

Technical Specs / Requirements for CCTV (Driving Track)

CCTV Surveillance System Supply, Installation, Configuration, Testing and Commissioning

1. Scope of Work

The contractor shall supply, install, configure, test, commission, and hand over a complete CCTV surveillance system.

The scope shall include, but not be limited to:

- Supply and installation of 10 bullet network cameras.
- Supply and installation of 2 dome network cameras.
- Installation of 5 camera poles.
- All excavation, civil works, pole foundation works, cabling, termination, and restoration works.
- Supply of HDD storage sufficient for a minimum of 30 days of recording at Full HD quality.
- Configuration of the cameras with the NVR provided by the client.
- Supply, installation, and configuration of Central Management Software (CMS), including all required licenses.
- Configuration of remote monitoring and playback access from the Head Office.
- Testing, commissioning, documentation, training, and final handover.

The NVR will be provided by the client. The contractor shall ensure that the proposed HDDs are fully compatible with the provided NVR.

2. Required Equipment

No.	Item Description	Required Model / Specification	Qty
1	Bullet Network Camera	Hikvision DS-2CD2066G2-IU (4mm) or equivalent	10
2	Dome Network Camera	Hikvision DS-2CD2143G2-IU (4MP) or equivalent	2
3	Camera Pole	12 ft height, 3-inch GI pipe, including foundation and installation	5
4	Surveillance HDD	Compatible with the client-provided NVR and sized for minimum 30 days recording	As Required

No.	Item Description	Required Model / Specification	Qty
5	Central Management Software	Centralized live view, playback, user management, and remote access	1 Lot
6	Central Management Software License	Required licenses for all 12 cameras	12 Channels / As Required
7	Required Accessories	Junction boxes, mounting accessories, connectors, cables, conduits, and other installation materials	1 Lot

3. Camera Requirements

3.1 Bullet Cameras

The contractor shall supply and install **10 bullet network cameras** based on the following model:

Hikvision DS-2CD2066G2-IU (4mm) or equivalent.

The proposed camera shall meet or exceed the following general requirements:

- Network IP camera.
- Minimum 6 MP resolution.
- Fixed 4 mm lens.
- Suitable for outdoor installation.
- Built-in microphone/audio capability.
- Day and night operation.
- Infrared or equivalent low-light performance.
- Intelligent video analytics.
- Weather-resistant housing is suitable for outdoor conditions.
- PoE network connectivity.

The contractor shall provide the manufacturer's data sheet for the proposed model.

3.2 Dome Cameras

The contractor shall supply and install **2 dome network cameras** based on the following model:

Hikvision DS-2CD2143G2-IU (4MP) or equivalent.

The proposed camera shall meet or exceed the following general requirements:

- Minimum 4 MP resolution.
- Fixed lens suitable for the proposed installation area.

- Built-in microphone/audio capability.
- Day and night operation.
- Intelligent video analytics.
- Suitable for indoor or outdoor installation, as required.
- PoE network connectivity.
- Vandal-resistant housing where applicable.

The contractor shall provide the manufacturer's data sheet for the proposed model.

3.3 PoE Network Switch

The contractor shall supply and install FortiSwitch-124F-FPOE Layer 2 or an equivalent PoE network switch suitable for the proposed CCTV system.

The switch shall meet or exceed the following requirements:

- **24 × 1G PoE RJ45 ports**
 - 4x 10G/1G SFP+/SFP ports
 - 1x RJ45 console port
 - IEEE 802.3af/at PoE support.
 - Suitable PoE power budget for the connected CCTV cameras.
 - Support for long-distance PoE transmission where required.
 - VLAN/network isolation or equivalent CCTV network security features where supported.
 - Industrial grade/suitable design for continuous CCTV operation.
 - Plug-and-play operation with IP cameras and NVR.
 - Suitable for rack, wall, or enclosure installation as required by the site.
 - All required power cables, mounting accessories, and installation accessories shall be included.
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4. Camera Pole Requirements

The contractor shall supply and install **5 camera poles**.

Each pole shall meet the following minimum requirements:

- Minimum height: **12 feet above ground level**.
- Material: **3-inch GI pipe**.
- Suitable for outdoor CCTV camera installation.
- Adequate structural strength to support the installed cameras, mounting brackets, junction boxes, and associated accessories.

- Proper foundation and anchoring arrangement.
- All required mounting brackets and accessories shall be included.
- Poles shall be properly treated and painted after installation.
- The paint shall be suitable for outdoor environmental conditions.

The contractor shall complete all pole foundation works, including excavation, concrete works, installation, finishing, and restoration.

5. Excavation and Civil Works

The contractor shall be responsible for all civil and installation work required for the complete CCTV system.

The scope shall include:

- Site inspection and verification before commencement of work.
- Excavation for cable routes.
- Excavation and foundation work for camera poles.
- Installation of required conduits or protective pipes.
- Cable pulling and routing.
- Backfilling and restoration of excavated areas.
- Pole installation and alignment.
- Concrete foundation and finishing work.
- Painting of all newly installed poles.
- Restoration of affected areas to their original condition or an acceptable finished condition.

All required tools, labor, materials, transportation, and equipment shall be included in the contractor's scope.

6. NVR and Recording Storage

The NVR will be provided by the client.

