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ABOUT THIS BOOK

This book is a guide to the protection regulations for extra-high-voltage (EHV) overhead lines and underground cables for contractors, consultants, strategic partners, as well as anyone who is working on or near DEWA’s electricity transmission network. It provides the necessary information to ensure that their projects conform to these regulations and what information, documents and other criteria must be provided to ensure their successful completion.

How this book will help you

To avoid accidents and potential blackouts, and minimise risk. You can know what to do and what is required to ensure your work can be carried out in complete safety.
CHAPTER 1
TRANSMISSION LINES & EQUIPMENT
1.1 Types of Cables

a) There are two voltages for underground cable – 400kV and 132kV.
b) Currently, DEWA uses XLPE cables (Fig a and b), and also uses oil-filled cables (Fig c) in some areas.

Please note that power cables cannot be detected by cable detectors when shutdown or out of service.

a. 400kV XLPE Cable
b. 132kV XLPE Cable
c. 132kV Oil Filled Cable
There are two types of communication cables:
1. Fiber-optic cable (Fig d)
2. Pilot cable (Fig e)

Note: Fiber-optic and Pilot cables cannot be detected by cable detectors, even when live.

- **d. Fiber-optic Cable**
  - Fiber = 24/48
  - APPROX. 10.5 - 18mm

- **e. Cross Section of Pilot cable**
  - APPROX. 31.4mm
  - Pair - 14/20 Nos.
  - APPROX. 1.13mm
TRANSMISSION LINES & EQUIPMENT

1.2 Transmission Overhead Towers

There are two voltage types of overhead lines: 400kV and 132kV. Overhead Lines are either

1. Tubular Monopole Tower: 400kV (Fig b)

a. 400kV Overhead Transmission Tower

b. 400kV Tubular Monopole Tower

c. 400/132kV Gantry Tower

d. 132kV Steel Lattice (Double Circuit Tower)

2. Steel Lattice: 400kV (Fig a), 400/132kV Gantry (Fig c) or 132kV Steel Lattice (Fig d)
1.3 Installation Methods

400 and 132kV cables are laid by the following methods:

a) 400kV cable laid in Tunnel
b) 132kV cable laid in concrete trough
c) 132kV cable laid in 50cm trough in congested area
d) 132kV FO cable laid in 50cm trough
e) 132kV Power and FO cable laid in PVC ducts
f) 132kV Power, Pilot and FO cable laid in directly buried condition
g) 132kV Power, Pilot and FO cable laid by Directional drilling method - Refer Figure 4.2.5 Pg. 58

a. 400kV cable laid in Tunnel

(Cable Installation method in Precast Culvert)
b. 132kV cable laid in concrete trough

132kV Cable Laid In Trough
c. 132kV Cable laid in 50cm trough in congested Area

132kV Power & Fiber Optic cable in 50cm Wide Trough in Congested Area Due to Inadequate Space
d. 132kV FO Cable laid in 50cm trough
e. 132kV Power and FO cable laid in PVC ducts

(132kV Power / F.O Cable Laid through duct (with 11 Ducts) (Open Cut Method for unmade area)
f. 132kV Power, Pilot and FO cable laid in directly buried condition

Cable Laying Method Directly Buried 132kV Power / Pilot / F.O. Cable
Cable Laying Method for Directly Buried 132kV F.O. Cable
Cable Laying Method for Directly Buried 132kV Pilot Cable
1.4 Equipment

A. Cable Equipment

1.4.1 Cable Joints
Cable joints are integral parts of the Transmission underground lines system as a whole.

Note: A Joint is a sensitive point in transmission cable systems. The joint area to be maintained and protected properly to ensure reliability of power supply.

A power cable joint is normally enclosed in 2.4 metre wide concrete troughs. A few joints are enclosed in troughs, with some access from manholes. Joint locations are identified with red and white route markers for all types of installation. (Fig 1.4.1.A)

1.4.2 Earth Link Boxes
This is one of the accessories for the transmission system used to easily test cable sheaths.

1.4.2 A Types of installation of link box
a. Vertical mounted
b. Flush mounted (Underground)

c. Surface / Pole type route marker is installed for direct buried or cable trough under any un-paved area.

c. Flush type cable route marker (Concrete) is installed for direct buried or cable trough under any paved area, road way, parking etc with suitable marking for straight and angle run, cable joint etc.

d. All type of route markers should be installed 50 Meters interval for straight route.

1.4.1 A 132kV Cable joint location

Location of 132kV cable Joint bay installation with identification route marker
1.4.4 Vertical mounted link box with steel bollard Protection

1.4.5 Vertical mounted link box with steel crash barrier protection in road side

1.4.6 Surface / pole type route marker installed in every 50 m interval

1.4.7 Flush type route marker at paved areas
B. Overhead Line Equipments

1.4.8 Installation of Permanent Height limit gantry at road crossing tower location

1.4.9 Installation of Permanent Height limit gantry at road crossing tower location
TRANSMISSION LINES & EQUIPMENT

1.4.10 Installation of signboards indicating prohibitions under power transmission lines

1.4.11 Installation of signboards indicating prohibition of any type of activity under/within overhead line corridor
CHAPTER 2
HAZARDOUS FACTORS WHILE WORKING NEAR TRANSMISSION LINES
HAZARDOUS FACTORS WHILE WORKING NEAR TRANSMISSION LINES

Most common hazard is damage to the EHV Transmission lines due to contractor’s unsafe construction activities:

2.1 Hazardous Factors

a) Works within and around Transmission lines without obtaining NOC, violation of NOC condition and method statement
b) Works without verification or identification of underground cables
c) Works without verification or checking clearance of overhead lines
d) Usage of machinery for excavation over or in close vicinity of Transmission lines
## 2.2 Hazard Levels

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Hazards</th>
<th>Hazard level</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Works within and around Transmission lines without prior notification or obtaining NOC, violation of NOC condition and Method statement</td>
<td>High</td>
</tr>
<tr>
<td>b</td>
<td>Works without verification or confirmation of the underground cables.</td>
<td>High</td>
</tr>
<tr>
<td>c</td>
<td>works without verification or checking clearance of over headlines</td>
<td>High</td>
</tr>
<tr>
<td>d</td>
<td>Usage of machinery for excavation over or in the close vicinity of Transmission lines</td>
<td>High</td>
</tr>
</tbody>
</table>
## HAZARDOUS FACTORS WHILE WORKING NEAR TRANSMISSION LINES

### 2.3 Precautionary measures to eliminate hazards

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Precautionary measures</th>
<th>Hazard level</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Contractor works within and around the Transmission lines to be allowed with prior notification, valid NOC and following all NOC conditions or method statement</td>
<td>Low</td>
</tr>
<tr>
<td>b</td>
<td>All underground cables identified and protected in work areas</td>
<td>Low</td>
</tr>
<tr>
<td>c</td>
<td>OHL clearance confirmed and height-limited gantry provided to work under OHL</td>
<td>Low</td>
</tr>
<tr>
<td>d</td>
<td>Ensure manual excavations are over or in the close vicinity of the Transmission lines</td>
<td>Low</td>
</tr>
</tbody>
</table>
CHAPTER 3
NOC FOR CONSTRUCTION WORKS
NOC FOR CONSTRUCTION WORKS

3.1 General Provisions

3.1.1 Definitions
The No Objection Certificate is usually abbreviated as NOC and is defined as a written permission issued by the Infrastructure Information and Permit department at DEWA to any requesting party to do the proposed construction as indicated in the submitted and approved drawings.

3.1.2 Purpose
Issuance of NOC prior to construction works provides the first line of protection to all existing DEWA's assets from proposed construction, as it contains sets of regulatory requirements, protective rules, precautionary measures, engineering construction standards, etc. that requires clear understanding by every constructors that they must adhere to the NOC's terms and conditions.

3.1.3 Scope
The extent of application of approved NOC are those areas within or in close proximity to the transmission line networks (400/132kV Overhead Line and underground cables)

3.2 Type Of NOC’s

3.2.1 Design NOC
Design NOC is a permission given to consultant to proceed with the proposed project as indicated in the Tender Design Drawing, which indicates the approximate locations and clearance of all the existing transmission underground cables and overhead lines.

3.2.2 Trial Pit NOC
Trial Pit NOC is a permission given to contractor to proceed digging-in the number of Trial Pits based on the proposed scope of work limit demarcated on the site as directed by DEWA's patrolling staff.

A. Purpose of Trial Pit
This is to confirm the real identification and exact location of DEWA's existing assets in relation to proposed construction works and to be the only parameters used in the evaluation and approval of the subsequent Construction NOC.

B. Requirements for Trial Pit Preparation

a. Trial Pit digging should only be started under the supervision of DEWA's representative (TLMPatrolling). According to the scope of work, the supervisor will mark the Trial Pit location.
b. The required supervision specified in above should be requested by using DEWA work supervision request format and sending a fax or e-mail to DEWA, two (2) days before to start of any digging works. (Annex 3.1.1)
c. Trial Pit is a trench made across and over the suspected location of underground cable, trough, joint, etc. (Figure: 3.1.2)
d. Trial pits should only be dug or to be carried manually by hand to ensure that the buried unconfirmed location of cables may not be penetrated or located. (Figure: 3.1.3)
e. Trial Pit Checklists should be completed before beginning to dig Trial Pits. (Annex: 3.1.1A)
Annexure 3.1.1 Work notification/supervision request

TRANSMISSION LINE (400/132 KV OHL & CABLE)
WORK NOTIFICATION/ SUPERVISION REQUEST

<table>
<thead>
<tr>
<th>Notification prior to start work</th>
<th>Trial Pit</th>
<th>Trial Pit Verification Request</th>
<th>Request for monthly supervisor for protection</th>
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</thead>
<tbody>
<tr>
<td>1. Trial Pit</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2. Construction</td>
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</tbody>
</table>

Note: This request has to be forwarded to DEWA 2 working days in advance by fax: 04-3229095 or by email to tlmsupervision@dewa.gov.ae, before start of proposed work.

Request Ref./Date:
Project No. & Title/Name
Description/Nature of the work
Contractor Name
Tel:
Fax:
Email:
Consultant Name
Tel:
Fax:
Email:
NOC no. (Copy and drawings to be attached)
Issue Date:
Location of the work:
  a) Area Name
  b) Road/Street Name
  c) Nearest Landmark
Requested Period:
(Work shall be done during DEWA office Hrs. only)
  From: To: Timing(Hrs.)
Requested Period beyond DEWA office Hrs.: (Justification letter to be attached)
  From: To: Timing(Hrs.)
Note: This request depends on DEWA approval.
Site in charge details:
  Name of the Engineer
  Contact No.
  Name of the Site Foreman/Supervisor
  Contact No.

Undertaking by working party - We assure you that no any works will be executed by us without prior notification to DEWA and before DEWA supervisor visits the site/ checks the NOC & provides official clearance for the above work, which is in the vicinity of 400/132KV Cables / OHL.

Thanking you for your kind cooperation and assuring you of our best services at all times.

