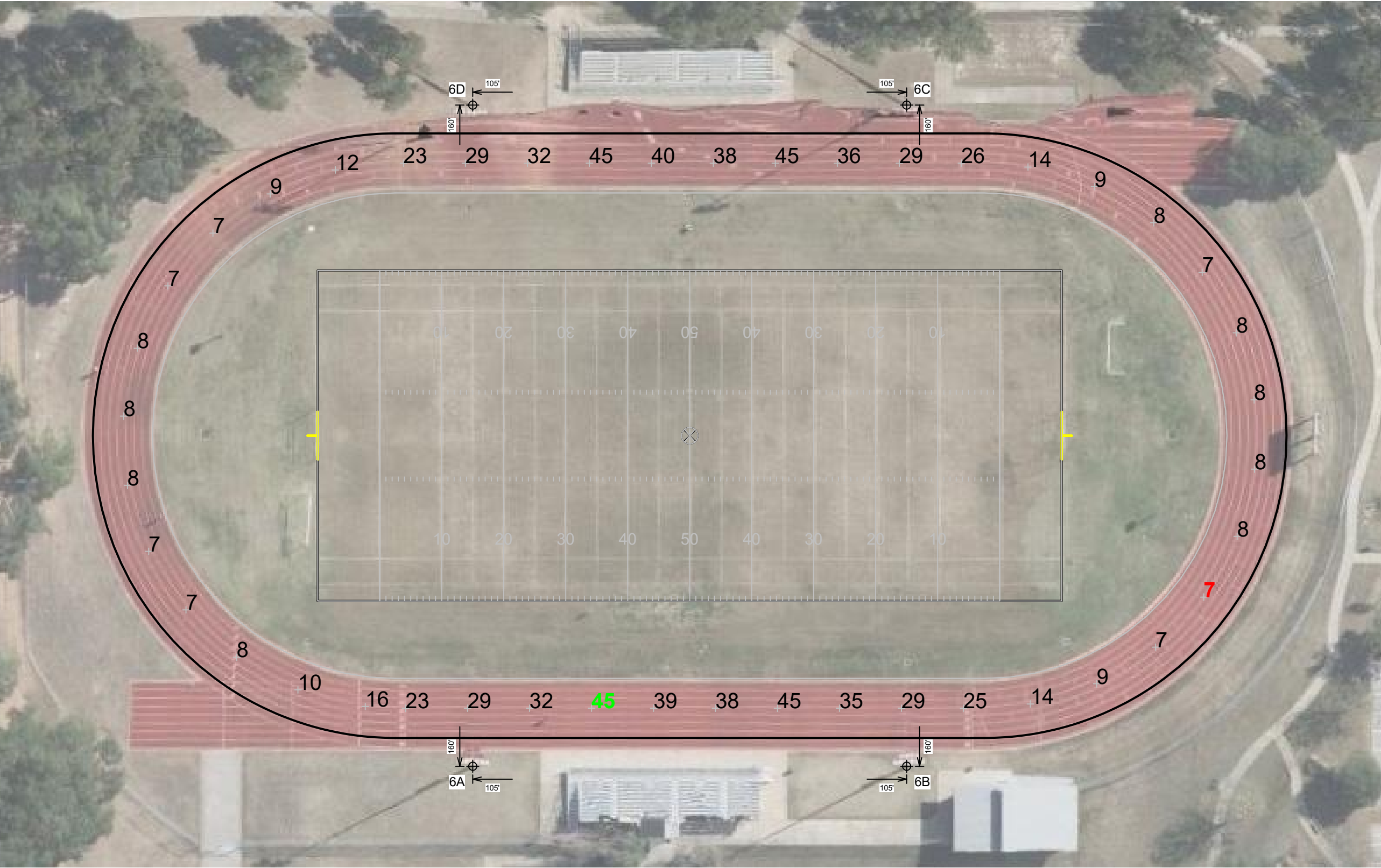
| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 20 |
| Scan Average: | 20.39 |
| Maximum: | 45 |
| Minimum: | 7 |
| Avg / Min: | 2.95 |
| Max / Min: | 6.54 |
| UG (adjacent pts): | 0.00 |
| CU: | 0.17 |
| No. of Points: | 44 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | A |
| No. of Luminaires: | 36 |
| Total Load: | 39.28 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.



Pole location(s) ⚡ dimensions are relative to 0,0 reference point(s) ⊗



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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 7A, 7B, 7C, 7D | 70' | - | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 4 | TOTALS | | | | | 20 | 20 | 0 |

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Field 7 |
| Size: | 360' x 210' |
| Spacing: | 30.0' x 30.0' |
| Height: | 3.0' above grade |

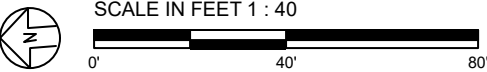
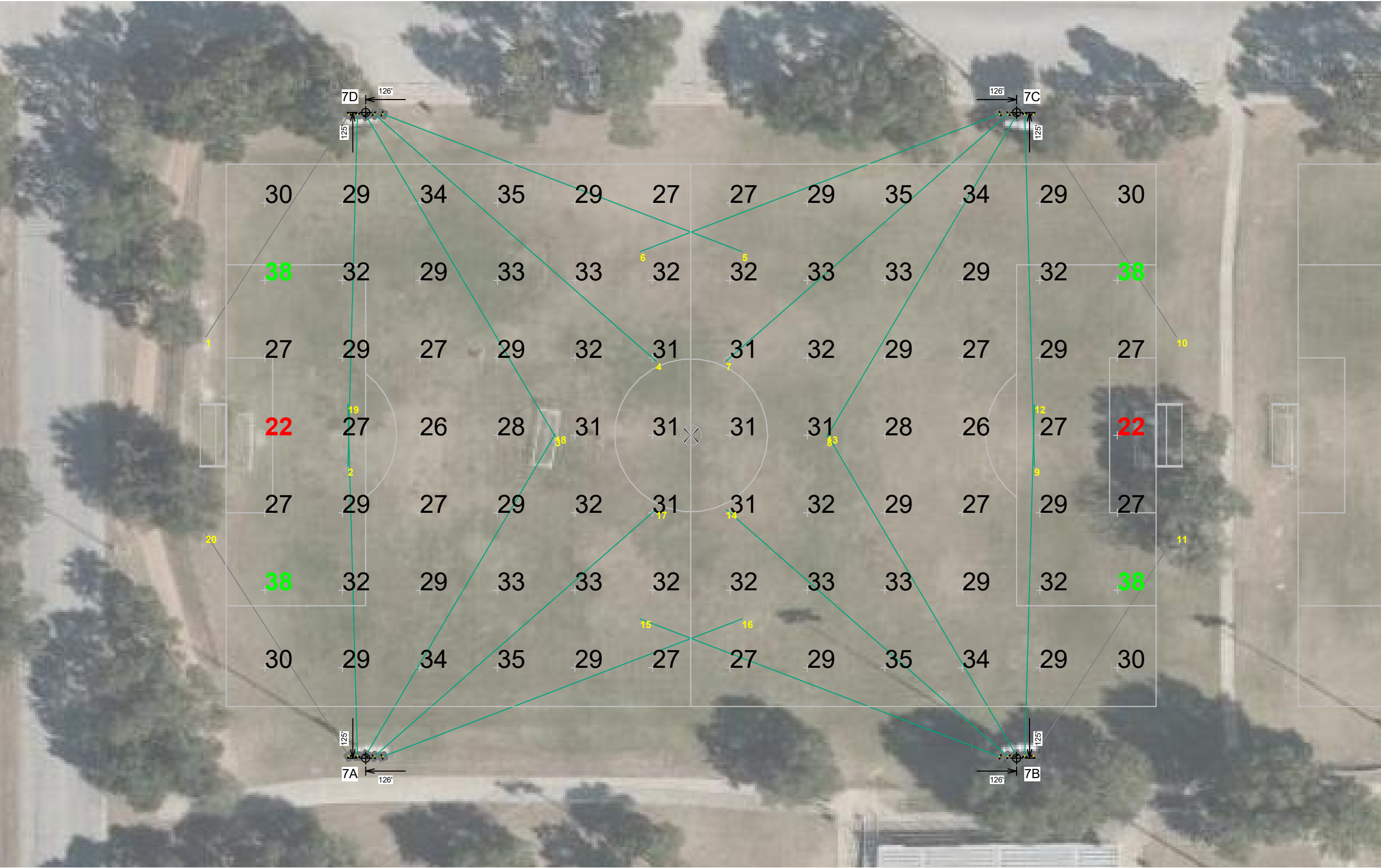
| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 30 |
| Scan Average: | 30.33 |
| Maximum: | 38 |
| Minimum: | 22 |
| Avg / Min: | 1.38 |
| Guaranteed Max / Min: | 2.5 |
| Max / Min: | 1.71 |
| UG (adjacent pts): | 1.41 |
| CU: | 0.78 |
| No. of Points: | 84 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | B |
| No. of Luminaires: | 20 |
| Total Load: | 23.4 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.



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗

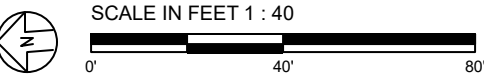
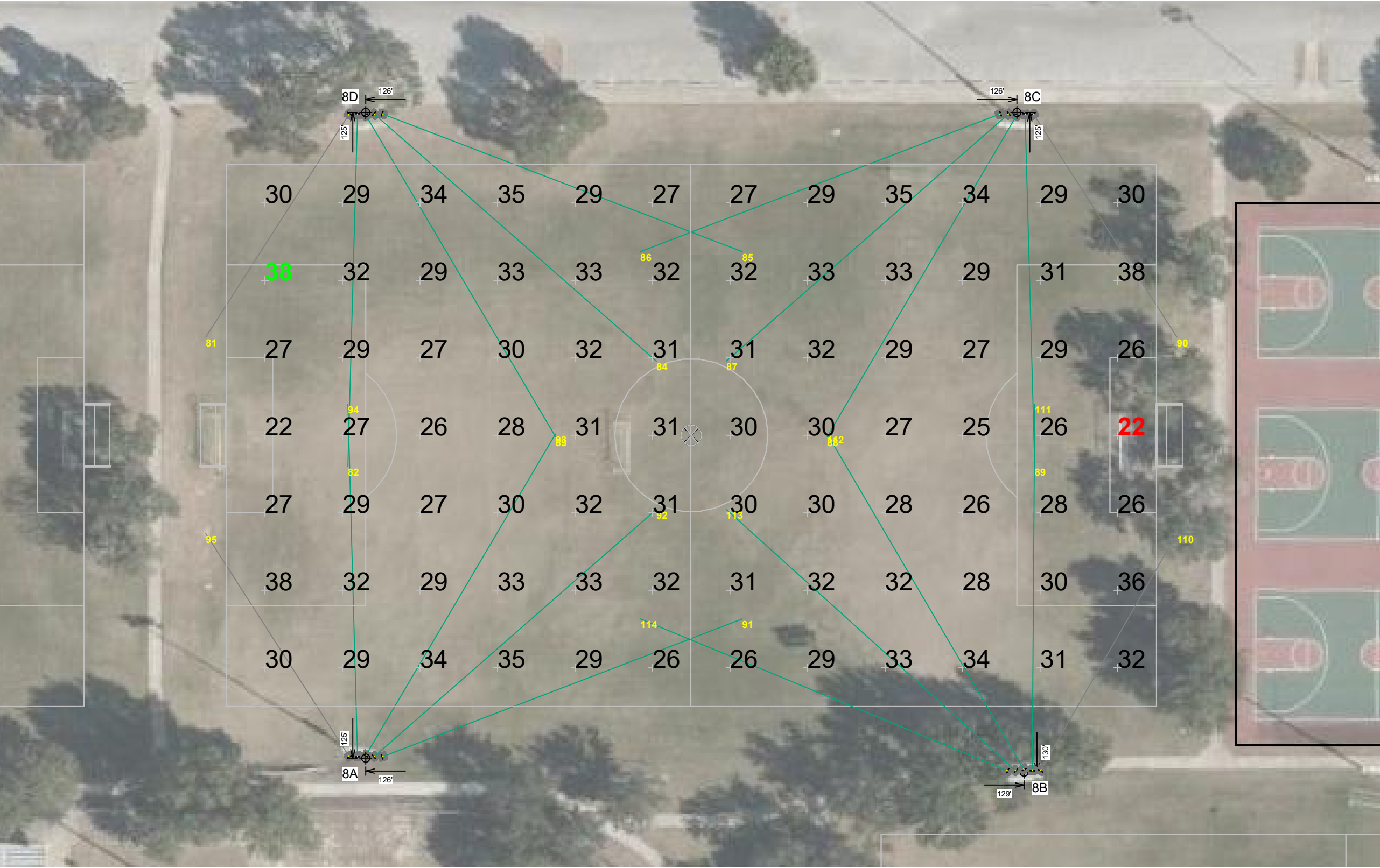


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| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | | |
|--------------------------------|------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|--|
| Pole | | | | Luminaires | | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS | |
| 3 | 8A, 8C, 8D | 70' | - | 70' | TLC-LED-1200 | 5 | 5 | 0 | |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 5 | 5 | |
| 4 | TOTALS | | | | | 25 | 20 | 5 | |

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Field 8 |
| Size: | 360' x 210' |
| Spacing: | 30.0' x 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 30 |
| Scan Average: | 30.10 |
| Maximum: | 38 |
| Minimum: | 22 |
| Avg / Min: | 1.40 |
| Guaranteed Max / Min: | 2.5 |
| Max / Min: | 1.75 |
| UG (adjacent pts): | 1.42 |
| CU: | 0.77 |
| No. of Points: | 84 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | C |
| No. of Luminaires: | 20 |
| Total Load: | 23.4 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.



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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

| Pole | | | | Luminaires | | | | |
|------|----------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 2 | 2C1, 2C2 | 70' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 70' | TLC-LED-900 | 4 | 4 | 0 |
| 2 | 2A1, 2A2 | 60' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| 2 | 2B1, 2B2 | 80' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 80' | TLC-LED-1200 | 6 | 6 | 0 |
| 6 | TOTALS | | | | | 30 | 30 | 0 |

Williamson County Park Relight

Leander, TX

GRID SUMMARY

Name: Softball 2
Size: 275'/275'/275' - basepath 60'
Spacing: 20.0' x 20.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

| | Infield | Outfield |
|-----------------------|---------|----------|
| Guaranteed Average: | 50 | 30 |
| Scan Average: | 51.28 | 31.79 |
| Maximum: | 61 | 49 |
| Minimum: | 38 | 20 |
| Avg / Min: | 1.35 | 1.57 |
| Guaranteed Max / Min: | 2 | 2.5 |
| Max / Min: | 1.61 | 2.40 |
| UG (adjacent pts): | 1.52 | 1.50 |
| CU: | 0.69 | |
| No. of Points: | 25 | 150 |

LUMINAIRE INFORMATION

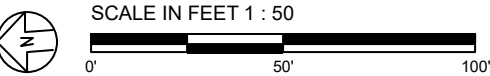
Applied Circuits: F
No. of Luminaires: 30
Total Load: 29.21 kW

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.



Pole location(s) ⓧ dimensions are relative to 0,0 reference point(s) ⊗



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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | |
|--------------------------------|----------|------|-----------------|-----------------|----------------|------------|-----------|
| Pole | | | | Luminaires | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID |
| 4 | T2A, T2B | 60' | - | 60' | TLC-LED-1200 | 2 | 2 |
| | T2C, T2D | | | 60' | TLC-LED-900 | 1 | 1 |
| 4 | TOTALS | | | | | 12 | 12 |
| | | | | | | | 0 |

Williamson County Park Relight

Leander, TX

GRID SUMMARY

Name: Tennis 5-8
Size: 4 Court - 24' Spacing
Spacing: 20.0' x 20.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Guaranteed Average: 50

Scan Average: 50.25

Maximum: 60

Minimum: 32

Avg / Min: 1.57

Guaranteed Max / Min: 2

Max / Min: 1.88

UG (adjacent pts): 0.00

CU: 0.77

No. of Points: 60

LUMINAIRE INFORMATION

Applied Circuits: J

No. of Luminaires: 12

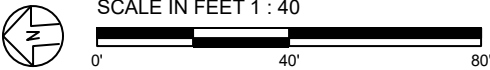
Total Load: 12.88 kW

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.



Pole location(s) ⚡ dimensions are relative to 0,0 reference point(s) ⊗



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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | T1A, T1B T1C, T1D | 40' | - | 40' | TLC-LED-900 | 2 | 2 | 0 |
| 4 | TOTALS | | | | | 8 | 8 | 0 |

Williamson County Park Relight

Leander, TX

GRID SUMMARY

Name: Tennis 1-2
Size: 2 Court - 24' Spacing
Spacing: 20.0' x 20.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Guaranteed Average: 50

Scan Average: 55.59

Maximum: 68

Minimum: 47

Avg / Min: 1.19

Guaranteed Max / Min: 2

Max / Min: 1.46

UG (adjacent pts): 0.00

CU: 0.89

No. of Points: 30

LUMINAIRE INFORMATION

Applied Circuits: H

No. of Luminaires: 8

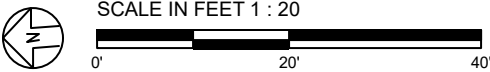
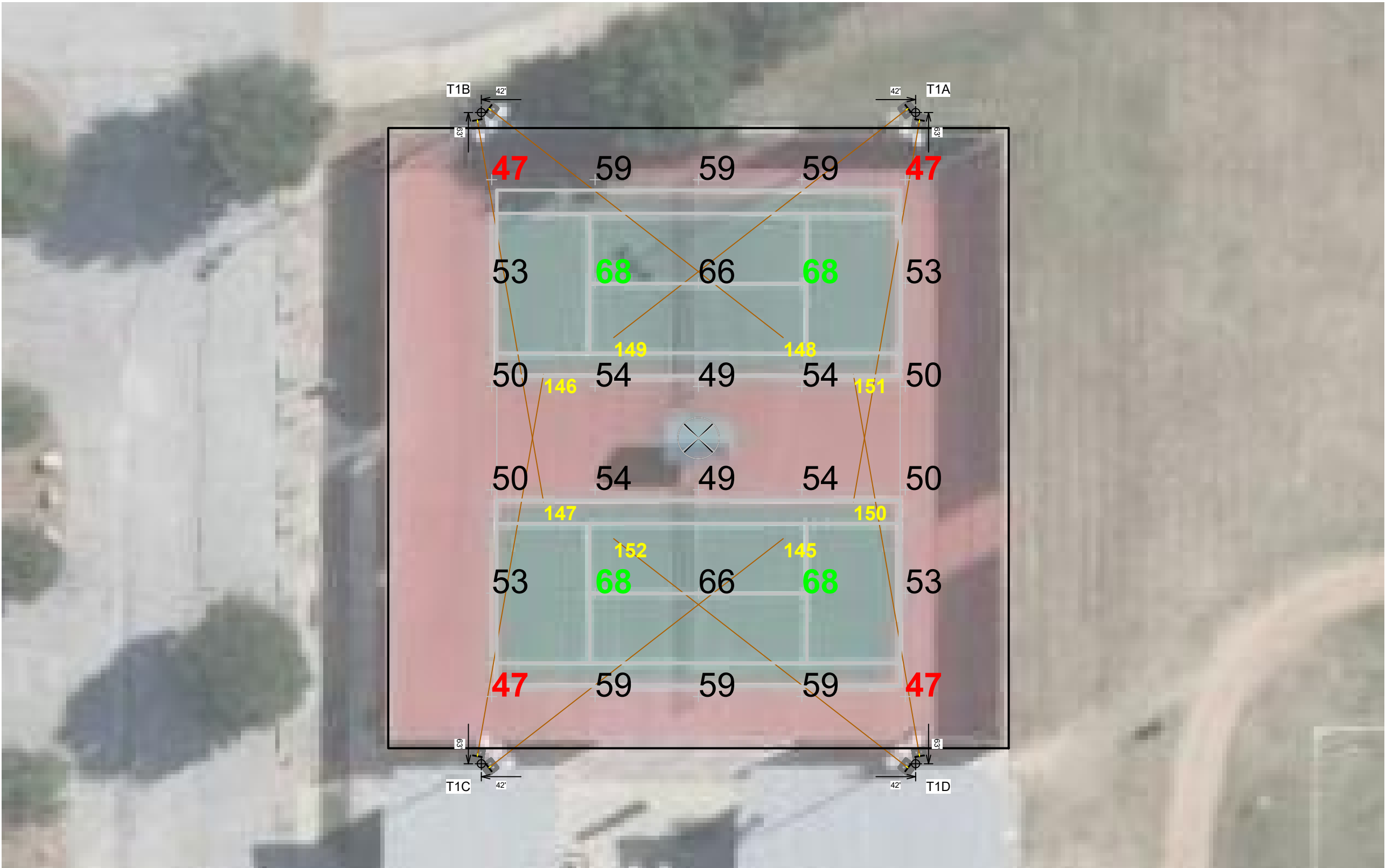
Total Load: 7.04 kW

