

Fixed CCTV Pole Installation Manual

General Installation and Inspection Procedures

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This manual guides site personnel through the installation of standard fixed CCTV poles, from delivery inspection and foundation construction to erection, wiring and acceptance. It applies to steel CCTV poles secured to reinforced concrete foundations by base flanges and cast-in anchor bolts. Install cameras, equipment enclosures and communication equipment only where included in the actual project configuration and scope of supply.

This manual provides general installation guidance; it is not an approved construction drawing for a specific pole model. Before work starts, the project technical lead must confirm the product drawings, foundation design, fastening requirements and site method statement. If a drawing conflicts with this manual, or requirements differ between documents, obtain written clarification before proceeding. Installers must not choose which requirement to follow themselves.

The erection and fixing procedures in this manual must not be applied directly to direct-buried poles, wall-mounted poles, platform-mounted poles, installations using post-installed anchors, or tiltdown, mid-hinged, lowering or telescopic CCTV poles. Solar modules, batteries and installation in hazardous areas require separate, dedicated instructions.

1 Installation Sequence

Confirm drawings and site conditions → Inspect deliveries → Set out → Excavate → Install reinforcement and cast-in components → Inspect work before concealment → Place and cure concrete → Accept the foundation → Assemble at ground level and install cables → Lift and erect the pole → Align and tighten connections → Grout and protect the base as specified → Complete earthing and equipment wiring → Test → Hand over.

Coordinate cast-in earthing components, underground services and cable conduits with foundation construction. Do not leave these items until after pole erection. The sequence of final earthing connections and equipment installation may be adjusted under the approved method statement.

Four mandatory hold points

1. Before concreting: confirm that anchor bolts, reinforcement, conduits and cast-in earthing components comply with the drawings. Obtain inspection sign-off before pouring.
2. Before lifting: verify that the foundation has reached the specified installation strength and that the pole and lifting conditions are acceptable.
3. Before releasing the lifting gear: complete the fixing required by the method statement, establish the full load path and obtain confirmation of stability from the person in charge.
4. Before energization: complete electrical inspections, protective earthing and the required tests. Obtain release from the electrical supervisor.

Completion does not constitute acceptance. Record the inspection result and the responsible person's name at every hold point.

2 Components and Terminology

Component or term	Description	Key installation checks
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Component or term	Description	Key installation checks
Pole shaft	Main steel member supporting the equipment	Bending, cracks, significant dents and structural damage
Base flange or baseplate	Plate at the pole base with mounting holes	Hole positions, deformation and support arrangement
Anchor bolts	Bolts cast into the foundation to secure the pole	Quantity, size, position, projection and threads
Anchor bolt setting template	Plate or frame that locates bolts during concreting	Hole spacing, orientation, level and secure fixing
Levelling nuts	Adjustment nuts beneath the baseplate in some designs	Use only where expressly permitted by the drawings
Non-shrink grout	Material used in some designs to fill the space beneath the baseplate	Material, extent of filling, curing and strength
Access door	Opening near the pole base for wiring and maintenance	Orientation, sealing, locking and working clearance
Earthing terminal	Dedicated connection between the pole and earthing system	Contact condition, tightness and electrical continuity
Weatherproof cable gland	Fitting that secures and seals a cable at an entry	Compatibility with cable diameter and effective sealing
Equipotential bonding	Connection of specified metal parts to a common protective system	Required bonding of the pole, enclosures and brackets

Base flange connections use different load-transfer arrangements. In some designs, the baseplate bears directly on the foundation; others use lower nuts in conjunction with grout; others permit an ungrouted stand-off connection. Do not mix these arrangements on site. A gap beneath the baseplate does not, by itself, justify adding grout or packing.

3 Required Documents and Project Parameters

3.1 Required Documents

- Pole general arrangement, equipment layout, base flange dimensions and anchor bolt drawings.
- Project-approved foundation design and the associated geotechnical, wind loading and equipment loading conditions.
- Earthing, lightning protection, power and communication wiring drawings.
- Requirements for matching bolts, nuts and washers, together with the fastening procedure.
- Lifting plan covering the actual lifted weight, centre of gravity, lifting points, rigging, crane and personnel positions, and conditions for releasing the lifting gear.
- Instructions for grouting, corrosion protection repairs and equipment installation, where applicable.

