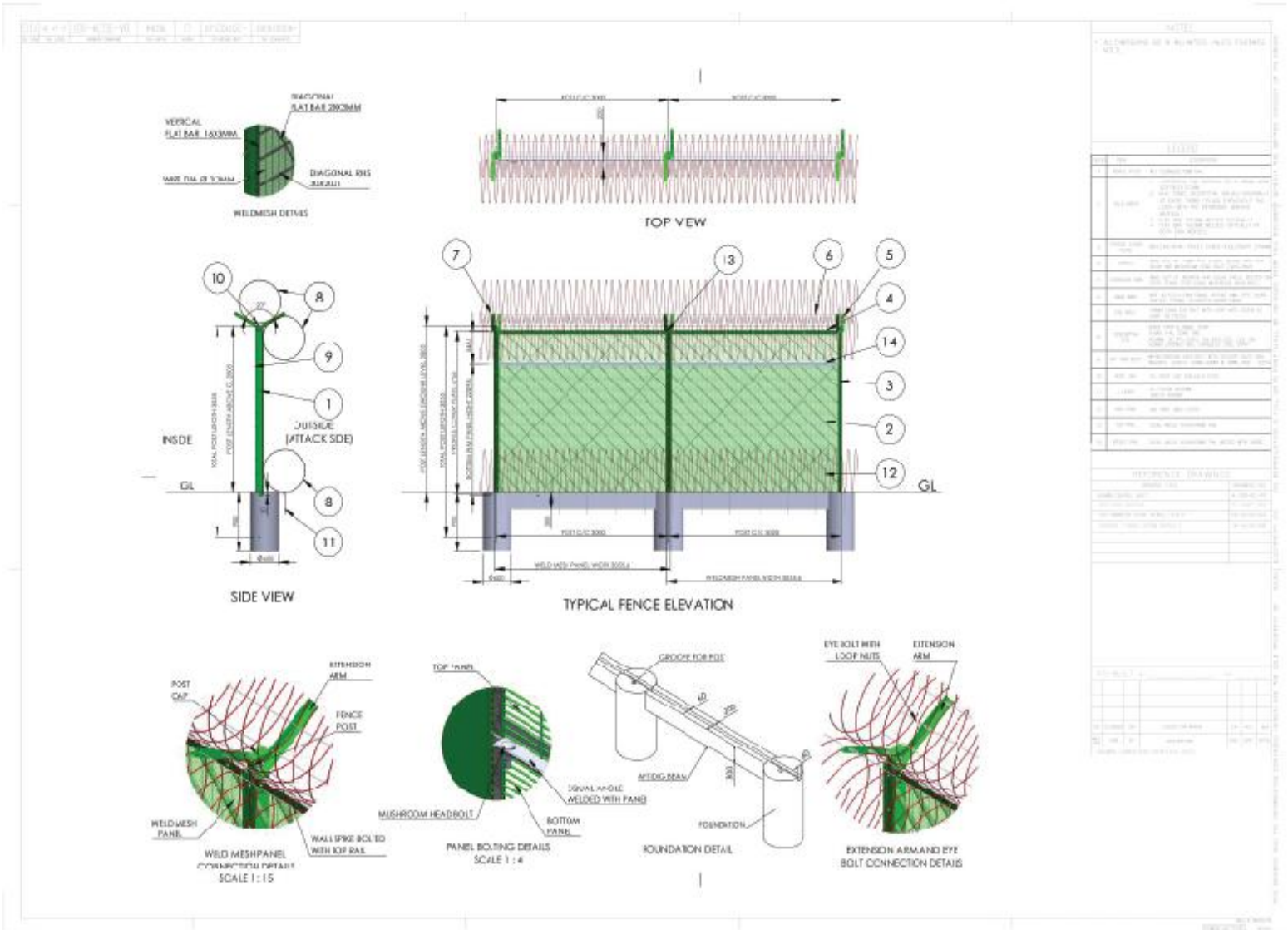




METHOD STATEMENT- ANTI PERSONNEL FENCE (RWM) AUGER METHOD / Cast in Situ, Precast



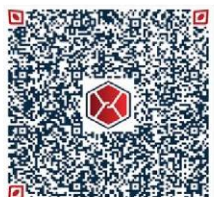
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DISCLAIMER

Please read this installation manual carefully before installing the **ANTI PERSONNEL FENCE**. This manual is intended to provide guidance for a safe and proper installation of the product. However, the manufacturer cannot be held responsible for any damages or injuries resulting from improper installation or use of the product. It is the responsibility of the installer/user to carefully review and follow all instructions provided in this manual. The installation process may require the use of specialized tools and materials, and it is important to ensure that these are used correctly and in accordance with all applicable safety guidelines and regulations. If you have any questions or concerns about the installation process, please contact our customer service department for assistance. Please also refer to the system drawings in Appendix section of this document to understand the nomenclature of the components and to review the component list. It is important to refer to contract plans and site documents for specific details. At Hitech Fence, your safety is important to us. Please feel free to connect with us if you have any questions or are in doubt about any aspect of the equipment. Hitech Fence can provide verbal guidance, additional written instructions, or the services of a factory engineer as per specific conditions. Please note that Hitech Fence does not assume responsibility for any injury to persons or property during the installation process. Finally, please ensure the correct delivery of the content by checking and confirming the packing list contents. If you notice any errors or shortages, please report them immediately to Hitech Fence.

System drawings included in the method statement are for representation purpose and drawings approved for the site considering all the site-specific complexities shall have precedence over these drawings. Similarly, some changes in the installation method would be adopted for managing fence installation under actual site conditions





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| Scope of Work

- The scope of work covers the complete process for constructing a new fence line, including all phases from site preparation to final installation. This involves marking the fence line, excavating post holes, setting fence posts and foundations, and installing the various components of the fence as per the approved drawings. It includes ensuring proper alignment, spacing, and depth for post holes and foundations, as well as adhering to project specifications and safety standards.

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| OBJECTIVES

- The objective of this project is to construct a new fence line that is secure, functional, and meets all design and quality requirements. The goal is to ensure the fence is installed efficiently and safely, adhering to the approved design specifications and providing a durable and aesthetically pleasing result. This includes achieving the desired level of security, compliance with standards, and minimal disruption to the site.

