

The specification below has been prepared to assist architects and design professionals in the preparation of a specification section covering lighting including interior recessed lighting, track lighting and custom lighting fixtures.

Utilize these paragraphs to insert text into Specification Section 26 51000 - Interior Lighting or similarly titled section governing this work.

For assistance with this section, contact **Modular International Inc.** by calling **412-734-9000**, by email at info@modularinternational.com, or visit our website at <https://www.modularinternational.com/>. A Microsoft Word version of this file can be downloaded [HERE](#).

PART 1 - GENERAL

1.5 SUBMITTALS

Include the following for submission of sample(s) for verification.

- A. Product Data: For each type of luminaire, arranged in order of luminaire designation. Include data on features, accessories, finishes, and the following:
 - 1. Material and physical description of luminaire including dimensions.
 - 2. Energy-efficiency data.
 - 3. Life, output (lumens, CCT, and CRI), Kelvin temperature, and energy-efficiency data for LED light modules.
 - 4. LED power supplies.
 - 5. Types of LED's, including manufacturer, wattage, and Color Rendering Index (CRI) and color temperature in degrees Kelvin (K).

- B. Shop Drawings shall:
 - 1. Show detail of nonstandard or custom luminaires.
 - 2. Indicate dimensions, weights, method of field assembly, components, features and accessories.
 - 3. For custom luminaires, modified luminaires or linear luminaires, submit scaled drawings prepared by the manufacturer showing all details of construction, lengths in runs, pendant or power feed locations, accessories, finishes and lists of materials.
 - 4. This Contractor shall provide the manufacturer with accurate field dimensions where required.
 - 5. Wiring diagrams shall detail wiring for luminaires and differentiate between manufacturer installed and field installed wiring.
 - 6. Review of luminaire submittals which indicate voltage, mounting condition, or quantities shall not be considered to be approval of said voltage, mounting condition or quantities. This Contractor shall field verify voltage and actual mounting condition and method.

1.6 CUSTOM LUMINAIRES

- A. All custom luminaires require a prototype to be submitted prior to commencement of fabrication. The purpose of the prototype will be to review construction, LED placement within luminaire, LED type, optical assembly, finishes, etc. Modifications may be required as a result of prototype review.

1.7 CLOSEOUT SUBMITTALS

- A. Provide a list of all arrays and driver types used on Project; use ANSI and manufacturers' codes.

1.8 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver luminaires individually wrapped in factory fabricated fiberboard type containers.
- B. Handle luminaires carefully to prevent breakage, denting and scouring of the luminaire finish.
- C. Store product in a clean, dry space, protected from weather.

1.10 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to the Authorities Having Jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.
- D. Designated manufacturers are listed to define the requirements for quality and function of the specified product.

1.11 COORDINATION

- A. Coordinate layout and installation of luminaires with ceiling system and other construction that penetrates ceilings or is supported by them including mechanical system, fire suppression, and technology and partition assemblies.

1.12 WARRANTY

- A. Special Warranty for LEDs' and Drivers: Manufacturers standard form in which manufacturer of LED's and drivers agrees to replace components that fails in materials or workmanship within specified warranty period. Consult with manufacturer regarding if installation costs of said materials are covered under warranty.