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 $\pm 3\%$ 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) ⊗



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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------------------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | T1E, T1F T1G, T1H | 40' | - | 40' | TLC-LED-900 | 2 | 2 | 0 |
| 4 | TOTALS | | | | | 8 | 8 | 0 |

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|-----------------------|
| Name: | Tennis 3-4 |
| Size: | 2 Court - 24' Spacing |
| Spacing: | 20.0' x 20.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 50 |
| Scan Average: | 54.93 |
| Maximum: | 66 |
| Minimum: | 47 |
| Avg / Min: | 1.18 |
| Guaranteed Max / Min: | 2 |
| Max / Min: | 1.41 |
| UG (adjacent pts): | 0.00 |
| CU: | 0.87 |
| No. of Points: | 30 |

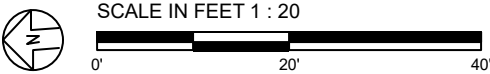
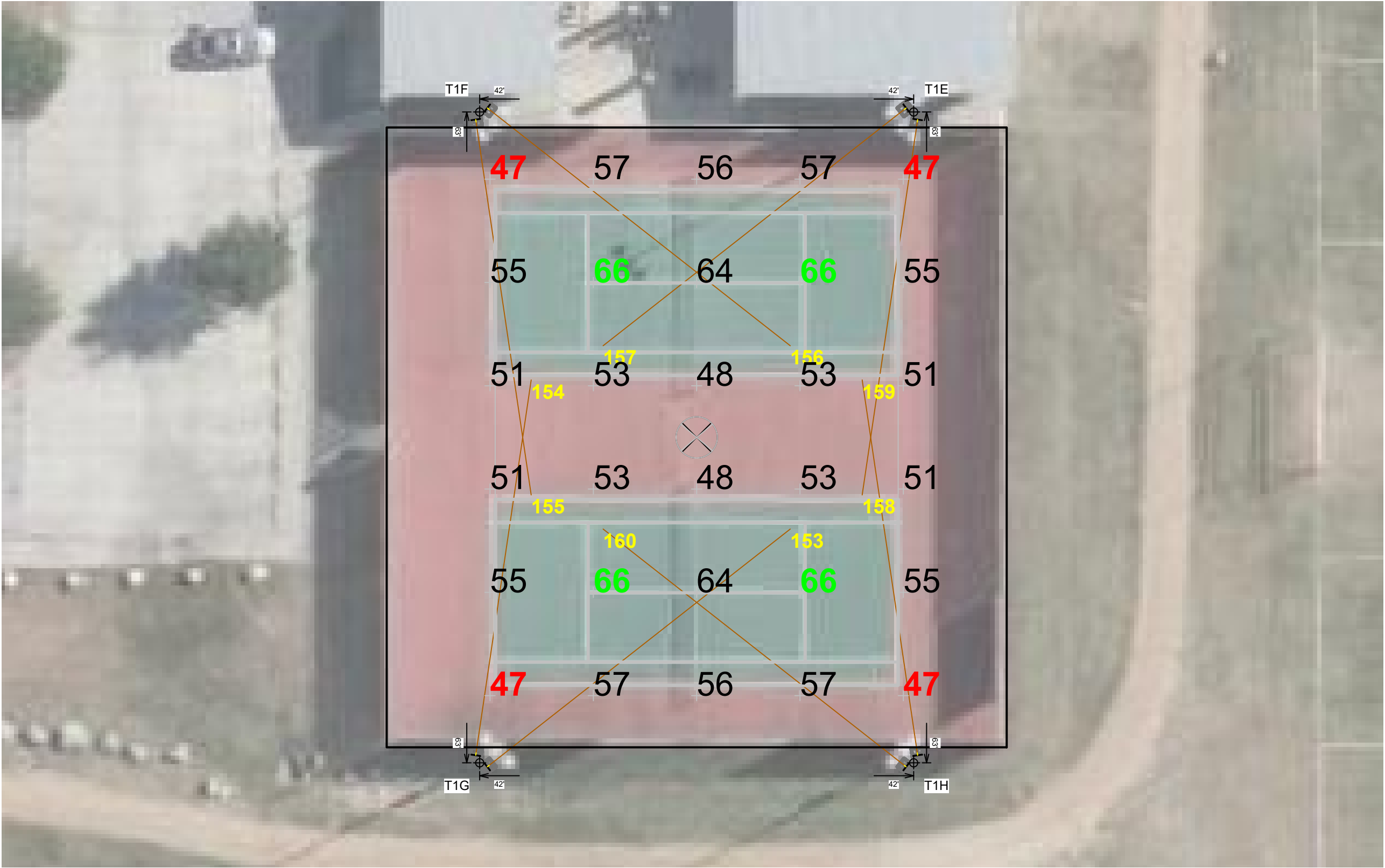
| LUMINAIRE INFORMATION | |
|-----------------------|---------|
| Applied Circuits: | 1 |
| No. of Luminaires: | 8 |
| Total Load: | 7.04 kW |

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.



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗



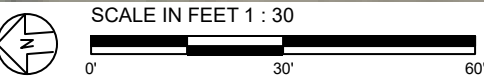
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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 | 3* | 3 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 0 | 5 |
| 2 | BB, BC | 60' | - | 60' | TLC-LED-900 | 3 | 3 | 0 |
| 1 | BA | 70' | - | 70' | TLC-LED-900 | 3 | 3 | 0 |
| 4 | TOTALS | | | | | 17 | 12 | 5 |

* This structure utilizes a back-to-back mounting configuration



ENGINEERED DESIGN By: Drew Jacobson · File #220413B · 30-May-23

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Basketball |
| Size: | 225' x 210' |
| Spacing: | 20.0' x 20.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 20 |
| Scan Average: | 24.63 |
| Maximum: | 33 |
| Minimum: | 9 |
| Avg / Min: | 2.84 |
| Max / Min: | 3.81 |
| UG (adjacent pts): | 2.68 |
| CU: | 0.85 |
| No. of Points: | 110 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | G |
| No. of Luminaires: | 12 |
| Total Load: | 10.56 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.



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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 2 | 1A1, 1A2 | 60' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| 2 | 1B1, 1B2 | 80' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 80' | TLC-LED-1200 | 6 | 6 | 0 |
| 2 | 1C1, 1C2 | 70' | - | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| | | | | 70' | TLC-LED-900 | 4 | 4 | 0 |
| 6 | TOTALS | | | | | 30 | 30 | 0 |

Williamson County Park Relight

Leander, TX

GRID SUMMARY

Name: Softball 1
Size: 275'/275'/275' - basepath 60'
Spacing: 20.0' x 20.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

| | Infield | Outfield |
|-----------------------|---------|----------|
| Guaranteed Average: | 50 | 30 |
| Scan Average: | 51.85 | 31.87 |
| Maximum: | 63 | 49 |
| Minimum: | 38 | 21 |
| Avg / Min: | 1.35 | 1.55 |
| Guaranteed Max / Min: | 2 | 2.5 |
| Max / Min: | 1.63 | 2.38 |
| UG (adjacent pts): | 1.50 | 1.49 |
| CU: | 0.71 | |
| No. of Points: | 25 | 154 |

LUMINAIRE INFORMATION

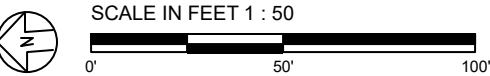
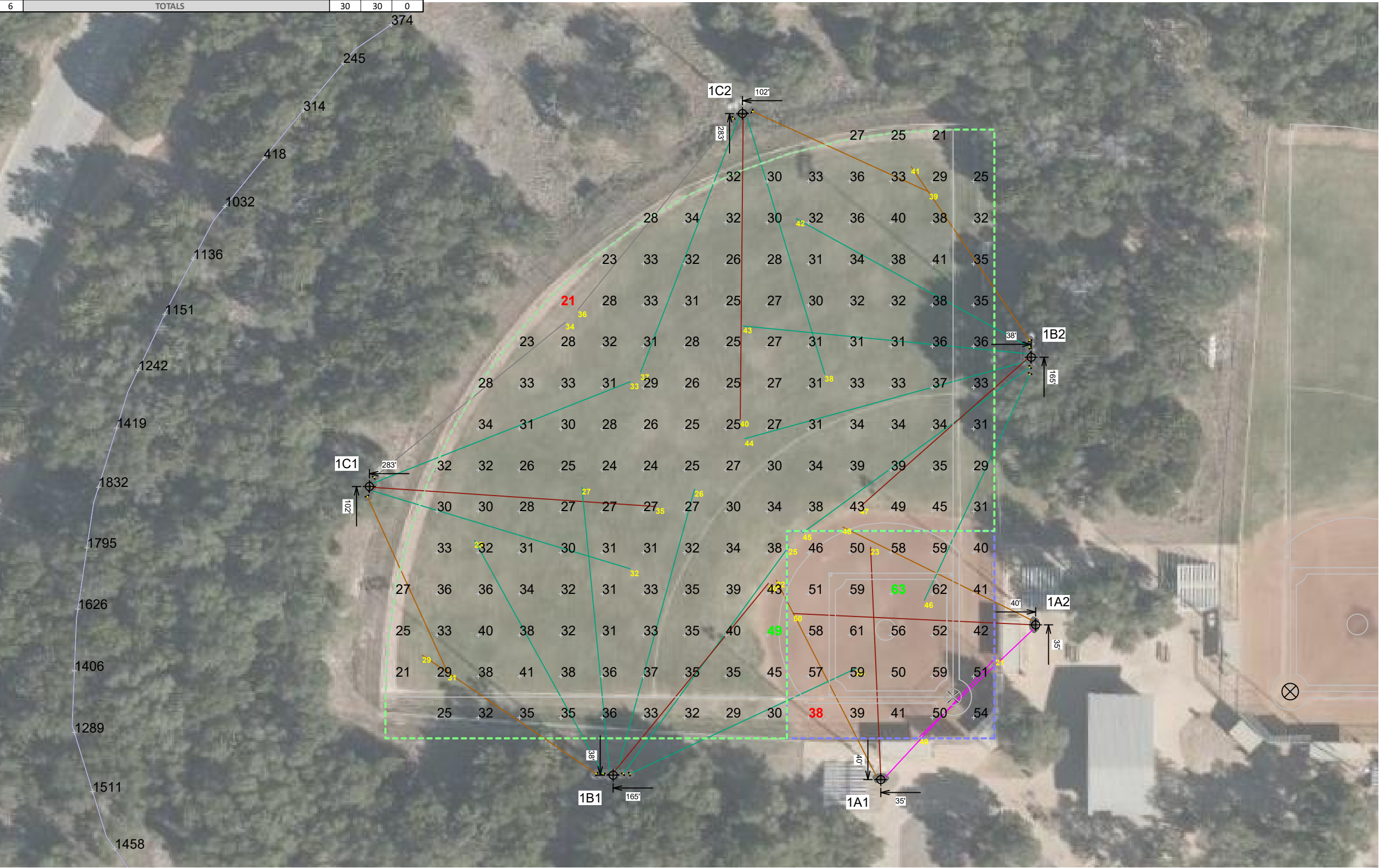
Applied Circuits: E
No. of Luminaires: 30
Total Load: 29.21 kW

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.



Pole location(s) ⚡ dimensions are relative to 0,0 reference point(s) ⊗



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| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|----------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 5 | 5 |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 | 3* | 0 | 3 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 2 | 9A, 9B | 70' | - | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 4 | TOTALS | | | | | 28 | 20 | 8 |

* This structure utilizes a back-to-back mounting configuration



Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | Field 9 |
| Size: | 360' x 210' |
| Spacing: | 30.0' x 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------------------|-------------|
| MAINTAINED HORIZONTAL FOOTCANDLES | |
| | Entire Grid |
| Guaranteed Average: | 30 |
| Scan Average: | 30.09 |
| Maximum: | 38 |
| Minimum: | 22 |
| Avg / Min: | 1.40 |
| Guaranteed Max / Min: | 2.5 |
| Max / Min: | 1.75 |
| UG (adjacent pts): | 1.42 |
| CU: | 0.77 |
| No. of Points: | 84 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | D |
| No. of Luminaires: | 20 |
| Total Load: | 23.4 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.

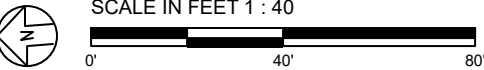
Installation Requirements: Results assume \pm 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



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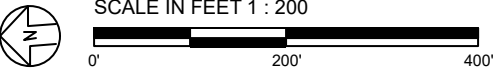
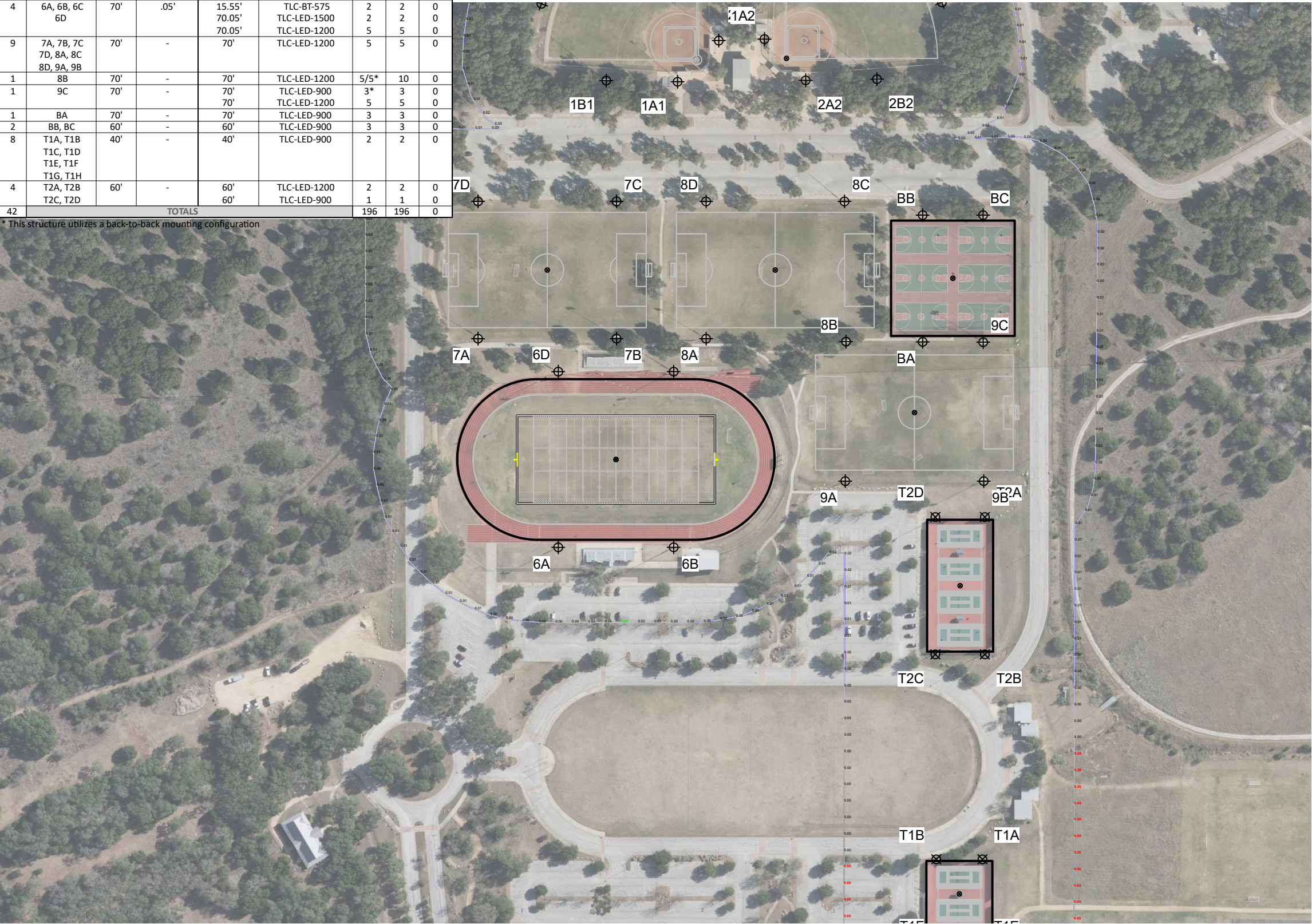
ILLUMINATION SUMMARY



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

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|--|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 1C1, 1C2 | 70' | - | 70' | TLC-LED-900 | 4 | 4 | 0 |
| | 2C1, 2C2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1A1, 1A2 | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | 2A1, 2A2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1B1, 1B2 | 80' | - | 80' | TLC-LED-1200 | 6 | 6 | 0 |
| | 2B1, 2B2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 6A, 6B, 6C 6D | 70' | .05' | 15.55' | TLC-BT-575 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1500 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1200 | 5 | 5 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 9 | 7A, 7B, 7C 7D, 8A, 8C 8D, 9A, 9B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 10 | 0 |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 3* | 3 | 0 |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 | 5 | 5 | 0 |
| | | | | 70' | TLC-LED-1200 | 3 | 3 | 0 |
| 1 | BA | 70' | - | 70' | TLC-LED-900 | 3 | 3 | 0 |
| 2 | BB, BC | 60' | - | 60' | TLC-LED-900 | 3 | 3 | 0 |
| 8 | T1A, T1B T1C, T1D T1E, T1F T1G, T1H | 40' | - | 40' | TLC-LED-900 | 2 | 2 | 0 |
| 4 | T2A, T2B T2C, T2D | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | | | | 60' | TLC-LED-900 | 1 | 1 | 0 |
| 42 | TOTALS | | | | | 196 | 196 | 0 |

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | 150' Spill |
| Spacing: | 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|------------------------|------------------------------|
| HORIZONTAL FOOTCANDLES | |
| Scan Average: | Entire Grid 0.0068 |
| Maximum: | 0.04 |
| Minimum: | 0.00 |
| No. of Points: | 233 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | A, B, C, D, E, F, G, H, I, J |
| No. of Luminaires: | 196 |
| Total Load: | 205.42 kW |

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

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.