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| Role and Responsibilities

Project Manager

- Oversee the overall execution of the fence installation project.
- Ensure adherence to project timelines, budget, and specifications.
- Coordinate with stakeholders, including clients, contractors, and suppliers.
- Address any issues or changes that arise during the project.

Site Engineer

- Supervise the day-to-day operations on-site.
- Ensure that the installation process adheres to the approved drawings and specifications.
- Conduct site inspections to monitor progress and quality.
- Resolve technical issues and provide solutions for any challenges encountered.
- Provide technical guidance and support during the installation process.
- Ensure safety regulations.
- Address technical issues and develop solutions to overcome challenges.
- Maintain detailed records of site activities and progress.
- Communicate project updates and issues to the project manager.

Site Supervisor

- Oversee daily operations and manage the installation workforce.
- Ensure tasks are performed according to the schedule and project requirements.
- Maintain site organization, cleanliness, and proper storage of materials.
- Monitor progress and enforce safety protocols.
- Conduct regular inspections to ensure work quality and adherence to specifications.

Safety Officer

- Develop and enforce safety protocols and procedures for the installation process.
- Conduct regular safety inspections and ensure compliance with safety regulations.
- Provide safety training and personal protective equipment (PPE) to all workers.
- Respond to and investigate any safety incidents or accidents.

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| Role and Responsibilities

Quality Control Inspector

- Perform quality checks and inspections at every stage of the installation.
- Verify that materials and workmanship meet the required standards and specifications.
- Document and report any deviations or non-compliance issues.
- Ensure that all quality control measures are implemented effectively.

Fence Installation Technicians/Workers

- Carry out the physical tasks involved in the fence installation process, including excavation, post setting, and panel installation.
- Follow instructions and adhere to safety and quality guidelines.
- Report any issues or discrepancies to the site engineer or project manager.
- Maintain tools and equipment in good working condition.

Surveyor

- Conduct initial site surveys to determine the exact location and alignment of the fence.
- Provide accurate measurements and boundary markings for excavation and installation.
- Assist in verifying that the installation aligns with the approved design and site plan.
- Each role is crucial to ensuring the successful completion of the fence installation project, and collaboration among team members is essential for achieving the project goals efficiently and effectively

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| LIST OF INSTALLATION TOOLS



Drill Bits



Dust Protection Mask



Screwdriver



Overalls with High



Measuring tape



Plumb Bob



Goggles



Safety Shoes



Helmet





| LIST OF INSTALLATION TOOLS



Auger(for Cost in Situ without formwork)



JCB Backhoe(for Cost in Situ with formwork and Precast)



Overalls with High

Measuring tape



Plumb Bob



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| MATERIALS

- Epoxy Coated Rebar ASTM A775
- Concrete C30 (Approved Mix design from Client/Authority)
- 250 Micron Polyethylene Vapor Barrier(only for auger method)
- Bitumen (For Cost in situ with formwork and Precast)
- Molds/formwork as per dimension in approved drawing.

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| SAFETY PRECAUTIONS

- Wear appropriate PPE: Use gloves, safety goggles, hard hats, and safety shoes.
- Perform site assessment: Identify and address potential hazards.
- Maintain tools: Regularly inspect and properly use equipment.
- Secure posts properly: Ensure posts are correctly aligned and anchored.
- Avoid extreme weather: Postpone work during severe weather conditions.
- Have an emergency plan: Keep a first aid kit and know emergency procedures.
- Keep the area clean: Remove debris and organize tools to prevent tripping.
- Follow regulations: Comply with local safety standards and codes.
- Transport fence material with care: Handle materials gently to prevent damage.

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| TRAINING/TOOL BOX MEETING

- Safety Procedures: Detailed guidelines on personal protective equipment (PPE), safe handling of tools and materials, and emergency protocols.
- Site Assessment: Training on how to identify and mitigate potential hazards, such as underground utilities and unstable ground.
- Equipment Use: Instructions on the correct operation, maintenance, and safety measures for tools and machinery used in fence installation.
- Compaction and Foundation Preparation: Techniques for proper soil compaction and preparation of fence foundations according to standards.
- Installation Techniques: Step-by-step procedures for installing fence posts, panels, and other components, including alignment and securing methods.
- Material Handling: Best practices for transporting, storing, and handling fence materials to avoid damage and ensure quality.
- Compliance: Understanding of local regulations, standards, and codes relevant to fence installation and construction safety.
- Emergency Response: Training on how to respond to accidents, injuries, and other emergencies on the job site.
- Housekeeping: Importance of maintaining a clean and organized work environment to prevent hazards and ensure efficiency.

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| QUALITY CONTROL

- **Standards and Specifications:** Ensure all materials and workmanship adhere to relevant standards (e.g., ASTM, AASHTO) and project specifications.
- **Material Inspection:** Inspect and verify the quality of all materials, including epoxy-coated rebar (ASTM A775/A775M), concrete, and fence components, before use.
- **Compaction Testing:** Conduct soil compaction tests (ASTM D698) to confirm that the foundation meets the required density, achieving at least 95% compaction.
- **Concrete Quality:** Verify the concrete mix design, placement, and curing processes to ensure compliance with strength and durability requirements.
- **Installation Procedures:** Monitor the installation process to ensure proper alignment, securing of posts, and adherence to approved techniques.
- **Continuous Monitoring:** Regularly inspect and document each phase of the installation to identify and correct any deviations from quality standards.
- **Final Inspection:** Perform a comprehensive final inspection to ensure the entire installation meets all quality criteria before project completion.
- **Documentation and Reporting:** Maintain detailed records of inspections, tests, and any corrective actions taken to ensure traceability and accountability throughout the project.
- **Training and Awareness:** Ensure all personnel are aware of quality control procedures and the importance of maintaining high standards throughout the installation process.

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| INSTALLATION OF POSTS

Contractor shall choose any one method according to site situation and approval from client/Consultant)

1. Use auger (for cast in situ auger method)
2. Use JCB Backhoe for manual excavation (for Cast in situ with formwork/molds)
3. Use JCB Backhoe for manual excavation (for Precast foundations)

Steps involved for Fence Foundation, post installation and beam concrete:

- Marking of Fence post center as per approved fence layout.
- Start of Auguring with Authorized Augur machinery on soil up to the required depth and diameter OR Use Manual Excavation with JCB Backhoe
- The Area should be barricaded with soft barrication method. Or follow any other special requirement from client/consultant for safety measures.

