

Lighting System

| Pole/Fixture Summary |             |            |             |                |          |         |
|----------------------|-------------|------------|-------------|----------------|----------|---------|
| Pole ID              | Pole Height | Mtg Height | Fixture Qty | Luminaire Type | Load     | Circuit |
| F1-F4                | 90'         | 90'        | 1           | TLC-LED-1200   | 1.17 kW  | A       |
|                      |             | 90'        | 7           | TLC-LED-1500   | 9.87 kW  | A       |
|                      |             | 70'        | 1           | TLC-RGBW       | 0.64 kW  | B       |
| 4                    |             |            | 36          |                | 46.72 kW |         |

| Circuit Summary |             |          |             |
|-----------------|-------------|----------|-------------|
| Circuit         | Description | Load     | Fixture Qty |
| A               | Football    | 44.16 kW | 32          |
| B               | Bleachers   | 2.56 kW  | 4           |

| 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 | 4        |
| TLC-LED-1500         | LED 5700K - 75 CRI | 1410W   | 181,000 | >120,000 | >120,000 | >120,000 | 28       |
| TLC-RGBW             | LED 5700K - 75 CRI | 640W    | 28,500  | >120,000 | >120,000 | >120,000 | 4        |

| Single Luminaire Amperage Draw Chart            |  |                                           |             |             |             |             |             |
|-------------------------------------------------|--|-------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Driver Specifications<br>(.90 min power factor) |  | Line Amperage Per Luminaire<br>(max draw) |             |             |             |             |             |
| Single Phase Voltage                            |  | 208<br>(60)                               | 220<br>(60) | 240<br>(60) | 277<br>(60) | 347<br>(60) | 380<br>(60) |
| TLC-LED-1200                                    |  | 6.9                                       | 6.5         | 6.0         | 5.2         | 4.2         | 3.8         |
| TLC-LED-1500                                    |  | 8.4                                       | 7.9         | 7.3         | 6.3         | 5.0         | 4.6         |
| TLC-RGBW                                        |  | 4.5                                       | 4.3         | 3.8         | 3.3         | 2.7         | 1.9         |

Light Level Summary

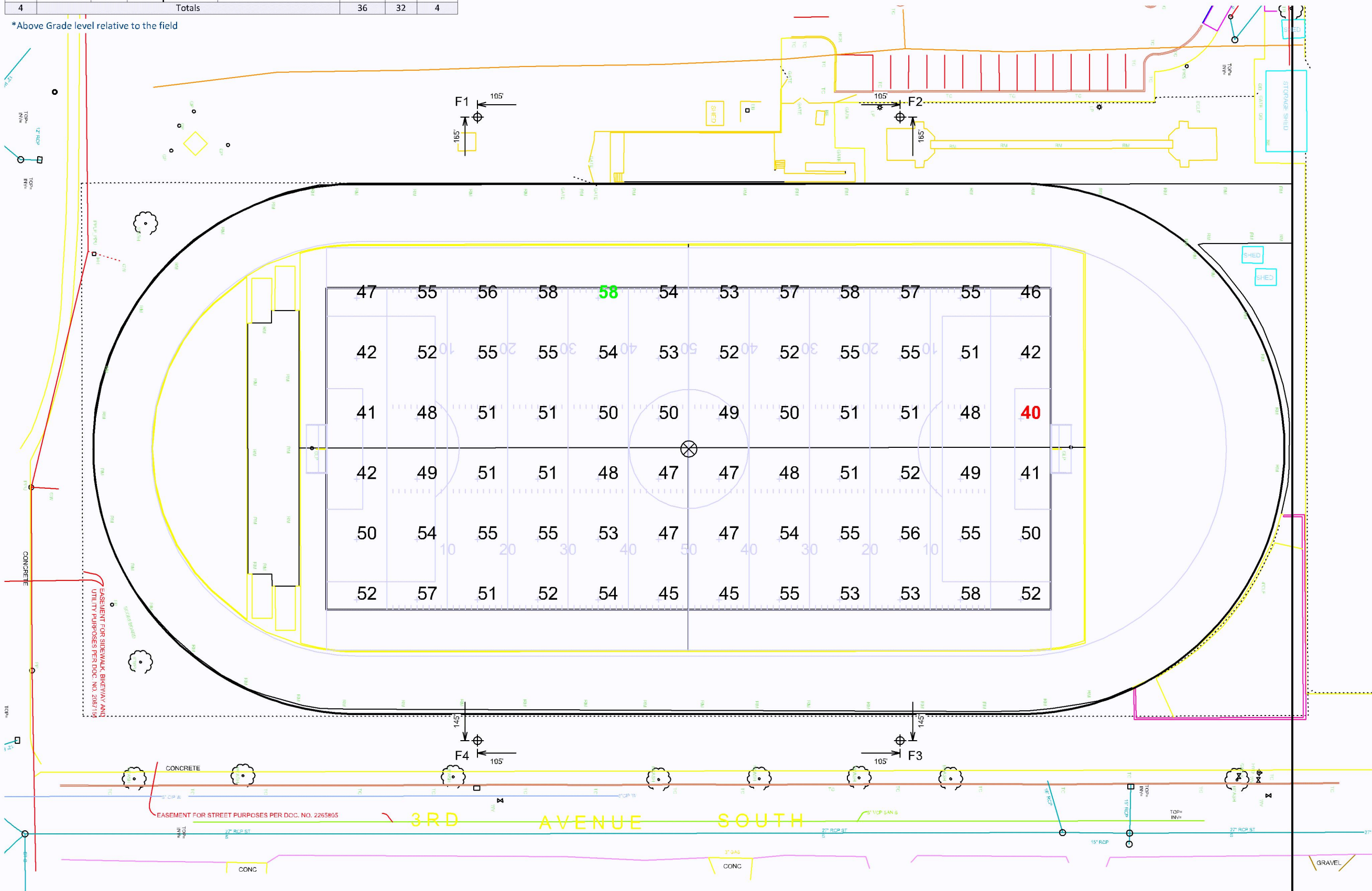
| Calculation Grid Summary   |                          |              |     |      |         |         |          |             |
|----------------------------|--------------------------|--------------|-----|------|---------|---------|----------|-------------|
| Grid Name                  | Calculation Metric       | Illumination |     |      |         |         | Circuits | Fixture Qty |
|                            |                          | Ave          | Min | Max  | Max/Min | Ave/Min |          |             |
| 100' S and E Property Line | Horizontal Illuminance   | 13.73        | 0   | 59   | -       | -       | A,B,C    | 36          |
| Away Bleachers             | Horizontal               | 2.38         | 2   | 3    | 1.75    | 1.32    | B        | 4           |
| Football                   | Horizontal Illuminance   | 51.20        | 40  | 58   | 1.44    | 1.27    | A,C      | 32          |
| Home Bleachers             | Horizontal               | 3.27         | 3   | 4    | 1.23    | 1.10    | B        | 4           |
| Property Glare             | Max Candela (by Fixture) | 2400.42      | 11  | 5779 | 542.91  | 225.49  | A,B,C    | 36          |
| Property Spill             | Horizontal               | 0.07         | 0   | 0    | -       | -       | A,B,C    | 36          |
| Soccer                     | Horizontal Illuminance   | 50.25        | 40  | 57   | 1.41    | 1.25    | A        | 32          |
| Track                      | Horizontal Illuminance   | 20.16        | 7   | 36   | 5.10    | 2.87    | A        | 32          |

