

## Appendices

# Appendix A      Lighting Plan

## Appendices

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Mission Hills High School Recreation Field  
San Marcos,CA

Lighting System

| Pole/Fixture Summary |             |            |             |                |          |         |
|----------------------|-------------|------------|-------------|----------------|----------|---------|
| Pole ID              | Pole Height | Mtg Height | Fixture Qty | Luminaire Type | Load     | Circuit |
| F1                   | 70'         | 70'        | 1           | TLC-LED-1200   | 1.17 kW  | B       |
|                      |             | 70'        | 3           | TLC-LED-1500   | 4.23 kW  | B       |
| F2-F3                | 70'         | 70'        | 2           | TLC-LED-1200   | 2.34 kW  | B       |
|                      |             | 70'        | 2           | TLC-LED-1500   | 2.82 kW  | B       |
| F4                   | 70'         | 70'        | 1           | TLC-LED-1200   | 1.17 kW  | B       |
|                      |             | 70'        | 3           | TLC-LED-1500   | 4.23 kW  | B       |
| 4                    |             |            | 16          |                | 21.12 kW |         |

| Circuit Summary |               |          |             |
|-----------------|---------------|----------|-------------|
| Circuit         | Description   | Load     | Fixture Qty |
| B               | Practice Area | 21.12 kW | 16          |

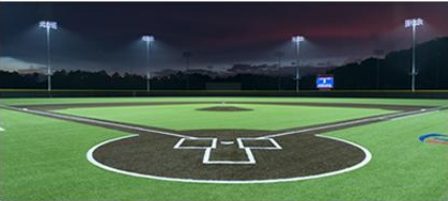
| Fixture Type Summary |                    |         |         |          |          |          |          |
|----------------------|--------------------|---------|---------|----------|----------|----------|----------|
| Type                 | Source             | Wattage | Lumens  | L90      | L80      | L70      | Quantity |
| TLC-LED-1200         | LED 5700K - 75 CRI | 1170W   | 150,000 | >120,000 | >120,000 | >120,000 | 6        |
| TLC-LED-1500         | LED 5700K - 75 CRI | 1410W   | 181,000 | >120,000 | >120,000 | >120,000 | 10       |

| Single Luminaire Amperage Draw Chart            |      |                                           |      |      |      |      |      |
|-------------------------------------------------|------|-------------------------------------------|------|------|------|------|------|
| Driver Specifications<br>(.90 min power factor) |      | Line Amperage Per Luminaire<br>(max draw) |      |      |      |      |      |
| Single Phase Voltage                            | 208  | 220                                       | 240  | 277  | 347  | 380  | 480  |
|                                                 | (60) | (60)                                      | (60) | (60) | (60) | (60) | (60) |
| TLC-LED-1500                                    | 8.4  | 7.9                                       | 7.3  | 6.3  | 5.0  | 4.6  | 3.6  |
| TLC-LED-1200                                    | 6.9  | 6.5                                       | 6.0  | 5.2  | 4.2  | 3.8  | 3.0  |