Signature: ____________________________
Name: _______________________________
Designation: _________________________
Contact No.: _________________________
Email: ______________________________
Date: ________________________________

Note: If failed to notify the cancellation, further request will be rejected and can be considered after approval from DEWA TLM-LP management.
# NOC FOR CONSTRUCTION WORKS

## Annexure 3.1.1 A. Trial Pit check List

### TRIAL PIT VERIFICATION CHECK LIST

<table>
<thead>
<tr>
<th>SN</th>
<th>ACTIVITY</th>
<th>ACTION</th>
<th>VERIFIED</th>
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<tr>
<td></td>
<td></td>
<td>CONTRACTOR</td>
<td>DEWA TLP</td>
</tr>
<tr>
<td>A.</td>
<td>PRIOR TO TRAIL PIT EXCAVATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Working party has obtained NOC from the concerned DEWA department and Detailed scope of work is available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Boundary of proposed working area especially the edge at the side of existing transmission D/C/Cables should be marked out on site.</td>
<td></td>
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<tr>
<td>3.</td>
<td>GPS Coordinates of existing H/D cables on-drawing should be determined at site by GPS Station and marked on site reliably at the presence of T/LP Supervisor which will serve as priority reference for location of Trial Pit.</td>
<td></td>
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<tr>
<td>4.</td>
<td>The proposed work is parallel to the existing 132kV Direct buried cables and clearance from the proposed work (max excavation edges) less than 2.0m, Trial pit verification is required. Minimum 10.0m and Maximum 20.0m gap. With the direct buried cables more than 2.0 m away and cable within the Trough, Trial pit verification required. Minimum 10.0m gap. If the proposed working area length is less than the above mentioned length, Minimum 2 trial pit verification required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Location of Trial Pit should be as shown only by T/LP Supervisor at site.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Any discrepancy of drawing to site topography and other structures should be corrected on the drawing.</td>
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### DURING TRAIL PIT EXCAVATION

1. Solution for searching existing Cables & Troughs
   a. If 2 meters depth of Trial Pit is not enough to find the cable, 1 meter more deep should be digged.
   b. If Item B.2.a is not sufficient behind the cable, TL/P Supervisor should refer to available T/LM As-Built Drawing to estimate the possible route and make Trial Pit on As-Built Drawing.
   c. If Item B.2.a is still not sufficient behind the cable, extend the depth of Trial Pit made under Item B.2.a & b to a depth of at least 1 meter deep than the depth of proposed nearby work if excavated by hand. Machine is not allowed to excavate the nearby proposed work in this strange situation.
   d. Take GPS coordinates of all excavated trial pits that fail to expose the expected cable and write the accurate coordinates on the verified drawing.

### AFTER TRAIL PIT IS COMPLETED AND READY FOR VERIFICATION

1. Clearance (Horizontal, Vertical, Diagonal) from existing cable/through and nearby cable joint and nearby cable route angle to proposed work including proposed line/entry/exit points, other utilities, and structures (bridge, edge of road, etc.) should be written on Verified Drawing.
2. GPS Coordinates of proposed drilling path / entry and exit pits, piling/Boring/Anchoring on drawing should be determined at site by GPS Station at presence of T/LP Supervisor.
3. Circuit name, type, diameter, number of cables, laying method, number of spare ducts (if any), and sized area (under roadway, condition of soil, crossing other structures, etc.) where it is installed should be written on drawing.
4. If existence of cables/through, C/T or other transmission D/C/Cable are considerably far or remotely be affected by any activities of the proposed works, the distance from existing D/C/Cable to work area and the name of nearest D/C/Cables should be written on verified drawing.
5. Confirm temporary roadway agreeable with contractor and sketch on the drawing. (Choose roadway that can avoid vehicular & machinery movement over transmission corridor)
6. Any recommendation or other information that should be considered in processing NOC should be clearly written in drawing (Soil condition, gas/fuel line, & other precautionary measures).

**DEWA Staff comments:**

<table>
<thead>
<tr>
<th>Requesting Party / Contractor</th>
<th>Contractor Staff</th>
<th>DEWA Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of Work</td>
<td>Signature</td>
<td>Signature</td>
</tr>
<tr>
<td>Work Location</td>
<td>Date</td>
<td>Remarks</td>
</tr>
</tbody>
</table>

**Note:** This document is required for processing Construction TLM NOC.
EHV Overhead Line & Underground Cable Protective Regulations
NOC FOR CONSTRUCTION WORKS

Fig 3.1.2 Locating 132kV cable through Trial Pit.

Locating the service by referring the NOC

C. Trial Pit Verification

After exposing all existing cables, troughs, and joints, DEWA’s representative (TLP – supervisor) needs to confirm the exact location of the cables, depth and clearance is the same as shown in the proposed scope of the work limit. Such confirmation should be written and signed by the same supervisor.

Contractors should submit the verified trial pit details to DEWA with their application for the construction NOC.

Special Cases:
1. If the 132kV cable cannot be found (HDD area), DEWA’s supervisor will write in the verification, that the cable has not been found at the expected depth.

2. Additionally, DEWA can provide the coordinates from the As Built drawings for trial pits, if required.

3. As a final resort, the sensor method can be used for identification of 132kV cables.

Fig 3.1.3 Manual excavation for Trial Pit.

Manual excavation for trial pit to trace the service

Fig 3.1.4 Trail pit verification.
D. OHL Clearance verification

The OHL Clearance verification confirms the horizontal and vertical clearance details shown in the proposed scope of work. This shows contractors the maximum height, and also how close, they can work near and under OHLs. This will be verified and signed by the TLP supervisor.

Contractors should submit this to DEWA with their application for the construction NOC.

3.2.3 Construction NOC

The Construction NOC allows contractors to do the construction they have requested.

3.2.4 Revalidation or Renewal of Expired Construction NOC

This NOC is valid for 6 months only, and should be revalidated 15 days before it is due to expire. Remember, it’s easier to request that the NOC be re-validated than go through the complete procedure all over again.

3.3 Requirements For The Application Of NOC

To make a successful application, you must supply the following documents for these specific types of NOCs:

A. Road work

a. Proposed scope of work drawing in scale (1:1000) with DLTM coordinates incorporating:
   i. Existing 400/132kV OHL or cable routes
   ii. Circuit names
   iii. Cable joints
   iv. Link box locations
   v. Clearance from the proposed road edge to the cable or trough edge
   vi. OHL Horizontal and vertical clearance from the proposed road
   vii. Horizontal clearance from the tower foundation to the road edge
   viii. Clearance details from any proposed bridge, ramp, side wall of ramp, bridge pillar, pier, or underpass to the transmission lines, crossing and their protection details
b. Right-Of-Way cross-section details.

c. Details of OHL tower protection (crash barrier), including Height limit gantry, fencing details, and access from the proposed road to the OHL corridor, if the proposed road is close to, or crosses the OHL corridor.

d. If the proposed road will go over the existing 132kV cable trough, then the length of the cable protection, spare duct details with end-coordinates must be shown on the drawings.
NOC FOR CONSTRUCTION WORKS

e. If the proposed road, or road-widening, goes over the existing duct bank, then the edge of the proposed road needs to be clearly marked in conjunction to the existing cable duct bank edge.
f. If the duct bank is being extended, then details and end-coordinates must be provided for this.
g. If the Proposed road edge is close to the cable joint or link box locations, 4 corners coordinates of the joint box, then the drawing should include the horizontal clearance from the joint or link box to the road edge.
h. If any utility services or diversions included in the proposed road work contract, then applicants should include the clearance details for these services, which can include water, drainage, storm water, irrigation pipelines etc., Etisalat duct, high-voltage or low-voltage electricity, crossing details, and protection details.
i. Applicants should show details of any landscaping work included in the road project if they are within the vicinity of the existing 400/132kV OHL or cable services.
j. Applicants should provide clearance from the road signal post, street-light poles to existing 400/132kV OHL and cables.
k. If the 132kV Cable diversions or OHL risings are included in the road contract, then details of this must be included in the drawing.
l. Access to the substation must be shown on the drawing if the proposed road is close to the substation.
m. Please ensure that TLP staff have verified and provided the cable and OHL clearance details.
n. If there is any other information that you think we need to know, please include it.

B. Installation of Electrical cables and troughs
a. Proposed scope of work drawing should be submitted to scale (1:1000) with DLTM coordinates incorporating the Existing 400/132kV OHL / cable route, circuit names, and cable joints, and link box locations.
b. Clearance from the proposed scope of work should show the excavation edge to the 400/132kV cables and trough edges and the horizontal and vertical clearance from the OHL to the proposed scope of work, and the horizontal clearance from the tower foundation to the excavation edge.
c. ROW cross section details.
d. Method statement, crossing details, and cable trough protection details.
e. If the works are near to the OHL, then applicants should provide the clearance details of equipment, machinery along with the method statements.
f. If the works are close to the OHL, then applicants should provide details of tower protection (concrete or steel crash barriers), temporary height limit gantries, and safety arrangements.
g. Underground structural works details like cable joints and duct bank.
h. Clearance from the existing joint location to the proposed joint location for LILO or existing cable diversion works.
i. Provide evidence and details that TLP staff have verified any cable and OHL clearance.
j. If there is any other information that you think we need to know, please include it.

C. Installation of Pipelines.
   a. Proposed scope of work drawing should show details such as main pipe, PVC duct for control cables, RTU, valve chamber etc. in scale (1:1000) with DLTM coordinates incorporating the existing drawing route, circuit names, cable joint and link box locations.
   b. Clearance from the proposed scope of work and excavation edge to the 400/132kV cable and trough edge, and the horizontal and vertical clearance from the OHL to the proposed scope of work, horizontal clearance from the tower foundation to the excavation edge.
   c. ROW cross section details.
   d. Method statement, crossing details, cable and trough protection details.
   e. Clearance details of equipment and machinery should be submitted along with method statement, if the works are near or are close to the OHL.
   f. Details of tower protection (crash barrier) temporary height limit gantry, etc. safety arrangement to be provided if the works are close to the OHL.
   g. Underground structural works details like manholes, pumping stations and chambers etc should be submitted along with method statements.
   h. TLP staff verified Cable / OHL clearance details.
   i. If there is any other information that you think we need to know, please include it.

D. Construction of building, Boundary walls, Temporary fencing and interlocking.
   a. Proposed plot details and plans for work and any effects.
   b. Scope of work details setting out plan including access details. If the access to the plot or building is over the existing cable routes, this must be protected by an additional protection slab and spare ducts, with detailed drawings for this.
   c. Please include the clearance from the plot limit, depth of excavation, and any shoring, anchoring and fencing details along with existing 400/132kV OHL or cable clearances.
   d. Fencing details (only see through if cable enclosed).
   e. Undertaking that no materials, cabins, construction or materials will be put on on cable reservations.
   f. Undertaking for interlock tiles, gardening, pavement, asphalt etc. that the owner will allow DEWA unrestricted access and reinstatement will be done by them.
   g. TLP staff have verified all cable or OHL clearance details.
   h. If there is any other information that you think we need to know, please include it.

E. NDRC, thrust boring, micro-tunnelling and pipe-jacking
   a. The proposed scope of work drawings should be in plan view and submitted in scale (1:1000) with DLTM coordinates of entry and exit pits incorporating
NOC FOR CONSTRUCTION WORKS

all existing 400/132kV cables, OHL routes, circuit names, cable joints, and link box location (if any).
b. Longitudinal section of proposed scope of work location indicating the existing 400/132kV cables, clearance from the bottom of the trough and the clearance from entry and exit pit to the existing cables.
c. Horizontal and vertical clearance from the OHL to the proposed scope of work, Horizontal clearance from the tower foundation to the excavation edge
d. Clearance details of equipment / machinery to be submitted along with method statement, if the works are near the OHL.
e. Details of tower protection (crash barrier) temporary height limit gantry, etc. safety arrangement to be provided if the works are close to the OHL.
f. Sheet piling protection details (If required).
g. TLP staff verified Cable / OHL clearance details.
h. If any additional information required other than the above to be provided.

F. Etisalat / Du Duct / Chamber Installation
a. Proposed scope of work drawing should be submitted in scale (1:1000) with DLTM coordinates incorporating any existing 400/132kV cables and OHL routes, circuit names, cable joints and link box locations.
b. Clearance from the proposed scope of work or excavation edge to the 400/132 kV cable or trough edge and horizontal and vertical clearance from the OHL to the proposed scope of work, and horizontal clearance from the tower foundation to the excavation edge.
c. ROW cross section details.
d. Method statement, crossing details, cable or trough protection details.
e. Clearance details of equipment / machinery to be submitted along with method statement, if the works are near the OHL.
f. Details of tower protection (crash barrier) and temporary height limit gantries, etc. with safety arrangement to be provided if the works are close to the OHL.
g. Clearance details of chamber and installation details.
h. TLP staff verified Cable / OHL clearance details.
i. If there is any other information that you think we need to know, please include it.