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 |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 0         | 1           |
| 4                              | Totals   |      |                 |                   |                | 36       | 32        | 4           |

\*Above Grade level relative to the field



SCALE IN FEET 1 : 50  
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Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

PL202300157

## Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |                  |
|--------------|------------------|
| Name         | Football         |
| Size         | 360' x 160'      |
| Spacing      | 30.0' x 30.0'    |
| Height       | 3.0' above grade |

| Illumination Summary  |                                   |
|-----------------------|-----------------------------------|
|                       | MAINTAINED HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                       |
| Guaranteed Average    | 50                                |
| Scan Average          | 51.20                             |
| Maximum               | 58                                |
| Minimum               | 40                                |
| Avg/Min               | 1.27                              |
| Guaranteed Max/Min    | 2                                 |
| Max/Min               | 1.44                              |
| UG (adjacent pts)     | 1.24                              |
| CU                    | 0.58                              |
| No. of Points         | 72                                |
| LUMINAIRE INFORMATION |                                   |
| Applied Circuits      | A,C                               |
| No. of Luminaires     | 32                                |
| Total Load            | 44.16 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.

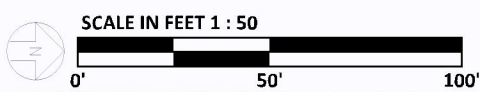
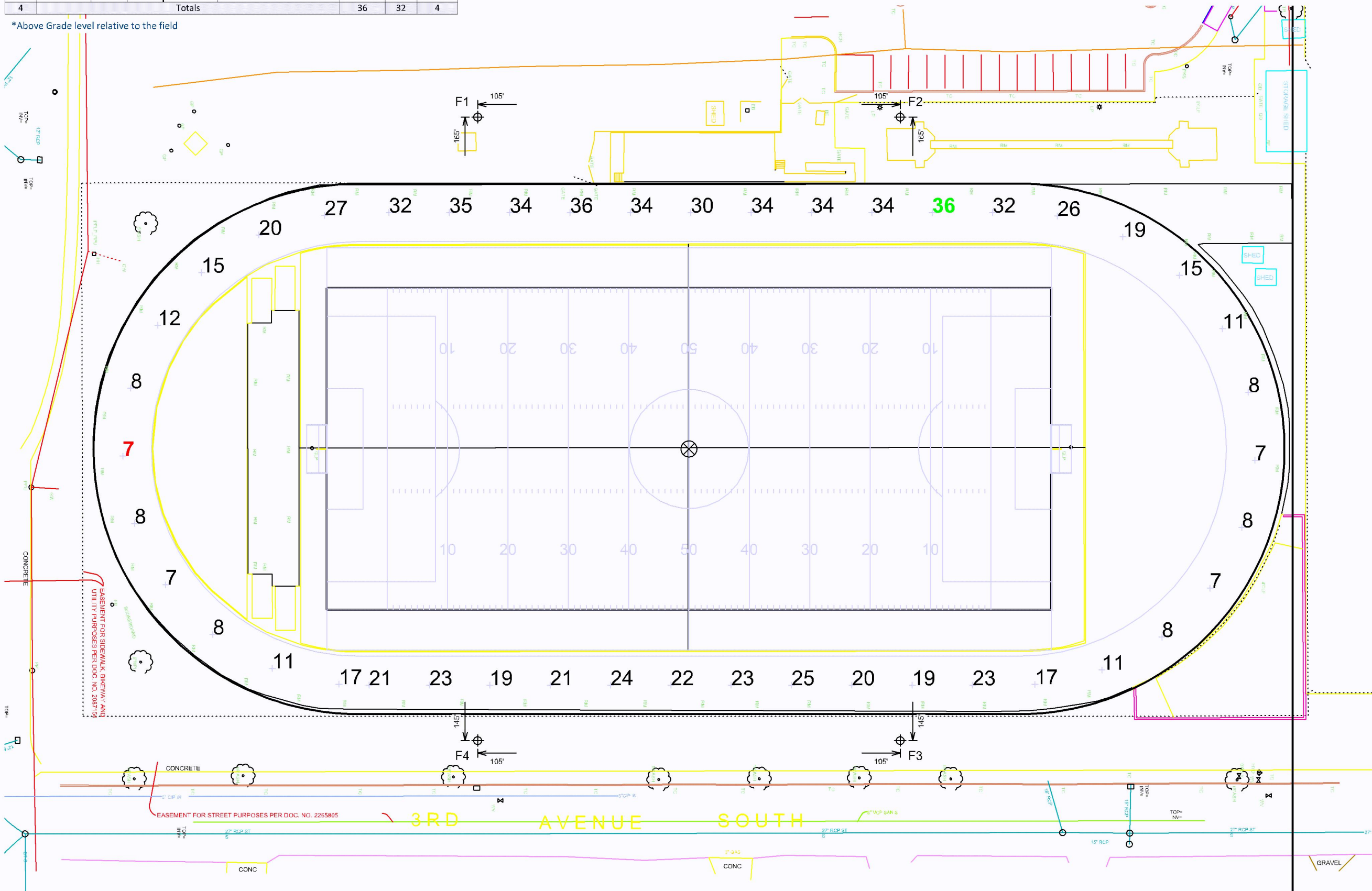


