

<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
	<b>TECHNICAL SPECIFICATIONS</b>		
<b>Doc. Title</b>	<b>SPECIFICATION FOR 11 KV TOP BRACKET (F-CLAMP)</b>		
<b>Doc. No</b>	ENG-HV-020	Eff. Date: 09-12-2021	
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Initiator		HOD (Engineering)	
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## 1.0 SCOPE

The scope of this document is to give design & constructional features, inspection, supply and transportation guidelines for F clamps used in 11 KV lines.

## 2.0 APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following standards/IEC and shall conform to the regulations of local statutory authorities.

- a) **IS 2062:2011** - For Hot rolled medium and high tensile structural steel- specification
- b) **IS 1852-1985** - For Rolling and cutting tolerances for hot rolled steel products
- c) **IS 2629-1985** - For Recommended practice for hot dip galvanized of iron and steel
- d) **IS 4759-1996** - For Hot dip zinc coatings on structural steel and other allied products- specification
- e) **IS 808-1989** - Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle Sections

## 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g  
(g being acceleration due to gravity)
11. Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.

Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

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#### 4.0 GENERAL CONSTRUCTION:

##### The material shall be-

- MS channel shall be ISMC 75\*40 ( 6.8 Kg/m)
- Hot dip galvanizing to be done after fabrication only.
- The design shall be suitable for the climatic condition stated above.
- The constructional details shall be as per the attached drawing.
- Dimensional tolerance shall be limited to 2% except tolerance on thickness until and unless otherwise specified.
- Zinc electroplated/painted material will not be accepted.
- Approximate weight shall be 9.86 kg.

#### 5.0 MARKING:

The unit shall be appropriately marked as "**PROPERTY OF TPNODL**" and with the name of the vendor and year of manufacturing at suitable location.

#### 6.0 TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All components shall also be type tested as per the relevant standards.

Tests	IS to be referred
Visual test	As a routine test
Dimensional tests	As per the drawing
Tensile strength	IS 2062
Bend test	IS 2062
Impact test	IS 2062
Hot dip galvanizing	IS 4759 : 1996

#### 7.0 TYPE TEST CERTIFICATE

The bidder shall furnish the type test certificates of the F clamps for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at NABL accredited labs as per the relevant standards. Type tests should have been conducted during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPNODL.

#### 8.0 PRE DISPATCH INSPECTION

Equipment shall be subjected to inspection by a duly authorized representative of TPNODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPNODL's representatives at all times when the work is in progress. Inspection by TPNODL or its

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authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPNODL.

Following documents shall be sent along with material.

- a) Test reports
- b) MDCC issued by TPNODL.
- c) Invoice in duplicate
- d) Packing list
- e) Drawings & catalogue
- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable)

## 9.0 INSPECTION AFTER RECEIPT AT STORES

The material received at TPNODL, Balasore, Odisha store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering and contracts department.

## 10.0 GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Company up to a period of at least 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract whichever is later. In the event any defect is found by the Company up to a period of 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract, whichever is earlier, supplier shall be liable to undertake to replace/rectify such defects at his own costs.

## 11.0 PACKING

Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

## 12.0 TENDER SAMPLE

Not required.


## 13.0 QUALITY CONTROL

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPNODL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

## 14.0 MINIMUM TESTING FACILITIES

Bidder shall have adequate in house testing facilities for carrying out all routine tests &

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acceptance tests as per relevant International / Indian standards

## MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

## SPARES, ACCESSORIES AND TOOLS

Bidder shall provide a list of recommended spares with quantity and unit prices for 4 years of operation after commissioning. The bidder shall provide a list of complete set of accessories and tools required for erection & maintenance along with the installation procedure.

Following drawings & documents shall be prepared based on Purchaser's specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) General description of the equipment and all components including brochures
- b) General arrangement drawings
- c) Type Test Certificates.
- d) Experience List
- e) Manufacturing schedule and test schedule.

After the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, test certificates shall be submitted after the final approval of the same to the purchaser.

## 15.0 GALVANISATION

All F-clamps shall be hot dip galvanized, are as following: All galvanizing shall be carried out by the hot dip process, in accordance with Specification IS 2629. However, high tensile steel nuts, bolts and spring washer shall be electro galvanized to Service Condition 4. The zinc coating(610)gms per sq.mt) shall be smooth, continuous and uniform. It shall be free from acid spot and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating. Before picking, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paints, varnish, oil, welding slag and other foreign matter completely removed. All protuberances which would affect the life of galvanizing shall also be removed.