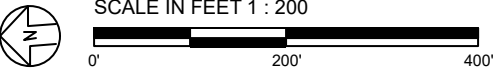
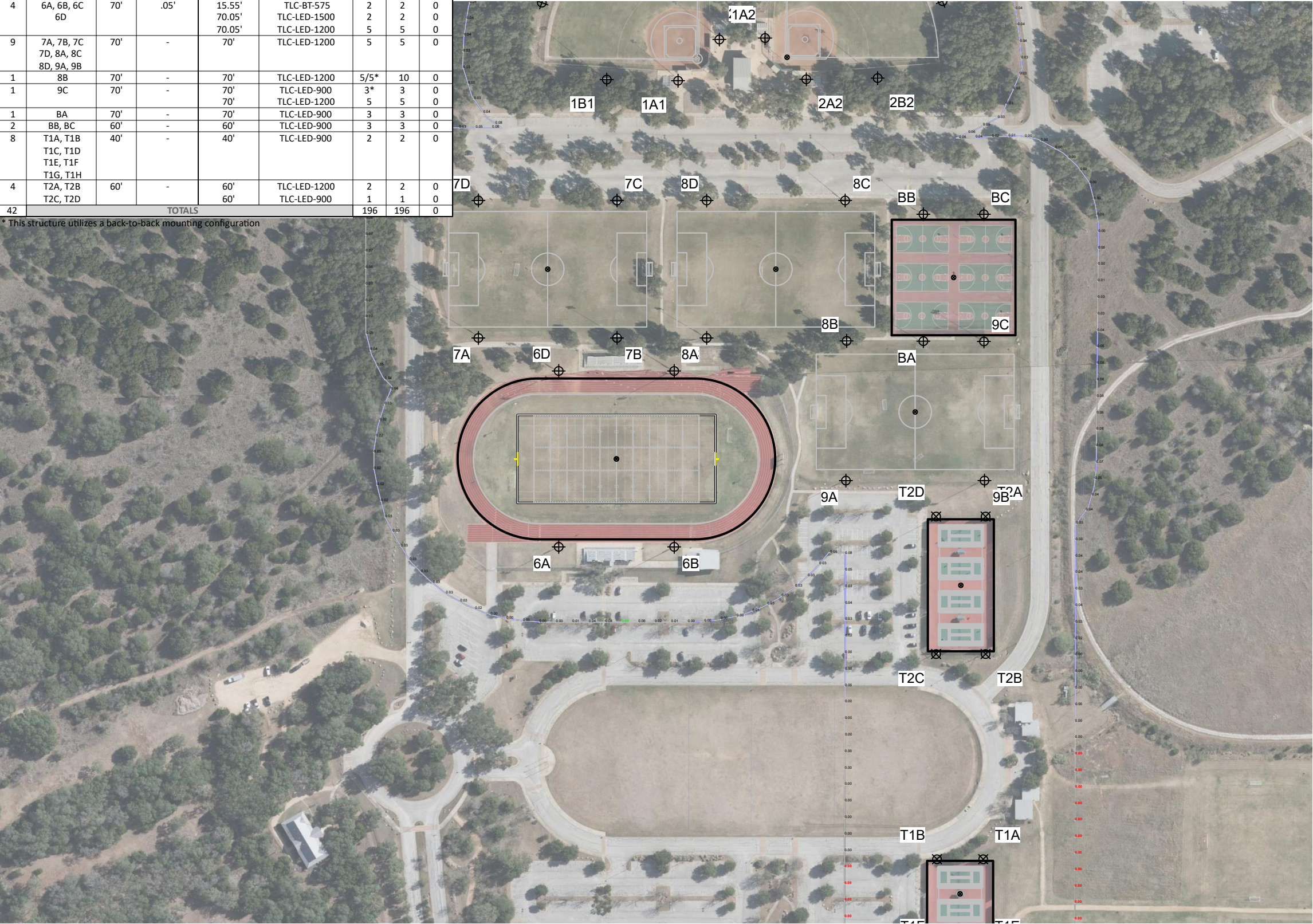
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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|--|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 1C1, 1C2 | 70' | - | 70' | TLC-LED-900 | 4 | 4 | 0 |
| | 2C1, 2C2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1A1, 1A2 | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | 2A1, 2A2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1B1, 1B2 | 80' | - | 80' | TLC-LED-1200 | 6 | 6 | 0 |
| | 2B1, 2B2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 6A, 6B, 6C 6D | 70' | .05' | 15.55' | TLC-BT-575 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1500 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1200 | 5 | 5 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 9 | 7A, 7B, 7C 7D, 8A, 8C 8D, 9A, 9B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 10 | 0 |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 10 | 0 |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 | 3* | 3 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 1 | BA | 70' | - | 70' | TLC-LED-900 | 3 | 3 | 0 |
| 2 | BB, BC | 60' | - | 60' | TLC-LED-900 | 3 | 3 | 0 |
| 8 | T1A, T1B T1C, T1D T1E, T1F T1G, T1H | 40' | - | 40' | TLC-LED-900 | 2 | 2 | 0 |
| 4 | T2A, T2B T2C, T2D | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | | | | 60' | TLC-LED-900 | 1 | 1 | 0 |
| 42 | TOTALS | | | | | 196 | 196 | 0 |

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | 150' Spill |
| Spacing: | 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|--------------------------|------------------------------|
| MAX VERTICAL FOOTCANDLES | |
| Scan Average: | Entire Grid 0.0226 |
| Maximum: | 0.09 |
| Minimum: | 0.00 |
| No. of Points: | 233 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | A, B, C, D, E, F, G, H, I, J |
| No. of Luminaires: | 196 |
| Total Load: | 205.42 kW |

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

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.



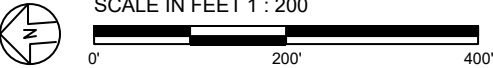
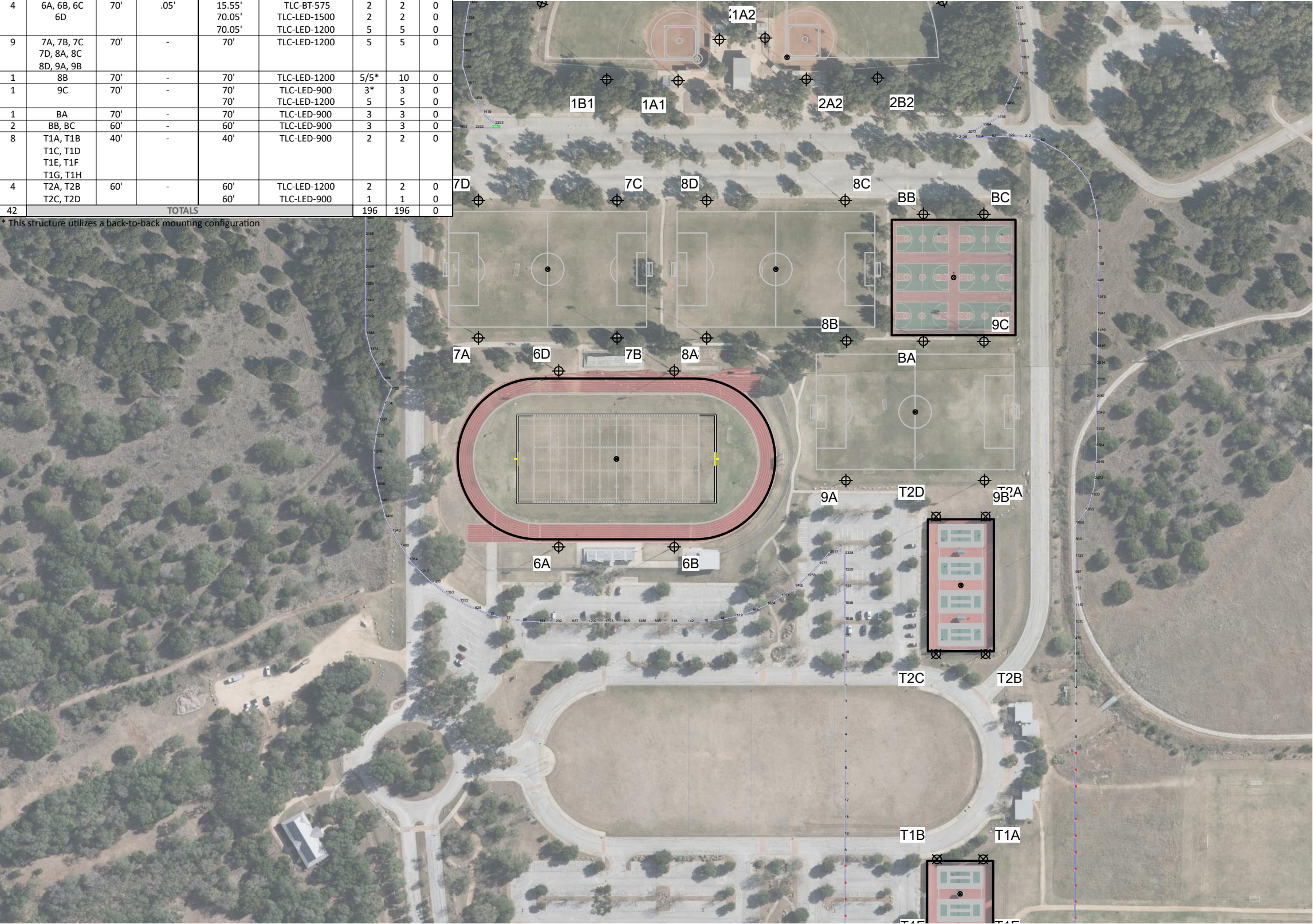
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ILLUMINATION SUMMARY

| EQUIPMENT LIST FOR AREAS SHOWN | | | | | | | | |
|--------------------------------|--|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole | | | | Luminaires | | | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 4 | 1C1, 1C2 | 70' | - | 70' | TLC-LED-900 | 4 | 4 | 0 |
| | 2C1, 2C2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1A1, 1A2 | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | 2A1, 2A2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 1B1, 1B2 | 80' | - | 80' | TLC-LED-1200 | 6 | 6 | 0 |
| | 2B1, 2B2 | | | 15.5' | TLC-BT-575 | 1 | 1 | 0 |
| 4 | 6A, 6B, 6C 6D | 70' | .05' | 15.55' | TLC-BT-575 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1500 | 2 | 2 | 0 |
| | | | | 70.05' | TLC-LED-1200 | 5 | 5 | 0 |
| | | | | 70' | TLC-LED-1200 | 5 | 5 | 0 |
| 9 | 7A, 7B, 7C 7D, 8A, 8C 8D, 9A, 9B | 70' | - | 70' | TLC-LED-1200 | 5/5* | 10 | 0 |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 3* | 3 | 0 |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 | 5 | 5 | 0 |
| | | | | 70' | TLC-LED-1200 | 3 | 3 | 0 |
| 1 | BA | 70' | - | 70' | TLC-LED-900 | 3 | 3 | 0 |
| 2 | BB, BC | 60' | - | 60' | TLC-LED-900 | 3 | 3 | 0 |
| 8 | T1A, T1B | 40' | - | 40' | TLC-LED-900 | 2 | 2 | 0 |
| | T1C, T1D | | | | | | | |
| | T1E, T1F | | | | | | | |
| | T1G, T1H | | | | | | | |
| | T2A, T2B | | | | | | | |
| 4 | T2C, T2D | 60' | - | 60' | TLC-LED-1200 | 2 | 2 | 0 |
| | 60' | | | TLC-LED-900 | 1 | 1 | 0 | |
| 42 | TOTALS | | | | | 196 | 196 | 0 |

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗

Williamson County Park Relight

Leander, TX

| GRID SUMMARY | |
|--------------|------------------|
| Name: | 150' Spill |
| Spacing: | 30.0' |
| Height: | 3.0' above grade |

| ILLUMINATION SUMMARY | |
|-----------------------|------------------------------|
| CANDELA (PER FIXTURE) | |
| Scan Average: | Entire Grid 885.6091 |
| Maximum: | 2777.74 |
| Minimum: | 0.00 |
| No. of Points: | 233 |
| LUMINAIRE INFORMATION | |
| Applied Circuits: | A, B, C, D, E, F, G, H, I, J |
| No. of Luminaires: | 196 |
| Total Load: | 205.42 kW |

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

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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ILLUMINATION SUMMARY

Williamson County Park Relight
Leander, TX

EQUIPMENT LAYOUT

INCLUDES:

- Basketball
- Field 6
- Field 7
- Field 8
- Field 9
- Softball 1
- Softball 2
- Tennis 1-2
- Tennis 3-4
- Tennis 5-8
- 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 | | | | | | |
|--------------------------------|--|------|-----------------|---------------------|--|-------------|
| Pole | | | | Luminaires | | |
| QTY | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE |
| 4 | 1C1, 1C2 2C1, 2C2 | 70' | - | 70' 15.5' | TLC-LED-900 TLC-BT-575 | 4 1 |
| 4 | 1A1, 1A2 2A1, 2A2 | 60' | - | 60' 15.5' | TLC-LED-1200 TLC-BT-575 | 2 1 |
| 4 | 1B1, 1B2 2B1, 2B2 | 80' | - | 80' 15.5' | TLC-LED-1200 TLC-BT-575 | 6 1 |
| 4 | 6A, 6B 6C, 6D | 70' | - | 15.5' 70' 70' | TLC-BT-575 TLC-LED-1500 TLC-LED-1200 | 2 2 5 |
| 9 | 7A, 7B 7C, 7D 8A, 8C 8D, 9A 9B | 70' | - | 70' | TLC-LED-1200 | 5 |
| 1 | 8B | 70' | - | 70' | TLC-LED-1200 | 5/5* |
| 1 | 9C | 70' | - | 70' | TLC-LED-900 TLC-LED-1200 | 3* 5 |
| 1 | BA | 70' | - | 70' | TLC-LED-900 | 3 |
| 2 | BB, BC | 60' | - | 60' | TLC-LED-900 | 3 |
| 8 | T1A, T1B T1C, T1D T1E, T1F T1G, T1H | 40' | - | 40' | TLC-LED-900 | 2 |
| 4 | T2A, T2B T2C, T2D | 60' | - | 60' 60' | TLC-LED-1200 TLC-LED-900 | 2 1 |
| 42 | TOTALS | | | | | 196 |

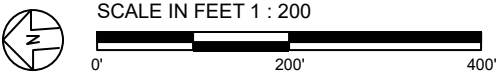
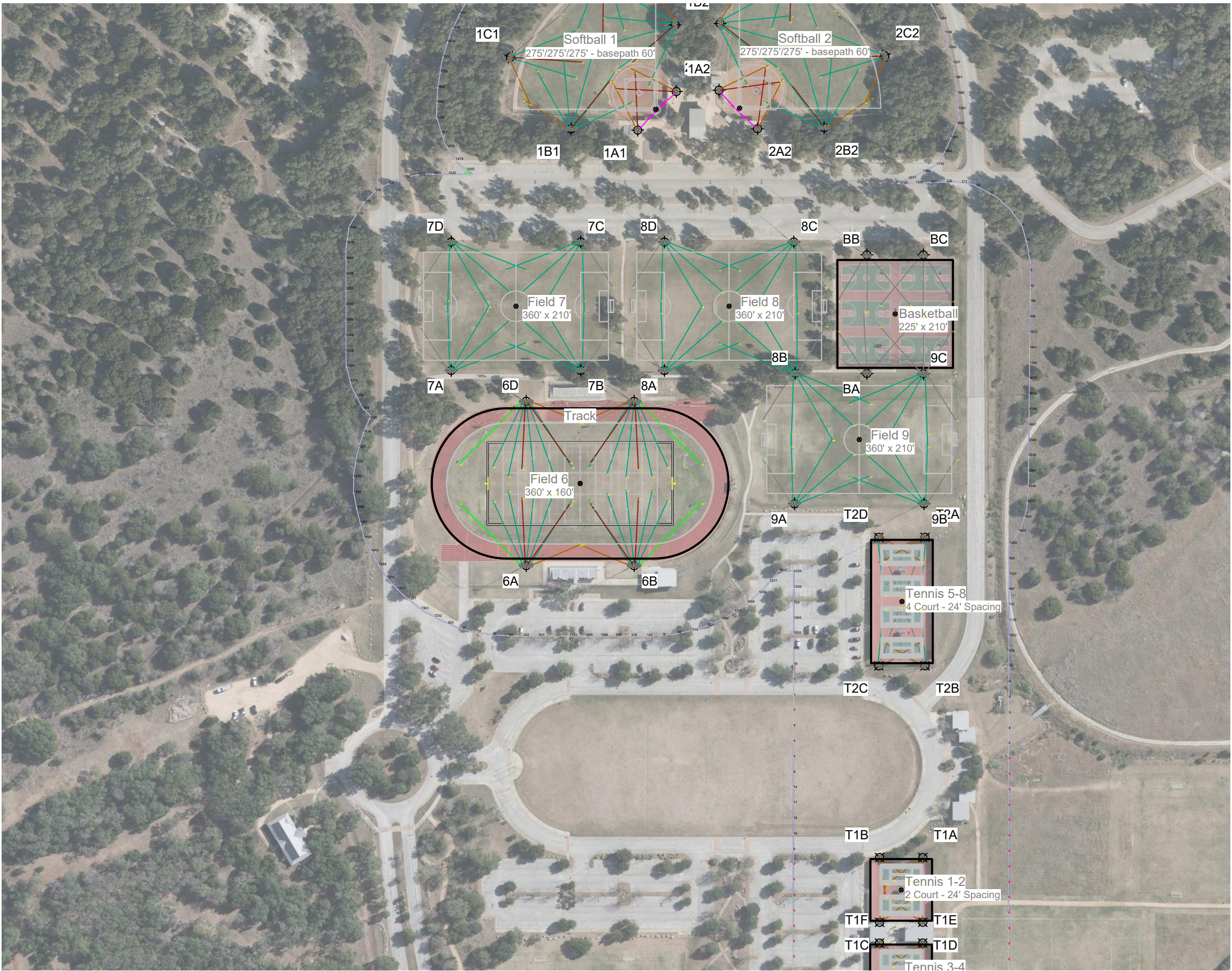
* This structure utilizes a back-to-back mounting configuration

| SINGLE LUMINAIRE AMPERAGE DRAW CHART | | | | | | | |
|--------------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Driver (.90 min power factor) | Line Amperage Per Luminaire (max draw) | | | | | | |
| | 208 (60) | 220 (60) | 240 (60) | 277 (60) | 347 (60) | 380 (60) | 480 (60) |
| TLC-LED-900 | 5.2 | 4.9 | 4.5 | 3.9 | 3.1 | 2.9 | 2.3 |
| TLC-LED-1200 | 6.9 | 6.5 | 6.0 | 5.2 | 4.2 | 3.8 | 3.0 |
| TLC-BT-575 | 3.4 | 3.2 | 2.9 | 2.5 | 2.0 | 1.8 | 1.5 |
| TLC-LED-1500 | 8.4 | 7.9 | 7.3 | 6.3 | 5.0 | 4.6 | 3.6 |



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EQUIPMENT LAYOUT



Pole location(s) ⚓ dimensions are relative to 0,0 reference point(s) ⊗



C. CONTROLS AND MONITORING

System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413

Control System ID: 1 of 2

Distribution Panel Location/ID: Service 1

Project Information

Control System

Control System ID: 1 of 2

Control System Type: Control-Link • Control and Monitoring System

Communication Type: PowerLine-ST

Project Notes:

Power Requirements

Control cabinet(s):

Control voltage (phase to neutral) 120/60

VA loading - Inrush 8413.0

VA loading - Sealed 908.0

Lighting Circuits:

Voltage/Hertz/Phase 480/60/3

Equipment Listing

| Description | Qty | Size (in) |
|--|-----|-----------|
| Control and monitoring cabinet - primary | 1 | 24 X 72 |
| Control and monitoring cabinet - secondary | 1 | 24 X 72 |
| Control and monitoring cabinet - secondary | 1 | 24 X 48 |

Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart (Minimum power factor is 0.9). Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

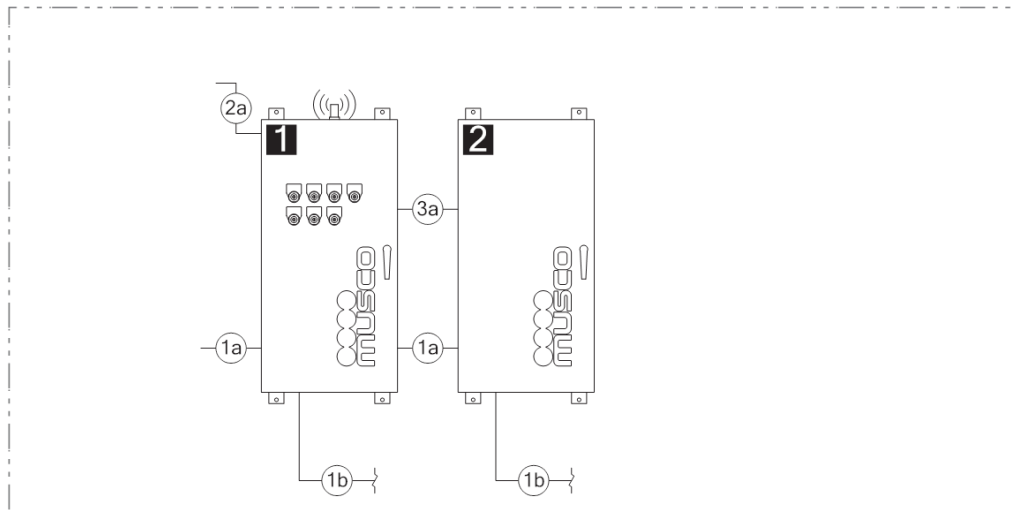
System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413
Control System ID: 1 of 2
Distribution Panel Location/ID: Service 1

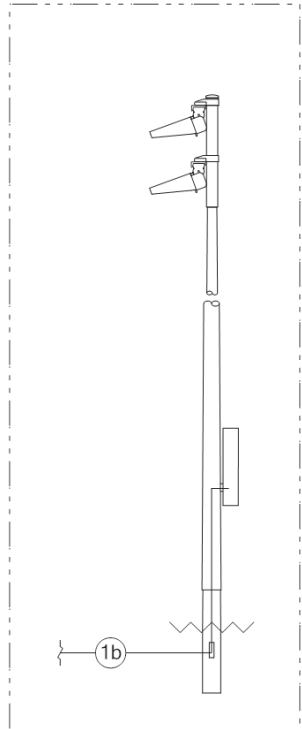
Equipment Layout and Connection Details



Control cabinet location



Lighting system



Connection Details

| ID | Description |
|----|---|
| 1a | Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop. |
| 1b | Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop. |
| 2a | Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present. |
| 3a | Control harnesses - Secondary cabinet to primary cabinet. Harness is provided by Musco in 8-foot length. Use minimum 2 inch diameter conduit for harness connector. |