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## ILLUMINATION SUMMARY

| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 0         | 1           |
| 4                              | Totals   |      |                 |                   |                | 36       | 32        | 4           |

\*Above Grade level relative to the field



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

PL202300157

## Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |                  |
|--------------|------------------|
| Name         | Track            |
| Size         | Irregular        |
| Spacing      | 30.0' x 30.0'    |
| Height       | 3.0' above grade |

| Illumination Summary              |          |
|-----------------------------------|----------|
| MAINTAINED HORIZONTAL FOOTCANDLES |          |
| Scan Average                      | 20.16    |
| Maximum                           | 36       |
| Minimum                           | 7        |
| Avg/Min                           | 2.87     |
| Max/Min                           | 5.10     |
| UG (adjacent pts)                 | 0.00     |
| CU                                | 0.14     |
| No. of Points                     | 44       |
| LUMINAIRE INFORMATION             |          |
| Applied Circuits                  | A        |
| No. of Luminaires                 | 32       |
| Total Load                        | 44.16 kW |

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

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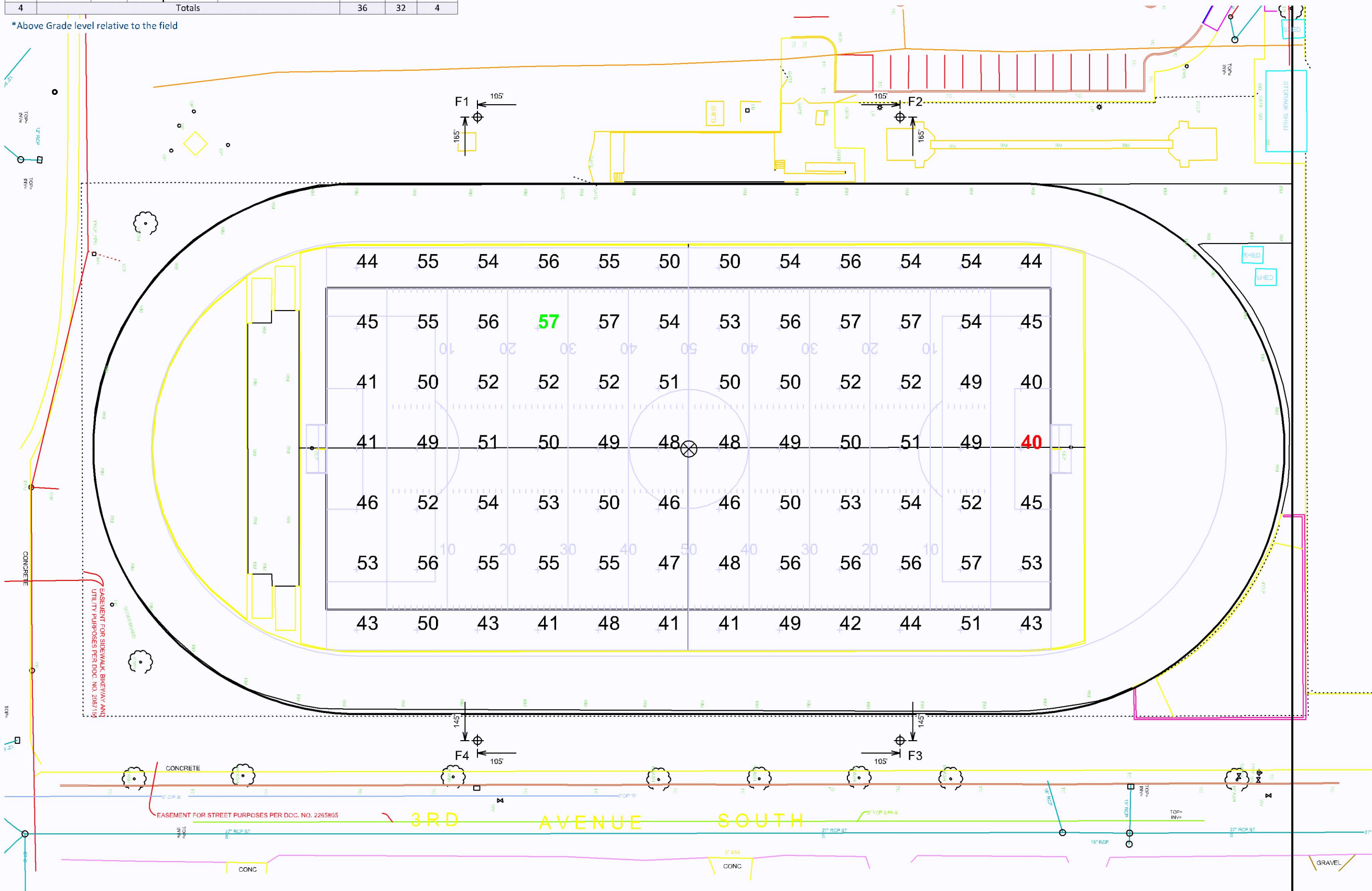


