DuBois Regional Medical Center
West Wing Addition
DuBois, PA

Schematic Design

Ben Ardary

Schematic Lighting Design

Project Location

DuBois, Pennsylvania

Project Information

- 120,000 sq. ft. new addition
- 50,000 sq. ft. of alterations to existing bldg.
- 6 stories (including basement)
- Total Cost = 22.8million

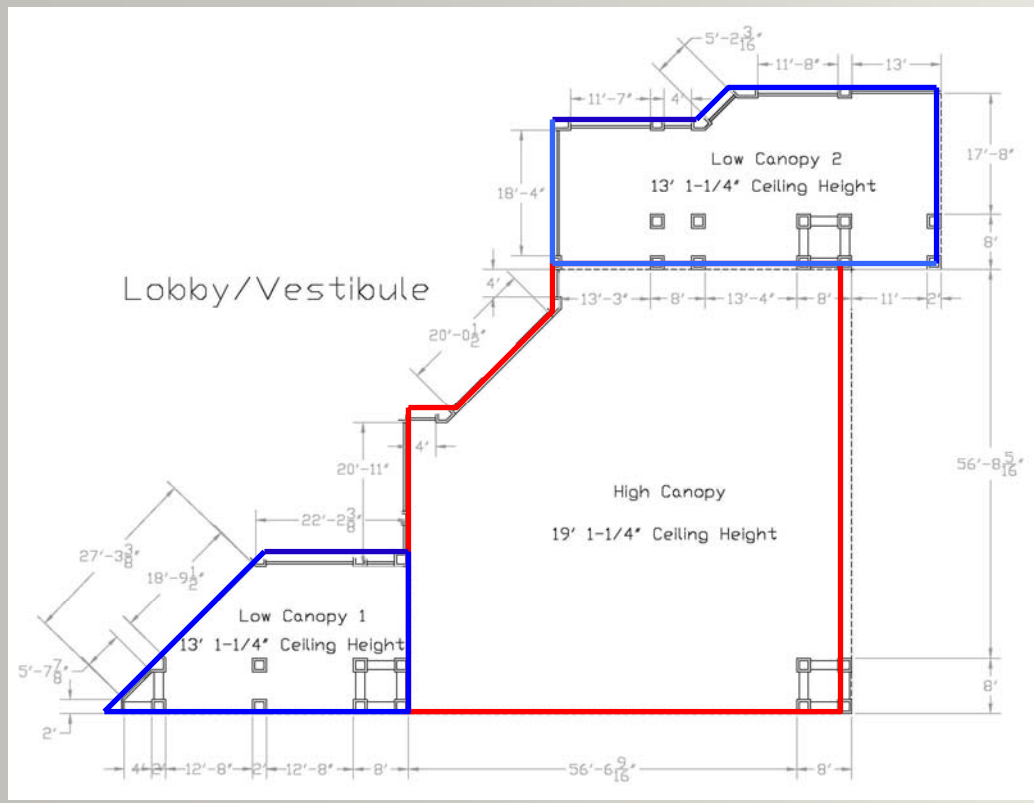
Proposal Areas

Conference Room

Front Canopy Design

Spatial Characteristics

- High Canopy Ceiling = 19’ 1.25”
- Low Canopy Ceiling = 13’ 1.25”

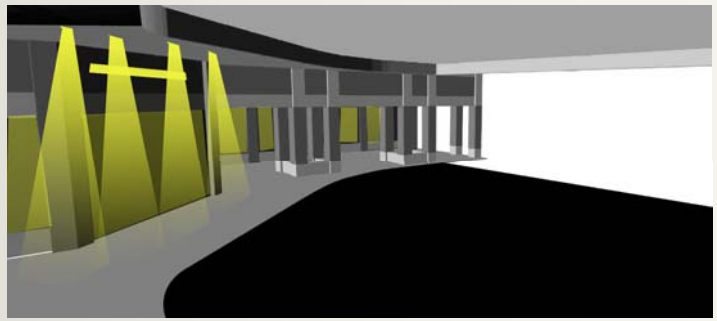


Functions

- Circulation to and from Building
- Drop Off and Pick Up
- Shelter from Weather Elements

Design Concepts

Lighting Scheme: Light escapes from inside to outside of the building.



- Downlights close to building should have sharp cut-off angles
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- Uplight outer columns in vehicular area with recessed in ground fixtures.
- Provide decorative lighting on canopy for directionality toward new building entrance.