The foundation must be designed for the pole height, equipment weight, projected wind area, ground conditions and other relevant factors. Do not select a generic foundation based solely on pole height or copy an existing nearby installation without verification.

3.2 Project Parameter Register

Enter the approved value or an explicit “Not applicable” for each item below. Do not use “to be decided on site”. Do not start a work stage until the critical parameters for that stage have been confirmed.

Parameter	Approved value or document reference
Pole ID, model, location and height	_____
Actual equipment, weights and mounting positions	_____
Foundation dimensions, concrete strength class and reinforcement	_____
Anchor bolt size, property class, quantity, spacing and orientation	_____
Bolt embedment, projection and permitted tolerances	_____
Baseplate support, levelling and grouting requirements	_____
Foundation and grout strength required for erection and subsequent loading	_____
Permitted pole verticality tolerance and measurement method	_____
Fastening method, torque or preload for each bolted connection	_____
Thread lubrication condition and anti-loosening method	_____
Earthing conductors, connections and test criteria	_____
Supply voltage, protection, power cable and communication cable requirements	_____
Lifting points, lifted weight, rigging and weather limits	_____

Common error: assuming that bolts of the same diameter require the same tightening torque. Bolt property class, surface treatment, lubrication and connection design all affect fastening requirements. Do not use an online torque table without approval.

4 Personnel Tools and Safety Preparation

4.1 Responsibilities

- Site supervisor: organize the work, check site conditions, coordinate activities and confirm hold-point release.
- Project technical lead: confirm drawings and resolve deviations and design changes.
- Lifting supervisor, crane operator, riggers and signallers: appoint in accordance with local requirements and the approved lifting plan.
- Electrical personnel: isolate supplies, carry out wiring, complete protective earthing and perform electrical tests.
- Installers: assemble components, install cables, secure connections and complete records in accordance with the task briefing.

Personnel unfamiliar with lifting, electrical work or work at height must not carry out these activities independently.

4.2 Tools and Materials

Provide tools and materials appropriate to each stage: surveying instruments, steel tape measure, level, torque wrench with a suitable range and valid calibration, matching sockets, cable pulling tools, cable bushings, weatherproof cable glands, cable labels, inspected and approved lifting gear, protective padding, corrosion protection repair materials and personal protective equipment. Electrical personnel must select the electrical test instruments.

An impact wrench may be used for preliminary tightening where the fastening procedure permits. Do not assume that it replaces the specified final tightening method or the required records.

4.3 Work Area and Safety Controls

1. Install barriers and establish exclusion zones covering crane slewing, pole swing and the potential fall area.
2. Confirm crane access, outrigger positions and ground bearing capacity. Check for underground voids, service trenches and nearby excavations.
3. Identify overhead power lines and other obstructions. Maintain clearances required by local regulations and the site method statement.
4. Before excavation, review underground service records and locate services using appropriate detection methods. Investigate uncertain locations further using an approved method.
5. Check the weather before starting. Stop the affected activity when the limits in the method statement or equipment instructions are reached, or if lightning, inadequate visibility or uncontrolled movement occurs.
6. Use an assessed work platform and suitable fall protection for work at height. Do not assume that the CCTV pole or camera brackets are designed for climbing.
7. Before electrical work, identify all power sources, disconnect them, apply lockout or equivalent isolation controls, and have electrical personnel verify that the circuit is dead. Identify solar, battery and standby supplies separately.

Stop work immediately if any of the following occurs: an unidentified underground service is found; the foundation cracks or settles; suspected structural damage is found in the pole or welds; fasteners do not match; a sling slips; temporary supports are unstable; a cable is damaged; or unqualified personnel are assigned work requiring specific competence or authorization.

5 Delivery Handling and Storage

Procedure

1. Check the pole shaft, arms, brackets, base flange hardware, cast-in components and other supplied parts against the packing list.
2. Verify pole IDs, models, material markings and equipment interfaces. Do not mix components from different pole models or foundation assemblies.
3. Inspect the pole shaft, baseplate, welds, mounting holes and access door. Record and photograph any transit damage.
4. Inspect galvanizing, coatings and threads. Refer structural damage to the project technical lead for assessment. Repair surface damage using the approved procedure.
5. Support the pole on suitable blocks and prevent rolling. Protect coatings, thin-walled sections and connection interfaces during handling.
6. Maintain drainage in the storage area. Avoid prolonged contact with standing water, soil or corrosive substances.