Light Level Summary

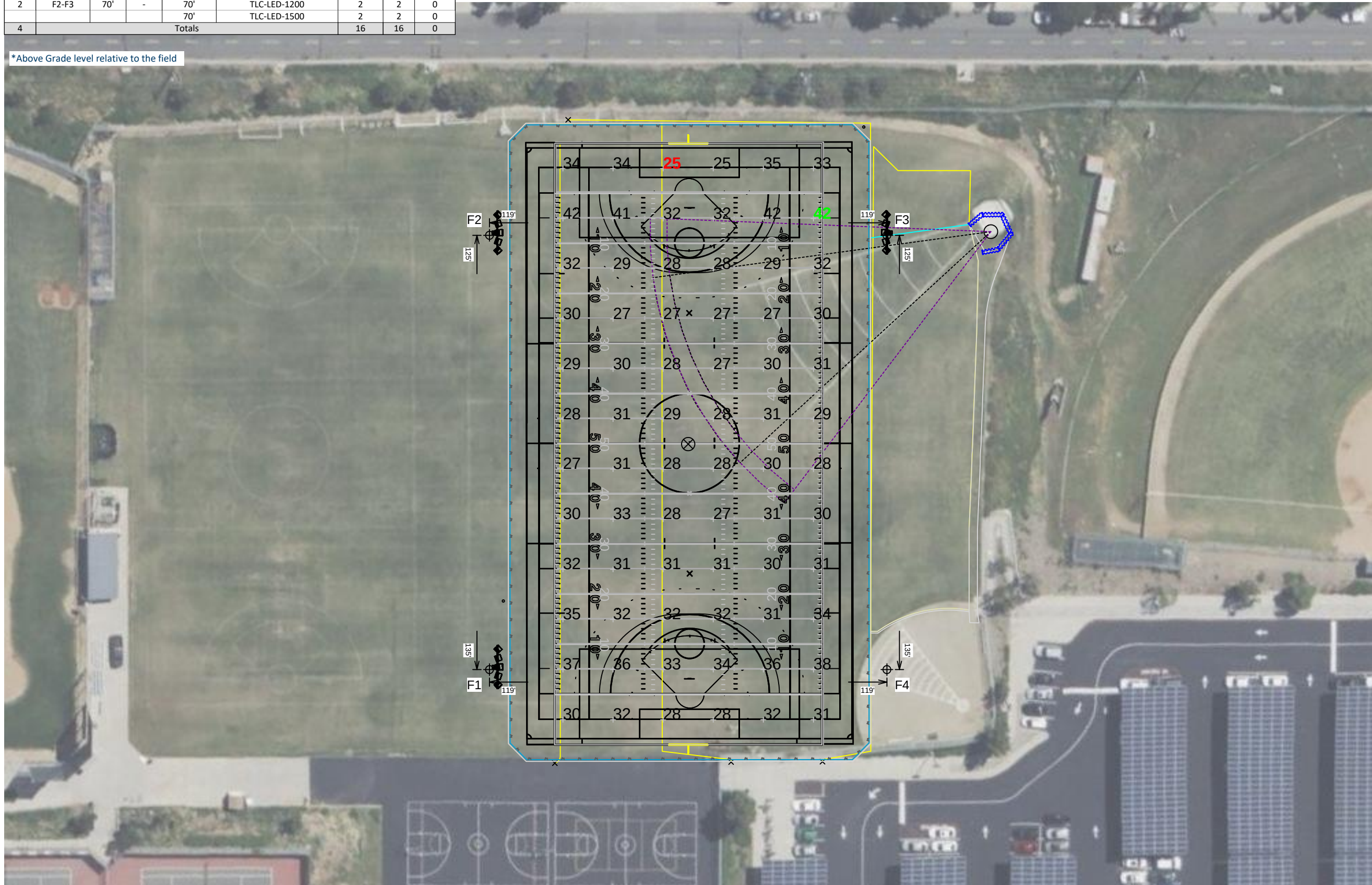
| Calculation Grid Summary |                                  |                  |      |         |         |         |          |             |
|--------------------------|----------------------------------|------------------|------|---------|---------|---------|----------|-------------|
| Grid Name                | Calculation Metric               | Illumination Ave |      |         |         |         | Circuits | Fixture Qty |
|                          |                                  | Ave              | Min  | Max     | Max/Min | Ave/Min |          |             |
| Football Practice        | Horizontal Illuminance           | 31.17            | 25   | 42      | 1.66    | 1.23    | B        | 16          |
| Spill @ 3ft.             | Horizontal Illuminance           | 0.0612           | 0.00 | 0.37    | -       | -       | A,B      | 16          |
| Spill @ 5ft.             | Max Candela Metric               | 1877.2039        | 0.00 | 9535.57 | -       | -       | A,B      | 16          |
| Spill @ 5ft.             | Max Vertical Illuminance Metric  | 0.1131           | 0.00 | 0.67    | -       | -       | A,B      | 16          |
| Spill @ 5ft.             | True Max Vert Illuminance Metric | 0.1039           | 0.00 | 0.62    | -       | -       | A,B      | 16          |