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## ILLUMINATION SUMMARY

| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 0         | 1           |
| 4                              | Totals   |      |                 |                   |                | 36       | 32        | 4           |

\*Above Grade level relative to the field



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PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary            |  |
|-------------------------|--|
| Name Soccer             |  |
| Size 360' x 200'        |  |
| Spacing 30.0' x 30.0'   |  |
| Height 3.0' above grade |  |

| Illumination Summary  |                                   |
|-----------------------|-----------------------------------|
|                       | MAINTAINED HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                       |
| Guaranteed Average    | 50                                |
| Scan Average          | 50.25                             |
| Maximum               | 57                                |
| Minimum               | 40                                |
| Avg/Min               | 1.25                              |
| Guaranteed Max/Min    | 2                                 |
| Max/Min               | 1.41                              |
| UG (adjacent pts)     | 1.34                              |
| CU                    | 0.67                              |
| No. of Points         | 84                                |
| LUMINAIRE INFORMATION |                                   |
| Applied Circuits      | A                                 |
| No. of Luminaires     | 32                                |
| Total Load            | 44.16 kW                          |

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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 |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 0         | 1           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 0         | 7           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 1         | 0           |
| 4                              | Totals   |      |                 |                   |                | 36       | 4         | 32          |

\*Above Grade level relative to the field

PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |                            |
|--------------|----------------------------|
|              | <b>Name</b> Home Bleachers |
|              | Size 360' x 200'           |
|              | Spacing 10.0' x 10.0'      |
|              | Height 3.0' above grade    |

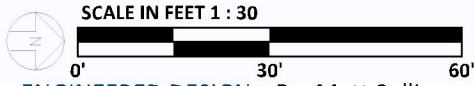
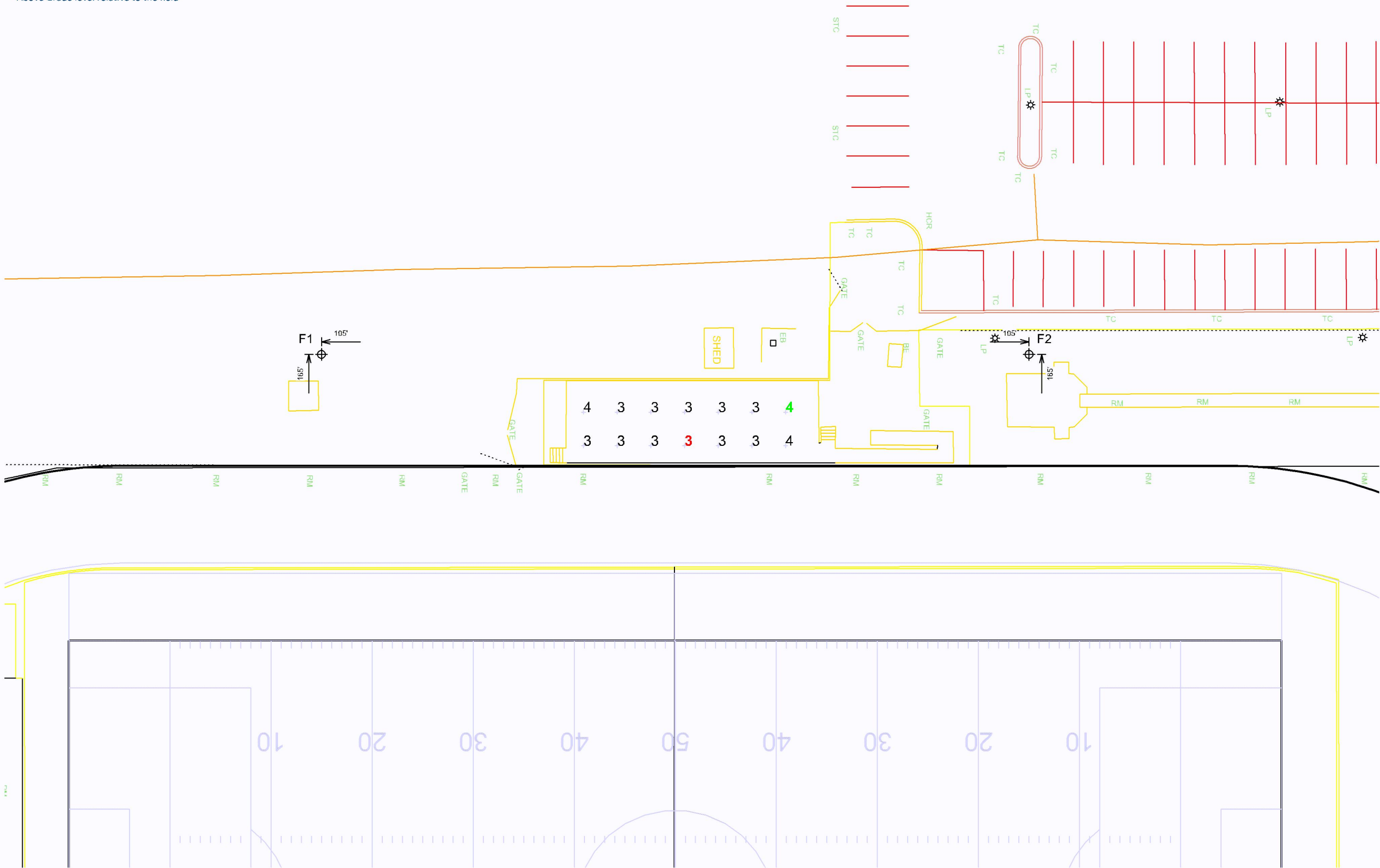
| Illumination Summary  |                                   |
|-----------------------|-----------------------------------|
|                       | MAINTAINED HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                       |
| Scan Average          | 3.27                              |
| Maximum               | 4                                 |
| Minimum               | 3                                 |
| Avg/Min               | 1.10                              |
| Max/Min               | 1.23                              |
| UG (adjacent pts)     | 1.11                              |
| CU                    | 0.05                              |
| No. of Points         | 14                                |
| LUMINAIRE INFORMATION |                                   |
| Applied Circuits      | B                                 |
| No. of Luminaires     | 4                                 |
| Total Load            | 2.56 kW                           |

