

**SECTION 26 55 61
THEATRICAL LIGHTING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Theatrical lighting units
- B. Lamps
- C. Dimmers and control units
- D. Accessories

1.2 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings: Indicate layout of rack-mounted equipment and details and diagrams of interconnecting wiring.
- C. Product Data: Provide for each item of equipment, showing sizes and ratings.
- D. Manufacturer Installation Instructions: Indicate handling and installation methods.

1.3 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01 77 00.
- B. Accurately record the locations of dimmer outlets and circuiting arrangements.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Sec 01 91 00 Commissioning and 01 78 23 Operations and Maintenance Data.
- B. Operation Data: Include the following:
 - 1. Instructions for operating lighting control system.
 - 2. Instructions for operating the system under normal conditions and under emergency life safety conditions exist.
 - 3. Operating limits which may result in hazardous or unsafe conditions, or in equipment damage.
 - 4. Document the ratings of the system and of each major component.
- C. Maintenance Data: Include the following:
 - 1. Provide copy of outline of the preventive maintenance schedule.
 - 2. Provide a list special tools, maintenance materials, and replacement parts.
 - 3. Repair instructions for procedures to check, repair, and test equipment during typical malfunctions.
 - 4. Provide copy of recommended cleaning methods, frequency, and materials.

1.5 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 77 00.
- B. Provide two of each size and type lamp.
- C. Provide two of each size dimmer.
- D. Provide two of each size filter holder.
- E. Provide two of each size, type, and color filter.
- F. Provide minimum of four sq ft of gel material of each color.
- G. Provide two of each size and type patch connectors.

PART 2 PRODUCTS

2.1 THEATRICAL LIGHTING SYSTEM

- A. Description: Provide a lighting dimming and control system for stage area and house lighting.
- B. Configuration
 - 1. Provide an electronic memory system with minimum of two-scene control.

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2. Dimmers: Cabinet mounted.
3. Lighting Circuit Connections: Provide a permanent connection to dedicated dimmers.

2.2 DIMMERS

- A. Description: Provide dimming unit suitable for mounting at lighting unit or modular dimming unit (as shown on the drawings) suitable for mounting in standard electronic rack.
- B. Ratings:
 1. Voltage: As noted on the drawings
 2. Capacity: As noted on the drawings
 3. Duty Cycle: Continuous
- C. Include integral circuit breaker in each dimmer.
- D. Provide adequate forced air ventilation.
- E. Emergency lighting dimmed during normal operation shall automatically activate at full brilliance in case of a power failure or during an emergency alarm mode of the fire alarm system.

2.3 CONTROL CONSOLE

- A. Fixed or portable control console with integral dimmers and/or for remote control of dimmers.
- B. Controls
 1. Grand master
 2. Independent master with bump switch for each scene
 3. Split scene faders with automatic cross fading
 4. Independent Master Timed Fade: Adjustable 0 to 100 seconds
 5. House light faders
 6. Channel faders
 7. Blackout switch
- C. Provide disk drive for removable mass memory.

2.4 LIGHTING UNITS AND ACCESSORIES

- A. Provide lighting units, with lamps, as scheduled.
- B. Provide a safety cable with spring clip for each theatrical lighting fixture.
- C. Theatrical lighting fixtures wider than two feet shall have a safety cable at each end.

2.5 Theatre architectural lighting controls

- A. Control locations
 1. Lobby: Additional 3-way or 4-way pilot lights line voltage switch or low voltage control for lobby lights shall be in the control booth.
 2. House: Provide low voltage push button control near each set of seating area entrance doors.
 3. Stage
 - a. Fader control station (minimum 8 faders) with master fader near the stage managers location, without the ability to record.
 - b. Low voltage push button control for house lights, near the stage managers location.
 4. Control Booth
 - a. Provide fader control for house lights.
 - b. Additional fader control station (minimum 8 faders) with master fader.
 - c. Control station may be an LCD display panel instead of separate fader stations.
 5. Push button control stations shall have a lockable cover.
- B. Operation
 1. The last control location used shall take over control.
 2. Low voltage push button controls shall turn lights on and off.
 - a. Trim house light fader controls to 80% maximum.
 - b. Dimmer curve to remain up to 100% output.

3. Control of House lights is by push button(s) in house seating area, by push button at stage managers location and fader in control booth.
 4. Fader control station with master fader in the control booth shall be able to record snapshot lighting looks setup on main lighting console. (Including stage and house lights)
 5. Fader control station with master fader on the stage shall recall looks recorded on the fader control station with master fader in control booth.
 - a. Fader control station on the stage shall not be able to record.
- 2.6 House Lights
- A. Ceiling and wall mounted light fixtures shall be dimmable LED type.
 - B. LED light fixtures shall be listed by a nationally recognized Testing lab such as UL, as approved by Authority Having Jurisdiction.
 - C. LED light fixtures shall have color temperature of 4000-4500 Kelvin with minimum 90 CPR.
 - D. LED lights fixtures shall provide full dimming range of 0% -100% without exhibiting flicker or stepping.
 - E. LED light fixtures shall have lens.
 - F. LED light fixtures angle to be adjustable to throw the light straight down, even on sloped ceilings.
 - G. LED light fixtures to have beam angle of 40 to 50 degrees.
 - H. Electrical panel(s) supplying the LED house lights shall be provided with surge protection devices.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install equipment in accordance with manufacturer's instructions.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Prepare and start systems under provisions of Section 01 40 00.

3.3 DEMONSTRATION

- A. Provide systems demonstration under provisions of Section 01 75 00.

3.4 DEMONSTRATION AND TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
 1. Provide competent, factory authorized personnel for the instructing of operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 2. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
 3. Refer to Section 01 91 00, Commissioning, for further contractor training requirements.
- B. Provide demonstration and training for all types of theatrical lighting and controls installed in this project.

END OF SECTION