

Lecture 12 – Lighting Design Documentation

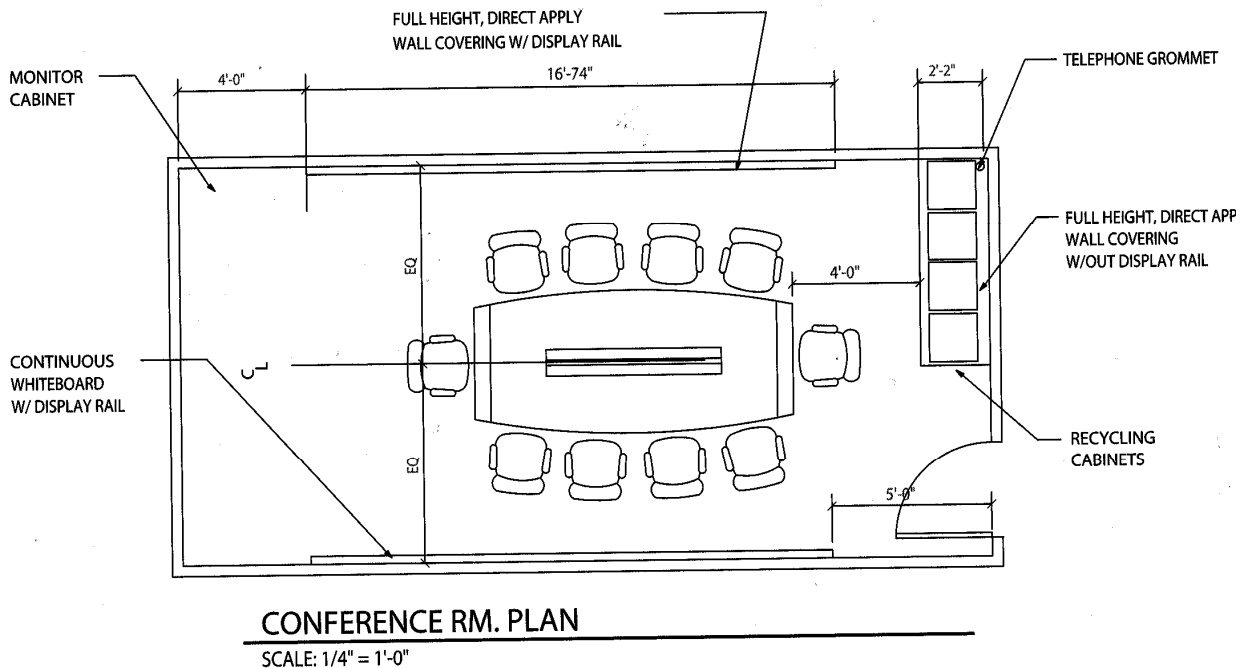
Effective lighting design requires proper design documentation. Depending upon the scope of the project, complexity and other factors, the lighting design and the accompanying design documentation will be created by one (or combinations) of the following design professionals:

- Architect-of-Record
- Specialized architect with extensive lighting design background
- Interior Designer
- Electrical Engineer

A typical set of Lighting Design Documents would include the following:

Floor Plan

Architectural Floor Plans are the basis of all information relating to the layout of the entire function of the space. It is also used as the “background” for lighting-related (and other) items.