Auger method for cast-in-situ

- Once the augur depth reached to the desired depth and diameter, shift the Augur machine to next pit and repeat the same procedure throughout the fence foundation.
- Manually, around the circumference of the pit and at bottom, 250 Micron (1000 gauge) Polyethylene sheet (Vapor Barrier) shall be laid.
- If required the water shall be injected into the pit to avoid soil sliding, if found loose soil.
- The 250micron sheet shall be inserted inside the pit after manual compaction at bottom of pit has done with hand wooden/steel rammer.
- At footing top 200 / 300 mm round mold shall be placed for having good surface.
- Periodically check the vertical alignment and center-to-center (c/c) distance of the posts during concrete pouring, as the weight of the concrete can sometimes cause the posts to shift.

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Manual Excavation with JCB Backhoe for Cast-in-situ

- Once the excavation depth reached to the desired depth, shift the machine to next marking of foundation and repeat the same procedure throughout the fence foundation.
- After manual compaction of the soil, install a 250-micron vapor barrier/polythene sheet.
- Apply a 100mm layer of lean concrete on top of the vapor barrier.
- Install formwork/mold of foundations.
- For forming the groove in the post foundation concrete a wooden runner of 60 x 60mm shall be fixed along the fence mesh line before pouring the concrete and shall be removed once the concrete reach its initial setting time (to insert the fence panel by 50mm).
- Installation of Fence post shall be done as per the survey marking points by considering line, level and alignment as per approved drawings.
- Position the fence post (120 x 60 mm) with 750 mm below the footing. APF Fence Post 60mm face shall be placed on the front face (Attacking direction) at every 3m C/C for both combined and individual system ensuring alignment.
- Periodically check the vertical alignment and center-to-center (c/c) distance of the posts during concrete pouring, as the weight of the concrete can sometimes cause the posts to shift

Manual Excavation with JCB Backhoe for precast

- Once the excavation depth reached to the desired depth, shift the machine to next marking of foundation and repeat the same procedure throughout the fence foundation.
- Prepare precast foundations with proper alignment of posts and ensure thorough curing proper curing of concrete.
- For forming the groove in the post foundation concrete a wooden runner of 60 x 60mm shall be fixed along the fence mesh line before pouring the concrete and shall be removed once the concrete reach its initial setting time (to insert the fence panel by 50mm).
- Position the fence post (120 x 60 mm) with 750 mm below the footing. APF Fence Post 60mm face shall be placed on the front face (Attacking direction)
- Place posts on fence line 3m c/c ensuring proper alignment.
- Once the posts are placed, backfill around the foundations with suitable material and compact.

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Remaining Process for All Methods

- Installation of corner post - Set corner fence post at desire angle as per site condition.
- C30 -4350 Psi concrete Grade shall be used as per approved specifications
- Excavate with mechanical means for anti-dig beams between the post footings as per the approved drawing for required depth & length and manual compaction at bottom of excavated trench shall be done with hand wooden/steel rammer.
- Fence bottom panel installation with required accessories shall be done once the above work completed.
- Formwork/shutters for grade beam will be done and concrete poured with approved grade along the fence mesh line.
- Two coats of Bitumen emulsion paint shall be applied on beam side concrete surface upto the soil contacted area.
- Backfilling shall be done with the same excavated material upto the top on attack side and 100mm below from top on asset side.
- Intermediate beam bottom layer one soil compaction FDD test shall be carried out at every 1Km to get the value between 85 – 90% compaction.
- Repeat the same procedure throughout the Fence length.
- Curing shall be done on top surface concrete portion for 7 days.

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Some examples of the excavation sites for reference only:



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| POST CONCRETE, CURING & PANEL FIXING AND ANTI DIG BEAM WORK



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| FIXING BOTTOM PANEL TO THE FENCE POST

- Make sure while installing that:
- The 12.7 horizontal wire spacing panel should be on the attacking side, here in after called Front Side.
- RHS tube and Horizontal flats with vertical wire panel should be on the safe side, here in after called the rear Side.
- Fix both ends of the front weld mesh panel with the front face of the post (60mm) using Profile Cover Plate, Mushroom Head (M8 x 160mm) bolt, Security nut, and washer as shown in fig. 03.
- Note that do not fully tight the bolts before installing top panel (Keep loose).
- It is recommended that the installation of the panels should start from one end and proceed further.