**The weight of zinc deposited shall be in accordance with that stated in Standard IS 2629 and shall not less than 0.61kg/m<sup>2</sup> with a minimum thickness of 86 microns for items of thickness more than 5mm, 0.46kg/m<sup>2</sup> (64 microns) for items of thickness between 2mm and 5mm and 0.33kg/m<sup>2</sup> (47 microns) for items less than 2mm thick.**

Parts shall not be galvanized if their shapes are such that the pickling solutions cannot be removed with certainty or if galvanizing would be unsatisfactory or if their mechanical strength would be reduced. Surfaces in contact with oil shall not be galvanized unless they are subsequently coated with an oil resistant varnish or paint. In the event of damage to the galvanizing the method used for repair shall be subject to the approval of the Engineer in Charge or that of his representative.

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**In no case the repair of galvanization on site will be permitted.**

The threads of all galvanized bolts and screwed rods shall be cleared of spelter by spinning or brushing. A die shall not be used for cleaning the threads unless specifically approved by the Engineer in Charge. All nuts shall be galvanized. The threads of nuts shall be cleaned with a tap and the threads oiled. Partial immersion of the work shall not be permitted and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion. After galvanizing no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing. To avoid the formation of white rust galvanized materials shall be stacked during transport and stored in such a manner as to permit adequate ventilation. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

**The galvanized steel shall be subjected to test as per IS-2633.**

#### **16.DRAWNING:**

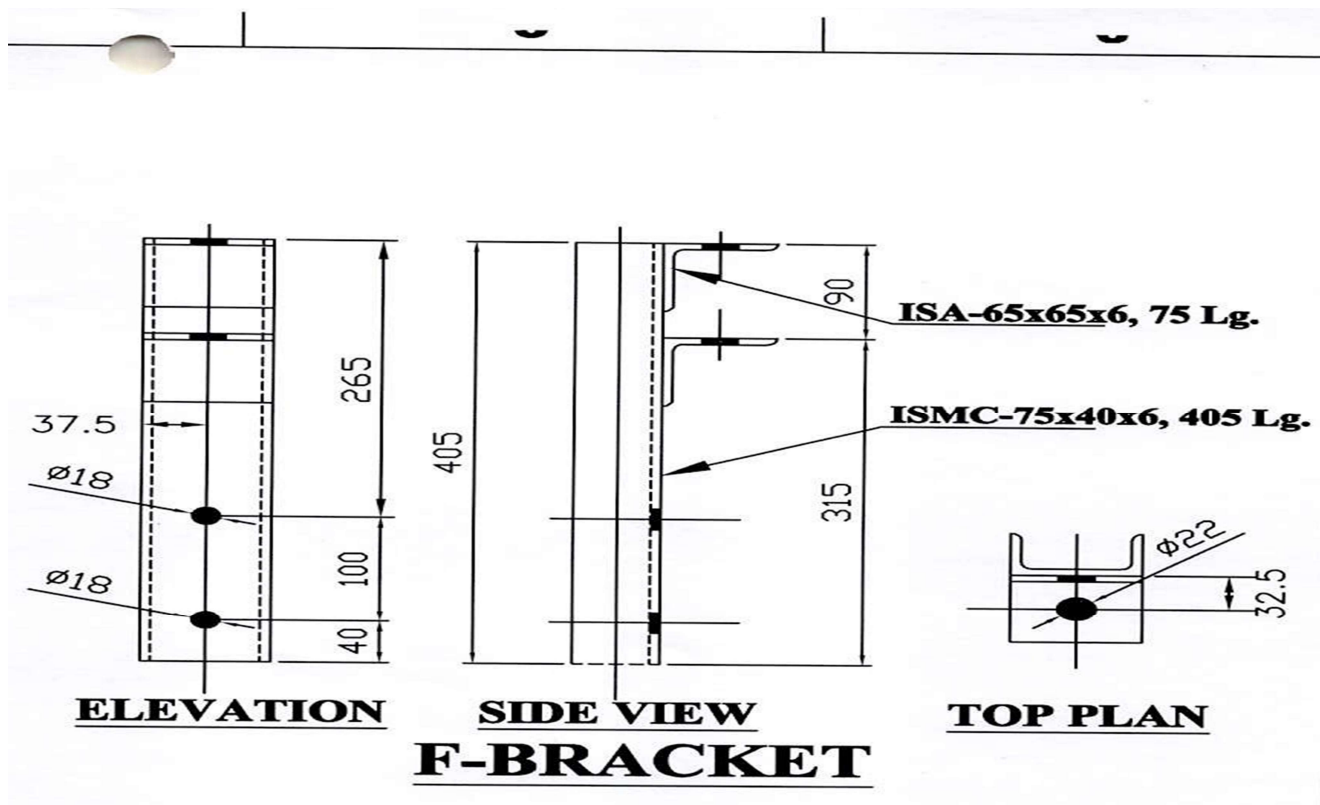
Following Drawings/Documents shall be submitted after the award of the contract:  
Drawings/documents to be submitted after the award of the contract:

S.No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	General Arrangement drawings	√		√
3	Manual/Catalogues/drawings		√	
4	Installation Instructions ( if any)		√	√
5	QA &QC Plan	√	√	√
6	Routine, Acceptance & Type Test Certificates	√	√	√

All the documents & drawings shall be in English language.

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17.0

### 11 KV TOP BRACKET (F CLAMP)

#### GURANTEED TECHNICAL PARTICULARS

(To be submitted along with offer)

SI NO.	Description unit		Specifications
1	Type of Clamp		11 KV F CLAMP
2	Type of Material		GI
3	Standard		IS-2633,IS-808,IS-2062,IS-2629
4	Dimensions		As per drawing enclosed
5	Galvanization	mm	Hot dip as per IS-2633
6	Suitable for pole		9mtr PSC pole, RSJ poles
7	Steel tensile strength	N/Cm <sup>2</sup>	1200kgf/cm <sup>2</sup>
8	Size	mm	As per drawing enclosed
9	HoleSize	mm	18mm

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## 18.0 SCHEDULE OF DEVIATIONS

### SCHEDULE OF DEVIATIONS

#### (TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S.No	Clause No.	Details of deviation with justifications

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We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature  
Designation

CONFIDENTIAL

Initiator		HOD (Engineering)	
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Initiator		HOG (Plant Engineering)	
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**TECHNICAL SPECIFICATIONS**

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**1.0 SCOPE**

The scope of this document is to give design & constructional features, inspection, supply and transportation guidelines for V Cross arm back clamps used in 11 KV lines.

**2.0 APPLICABLE STANDARDS**

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following standards/IEC and shall conform to the regulations of local statutory authorities.

- a) **IS 2062:2011 - For Hot rolled medium and high tensile structural steel- specification**
- b) **IS 1852-1985 - For Rolling and cutting tolerances for hot rolled steel products**
- c) **IS 2629-1985 - For Recommended practice for hot dip galvanized of iron and steel**
- d) **IS 4759-1996 - For Hot dip zinc coatings on structural steel and other allied products- specification**
- e) **IS 808-1989 - Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle Sections**

**3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:**

The service conditions shall be as follows:

i.	Maximum Ambient Temperature	50°c
ii.	Maximum daily average ambient temperature	40°c
iii.	Minimum Ambient Temperature	2°c
iv.	Maximum humidity	99.7%
v.	Minimum humidity	15%
vi.	Average Annual Rainfall	1800mm
vii.	Average wind speed prevailing in the area	200kmph
viii.	Average Thunderstorms prevailing in the area	70 days per annum
ix.	Average Dust storms prevailing in the area	20 days per annum
x.	Average number of rainy days per annum	160
xi.	Maximum Altitude above sea level	1200m
xii.	Rainy months	June to October

The atmosphere across coastal divisions of TPNODL is very saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

**4. GENERAL TECHNICAL REQUIREMENTS**

Sl. No.	Technical Parameter	Desired Value
1	Materials	Hot-Dip Galvanized, Flat(50X8) GI Flat, Grade Fe-410 WA
2	Relevant Standard	IS: 2062, IS: 2633, IS: 2629
3	Grade Of Steel	E 250 A
4	Minimum Tensile Strength	410 N/mm <sup>2</sup>
5	Yield Stress	250 N/mm <sup>2</sup>
6	Percentage Elongation (Min.) at Gauge length	23%
7	Bend Test (Internal Dia)	Min-2t

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8	Mass of Zinc Coating	705 gm/m <sup>2</sup>
9	Zinc Coating Thickness	100-micron, 6 Dip (min)
10	Chemical Composition	Grade: E 250 (As per IS: 2062)
a.	Marking /Embossing	TPNODL ,Manufacture's trademark

**5.0 GENERAL CONSTRUCTION:**

**The material shall be-**

- a) Material shall be Hot-Dip Galvanized, Flat (50X6) GI Flat, and Grade Fe-410 WA.
- b) The design shall be suitable for the climatic condition stated above.
- c) The constructional details shall be as per the attached drawing.
- d) Dimensional tolerance shall be limited to 2% except tolerance on thickness until and unless otherwise specified.
- e) Zinc electroplated/painted material will not be accepted
- f) Approximate weight shall be shall be provided by bidder in GTP.