Design Criteria

Criteria

- Horz. Illuminance = 5 fc
- Vert. Illuminance = 5 fc
- Provide even dist. on ground
- Reduce reflected glare
- Weather proof system
- Ease of maintenance
- Under canopy control system should be tamper free on/off switch with intergraded exterior photoelectric sensor.
- Decorative – On/Off programmed

Atruim Design

Spatial Layout

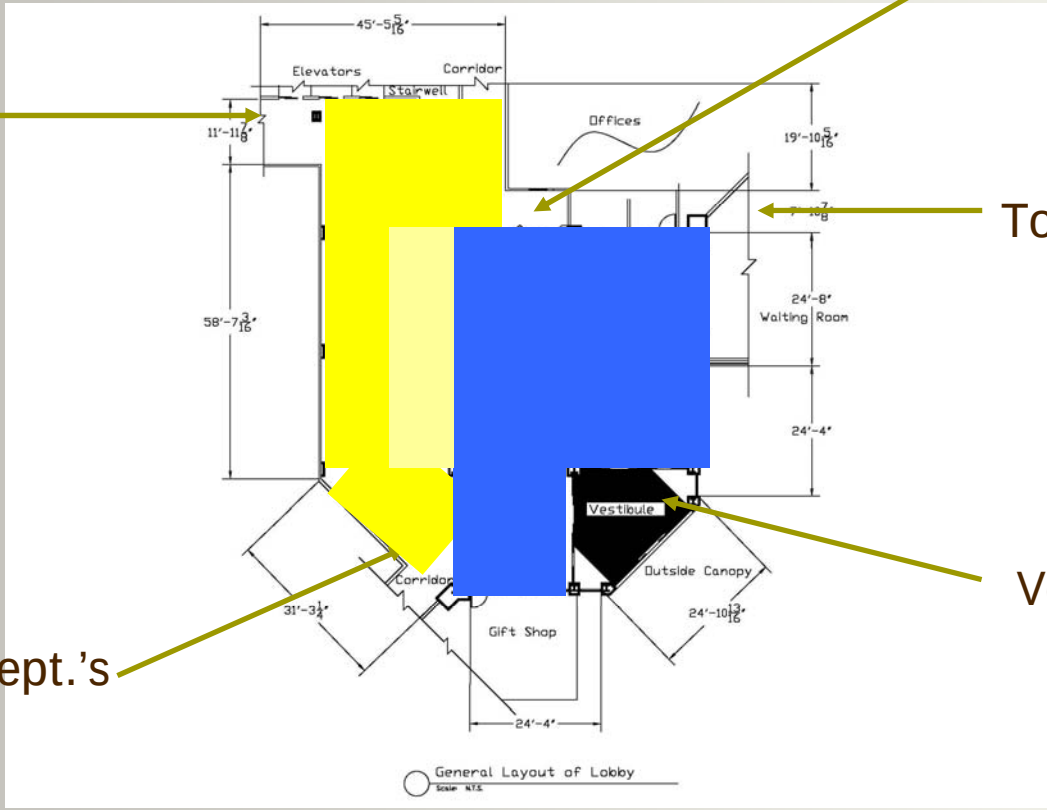
First Story = 9’ 10”

Second Story = 21’ 7”

Third Story = 33’ 1.25”