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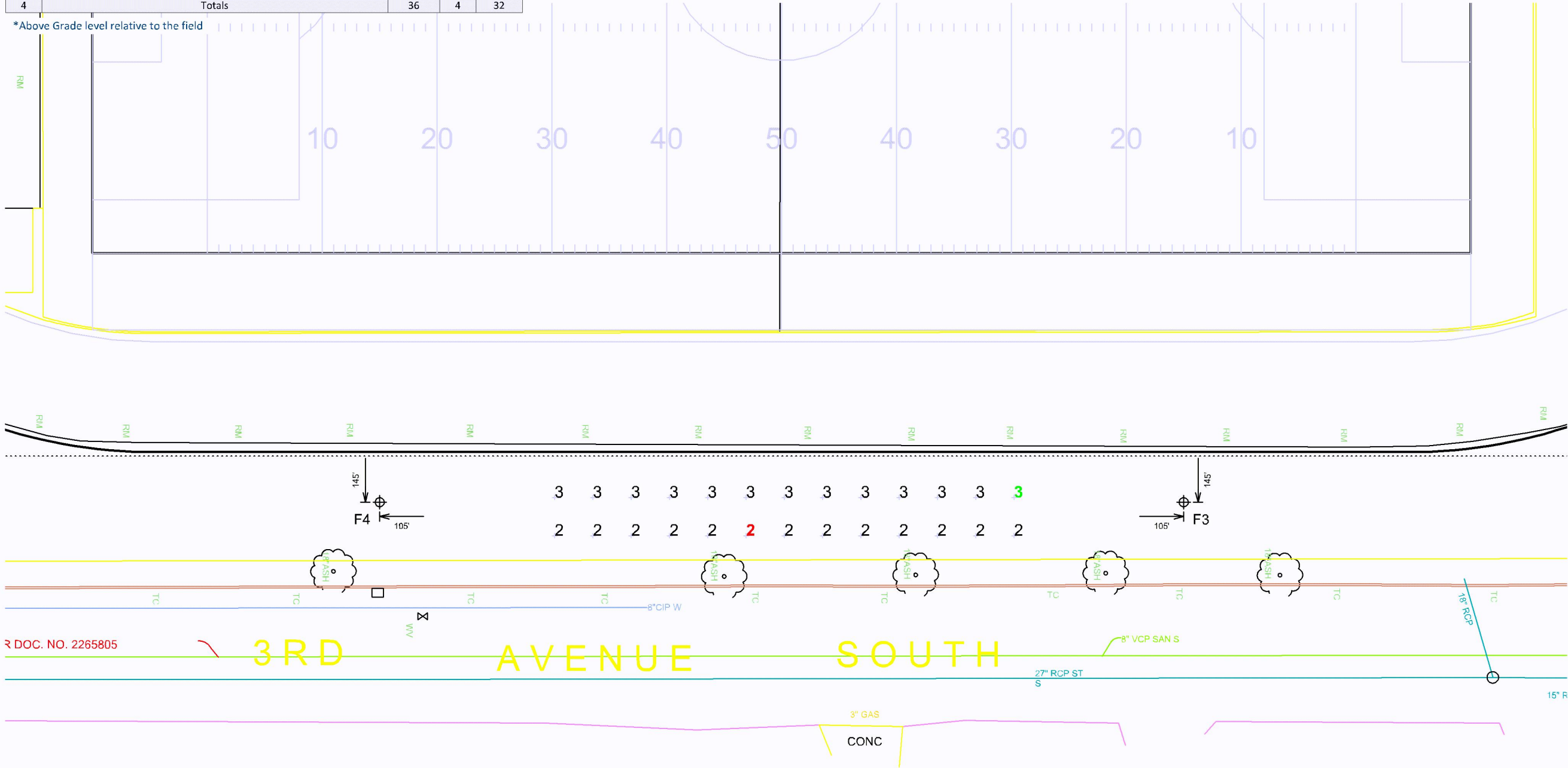


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ILLUMINATION SUMMARY

| Equipment List For Areas Shown |          |      |                 |                   |                |          |           |             |
|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 0         | 1           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 0         | 7           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 1         | 0           |
| 4                              | Totals   |      |                 |                   |                | 36       | 4         | 32          |

\*Above Grade level relative to the field



PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |                            |
|--------------|----------------------------|
|              | <b>Name</b> Away Bleachers |
|              | Size 360' x 200'           |
|              | Spacing 10.0' x 10.0'      |
|              | Height 3.0' above grade    |