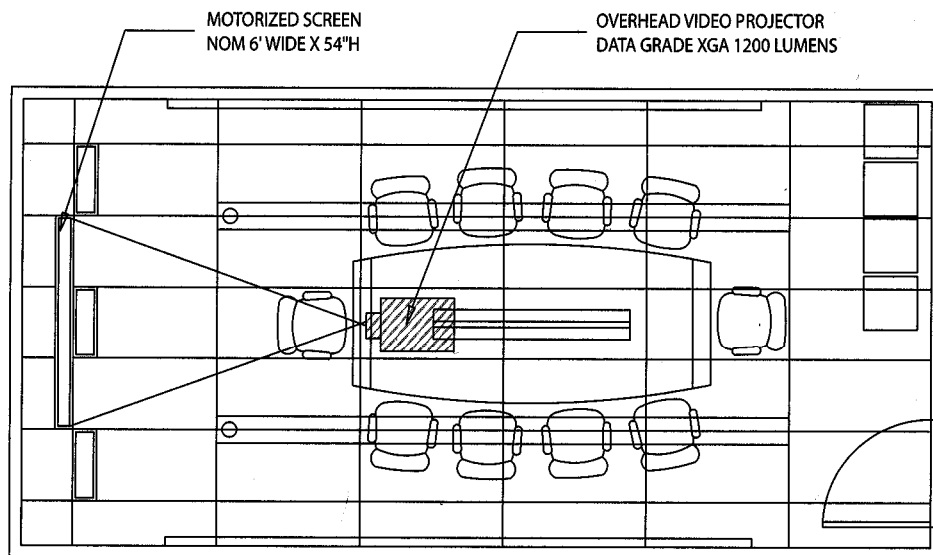


Reflected Ceiling Plan

Using the Architectural Floor Plan as a “background”, typically using very light lines, the ceiling-mounted lighting is superimposed on it and viewed as if a mirror were placed on the floor. It would typically indicate the layout of the following:

- ceiling grid
- HVAC diffusers
- sprinkler heads & fire detection devices
- sound system speakers

A typical example is shown below:

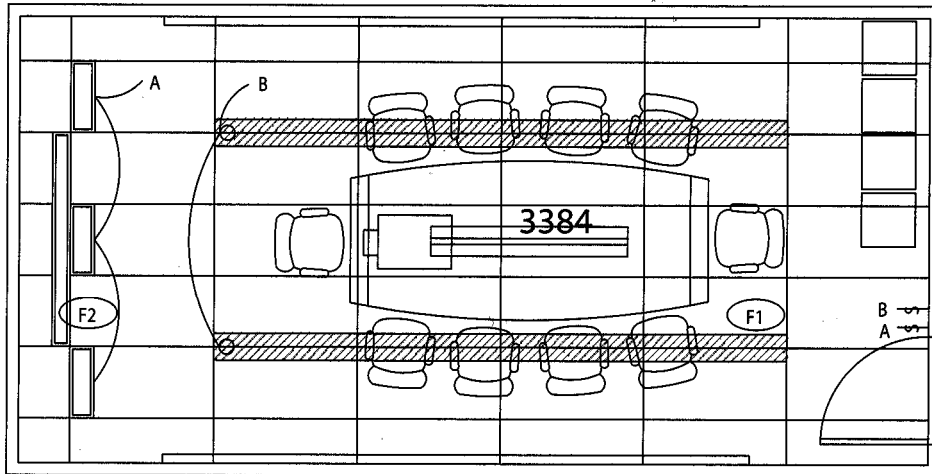


CONFERENCE RM. REFLECTED CEILING PLAN

SCALE: 1/4" = 1'-0"

Lighting Plan

A lighting plan could be combined with the Reflected Ceiling Plan, or, based upon the complexity; a stand-alone Lighting Plan would be produced. However, a Lighting Plan would also show wall-mounted lighting in addition to ceiling-mounted lighting. Typical items found on the Lighting Plan include:



CONFERENCE RM. LIGHTING PLAN

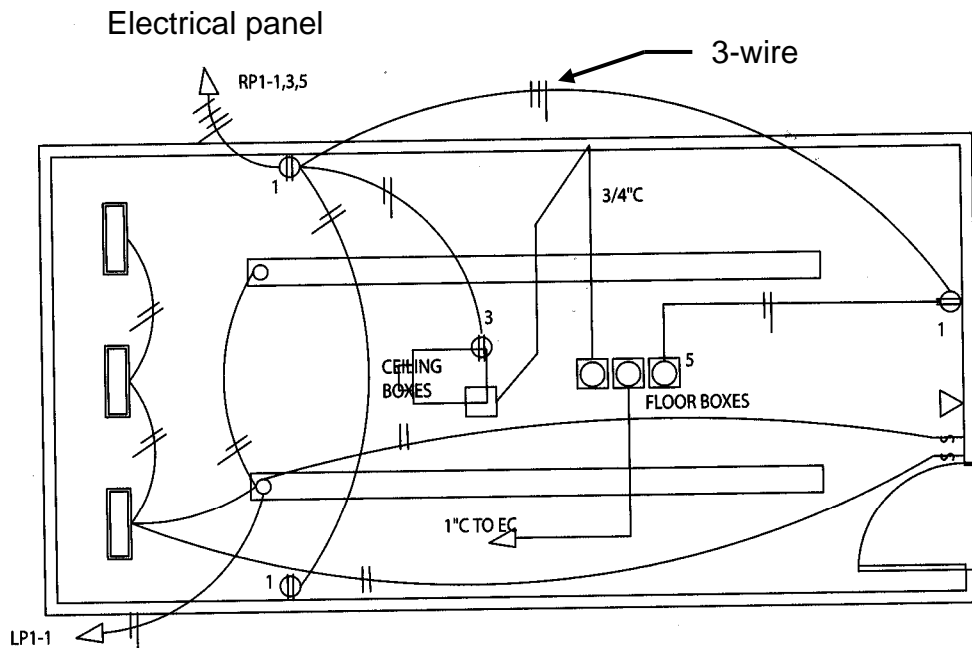
SCALE: 1/4" = 1'-0"