1. LED arrays: 5 years from date of install.

2. Drivers: 5 years from date of install

PART 2 - PRODUCTS

MATERIALS - GENERAL

- A. Recessed Luminaires: Comply with NEMA LE 4 for ceiling compatibility for recessed luminaires.
- B. Luminaires: Comply with UL 1598.
- C. Metal Parts: Free of burrs, sharp corners and edges. Metal work shall be free of tool marks and dents and shall have accurate angles bent as sharply as compatible with the gauges of the required metal. Intersections and joints shall be formed true and of adequate strength and structural rigidity to prevent any distortion after assembly. All miters shall be in accurate alignment with abutting intersection members.
- D. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging. Luminaires to be painted after fabrication.
- E. Luminaire hardware to comply with the following material standards: For steel and aluminum luminaires, all screws, bolts, nuts and other fastening and latching hardware shall be plated steel. For stainless steel and exterior luminaires, all hardware shall be stainless steel.
- F. Each luminaire that has an array with a beam pattern or a spread lens that defines beam orientation may contain an optional locking device(s) to insure the orientation is not disturbed during array replacement or cleaning.
- G. All luminaires and drivers shall operate within the temperature limits of their design and as specified by UL in the applications and mounting conditions specified.
- H. Luminaires recessed in suspended ceilings where the space above the ceiling is either an air supply or return plenum shall conform to NEC Article 300-22.
- I. Fixtures installed in "hard" ceilings shall have all connections accessible through the luminaire.
- J. For weatherproof or vapor-tight installations, finishes of luminaires and accessories shall be a premium 5 stage TGIC polyester powder coat paint minimum 2.5 mils thick, applied to factory assembled and -tested luminaires before shipping, so that the entire assembly is completely corrosion resistant for the service intended.
- K. Luminaires for use outdoors or in areas designated as damp locations shall be suitably gasketed to prevent the entrance of moisture. Provide approved wire mesh screens for ventilation openings. Dissimilar metals shall be separated by non-conductive material to prevent galvanic action.
- L. Factory-Applied Labels: Comply with UL 1598. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing

angles when light modules are in place.

LIGHTING MATERIALS

Include one or more of the following fixtures below depending on specific lighting needs for project. Refer to Modular International Inc. technical information or contact Modular International Inc. for assistance in selecting standard products, custom fixture design or editing the following paragraphs to suit your project requirements.

2.3 LUMINAIRES

A. Manufacturers: Modular International Inc., [etc.]

1. Basis of Design Product:

A. Apertures®:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [New Work] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Three Light] [Four Light]
4. Aperture Shape: [Round] [Square] [Rectangle]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]
9. Options: [locking ring set] [filter media] [pull down yokes]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

B. Linears®:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [New Work] [Recessed] [To match Architect's sample.]
3. Type: [Number of Lights] [spacing on center] [90 degree corner section] [45 degree corner section]
4. Aperture: [Trimmed] [Trimless]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]
9. Options: [locking ring set] [filter media] [pull down yokes]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

C. Trimless:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [New Work] [Old Work] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Three Light] [Four Light] [Four Light Square]
4. Aperture Shape: [Rectangle]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Stainless Steel] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]

9. Options: [locking ring set] [filter media] [pull down yokes]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

D. Trimmed:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [New Work] [Old Work] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Three Light] [Four Light] [Four Light Square]
4. Aperture Shape: [Rectangle]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Stainless Steel] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]
9. Options: [locking ring set] [filter media] [pull down yokes]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

E. Surface:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [Solid] [Layered] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Three Light] [Four Light] [Four Light Square]
4. Aperture Shape: [Round]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Aluminum] [Stainless Steel] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]
9. Options: [locking ring set] [filter media] [pull down yokes]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