**6.0 MARKING:**

The unit shall be appropriately marked as **"PROPERTY OF TPNODL"** and with the name of the vendor and year of manufacturing at suitable location.

**7.0 TESTS**

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All components shall also be type tested as per the relevant standards.

Tests	IS to be referred
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**8.0 TYPE TEST CERTIFICATE**

The bidder shall furnish the type test certificates of the V cross Arm back clamps for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at NABL accredited labs as per the relevant standards. Type tests should have been conducted during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to **TPNODL**.

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**11.0 GUARANTEE**

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Company up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later. In the event any defect is found by the Company up to a period of 12 months from the date of commissioning or 24months from the date of last supplies made under the contract, whichever is earlier, supplier shall be liable to undertake to replace/rectify such defects at his own costs.

**12.0 PACKING**

Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

**13.0 TENDER SAMPLE**

Not required.

**14.0 QUALITY CONTROL**

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPNODL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

Initiator		HOD (Engineering)	
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**TECHNICAL SPECIFICATIONS**

<b>Doc. Title</b>	<b>SPECIFICATION FOR BACK CLAMP FOR 11 KV V CROSS ARM</b>		
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**15.0 MINIMUM TESTING FACILITIES**

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards

**MANUFACTURING ACTIVITIES**

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

**SPARES, ACCESSORIES AND TOOLS**

Bidder shall provide a list of recommended spares with quantity and unit prices for 3 years of operation after commissioning. The bidder shall provide a list of complete set of accessories and tools required for erection & maintenance along with the installation procedure.

Following drawings & documents shall be prepared based on Purchaser's specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) General description of the equipment and all components including brochures
- b) General arrangement drawings
- c) Type Test Certificates.
- d) Experience List
- e) Manufacturing schedule and test schedule.

After the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, test certificates shall be submitted after the final approval of the same to the purchaser.

**16.0 GALVANISATION**

All type of V cross arms Back clamps shall be hot dip galvanized, are as following: All galvanizing shall be carried out by the hot dip process, in accordance with Specification IS 2629. However, high tensile steel nuts, bolts and spring washer shall be electro galvanized to Service Condition 4. The zinc coating (610 gms per sq.mt) shall be smooth, continuous and uniform. It shall be free from acid spot and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating. Before picking, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paints, varnish, oil, welding slag and other foreign matter completely removed. All protuberances which would affect the life of galvanizing shall also be removed.

**The weight of zinc deposited shall be in accordance with that stated in Standard IS 2629 and shall not less than 0.61kg/m<sup>2</sup> with a minimum thickness of 86 microns for items of thickness more than 5mm, 0.46kg/m<sup>2</sup> (64 microns) for items of thickness between 2mm and 5mm and 0.33kg/m<sup>2</sup> (47 microns) for items less than 2mm thick.**

Parts shall not be galvanized if their shapes are such that the pickling solutions cannot be removed with certainty or if galvanizing would be unsatisfactory or if their mechanical strength would be reduced. Surfaces in contact with oil shall not be galvanized unless they are subsequently coated with an oil resistant varnish or paint. In the event of damage to the galvanizing the method used for repair shall be subject to the approval of the Engineer in Charge or that of his representative.

**In no case the repair of galvanization on site will be permitted.**

The threads of all galvanized bolts and screwed rods shall be cleared of spelter by spinning or brushing. A die shall not be used for cleaning the threads unless specifically approved by the Engineer in Charge. All nuts shall be

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**TECHNICAL SPECIFICATIONS**

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galvanized. The threads of nuts shall be cleaned with a tap and the threads oiled. Partial immersion of the work shall not be permitted and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion. After galvanizing no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing. To avoid the formation of white rust galvanized materials shall be stacked during transport and stored in such a manner as to permit adequate ventilation. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

**The galvanized steel shall be subjected to test as per IS-2633.**

**17.0 DRAWING:**

Following Drawings/Documents shall be submitted after the award of the contract: Drawings/documents to be submitted after the award of the contract:

S.No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	General Arrangement drawings	√		√
3	Manual/Catalogues/drawings		√	
4	Installation Instructions ( if any)		√	√
5	QA &QC Plan	√	√	√
6	Routine, Acceptance & Type Test Certificates	√	√	√