Electrical Plan

Specific electrical details are superimposed over the Floor Plan indicating the following:

- Lighting control devices such as switches and dimmers
- Wiring connectivity between control devices and luminaries
- Electrical receptacles
- Power panels
- Telephone jacks
- Data connections

A typical Lighting Plan is shown below:


















CONFERENCE RM. ELECTRICAL PLAN













SCALE: 1/4" = 1'-0"

Lighting Symbols

Lighting items are typically indicated on plans by standard industry-accepted symbols, as shown below:

| | |
|---|----------------------------------|
|  | SCONCE OR LANTERN |
|  | TABLE OR FLOOR LAMP |
|  | RECESSED DOWNLIGHT |
|  | RECESSED DOWNLIGHT IC HOUSING |
|  | RECESSED ACCENT LIGHT |
|  | RECESSED ACCENT LIGHT IC HOUSING |
|  | RECESSED WALLWASHER |
|  | RECESSED WALLWASHER IC HOUSING |
|  | PENDANT OR CHANDELIER |
|  | MONOPOINT ACCENT LIGHT |
|  | STEP LIGHT |
|  | FLUORESCENT TROFFER (2X4) |
|  | FLUORESCENT STRIP LIGHTS |
|  | FLUORESCENT WALLWASHER |
|  | SUSPENDED FLUORESCENT UPLIGHT |

Lighting Symbols

| CONVENTIONAL WIRING SYMBOLS | |
|---|--------------------------|
|  | SWITCH |
|  | THREE WAY SWITCH (SPDT) |
|  | FOUR WAY SWITCH (DPDT) |
|  | DIMMER SWITCH |
|  | DIMMER THREE WAY SWITCH |
|  | DIMMER FOUR WAY SWITCH |
|  | DIMMER LOW VOLTAGE RATED |
|  | DIMMER FLUORESCENT |
|  | DIMMER OCCUPANCY SENSOR |
|  | OCCUPANCY SENSOR SWITCH |
| SYMBOLS FOR ELECTRONIC DEVICES | |
|  | DIMMER MASTER |
|  | DIMMER REMOTE |

Control Symbols

Lighting Schedule

A schedule is a listing of detailed information related to the items “keyed” into the plans. We have seen other schedules, such as door & window schedules and room finish schedules.

A Lighting Schedule typically includes the following information:

- Tag – an identifier such as “L1” Otherwise called a Key
- Description of luminaire – type, mounting, style, voltage
- Lamp information – watts, ballast, lens
- Manufacturer and catalog model number

