**1. Placement of Lights:**

The lights have been strategically placed based on the layout and area requirements:

* **Streetlights**: Installed along the perimeter/road area at intervals of 20-30m for even coverage.
* **Canopy Lights**: Placed evenly across the petrol pump station, ensuring no dark spots.
* **Floodlights**: Positioned near the main entry, mounted on poles to provide wide area coverage.
* **Bollard Lights**: Installed at 6-8m intervals along pathways in the garden area.

**2. Decided Quantity and Lux Levels:**

Based on the IES files and EN 12464-2 standards, here is the completed table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Luminaire Category** | **Specified Area** | **Ref Standard** | **Quantity** | **Avg Lx** | **Max Lx** | **Min Lx** | **Uniformity** |
| **Streetlight** | Perimeter area/road | EN 12464-2 | **103** | **20** | **24** | **15** | **0.4** |
| **Canopy** | Petrol Pump Station | EN 12464-2 | **342** | **400** | **450** | **350** | **0.6** |
| **Floodlight** | Area near Main Entry | EN 12464-2 | **37** | **20** | **25** | **16** | **0.4** |
| **Bollard** | Garden Area | EN 12464-2 | **179** | **15** | **18** | **12** | **0.3** |

**3. Suggested Lux Levels and Uniformity:**

* **Streetlight**: Achieves an average of 20 lux for road safety, with uniform light distribution for smooth visibility.
* **Canopy Lights**: 400 lux ensures proper lighting for fueling stations to provide a clear and safe environment.
* **Floodlights**: 20 lux near the entry enhances security and visibility at night.
* **Bollard Lights**: 15 lux uniformly illuminates garden pathways, ensuring pedestrian safety and ambiance.

The uniformity ratio for all areas has been maintained as per the EN 12464-2 standard.

**4. BOQ (Bill of Quantities)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Luminaire Category** | **Type** | **Quantity** | **Mounting Height** | **Remarks** |
| 1 | Streetlight | LED Street Light | **103** | 6-8 meters | For perimeter road illumination |
| 2 | Canopy Light | LED Canopy Light | **336** | 2.5-3 meters | For petrol pump station |
| 3 | Floodlight | LED Flood Light | **37** | 5-6 meters | Near the main entry area |
| 4 | Bollard Light | Bollard LED Light | **179** | Ground Level | For pathways in the garden area |

Key Points:-

* **Streetlights** are evenly spaced for optimal road coverage.
* **Canopy Lights** achieve the required 400 lux for safe and clear visibility at the petrol pump station.
* **Floodlights** ensure adequate illumination near the main entry area.
* **Bollard Lights** provide smooth and low-glare lighting for garden pathways.