G. Other works.
a. Proposed scope of work drawing to be submitted in scale (1:1000) with DLTM coordinates incorporating any existing 400/132kV cables and OHL routes, circuit names, cable joints and link box locations within the proposed working area.
b. Clearance from the proposed scope of any works, excavations and pilings to the 400/132kV cables or the trough edge and the horizontal and vertical clearance from the OHL to the proposed scope of work, and the horizontal clearance from the tower foundation to the excavation edge.
c. ROW cross section details.
d. Method statement for the proposed work.
e. If the works are near or close to the OHL then provide clearance details of any equipment and
machinery along with method statement,

f. Details of tower protection (crash barrier) temporary height limit gantry, etc. safety arrangement to be provided if the works are close to the OHL.

g. TLP staff verified Cable / OHL clearance details.

h. If there is any other information that you think we need to know, please include it.

H. Revalidation or Renewal of Expired Construction NOC.

a. NOC holders should submit applications to extend the validity of existing NOCs by an extra 6 months.

b. Expired NOC can be revalidated in several times so long as submitted with acceptable reasons.

c. The original TLM stamped drawing of expired NOCs and all its accompanying drawings and method statement should be submitted while applying for revalidation.

d. Drawing showing the part of completed works and the remaining works which should be the work scope of the Revalidated NOC should be submitted.

e. Application for NOC renewal should be submitted at least two weeks before it expires to ensure the NOC is valid at all times.

I. Requirements of Project completion certificate

This is to confirm by DEWA that the contractor has completed the work as per the Issued NOC drawings and method statement. In general, the following documents and details are needed to obtain a completion certificate and the As-Built drawing approval.

a. Full set of all Construction NOC drawings shop drawings, Diversion drawings and any other drawings issued by DEWA (TLM) for the full project and contract area. This includes the as built drawings and all work details included in the As-Built drawing within the vicinity of the existing 400/132kV OHL and cable areas.

b. As-Built drawing should be to scale (1:1000) and incorporating the existing 400/132kV OHL and cable routes, circuit names, cable joints, link box location, clearance from the proposed scope of work to the cable, trough edge, and OHL horizontal and vertical clearances from both the proposed work and from the tower foundation.

c. Provide the clearance details from the proposed bridge, ramp, and side wall of ramp, bridge pillar or pier, and underpass to the existing 400/132kV cable and crossing details, and cable protection details.

d. Details of OHL tower protection (crash barrier) height limit gantry, fencing details, access from the proposed road to the OHL corridor (If the proposed road is close or crosses the OHL corridor).

e. Access to the substation should be shown on the drawing if the proposed road is close to the substation.

f. If the proposed road is over the existing 400/132kV cable or trough, then state the length of the cable protection, and provide details of spare duct with ends and their coordinates.
NOC FOR CONSTRUCTION WORKS

g. Any proposed road or road-widening over existing duct banks, edge of the proposed road should show the existing cable duct bank edge.

If the duct bank is extended, then provide the details and end-coordinates.

h. If the Proposed road edge is close to the cable joint or link box locations, 4 corners coordinates of the joint box, Horizontal clearance from the joint or link box to the road edge should be shown to the drawing.

i. If any utility services or diversions are included in the proposed road work contract, then provide clearance details of the services, such as water, drainage, storm water, irrigation pipelines, Etisalat ducts, electricity HV and LV) crossing details, and protection.

j. Include details of any landscaping work included under the road project within the vicinity of the existing 400/132kV OHL or cables.

k. Provide clearance from any road signal posts and street light poles to the existing 400/132kV OHL or cables.

l. If the 132kV Cable diversions or OHL raising are included under the road contract, then provide separate As built drawings as per DEWA standard. (Standard requirements list attached).

m. Contractors and consultants must ensure that backfilling works over the existing cable route, where the construction related works carried out over or within the vicinity of the 400/132kV OHL or cable areas, and that no route markers are displaced, removed, or damaged during the work, if any.

n. Joint site inspection from TLM personnel may be required to confirm the above details provided.

Note:- If any work has been carried out without a DEWA NOC or there has been a violation of DEWA's NOC conditions during the work, then a clearance certificate may not be issued.

J. Requirements of as built drawings for 400/132kV OHL risings or Cable diversions

a. Clearance from the B/L/ROW/ Road edge to the cable diversion to be marked on the drawing.

b. Cross section details of services crossings mainly for water and other pressure pipe line crossings, existing 132kV cable crossings and road crossings should be provided.

c. Attached a copy of the RTA NOC with the final As-Built drawing along with the ROW cross section.

d. Duct bank / Drilling portion including length and GPS coordinates.

e. Directional Drilling profile details with GPS co-ordinates (Separately for each drilling).

f. Cable schedule showing the section wise route length.

g. Pilot and FO cable joint locations should be marked with GPS coordinates and detailed sections.

h. Provide any cable route layouts inside substations.

i. Provide any updated substation layouts showing new 132kV cable route along with existing ones.

j. Single line drawings should show any cables in duct bank areas, protection with Inter lock tiles and directly-buried areas.
k. Provide all of any cable diversion contract numbers, cable manufacturer names, cable test reports, data of cables laid, cable types and size, numbers of cables, distances between cable centres to centres, and cable circuit names.
l. Provide all cable joint details such as coordinates for all Four corners, joint types, jointer names and dates, and joint manufacturer names.
m. Provide all of any spare duct details, duct coordinates, numbers of ways and layers, duct inspection checklists signed by DEWA Inspectors, types of ducts (such as road cuttings or drilling), extended duct / split duct details (If any).
n. Show all types of proposed OHL towers, test reports, technical specifications, plans, elevations, cross-sections of the tower with dimensions, insulators, and other components used for the proposed tower.
o. Profile drawings should include the nearest existing OHL to the proposed OHLs.
p. Show the horizontal clearance from the proposed road edge to the proposed tower foundation's or tower’s protection barrier edge.
q. Vertical clearance details from the proposed road level to the lowest OHL conductor (After raising the tower).
r. Show the existing and proposed tower numbers, and the distances between either sides of existing and proposed towers.
s. Mark the access road to the proposed tower location.
3.4 Transmission Line Maintenance NOC Conditions

A. 400/132kV Cables

This DEWA 400/132kV cables NOC is fully or partially issued subject to the following conditions:

1. This NOC is not a blanket permission to start the work.
2. Send prior notification to DEWA at least 2 working days in advance by fax to (04) 422 9353 or email to maintenance@dewa.gov.ae and confirm with the engineer’s telephone number given in the issued NOC (No-Objection Certificate).
3. Original and duplicate copies of the NOC drawings approved by DEWA’s TLM (Transmission Line Maintenance) department must be available at the worksite (within the vicinity of the cable area), including proposed works, drawings and method of operation. Sub-contractors are not allowed to alter the vicinity of DEWA’s 132kV power cables and shall be stops to Theo (Horizontal Directional Drilling) and not possible to access through the area. No cable work is allowed in the vicinity of the Transmission lines.
4. Responsible engineers, supervisors and approved safely officers should be available at the site while working close to DEWA’s OHL area.
5. Contractors should take all necessary guidelines and precautions at their own cost while working in the vicinity of DEWA’s service and will be taken to the approved safety officer present at the site and the decision will be made on the spot by the supervisor.
6. Trial holes to be taken by hand excavation in presence of DEWA personnel prior to start of construction work to identify and confine clearance of any underground service. In case of existing cables not marked that need to be identified and verified by TLM staff. The party has to make additional trial pits on the site such as any request from DEWA staff. After backfilling any trial pit, temporary极点 should be installed above the cable route showing numbers, lengths and other details as mentioned in the drawings for TP Locations.
7. Excavation 120m cables within the vicinity of proposed working area is to be located and identified by digging trial pits, barcoding, and fixing danger signposts so as to DEWA requirements and site conditions in the presence of DEWA. The ditch line must not be permitted with any part of the NOC drawings. TLM Clearance will be provided to the contractor only after fulfilling the condition.
8. Any machinery, construction equipment, excavators and other vehicles not allowed to work, move or park over the cable route at any area and the equipment that may cause any damage to the cables should be protected with a canopy over the cables, and the area is to be protected and a separate NOC must be obtained.
9. Cable corridors should not be incised by fencing. If the corridor is under the boundaries of DEWA, it shall not be used as a storage area, site offices, or for any other purpose.
10. No overhead, underground, or any other works should be carried out within 100m of existing power cables. Power cables must be accessible at all times. If any activity takes place within the area that is not mentioned in the approved NOC and drawings, then a separate NOC must be obtained for the same.
11. No construction or structures in the DEWA corridor, such as for any service, storage, or garages, are prohibited.
12. Any streetlight poles, crash barriers, road signboards, or excessive filling on cable corridor are prohibited. Only grass or shrubs are allowed in the cable corridor. Trees should be at least 5.0 meters away.
13. Tree maintenance/clearance for service such as cables, poles and ducts must be done by their own side. The tree branch should be kept above the cable head for a distance of 5.0m from the centerline of the roadway.
14. DEWA reserves the right to execute the garden, grass, tree area or road without any notification in case of emergency. Anyone undertaking filling, landscaping, or landscaping work should get an undertaking before.
15. Protection and backfilling must be specified on NOC drawings, the method of statement, and site instructions must be carried out under DEWA TLM supervision.
16. All crossings of 132 kV cables and passing parallels require a separate NOC to be issued. Sections, procedures, and methods of statement for the same must be approved by the DEWA TLM.
17. Micro tunneling, thrust boring, and directional driling should have a minimum vertical clearance of 2.5meters from the bottom of cables or through the entry or exit pit. The driling profile must be approved by DEWA TLM.
18. Micro tunneling, thrust boring, directional drilling, piling and soil investigation will be approved only after the services and clearance of DEWA. In case of proposed excavation or drilling depth, the contractor must be approved by DEWA before work is carried out. The proposed location must be monitored by DEWA staff prior to the approved profile, and the contractor must be informed.
19. Shifting, storing or removing cables will not be permitted without an NOC demonstrating explicit written permission.
20. Separate NOC has to be taken from DEWA through RTA for the works outside the building plot limit within the vicinity of the Transmission line (Network Map) and the NOC must be approved by DEWA’s TLM department.
21. Existing cables coming under the proposed roads crossing area shall be provided with suitable protection along with spare ducts and temporary road construction on top of cables have to be removed once use is over. Cables should be diverted and the unsuitable portion of the cables or trough should be removed. A steel protection barrier should be provided for links in the vicinity of the road.
22. Any existing spare ducts should be extended to the proposed road widening or crossing area. If this is not possible, then new and to end any provided may be ended at the expense of the contractor
23. Existing and proposed road shoulders are prohibited. Only grass or shrubs are allowed in the vicinity of DEWA’s 132kV power cables. No high levee or backfilling or retaining walls is allowed in the vicinity of DEWA’s 132kV power cables.
24. Route markers should not be deployed or displayed as they will be replaced or relocated in the same place after completion of the works and the same route for the cable area to be provided with a permanent signpost and road shoulder protection edge.
25. Any machinery, construction equipment, excavators and other vehicles not allowed to work, move or park over the power cable corridor. The works to be carried out after the cable corridor with coordinates by TLM’s cable staff.
26. Trial holes to be taken by hand excavation in presence of DEWA personnel prior to start of construction work to identify and confine clearance of any underground service. In case of existing cables not marked that need to be identified and verified by TLM staff.
27. The party has to make additional trial pits on the site such as any request from DEWA staff. After backfilling any trial pit, temporary极点 should be installed above the cable route showing numbers, lengths and other details as mentioned in the drawings for TP Locations.
28. No high levee or backfilling or retaining walls is allowed in the vicinity of DEWA’s 132kV power cables. No high levee or backfilling or retaining walls is allowed in the vicinity of DEWA’s 132kV power cables.
29. Trial holes to be taken by hand excavation in presence of DEWA personnel prior to start of construction work to identify and confine clearance of any underground service. In case of existing cables not marked that need to be identified and verified by TLM staff.
30. The party has to make additional trial pits on the site such as any request from DEWA staff. After backfilling any trial pit, temporary极点 should be installed above the cable route showing numbers, lengths and other details as mentioned in the drawings for TP Locations.
31. This NOC is valid for 6 months only.
32. The party who obtained the NOC from DEWA is only allowed to work at the proposed site of the project. The contractor’s works can be allowed if previously approved by the appropriate DEWA department. NOC.
33. Clearance from retaining walls, girders, or piers must be at least 2.6 meters away from any cable or trough. The works to be carried out after the cable corridor with coordinates by TLM’s cable staff.
34. The proposed 400/132 kV cable installation, diversion, or in out loop must be a minimum of 100 meters. Clearance to be required from the existing nearest cable joint location to the cable corridor, when not permitted to be used in the general working cables. The area is to be safeguarded for construction, environmental, and other reasons. The project NOC drawing along with cross sections and clearance of Transmission lines.
35. The parties must not be located under or close to any cables. The surrounding steel sheets must be extended to both sides of the cable depending upon the diameter of the pipe, this is to be approved by DEWA.
36. Any cable circuitries that are energized or energized may not start or be maintained in the vicinity of DEWA’s 132kV power cables. Any works may be permitted to start or be continued in the vicinity of DEWA’s 132kV power cables during normal DEWA operational hours (1700-1900 hours). However, in urgent cases, the work may be permitted subject to RTA approval and the NOC conditions were met.
37. Any cable circuits that are energized or energized may not start or be continued in the vicinity of DEWA’s 132kV power cables during normal DEWA operational hours (1700-1900 hours). However, in urgent cases, the work may be permitted subject to RTA approval and the NOC conditions were met.
38. Any cable circuits that are energized or energized may not start or be continued in the vicinity of DEWA’s 132kV power cables during normal DEWA operational hours (1700-1900 hours). However, in urgent cases, the work may be permitted subject to RTA approval and the NOC conditions were met.
39. Any cable circuits that are energized or energized may not start or be continued in the vicinity of DEWA’s 132kV power cables during normal DEWA operational hours (1700-1900 hours). However, in urgent cases, the work may be permitted subject to RTA approval and the NOC conditions were met.
40. Any cable circuits that are energized or energized may not start or be continued in the vicinity of DEWA’s 132kV power cables during normal DEWA operational hours (1700-1900 hours). However, in urgent cases, the work may be permitted subject to RTA approval and the NOC conditions were met.
This DEWA 400/132kV OHL NOC is fully or partially issued subject to the following conditions:

1. This NOC is not a blanket permission to start the work.
2. Send prior notification to DEWA at least 2 working days in advance by fax to 04 322 9005 or email lm.supervision@dewa.gov.ae and confirmed with the engineer’s telephone number given in the issued NOC (No-Objection Certificate).
3. Originals and copies of the NOC drawings approved by DEWA’s TLM (Transmission Line Maintenance) department must be available at the worksite (within the vicinity of the OHL area), including OHL clearance verified drawings and method of statement. Sub-contractors are not allowed to work without prior approval from DEWA TLM.
4. Responsible engineers, supervisors and approved safety officers should be available at the site while working close to DEWA’s ED services.
5. Approved Safety officer must be available at site to ensure the safety precautionary measures of DEWA Transmission lines are as per issued NOC conditions.
6. Contractors should take all safety regulations and precautions are at their own cost while working in the vicinity of DEWA’s services and will be liable for any damage as per local Act 06/2015. Action will be taken against violators and contractor as per the violations, black points or fines incurred.
7. Height of the machinery boom/lifting arrangements should not be exceeded beyond the clearance (Horizontal/Vertical) as mentioned in the approved NOC drawing & conditions.
8. Works should not be carried out by using crane & other high boom machineries below 400/132 kV OHL & its corridor/vicinity without DEWA-TLM supervision. (Separate NOC should be obtained such kind of work if the details are not incorporated in the general NOC document/drawings).
9. Authorities/Developers shall not restrict the entry of DEWA TLM staffs & vehicles during Patrolling/Maintenance activities due to the Construction activities by Contractors within the DEWA Corridor.
10. Proposed road construction should not obstruct the existing patrolling access to OHL Towers.
11. Separate NOC must be obtained for water line chamber/Galleries (Street light pole/Sign boards/Overhead boards/Meter Cabinets etc., if details not mentioned in the Project NOC drawing, also it should include cross section(s) and clearance of Transmission lines.
12. No construction activity is allowed within the reserved corridor of DEWA (Road crossings). Utility services crossing may be allowed with a valid NOC.
13. Any excavation/digging/drilling/tunneling are not allowed within 5 meters of tower legs.
14. Any heavy machinery, vehicle or other equipment are not allowed to park underneath the overhead line.
15. Finished road level should have a minimum vertical clearance of 16.5/15 meters for 400/132kV lines respectively and the same clearances to be confirmed with TLP Personnel, before starting the work, during the construction and after completion of the work.
16. The contractor should fully comply with the agreed protection measures for existing OHLs, method of statement, safety clearances and restriction/limitation if use of equipment.
17. Any OHL located at the site, which is not marked in the NOC shall be notified to DEWA. This OHL will also be considered a part of our network and damage to this OHL will be charged according to the regulation.
18. Crash barriers to be installed to protect the tower if the proximity is less than 2540 meters to the secondary/main road edges.
19. DEWA access road along the line not to be disturbed or damaged.
20. Tower earthing system at underground shall not be damaged.
21. Any plantation/trees are not allowed inside DEWA OHL corridor.
22. Temporary height limit gantry to be installed if the equipment and vehicles require to pass/approach the OHLs.
23. As installed drawing, showing OHLs to be submitted for DEWA approval.
24. The party who has obtained the NOC from DEWA are only allowed to do the work at site. For Sub-contractor works, separate approval to be obtained from concerned DEWA departments.
25. If any new 400/132kV OHL energized in the proposed working area before completion of the work or any changes on the approved NOC drawing during the validity of the original NOC, a separate NOC shall be obtained for the affected area, otherwise the work will be stopped.
26. Existing OHL ground clearance should not be altered by dumping excess soil or cutting of the soil.
27. Any poles/structure erected in the vicinity of OHL should have minimum falling clearance of 6.0/5.0 meters for 400/132kV lines respectively.
28. All works must be carried out in presence of DEWA personnel during normal DEWA working hours (0730-1430 hours). Any deviation must be agreed in writing in advance. No work is allowed at night. However, in urgent cases night work is permitted within the approved revised method statement as applicable as per site conditions.
29. Working personnel and site agents are liable to receive any site instructions by issuing stop work notices issued by DEWA representatives. Working personnel and site agents must not ignore or behave improperly on receipt of these notices and must stop the work immediately. Failure to do so will be considered as serious violation.
30. Contractors must notify DEWA after completion of all required works and obtain a clearance certificate within 45 days. Clearance certificates will not be issued if the relevant conditions are not met.
31. This NOC is valid for 6 months only, and should be revalidated 15 days before it is due to expire.
32. DEWA reserves the right to stop the work, and review, suspend, or cancel the NOC in case of any violations of the above conditions or any observed high risks to the network during work at the site or any emergency arises.

Patrolling & NOC Section
Transmission Lines Maintenance Department
NOC FOR CONSTRUCTION WORKS

3.5 Submission of Application

**Submission of Applications**: All the NOC applications are submitted through Senior Manager. Infrastructure Information and Permit Dept. (II&P) / Senior Manager Connection Services Dept. (CS)

<table>
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<th>Contact details</th>
<th>Dept.</th>
<th>Infrastructure Information &amp; Permit department</th>
<th>Connection Services department</th>
<th>Transmission Line Maintenance department</th>
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<td>DEWA Hudaiba Office</td>
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<td>04 - 322 1262</td>
<td>04 - 506 6417</td>
<td>04 - 322 1492/322 1493</td>
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<tr>
<td>Fax No.</td>
<td>04 - 307 2239</td>
<td>04 - 506 6793</td>
<td>04 - 322 9095</td>
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CHAPTER 4

PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

4.1 Infrastructure Works

A. In the vicinity of existing 400 / 132kV Cable

1. Identification & Barricading: Existing transmission lines in the vicinity and within the proposed working area should be identified by trial pits. Danger sign board needs to be fixed, and entire cable routes barricaded, before starting the work at site. - Figure: 4.1.1, 4.1.2, 4.1.3

Fig 4.1.1: Cable identification by Trial pit

Fig 4.1.2: Danger Sign Board To Be Provided After Identification Of 400 / 132kV Cable At Work

Fig 4.1.3: Danger sign board and barrication at work area
2. **No Machinery Excavation:** Machinery, construction equipment, excavators and vehicles are prohibited from working, moving or parking over cable routes, along with heavy vibratory compactors. If any particular locations are required to cross over the extending cables, then that portion requires a separate NOC and the cable route’s crossing area must be protected. Only Manual excavation is allowed. Figure: 4.1.4

**Fig 4.1.4: No machinery excavation over / vicinity of cable route**

3. **Separate NOC criteria:** No construction of road or services should happen on or close to joints and link boxes and joint bays must be accessible at all times. If there is any activity within this area, then a separate NOC must be obtained.

4. **Miscellaneous installations:** Streetlight poles, crash barriers, road signboards, excessive filling on cable corridor are prohibited. Only grass or shrubs are allowed in cable corridors. Trees should be at least 5 metres apart. Figure: 4.1.5

**Fig 4.1.5: Trees should be 5m away from cable route**

5. **Cable protection:** Shifting, slewing or exposing of any cables will not be permitted without an NOC that provides explicit written permission. Exposed cables must be protected in wooden box after wrapping with hessian cloth and supported properly. Figure: 4.2.2 - (Pg. 59) & 4.2.3 (Pg. 60)

6. **Road construction:** Carriageway is not allowed to run longitudinally over 132kV Power, Fiber Optic, and Pilot Cables. Existing cables / Trough coming under / along the proposed road to be diverted and abandoned portion of the cable / trough to be removed. Steel protection barrier to be provided for Link boxes in the vicinity of Road. A new trough design is used for Asphalt Road (carriage way) by replacing the Existing Protection slab with heavy duty slab. Figure: 4.1.7 (Pg. 47) and Figure: 4.1.9 (pg. 48)

7. **Road crossing:** New carriageways and service roads are allowed to cross over existing transmission lines if the following additional protections are provided:
7.1 132kV Power, Fiber Optic, and Pilot Cables in trough
   a. Provide (3m x 1m x 0.3m) Pre cast Reinforced Concrete Class 40 / 20 Protection Slab over the trough. Extending 1mtr from the road edge. Figure: 4.1.6, 4.1.7

Fig 4.1.6: 132kV Trough Protection for Road crossing Works
8. **New service Road:**
New Service Road is allowed to run longitudinally over Fiber Optic or Pilot Cables if the following requirements and additional protections and spare duct criteria are met and provided respectively:

a. Providing the depth of existing Fiber Optic or Pilot Cables is least 1.0 metre below the ground and protection tiles are installed over the cables. Figure: 4.1.8.

b. Provide Cable Joint Boxes outside the proposed service road, otherwise, it should be made inside approved type of the manhole.