Equipment

| ID | Description |
|----|--|
| 1 | Control and monitoring cabinet - primary |
| 2 | Control and monitoring cabinet - secondary |

System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413

Control System ID: 1 of 2

Distribution Panel Location/ID: Service 1

Circuit Summary

| Switching Schedule | |
|--------------------------|----------|
| Field/Switch Description | Switches |
| Softball 2 | 6 |
| Softball 1 | 5 |
| Basketball | 7 |
| Field 6 | 1 |
| Field 7 | 2 |
| Field 8 | 3 |
| Field 9 | 4 |
| Track | 1 |

Control Module ID: 1

Lighting Circuit Voltage: 480/60/3

| Circuit Summary by Switch | | | | | | | |
|---------------------------|------------------|---------|---------------|-------------------|-----------------------|-----------|--------------|
| Switch | Zone Description | Pole ID | # of Fixtures | Full load amperes | Contactor Size (Amps) | Cabinet # | Contactor ID |
| 1 | Field 6 | 6A | 9 | 15.34 | 30 | 1 | C1 |
| | Field 6 | 6B | 9 | 15.34 | 30 | 1 | C2 |
| | Field 6 | 6C | 9 | 15.34 | 30 | 1 | C3 |
| | Field 6 | 6D | 9 | 15.34 | 30 | 1 | C4 |
| 2 | Field 7 | 7A | 5 | 10.39 | 30 | 1 | C5 |
| | Field 7 | 7B | 5 | 10.39 | 30 | 1 | C6 |
| | Field 7 | 7C | 5 | 10.39 | 30 | 1 | C7 |
| | Field 7 | 7D | 5 | 10.39 | 30 | 1 | C8 |
| 3 | Field 8 | 8A | 5 | 10.39 | 30 | 1 | C9 |
| | Field 8 | 8B | 5 | 10.39 | 30 | 1 | C10 |
| | Field 8 | 8C | 5 | 10.39 | 30 | 1 | C11 |
| | Field 8 | 8D | 5 | 10.39 | 30 | 1 | C12 |
| 4 | Field 9 | 8B | 5 | 10.39 | 30 | 2 | C13 |
| | Field 9 | 9A | 5 | 10.39 | 30 | 2 | C14 |
| | Field 9 | 9B | 5 | 10.39 | 30 | 2 | C15 |
| | Field 9 | 9C | 5 | 10.39 | 30 | 2 | C16 |
| 5 | Softball 1 | 1A1 | 3 | 5.2 | 30 | 2 | C17 |
| | Softball 1 | 1A2 | 3 | 5.2 | 30 | 2 | C18 |
| | Softball 1 | 1B1 | 7 | 11.65 | 30 | 2 | C19 |
| | Softball 1 | 1B2 | 7 | 11.65 | 30 | 2 | C20 |
| | Softball 1 | 1C1 | 5 | 7.13 | 30 | 2 | C21 |
| | Softball 1 | 1C2 | 5 | 7.13 | 30 | 2 | C22 |

System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413

Control System ID: 1 of 2

Distribution Panel Location/ID: Service 1

Circuit Summary - Cont'd

Control Module ID: 1

Lighting Circuit Voltage: 480/60/3

| Circuit Summary by Switch | | | | | | | |
|---------------------------|------------------|---------|---------------|-------------------|-----------------------|-----------|--------------|
| Switch | Zone Description | Pole ID | # of Fixtures | Full load amperes | Contactor Size (Amps) | Cabinet # | Contactor ID |
| 6 | Softball 2 | 2A1 | 3 | 5.2 | 30 | 2 | C23 |
| | Softball 2 | 2A2 | 3 | 5.2 | 30 | 2 | C24 |
| | Softball 2 | 2B1 | 7 | 11.65 | 30 | 2 | C25 |
| | Softball 2 | 2B2 | 7 | 11.65 | 30 | 2 | C26 |
| | Softball 2 | 2C1 | 5 | 7.13 | 30 | 3 | C27 |
| | Softball 2 | 2C2 | 5 | 7.13 | 30 | 3 | C28 |
| 7 | Basketball | BA | 3 | 3.91 | 30 | 3 | C29 |
| | Basketball | BB | 3 | 3.91 | 30 | 3 | C30 |
| | Basketball | BC | 3 | 3.91 | 30 | 3 | C31 |
| | Basketball | 9C | 3 | 3.91 | 30 | 3 | C32 |

System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413

Control System ID: 2 of 2

Distribution Panel Location/ID: Tennis Service

Project Information

Control System

Control System ID: 2 of 2

Control System Type: Control-Link * Control and Monitoring System

Communication Type: PowerLine-ST

Project Notes:

Power Requirements

Control cabinet(s):

Control voltage (phase to neutral) 120/60

VA loading - Inrush 3513.0

VA loading - Sealed 388.0

Lighting Circuits:

Voltage/Hertz/Phase 480/60/3

Equipment Listing

| Description | Qty | Size (in) |
|--|-----|-----------|
| Control and monitoring cabinet - primary | 1 | 24 X 72 |

Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart (Minimum power factor is 0.9). Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

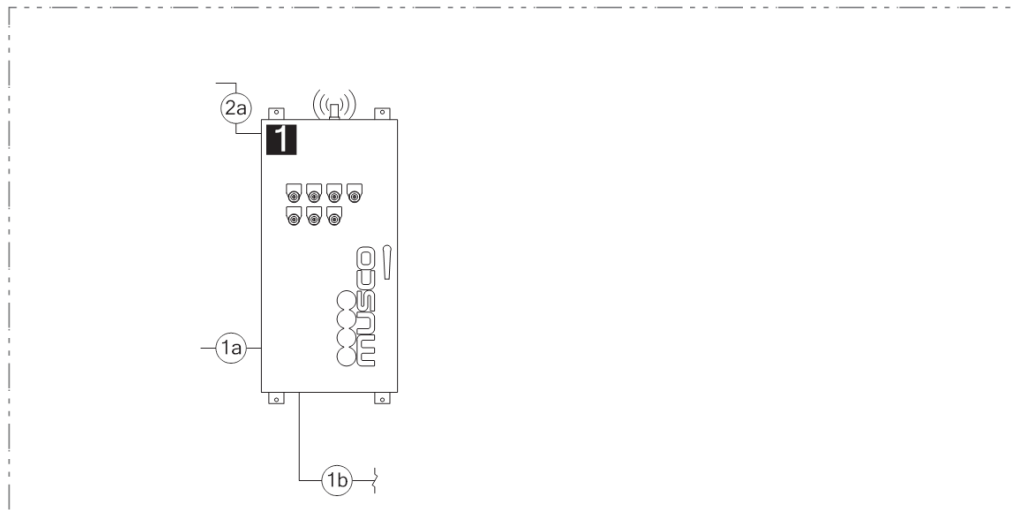
System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413
Control System ID: 2 of 2
Distribution Panel Location/ID: Tennis Service

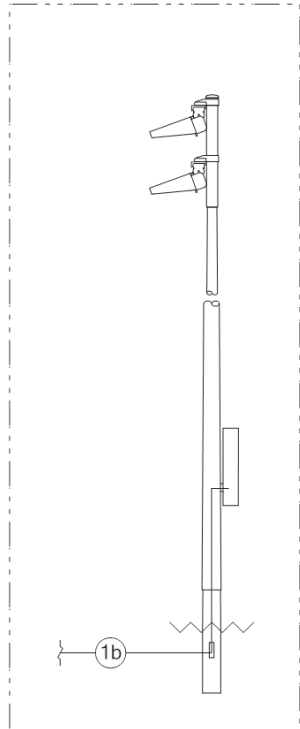
Equipment Layout and Connection Details



Control cabinet location



Lighting system



Connection Details

| ID | Description |
|----|--|
| 1a | Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop. |
| 1b | Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop. |
| 2a | Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present. |

Equipment

| ID | Description |
|----|--|
| 1 | Control and monitoring cabinet - primary |

System Requirements: Control System Summary

Project Name: Williamson County Park Retrofit | Project #: 220413

Control System ID: 2 of 2

Distribution Panel Location/ID: Tennis Service

Circuit Summary

| Switching Schedule | |
|--------------------------|----------|
| Field/Switch Description | Switches |
| Tennis 5-8 | 3 |
| Tennis 1-2 | 1 |
| Tennis 3-4 | 2 |

Control Module ID: 2

Lighting Circuit Voltage: 480/60/3

| Circuit Summary by Switch | | | | | | | |
|---------------------------|------------------|---------|---------------|-------------------|-----------------------|-----------|--------------|
| Switch | Zone Description | Pole ID | # of Fixtures | Full load amperes | Contactor Size (Amps) | Cabinet # | Contactor ID |
| 1 | Tennis 1-2 | T1A | 2 | 3.91 | 30 | 4 | C1 |
| | Tennis 1-2 | T1B | 2 | 3.91 | 30 | 4 | C2 |
| | Tennis 1-2 | T1C | 2 | 3.91 | 30 | 4 | C3 |
| | Tennis 1-2 | T1D | 2 | 3.91 | 30 | 4 | C4 |
| 2 | Tennis 3-4 | T1E | 2 | 3.91 | 30 | 4 | C5 |
| | Tennis 3-4 | T1F | 2 | 3.91 | 30 | 4 | C6 |
| | Tennis 3-4 | T1G | 2 | 3.91 | 30 | 4 | C7 |
| | Tennis 3-4 | T1H | 2 | 3.91 | 30 | 4 | C8 |
| 3 | Tennis 5-8 | T2A | 3 | 5.2 | 30 | 4 | C9 |
| | Tennis 5-8 | T2B | 3 | 5.2 | 30 | 4 | C10 |
| | Tennis 5-8 | T2C | 3 | 5.2 | 30 | 4 | C11 |
| | Tennis 5-8 | T2D | 3 | 5.2 | 30 | 4 | C12 |



D. WARRANTY



Musco Constant 25™

25-Year Product Assurance & Warranty Program

Project name: Williamson County Park Retrofit Project number: 220413
Owner: Williamson County city: Leander State: TX
Covered product(s): Light-Structure System™ with TLC for LED™ technology
Date issued: Date of Shipment Expiration: Date of Shipment + 25 years

Musco Sports Lighting, LLC will provide all materials and labor to maintain operation of your lighting system to original design criteria for 25 years. Musco products and services are guaranteed to perform on your project as detailed in this document.

Light Performance

Specified illumination levels will be maintained and are marked as guaranteed in the Musco Illumination Summary. Individual luminaire outages that occur during the warranty and maintenance period are repaired when the usage of any field is materially impacted.

Spill Light Control

If specified, spill light levels at identified locations are guaranteed to be controlled to the maximum values provided in the Musco Illumination Summary.

Energy Consumption

Total average kW consumption for your lighting system is guaranteed to be not more than the total load shown in the Musco Illumination Summary.

Monitoring, Maintenance, and Control Services

Musco shall monitor the performance of your lighting system, including on/off status, hours of usage, and luminaire outages. If outages that affect playability are detected, Musco will contact you and proactively dispatch technicians.

On-off control of your lighting system is provided via an easy-to-use web site scheduling system, smartphone app, phone, email, or fax. Our trained Control-Link Central™ service center staff is available toll-free 24/7. Regular usage reports are always available on Control-Link Central's web site.

Structural Integrity

Your project has been designed to IBC 2021, 110 mph, Exposure C.
Structural integrity of equipment manufactured by Musco is guaranteed.

Musco has a team of people to ensure fulfillment of our product and services warranty and maintains financial reserves dedicated to support our fulfillment of this warranty. Please keep this document as your signed contract guaranteeing comprehensive service for the 25 year period.



Musco Constant 25™

25-Year Product Assurance & Warranty Program

Terms and Conditions

Service under this Contract is provided by Musco Sports Lighting, LLC ("Musco") or an authorized servicer approved by Musco. Services performed under this Contract shall consist of furnishing labor and parts necessary to restore the operation of the Covered Product(s) to original design criteria provided such service is necessitated by failure of the Covered Product(s) during normal usage. This Contract covers Product(s) consisting of Musco's Total Light Control – TLC for LED® with Control-Link® and any additional Musco manufactured product as listed on page 1.

"We", "us," and "our" mean Musco. "You" and "your" mean the purchaser of the Covered Product(s). No one has the authority to change this Contract without the prior written approval of Musco. Musco shall not assume responsibility for their agents or assignees other than as described below. If there is a conflict between the terms of this Contract and information communicated either orally or in writing by one or more of our employees or agents, this Contract shall control.

Additional Provisions

- 1. Availability of Service:** Control-Link Central™ operators shall be available 24/7 via web site, phone, fax, or email. Maintenance service specialists shall be available 8AM to 5PM Central Time, and services shall be rendered during these same hours in your local time zone, Monday through Friday (with the exception of national holidays). Hours of operation are subject to change without notice to you. Musco will exercise all reasonable efforts to perform service under this Contract, but will not be responsible for delays or failure in performing such services caused by adverse weather conditions, acts of any government, failure of transportation, accidents, riots, war, labor actions or strikes or other causes beyond its control.
- 2. Determination of Repairs:** Musco will utilize the field monitoring system and any information provided by the customer to determine when the usage of the field is materially impacted. From this information, Musco will determine needed repair and/or replacement of Covered Product(s) and parts. Repair will be with Product(s) of like kind and quality.
- 3. Your Requirements Under this Contract:** You must meet all electrical and installation requirements as specified by the manufacturer. In addition, you promise and assure: full cooperation with Musco, Musco's technicians and authorized servicers during telephone diagnosis and repair of the Covered Product(s); reasonable accessibility of the Covered Product(s); a nonthreatening and safe environment for service.

You agree to check fuses and to replace fuses as needed. Musco provides spare fuses in the lowest alpha-numeric numbered enclosure. Musco will replenish spare fuses used.

You agree to keep your control system online. This means keeping the required control voltage to the control system at all times. Any deviation from this practice must be discussed with Musco's Warranty Department.

- 4. Service Limitations — This Contract does not cover:** Maintenance, repair, or replacement necessitated by loss or damage resulting from any external causes such as, but not limited to, theft, environmental conditions, negligence, misuse, abuse, improper electrical/power supply, unauthorized repairs by third parties, attachments, damage to cabinetry, equipment modifications, vandalism, animal or insect infestation, physical damage to Covered Product(s) parts or components, failure of existing structures, supporting electrical systems or any non-Musco equipment, or acts of God/nature (including, but not limited to: earthquake, flood, tornadoes, typhoons, hurricanes, or lightning).

5. Contract Limitations:

- a. EXCLUSIONS FROM COVERAGE:** IN NO EVENT WILL MUSCO BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH INCLUDE, BUT ARE NOT LIMITED TO, ANY DELAY IN RENDERING SERVICE OR LOSS OF USE DURING THE REPAIR PERIOD OF THE COVERED PRODUCT(S) OR WHILE OTHERWISE AWAITING PARTS.
 - b. Limitation of Liability:** To the extent permitted by applicable law, the liability of Musco, if any, for any allegedly defective Covered Product(s) or components shall be limited to repair or replacement of the Covered Product(s) or components at Musco's option. THIS CONTRACT IS YOUR SOLE EXPRESS WARRANTY WITH RESPECT TO THE COVERED PRODUCT(S). ALL IMPLIED WARRANTIES WITH RESPECT TO THE COVERED PRODUCT(S) INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXPRESSLY EXCLUDED.
 - c.** For the purposes of and by your acceptance of this Contract you acknowledge and agree that if a surety bond ("Bond") is provided the warranty and/or maintenance guarantee provided for in this Contract and any corresponding liability on behalf of the issuing surety under the Bond is limited to the first twelve (12) months of said warranty and/or maintenance guarantee coverage period. Any warranty and/or guarantee coverage period in excess of said initial 12 month period does not fall within the scope of the Bond and shall be the sole responsibility of Musco.
 - d.** Musco requires reasonable access for a crane or man lift equipment to service the lighting system. Musco will not be responsible for damage from operating the vehicle on the property when the equipment is operated in the prescribed manner over the designated access route.
 - e. Obsolescence or Environmental Restrictions:** If during any maintenance or other work performed under this Warranty, any of the parts of the Covered Product(s) are found to be either obsolete, no longer available, or prohibited by any state or federal agency, Musco shall replace said parts with comparable parts and materials with equal operating characteristics solely at Musco's discretion. The cost of replacement of any obsolete cellular related technology shall be borne by you. Prior to completing any such work, Musco shall notify you of the cost (if any) you will incur in the replacement of such parts under this section.
- 6. Transfer and Assignment:** Except to owners, you shall not have the right to assign or otherwise transfer your rights and obligations under this Contract except with the prior written consent of Musco; however, a successor in interest by merger, operation of law, assignment or purchase or otherwise of your entire business shall acquire all of your interests under this Contract.
 - 7. Governing Law:** Unless otherwise governed by applicable state law, the Contract shall be interpreted and enforced according to the laws of the State of Iowa.
 - 8. Subrogation:** In the event Musco repairs or replaces any Covered Product(s), parts or components due to any defect for which the manufacturer or its agents or suppliers may be legally responsible, you agree to assign your rights of recovery to Musco. You will be reimbursed for any reasonable costs and expenses you may incur in connection with the assignment of your rights. You will be made whole before Musco retains any amounts it may recover.

Signature: _____

Vice President of Sales



E. PRODUCT INFORMATION

5 Easy Pieces™

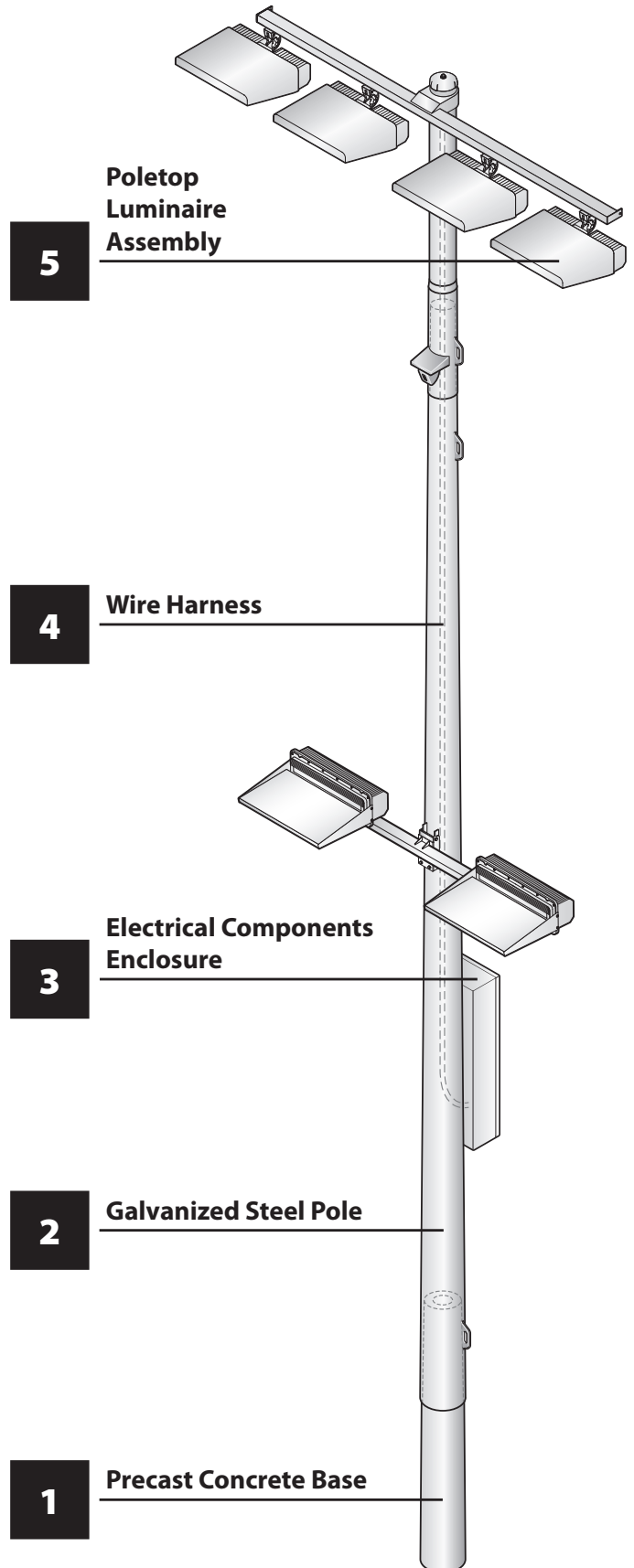
Complete System from Foundation to Poletop

Factory wired, aimed, and tested

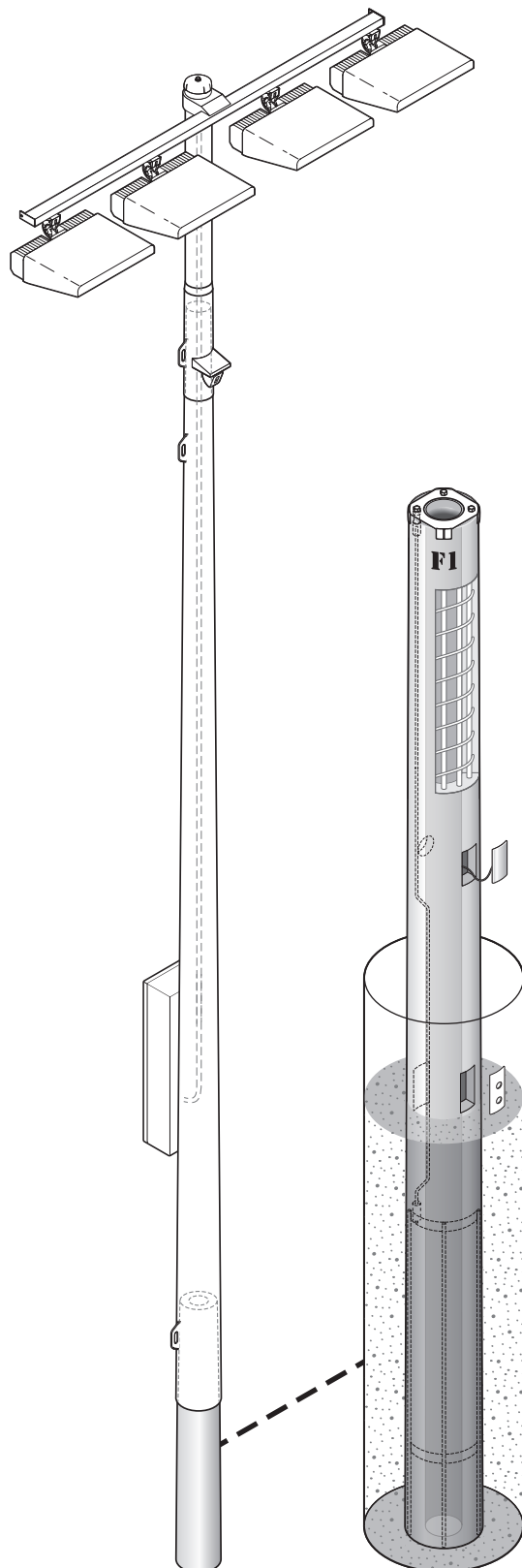
Fast, trouble-free installation

Comprehensive corrosion package

Integrated lightning ground



TLC for LED® – Precast Concrete Base



Overview

The precast concrete base is set directly into the ground and backfilled with concrete. The base includes an integrated lightning ground system.