From Hometown to Professional



| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 2                              | F1<br>F4 | 70'  | -               | 70'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 3        | 3         | 0           |
| 2                              | F2-F3    | 70'  | -               | 70'               | TLC-LED-1200   | 2        | 2         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 2        | 2         | 0           |
| 4                              | Totals   |      |                 |                   |                | 16       | 16        | 0           |

\*Above Grade level relative to the field



## Mission Hills High School Recreation Field

San Marcos,CA

| Grid Summary |                   |
|--------------|-------------------|
| Name         | Football Practice |
| 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                      | 31.17    |
| Maximum                           | 42       |
| Minimum                           | 25       |
| Avg/Min                           | 1.23     |
| Guaranteed Max/Min                | 2.5      |
| Max/Min                           | 1.66     |
| UG (adjacent pts)                 | 1.43     |
| CU                                | 0.72     |
| No. of Points                     | 72       |
| LUMINAIRE INFORMATION             |          |
| Applied Circuits                  | B        |
| No. of Luminaires                 | 16       |
| Total Load                        | 21.12 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.

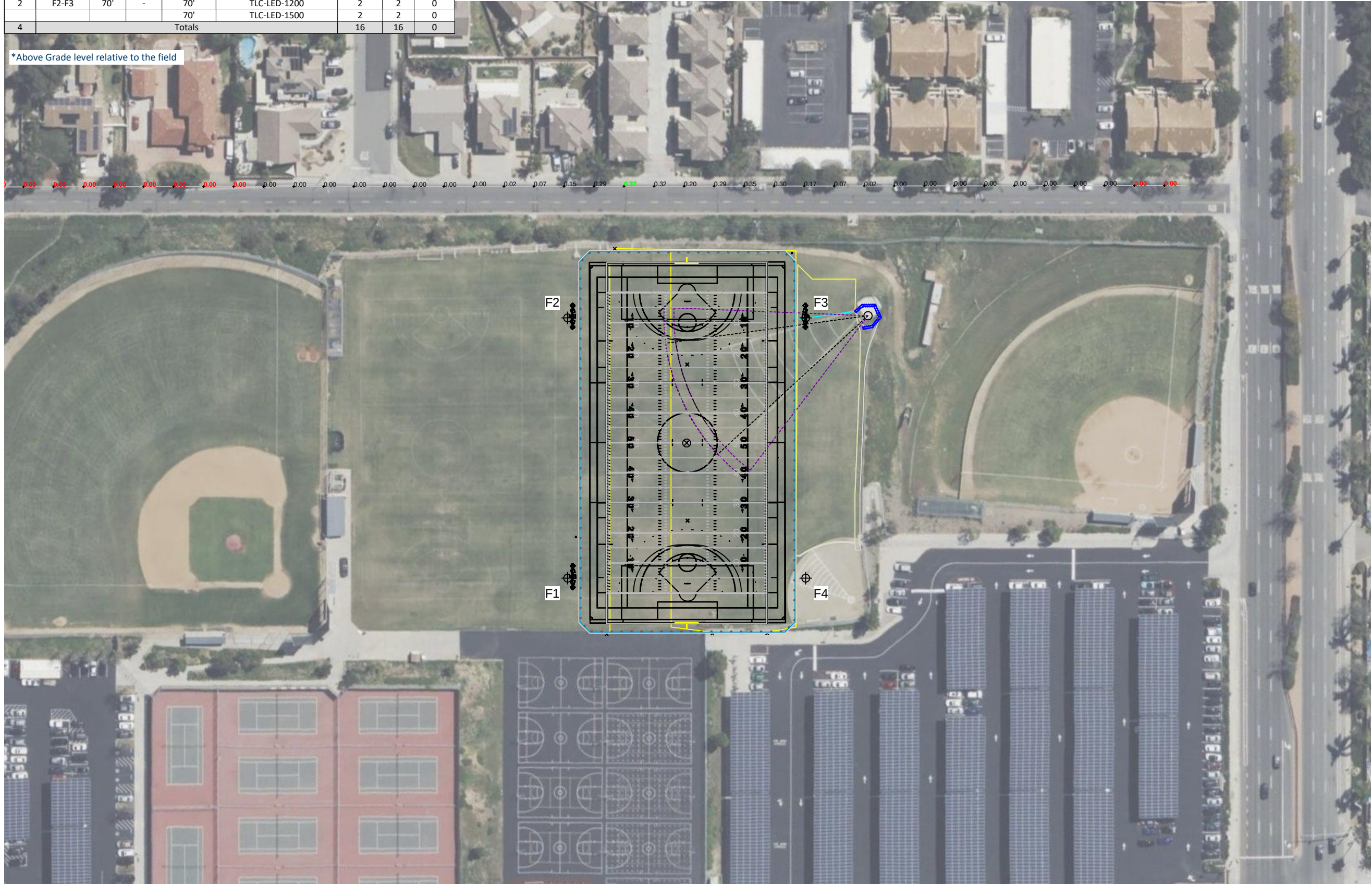


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## ILLUMINATION SUMMARY

| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 2                              | F1<br>F4 | 70'  | -               | 70'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 3        | 3         | 0           |
| 2                              | F2-F3    | 70'  | -               | 70'               | TLC-LED-1200   | 2        | 2         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 2        | 2         | 0           |
| 4                              | Totals   |      |                 |                   |                | 16       | 16        | 0           |

\*Above Grade level relative to the field





SCALE IN FEET 1 : 100

0'

100'

200'

ENGINEERED DESIGN

By: D.Palmer • File #227272F • 17-Jan-25

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

## Mission Hills High School Recreation Field

San Marcos,CA

| Grid Summary             |
|--------------------------|
| Name <b>Spill @ 3ft.</b> |
| Spacing 30.0'            |
| Height 3.0' above grade  |

| Illumination Summary  |                                |
|-----------------------|--------------------------------|
|                       | INITIAL HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                    |
| Scan Average          | 0.0612                         |
| Maximum               | 0.37                           |
| Minimum               | 0.00                           |
| CU                    | 0.00                           |
| No. of Points         | 43                             |
| LUMINAIRE INFORMATION |                                |
| Applied Circuits      | A,B                            |
| No. of Luminaires     | 16                             |
| Total Load            | 21.12 kW                       |

