

## **SECTION 16501**

### **LIGHTING FIXTURES**

#### **PART 1 - GENERAL**

##### **1.01 WORK INCLUDED**

- A. Furnish and install lighting fixtures, lamps, and accessories for lighting outlets in accordance with the drawings. Furnish and install a lighting fixture of the same type as indicated for areas of similar usage wherever the type designation is omitted on the drawings.
- B. Furnish and install a plaster frame for each recessed fixture as required by the type of building construction. Furnish and install hangers, bolts, or other devices required to properly and adequately support each lighting fixture from the structure. Fixtures may be supported from the suspended ceiling where specifically permitted by the construction specified in other Divisions of Work. Suspended pendent fixtures shall be supported as recommended by fixture manufacturer.

##### **1.02 REFERENCE DOCUMENTS**

- A. The Special Provisions for Electrical Work are hereby made a part of this Section of the Work. Refer to Section 16010.
- B. Each lighting fixture shall be constructed in accordance with the applicable provisions of the Electrical Code as suitable for the location where they are indicated to be installed.
- C. Each lighting fixture shall bear the Underwriters' Label indicating the fixture is suitable for the application and installation location.

##### **1.03 SUBMITTAL**

- A. Submit adequately descriptive data including published catalog data or shop drawings for each type listing of lighting fixture for review prior to purchases or installation.
- B. If a substitute for a fixture specified is proposed, submit, when so requested, photographs, laboratory test data and samples of both the specified and the proposed fixture to demonstrate that the proposed substitute is an acceptable equal to the specified fixture. Rejection of an offered substitute shall not be basis for work delay or extra compensation.

## **PART 2 - PRODUCTS**

### **2.01 LIGHTING FIXTURES**

- A. Lighting fixtures shall be of the type, manufacturer, and construction as indicated in the Lighting Fixture Schedule.
- B. Each fixture shall be complete with all proper components and accessories.
- C. Recessed incandescent fixtures for ceiling that have insulation shall be Type IC.
- D. Surface mounted fluorescent fixtures shall have spacers to achieve required separation from low-density ceilings construction.
- E. Fixture housing shall be reinforced steel, 90% reflective white enamel finish.
- F. Provide 0.125 thick prismatic virgin acrylic refractor lenses.
- G. Lighting Standards 2007:
  - 1. Treatment Room: Ceiling height above 8'-6" but not above 12'-6" shall be provided with suspended linear indirect lighting. Any ceiling higher than 12'-6" shall be consulted with the engineer for special design. Lighting Fixtures shall be 2-lamp-T8 sectional, two-circuit linear and shall be pendant type Finelite "Series8-P" or equal by Lightolier "Baselyte" or Corelite "Class A Perf" with Osram/Sylvania FO32/830/ECO 4' T8 lamp and utilizing electronic ballast and Ballast Factor of no less than 0.88. Lamps to be 3000° Kelvin, 80 + CRI. Hanging height shall not be below 7'-6" to the bottom of the fixture. Minimum distance between the ceiling and the top of the fixture shall be 9". Also, the bottom height may have to be adjusted to clear the top of the patient privacy curtain rails where used. Any ceiling height lower than 8'-6" shall be semi-indirect recessed and same as described in item 2 below.
  - 2. All Offices, Reception, Waiting and Training Rooms: Lighting shall be semi-indirect type. Lighting fixtures shall be 2'x4" lay-in with semi-indirect perforated baffle and three (3) T-8 lamps with electronic ballast. Fixtures shall be model "Ovation" 2-RDI-332-RP--ER81 as manufactured by Metalux or equal by Lightolier or Lithonia.
  - 3. Conference Room: Lighting shall be semi-indirect type. Lighting fixtures shall be 2'x4" lay-in with semi-indirect perforated baffle and three (3) T-8 lamps with electronic ballast. Fixtures shall model "Ovation" 2-RDI-332-RP- -LU-FDB-4827- -3 as manufactured by Metalux or equal by Lightolier or Lithonia and shall be provided with dimmer switches. Dimmer shall be a white Lutron "Nova T-Star" slide-to-off wall box and located beside the occupancy sensor.

4. All other rooms shall be same as indicated on the lighting fixture schedule on the Construction Drawings.

## 2.02 LAMPS

- A. Lamps shall be energy saving and suitable for the lighting fixture installed and in accordance with the schedules and shall be manufactured by General Electric, Sylvania, or North American Phillips Corporation.
- B. Incandescent lamps shall be general service inside frosted type except as listed for specific application.
- C. Fluorescent lamps shall be standard (T-8) 3000K except as listed for color, energy savings, or special duty.
- D. Other lamps shall be as specifically listed and be for the duty, lighting quality and application selected.