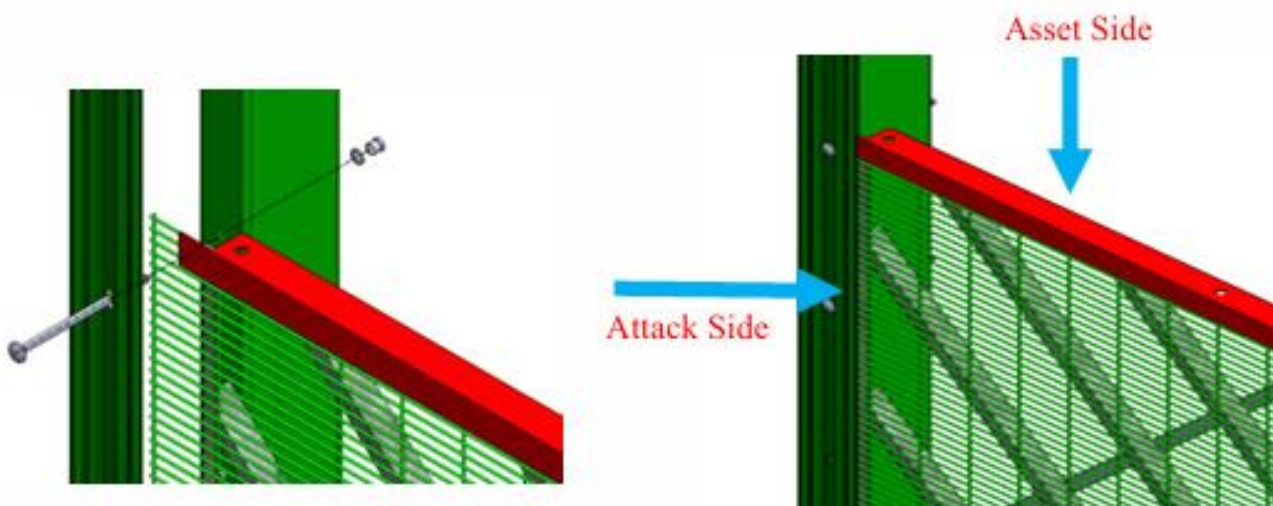


Fig. 03

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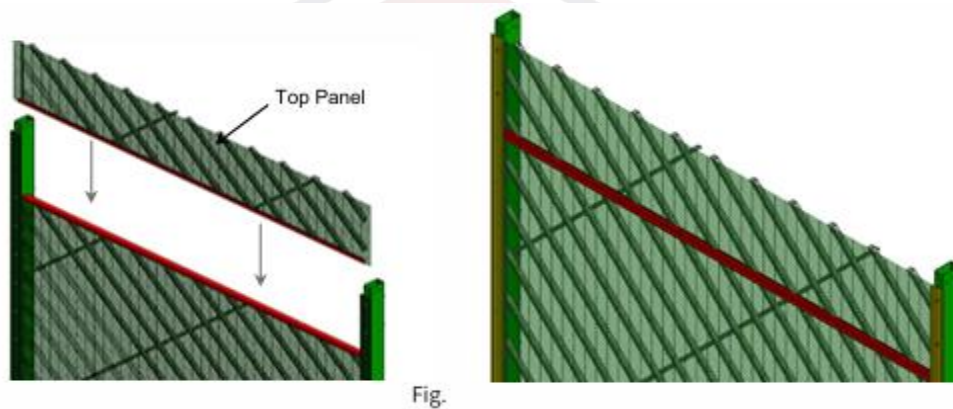
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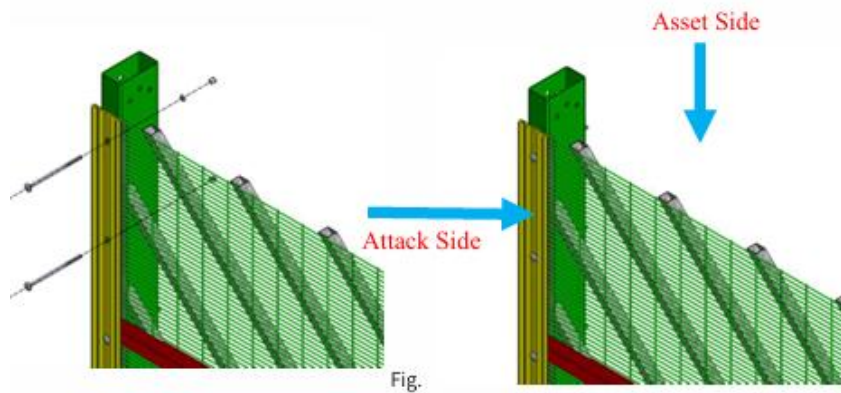


| FIXING TOP PANEL TO THE FENCE POST

- Make sure while installing that:
- The 12.7 horizontal wire spacing panel should be on the attacking side, here in after called Front Side.
- RHS tube and Horizontal flats with vertical wire panel should be on the safe side, here in after called the rear Side.
- Lift the top panel using the lifting equipment /manually and insert it in from top side in between post and cover plate as shown in below fig.



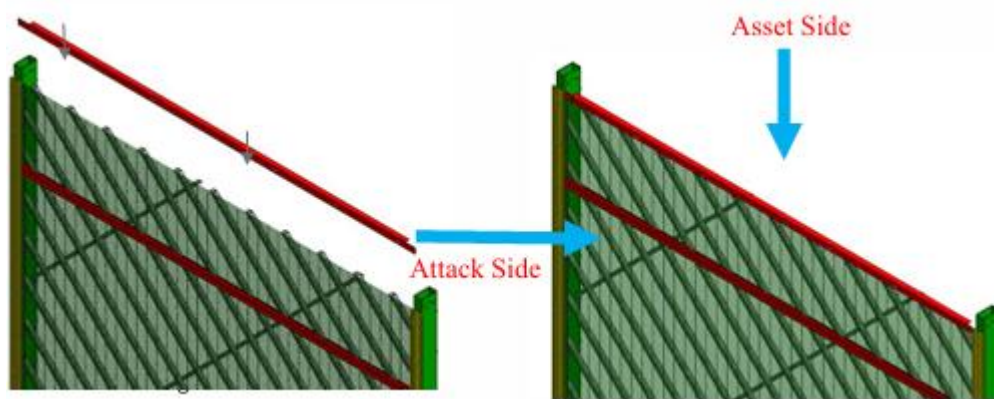
- Insert the bolts to fix the top panel as shown in below fig.
- Note that do not fully tight the bolts before inserting the top rail (Keep loose).



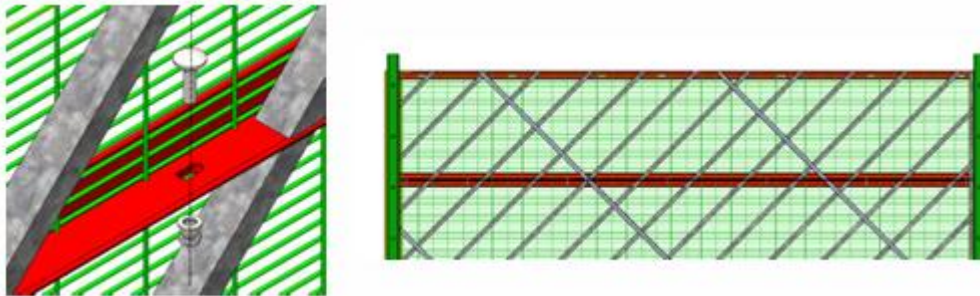


| FIXING TOP RAIL TO THE FENCE PANEL

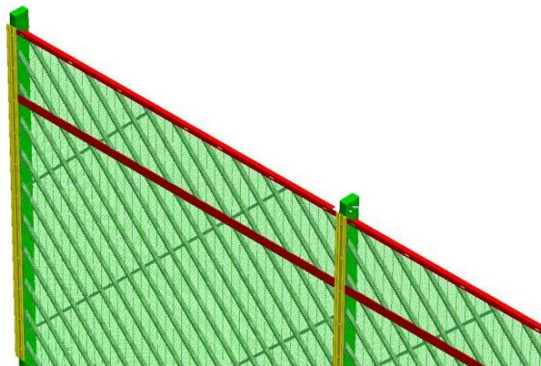
- Lift the top rail using the lifting equipment /manually and insert it in from top side in between panel and cover plate as shown in below fig.
- After that do fully tight all the bolts of cover plate.