Features

Base

- Set pole on base in 24 hours
- Tapered upper section for slip-fit steel pole
- Access holes for wire entry
- Epoxy-coated ends prevent water intrusion
- Lifting hole accepts load-rated steel rod provided by Musco

Integrated Lightning Ground System

- Complies with NFPA 780, UL 96A, and EN 62305 standards when installed per Musco installation instructions
- UL Listed, Class II Lightning Protection, file number E337467
- Tested up to 100 kA by independent laboratory
- Steel pole interfaces with integrated grounding system by means of the pole grounding connector
- 2/0 AWG (crosssectional area of 67.4 mm²) grounding electrode conductor
- Concrete-encased grounding electrode, 20 feet (6.1 m) total length, ½ inch (12.7 mm) diameter

Technical Specifications

Base dimensions vary. For measurements refer to project-specific *Foundation and Pole Assembly* drawing.

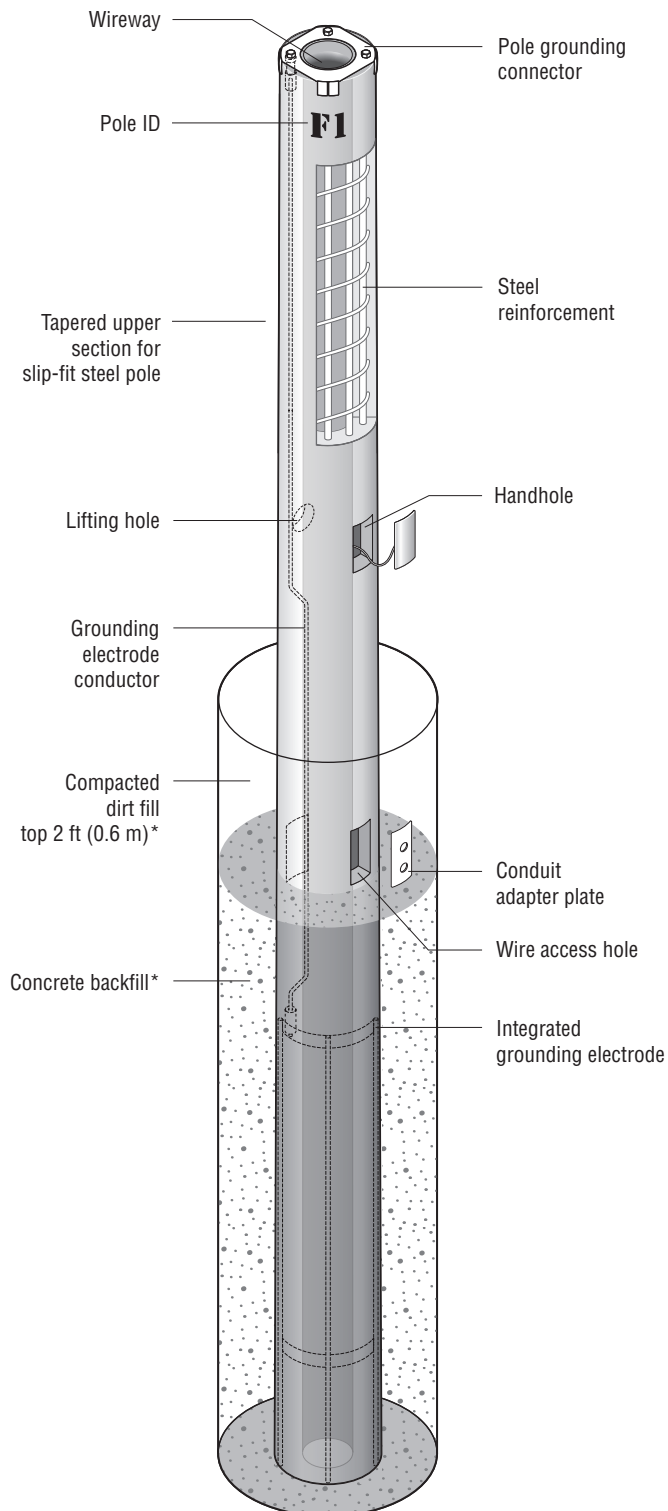
Construction

- Spun concrete construction
- Prestressed steel vertical strands and coil spiral for strength throughout base
- Minimum design strength is 9500 lb/in² (65.5 MPa) at 28 days
- Meets ASTM C1804 design requirements

Quality Assurance Tests

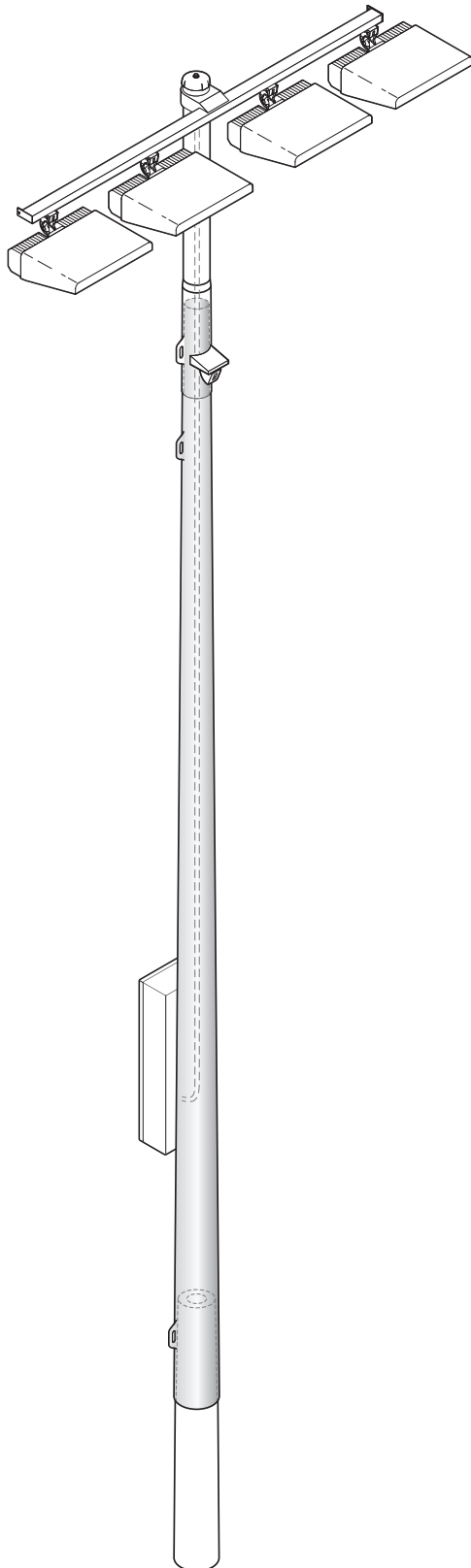
- 28-day compressive strength
- Bending moment capacity
- Grounding system continuity

TLC for LED® – Precast Concrete Base



*Standard pier foundation shown. Foundation and/or backfill may vary per alternate foundation design.

TLC for LED® – Galvanized Steel Pole



Overview

The galvanized steel pole is designed to slip-fit together with the precast concrete base and the poletop luminaire assembly.

Features

- Slip-fit connection allows pole assembly with come-alongs
- Built-in hardware for attaching electrical components enclosure
- Wire access from inside the pole (no exposed wiring or conduit)
- Shipped in sections for easier handling
- Labeled with pole identification for location on field

Technical Specifications

Pole dimensions vary. For measurements refer to project specific pole configuration drawing.

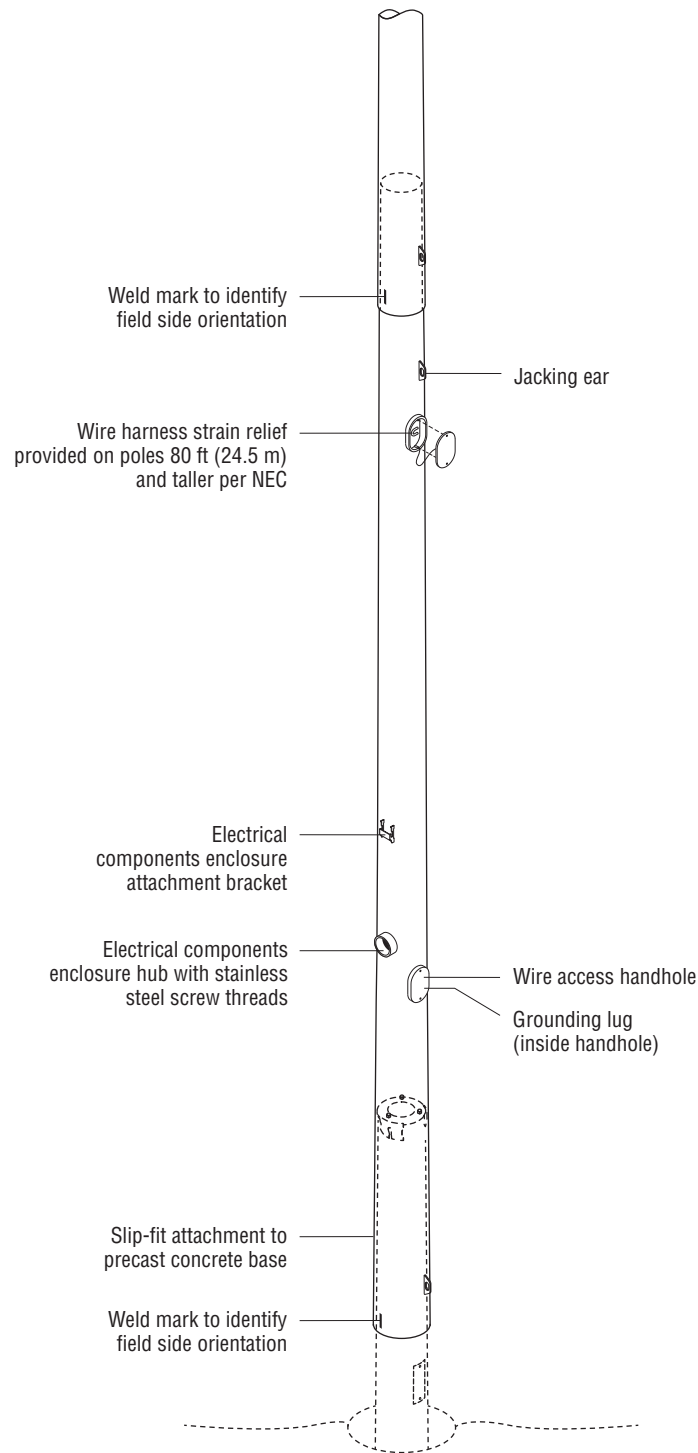
Construction

- Pole designs comply with all major building codes
- High strength, low alloy, tapered, round steel pole
- Hot-dip galvanizing inside and outside after fabrication meets ASTM-A123 and EN 1461 standards
- Conforms to AASHTO stress standards and BS EN 40-3-1
- Grounding lug—rated for aluminum (AL) or copper (CU) wiring
- Pole shipped in sections
- Stainless steel fasteners passivated and coated
- Material certifications are available

Quality Assurance Tests

- Bending stress
- Minimum galvanizing thickness
- Straightness measurement

TLC for LED® – Galvanized Steel Pole



TLC for LED® – Electrical Components Enclosure

Overview

The electrical components enclosure contains all necessary equipment to operate luminaires. Built-in mounting hardware allows for easy attachment to the galvanized steel pole. Quick connect plugs fasten to the wire harness.

Features

- Factory-built and tested as a unit
- Quick connect plug for easy field wiring
- Mounted 10 ft (3 m) above grade for servicing with ladder
- Labeled with pole identification and electrical information
- Drivers individually fused and spare fuses supplied
- Wire access from inside the pole (no exposed wiring or conduit)
- Disconnect per circuit

Technical Specifications

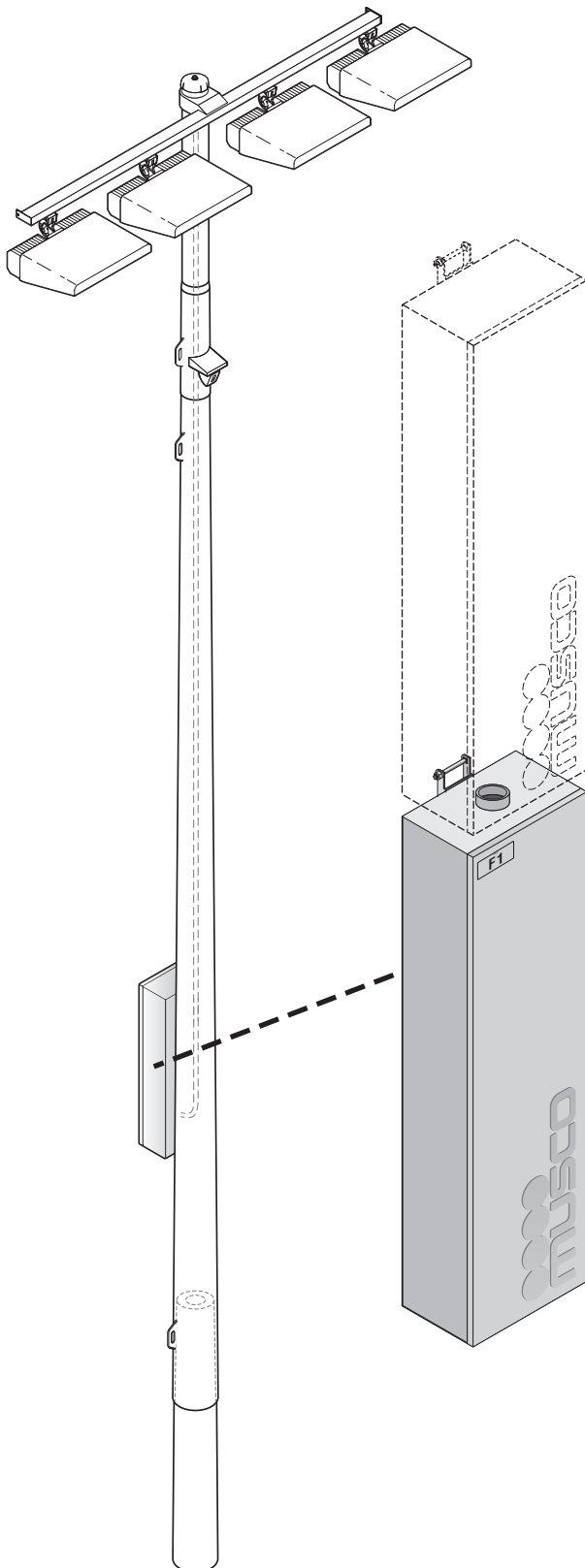
For amperage draws and circuitry refer to project specific document.

Construction

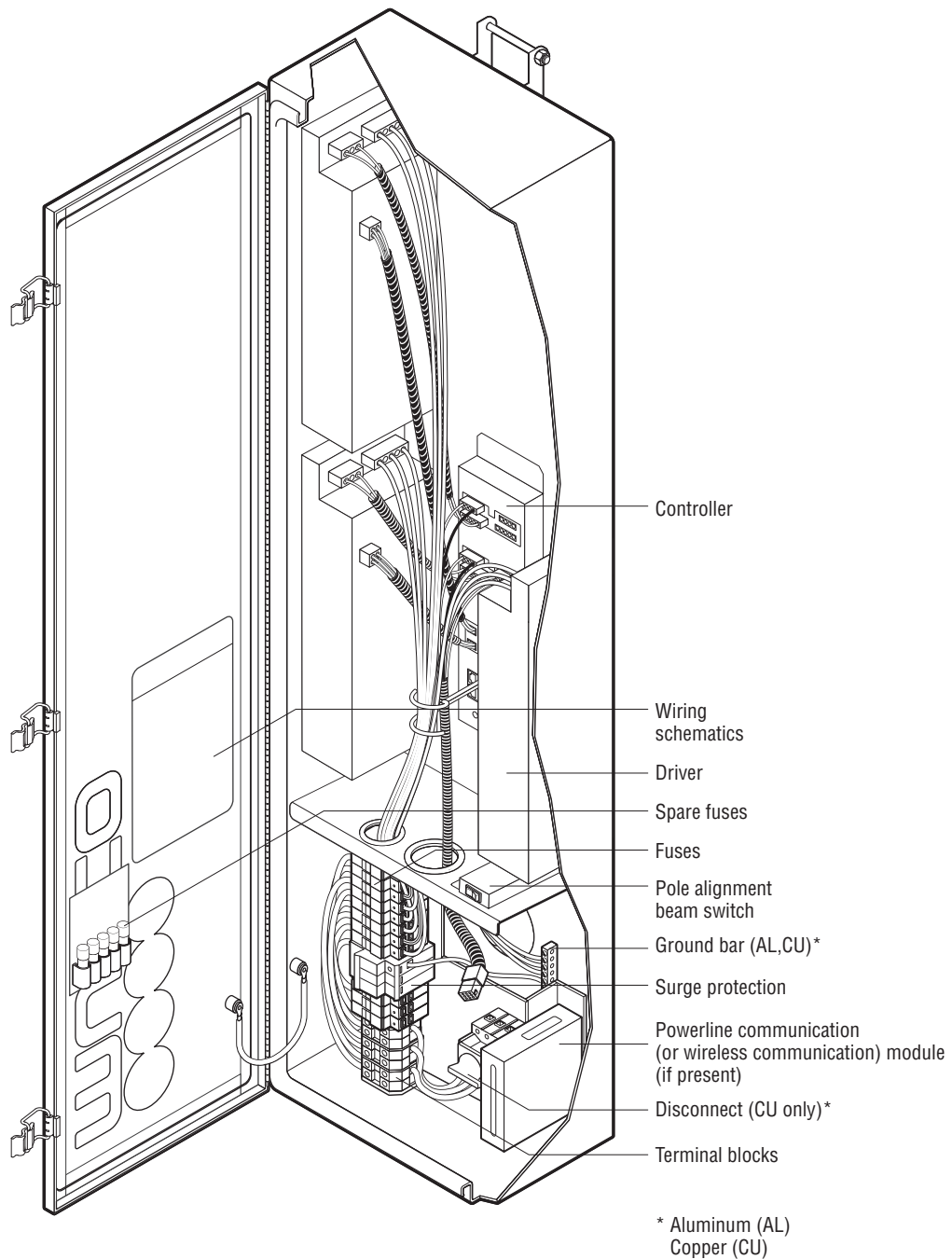
- 0.08 inch (2 mm) thick, powder-coated aluminum
- Enclosure ratings: NEMA 3R, IP54
- Designed to operate in up to 50° C (122° F) ambient temperature
- Full length stainless steel hinge
- All stainless steel fasteners passivated and coated
- Meets touchsafe standards
- Up to four drivers per enclosure
- Approximate weight 65 lb (29 kg)
- Lower enclosure size 14.25 in (362 mm) wide x 8 in (203 mm) deep x 52.5 in (1334 mm) high
- Upper enclosure size 14.25 in (362 mm) wide x 8 in (203 mm) deep x 40.5 in (1029 mm) high