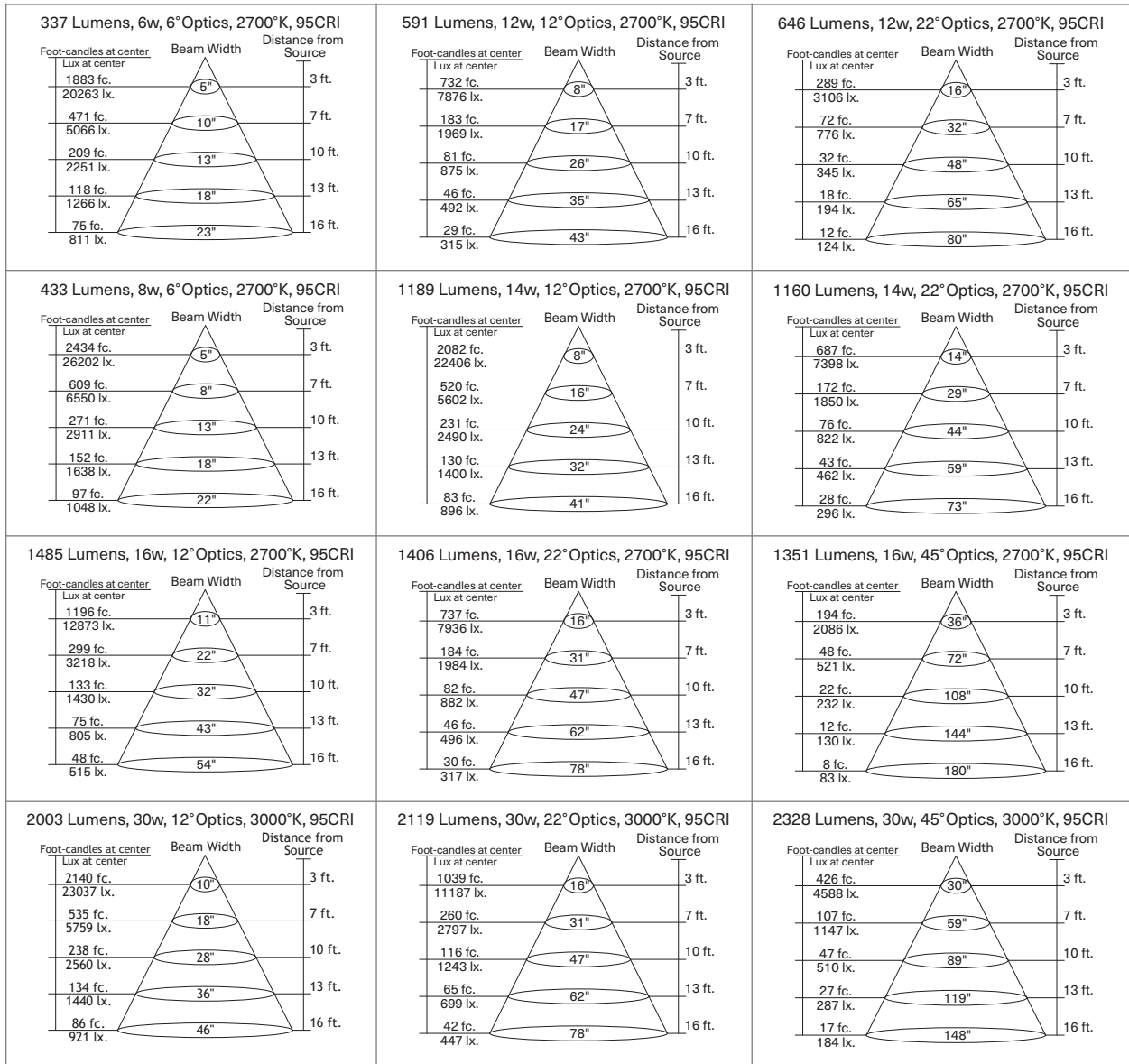
F. Boomerang:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [New Work] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Four Light Square]
4. Canopy: [Recessed] [Surface]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [Aluminum/ Stainless Steel] [Custom]
8. Incorporated: [Power Supply] [Ballast] [Transformer]
9. Options: [locking ring set] [filter media] [extended tube assembly]
10. Light Source: [LED Direct Replacement] [Legacy Lamps]
11. LED Modules: [See attached photometric data below]

G. Grid:

1. Product: [____] by Modular International Inc., 412.734.9000, www.modularinternational.com; [or approved substitute.] [substitutions not permitted.]
2. Description: [Surface] [Pendant] [To match Architect's sample.]
3. Type: [One Light] [Two Light] [Three Light] [Four Light] [Four Light Square]
4. Aperture Shape: [Square] [Rectangle]
5. Voltage: [120v] [277v]
6. Dimming: [Phase] [0-10v]
7. Color: [White] [Black] [Aluminum] [Custom]

- 8. Incorporated: [Power Supply] [Ballast] [Transformer]
- 9. Options: [locking ring set] [filter media] [pull down yokes]
- 10. Light Source: [LED Direct Replacement] [Legacy Lamps]
- 11. LED Modules: [See attached photometric data below]



2.6 LED LUMINAIRES AND DRIVERS

All Luminaires

- 1. LED's shall be Restriction of Hazardous Substances Directive (RoHS) compliant.
- 2. LED luminaires shall deliver a minimum of [] lumens per watt.
 - a. LED's shall be "Bin No. 1" quality.