- Fix both panel rails using Mushroom Head(M8 x 30mm) bolt, Security nut, and washer as shown in fig.



- Follow the same procedure for other top rails



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| FIXING WALL SPIKE ON PANEL/TOP RAIL

- Fix wall Spike on top rail and connect it with 7 nos of M8 X30 mushroom head bolt, security nut & washer per bay.

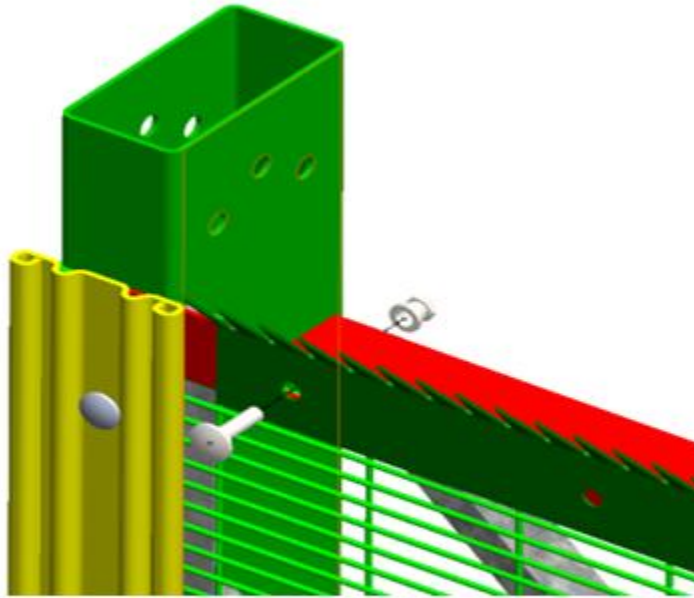


Fig. 05

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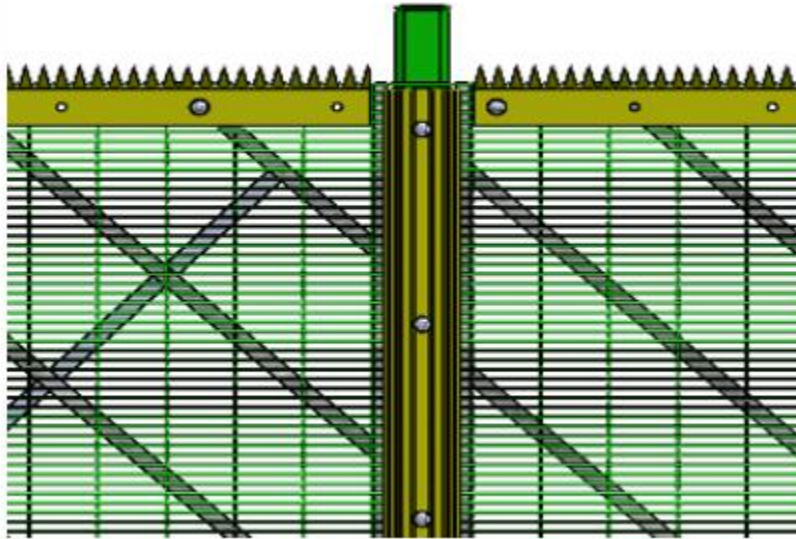


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| FIXING WALL SPIKE ON PANEL/TOP RAIL



| INSTALLATION OF EXTENSION ARMS

- Fix the Extension arm using M8X90 Mushroom head bolt as shown in the figure.
- Insert the Post caps at the top of the post.
- Ref below fig..

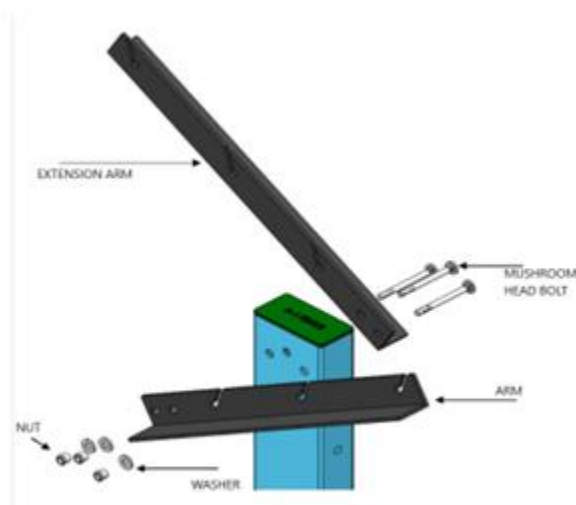


Fig.

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| INSTALLATION OF EXTENSION ARMS