Common Errors

- Dragging the pole along the ground, damaging the coating or causing local deformation.
- Using an arm, access door or unapproved hole as a lifting point.
- Checking quantities without verifying bolt property classes and matching washers.
- Storing stainless steel poles in contact with rusty carbon steel, causing surface contamination.

Release to the next stage: quantities and models are correct, no structural damage remains unresolved, and the disposition of every defective item has been confirmed.

6 Setting Out and Excavation

Procedure

1. Establish the foundation centre, elevation and orientation from the approved layout. Set reference points that can be checked during subsequent work.
2. Verify camera coverage, arm orientation, access door clearance, enclosure position and road access requirements.
3. Check underground services and overhead obstructions, then excavate in accordance with the approved method statement.
4. Confirm that founding soil, groundwater and actual excavated conditions match the design assumptions.
5. Provide the specified side slopes or excavation support, drainage and edge protection. Personnel may enter the excavation only when site safety conditions permit.
6. After inspection and acceptance of the formation, carry out the specified blinding and subsequent foundation work.

Common Errors

- Setting out only the centre without checking the rotational orientation of the flange hole pattern, leaving the arm or access door facing the wrong direction.
- Assuming that service depths shown on drawings are exact and excavating without detection checks.
- Filling an over-excavation with loose soil, reducing foundation support.
- Continuing to the original design after encountering soft ground, fill or standing water.

If conditions differ: stop foundation work if the soil, dimensions or underground conditions do not match the design. The project technical lead must obtain the designer's instructions. Do not reduce foundation dimensions or reinforcement, or relocate the foundation, without approval.

7 Reinforcement Anchor Bolts and Conduits

Procedure

1. Install reinforcement and cover spacers to the drawings. Check bar sizes, quantities, spacing and connections.
2. Secure anchor bolts with a setting template matching the base flange. Maintain the specified bolt spacing and overall orientation.
3. Measure each bolt's position, vertical alignment, top elevation and projection above the foundation.
4. Confirm that the bolt projection accommodates all nuts, washers and associated components in the approved connection arrangement. Checking that the bolts merely protrude is insufficient.
5. Position cable conduits to the drawings. Confirm that their outlets enter the pole interior and remain clear of anchor bolts, reinforcement and baseplate bearing areas.

6. Ensure conduit bend radii and internal diameters suit the cables. Install draw ropes and cap conduit ends to prevent concrete ingress.
7. Install cast-in earthing components and connections to the earthing drawing. Leave termination points identifiable, accessible for connection and available for inspection.
8. Inspect all work before concealment and concreting. Record dimensions, elevations and orientation; take photographs and obtain inspection sign-off.

Common Errors

- Relying only on tie wire to locate anchor bolts, allowing the assembly to move during concreting.
- Using a setting template that does not match the actual base flange model.
- Positioning a conduit outlet outside the flange footprint or against the baseplate, causing cable crushing during erection.
- Allowing slurry or concrete to contaminate threads, then damaging them by forcing nuts on.
- Wrapping an earthing conductor around a bolt instead of making the specified earthing connection.
- Welding anchor bolts to reinforcement without approval, altering the bolt material properties or load-transfer conditions.

Release to the next stage: inspection of work before concealment has been signed off, anchor bolts are securely positioned, conduits are clear and cast-in earthing components comply with the drawings.

8 Concrete Placement Curing and Foundation Acceptance

Procedure

1. Recheck formwork, reinforcement, anchor bolt positioning and conduit end protection. Confirm that the concrete to be placed meets the design requirements.
2. Place and compact concrete using the approved procedure. Avoid striking anchor bolts and conduits.
3. Monitor formwork and bolt positions during concreting. Address any movement promptly using the approved method.
4. Finish the foundation top and drainage falls to the specified detail. Do not alter the baseplate bearing surface without approval.
5. Cure the concrete and carry out the specified strength tests. Restrict construction loading until the required strength is achieved.
6. Clean exposed threads. Inspect anchor bolts, the foundation surface, conduits and earthing termination points.
7. Recheck the centre, elevation, bolt spacing, orientation, bolt projection and foundation condition. Complete the foundation acceptance record.