Quality Assurance Tests

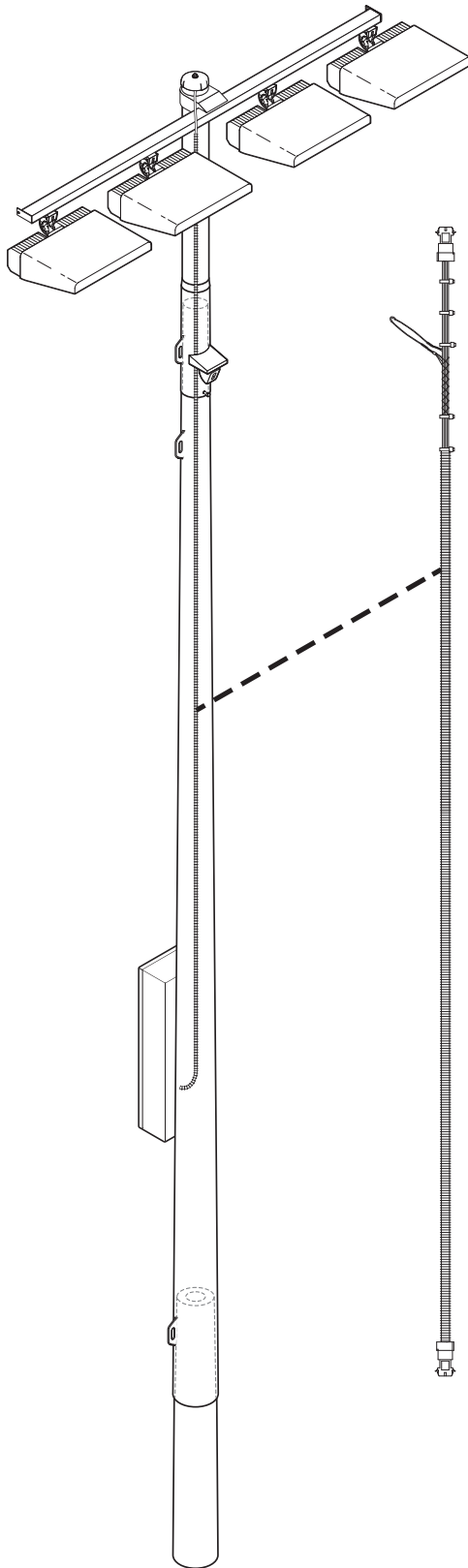
- Grounding continuity
- High potential dielectric withstand
- Full functionality test



TLC for LED® – Electrical Components Enclosure



TLC for LED® – Wire Harness



Overview

The factory-built wire harness connects the electrical components enclosure to the poletop luminaire assembly.

Features

- Quick connect plugs for easy field wiring
- Factory-assembled support grip alleviates strain on connections
- Spiral wound cable eliminates slippage
- Protective sleeve prevents wire damage
- All internal wiring, no exposed wires
- Labels identify pole and luminaires

Technical Specifications

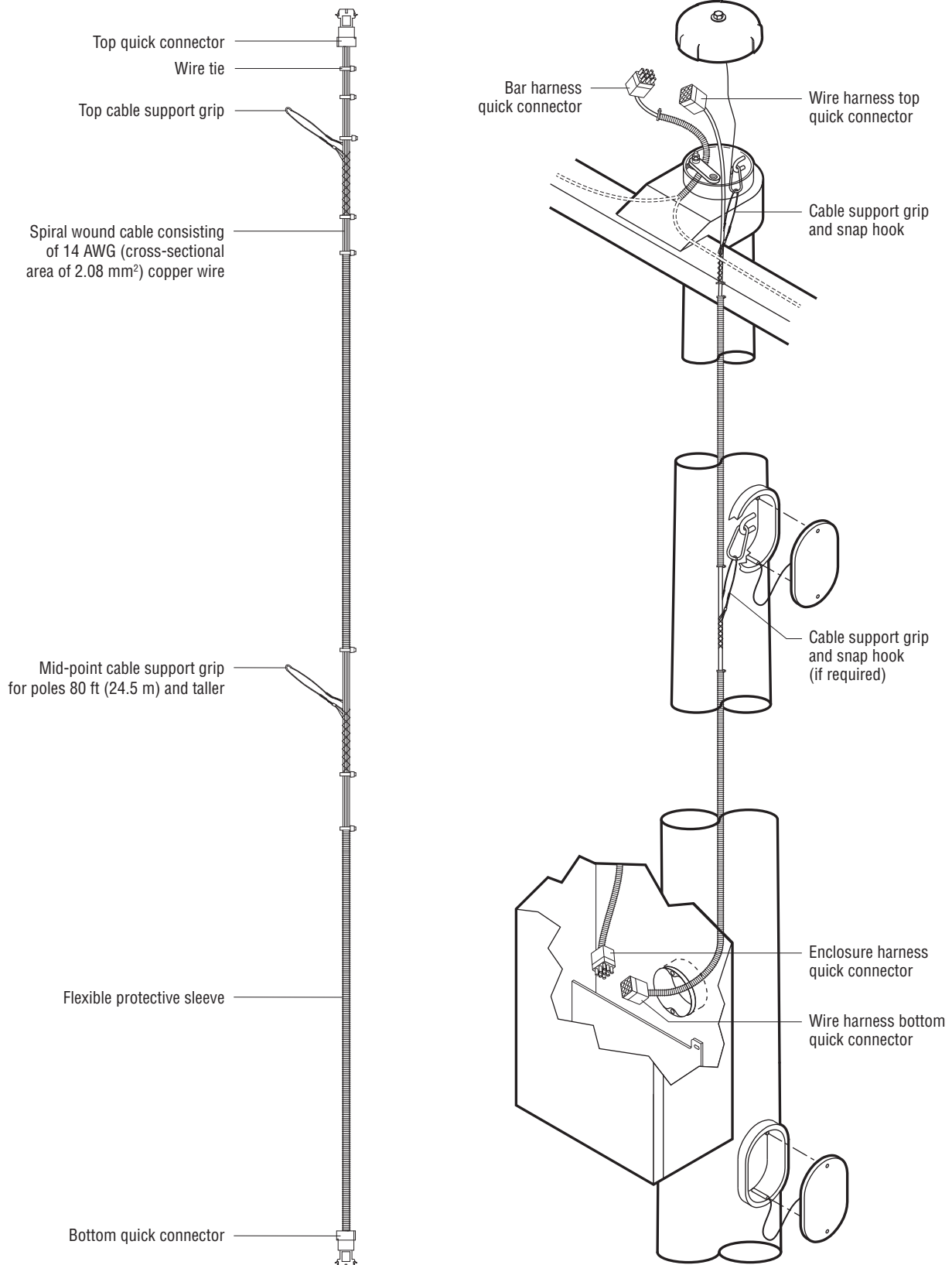
Construction

- Spiral wound, wrapped cable, 14 AWG (cross-sectional area of 2.08 mm²) copper wire
- Integral cable support grip
- Two wires per driver
- Each harness supports up to four drivers
- Multiple top connectors may be present if required for number of luminaires

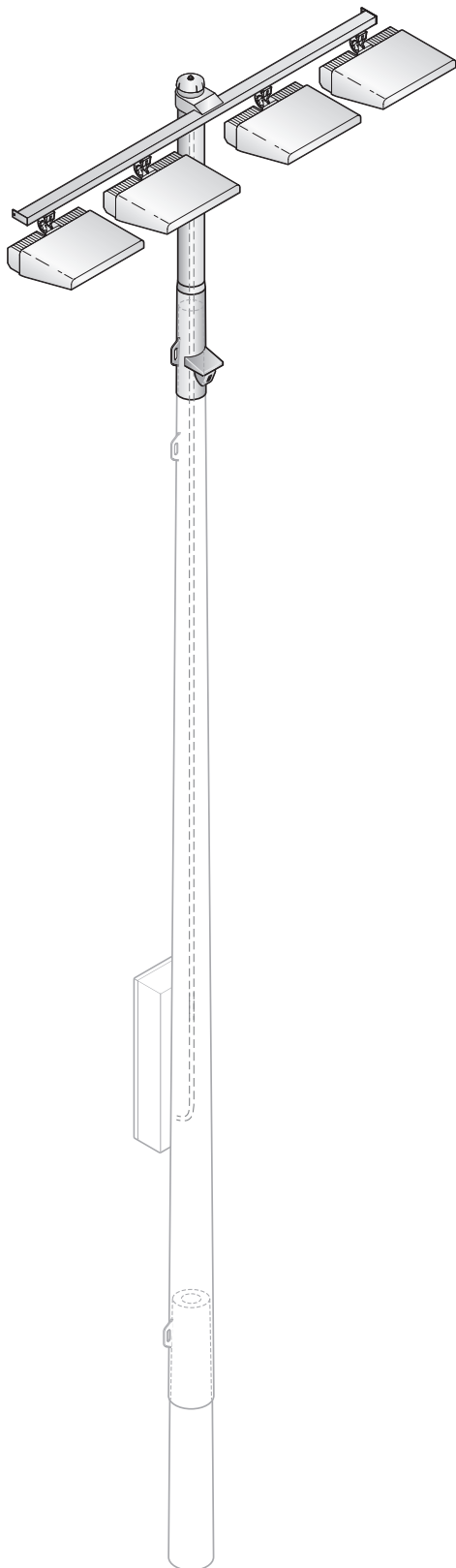
Quality Assurance Tests

- Connector/load resistance
- High potential dielectric withstand
- Grounding continuity
- Termination crimp

TLC for LED® – Wire Harness



TLC for LED® – Poletop Luminaire Assembly, Weld On



Overview

The factory-aimed poletop luminaire assembly is the upper section of the pole and slip-fits together with the galvanized steel pole.

Features

- Each luminaire is factory-built, tested, and ships as a unit
- Luminaires are factory-aimed to two-tenths degree of accuracy
- Luminaire mounts and connects in a single step
- Slip-fit connection allows assembly with come-alongs
- All luminaires are factory-wired to a quick connect harness for easy installation
- Labels identify pole and luminaire location
- No exposed wiring or conduit
- Factory-set pole alignment beam allows easy field alignment

Technical Specifications

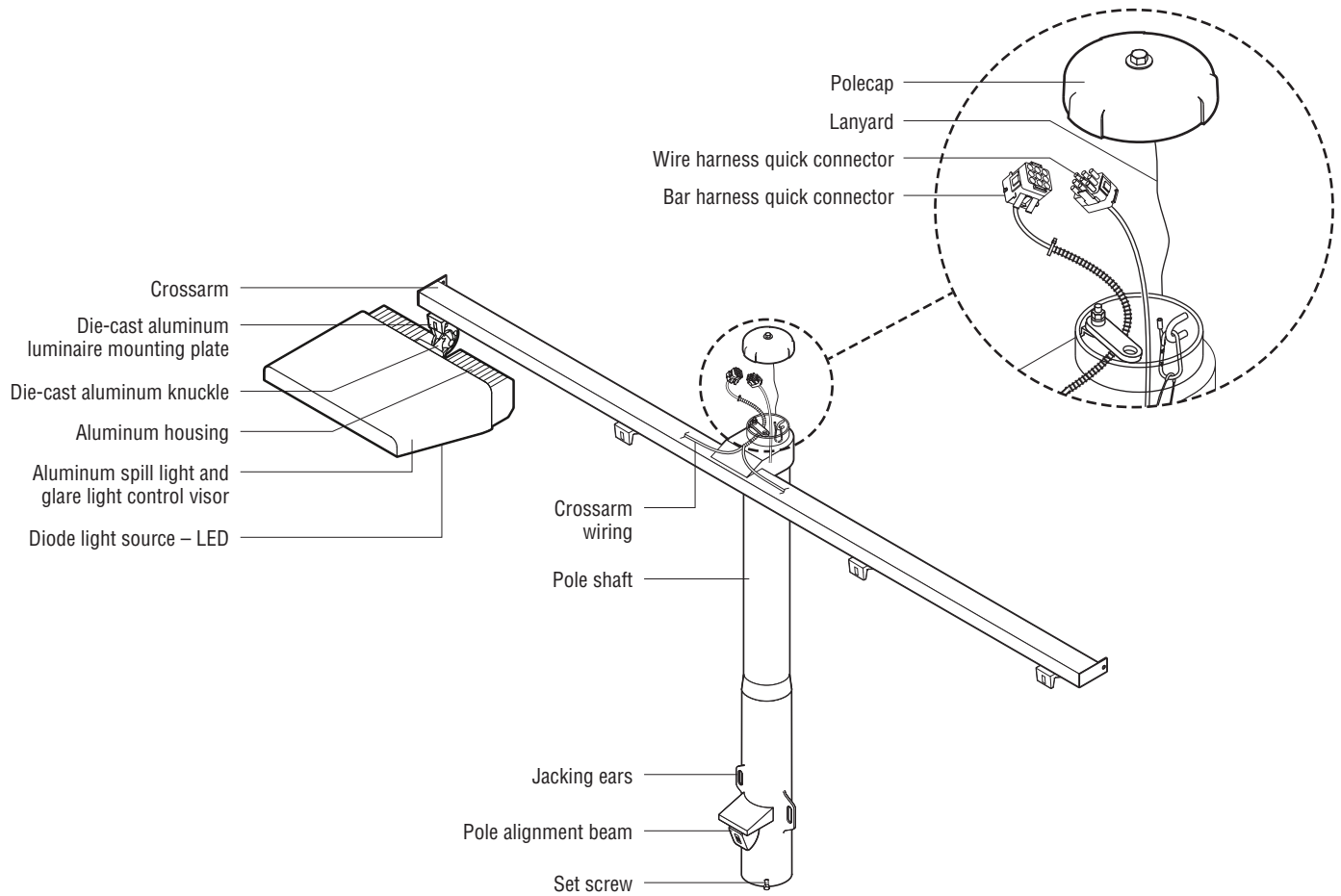
Construction

- Crossarms and pole shaft hot-dip galvanizing inside and outside after fabrication meets ASTM-A123 and EN 1461 standards
- All aluminum components are powder-coated or anodized to mil-A-8625F and BS 5599
- Luminaire and knuckle are powder-coated die-cast aluminum
- All stainless steel fasteners are passivated and coated
- Crossarms are constructed of rectangular steel tubing
- Polecap is attached with stainless steel lanyard and securing bolt

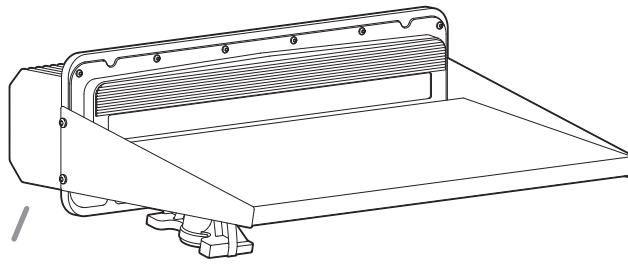
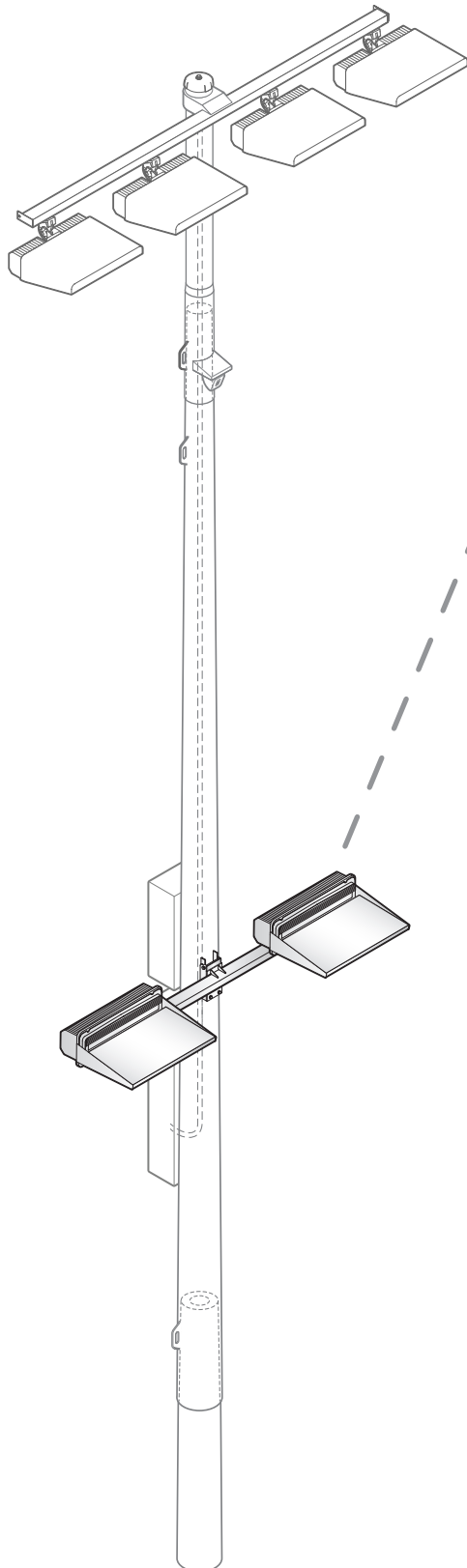
Quality Assurance Tests

- Galvanizing thickness
- High potential dielectric withstand
- Electrical continuity

TLC for LED® – Poletop Luminaire Assembly, Weld On



Luminaire and Driver – TLC-BT-575



Luminaire Data

| | |
|--|-------------------------------|
| Weight (luminaire) | 34 lb (15 kg) |
| UL listing number | E338094 |
| UL listed for USA/Canada | UL1598 CSA-C22.2 No.250.0 |
| CE Declaration | LVD, EMC, RoHS |
| Ingress protection (luminaire) | IP65 |
| Impact rating | IK07 |
| Material and finish | Aluminum, powder-coat painted |
| Wind speed rating (aiming only) | 150 mi/h (67 m/s) |
| UL, IEC ambient temperature rating (luminaire) | 50°C (122°F) |

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11

| | |
|----------------------------------|------------------------|
| L90 (20k) | >120,000 h |
| L80 (20k) | >120,000 h |
| L70 (20k) | >120,000 h |
| Lumens ¹ | 52,000 |
| CIE correlated color temperature | 5700 K |
| Color rendering index (CRI) | 75 typ, 70 min |
| LED binning tolerance | 7-step MacAdam Ellipse |

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

Luminaire and Driver – TLC-BT-575

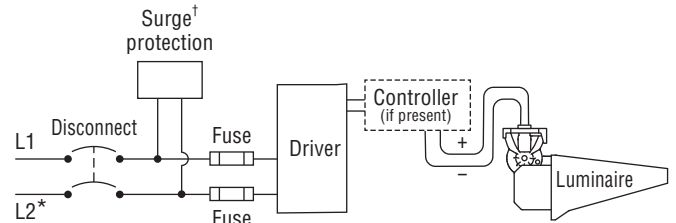
Driver Data

Electrical Data

Rated wattage¹

| | |
|---|--------------------|
| Per driver | 575 W |
| Per luminaire | 575 W |
| Number of luminaires per driver | 1 |
| Starting (inrush) current | <40 A, 256 μ s |
| Fuse rating | 15 A |
| UL, IEC ambient temperature rating, electrical components enclosure | 50°C (122°F) |
| Ingress protection, electrical components enclosure | IP54 |
| Efficiency | 95% |
| Total harmonic distortion (THD) at full output | <20% |

Typical Wiring



* If L2 is neutral then not switched or fused.
† Not present if indoor installation.