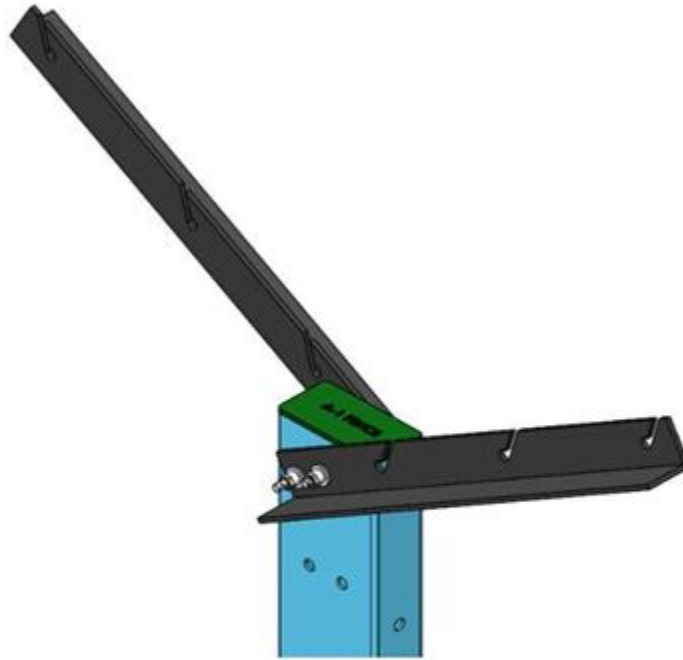
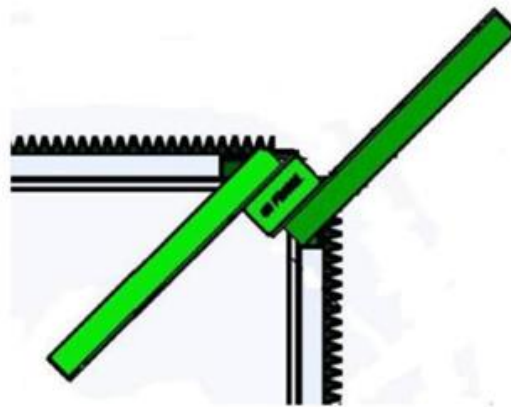


Fig. 07 (b)

- Installation of extension arms at corner post -Fix the Extension arm using the M8X90Mushroom head bolt as shown in the figure.



Installation of extension arms at corner post a or b

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| FIXING EYE BOLTS

- Eye bolts to be installed every 21 posts, Start, End and Corner posts.
- Slide the stud through the extension arm slot and fix it using a hex nut & washer as shown in Fig. 08 (a & b).
- After sliding the stud with the extension arm, two loop nuts to the tight with extension arm.

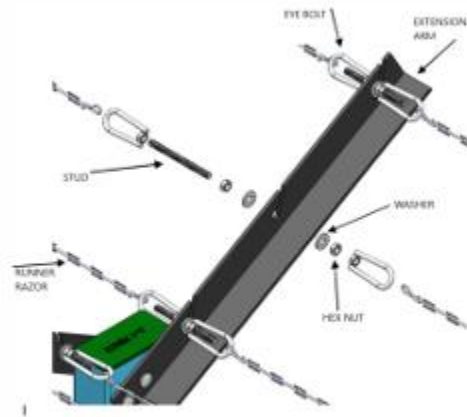


Fig. 08 (a)

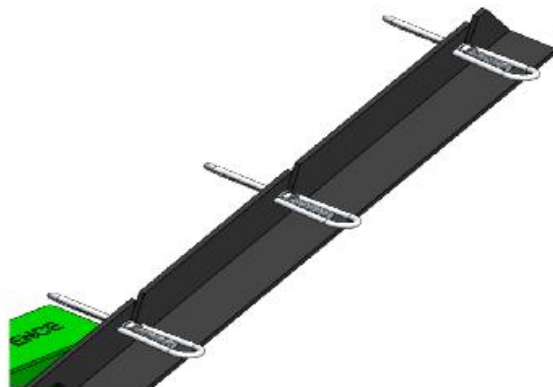


Fig. 08 (b)

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| FIXING BARBED WIRE IN EYE BOLT

- After fixing eye bolts to the extension arm, fix the barbed wire by passing one end of the barbed wire through the eye bolt loop.
- Stretch it through the remaining extension arms and insert by sliding inside the slots.
- Ref below fig. 09

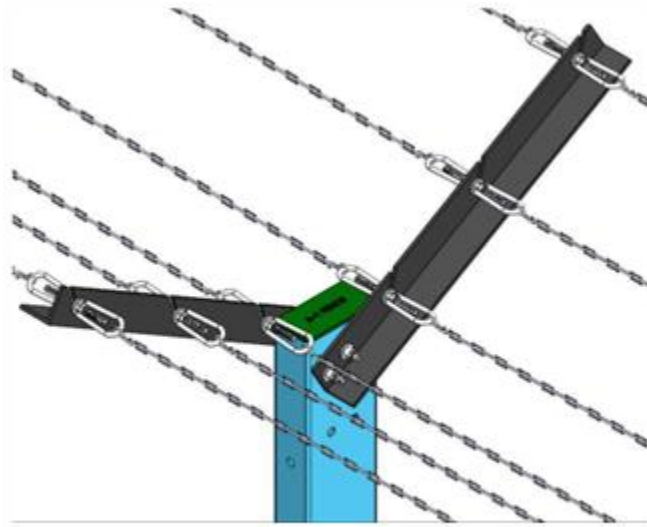


Fig. 09

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| FIXING CONCERTINA COILS ON EXTENSION ARM

- Open the coil at the ground and lift to the position
- Place concertina coil rolls on barbed wire.
- Open the coil at the ground and lift to the position
- Hold the coil steadily and place it along the length of the fence line.
- One coil of concertina (55 loops) to be stretched to 9m long.
- Tie the concertina coil with 2 rows of barbed wire on each side using hog rings @ every 500mm c/c.
- Ref below fig. 10

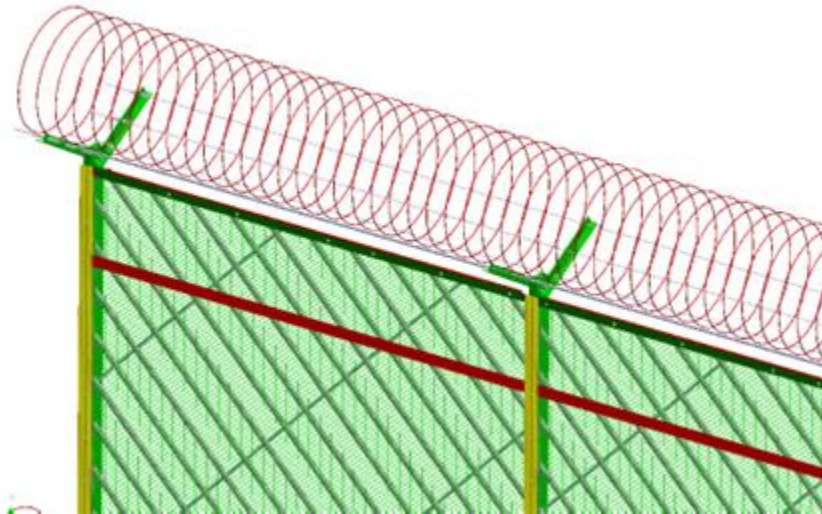


Fig.10

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| FIXING CONCERTINA COILS ON EXTENSION ARM