Information Desk

Elevators



To Waiting Room

Vestibule Entrance

Corridor to Dept.’s

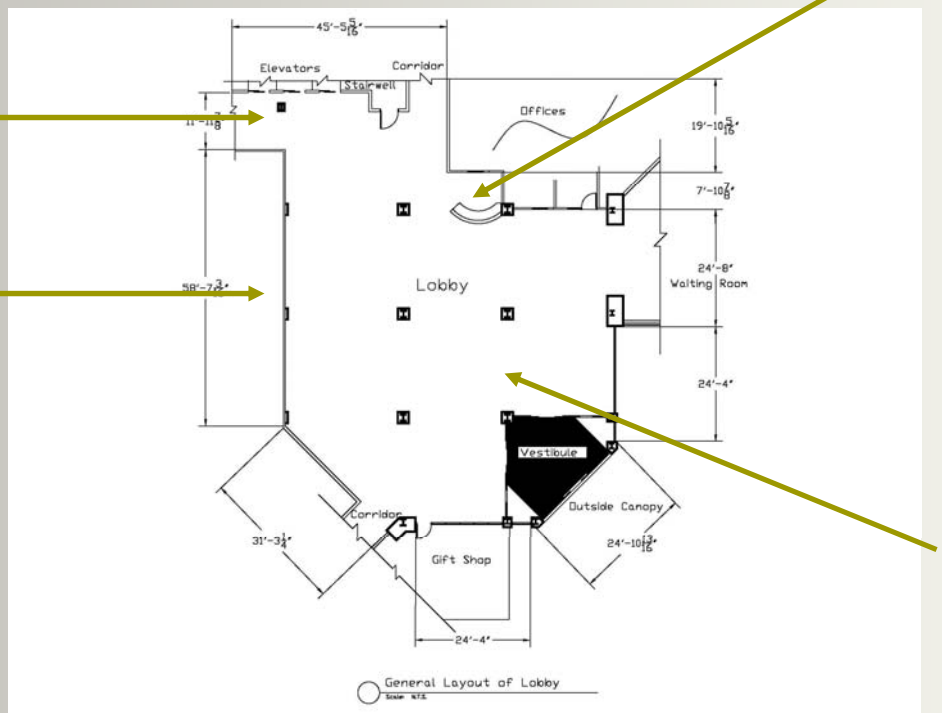
Proposed Sketch

Functions

- Egress
- Reading at benches
- Reading signage on walls
- Communicating with receptionist
- Meeting with people

Design Areas

- Three Story Atrium
- Rear Wall – Signage and display area
- Informaion Desk
- Elevator Lobby

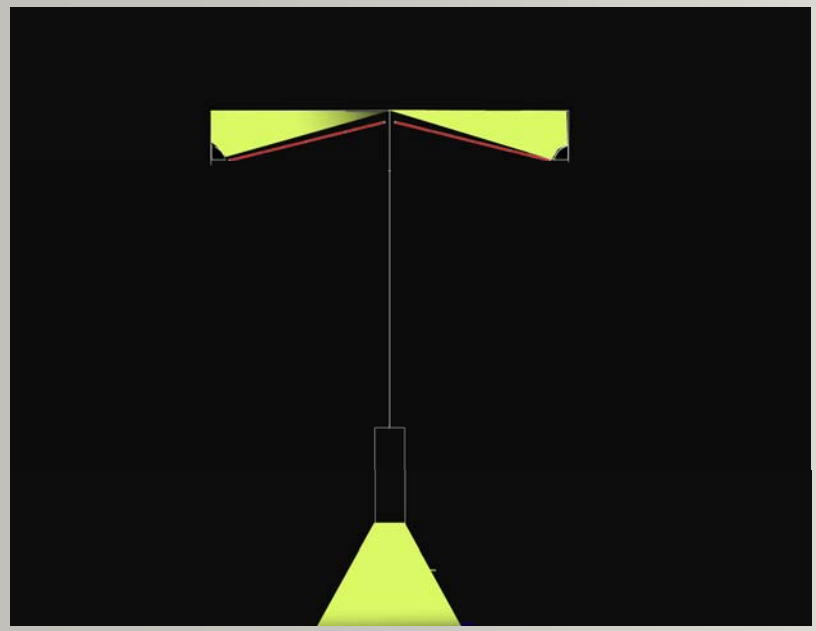


Design Criteria

- Illuminance Values
  - Floor = 5 fc
  - Receptionists Desktop = 50 fc
  - Benches = 30 fc
  - Signage = 50 fc
  - Walls = 5fc
- Even light dist. On floor
- Provide directionality
- Achieve good facial renderings
- Points of Interest

Skylight Concept

Artificial Skylight

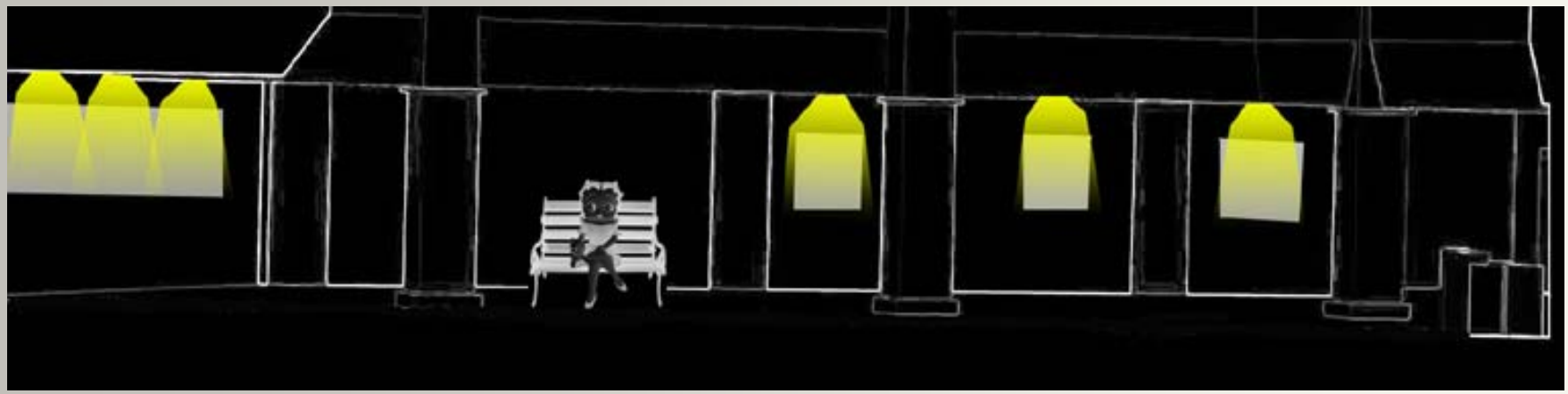


- Replace perforated metal tiles with diffusing glass.
- Use flood lamps to produce a wide light distribution
- Provide decorative pendant downlights that are suspended approximately 15 feet from ceiling.