3. Drivers shall be solid state and accept 120 through 277 VAC.
4. Luminaires shall have internal thermal protection.
5. Luminaire manufacturers shall adhere to device manufacturer guidelines, certification programs, and test procedures for thermal management
6. Luminaires shall be fully accessible from below ceiling plane for changing drivers, power supplies and arrays.

2.7 LED ARRAYS

- A. All LED's of the same type are to be provided by the same manufacturer.
- B. Equip each luminaire with the proper LED array of the type shown or specified in the Luminaire Schedule

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Luminaires:
 1. Set level, plumb, and square with ceilings and walls, and secure according to manufacturer's written instructions and approved submittal materials, unless otherwise indicated.
- B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, and reinstall.
- C. Remote Mounting of Drivers: Distance between the driver and fixture shall not exceed that recommended by manufacturer. Verify, with manufacturers, maximum distance between driver and luminaire.
- D. Mounting height indicated from finished floor to bottom of luminaire or to the center of the outlet box for wall mounted luminaires unless otherwise noted. Verify mounting heights with Architect and Lighting Designer.
- E. Mounting height may also be indicated as the length of the luminaire below finished ceiling.
- F. Suspended Luminaire Support:
 1. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers.
 2. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of luminaire chassis, including one at each end.
 3. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.

4. All power feeds shall originate from the same location/end of each run.
- G. Provide all necessary hanging or mounting devices and accessories for all luminaires. Verify the types needed for various ceiling conditions.
- H. Refer to architectural reflected ceiling plans for coordination of luminaire locations with mechanical, fire protection, technology and fire safety equipment. Where conflicts occur, coordinate with Architect, Engineer and Lighting Designer prior to installing any of the systems.
- I. In accessible suspended ceilings, luminaire wiring connections, including equipment grounding conductor, is to be through use of 72-inch (maximum) flexible conduit from a rigidly supported junction box.
- J. Wire per requirements of branch circuit installation. Properly ground each luminaire.
- K. This Contractor shall be responsible for adjusting aperture flanges or rings on all recessed luminaires to be flush with the finished ceiling. Trim shall completely conceal ceiling opening.
- L. Luminaires shall not be secured to ductwork or other Systems.
- M. Adjust variable position lampholders for proper lamp position prior to luminaire installation.

3.2 DOWNLIGHT LUMINAIRES

- A. Recessed Type in Accessible Ceilings: Mount in frames suitable for the ceiling with the recessed portion of the luminaire securely supported from the ceiling opening by use of a metal trim ring.
- B. Recessed Type in Non-accessible Ceilings: As Specified for mounting in accessible ceilings, except provide access to wiring and driver through the ceiling opening for the luminaire.

3.4 LED LUMINAIRES

- A. Adhere to manufacturers installation guidelines regarding proper thermal management.

3.6 CLEANING AND ADJUSTING

- A. Remove protective plastic covers from luminaires and luminaire diffusers only after construction work, painting and clean-up are completed. Remove, clean, and reinstall all dirty reflectors and diffusers.
- B. Clean luminaires internally and externally after installation. Use methods and materials recommended by manufacturer for cleaning reflectors and other surfaces.
- C. Make final adjustment of directional luminaires and adjustable light settings under the direction of the Architect and/or Lighting Designer during a scheduled period of time prior to the completion of the Project, after normal business hours if

required.

- D. Luminaires, reflectors, louvers and accessories which are damaged, blemished, or impregnated with fingerprints shall be replaced at this Contractor's expense. All finishes shall be unmarred upon Project completion.

3.8 FIELD QUALITY CONTROL

- A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.
- B. Replace all inoperable LED arrays at the end of construction prior to occupancy.
- C. Malfunctioning Luminaires and Components: Replace or repair, then retest. Repeat procedure until units operate properly.

END OF SECTION 26 5100