- Hold concertina coil rolls on the front side of the panel at the front top side.
- Hold the coil steadily and place it along the length of the fence line.
- One coil of concertina (55 loops) to be stretched to 9m long.
- Fix concertina coil with bottom row of barbed wire at attack side and with panel using hog rings at 500mm C/C.
- Ref below fig. 11 (a & b)

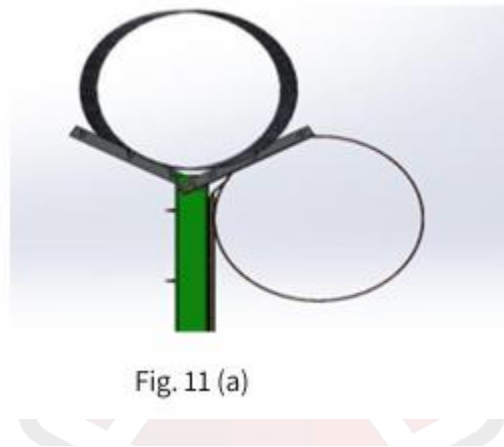


Fig. 11 (a)

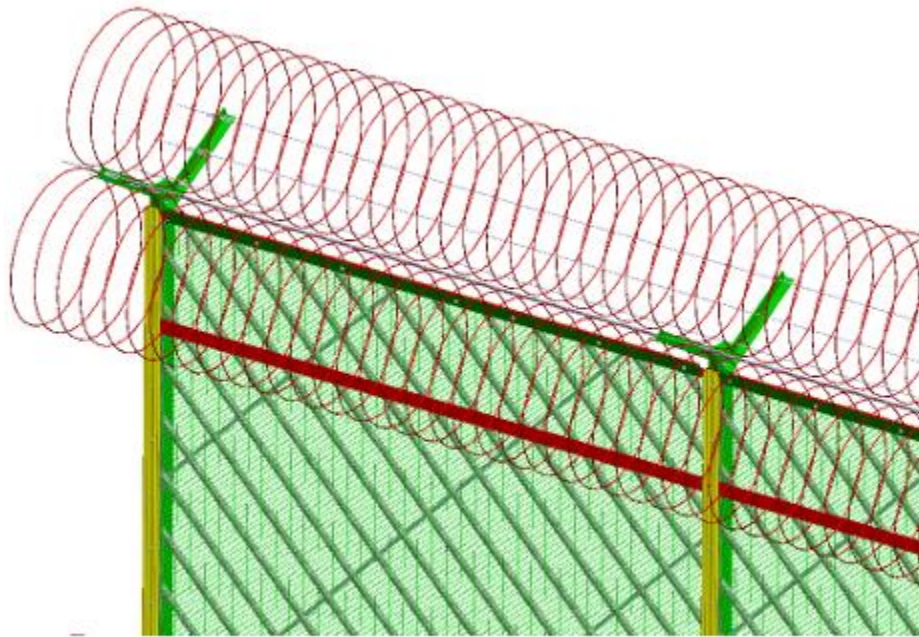


Fig. 11 (b)





| FIXING CONCERTINA ON GROUND

- This Concertina to be fixed at the bottom side of Panel i.e rest on Ground level.
- Hold the coil steadily and place it along the length of the fence line.
- One coil of concertina (55 loops) to be stretched to 9m long.
- After that, with a layer of concertina hammered with 'J' type hook in the ground (soil) at every 500 mm C/C. As shown in fig.12
- Concertina to be clipped with mesh panel using hog rings at every 500mm C/C.
- Follow the same procedure for next.