Common Errors

- Using elapsed days in place of strength evidence. Reaching a particular concrete age does not automatically authorize lifting.
- Assuming that a dry-looking surface proves adequate internal concrete strength.
- Heating or bending misplaced bolts, or cutting base flange holes larger to make them fit.
- Replacing cast-in bolts with anchors installed in drilled holes without redesign.

Do not proceed to lifting if the required foundation strength has not been demonstrated, cast-in component deviations remain unresolved, or cracks, honeycombing, looseness or settlement have not been assessed. Obtain approval of the repair method from the designer or project technical lead.

9 Ground Assembly and Cable Installation

Procedure

1. Support the pole on protective padding in a level area and prevent rolling. Check arm, bracket, enclosure and access door orientation.
2. Fit components approved for ground-level assembly to the drawings, using the specified hardware and anti-loosening measures.
3. Assemble sectional poles using the model-specific joint instructions. Verify the slip-joint overlap, orientation, joint clearance or flange fastening requirements, as applicable. Do not assemble by judgement alone if instructions are unavailable.
4. Clean cable routes and outlets. Fit bushings or protective sleeves to prevent metal edges from cutting the cables.
5. Install and label cables to the wiring drawing. Leave sufficient length for equipment termination and maintenance, and provide cable supports and strain relief.
6. Maintain the specified segregation of power and communication cables, minimum bend radii and cable pulling limits.
7. Check how preinstalled equipment affects the lifted weight and centre of gravity. Verify that all components are secure.

Common Errors

- Selecting rigging for the bare pole weight after cameras have been preinstalled.
- Pulling cables across sharp hole edges, causing sheath damage that may be difficult to see.
- Leaving cables too short, placing tension on terminals during erection or equipment adjustment.
- Allowing cable self-weight to be carried continuously by electrical terminals or network ports.
- Mounting equipment at unapproved holes, increasing eccentric loading and projected wind area.

Acceptance checks: components match the drawings; fastening is complete; cables are free from crushing, abrasion and tension; and the lifting plan covers the actual preassembled configuration.

10 Lifting and Pole Erection

Before Lifting

1. Confirm that foundation acceptance and strength documentation have been approved for release.
2. The lifting supervisor must verify crane capacity at the actual working radius, boom length and outrigger configuration. Do not rely solely on the crane's nominal tonnage.
3. Check rigging rated capacities, sling angles, loading arrangements and approval of lifting points.
4. Confirm the designated signaller and signals, exclusion zone, tag line arrangements and escape routes.
5. Clear the installation area. Prepare connection hardware and the temporary stability measures specified in the lifting plan.

Procedure

1. Attach rigging at the approved lifting points, with measures to prevent slipping and protect the coating.
2. Carry out the trial lift specified in the lifting plan. Check balance, sling loading and attachment security. If anything is abnormal, lower the assembly to a safe position before adjustment.
3. Lift and rotate the pole upright smoothly. Control orientation with the tag lines specified in the plan. Keep personnel clear of the swing and potential fall zones and out from beneath the suspended load.

4. Align the base flange with the anchor bolts and lower slowly. Avoid striking the bolts with the pole base, and protect cables entering through the base.
5. Once the base is in position, immediately fit all required nuts and washers and implement the specified stability measures.
6. Maintain control with the crane while completing the necessary alignment and specified fastening.
7. Transfer the load from the crane and release the lifting gear only after the site supervisor confirms that support, connections and stability meet the release criteria.

Common Errors

- Releasing the lifting gear after fitting only one or two nuts.
- Placing hands between the baseplate and foundation to locate holes, creating a crush hazard.
- Using the crane to side-pull the pole or force it onto misaligned bolts.
- Lifting with a loose arm to save time.
- Assuming the pole is stable because it is upright, although base support is incomplete.

If a sling slips, uncontrolled swinging occurs, an outrigger settles or abnormal noise is heard, stop in accordance with the lifting emergency arrangements and isolate the danger area. The lifting supervisor must coordinate the safe response. Personnel must not approach and attempt to steady the pole with their bodies.