7.2 **132kV directly buried power, pilot or F.O cables**

a. Each of the existing cable should be encased by new 150 mm dia (split duct) and all ducts plus two spare ducts should be encased by concrete: this is called a Concrete Duct Bank. Figure: 4.1.8

b. The concrete duct bank should extend at least one meter distant from the edges of the proposed road.

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**Fig 4.1.7: 132kV trough protection for road works**

**Protection Slab Over 132kV Trough(3Mx1m, 0.30 M)**

b. Protection Slab should be extended along the width of the proposed road and extended at least one metre from the edge of each side of the road.

c. Provide 4 x 150mm-diameter spare ducts inside the trough and terminate the spare ducts to both ends of protection slab, for future use, without disturbing the surface of the road.

**Fig 4.1.8: Direct buried cable pilot & F.O cable protection by split duct and surround concrete with spare duct**
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

Fig 4.1.9 Protection details for tiling on top of 132kV cable trough

9. **Parking installation:** Parking (asphalted or interlocking tiles) are allowed above the existing 132kV cables in trough or direct buried Fiber optic or pilot cables and each of the the following requirements and additional protections should be both met and provided.
   a. Providing of protection and spare ducts as shown in the Figure: 4.1.8 & 4.1.9.
   b. No part of any parking area should be constructed over underground cables joint and flush type Link boxes.
   c. Flush type cable route marker should be installed over the cable route at maximum interval of 50 metres for straight cable run. Figure: 1.4.7 (Pg. 20)

10. **Road widening:** Existing protection and spare ducts should be extended to any proposed road widening or crossing areas. If this is not possible, then new end-to-end spare ducts must be provided, and maintain a minimum of 1 metre from either side of the proposed road edge. Figure: 4.1.10
11. **No Blocking of Access**: Entrances to DEWA substation or access to DEWA Corridor should not be blocked by the new project or work by any means, whether temporary or permanent.

12. **Backfilling**: Backfilling of transmission cable routes should be carried out as per DEWA standard. Backfilling materials, excavated soil and any other materials used for construction works shall not be left at the site. All stored or dumped materials and any soil should be disposed immediately and the site cleaned before demobilisation. Figure: 4.1.11, 4.1.12, 4.1.13

13. **Route markers**: Route markers should not be displaced or destroyed otherwise it will be charged for and will be replaced or restored in the same place or position after completion of the work with a pole- or flush-type marker. Any tiled areas should be provided with flush-type route markers after completion of the works. Figure: 1.4.6, 1.4.7 (Pg 20)
14. **As built drawings:** As built drawing showing cable, joint / Link box position installation to the permanent structures or land marks, to be provided after finishing the project.

**Fig 4.1.11** Placing of cable Protection tiles during backfilling

**Fig 4.1.12** Placing of electrical warning tape during backfilling

**Fig 4.1.13** Providing of route marker after backfilling
B. In the vicinity of Existing 400 / 132kV OHL

1. **Height limit gantries**: Temporary height limit gantries about 5.5 - 6 m from ground level must be installed for all machinery, such as diggers or cranes, at all working locations, along with danger sign boards. Figure: 4.1.14, 4.1.15

**Fig 4.1.14 - Temporary Height limit gantry under OHL at machinery working locations**
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

Fig 4.1.15

[Diagram showing protective regulations and precautionary measures for the protection of transmission lines, including details like PVC pipes, warning tapes, existing poles, and trench excavations.]
2. **Crash barrier**: Temporary concrete crash barriers need to be installed around nearby tower foundation.

*Fig 4.1.16*  
Concrete barrier protection for tower foundation
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

3. **Horizontal clearance**: Minimum horizontal clearance of about 40m and 30m from tower concrete foundation to edge of road and bridge to be ensured for 400kV and 132kV OHL respectively.

Fig 4.1.17

Minimum Horizontal Clearance From 400 / 132kV OHL Tower Foundation To The Edge Of The Road, When The Line & The Road Is Running In Parallel
4. **Vertical Clearance**: Minimum vertical clearance of about 16.5 and 15m to be ensured from the lowest conductor to the finished road level for 400kV and 132kV OHL respectively.

Fig 4.1.18

Minimum Vertical Clearance From Bottom Conductor of 400 / 132kV O / H Line To The Top Of The Road Level For High Way / Secondary Road (considering a maximum conductor temperature of 80 degree Celsius)
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

5. **Permanent Crash Barrier**: Permanent steel Crash barrier need to be provided, if the horizontal clearance from the Tower concrete foundation to the edge of the road or bridge is less than 40 m and 25 m for dual-carriageways and service roads respectively.

![Fig 4.1.19 Permanent steel crash barrier for Tower foundation protection](image)

6. **Permanent Height limit gantry**: Permanent height limit Gantry of about 5.5 - 6 m from the finished road level to be provided at the road crossing tower locations, at both sides of the road (Dual Carriageway and service roads). Figure: 1.4.9 (Pg 21)

![Steel Crash Barrier Tower Foundation Leg](image)

7. **Access Road**: DEWA’s Access road must be repaired by the contractor, if damaged.

8. **Removal of unwanted material**: Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

![Fig 4.1.21 Scaffolding provided at road crossing during Tower erection](image)

9. **Parking of vehicle**: Parking of Light / Heavy Vehicle within the OHL corridor is prohibited.

10. **Scaffolding protection**: Scaffolding to be provided for road crossing, during Tower Construction activities Figure: 4.1.21
4.2 Installation of new cables or troughs of any voltage

A. In the vicinity of existing 400 / 132kV Cable

1. **Existing cable identification:** Existing Transmission lines to be identified in the vicinity of new cable installation area, by trial pit and fix danger sign board along the cable route and the area should be barricaded before starting the work at site. Figure: 4.1.1, 4.1.2, 4.1.3 (Pg no - 44)

2. **No Machinery Excavation:** No machinery, construction equipment, excavators or any vehicles are allowed to work, move or park over the cable route and the use of heavy vibratory compactors are prohibited. If any particular locations are required to cross over existing cables, then that portion requires a separate NOC and the cable route must be protected for the crossing area. Only manual excavation is allowed. Figure: 4.1.4 (Pg no - 45)

3. **Service Clearance:** Minimum clearances of services such as cables, pipes and ducts etc. must be at least 1 (one) Meter away and 500 mm above or below with no services laid on top of the troughs.

Fig 4.2.1 Minimum clearance requirement for utility line crossing

Minimum Horizontal Clearance For 11kV / 33kV / Etisalat / DU Duct and Pipe Laying With Parallel 132kV Cable In Trough

Minimum Vertical Clearance For 11kV / 33kV / Etisalat / DU Duct Laying With Crossing 132kV Cable In Trough
4. **Parallel installation:** New cable installations are not allowed to run parallel exactly above or below the existing 132kV cables and troughs, irrespective of any vertical clearance but are allowed besides (adjacent) provided that the clearances are complied with, as per the approved NOC.

5. **Crossing over:** New cable crossings over the existing trough are not allowed. All crossings shall be underneath the trough except joint areas by HDD only (Fig 4.2.5) Any crossing of new 132kV / 11kV cables above Existing direct buried transmission cable, existing cables should be protected by spilt ducts and surrounding concrete with spare duct to ensure that no load will be transferred to the cables. (Figure: 4.1.8 Pg 47). While crossing below the existing direct buried transmission cable, affected cable should be protected in split duct or wooden coffin boxes and supported with cross beam and vertical steel angle /nylon rope. (Figure: 4.2.2 & 4.2.3)

**Fig 4.2.5 Directional drilling**
Fig 4.2.2 Protection of direct buried oil filled cable inside wooden box with supporting

Typical Protection for Single Group Of 132kV Oil Filled Cables
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

6. **Crossing under trough**: 132kV troughs and directly-buried cable should be protected as per the approved method and duct banks should be installed by the open cut method if the trench width exceeds 1.5 m underneath any cable troughs of 6 m length. (Figure: 4.2.4)

7. **GPS coordinates**: For crossing existing 132kV cables by the HDD method, all existing transmission services should be identified by trial pits. HDD entry and exit pit locations should be marked by GPS coordinates and verified by a DEWA-TLP supervisor during the TP verification and before starting the construction work.

8. **Diversion / LILO cable length**: New cable lengths for existing cable diversion and LILO should not be less than 100m from joint to joint or joint to cable termination at GIS.

9. **Entrance**: Entrance to DEWA substation and access to DEWA corridor should not be blocked for the proposed project or work by any means, either temporarily or permanently.

10. **Backfilling**: Backfilling of transmission cable routes should be carried out as per the DEWA standard. Backfilling materials, excavated soil and any other materials used for construction works must not be left at the site. Any stored or dumped materials or soil must be disposed immediately and the site cleaned before demobilisation. (Figure: 4.1.11, 4.1.12, 4.1.13 - Pg. 50)

11. **Route markers**: Route markers should not be displaced or destroyed otherwise it will be charged for and will be replaced or restored in the same place.
or position after completion of the work with a pole or flush type marker. Any tiled area to be provided with a flush type route marker after completion of the works. Figure: 1.4.6, 1.4.7 (Pg no - 20)

B. In the close vicinity of Existing 400 / 132kV OHL

1. Height limit gantries: Installation of temporary height limit gantries should be about 5.5 - 6 m from the ground for all machinery, such as diggers and cranes, in working locations, along with danger signboards. (Figure: 4.1.14, 4.1.15 - Pg 51 & 52)

2. Crash barrier: Temporary concrete crash barriers need to be installed around nearby tower foundations. (Figure: 4.1.16 Pg. 53)

3. Excavation clearance: There must be a minimum horizontal distance of 5 metres for any excavations near the concrete foundation of the tower. (Figure: 4.2.6)

4. Sheet piling: Sheet piling or sand bags should be provided while excavating near tower foundations, to avoid the collapse of sand. (Figure: 4.2.7)

5. Earth conductor protection: Tower foundation earth conductor should be protected while excavating near tower foundations.

6. Access Road: DEWA patrolling access road must be repaired by the contractor, if damaged.

7. Removal of Waste materials: Leftovers, waste and any debris should be removed from the OHL Corridor, after the completion of work.

8. Parking of vehicle: Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.

Fig 4.2.6 Minimum horizontal clearance requirement for excavations near tower foundation

Minimum Horizontal Clearence From 132 / 400kV / O / H Line Tower To Prop. Trench Excavaion
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

Fig 4.2.7 Sheet piling provided for tower foundation
4.3 Installation of pipelines
(Pressurized water/Gas/Irrigation/Fuel/Chilled water pipe lines works & Gravity lines such as drainage, storm water line, sewerage)

A. In the vicinity of existing 400 / 132kV Cable

1. **Existing cable identification**: Existing Transmission lines should be identified in the vicinity of new cable installation area, by trial pit. Danger signboards should be posted along the cable route and the area barricaded before starting work at the site. Figure: 4.1.1, 4.1.2, 4.1.3 (Pg no - 44)

2. **No Machinery Excavation**: Machinery, construction equipment, excavators and any other vehicles are not allowed to work, move or park over the cable route and use of any heavy vibratory compactors is prohibited. If any particular locations are required to cross over the existing cables, then that portion requires a separate NOC be obtained and the cable route protected at the crossing area. Only manual excavation is allowed. Figure: 4.1.4 (Pg no - 45)

3. **Service Clearance**: Minimum clearances of pressurised water or irrigation should be at least 3 metres distant from and at least either 500 mm above and below with no services laid above the troughs. Figure: 4.2.1 (Pg no - 57)

4. **DEWA Corridor**: Any construction or structures in the DEWA corridor, such as RTUs, manholes, or gullies, are prohibited

5. **Deep Excavation**: Any deep excavation in close proximity to the cable or trough should be provided with steel sheet piling or protection with de-watering arrangements along the cable route, after providing a method statement. (Figure: 4.3.1)

6. **Substation Access**: Entrance to DEWA substations and access to DEWA corridors should not be blocked for the proposed project or work by any means, whether temporary or permanently

7. **Cable shifting/slewing**: Any shifting, slewing or exposing cables will not be permitted without NOC explicit written permission. Exposed cables must be protected in wooden boxes or split duct after wrapping with hessian cloth and supported properly. (Fig.4.2.2 & 4.2.3 - Pg 59 & 60)
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

8. **Steel sleeve protection:** Installation of High pressure line crossing below of the 132kV cable. Pipelines need to be provided with suitable steel sleeves to prevent pipeline breakage impact. (Figure: 4.3.2)

9. **Trough protection:** While laying steel sleeves and pipeline underneath troughs for crossing by the open-cut method, 132kV cable troughs should be equipped with suitable steel supports. Figure: 4.2.4 (Pg no 60)

10. **Cable protection:** While laying pipes under existing directly-buried transmission cables, the affected cable should be protected and supported as shown in Figure: 4.2.2 and 4.2.3 (Pg no 59 and 60)

11. **Parallel installation:** New pipeline installation is not allowed to run parallel exactly above or below the existing 132kV cables and troughs, irrespective of any vertical clearance but are allowed if adjacent, provided the clearances are complied with as per the approved NOC.