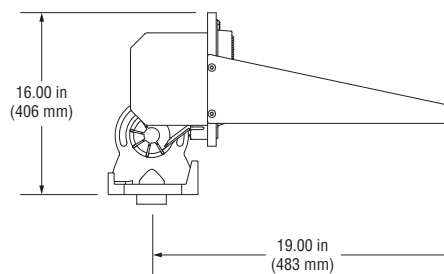
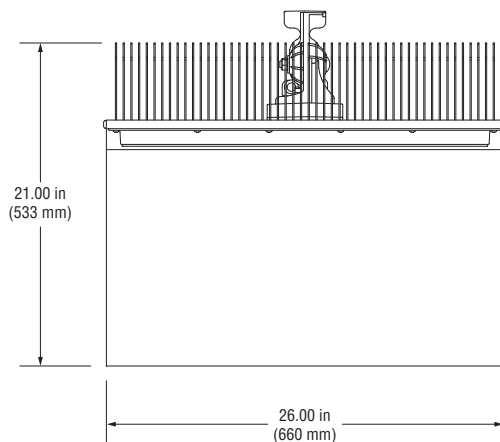
| | 200 Vac 50/60 Hz | 208 Vac 60 Hz | 220 Vac 50/60 Hz | 230 Vac 50 Hz | 240 Vac 50/60 Hz | 277 Vac 60 Hz | 347 Vac 60 Hz | 380 Vac 50/60 Hz | 400 Vac 50 Hz | 415 Vac 50 Hz | 480 Vac 60 Hz |
|--|---------------------|------------------|---------------------|------------------|---------------------|------------------|------------------|---------------------|------------------|------------------|------------------|
| Max operating current per luminaire ² | 3.48 A | 3.35 A | 3.16 A | 3.03 A | 2.90 A | 2.51 A | 2.01 A | 1.83 A | 1.74 A | 1.68 A | 1.45 A |

Footnotes:

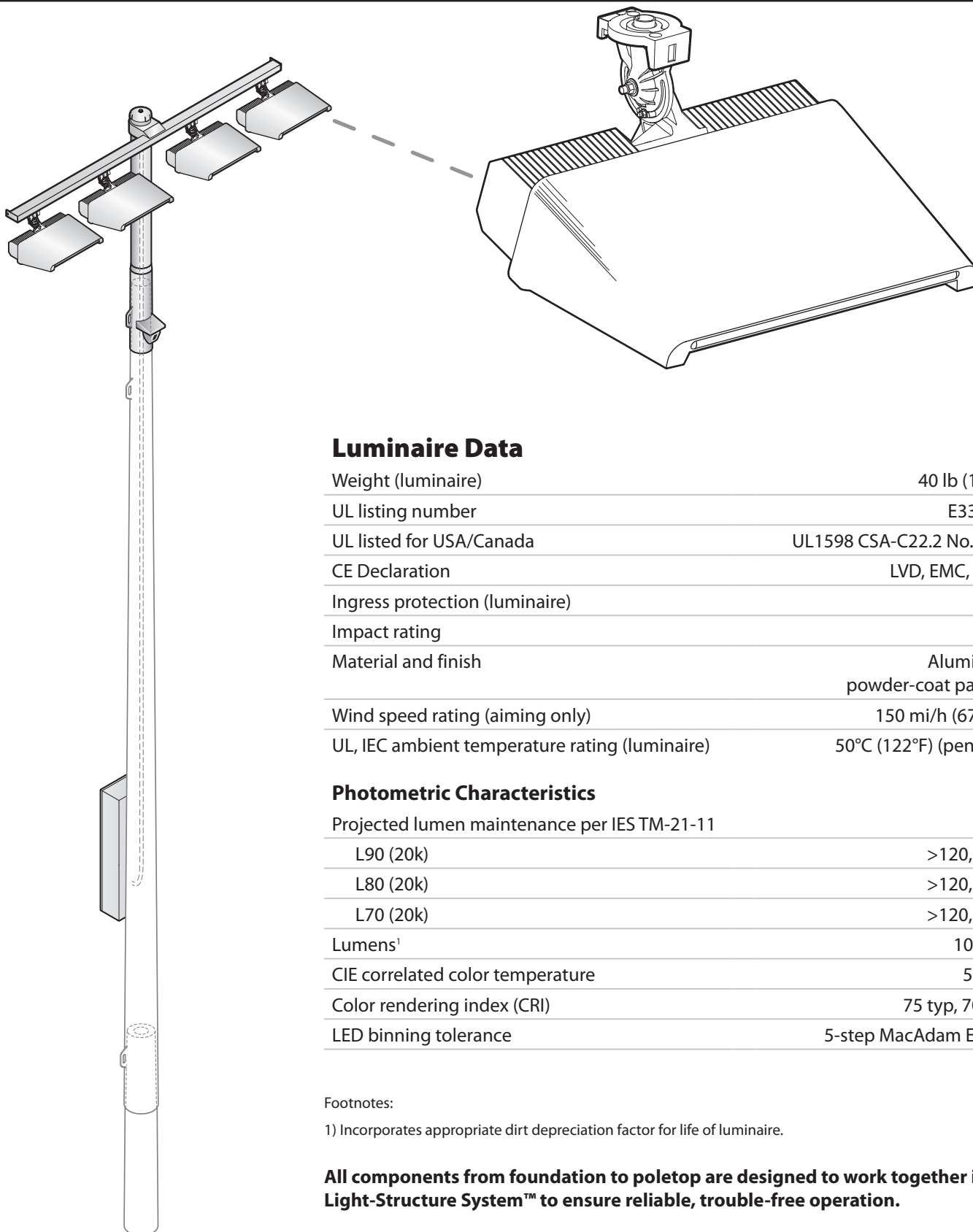
- 1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
- 2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.



Luminaire and Driver – TLC-LED-900



Luminaire Data

| | |
|--|----------------------------------|
| Weight (luminaire) | 40 lb (18 kg) |
| UL listing number | E338094 |
| UL listed for USA/Canada | UL1598 CSA-C22.2 No.250.0 |
| CE Declaration | LVD, EMC, RoHS |
| Ingress protection (luminaire) | IP65 |
| Impact rating | IK07 |
| Material and finish | Aluminum, powder-coat painted |
| Wind speed rating (aiming only) | 150 mi/h (67 m/s) |
| UL, IEC ambient temperature rating (luminaire) | 50°C (122°F) (pending) |

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11

| | |
|----------------------------------|------------------------|
| L90 (20k) | >120,000 h |
| L80 (20k) | >120,000 h |
| L70 (20k) | >120,000 h |
| Lumens ¹ | 104,000 |
| CIE correlated color temperature | 5700 K |
| Color rendering index (CRI) | 75 typ, 70 min |
| LED binning tolerance | 5-step MacAdam Ellipse |

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

Luminaire and Driver – TLC-LED-900

Driver Data

Electrical Data

Rated wattage¹

Per driver 880 W

Per luminaire 880 W

Number of luminaires per driver 1

Starting (inrush) current <40 A, 256 µs

Fuse rating 15 A

UL, IEC ambient temperature rating (electrical components enclosure) 50°C (122°F) (pending)

Ingress protection (electrical components enclosure) IP54

Efficiency 95%

Dimming mode optional

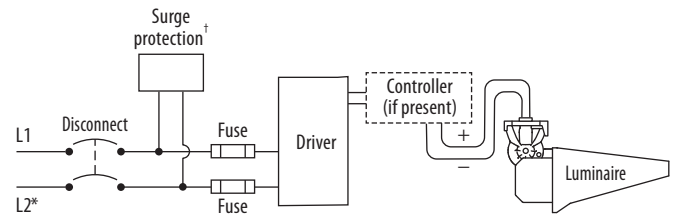
Range, energy consumption 21 – 100%

Range, light output 26 – 100%

Flicker <2%

Total harmonic distortion (THD) at full output <20%

Typical Wiring



* If L2 is neutral then not switched or fused.
† Not present if indoor installation.

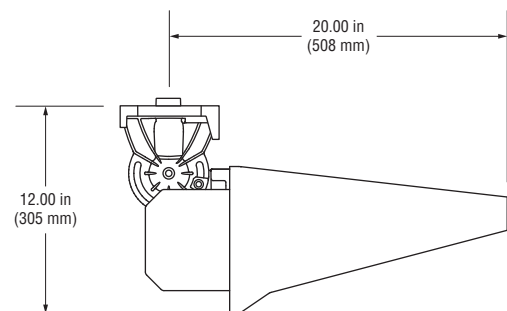
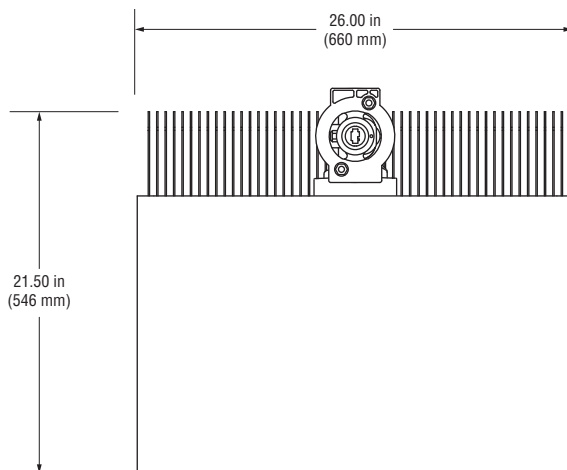
| | 200 Vac 50/60 Hz | 208 Vac 60 Hz | 220 Vac 50/60 Hz | 230 Vac 50 Hz | 240 Vac 50/60 Hz | 277 Vac 60 Hz | 347 Vac 60 Hz | 380 Vac 50/60 Hz | 400 Vac 50 Hz | 415 Vac 50 Hz | 480 Vac 60 Hz |
|--|---------------------|------------------|---------------------|------------------|---------------------|------------------|------------------|---------------------|------------------|------------------|------------------|
| Max operating current per luminaire ² | 5.43 A | 5.22 A | 4.93 A | 4.72 A | 4.52 A | 3.92 A | 3.13 A | 2.86 A | 2.72 A | 2.62 A | 2.26 A |

Footnotes:

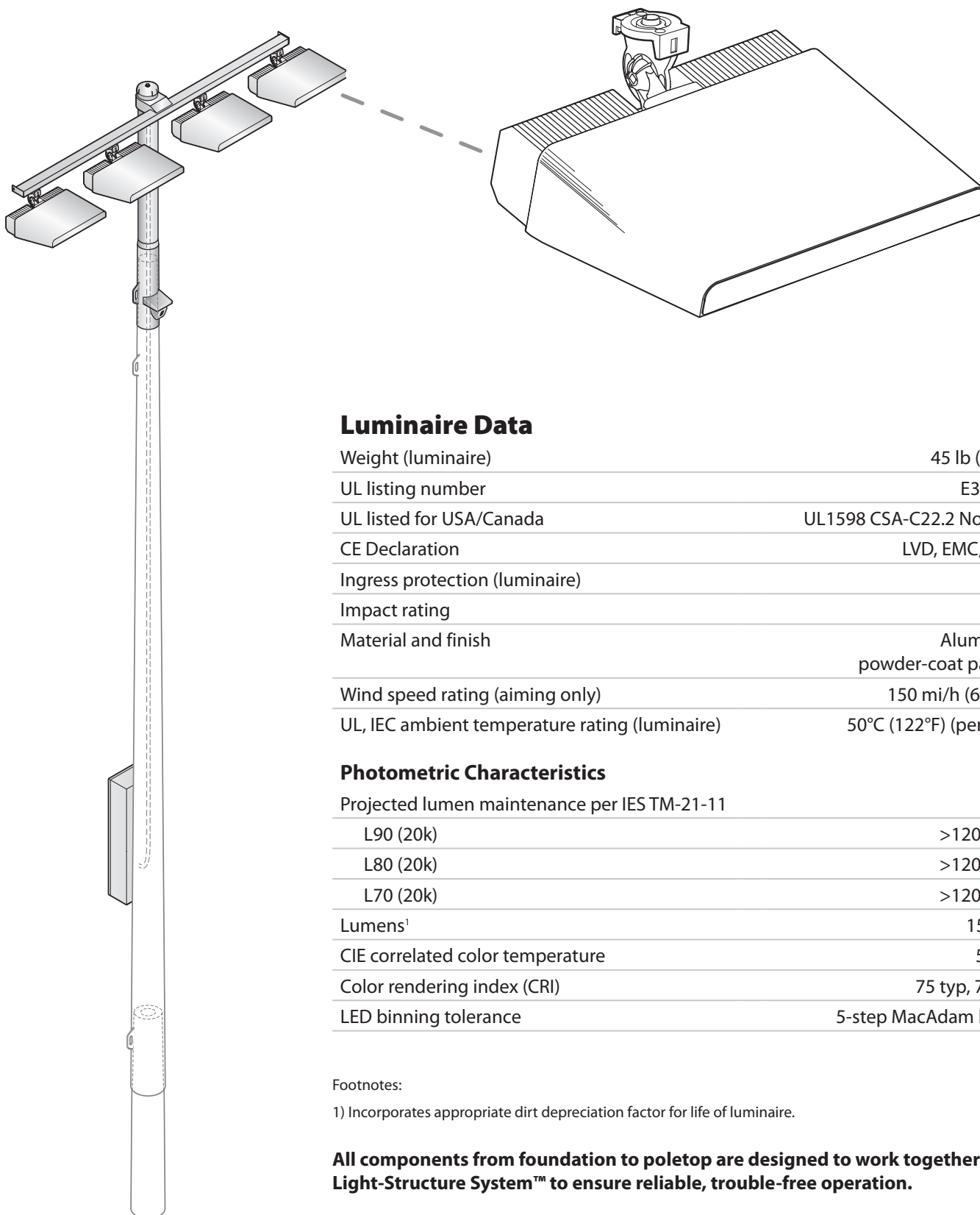
- 1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
- 2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.



Luminaire and Driver – TLC-LED-1200



Luminaire Data

| | |
|--|----------------------------------|
| Weight (luminaire) | 45 lb (20 kg) |
| UL listing number | E338094 |
| UL listed for USA/Canada | UL1598 CSA-C22.2 No.250.0 |
| CE Declaration | LVD, EMC, RoHS |
| Ingress protection (luminaire) | IP65 |
| Impact rating | IK07 |
| Material and finish | Aluminum, powder-coat painted |
| Wind speed rating (aiming only) | 150 mi/h (67 m/s) |
| UL, IEC ambient temperature rating (luminaire) | 50°C (122°F) (pending) |

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11

| | |
|----------------------------------|------------------------|
| L90 (20k) | >120,000 h |
| L80 (20k) | >120,000 h |
| L70 (20k) | >120,000 h |
| Lumens ¹ | 150,000 |
| CIE correlated color temperature | 5700 K |
| Color rendering index (CRI) | 75 typ, 70 min |
| LED binning tolerance | 5-step MacAdam Ellipse |

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

Luminaire and Driver – TLC-LED-1200

Driver Data

Electrical Data

Rated wattage¹

Per driver 1170 W

Per luminaire 1170 W

Number of luminaires per driver 1

Starting (inrush) current <40 A, 256 µs

Fuse rating 15 A

UL, IEC ambient temperature rating (electrical components enclosure) 50°C (122°F) (pending)

Ingress protection (electrical components enclosure) IP54

Efficiency 95%

Dimming mode optional

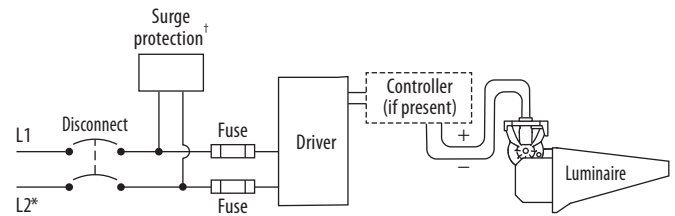
Range, energy consumption 13 – 100%

Range, light output 18 – 100%

Flicker <2%

Total harmonic distortion (THD) at full output <20%

Typical Wiring



* If L2 is neutral then not switched or fused.
† Not present if indoor installation.

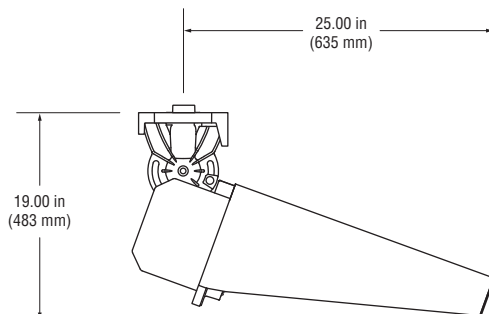
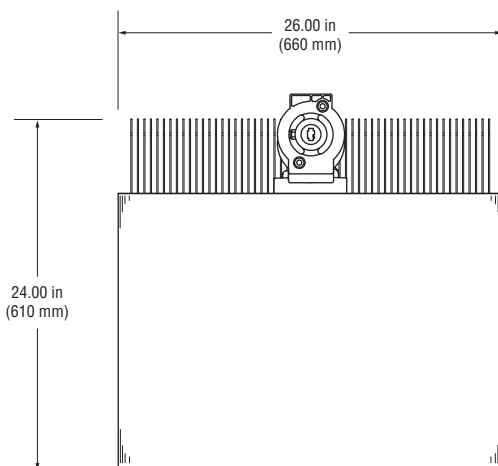
| | 200 Vac 50/60 Hz | 208 Vac 60 Hz | 220 Vac 50/60 Hz | 230 Vac 50 Hz | 240 Vac 50/60 Hz | 277 Vac 60 Hz | 347 Vac 60 Hz | 380 Vac 50/60 Hz | 400 Vac 50 Hz | 415 Vac 50 Hz | 480 Vac 60 Hz |
|--|---------------------|------------------|---------------------|------------------|---------------------|------------------|------------------|---------------------|------------------|------------------|------------------|
| Max operating current per luminaire ² | 7.20 A | 6.92 A | 6.54 A | 6.26 A | 6.00 A | 5.20 A | 4.15 A | 3.79 A | 3.60 A | 3.47 A | 3.00 A |

Footnotes:

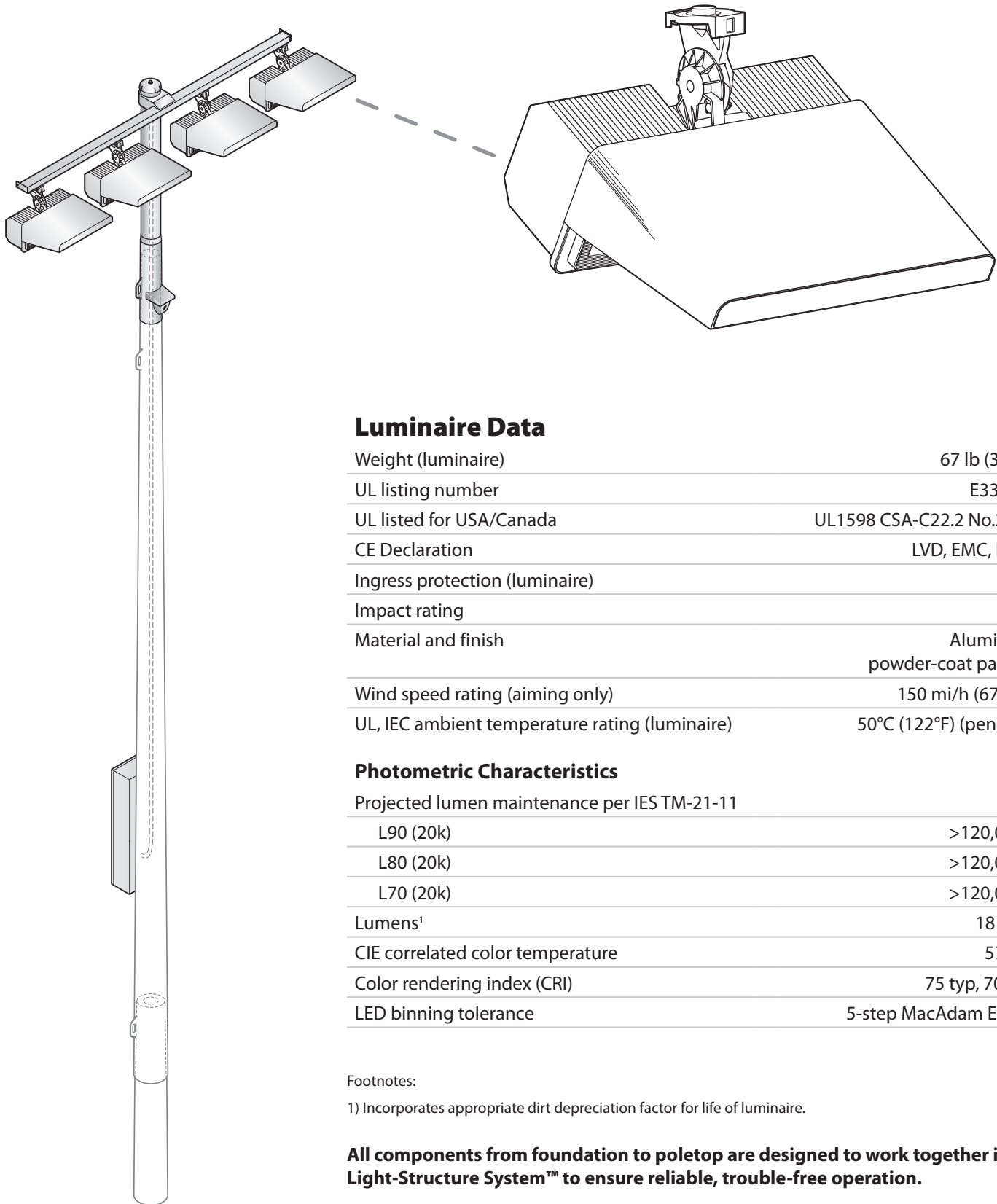
- 1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
- 2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.



