

# W.R. Oliver Complex

Waukesha, WI

## Lighting System

| Pole / Fixture Summary |             |            |             |                |                 |         |
|------------------------|-------------|------------|-------------|----------------|-----------------|---------|
| Pole ID                | Pole Height | Mtg Height | Fixture Qty | Luminaire Type | Load            | Circuit |
| A1-A2                  | 60'         | 60'        | 1           | TLC-LED-1200   | 1.17 kW         | A       |
|                        |             | 60'        | 1           | TLC-LED-900    | 0.89 kW         | A       |
| B1-B2                  | 60'         | 60'        | 5           | TLC-LED-1200   | 5.85 kW         | A       |
|                        |             | 16'        | 1           | TLC-BT-575     | 0.58 kW         | A       |
| C1                     | 60'         | 60'        | 4           | TLC-LED-1200   | 4.68 kW         | A       |
|                        |             | 16'        | 2           | TLC-BT-575     | 1.15 kW         | A       |
| <b>5</b>               |             |            | <b>22</b>   |                | <b>22.80 kW</b> |         |

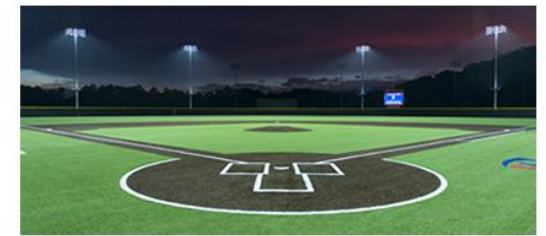
| Circuit Summary |             |         |             |
|-----------------|-------------|---------|-------------|
| Circuit         | Description | Load    | Fixture Qty |
| A               | Field 1     | 22.8 kW | 22          |

| Fixture Type Summary |                    |         |         |          |          |          |          |
|----------------------|--------------------|---------|---------|----------|----------|----------|----------|
| Type                 | Source             | Wattage | Lumens  | L90      | L80      | L70      | Quantity |
| TLC-LED-1200         | LED 5700K - 75 CRI | 1170W   | 136,000 | >120,000 | >120,000 | >120,000 | 16       |
| TLC-BT-575           | LED 5700K - 75 CRI | 575W    | 52,000  | >120,000 | >120,000 | >120,000 | 4        |
| TLC-LED-900          | LED 5700K - 75 CRI | 890W    | 89,600  | >120,000 | >120,000 | >120,000 | 2        |

## Light Level Summary

| Calculation Grid Summary |                                 |              |     |       |         |         |          |             |
|--------------------------|---------------------------------|--------------|-----|-------|---------|---------|----------|-------------|
| Grid Name                | Calculation Metric              | Illumination |     |       |         |         | Circuits | Fixture Qty |
|                          |                                 | Ave          | Min | Max   | Max/Min | Ave/Min |          |             |
| Field 1 (Infield)        | Horizontal Illuminance          | 51.8         | 40  | 60    | 1.49    | 1.30    | A        | 22          |
| Field 1 (Outfield)       | Horizontal Illuminance          | 32.2         | 20  | 42    | 2.15    | 1.61    | A        | 22          |
| Property Line            | Horizontal                      | 0.03         | 0   | 1.35  | 0.00    |         | A        | 22          |
| Property Line            | Max Candela (by Fixture)        | 1486         | 0   | 57474 | 0.00    |         | A        | 22          |
| Property Line            | Max Vertical Illuminance Metric | 0.08         | 0   | 3.22  | 0.00    |         | A        | 22          |