12. **Trough cover opening:** Crossing of pressurised pipe line above the cable trough is not allowed as this will obstruct the opening of trough covers. Backfilling of transmission cable route to be carried out as per DEWA standard.

13. **Backfilling:** Backfilling materials, excavated soil or any other materials used for construction should not be left at the site. Any stored or dumped materials or soil should be disposed off immediately, and the site cleaned before demobilisation. Figure: 4.1.13 (Pg. 50)

14. **Route markers:** Route markers should not be displaced or destroyed otherwise it will be charged for and will be replaced or restored in the same place or position after completion of the work with a pole or flush type marker. Any tiled area to be provided with a flush type route marker after completion of the works. Figure: 1.4.6, 1.4.7 (Pg no. 20)
B. In the close vicinity of Existing 400/132kV OHL

1. Height limit gantries: Installation of temporary height limit gantries should be about 5.5 - 6 m from the ground for all machinery, such as diggers and cranes, in working locations, along with danger signboards. (Figure: 4.1.14, 4.1.15 - Pg no 51 & 52)

2. Crash barrier: Temporary concrete crash barriers need to be installed around nearby tower foundations. (Figure: 4.1.16 - Pg 53)

3. Excavation clearance: Minimum horizontal distance of 5m to be ensured for any excavations near the concrete foundation of the tower. (Figure: 4.2.6 Pg 61)

4. Sheet piling: Sheet piling or sand bags to be provided, while excavating near the tower foundation to avoid collapse of sand. (Figure: 4.2.7 Pg 62)

5. Earth conductor protection: Tower foundation earth conductor should be protected, while excavating near the tower foundation.

6. Access road: DEWA patrolling access road must be repaired by the contractor, if damaged.

7. Removal of unwanted materials: Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

8. Parking of vehicle: Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.

9. Sand dumping: Dumping of sand in the transmission (OHL/Cable) Corridor is prohibited.

10. Horizontal clearance for pipe line:
   10.1 A minimum horizontal clearance of 25m from tower foundation is required to lay any proposed metallic pipe services at a nominal diameter less than 150mm, as per DEWA technical specifications.

   10.2 A minimum horizontal clearance of 50m from tower foundation to be ensured, for laying any proposed metallic pipe services at a nominal diameter between 180 - 450mm, as per DEWA technical specifications.

   10.3 There must be a minimum horizontal clearance of 100m from the tower foundations when laying any proposed metallic pipe services at a nominal diameter more than 450mm, as per DEWA technical specifications.
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

4.4 Construction of Buildings, Boundary Wall, Temporary Fencing and Interlocking

A. In the vicinity of existing 400/132kV Cable

1. **Existing cable identification**: Existing Transmission lines should be identified in the vicinity of new cable installation areas, by trial pits and fixed danger signboards along the cable route and area to be barricaded, before starting work at the site. Figure: 4.1.1, 4.1.2, 4.1.3 (Pg no - 44)

2. **No Machinery Excavation**: Machinery, construction equipment, excavators and any other vehicles are not allowed to work, move or park over the cable route and use of any heavy vibratory compactors is prohibited. If any particular locations are required to cross over the existing cables, then that portion requires a separate NOC and the cable route must be protected at the crossing area. Only Manual excavation is allowed. Figure: 4.1.4 (Pg no - 45)

3. **Undertaking**: DEWA reserves the right to excavate the garden, grass or tiled area and road without prior notice in case of emergency. Owners of the tiling, gardening or landscaping work should give an undertaking before commencement of the work. Trees should be at least 5metres away. A NOC is required for this. Figure: 4.1.5 (Pg no - 45)

4. **Enclosing by fence**: Cable corridor should not be enclosed by fence and if the corridor is inside boundary of project area, then should not be used as a storage of excavated or construction materials, equipment, site offices, or as a parking area. Figure: 4.4.1

5. **Access Road**: For any access road to the building, the necessary protection should be made for the existing cable route as per the approved NOC.

6. **Shoring and Anchoring**: Shoring and Anchoring should be at a minimum of 2.0 metres away from the existing cable or trough edge. Figure: 4.4.2

Fig 4.4.1 Transmission cable (400kV, 132kV) route should not be enclosed by fence and no storage of any material over cable corridor

Fence not enclosing the cable route
Fig 4.4.2 Transmission cable route should be protected from shoring
B. In the vicinity of existing 400/132kV OHL

Fig 4.4.3 Prohibition of building construction within DEWA OHL Corridor

1. Construction works inside corridor: Construction of buildings and any other activities are not allowed within the DEWA OHL Corridor. The OHL corridor shall be confirmed from the TLM NOC centre. (Figure: 4.4.3)

2. Miscellaneous works inside corridor: Shoring, walls, fencing and interlocking are not allowed within the OHL corridor. OHL corridor shall be confirmed from TLM NOC centre.

3. Access Road: The DEWA access road along the line should not to be disturbed or damaged.

4. Vehicle parking: Heavy machinery, vehicle or other equipment are not allowed to park under or near the overhead line.

5. Height limit gantry: Temporary height limit gantries should be installed in case vehicles and equipment need to pass or approach the OHLs.

Note:
Width of the OHL corridor varies from one to another tower location.
20m - Minimum horizontal clearance from 400kV outer conductor
15m - Minimum horizontal clearance from 132kV outer conductor
4.5 Drilling / Boring / Anchoring / Micro tunneling / Piling / NDRC works (wherever applicable)

A. In the vicinity of existing 400/132kV Cable

1. **Existing cable identification:** Existing Transmission lines should be identified in the vicinity of new cable installation areas by trial pits and danger signboards should be placed along the cable route and area to be barricaded before starting the work at site. Figure: 4.1.1, 4.1.2, 4.1.3 (Pg no - 44)

2. **NOC / Method statement:** All drilling related works should be carried out as per the construction NOC and method statement.

3. **Prior intimation:** Advance notice should be given to DEWA 2 days prior to start the work and works to be carried out in the presence of DEWA TLP supervisor. (Format attached Pg.no - 29)

4. **No Machinery Excavation:** Machinery, construction equipment, excavators and any other vehicles are not allowed to work, move or park over the cable route and use of any heavy vibratory compactors is prohibited. If any particular locations are required to cross over the existing cables, then that portion separate NOC should be obtained and the cable route protected at the crossing area. Only Manual excavation is allowed. Figure: 4.1.4 (Pg no- 45)

5. **GPS coordinate:** NDRC works such as Micro-tunnelling, thrust boring, pipe-jacking, directional drilling and piling or boring will be approved only after all the services and clearances have been identified and verified with coordinates and the method statement and shop drawing are approved by DEWA before execution of the work. The drilling location should be confirmed as per the approved profile and coordinates before starting the work by the Transmission Line Patrolling supervisor.

6. **Clearance:** Micro-tunnelling, thrust boring, pipe-jacking, and directional drilling should have a minimum vertical clearance of 2.0m from the bottom of the cable or trough and the horizontal clearance of 2.0m from the edge of the cable or trough to the entry or exit pit. The drilling profile should be approved by DEWA TLM.

7. **Trough protection:** While laying steel sleeves and pipelines underneath troughs for crossing by the open cut method, 132kV cable troughs should be braced with suitable steel supports Figure: 4.2.4 (Pg no 60)

8. **Entry / Exit pit:** While making entry or exit pits close to 132kV cables for drilling, 132kV cables should be protected by sheet piling. (Figure: 4.5.1)
B. In the vicinity of existing 400/132kV OHL

1. **Height limit gantries:** Installation of temporary height limit gantries should be about 5.5 - 6 m from the ground for all machinery, such as diggers and cranes, in working locations, along with danger signboards. (Figure: 4.1.14, 4.1.15 - Pg no 51 & 52)

2. **Crash barrier:** Temporary concrete crash barriers need to be installed around nearby tower foundations. (Figure: 4.1.16 - Pg 53)

3. **Excavation clearance:** Any excavations near the concrete foundation of the tower must be at least 5 metres horizontally distant from them. (Figure: 4.2.6) Pg 61

4. **Sheet piling:** Sheet piling or sand bags to be provided, while excavating near the tower foundation to avoid collapse of sand. (Figure: 4.2.7) Pg 62

5. **Earth conductor protection:** Tower foundation earth conductor to be protected, while excavating near the tower foundation.

6. **Access road:** DEWA patrolling access road must be repaired by the contractor, if damaged.

7. **Removal of unwanted materials:** Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

8. **Parking of vehicle:** Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.
4.6 Telecommunication services such as Etisalat / Du (services /duct laying)

A. In the vicinity of existing 400/132kV Cable

1. **Existing cable identification:** Existing Transmission lines should be identified in the vicinity of new cable installation areas by trial pits and danger signboards fixed along the cable route and area to be barricaded before starting work at the site. (Figure: 4.1.1, 4.1.2, 4.1.3 - Pg no - 44)

2. **No Machinery Excavation:** Machinery, construction equipment, excavators and any other vehicles are not allowed to work, move or park over the cable route and use of any heavy vibratory compactors is prohibited. If any particular locations are required to cross over the existing cables, then that portion requires a separate NOC and cable route must be protected at the crossing area. Only Manual excavation is allowed. (Figure: 4.1.4 - Pg no - 45)

3. **Minimum clearances:** Minimum clearances of services such as cables, pipes and ducts etc. to be 1 (one) Metre away and 500 mm above or below and no services lay on top of the troughs. Figure: 4.2.1 (Pg no - 57)

4. **Parallel installation:** New services and duct laying is not allowed to run parallel exactly above or below the existing 132kV cables and troughs, irrespective of any vertical clearance but are allowed if adjacent, provided the clearances are complied with as per the approved NOC.

5. **Trough cover opening:** Crossing of new services or duct laying above the cable trough is not allowed as this will obstruct opening of trough cover.