11 Alignment Fastening and Base Completion

11.1 Vertical Alignment

1. Check pole verticality in two perpendicular directions using the specified measurement method.
2. Adjust only within the approved support arrangement. Where levelling nuts are permitted, adjust them as instructed; do not raise the base arbitrarily.
3. Check arm and access door orientation. Carry out final fastening once the permitted alignment tolerances have been achieved.
4. Remeasure after tightening and transferring the load from the crane. Where required, check again after grouting in accordance with the method statement.

Do not level the base with timber, bricks, scrap steel or stacks of washers. Where the design specifies shims or packing plates, follow the drawings for their size, position and securing method.

11.2 Bolt Fastening

1. Confirm that bolts, nuts, washers and thread condition meet the requirements and that nuts can be threaded on normally.
2. Tighten in stages and in the specified sequence. Symmetrical connections are generally tightened by alternating between opposite positions; follow the connection-specific instructions.
3. Use the specified tools to achieve the approved torque or other preload requirement. Record the connection location, target value and result.
4. Apply the specified anti-loosening measures. Inspection witness marks may also be added for subsequent monitoring.
5. Recheck verticality, baseplate condition and effective thread engagement.

Common errors: adding lubricant without approval; using mismatched nuts; treating paint witness marks as an anti-loosening measure; accepting a connection solely because it feels tight; or forcing stainless steel fasteners after thread galling has begun. Stop if galling, stripped threads or failure to achieve the required condition occurs. Replace or rectify components as directed by the technical lead.

11.3 Grouting and Corrosion Protection

- Grout only where required by the design. Confirm the grout material, substrate preparation, formwork, gap and extent of filling.
- Mix and place grout to the material manufacturer's instructions, avoiding voids. Cure as specified and demonstrate that the strength required for subsequent loading has been achieved.
- Maintain the specified temporary stability measures before and after grouting. Do not assume that unhardened grout is load-bearing.
- Where the approved design permits an ungrouted connection, do not fill or seal the space beneath the baseplate without approval. Provide drainage and protection to the drawings.
- Repair coating or galvanizing damage using the approved procedure. Protect exposed fasteners against corrosion as specified for the project.
- Do not obstruct drainage holes, access doors, earthing test points or any opening required to remain clear.

12 Equipment Installation Cabling and Earthing

12.1 Equipment Installation

1. Verify the models and actual weights of cameras, brackets, enclosures and accessories.
2. Install equipment at the designed positions. Tighten and secure against loosening in accordance with the equipment instructions.
3. Adjust camera views and confirm that arms, enclosures and site structures do not obstruct the image.
4. Provide adequate maintenance clearance and the required door opening direction.
5. Before adding equipment, longer arms or solar panels, obtain a review confirming the load capacity of both the pole and foundation.

Common errors: assuming that any equipment may be added if the pole appears able to support it; ignoring wind loads from solar panels or large enclosures; or drilling or welding the pole without approval.

12.2 Cabling and Weatherproofing

1. Route power, communication and control cables to the drawings. Clearly identify cables and ports.
2. Fit bushings at metal cable outlets. Secure cables without cutting into the sheath, and prevent the access door from trapping cables.
3. Match weatherproof cable glands to the cable outside diameter and fit compatible blanking plugs to unused openings. Installation must not reduce the equipment's ingress protection rating.
4. Provide drip loops and other weatherproofing measures specified by the equipment manufacturer to prevent rainwater running along cables into connections.
5. Connect cable screens and surge protective devices in accordance with the system design.
6. After termination, arrange the cables neatly, leave adequate service length and close the access door.

Tape does not replace specified sealing accessories. Simply looping a cable upwards does not ensure a watertight connection.

12.3 Protective Earthing and Lightning Protection

1. Connect the pole's dedicated earthing terminal to the earthing system as designed. Complete the required bonding of enclosures, brackets and other metal components.
2. Use earthing conductors, terminals and connection methods meeting the project requirements. Prepare contact surfaces and provide corrosion protection.

3. Keep earthing connections accessible for inspection. Apply the designed compatibility measures at connections between dissimilar metals.
4. Electrical personnel must test protective conductor continuity and the earthing criteria specified by the design. Record test locations and results.
5. Install lightning and surge protection to the dedicated design and equipment instructions. Protective earthing does not replace a complete lightning protection design.

Common errors: relying on contact between the pole base and concrete as earthing; clamping bare wire beneath an ordinary nut; connecting over an insulating coating; assuming that base flange bolts ensure earthing continuity to every component; or applying the same earth resistance limit to every project.