## From Hometown to Professional



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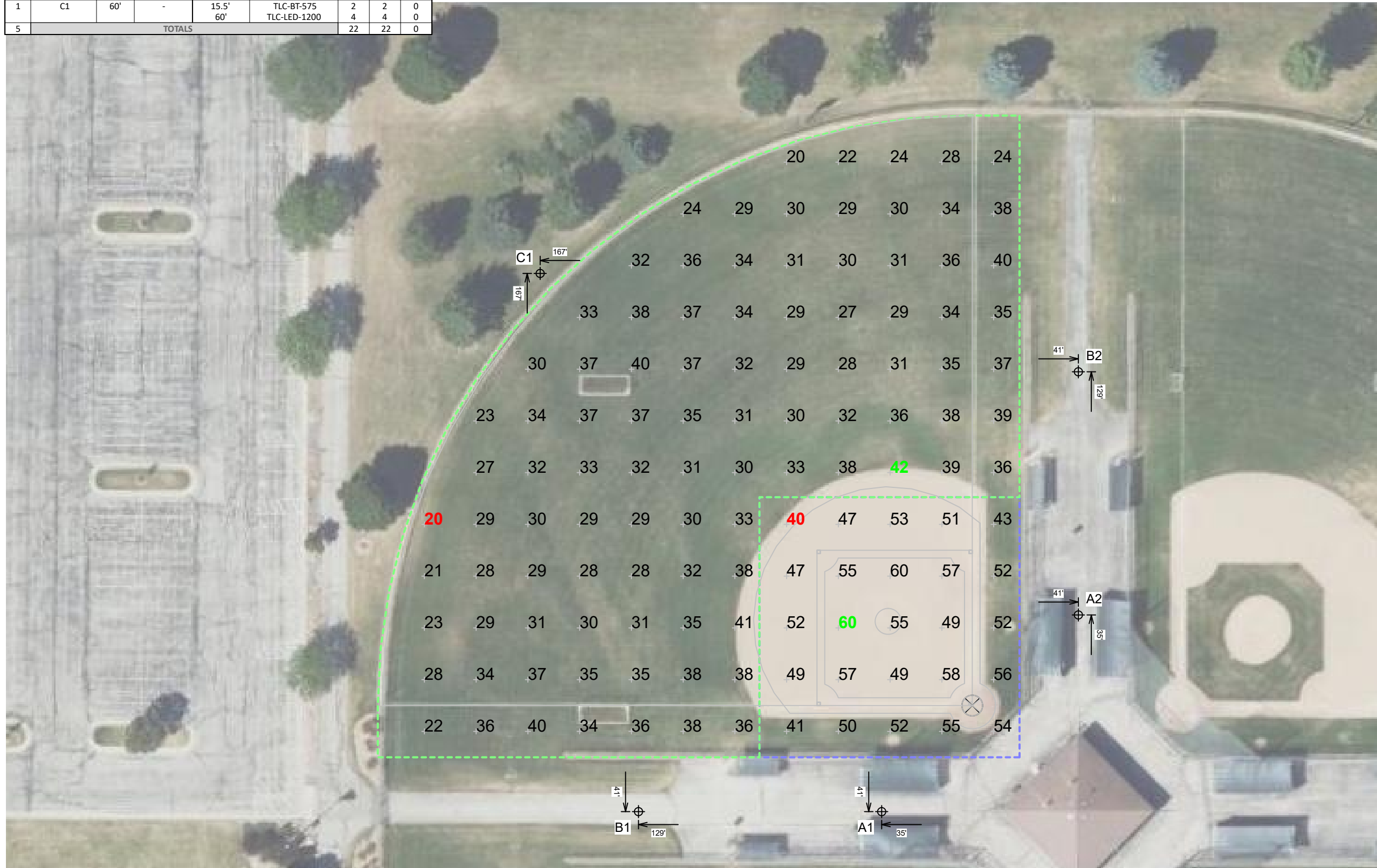
| EQUIPMENT LIST FOR AREAS SHOWN |          |      |                 |                 |                |            |           |             |
|--------------------------------|----------|------|-----------------|-----------------|----------------|------------|-----------|-------------|
| Pole                           |          |      | Luminaires      |                 |                |            |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE | THIS GRID | OTHER GRIDS |
| 2                              | A1-A2    | 60'  | -               | 60'             | TLC-LED-1200   | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-900    | 1          | 1         | 0           |
| 1                              | B1       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | B2       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | C1       | 60'  | -               | 15.5'           | TLC-BT-575     | 2          | 2         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 4          | 4         | 0           |
| 5                              | TOTALS   |      |                 |                 |                | 22         | 22        | 0           |