Rear Wall

Criteria

- Illuminance on Displays = 50 fc
- Locate wallwashers close to wall to graze signage and displays to reduce reflected glare.
- CRI > 80 CRI
- Avoid distracting wall patterns.



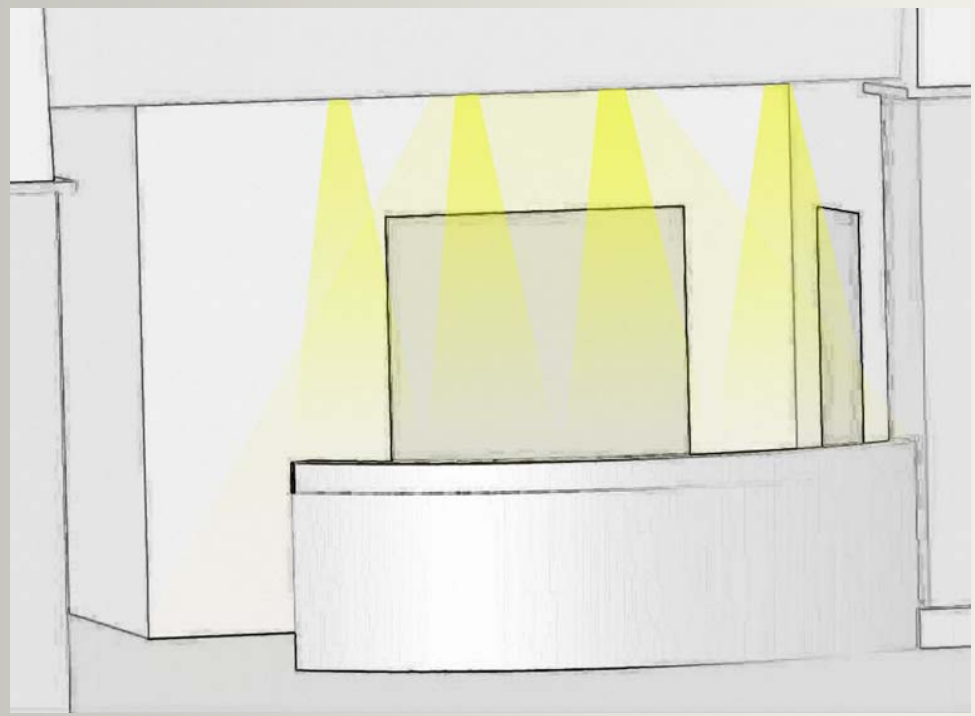
Circulation Desk

Criteria

- Illuminance on Desk = 50 fc
- Make space a point of interest in lobby.

Design Concept

- Use CFL down lights to provide light on top of counter area.
- Use 2'x4' parabolic troffer behind the receptionists



Elevators

Criteria

- Illuminance on Doors = 50 fc
- Make elevator doors a point of interest.

Design Concept

- Provide a recessed fluorescent light in door frame to wash doors.
- Light will most likely be provided by manufacturing company

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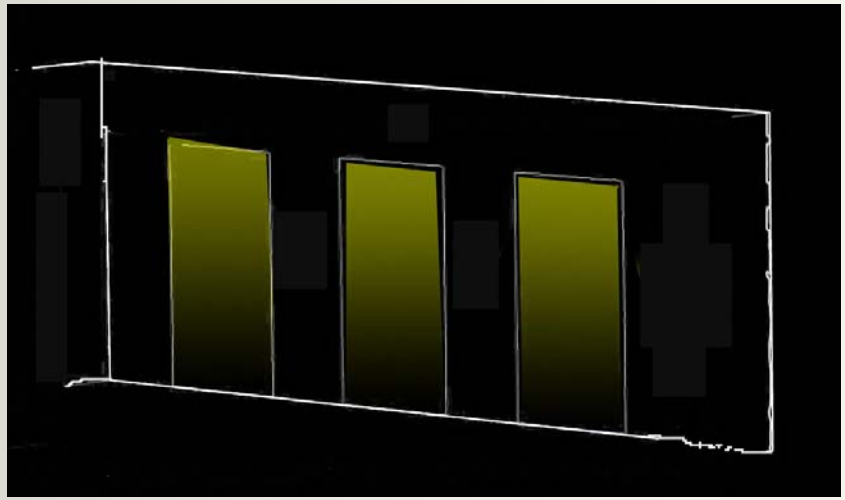