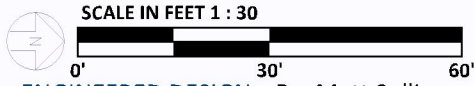
| Illumination Summary  |                                   |
|-----------------------|-----------------------------------|
|                       | MAINTAINED HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                       |
| Scan Average          | 2.38                              |
| Maximum               | 3                                 |
| Minimum               | 2                                 |
| Avg/Min               | 1.32                              |
| Max/Min               | 1.75                              |
| UG (adjacent pts)     | 1.51                              |
| CU                    | 0.06                              |
| No. of Points         | 26                                |
| LUMINAIRE INFORMATION |                                   |
| Applied Circuits      | B                                 |
| No. of Luminaires     | 4                                 |
| Total Load            | 2.56 kW                           |

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|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 1         | 0           |
| 4                              | Totals   |      |                 |                   |                | 36       | 36        | 0           |

\*Above Grade level relative to the field

PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |                  |  |
|--------------|------------------|--|
| Name         | Property Spill   |  |
| Size         | 360' x 200'      |  |
| Spacing      | 30.0' x 10.0'    |  |
| Height       | 3.0' above grade |  |

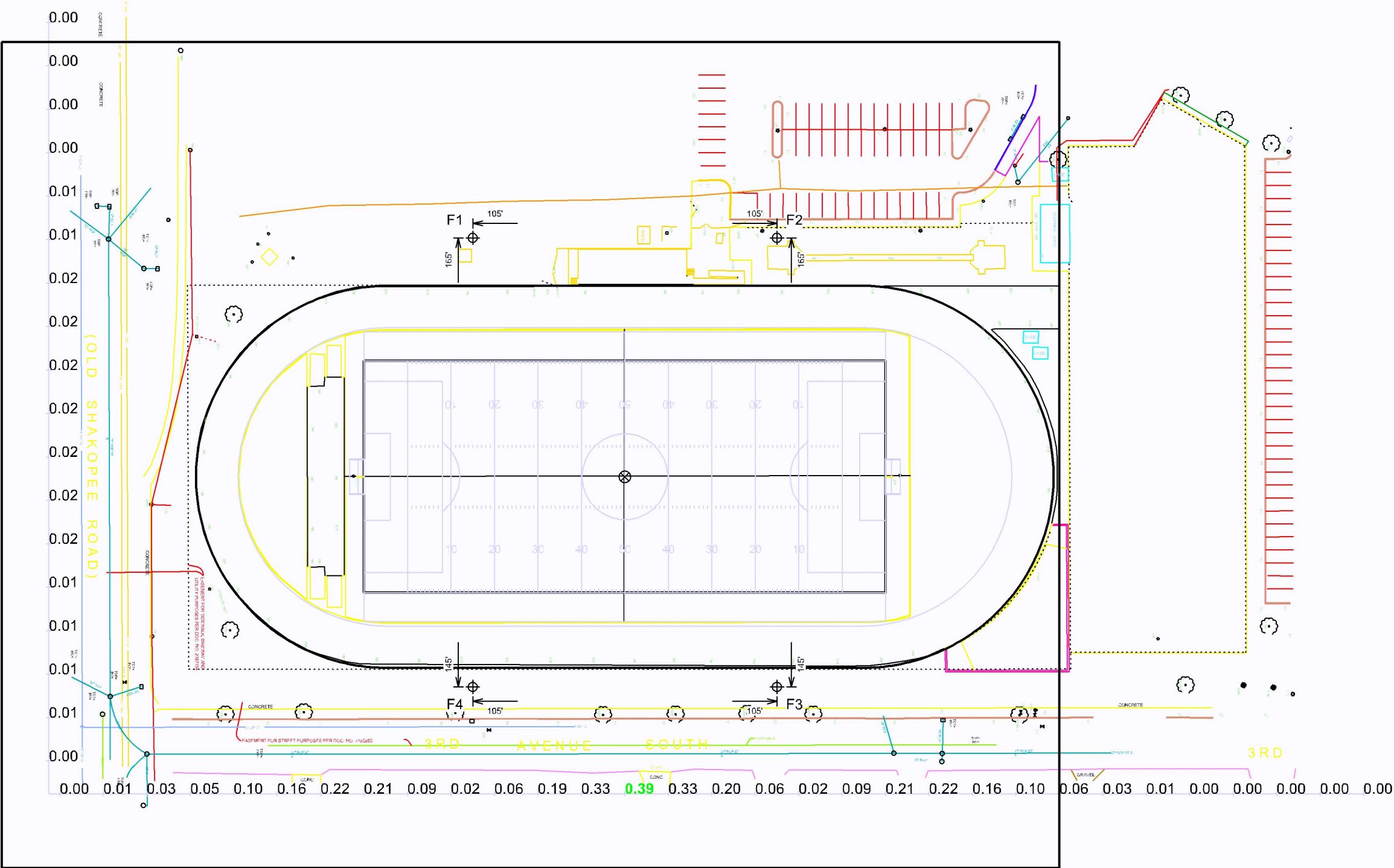
| Illumination Summary  |                                   |
|-----------------------|-----------------------------------|
|                       | MAINTAINED HORIZONTAL FOOTCANDLES |
|                       | Entire Grid                       |
| Scan Average          | 0.07                              |
| Maximum               | 0                                 |
| Minimum               | 0                                 |
| Avg/Min               | -                                 |
| Max/Min               | -                                 |
| UG (adjacent pts)     | 0.00                              |
| CU                    | 0.00                              |
| No. of Points         | 49                                |
| LUMINAIRE INFORMATION |                                   |
| Applied Circuits      | A,B,C                             |
| No. of Luminaires     | 36                                |
| Total Load            | 46.72 kW                          |

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|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 1         | 0           |
| 4                              | Totals   |      |                 |                   |                | 36       | 36        | 0           |

\*Above Grade level relative to the field

PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary |         |                  |
|--------------|---------|------------------|
|              | Name    | Property Glare   |
|              | Size    | 360' x 200'      |
|              | Spacing | 30.0' x 10.0'    |
|              | Height  | 3.0' above grade |