## 2.03 BALLASTS

- A. Each lighting fixture shall be equipped with a proper energy saving electronic ballast in accordance with the operating requirements of the lighting fixture. Each ballast shall be UL listed and carry a UL label for the lighting fixture and installation specified. Ballasts shall be manufactured by Advance, GE, Jefferson or Universal.
- B. Fluorescent ballasts shall be CBM certified, high power factor type and sound rated for the lowest rating available for the application. Ballasts for lamps rated 430 ma and below shall be sound rating "A". Each ballast shall have the sound rating listed thereon. Ballasts shall be Premium Class P for those types where the requirements have been established. Other ballasts, where indicated, shall be energy saving type and shall be equal to Advance Mark III.
- C. Other gaseous discharge lamp ballasts shall be high power factor constant wattage type. These ballasts for fixtures on building interior mounting shall be fully enclosed in a metal housing which if filled with thermo-setting sound absorbing and encapsulating material. The interior ballast shall, on recessed fixtures, be mounted separate from the reflector and socket but shall be removable without tools through the fixture ceiling opening. Each ballast shall be provided with a line disconnecting device and thermal protection.

## 2.04 OCCUPANCY SENSORS

- A. Occupancy Densors: Model WSD-PDT-WH as manufactured by SensorLite or equal by WattStopper or Lightolier. The following rooms and areas shall be provided with occupancy-sensor switch located at strike side of the door when possible.

1. All Offices.

2. Visitors and Staff Toilets.
3. Conference Rooms.
4. Medical Records and Multi-purpose Rooms.
5. Staff Lounge and Locker Rooms.
6. Medical waste.
7. Tech Repair Area.

## 2.05 ACCESSORIES

- A. Recessed lighting fixtures for mounting in lay-in type ceilings shall be provided with tee clamp lock-in supports when it is acceptable to support the fixtures from the tees. Recessed fixtures will have all required plaster frames, concrete inserts, gaskets, sight shields and similar accessory components required for the particular installations in this project.
- B. Lighting fixtures indicated to have integral battery, charger and inverter for emergency light shall have equipment specially designed for and installed in the fixture. Units shall meet or exceed life safety 101, 90-minute illumination capability. Units for fluorescent fixtures shall be Siltron Unit-Pak.
- C. Pendant fixtures shall be provided with supports and all other accessories for proper suspension as recommended by the manufacturer and to provide a complete installation.

## PART 3 - EXECUTION

### 3.01 FIXTURES

- A. Each lighting fixture shall be carefully installed in accordance with the manufacturer's directions and to fit the general construction of the walls, ceilings or other areas where the fixture is indicated. Refer to reflect ceiling plans, elevations and other details for the exact locations of fixtures. Where those details or other instructions do not indicate lighting fixture locations, position the fixtures proportionally in spaces using the arrangement indicated on the electrical drawings plus center, parallel and space the lighting fixtures and rows of fixtures on and with general construction lines.
- B. Install suspended and recessed lighting fixtures in accordance with the lighting fixture manufacturer's instructions for the application. Install above ceiling junction boxes to provide ready access through the ceiling opening. Install hangers to support fixtures independent of suspended ceilings unless the ceiling is specifically designed to support the fixture. Any above-ceiling insulation materials are prohibited to be within 3" of recessed lighting fixtures.
- C. Mount surface lighting fixtures to the ceiling in accordance with the lighting fixture manufacturer's instructions. Provide through-ceiling-to-structure-above supports for

each lighting fixture mounted on suspended ceiling unless the ceiling is specifically designed to support the lighting fixture.

Narrow channel or box-mounted lighting fixtures on tee-bar type ceilings shall be connected through outlet boxes centered above the fixture and supported squarely on the tees. Provide auxiliary above-ceiling supports for the ceiling where tees must be cut.

- D. Securely anchor bracket mounted fixtures to maintain vertical and horizontal alignment. Provide that all mounting devices are concealed.

### 3.02 LAMPS

- A. Each fixture shall be equipped with a set of new lamps of the size and type specified, and left in a condition such that there is a new lamp in each receptacle in each fixture upon completion and acceptance of the work. Low-energy or energy-saving type lamps shall be furnished and installed where indicated and shall specifically match the fixture, socket and ballast selection.
- B. Use permanent fixtures with final lamps to allow final touch-up painting to be performed under completed building light. Permanent fixtures used for other temporary lighting shall have the used lamps removed and not reused for final lamping of the job. Specific approval by the Owner shall be obtained for installation of the final lamps.
- C. Replace all lamps that fail or have blackened ends during the period of touch-up painting, replacing all lamps that have been used more than 1/4 of their rated life. The use time will be determined by the Owner's records.

### 3.03 TESTING, CLEANING AIMING AND ADJUSTING

- A. Each fixture shall be replaced in proper operating condition, equipped with the proper lamps and properly fitted and adjusted to aim, focus, and physically work in the spaces and construction where installed. Fixtures shall be left clean of all dust, dirt, grease and other foreign materials. Reflectors and lenses shall be clean and undamaged. Trims, finishes, and housings shall fit together and to the building construction and show no evidence of damage, handling, and misalignment.

**END OF SECTION**