Overall Appearance

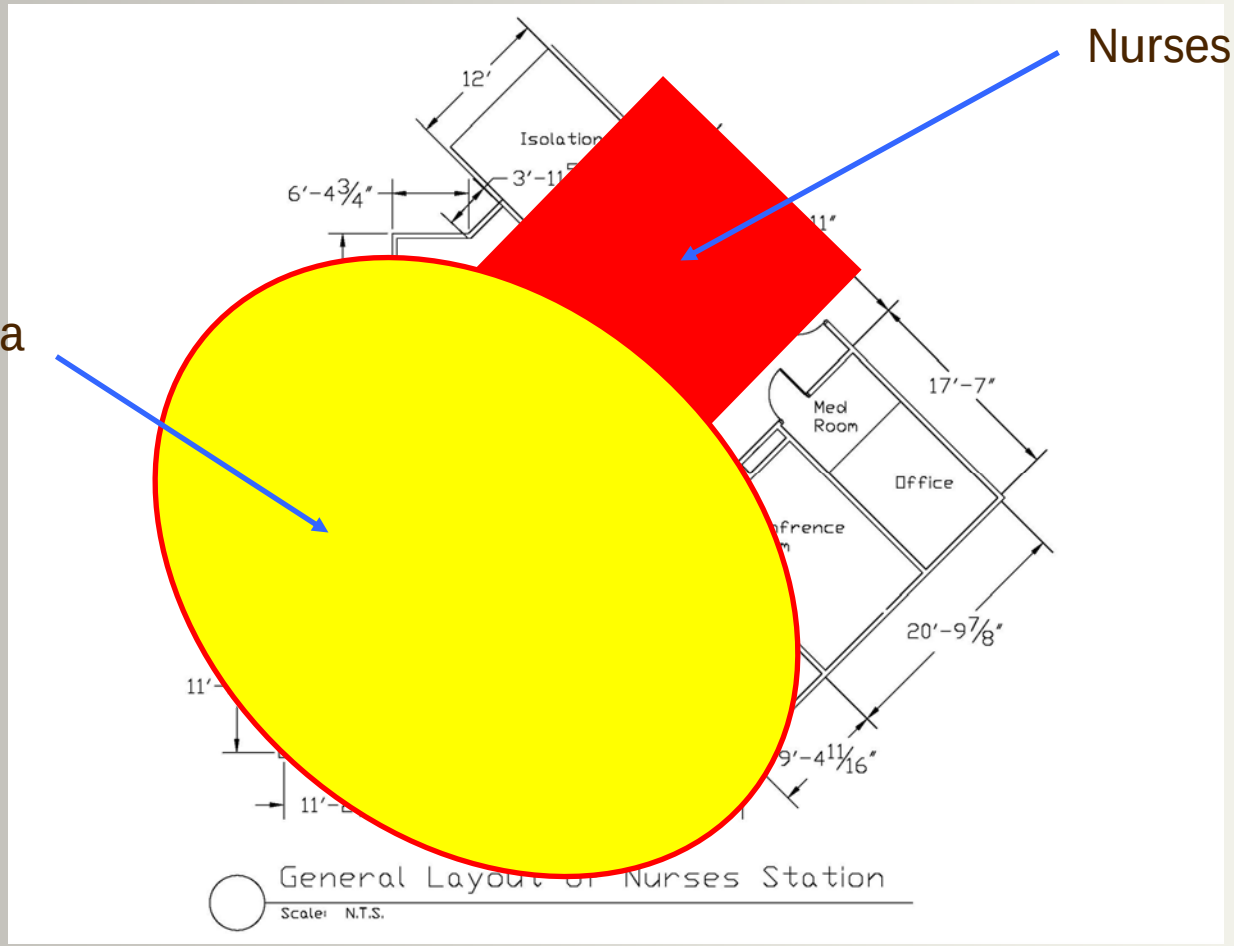
Control System

- Elevators
  - On/Off should be integrated with power of elevator.
- First & Second Story Downlights
  - Use a dimmable system that will be controlled by a photoelectric sensors.
- Pendant Fixtures
  - On/Off switch in secure location.
- Receptionist
  - Receptionist should have the ability to switch the table top downlights, area light behind desk and task lighting. Different systems should be dimmable by receptionist for her own comfort.
- Artificial Skylights
  - On/Off switch in secure location.