The target earth resistance must be established by the project design. This manual does not prescribe a universal resistance value.

13 Pre Energization Checks and Functional Testing

13.1 Mechanical Checks

- No unresolved defects remain in the pole, arms, brackets or foundation.
- Verticality and orientation meet the approved requirements.
- All connection hardware is fitted, with records of fastening, anti-loosening measures and corrosion protection.
- Baseplate support complies with the design. Where grout is required, it has been accepted and has reached the specified strength.
- The access door is securely closed, and drainage paths and maintenance access remain clear.

13.2 Electrical Checks

Electrical personnel must verify supply voltage, wiring, polarity, protective devices and earthing, and complete the project-specified tests. Before insulation resistance testing, isolate cameras, network switches, surge protective devices and other electronics that could be damaged by the test voltage, following their manufacturers' instructions. General installers must not select the test scope or voltage themselves.

Confirm that terminals are secure, no conductors are exposed and no cables are trapped or crushed. After enclosure seals have been restored, authorized personnel may energize the system. Do not connect wiring and use live trial-and-error testing at the same time.

13.3 Functional Testing

1. Energize in accordance with the system commissioning plan and monitor the supply and protective devices.
2. Check equipment start-up, communication links, video images and connection to the monitoring platform.
3. Verify coverage, focal length, viewing angles and night-time images where applicable.
4. Investigate abnormal vibration, sway, overheating, unusual odours, signs of water ingress and intermittent communication.
5. Once testing is satisfactory, save the as-installed configuration, port assignments and inspection records.

Do not attempt to demonstrate structural safety by shaking the pole, climbing it or applying improvised loads. Any required structural testing must follow a separately approved test plan.

14 Troubleshooting

Issue	Possible cause	Required action	Do not
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Issue	Possible cause	Required action	Do not
Base flange will not fit over bolts	Incorrect spacing, orientation or bolt position	Remeasure and obtain approved corrective instructions	Bend bolts or enlarge or cut holes
Pole leans	Levelling, support or foundation defect	Remeasure and adjust to the support detail; inspect the foundation	Pack with bricks or timber, or pull into position by force
Nut will not thread on	Wrong size, contamination or damaged thread	Clean, verify compatibility and assess replacement	Force on with an impact wrench
Excessive pole movement	Connection, support, foundation or loading problem	Isolate the area, take out of service and obtain technical assessment	Assume retightening alone has resolved the defect
Video image vibration	Loose fixing, insufficient bracket stiffness or pole response	Check equipment fixings and pole conditions separately	Weld on braces without approval
Water in enclosure or connection	Defective seals, cable routing or drainage	Isolate power, repair to the design and retest	Open while energized or rely only on tape
Intermittent communication	Wiring, supply, interference or cable damage	Test the link section by section	Keep replacing cameras without diagnosis
Earthing test fails	Connection, earth electrode system or test method problem	Have electrical personnel verify the cause and implement approved corrective work	Add salt to manipulate the test result
Foundation cracking or settlement	Construction, ground or loading problem	Stop further loading and obtain a structural assessment	Conceal the defect with surface render
Witness marks no longer align	Connection may have loosened or been disturbed	Inspect to the fastening procedure and record findings	Repaint marks instead of inspecting

15 Acceptance and Handover

Acceptance requires more than checking that the pole is upright or that the camera produces an image. Review the mechanical, civil, electrical and system commissioning records.

15.1 Final Inspection Checklist

Item	Acceptance basis	Result and record reference
Product model and equipment configuration	Approved drawings and equipment schedule	_____
Foundation and cast-in components	Acceptance records, strength evidence and dimensional checks	_____
Baseplate support and grouting	Approved detail, installation records and strength requirements	_____
Verticality and orientation	Project tolerances and measurement records	_____
Bolt fastening and anti-loosening measures	Approved fastening procedure and measured results	_____

Item	Acceptance basis	Result and record reference
Coatings and exposed component protection	Corrosion protection specification and inspection records	_____
Cabling and weatherproofing	Wiring drawings, equipment instructions and inspection records	_____
Earthing and electrical protection	Design criteria and test records	_____
Camera and communication functions	Commissioning plan and test records	_____
Access door and maintenance clearance	Drawings and site inspection	_____

Explain any “Not applicable” entry. Rectify and reinspect nonconforming items before acceptance; identifying them as “known issues” does not make the installation acceptable for handover.