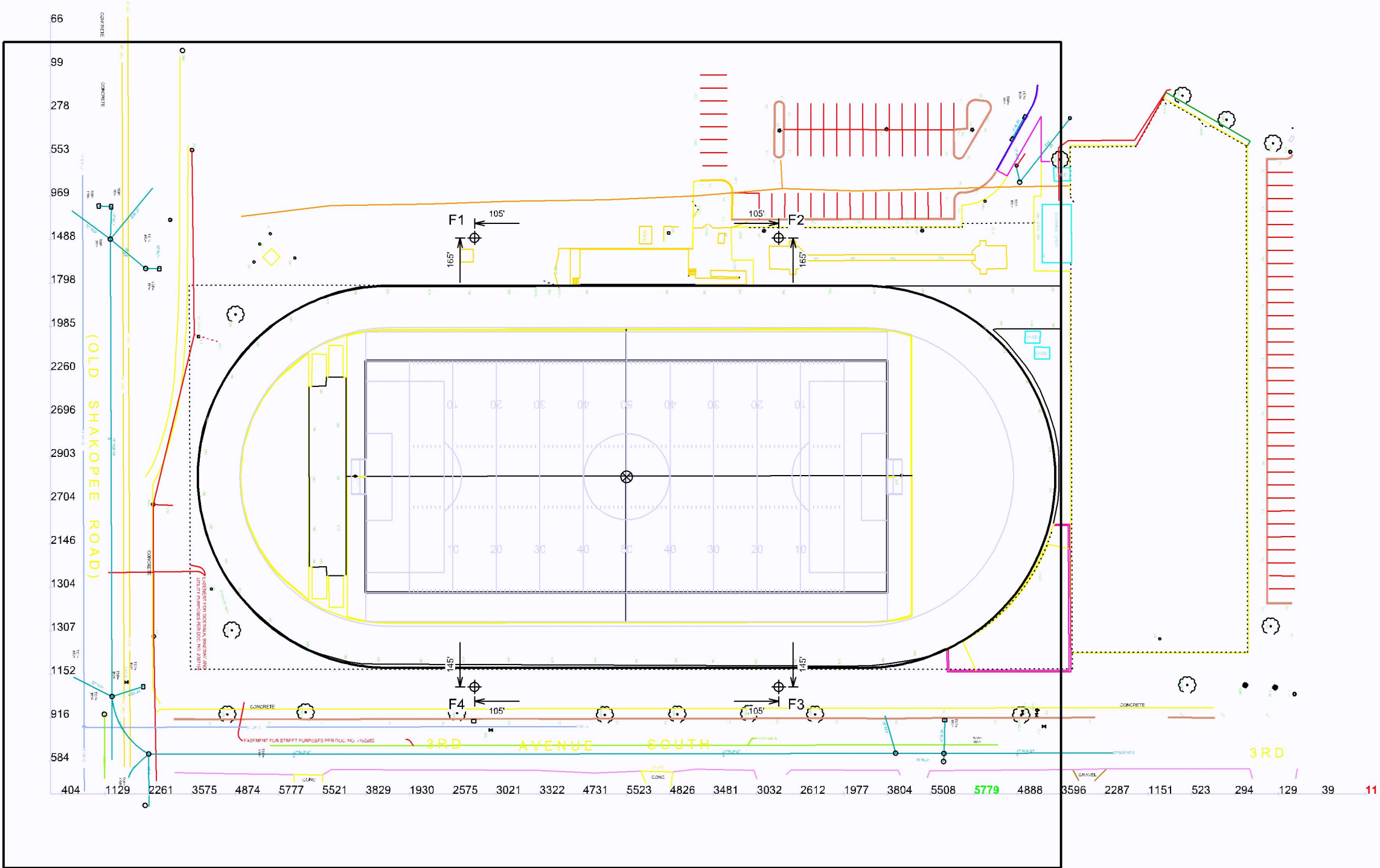
| Illumination Summary  |                                      |  |
|-----------------------|--------------------------------------|--|
|                       | MAINTAINED MAX CANDELA (PER FIXTURE) |  |
|                       | Entire Grid                          |  |
| Scan Average          | 2400.42                              |  |
| Maximum               | 5779                                 |  |
| Minimum               | 11                                   |  |
| Avg/Min               | 225.49                               |  |
| Max/Min               | 542.91                               |  |
| UG (adjacent pts)     | 0.00                                 |  |
| CU                    | 0.00                                 |  |
| No. of Points         | 49                                   |  |
| LUMINAIRE INFORMATION |                                      |  |
| Applied Circuits      | A,B,C                                |  |
| No. of Luminaires     | 36                                   |  |
| Total Load            | 46.72 kW                             |  |

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|--------------------------------|----------|------|-----------------|-------------------|----------------|----------|-----------|-------------|
| Pole                           |          |      |                 | Luminaires        |                |          |           |             |
| QTY                            | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE | THIS GRID | OTHER GRIDS |
| 4                              | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        | 1         | 0           |
|                                |          |      |                 | 90'               | TLC-LED-1500   | 7        | 7         | 0           |
|                                |          |      |                 | 70'               | TLC-RGBW       | 1        | 1         | 0           |
| 4                              | Totals   |      |                 |                   |                | 36       | 36        | 0           |

\*Above Grade level relative to the field

PL202300157

Bloomington Kennedy High School Football

Bloomington, MN

| Grid Summary                    |  |
|---------------------------------|--|
| Name 100' S and E Property Line |  |
| Size 730' x 570'                |  |
| Spacing 10.0' x 10.0'           |  |
| Height 3.0' above grade         |  |