Neonatal Intensive Care Unit

Spatial Layout

- Ceiling Height = 8 ft



Design Areas

- Bedside
- Bed
- Area Lighting
- Station Lighting
- Wash Sink Lighting

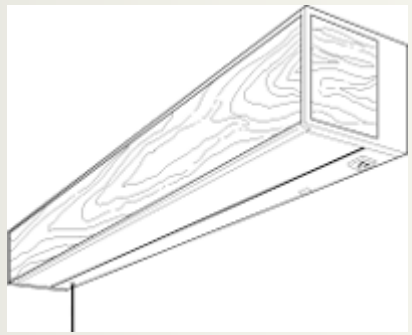
Bedside Lighting

Criteria

- Allow for bed area to be dim
- Avoid direct sight of light source.
- Use reflected light to light bed.
- Night Horiz. Illuminance = 10 fc
- Day Horiz. Illuminance = 30 fc
- High CRI Bulbs

Design Concept

- Provide a dimmable linear fluorescent perimeter fixture at bottom of bulkhead and headwall.
- This system will illuminate headwall components and devices to make them easily readable while also distributing light from behind infants bed indirectly.



Awaiting information on headwall details from architect.

Over Bed Lighting

Criteria

- Use a source that produces diffuse light overtop of baby
- Avoid luminaries where the infant can see the source because of the sensitivity of the infants eyes.

Design Concept

- Use a pendant mounted fixture that allows for low diffuse illuminance lighting.

Area Lighting

Criteria

- Reduce Glare
- Eliminate hot spots on ceiling
- Luminaire should blend into surroundings

Design Concept

- Use volumetric lighting for general area lighting.
- Luminaire eliminates glare and hot spots on ceiling by distributing light across the whole luminaire.

Station Lighting

Criteria

- Horz. Illuminance = 30 fc
- Paper Tasks = 50 fc
- Vert. Illuminance = 5 fc
- Reduce reflected glare on VDT's
- Task lighting for paper tasks.
- Near Luminance < 3:1
- Far Luminance < 10:1

Design Concept

- Use Volumetric lighting for lighting behind VDT's. Luminaries will not present a glare problem.
- Use small aperture downlighting in bulkhead over countertop for task lighting.

Wash Sink Stations

Criteria

- Horiz. Illuminance = 30 fc
- Uniform distribution on counter tops
- Eliminate direct glare into babies eyes when in basinet position
- Use lamps that will give babies a good appearance