Luminaire and Driver – TLC-LED-1500



Luminaire Data

| | |
|--|----------------------------------|
| Weight (luminaire) | 67 lb (30 kg) |
| UL listing number | E338094 |
| UL listed for USA/Canada | UL1598 CSA-C22.2 No.250.0 |
| CE Declaration | LVD, EMC, RoHS |
| Ingress protection (luminaire) | IP65 |
| Impact rating | IK07 |
| Material and finish | Aluminum, powder-coat painted |
| Wind speed rating (aiming only) | 150 mi/h (67 m/s) |
| UL, IEC ambient temperature rating (luminaire) | 50°C (122°F) (pending) |

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11

| | |
|----------------------------------|------------------------|
| L90 (20k) | >120,000 h |
| L80 (20k) | >120,000 h |
| L70 (20k) | >120,000 h |
| Lumens ¹ | 181,000 |
| CIE correlated color temperature | 5700 K |
| Color rendering index (CRI) | 75 typ, 70 min |
| LED binning tolerance | 5-step MacAdam Ellipse |

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

Luminaire and Driver – TLC-LED-1500

Driver Data

Electrical Data

Rated wattage¹

Per driver 1410 W

Per luminaire 1410 W

Number of luminaires per driver 1

Starting (inrush) current <40 A, 256 μ s

Fuse rating 15 A

UL, IEC ambient temperature rating (electrical components enclosure) 50°C (122°F) (pending)

Ingress protection (electrical components enclosure) IP54

Efficiency 95%

Dimming mode optional

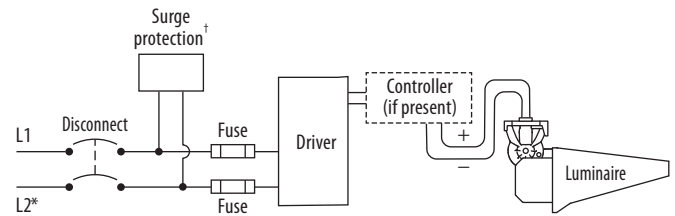
Range, energy consumption 10 – 100%

Range, light output 15 – 100%

Flicker <2%

Total harmonic distortion (THD) at full output <20%

Typical Wiring



* If L2 is neutral then not switched or fused.
† Not present if indoor installation.

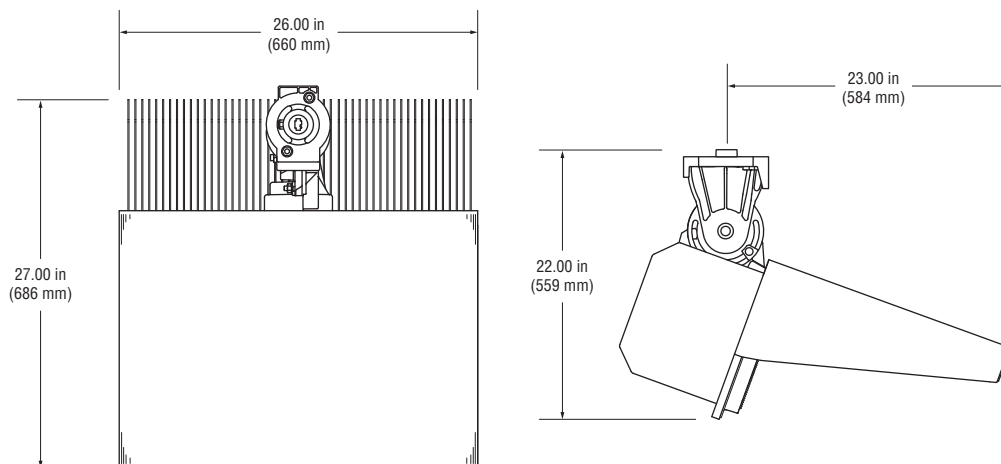
| | 200 Vac 50/60 Hz | 208 Vac 60 Hz | 220 Vac 50/60 Hz | 230 Vac 50 Hz | 240 Vac 50/60 Hz | 277 Vac 60 Hz | 347 Vac 60 Hz | 380 Vac 50/60 Hz | 400 Vac 50 Hz | 415 Vac 50 Hz | 480 Vac 60 Hz |
|--|---------------------|------------------|---------------------|------------------|---------------------|------------------|------------------|---------------------|------------------|------------------|------------------|
| Max operating current per luminaire ² | 8.71 A | 8.37 A | 7.92 A | 7.57 A | 7.26 A | 6.29 A | 5.02 A | 4.59 A | 4.36 A | 4.20 A | 3.63 A |

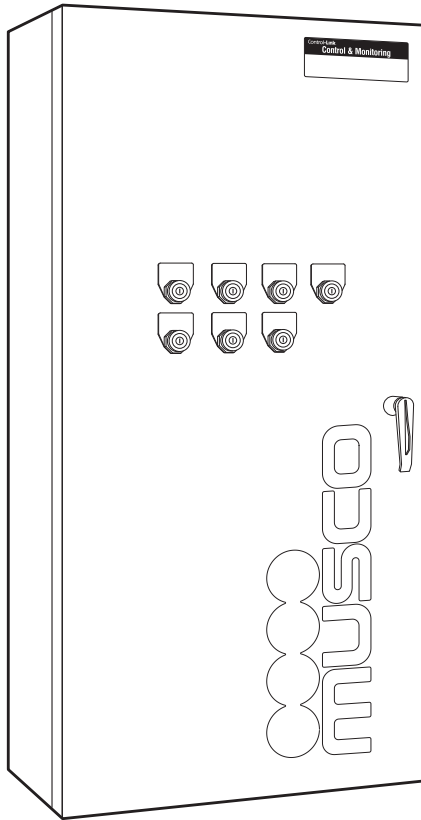
Footnotes:

- 1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
- 2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.





Overview

Control-Link® Control and Monitoring System provides remote on/off control, dimming, system monitoring, and management of your lighting system.

Features

Control

- Lighting system and auxiliary equipment
- Control with: Control-Link website, smartphone app, phone call, email, or fax up to 10 years in advance
- Seven controllable lighting zones
- Three customizable dimming levels (factory set at 100%, 50%, 20%)
- Multi-level user security settings
- Door-mounted or remote-mounted on/off/auto switches allow for manual override of automated control

Monitoring

- Detects luminaire outages and other issues that affect light quality

Management and Support

- Control-Link Central™ service center provides support 24 hours a day, 7 days a week for scheduling, monitoring, and reporting
- Luminaire outage notification within the next business day
- Customized usage reports through website

Technical Specifications

Control and Monitoring Cabinet Ratings

| | |
|--|-------------------------------|
| UL 508A Listed | E204954 |
| CE declaration | LVD, EMC, RoHS |
| IEC 60439-1 compliant | UL test report 05NK26317 |
| IEC Emissions/Immunity | Class A compliant |
| Operating temperature | -4°F to 140°F (-20°C to 60°C) |
| FCC Part 15 | Class A compliant |
| Weight for 72 inch (1829 mm) cabinet | 180 lb (82 kg) |
| Weight for 48 inch (1219 mm) cabinet | 140 lb (64 kg) |
| Short Circuit Current Rating (SCCR) | |
| with 30 A contactors* | 18 kA |
| with 60 or 100 A contactors* | 25 kA |
| *Minimum circuit breaker interrupt rating must be greater than or equal to SCCR rating listed above. | |

Construction

Control and Monitoring Cabinet

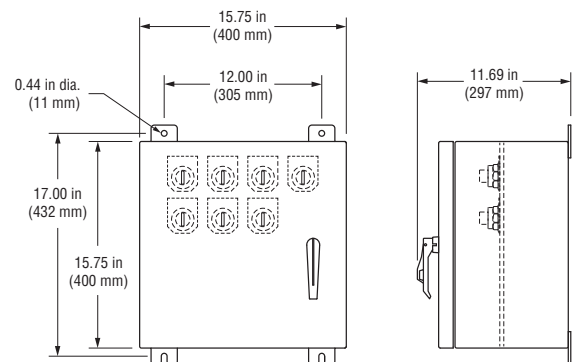
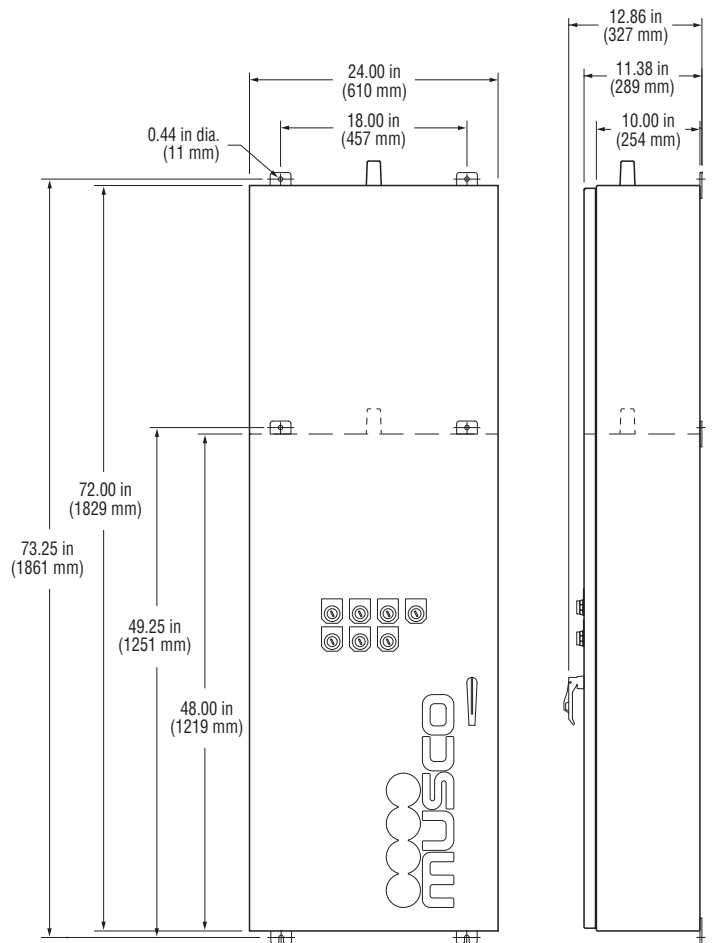
- NEMA type 4 (IP65) cabinet
- Powder-coated aluminum 5052 H32 cabinet and panel
- Lockable, 3-point latch
- Supports lighting system voltage up to 480 V
- Requires 120 V or 230 V phase-to-neutral control voltage
- Protective cover isolates high voltage

On/Off/Auto Manual Switches Cabinet (optional)

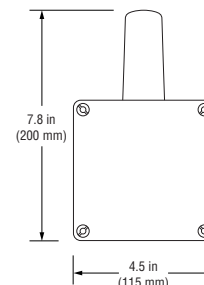
- NEMA type 4 (IP65) cabinet
- Powder-coated aluminum 5052 H32 cabinet and panel
- Lockable door
- Hinged interior panel for switch mounting

Remote Wireless Antenna Cabinet (for wireless communication)

- Cast aluminum with texture gray paint finish
- Omnidirectional antenna
- Operating temperature: -40°C (-40°F) to 85°C to (185°F)
- Frequency: 900 MHz or 2.4 GHz



Manual switches cabinet



Remote wireless antenna cabinet

Internal Details

- Factory wired, programmed, and tested
- Internally fused
- Control power terminal blocks provided
- One control circuit operates entire cabinet
- Plug-in wire harnesses provided to connect multiple cabinets

Control Module

Receives and stores schedules from Control-Link Central™ service center, operates your equipment, and verifies schedules were carried out.

- Executes scheduled on/off or dimming events.
- Stores schedules for up to 7 days
- Reboots automatically and executes current schedule when power is restored, in case of power interruption
- Monitors Musco lighting system and reports issues to keep facilities operating and to help plan routine maintenance. Alerts Control-Link Central service center to schedule appropriate action or maintenance.

Communication Modules

Communication with Control-Link Central is done via an integrated, high speed, cellular connection with no additional monthly charges during the warranty period.

Communication with light poles is done via powerline communication or wireless communication.

- Powerline communication requires a dedicated 20A circuit (lighting circuit distribution panel)
- Wireless communication requires a dedicated antenna to be mounted at least 3 ft above the cellular antenna, and 7 ft total distance away, and line of sight to lighting poles.

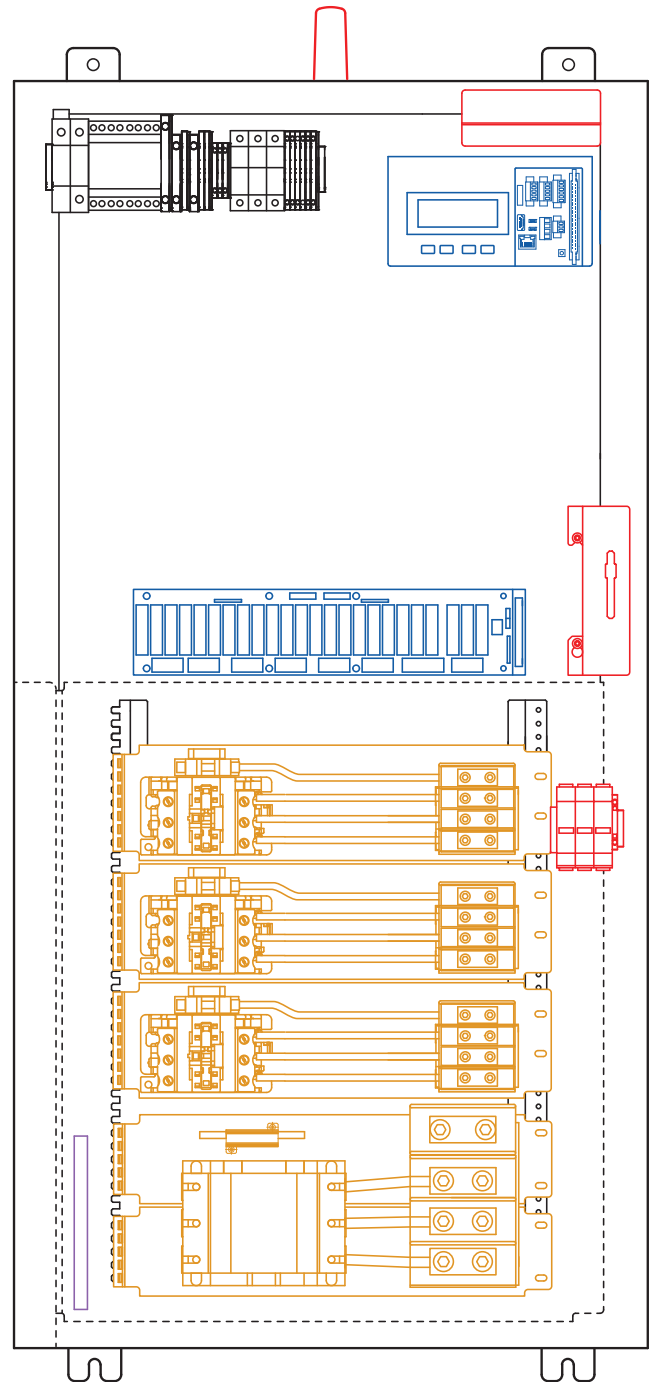
Contactor Modules

Operates equipment based on control module schedules.

- Compliant with IEC 60947-4-1 for continuous operation at 100% of rated current
- Contactors rated for 30, 60, or 100 amps

Ground Bar

Provides integral ground bar for lighting equipment grounding.



Safety: UL Product Certification

UL Product Certification for:

Musco Sports Lighting, LLC
100 1st Ave W
PO Box 808
Oskaloosa, IA 52577
USA



| UL Category | Covers | UL Number |
|--|--|-----------|
| High-Intensity Discharge Surface-Mounted Luminaires | <ul style="list-style-type: none">Green Generation™ luminaires and remote ballast assembliesSportsCluster® and SportsCluster-2® luminaires and remote ballast assembliesLight-Structure 2™ and Light-Structure System™ luminaires and remote ballast assemblies1000 W Light-Pak™ and Light-Pak indoor luminaires with Multi-Watt™ control system1000 W Show-Light™ and Show-Light Green™ luminaires with hooded light actuator system and remote ballast assemblies2000 W Mirtran™ luminaireStadium 2K Fixture™ 2000 W luminaire and Hot Restrike Green™ 2000 W hot restrike luminaire | E33316 |
| Management Equipment, Energy | Lighting control systems for: <ul style="list-style-type: none">Control-Link® control and monitoring systemControl-Link retrofit control system | E139944 |
| Industrial Control Panels | Control panels and enclosures for: <ul style="list-style-type: none">Control-Link® control and monitoring systemControl-Link retrofit control systemLighting contactor cabinetsMulti-Watt™ control systems | E204954 |
| Emergency Lighting and Power Equipment | <ul style="list-style-type: none">Auxiliary Lighting Interface Cabinet (ALIC) | E311491 |
| Luminaire Fittings | Galvanized steel poles 12 ft (3.7 m) or less for: <ul style="list-style-type: none">Poles for Mirtran™ luminaire mountingRooftop polesSpecial applications | E132445 |
| Luminaire Pole in Excess of 12 ft (3.7 m) | Galvanized steel poles greater than 12 ft (3.7 m) for: <ul style="list-style-type: none">Light-Structure System™ luminaire mountingSportspole™ structure or mounting system and special applications | E325078 |

Safety: UL Product Certification

| UL Category | Covers | UL Number |
|--|--|-----------|
| Devices, Scaffolding | Service platforms for: <ul style="list-style-type: none">• Light-Structure System™ luminaires and remote ballast assemblies• SportsCluster® System luminaires and remote ballast assemblies | SA7004 |
| Lightning Conductors, Air Terminals, and Fittings | <ul style="list-style-type: none">• Light-Structure System™ pole structure concrete base | E337467 |
| Light-Emitting-Diode Surface-Mounted Luminaires | <ul style="list-style-type: none">• LED luminaires and driver assemblies• LED auxiliary luminaires | E338094 |

A copy of the UL Certificate of Compliance is available upon your request.

Manufacturer's Certification of Corrosion Protection for Light-Structure System™ and SportsCluster® Lighting Systems

The following standard corrosion protection is provided on your equipment:

- All exposed components are constructed of corrosion-resistant material and/or coated to protect against corrosion.
- All exposed carbon steel is hot-dip galvanized, meeting ASTM A123 and ISO/EN 1461.
- All exposed aluminum is powder-coated with high-performance polyester or anodized. All exterior reflective inserts are anodized, coated with a clear, high-gloss, durable fluorocarbon, and protected from direct environmental exposure to prevent reflective degradation or corrosion.
- All exposed hardware and fasteners are stainless steel, passivated, and coated with an aluminum based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Alternately, for hardware in non-stressed applications, an electroless nickel coating meeting ASTM B733 may be used. Pole strapping used to mount certain equipment to light poles is annealed grade 304 stainless steel and passivated.
- Certain structural fasteners are carbon steel, galvanized meeting ASTM A153 and ISO/EN 1461 (for hot-dip galvanizing), or ASTM B695 (for mechanical galvanizing).

This corrosion protection package only applies to equipment manufactured by Musco.

Musco Sports Lighting, LLC



Greg Kubbe
Director of Product Performance