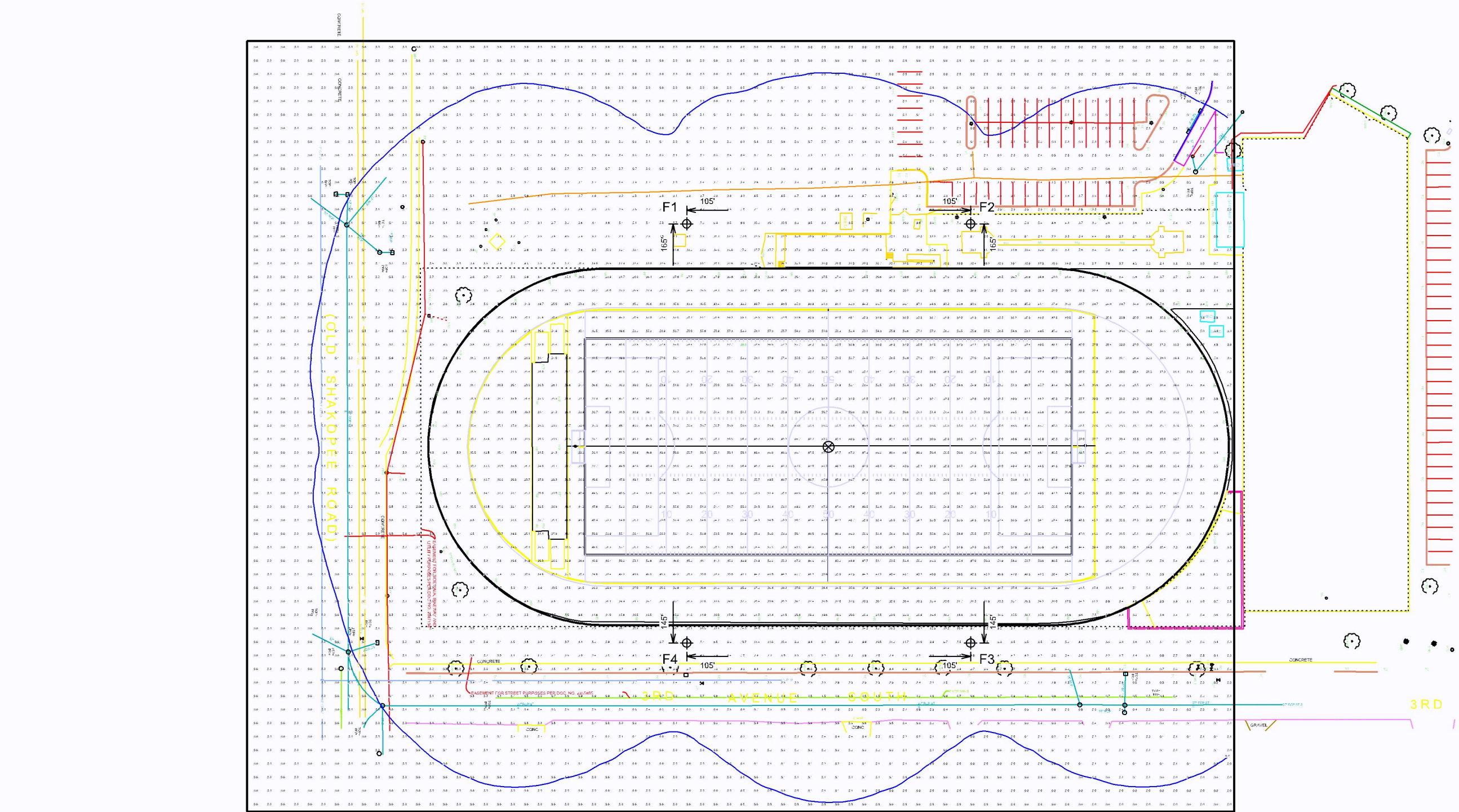
| Illumination Summary              |          |
|-----------------------------------|----------|
| MAINTAINED HORIZONTAL FOOTCANDLES |          |
| Entire Grid                       |          |
| Scan Average                      | 13.73    |
| Maximum                           | 59       |
| Minimum                           | 0        |
| Avg/Min                           | -        |
| Max/Min                           | -        |
| UG (adjacent pts)                 | 4.56     |
| CU                                | 0.98     |
| No. of Points                     | 4161     |
| LUMINAIRE INFORMATION             |          |
| Applied Circuits                  | A,B,C    |
| No. of Luminaires                 | 36       |
| Total Load                        | 46.72 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.



SCALE IN FEET 1 : 80

0' 80' 160'

ENGINEERED DESIGN

By: Matt Sullivan • File #160225G • 24-Jun-24

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

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ILLUMINATION SUMMARY

Equipment Layout

**INCLUDES:**

- 100' S and E Property Line
- Football
- Soccer
- Track

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

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

Equipment List For Areas Shown

| Pole |          |      |                 | Luminaires        |                |          |
|------|----------|------|-----------------|-------------------|----------------|----------|
| QTY  | LOCATION | SIZE | GRADE ELEVATION | ABOVE GRADE LEVEL | LUMINAIRE TYPE | QTY/POLE |
| 4    | F1-F4    | 90'  | -               | 90'               | TLC-LED-1200   | 1        |
|      |          |      |                 | 90'               | TLC-LED-1500   | 7        |
|      |          |      |                 | 70'               | TLC-RGBW       | 1        |
| 4    | Totals   |      |                 |                   |                | 36       |

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-1200                                    | 6.9                                       | 6.5         | 6.0         | 5.2         | 4.2         | 3.8         | 3.0         |
| TLC-LED-1500                                    | 8.4                                       | 7.9         | 7.3         | 6.3         | 5.0         | 4.6         | 3.6         |
| TLC-RGBW                                        | 4.5                                       | 4.3         | 3.8         | 3.3         | 2.7         | 1.9         | 1.9         |