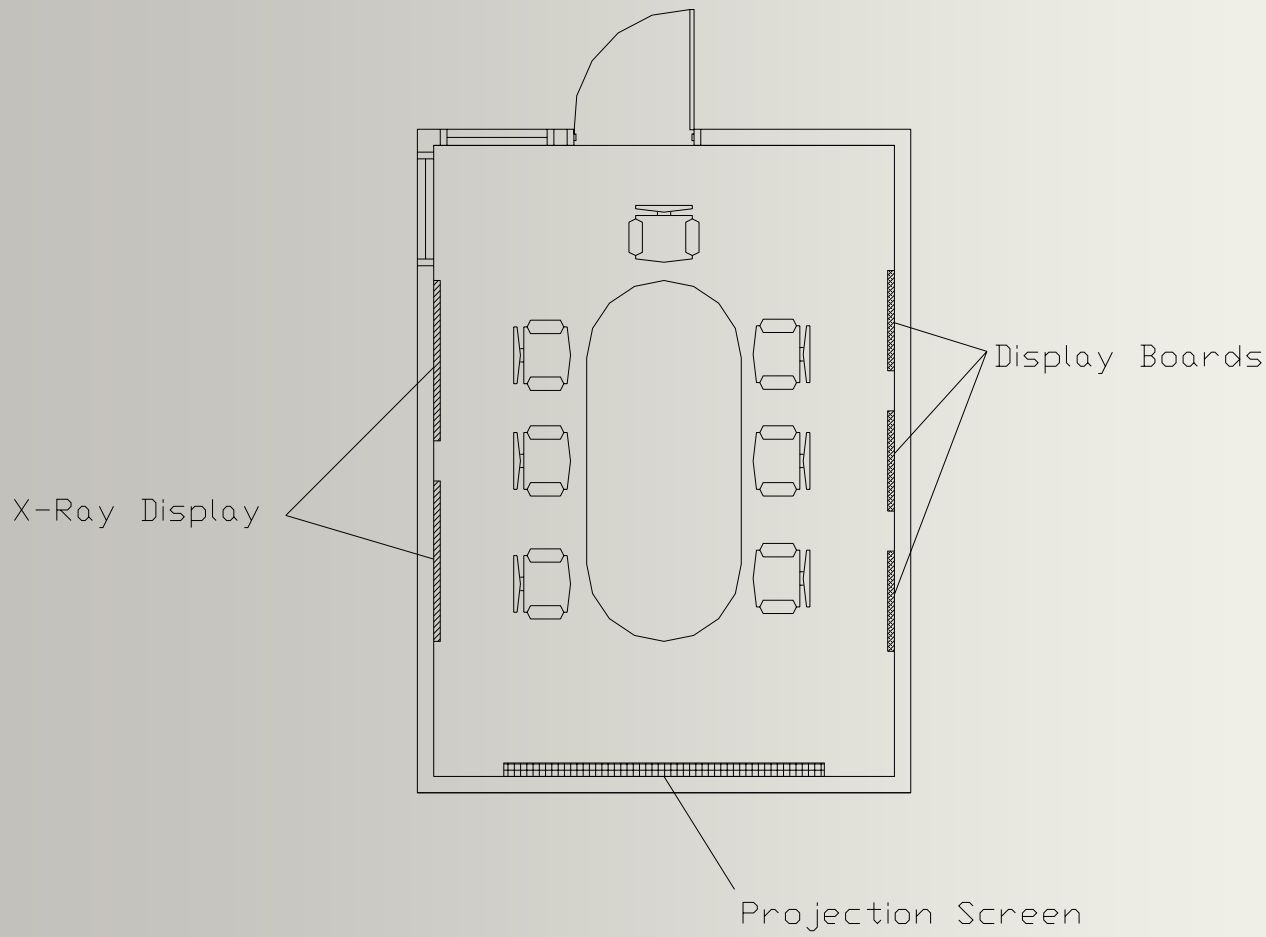
Design Concept

- Lensed downlights in bulkhead over countertops
- High CRI source
- Warm CCT bulb

Conference Room

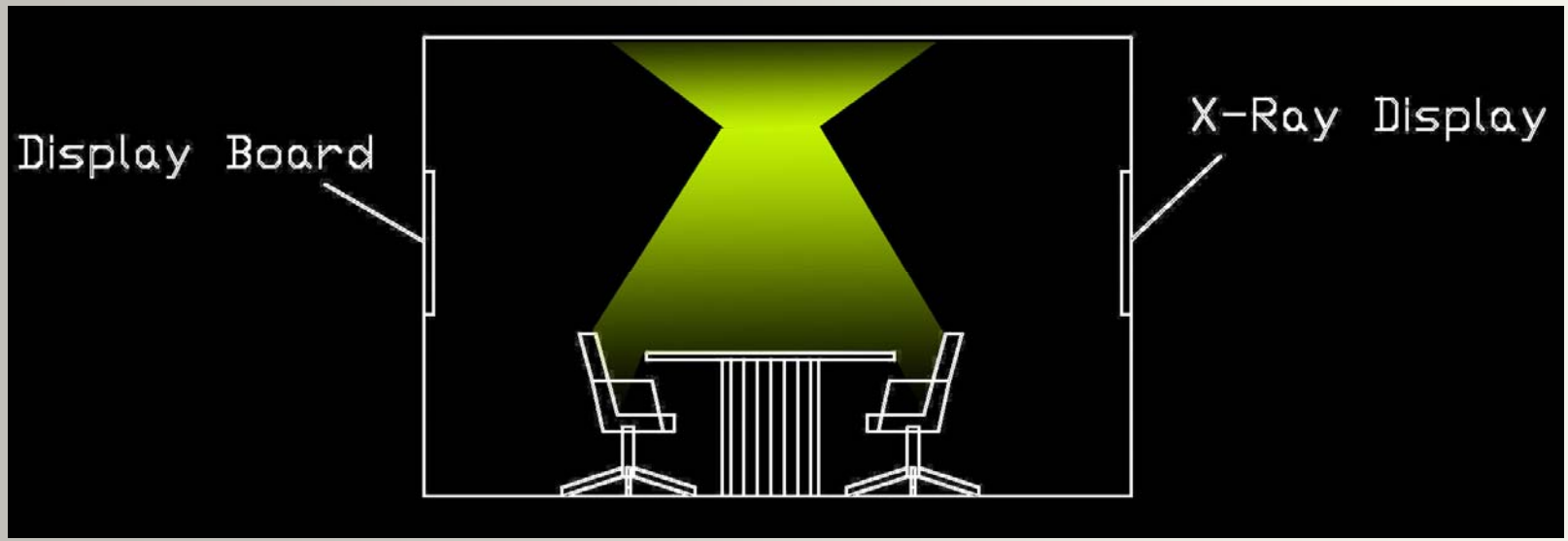
Spatial Layout

- Ceiling Height = 8 ft



General Lighting

- General
- Criteria
  - Horz. Illuminance = 30 fc
  - Vert. Illuminance = 5 fc
  - Professional looking luminaries
  - Provide good facial renderings
- Design Concept
  - Use direct/indirect fixtures to create interreflected and direct light on faces
  - Use Bulbs 80 CRI bulbs



Wall Mounted Displays

Criteria

- Illuminance of Displays = 50 fc
- Produce Vibrant renderings
- Place lights close to wall to reduce glare form boards.