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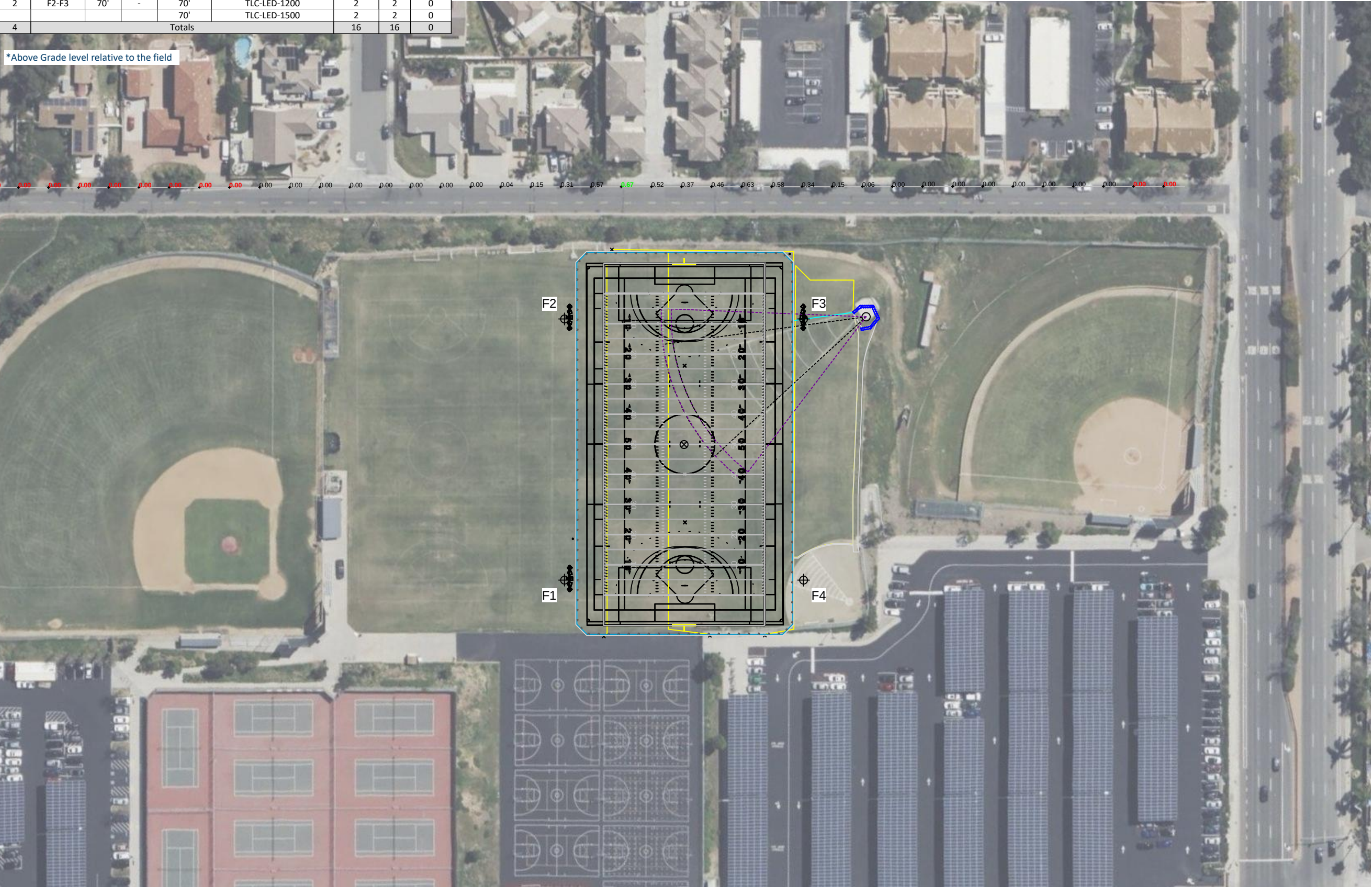


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## ILLUMINATION SUMMARY

| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 2                              | F1<br>F4 | 70'  | -               | 70'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 3        | 3         | 0           |
| 2                              | F2-F3    | 70'  | -               | 70'               | TLC-LED-1200   | 2        | 2         | 0           |
|                                |          |      |                 | 70'               | TLC-LED-1500   | 2        | 2         | 0           |
| 4                              | Totals   |      |                 |                   |                | 16       | 16        | 0           |

\*Above Grade level relative to the field



## Mission Hills High School Recreation Field

San Marcos,CA

| Grid Summary |                  |
|--------------|------------------|
| Name         | Spill @ 5ft.     |
| Spacing      | 30.0'            |
| Height       | 5.0' above grade |

| Illumination Summary             |          |
|----------------------------------|----------|
| INITIAL MAX VERTICAL FOOTCANDLES |          |
| Entire Grid                      |          |
| Scan Average                     | 0.1131   |
| Maximum                          | 0.67     |
| Minimum                          | 0.00     |
| CU                               | 0.00     |
| No. of Points                    | 43       |
| LUMINAIRE INFORMATION            |          |
| Applied Circuits                 | A,B      |
| No. of Luminaires                | 16       |
| Total Load                       | 21.12 kW |