6. **Cable crossing protection:** Any crossing of duct bank above Existing direct buried Transmission cable existing cable to be protected by spilt duct and surround concrete with spare duct to ensure that no load will be transferred to the cables. Figure: 4.1.8 (Pg no - 47)

7. **Crossing of new Duct bank:** While crossing of new duct bank below the existing direct buried Transmission cable, said cable should be protected and supported. (Figure: 4.2.2 & 4.2.3) (Pg no - 59 & 60)

8. **Cable protection for open cut method:** Existing 132kV trough and directly-buried cables should be protected as per the approved method statement while installation of duct banks by the open cut method (if trench width exceeds 1.5m) underneath of cable trough of 6 metre length. Figure: 4.2.4 (Pg no - 60)

9. **Service verification:** All services to be identified by trial pit if duct laying by HDD method. GPS coordinates to be provided for TP locations and entry and exit pits for the drilling. Before starting the drilling works, the coordinates shown in the approved NOC for entry and exit pits and trial pit locations should be confirmed by a TLP supervisor.
PROTECTIVE REGULATIONS & PRECAUTIONARY MEASURES FOR THE PROTECTION OF TRANSMISSION LINES

10. **Entrance**: Entrance to DEWA substation and access to DEWA corridor should not be blocked for the proposed project or work by any means, temporary or permanently.

11. **Backfilling**: Backfilling materials, excavated soil or any other materials used for construction should not be left at the site. Any stored or dumped materials or soil should be disposed of immediately, and the site cleaned before demobilisation. (Figure: 4.1.11, 4.1.12, 4.1.13 – Pg. 50)

12. **Route markers**: Route markers should not be displaced or destroyed otherwise it will be charged for and will be replaced or restored in the same place or position after completion of the work with a pole or flush type marker. Any tiled area to be provided with a flush type route marker after completion of the works. (Figure: 1.4.6, 1.4.7 - Pg no - 20)

**B. In the vicinity of existing 400/132kV OHL**

1. **Excavations near Tower foundations**: There must be a minimum horizontal distance of 5m of distance for any excavations near the concrete foundation of the tower. Figure: 4.2.6 (Pg no - 61)

2. **Height limit gantries**: Temporary height limit gantries about 5.5 - 6 m from ground level must be installed for all machinery, such as diggers or cranes, at all working locations, along with danger signboards. (Figure: 4.1.14, 4.1.15 - Pg no 51 & 52)

3. **Crash barrier**: Temporary concrete crash barriers need to be installed around all nearby tower foundations. (Figure: 4.1.16 - Pg 53)

4. **Sheet piling**: Sheet piling or sand bags to be provided, while excavating near the tower foundation to avoid the collapse of sand. (Figure: 4.2.7) Pg 62

5. **Earth conductor protection**: Tower foundation earth conductors should be protected while excavating near the tower foundation.

6. **Access road**: DEWA patrolling access road must be repaired by the contractor, if damaged.

7. **Removal of unwanted materials**: Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

8. **Parking of vehicles**: Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.
4.7 Miscellaneous Construction Works  
(Sign Board, Lighting Pole, Bore Holes, Piling, Parking Area, Tree Plantation Etc)

A. In the vicinity of existing 400/132kV Cable

1. **Existing cable identification**: Existing Transmission lines to be identified in the vicinity of new cable installation area, by trial pit and fix danger sign board along the cable route and area to be barricaded, before starting the work at site. (Figure: 4.1.1, 4.1.2, 4.1.3 - Pg no - 44)

2. **No Machinery Excavation**: Machinery, construction equipment, excavators and any other vehicles are not allowed to work, move or park over the cable route and use of any heavy vibratory compactors is prohibited. If any particular locations are required to cross over the existing cables, then that portion requires a separate NOC and the cable route must be protected at the crossing area. Only Manual excavation is allowed. (Figure: 4.1.4 - Pg no - 45)

3. **Prohibited installations**: Any streetlight poles, crash barriers, road signboards installation over the Transmission cable are prohibited.

4. **Bore holes and piling works**: Bore holes and piling works will be approved only after all the services and clearances have been identified and verified with coordinates. The Method statement and shop drawing must be approved by DEWA before execution of the work. Drilling locations should be confirmed as per the approved profile and coordinates before starting the work by Transmission Line Patrolling supervisor.
B. In the vicinity of existing 400/132kV OHL

1 Tree Plantation: No tree plantation is allowed within the OHL corridor. (Figure: 4.7.1)

Note: Width of the OHL corridor varies from one to another tower location. No Tree Plantation Allowed Inside DEWA Transmission OHL Corridor
2 Lighting pole and Sign board installations:

a) **Height limit gantries**: Temporary height limit gantries about 5.5 - 6 m from ground level must be installed for all machinery, such as diggers or cranes, at all working locations, along with danger signboards. (Figure: 4.1.14, 4.1.15 - Pg no 51 & 52)

**Fig 4.7.2**

Minimum Clearance requirement for Lighting Pole Installation from OHL conductor
b) Crash barrier: Temporary concrete crash barriers need to be installed around nearby tower foundations. (Figure: 4.1.16 - Pg 53)

c) Excavations near Tower foundations: Minimum horizontal distance of 5m to be ensured for any excavations near the concrete foundation of the tower. (Figure: 4.2.6 - Pg 61)

d) Minimum vertical clearance: Any poles or structure erected in the vicinity of OHL should have minimum falling clearance of 6.0 metres for 400kv lines and 5.0 metres for 132kV lines. (Figure: 4.7.2)

e) Access road: DEWA patrolling access road must be repaired by the contractor, if damaged.

f) Removal of unwanted materials: Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

g) Parking of vehicle: Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.

3 Construction parking:

a. Parking area construction is not allowed within the DEWA Transmission OHL Corridor. The OHL Corridor details should be confirmed by the TMD NOC centre.

b. DEWA patrolling access road must be repaired by the contractor, if damaged.

c. Leftovers, waste and any other debris should be removed from the OHL Corridor, after the completion of work.

d. Parking of any vehicles over cable routes or under OHL corridor transmission services is prohibited.
CHAPTER 5
IMPLEMENTATION OF NOC CONDITIONS & PRECAUTIONARY MEASURES
IMPLEMENTATION OF NOC CONDITIONS & PRECAUTIONARY MEASURES

To ensure implementation of all the provisions of Protective Regulations of this Handbook during execution of any activities near or within the vicinity of the existing OHL and UG Cable Corridors.

5.1 Patrolling

Patrolling of all existing OHL and cable routes is carried out in a scheduled frequency to monitor DEWA’s Transmission lines network from damages and third party violations by observing, reporting and preventive actions.

5.1.1 Routine Patrolling

DEWA’s Transmission network and grids are divided into number of patrolling zones of which each zone should be patrolled twice a day.

5.1.2 Emergency Patrolling

This type of patrolling should be conducted as requested to specific area where damaged or tripping has occurred or where transmission facilities needs special attention or priority actions to minimise or prevent the possibility of damage.

5.1.3 Intensive Patrolling

This type of patrolling is acted upon the request from the relevant parties to exert additional attention (extra patrol) to specific circuit on the following reasons:

- To ensure healthiness of the remaining cables or lines in the Ring network feeder, if any of the ring network feeder are shut down for repair and maintenance or as requested for the approved purposes.

5.1.4 Special Patrolling

This type of patrolling is acted upon the request from the relevant parties to exert additional attention (extra patrol) to specific circuit on the following reasons:

- To ensure healthiness of all transmission lines or cables supplying substation that is to serve for important occasions or VIP visit to the Emirates.

5.2 Pre-Commission Inspection

This type of inspection is conducted in response to the request for joint inspection of completed project. This will ensure that all installed components of transmission system were installed according to DEWA’s standards.

5.3 Contractor’s Work Supervision

TLM directly supervises the execution of all construction activities near or in vicinity with
line or cable corridor to ensure that such work executions are in accordance with the provisions of NOC and Method statement. The following types of supervision should be scheduled as suitable to the kinds of work requirements. (Please refer Annexure-3.1.1 Pg 29)

5.3.1 Work Supervision Request
All works near or in vicinity of OHL or UG Cables corridor, if with relevant NOC, should only be executed under direct supervision of TLM’s Standby Site Supervisor. The service of Standby Site Supervisor will be obtained based on the following requirements:

A. The work supervision request form should be obtained from TLM patrolling/NOC section of DEWA or from Patrolling staff at site. It is also available on the DEWA website and can be obtained by following the below procedure. http://www.dewa.gov.ae >> eBusiness >> View/Print Forms >> No Objection Certificates >> Work Notice/ Supervision Request. The above form should be appropriately completed.

B. Submission of completed Forms
   a. The completed forms should be submitted within two (2) working days, before commencement of the proposed works, to TLM Patrolling Fax number (04) 3229095.
   b. Alternatively, for priority actions, the contractor should submit the completed form with the required attachment personally, one day before commencing work, to the office of TLM Patrolling and NOC Section.

5.3.2 Critical Site Supervision
Any work execution near or in vicinity of OHL / UG cables corridor which likely needs special actions to protect the lines by additional cable protection in coordination with contractors, consultants or government utility departments may require more time.

5.4 Site Instruction Notice
During patrolling, the patroller checks the contractor’s worksite and if any non-critical violations are found, then a site instruction notice will be issued to contractors for immediate correction. If contractors don’t take the necessary steps, the patroller will issue a notice to stop work. (Format attached Figure: 5.4)
IMPLEMENTATION OF NOC CONDITIONS & PRECAUTIONARY MEASURES

Figure: 5.4 - Site instruction Note

<table>
<thead>
<tr>
<th>M/s</th>
<th>Engineer/Foreman</th>
<th>Contact No.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Construction Work Type</th>
<th>Present Activity</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Affected Circuit</th>
<th>Zone / Location</th>
</tr>
</thead>
</table>

Please follow (✓) marked instruction very strictly to avoid work stop notice

1. Prior intimation to be given to DEWA—TLM for works commencement at least 2 working days in advance. The work supervision request format by fax – 04-3221500 or by email – tlm.supervision@dewa.gov.ae

2. NEC with approved method of statement. Trial pit verification/OHL clearance details & drawings must be available at work site throughout the project completion.

3. NEC is valid for 6 months only & should be revalidated within 15 days before expiry by submitting the original stamped NEC copy.

4. Responsible Engineer/Supervisor should be available at site while working close to Tr. Lines.

5. Cross-sectional drawings with horizontal and vertical clearances & method of statement to be approved by TLM for cable / OHL crossing works.

6. Works should be carried out during DEWA working hours only. Works at night, holidays & beyond office hours are not allowed. Special approval to be obtained for emergency and very urgent works with justification to work beyond working hours.

7. Trial holes to be taken to locate existing 400/132KV Cable at proposed work area by hand shovel excavation only.

8. Before starting of drilling/boring/shoring/piling work, site location shall be confirmed by GPS coordinates and approved method of statement to be ensured by DEWA TLM Supervisor.

9. Height limit gantry/Danger sign board/safety & crash barrier to be provided for the Cable/OHL route/tower at working area.

10. Existing route markers can be removed only after taking GPS co-ordinates and reinstated at the same location after the completion of work as per the previously taken GPS co-ordinates. Displaced/tampered/missing route markers shall be replaced at the previous location as per the GPS co-ordinates.

11. Name 400/132KV Cable and OHL circuit is energized in the working area and shall obtain separate NOC from TLM for remaining works showing the newly energized Cable/OHL circuits.

12. Parking of vehicles/lighting equipment, machinery movement, excavation of holes, dumping of soil, material storage should not be carried out over the Cable route, joint & link box location/or under OHL.

13. Existing cables coming under the proposed road crossings shall be provided with suitable protection along with spares (if existing available then to be extended).

14. Steel sheet piling/shoring with dewatering arrangement should be provided for the deep excavation works in the close proximity of the Transmission lines after the approval of location and method of statement.

15. Separate NOC to be obtained for the utility services,street lighting, signs, plantation works, dewatering works and other works which are not included in the issued NOC.

16. Adequate measures to be taken while working near to the 400/132KV cable/lines network.

17. The undersigned (contractor/utility department representative) agrees to follow all the above ticked instructions and any failure will cause DEWA to issue Stop Work Notice. Necessary action shall be taken as per law 06/15.