The contractor shall:

- Verify the compatibility of all cameras with the provided NVR.
- Supply compatible surveillance-grade HDD(s).
- Calculate and provide sufficient storage capacity for a minimum of **30 days of continuous or configured recording**, based on the final recording configuration.
- Size the storage based on the proposed camera resolution, frame rate, bitrate, compression method, and recording schedule.
- Configure the recording parameters to achieve the required minimum retention period.

The proposed HDD shall be specifically designed for surveillance or continuous recording applications.

The contractor shall submit the storage calculation together with the proposal.

7. Central Management Software and Licensing

The contractor should provide a Central Management Software solution that allows the Head Office to centrally monitor and manage the CCTV system.

The solution shall include all required software licenses.

The Central Management Software shall support, at minimum:

- Live view of all cameras from the Head Office.
- Playback of recorded video from the remote site.
- Camera grouping and management.
- User and permission management.
- Remote access to the CCTV system.
- Camera status monitoring.
- Events and alarm management where supported.
- Centralized configuration and management.

The quotation shall clearly indicate:

- Software manufacturer and product name.
- Required server or PC specifications.
- Number of included camera/channel licenses.
- Any additional licenses required for live view, playback, or central management.
- Any recurring maintenance, subscription, or renewal costs.

All licenses required for the complete operation of the proposed system shall be included.

8. CCTV Network Rack

The rack shall meet, at minimum, the following requirements:

- Minimum **9U rack capacity**.
- Minimum **600 mm depth**.
- Suitable for installation of the proposed NVR/network equipment, PoE switches, UPS, patch panels, and accessories.
- Lockable front door.
- Suitable ventilation.
- Removable or lockable side/rear panels where applicable.

- Standard 19-inch equipment mounting rails.
- Cable entry provisions.
- Earthing provision.
- Required rack mounting hardware.
- Suitable PDU/power distribution arrangement.
- All installation accessories should be included.

The contractor shall ensure that the rack has sufficient usable space and load capacity for all equipment to be installed.

9. Uninterruptible Power Supply (UPS)

The contractor shall supply and install an **APC Smart-UPS SRV2KRI-E** or equivalent online UPS suitable for protecting the CCTV equipment.

Minimum requirements shall include:

- **Model:** APC Smart-UPS SRV2KRI-E
- **Capacity:** 2 kVA
- **Type:** Online double-conversion UPS
- **Rack-mountable design**
- Suitable for installation in the proposed 9U rack.
- Suitable for continuous operation of CCTV/NVR/network equipment.
- LCD/display or equivalent monitoring interface.
- Battery backup for the connected CCTV equipment.
- Overload and short-circuit protection.
- Input/output power protection.

- Automatic voltage regulation/conditioning where applicable.
- Required batteries and accessories shall be included.
- All required rack mounting accessories shall be included.

10. Head Office Monitoring

The contractor shall configure the system to allow authorized users at the Head Office to:

- View all 12 cameras in real time.
- Access individual or multiple cameras simultaneously.
- Playback recorded footage from the NVR.
- Search for recordings by date and time.
- Access authorized cameras based on user permissions.

The contractor shall configure the required network connectivity and provide recommendations for secure remote access.

11. Installation and Configuration

The contractor shall complete all required installation and configuration work, including:

- Camera installation and positioning.
- Installation of junction boxes and mounting accessories.
- Installation of camera poles.
- Network cabling and termination.
- Installation of protective conduits and accessories were required.
- Installation and configuration of the HDD.
- Addition of all cameras to the client-provided NVR.
- Camera naming and labeling.
- Configuration of recording schedules.
- Configuration of video quality and recording parameters.
- Configuration of the Central Management Software.
- Configuration of Head Office live view and playback access.
- User account and permission configuration.
- Testing of all cameras and network connections.

12. Testing and Commissioning

The contractor shall complete comprehensive testing and commissioning of the entire system.

Testing shall include:

- Verification of all 12 cameras.
- Live video testing.
- Recording verification.
- Playback testing.
- Network connectivity testing.
- Remote access testing from Head Office.
- Central Management Software testing.
- Storage retention verification.
- Camera positioning and image quality verification.
- Day and night performance testing were applicable.

Any faults or deficiencies identified during testing shall be rectified by the contractor before handover.

13. Documentation and Handover

Upon completion, the contractor shall provide:

- Final system configuration details.
- Camera list and assigned names.
- Camera locations.
- Network configuration details.
- Storage calculation.
- HDD model and specifications.
- Central Management Software details.
- License details.
- User manual or operational guide.
- Manufacturer datasheets for all proposed equipment.
- Warranty details.
- As-built drawings or cable route drawings, where applicable.

The contractor shall demonstrate the complete system to the client and hand over the system in fully operational condition.

14. Warranty

The contractor shall provide a minimum **one-year warranty** covering:

- Supplied cameras.
- Software and licenses, where applicable.

Any defect resulting from improper installation or workmanship shall be rectified by the contractor at no additional cost during the warranty period.

15. Contractor Responsibilities

The contractor shall be fully responsible for providing all materials, labor, tools, transportation, equipment, and accessories required for the successful completion of the project.

No additional cost shall be charged for items reasonably required to complete the system, even if such items are not individually listed in the Bill of Quantities.

The contractor shall conduct a site survey and verify all site conditions before submitting the proposal.