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

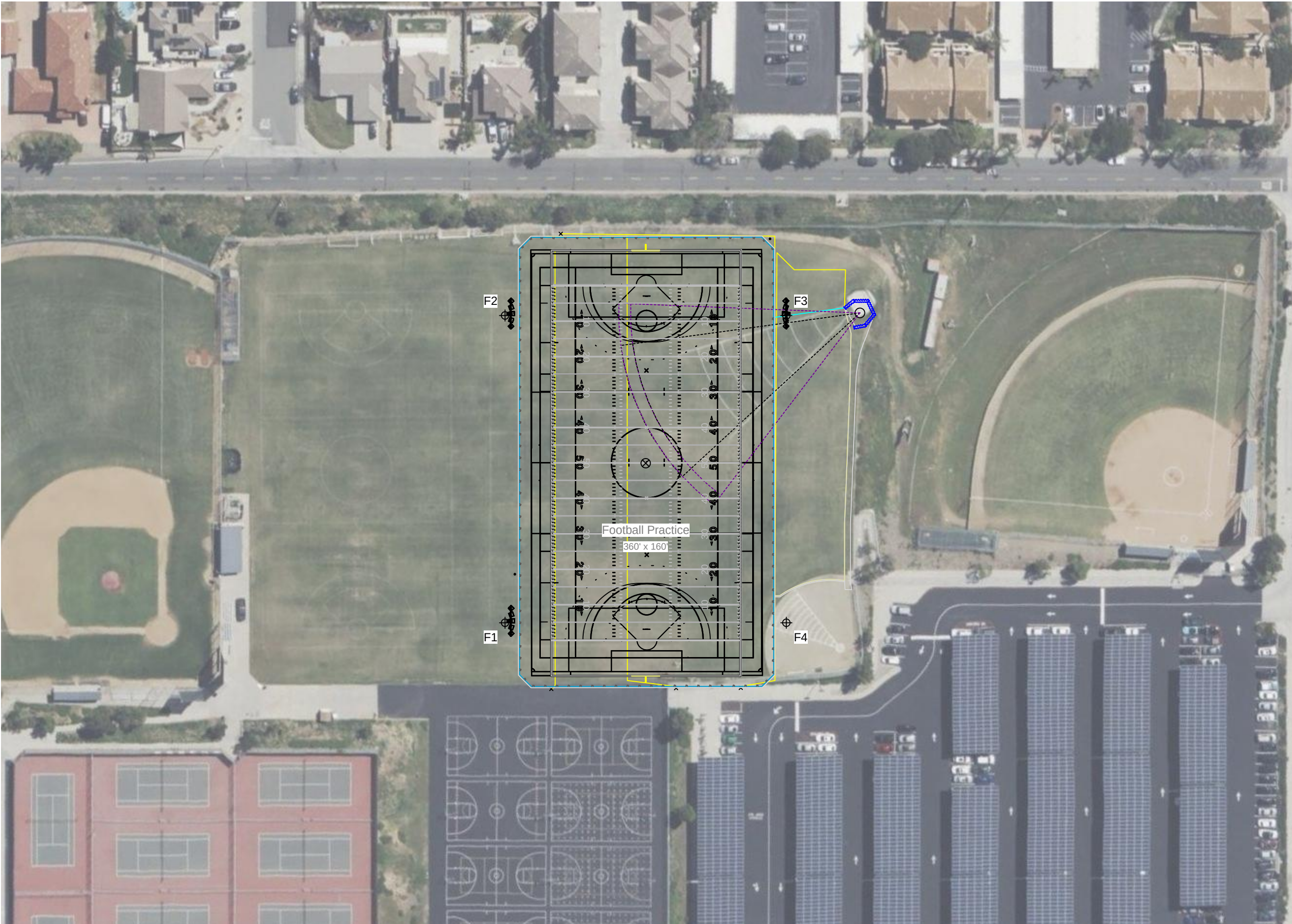
**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**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



Mission Hills High School Recreation Field

San Marcos,CA

Equipment Layout

**INCLUDES:**  
· Football Practice

**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 | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE |
| 2    | F1       | 70'  | -               | 70'               | TLC-LED-1200   | 1        |
|      | F4       |      |                 | 70'               | TLC-LED-1500   | 3        |
| 2    | F2-F3    | 70'  | -               | 70'               | TLC-LED-1200   | 2        |
|      |          |      |                 | 70'               | TLC-LED-1500   | 2        |
| 4    | Totals   |      |                 |                   |                | 16       |

Single Luminaire Amperage Draw Chart

| Driver 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                            |                                           |             |             |             |             |             |             |
| TLC-LED-1500                                    | 8.4                                       | 7.9         | 7.3         | 6.3         | 5.0         | 4.6         | 3.6         |
| TLC-LED-1200                                    | 6.9                                       | 6.5         | 6.0         | 5.2         | 4.2         | 3.8         | 3.0         |