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| GRID SUMMARY |                               |
|--------------|-------------------------------|
| Name:        | Field 1                       |
| Size:        | 228'/228'/228' - basepath 60' |
| Spacing:     | 20.0' x 20.0'                 |
| Height:      | 3.0' above grade              |

| ILLUMINATION SUMMARY              |           |            |
|-----------------------------------|-----------|------------|
| MAINTAINED HORIZONTAL FOOTCANDLES |           |            |
|                                   | Infield   | Outfield   |
| <b>Guaranteed Average:</b>        | <b>50</b> | <b>30</b>  |
| Scan Average:                     | 51.82     | 32.20      |
| Maximum:                          | 60        | 42         |
| Minimum:                          | 40        | 20         |
| Avg / Min:                        | 1.28      | 1.65       |
| <b>Guaranteed Max / Min:</b>      | <b>2</b>  | <b>2.5</b> |
| Max / Min:                        | 1.49      | 2.15       |
| UG (adjacent pts):                | 1.22      | 1.64       |
| CU:                               | 0.71      |            |
| No. of Points:                    | 25        | 96         |
| LUMINAIRE INFORMATION             |           |            |
| Applied Circuits:                 | A         |            |
| <b>No. of Luminaires:</b>         | <b>22</b> |            |
| Total Load:                       | 22.8 kW   |            |

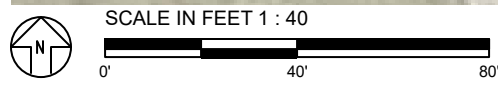


**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

**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 |
| 2                              | A1-A2    | 60'  | -               | 60'             | TLC-LED-1200   | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-900    | 1          | 1         | 0           |
| 1                              | B1       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | B2       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | C1       | 60'  | -               | 15.5'           | TLC-BT-575     | 2          | 2         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 4          | 4         | 0           |
| 5                              | TOTALS   |      |                 |                 |                | 22         | 22        | 0           |

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| GRID SUMMARY |                  |
|--------------|------------------|
| Name:        | Property Line    |
| Spacing:     | 30.0'            |
| Height:      | 3.0' above grade |

| ILLUMINATION SUMMARY   |                       |
|------------------------|-----------------------|
| HORIZONTAL FOOTCANDLES |                       |
| Scan Average:          | Entire Grid<br>0.0319 |
| Maximum:               | 1.35                  |
| Minimum:               | 0.00                  |
| No. of Points:         | 193                   |
| LUMINAIRE INFORMATION  |                       |
| Applied Circuits:      | A                     |
| No. of Luminaires:     | 22                    |
| Total Load:            | 22.8 kW               |

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SCALE IN FEET 1 : 200



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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 |
| 2                              | A1-A2    | 60'  | -               | 60'             | TLC-LED-1200   | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-900    | 1          | 1         | 0           |
| 1                              | B1       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | B2       | 60'  | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1                              | C1       | 60'  | -               | 15.5'           | TLC-BT-575     | 2          | 2         | 0           |
|                                |          |      |                 | 60'             | TLC-LED-1200   | 4          | 4         | 0           |
| 5                              | TOTALS   |      |                 |                 |                | 22         | 22        | 0           |

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| GRID SUMMARY |                  |
|--------------|------------------|
| Name:        | Property Line    |
| Spacing:     | 30.0'            |
| Height:      | 3.0' above grade |

| ILLUMINATION SUMMARY     |                       |
|--------------------------|-----------------------|
| MAX VERTICAL FOOTCANDLES |                       |
| Scan Average:            | Entire Grid<br>0.0768 |
| Maximum:                 | 3.22                  |
| Minimum:                 | 0.00                  |
| No. of Points:           | 193                   |
| LUMINAIRE INFORMATION    |                       |
| Applied Circuits:        | A                     |
| No. of Luminaires:       | 22                    |
| Total Load:              | 22.8 kW               |