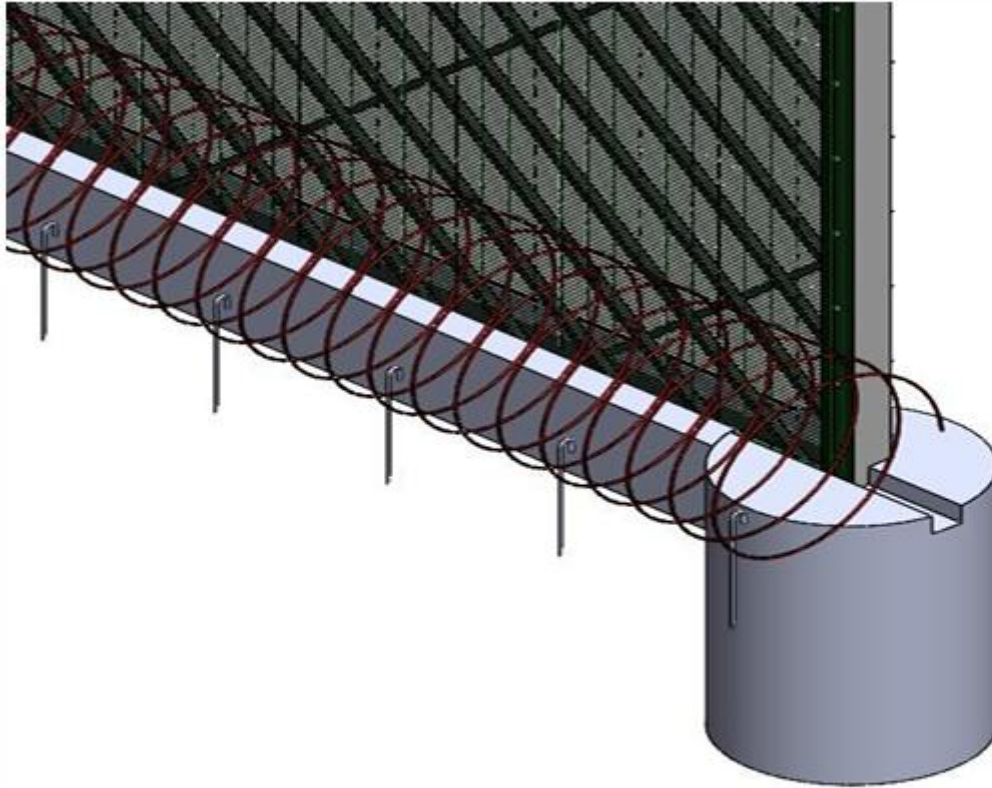


Fig. 12

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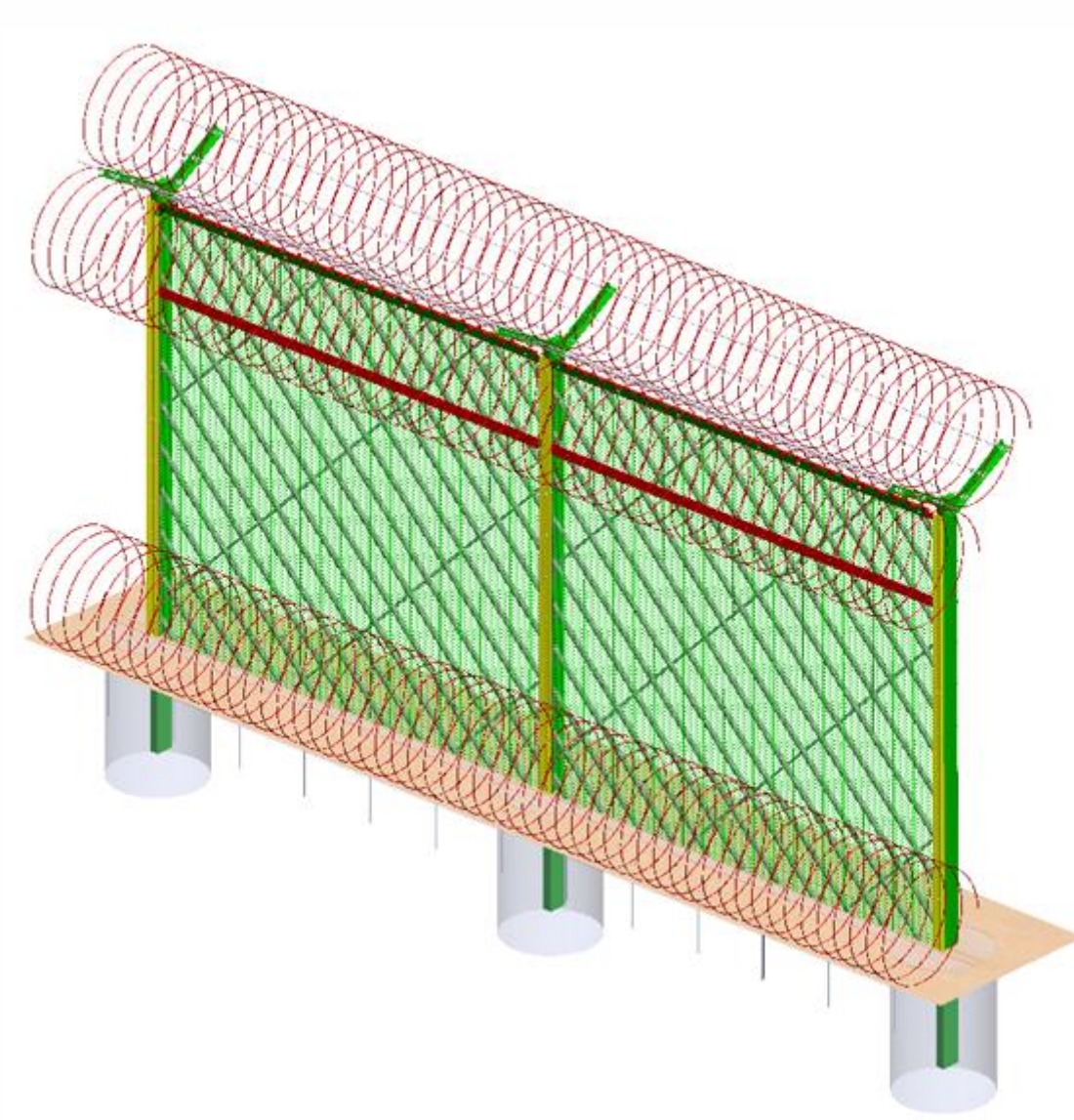
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INSPECTION CHECK LIST

CLASS - 1 ANTI PERSONNEL FENCE (RWM- INDIVIDUAL) AUGER METHOD

INSPECTION CHECK POINT FOR CLASS - 1 ANTI PERSONNEL FENCE (RWM- INDIVIDUAL)-AUGER METHOD

	Inspection Activity	Ref. Docs. (Drawing / Spec / MS / Standard / Code / Contract)	Test / Inspection Requirements and Acceptance Criteria	Frequency	Intervention Points			Verification Documents
					A one fence	SBM	Consultant/ JCP Engineer	
1	Pre-Works							
1.1	Toolbox Talk / Briefing on MS shall be carried out.	As per Method statement	Ensure toolbox conducted and documented	Prior to work start	H	S	S	Attendance Sheet
1.2	Survey Equipment Calibration	As Per Requirement	Third party Certification (calibration)	Prior to start of work	H	R	R	Calibration Certificates
1.3	Underground utilities Identification and Protection	As Per Requirement	NOC Approval	Information Prior to work start	H	W	R	NOC, Survey report
2	Installation of CLASS - 1 ANTI PERSONNEL FENCE (RWM)- AUGER METHOD							
2.1	Setting out for Excavation and formation preparation	As Per Approved Drawing/ survey Layout/ Method Statement	Approved Drawing / Layout	Actual Fence length	H	H	H	Approved layout
2.2	Inspection after Mechanical Augur drilling , Compaction at bottom with hand rammer , laying 250micron vapor barrier as bottom & circumference of excavated pit ,Top 200/300mm Shuttering , Installation of Post before concrete .	As Per Approved Drawing/ survey Layout/ Method Statement	Ensure fence posts has been installed true in alignment, plumbed and level. Ensure fence post placed in the centre of hole as per survey marking.	Actual Fence length	H	H	H	Approved Survey report .
2.3	Final Inspection & Handover	As Per Drawing and Method Statement	Ensure Final Inspection will be raised after completion of work for approval.	Actual Fence length	H	H	H	Approved typical Fence drawing

Abbreviation:

1. S – Surveillance
2. R – Review
3. H- Hold

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