15.2 Handover Documents

- As-built drawings, pole ID and location register, and as-installed equipment configuration.
- Records of work inspected before concealment, foundation acceptance records and concrete strength evidence.
- Grouting and grout strength records, where applicable.
- Verticality, fastening, electrical and earthing test records.
- Equipment commissioning records, photographs of critical work stages and defect close-out records.
- Product and equipment manuals, maintenance requirements and warranty documents, as required by the contract.
- Approvals for site changes.

At handover, explain the isolation procedure, access door and earthing point locations, the prohibition on unauthorized equipment additions, and the process for reporting abnormal conditions to maintenance personnel.

16 Inspection and Maintenance in Service

Establish the inspection schedule and initial follow-up inspection for the project based on site conditions, wind exposure, corrosion conditions and manufacturer requirements. Do not apply a universal interval without assessment.

Focus on foundation cracking and settlement, pole corrosion and deformation, signs of fastener loosening, bracket condition, access door seals, cable abrasion and earthing connections. Check fastenings using the approved method; do not repeatedly apply additional torque to every bolt.

After strong winds, flooding, impact, lightning or equipment modifications, carry out a targeted inspection appropriate to the event. If increasing lean, foundation movement, cracks, significant deformation or persistent abnormal sway is found, isolate the danger area and safely disconnect power where necessary. Resume use only after technical assessment.

Appendix A Site Installation Inspection Record

Project: _____ Pole ID: _____
 Location: _____ Drawing revision: _____

Stage	Inspection points	Result	Inspector and date
Delivery	Quantity, model, structural and surface condition	_____	_____
Setting out	Centre, elevation, orientation and underground services	_____	_____
Before concreting	Reinforcement, bolts, conduits and cast-in earthing	_____	_____
Foundation release	Strength, dimensions, tolerances and condition	_____	_____
Ground assembly	Components, connections, bushings and cables	_____	_____
Before lifting	Lifting points, rigging, weight, site and weather	_____	_____
Before rigging release	Support, fixing, stability measures and authorization	_____	_____
Installation completion	Verticality, fastening, grout and corrosion protection	_____	_____
Before energization	Wiring, sealing, earthing and electrical tests	_____	_____
Handover	Functions, records and defect close-out	_____	_____

Appendix B Bolt Fastening Record

Connection location: _____ Bolt ID: _____

Bolt size and property class: _____

Matching nuts and washers: _____

Thread surface condition and lubrication: _____

Fastening instruction reference: _____

Specified method or target torque: _____

Tool ID and calibration expiry date: _____

Achieved result: _____

Anti-loosening method: _____

Installer: _____ Checked by: _____ Date: _____

Where fastening is controlled by a method other than torque, record the actual parameters and inspection results required by that method. Do not enter a fictitious torque value.

Appendix C Pre Installation Toolbox Briefing

1. Do not start without confirmed drawings. Do not excavate until underground conditions have been verified.
2. Check anchor bolt orientation, spacing and projection before concreting.
3. Authorize erection on the basis of foundation strength evidence and acceptance records.
4. Support the baseplate as drawn. Do not raise it or fill gaps without approval.
5. Use the planned lifting points. Keep personnel out from under suspended loads and clear of potential fall areas.
6. Release the lifting gear only after authorization. An upright pole is not automatically safe to release.
7. Follow the fastening procedure. Hand feel alone is not an acceptance criterion.
8. Protect cables at metal openings. Do not trap cables at the pole base or access door.
9. Use specified earthing terminals and methods. Isolate and verify that the circuit is dead before wiring.
10. Obtain technical approval before adding equipment, modifying brackets, drilling or welding.
11. Rectify failed inspection items and reinspect before proceeding.
12. Keep installation records for acceptance and subsequent maintenance.

Preparation Notes and References

The procedures, checklists and reminders in this manual provide general site guidance for fixed CCTV poles. The manufacturer and project technical lead must supply the project-specific values and model-specific procedures. The reference material is intended only to support checks of general principles for underground service protection, lifting arrangements and electrical safety. It does not imply product certification or replace local legislation or approved project procedures.