Design Concept

- Use three CFL wall washer to illuminate the three display areas.
- Use Bulbs with High CRI
- Use dimmable ballast for versatility.

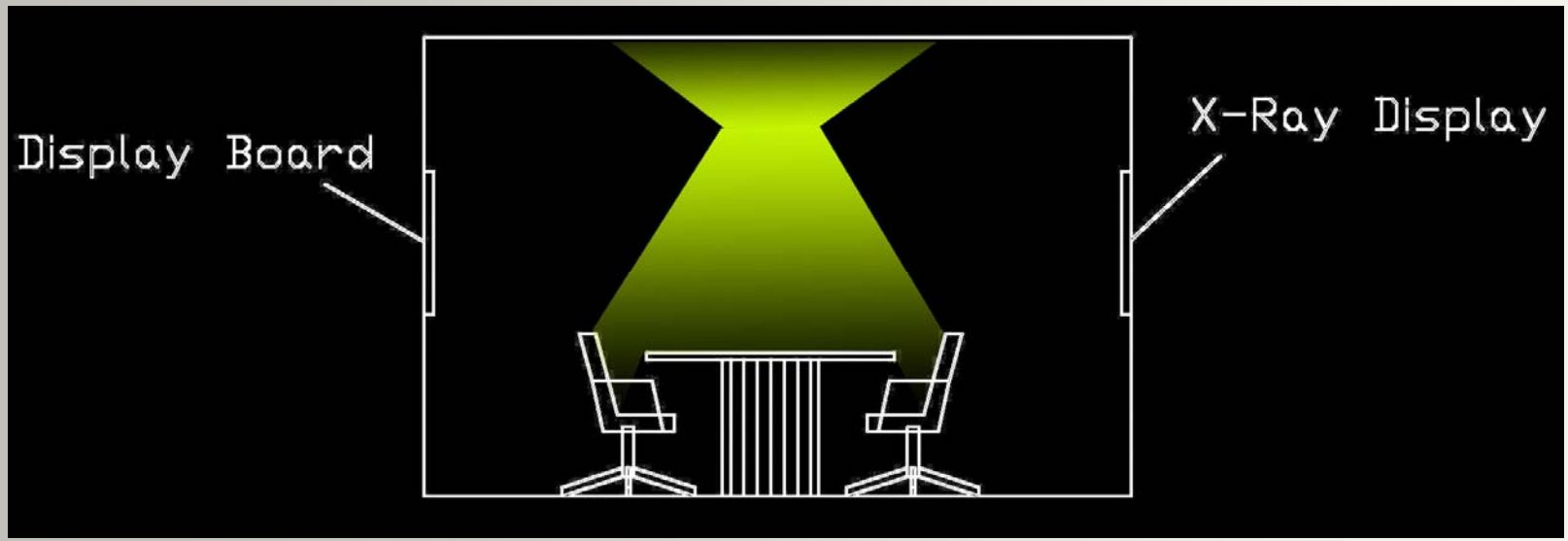
Video Screen

Criteria

- Low illuminance on screen
- Concentrate relatively low light on conference table.

Design Concept

- Provide a dimmable area system to reduce illuminance of screen while maintaining a reasonable light level on table top.



X-Ray Viewer

- X-Ray Viewing
  - X-Ray viewer is self luminous
  - No specific design required

Electrical Redesign

Save Owner Money

Lower Electric Bills

Thermal Energy Storage

- Produces ice or chilled water during off-peak electrical usage periods therefore utilizes energy at a lower cost.
- Produced ice or chilled water is then used as stored energy to supply cooling loads during the day.
- Requires smaller chiller, pipe sizes and pumps.
- Redesign of branch circuits and protection devices for resized mechanical components will be analyzed.

Lower Electric Bills

Market Shopping Possibilities

- Buy electricity generation from Energy Service Companies (ESCOs) that compete for your business.
- Better value of energy per dollar
- ESCOs coordinate with utility for delivery of electricity
- Reliability of power not changed

Lower Electric Bills

Real Time Pricing

- Buy electricity at lower than standard or at marginal cost-based prices
- Shift usage to lower cost periods or reduce your load to avoid high cost per load
- Use Web-based analysis to project how your energy decisions will affect your next utility bill
- Medium-risk investment with a high return

Closing Remarks

Thank you for your time!

Questions?