Any other comments: 

------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

ISSUED TO (CONTRACTOR STAFF)  ISSUED BY (DEWA SUPERVISOR)  DEWA ENGINEER

Name: ________________________________  Name: ________________________________  Name: ________________________________
Signature: _____________________________  Signature: _____________________________  Signature: _____________________________

Contact Details: 04-3221546/04-3221500  Email: tlm.supervision@dewa.gov.ae
5.5 Notice to Stop Work

During patrolling, the patroller checks the contractors work site, NOC documents and implementation of NOC conditions. In case, any of the criteria is not met, then the patroller will issue the notice to stop work and immediately leave the contractors site, without waiting for further compliance from the contractor, to complete his patrolling, based on the landmark. Black points will be provided to the contractor based on the violation types under each notice to stop work received by the contractor. (Format attached Figure: 5.5)
IMPLEMENTATION OF NOC CONDITIONS & PRECAUTIONARY MEASURES

5.6 Awareness Tool Box talk

Awareness TBT is conducted by DEWA TLM Engineer to contractors Engineer, Safety Engineer, Supervisor, Machine Operators at site to create awareness about the safety precautionary measures to avoid lines abnormality or damages. (Format attached Figure: 5.6)

Figure: 5.6 - Tool Box talk format

<table>
<thead>
<tr>
<th>TOOL BOX TALK (TBT) REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dept/Sec:</strong> TMD/TLM-LP</td>
</tr>
<tr>
<td><strong>Location:</strong></td>
</tr>
<tr>
<td><strong>Given By:</strong></td>
</tr>
<tr>
<td><strong>Signature:</strong></td>
</tr>
<tr>
<td><strong>To Whom:</strong></td>
</tr>
</tbody>
</table>

**Language in which TBT Conducted:**

Arabic/English/Hindi/Urdu/Malayalam/Bengali/Other

**TOPIC:** Safety Precautions and Protective Measures to be taken while works near to 400/132kV Over Head Lines

1. NOC with approved method of statement and trial pits & DSL verification drawing must be available in site before any work.
2. Responsible Engineer/Supervisor/Safety officer should be available at site while working.
3. Danger Sign board is to be placed on top of the circuit by Trial pit only and at the location near/over cable route should be done manually.
4. Height limit of safety barrication/ Crash barrier to be provided (Cables/DSL).
5. Scrap/IRE hazard/Wastedumping/Storage of Materials/lagoon and any other construction within DEWA corridor is strictly prohibited.
6. Machinery excavation/parking/movement should not be carried out near/over DSL/132kV OHL/33kV OHL.
7. Before starting of Boring/Drilling/Shoring/Hilling and Dewatering work site location to be confirmed by GPS and marked by DEWA TLM supervisory personnel.
8. Route Marker should not be displaced without permission. Pole Type marker to be replaced by Push/Pull marker for Interlock areas.
9. Works at night/Holiday and beyond office hours are not allowed and special approval to be taken from TLM NOC with justification (If emergency).
10. Separate NOC to be taken for works not mentioned in the issued NOC. Also method of statement should be revised as per site conditions/situation.
11. Separate Approval to be taken for subcontractors from ISPT, Transmission projects on TLM.

12. Any failure in the above ticked instruction will cause DEWA to issue Stop Work Notice and impose fine.

**Questions raised by attendees:**

Endorsed By: ____________________________ Date: __________

(Sr. Manager / Dy. Sr. Manager / Manager)

Form-15-TBT-06-June 2015
ACTIONS AGAINST VIOLATORS

6.1 Legal Requirements

Legal action and penalty shall be imposed to the contractor/ violator as per Law no. (6) of 2015.

6.2 Black Points System

A System Implemented by DEWA as a Preventive measure to monitor and control the contractors, from performing violations of issued Noc’s and its conditions at site, which will lead to damage of the DEWA’S Transmission lines network.
Categories and Actions

6.2.1.1 Action against violators who fall under Category A:
If contractor performs violation at site repeatedly and accumulates say 18 black points (within a period of one year), as per the violations of NOC conditions and protective regulations, following action shall be taken as mentioned below,
A1. Contractor works at violated locations will be stopped.
A2. Inform the utility and DEWA depts. about the Contractor’s violation and request for their action against the violated Contractor.
A3. Meeting with clients (DEWA or Private), Contractors & Consultants to list actions to avoid repeating of violations.
A4. Action Plan for safe construction work in close vicinity of 400 / 132 kV OHL/ Cable should be prepared by the Contractor / Consultant, and Utility / DEWA dept. and will submit to TMD/TLM for review/ approval.
A5. Warning to be issued to Site In charge.
6.2.1.2 **Action against violators who fall under category B:**

If accumulation of black points reaches 35 or damage of 400/132kV Cable/Ohl without tripping (within a period of one year), following action shall be taken as mentioned below,

B1. All works of the particular project will be stopped.
B2. All issued NOC’s will be suspended for the particular project until fulfilling the requirements specified in B5.
B3. Inform the utility and DEWA depts. about the Contractor’s violation and request for their action against the violated contractor.
B4. Meeting with clients (Authority or Private), Contractors & Consultants to list actions to avoid repeating of violations.
B5. Replace the Project Engineer, Safety Engineer, and Site Supervisor of the project. CV’s of the newly appointed staffs will be submitted to TMD/TLM for review/approval.
B6. Action Plan for safe construction work in close vicinity of 400 / 132 kV OHL/ Cable should be prepared by the Contractor / Consultant, and Utility / DEWA Dept. and submit to TMD/TLM for review / approval to avoid repetition of violation /damage.

6.2.1.3 **Action against violators who fall under category C:**

If damage of 400/132kV Cable/OHL occurs with tripping and accumulation of black points reaches 48 (within a period of one year), following action shall be taken as mentioned below,

C1. All works of the particular project will be stopped.
C2. All issued NOC’s will be cancelled for the particular project.
C3. Stop issuing new NOC’s for the period of 3 months to the involved Contractor.
C4. Inform the utility and DEWA depts. about the Contractor’s violation and request for their action against the violated Contractor.
C5. Meeting with clients (DEWA or Private), Contractors & Consultants to list actions to avoid repeating of violations.
C6. For resumption of work, either new Contractor / DEWA approved Contractors to be appointed or Replace the Project Manager, Project Engineer, Safety Engineer, and Site Supervisor of the project. CV’s of the newly appointed staffs will be submitted to TMD/TLM for review/approval.
C7. Action Plan for safe construction work in close vicinity of 400 / 132 kV OHL/ Cable should be prepared by the Contractor / Consultant, and Utility / DEWA Dept. and will submit to TMD/TLM for review / approval. Also New NOC application for the particular project shall be applied through proper channel.

Furthermore works can be resumed subject to fulfilling above mentioned requirements and agreements as per respective categories.
CHAPTER 7
SERVICES PROVIDED BY TLM
SERVICES PROVIDED BY TLM

7.1 Trial pit / OHL Verification & Supervision

To verify the clearance and geographic details of the transmission lines (Cable and OHL) and accessories from the proposed scope of works for NOC applications, Transmission Line Maintenance-Patrolling section provides the following services to customers, including contractors, consultants and other utilities, in Dubai.

7.1.1 Prior Notice, Supervision for trial pit work and verification for the trial pit.
The DEWA work supervision and verification request format should be filled in and sent to DEWA 2 working days in advance by
a) Applying directly to DEWA TLM – TLP office,
   2nd Floor, DEWA Warsan Complex, Warsan
   (During DEWA office hours 7:30am to 2:30pm)
b) by fax no. 04 – 3229095
c) by email tlm.supervision@dewa.gov.ae with sample attached in page 29.
d) by online dewa eservices (https://crm.dewa.gov.ae/irj/portal/anonymous) & after login, click for Transmission line supervisory service.

7.1.2 Telephonic confirmation
To be done with concerned DEWA Engineer, after sending fax or email to ensure the availability of DEWA supervisor on the requested date, by telephone 04 322 1547 or 04 322 7929.

7.1.3 Work Hours
Works should be carried out during DEWA working hours only. Special approval to be obtained for emergency and very urgent works with justification to work beyond working hours.

7.2 Construction Work Supervision

To provide supervisor during the construction activities in the vicinity of 400/132kV Cable/OHL or inside DEWA Corridor.

7.2.1 Prior notice, supervision for OHL and cable line protection works
DEWA Work supervision request format duly filled to be sent to DEWA 2 working days advance by
a) Applying directly to DEWA TLM – TLP office,
   2nd Floor, DEWA Warsan Complex, Warsan
   (During DEWA office hours 7:30am to 2:30pm)
b) by fax no. 04 – 3229095
c) by email tlm.supervision@dewa.gov.ae with samples attached in page 29.
d) by online dewa eservices (https://crm.dewa.gov.ae/irj/portal/anonymous) & after login, click for Transmission line supervisory service.

7.2.2 Telephonic confirmation
To be done with concerned DEWA Engineer, after sending fax or email to ensure the availability
of DEWA supervisor on the requested date, by telephone: 04 322 1547 or 04322 7929.

7.2.3 Work Hours
Works should be carried out during DEWA working hours only. Special approval to be obtained for emergency and very urgent works with justification to work beyond working hours. For clarification and follow up in English or Arabic, you can contact us on the following telephone numbers: 04 322 1547 or 04 322 7929 for English, 04 322 1499 or 04 322 1500 for Arabic.

Moreover, we are providing awareness training to contractors’ staff to improve their safety skills to work in the vicinity of 400/132kV OHL or cable lines and being certified from our end.

In this Hand Book, the following items are explained in different chapters on how to protect existing 400/132kV Transmission Lines network as below:

1. Transmission Lines and Accessories
2. Hazardous factors while working near Transmission Lines
3. NOC for construction works
4. Protective Regulations and precautionary measures for the protection of Transmission Lines
5. Implementation of NOC conditions and precautionary measures
6. Legal Actions against violators.

The above items will help all contractors, consultants, utility departments and private parties for proceeding NOC application, with proper method statement for safe construction works in and around the transmission lines.
Furthermore, all concerned parties will get general or technical knowledge about the transmission OHL and Cable lines and safety precautionary measures to avoid unwanted damages.

All are welcome for Queries, clarifications and suggestion if any.

We hope contractor, consultant, utility departments and private parties will follow “DEWA protective rules and regulations”, and cooperate to achieve Dubai Government’s mission to provide an uninterrupted electricity supply, in Dubai.
List Of Abbreviations

° **Approx** Approximate
° **CS** Connection Services
° **DM** Dubai Municipality
° **DUSUP** Dubai Supply Authority
° **EHV** Extra High Voltage
° **EXTG** Existing
° **FO** Fibre Optic
° **FIG** Figure
° **FRL** Finished Road Level
° **GIS** Geographical Information System
° **GPS** Global Positioning System
° **HDD** Horizontal Directional Drilling
° **II&P** Infrastructure Information & Permits
° **kV** Kilo Volt
° **M** meter
° **MM** Milli Meter
° **MTR** meter
° **NDRC** Non Disruptive Road Crossing
° **NOC** No Objection Certificate
° **OHL** Overhead Line
° **OPGW** Optical Ground Wire
° **RCC** Reinforced Cement Concrete
° **ROW** Right Of Way
° **RTA** Road Transport Authority
° **TBT** Tool Box Talk
° **TLM - LP** Transmission Lines Maintenance - Lines Patrolling
° **TMD** Transmission Maintenance Dept
° **TP** Trial Pit
° **UG** Underground
° **XLPE** Cross Link Poly Ethylene
Contact Us

For any clarification related to any information mentioned in the Hand Book, please send your queries / comments to the following contact details:

Tel : 04 3227922 / 04 3221542
Fax : 04 322 9095
Email : tlm.supervision@dewa.gov.ae
Website : www.dewa.gov.ae