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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 |
| 2    | A1-A2    | 60'        | -               | 60'             | TLC-LED-1200   | 1          | 1         | 0           |
|      |          |            |                 | 60'             | TLC-LED-900    | 1          | 1         | 0           |
| 1    | B1       | 60'        | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|      |          |            |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1    | B2       | 60'        | -               | 15.5'           | TLC-BT-575     | 1          | 1         | 0           |
|      |          |            |                 | 60'             | TLC-LED-1200   | 5          | 5         | 0           |
| 1    | C1       | 60'        | -               | 15.5'           | TLC-BT-575     | 2          | 2         | 0           |
|      |          |            |                 | 60'             | TLC-LED-1200   | 4          | 4         | 0           |
| 5    | TOTALS   |            |                 |                 |                | 22         | 22        | 0           |

**W.R. Oliver Complex**

Waukesha, WI

**GRID SUMMARY**

Name: Property Line  
 Spacing: 30.0'  
 Height: 3.0' above grade

**ILLUMINATION SUMMARY**

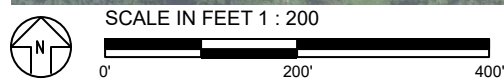
| CANDELA (PER FIXTURE)     |                          |
|---------------------------|--------------------------|
| Scan Average:             | Entire Grid<br>1485.7643 |
| Maximum:                  | 57474.36                 |
| Minimum:                  | 0.00                     |
| No. of Points:            | 193                      |
| LUMINAIRE INFORMATION     |                          |
| Applied Circuits:         | A                        |
| <b>No. of Luminaires:</b> | <b>22</b>                |
| Total Load:               | 22.8 kW                  |

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## EQUIPMENT LAYOUT

### INCLUDES:

· Field 1

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

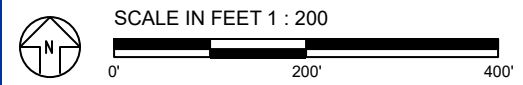
**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

## EQUIPMENT LIST FOR AREAS SHOWN

| QTY | LOCATION | POLE SIZE | GRADE ELEVATION | Luminaires      |                |            |
|-----|----------|-----------|-----------------|-----------------|----------------|------------|
|     |          |           |                 | MOUNTING HEIGHT | LUMINAIRE TYPE | QTY / POLE |
| 2   | A1-A2    | 60'       | -               | 60'             | TLC-LED-1200   | 1          |
|     |          |           |                 | 60'             | TLC-LED-900    | 1          |
| 1   | B1       | 60'       | -               | 15.5'           | TLC-BT-575     | 1          |
|     |          |           |                 | 60'             | TLC-LED-1200   | 5          |
| 1   | B2       | 60'       | -               | 15.5'           | TLC-BT-575     | 1          |
|     |          |           |                 | 60'             | TLC-LED-1200   | 5          |
| 1   | C1       | 60'       | -               | 15.5'           | TLC-BT-575     | 2          |
|     |          |           |                 | 60'             | TLC-LED-1200   | 4          |
| 5   | TOTALS   |           |                 |                 |                | 22         |

## SINGLE LUMINAIRE AMPERAGE DRAW CHART

| Ballast Specifications<br>(.90 min power factor) | Line Amperage Per Luminaire<br>(max draw) |             |             |             |             |             |             |
|--|---|-------------|-------------|-------------|-------------|-------------|-------------|
|  | 208<br>(60)                               | 220<br>(60) | 240<br>(60) | 277<br>(60) | 347<br>(60) | 380<br>(60) | 480<br>(60) |
| Single Phase Voltage                             | 7.0                                       | 6.6         | 6.1         | 5.2         | 4.2         | 4.0         | 3.0         |
| TLC-LED-1200                                     | 7.0                                       | 6.6         | 6.1         | 5.2         | 4.2         | 4.0         | 3.0         |
| TLC-BT-575                                       | 3.4                                       | 3.2         | 2.9         | 2.5         | 2.0         | 1.8         | 1.5         |
| TLC-LED-900                                      | 5.3                                       | 5.0         | 4.6         | 4.0         | 3.2         | 2.9         | 2.3         |



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



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