| LIGHTING FIXTURE SCHEDULE (WITH LEGEND) | | | | | | | | |
|---|--------|---|-------|------------------|-----------------------|-------|---|---------|
| TAG | SYMBOL | DESCRIPTION | VOLTS | LAMP | BALLAST | WATTS | MOUNTING | PRODUCT |
| A1 | | WALL SCONCE, ORNAMENTAL POLISHED BRASS LANTERN | 120 | 3-25C10 CLEAR | N/A | 75 | WALL MOUNT TO BOX 6-2" AFF TO CENTER | XYZ 123 |
| A2 | | RECESSED DOWNLIGHT CLEAR ALZAK CONE 6" APERTURE | 120 | 1-100A | N/A | 100 | RECESSED | XYZ 123 |
| A3 | | RECESSED ACCENT LIGHT CLEAR ALZAK CONE 6" APERTURE | 120 | 1-60PAR38SL | N/A | 60 | RECESSED | XYZ 123 |
| A4 | | RECESSED WALLWASHER CLEAR ALZAK CONE 7" APERTURE ANGLED SPREAD LENS | 120 | 1-100PAR38SL | N/A | 100 | RECESSED | XYZ 123 |
| A5 | | PENDANT LIGHT CHROME STEM BLUE GLASS | 120 | 1-100PAR38SL | N/A | 100 | RECESSED | XYZ 123 |
| A6 | | MONOPOINT ACCENT LIGHT | 120 | 1-50MR16FL | N/A | 55 | RECESSED | XYZ 123 |
| A7 | | STEP LIGHT | 120 | 1-25A | N/A | 25 | RECESSED | XYZ 123 |
| F1 | | FLUORESCENT TROFFER (2X4) | 277 | 2-F32T8/830 | ELECTRONIC | 58 | RECESSED | XYZ 123 |
| F2 | | FLUORESCENT STRIP LIGHTS | 277 | 1-F32T8/830 | ELECTRONIC | 32 | SURFACE MOUNT | XYZ 123 |
| F3 | | FLUORESCENT WALLWASHER | 277 | 1-CF40T5/830 | ELECTRONIC | 38 | RECESSED | XYZ 123 |
| F4 | | SUSPENDED FLUORESCENT UPLIGHT | 277 | 1-F54T5HO/830 | PREHEAT ELECTRONIC | 61 | SUSPENDED 18" BELOW CEILING | XYZ 123 |
| X | | EXIT SIGN SINGLE FACE | 277 | RED LED | ELECTRONIC | 5 | SURFACE WALL | XYZ 123 |
| X1 | | EXIT SIGN SINGLE FACE | 277 | RED LED | ELECTRONIC | 5 | CEILING CANOPY | XYZ 123 |

Technical Specifications

The CSI generally acknowledges lighting within Division 16 – Electrical. In particular, the following sub-divisions are commonly used for commercial buildings:

(Taken from <http://www.ogs.state.ny.us/dnc/generalInfo/masterspecdefault.htm>)

| | |
|-----------------------|---|
| 16511 | FLUORESCENT FIXTURES |
| 16513 | MERCURY VAPOR FIXTURES |
| 16514 | METAL HALIDE FIXTURES |
| 16515 | HIGH PRESSURE SODIUM FIXTURES |
| 16519 | INCANDESCENT FIXTURES |
| 16521 | STREET LIGHTING AND GROUNDS LIGHTING Shoe Box |
| 16521 | STREET LIGHTING AND GROUNDS LIGHTING Cobra Head |
| 16522 | SPORTS LIGHTING SYSTEM |
| 16531 | EXIT LIGHT FIXTURES |
| 16535 | EMERGENCY LIGHTING - UNIT EQUIPMENT |
| 16551 | SECURITY FENCE LIGHTING SYSTEM |
| 16552 | AUDITORIUM & STAGE LIGHTING CONTROL SYSTEM |
| 16561 | OBSTRUCTION BEACON LIGHTING SYSTEM |
| 16591 | CHANDELIER RESTORATION |

Section 16519 is shown below:

**SECTION 16519
INCANDESCENT FIXTURES**

PART 1 GENERAL

1.01 SUBMITTALS

- A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 01330 does not apply to this Section.
- B. Product Data: Catalog sheets, specifications and installation instructions.
- C. Samples: One of each product if requested.

PART 2 PRODUCTS

2.01 GENERAL

- A. Equip fixtures with:
 - 1. Plaster frames as required for installation of recessed and semi-recessed fixtures.
 - 2. Lamps as manufactured by General Electric Co., GTE/Sylvania, or Westinghouse Electric Corp.

2.02 FIXTURE TYPES

| FORMERLY: | POSSIBLE SUBSTITUTES: |
|------------------|------------------------------|
| TYPE A | CS-3, VS-5 |
| TYPE B | YW-2, VW-3, HPS-6 |
| TYPE C, D | IF-1, MH-3, HPS-3 |
| TYPE E | IW, HPS-7 |
| TYPE HC | VH |
| TYPE R | VS-3, VS-5, VW-2, VW-3 |
| TYPE NL | CNL |
| TYPE V | VS-3, VS-5A, VW-2, VW-3 |

PART 3 EXECUTION

3.01 INSTALLATION

- A. Fixtures: Install fixtures at locations indicated on the drawings.

END OF SECTION