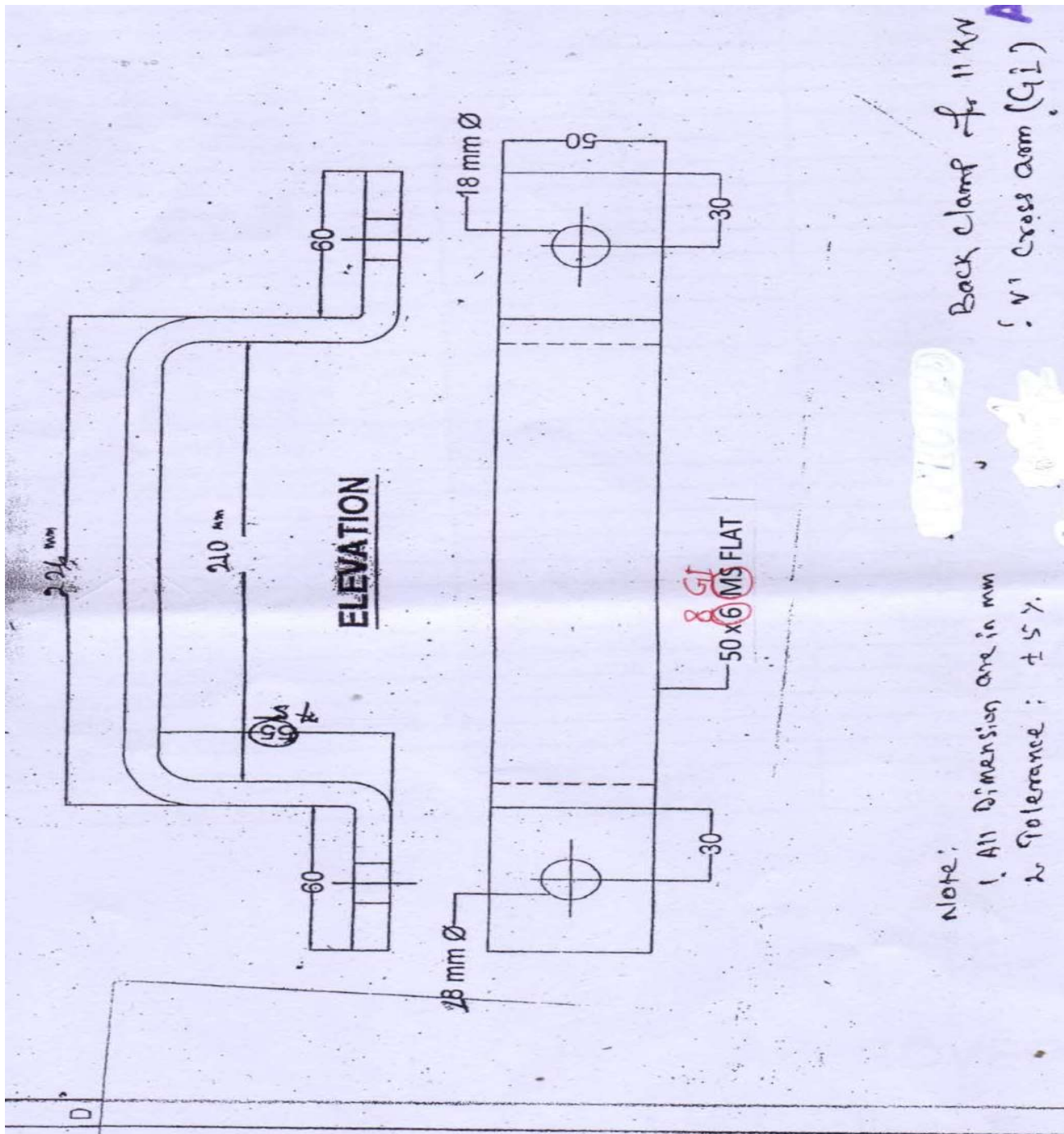
All the documents & drawings shall be in English language.

Initiator		HOD (Engineering)	
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**TECHNICAL SPECIFICATIONS**

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**11 KV V CROSS ARM BACK CLAMP**

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**TECHNICAL SPECIFICATIONS**

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**18.0**

**GURANTEED TECHNICAL PARTICULARS**

**(To be submitted along with offer)**

SI NO.	Description unit		Specifications
1	Type of Clamp		<b>11 KV V CROSS ARM BACK CLAMP</b>
2	Type of Material		GI
3	Standard		IS-2633,IS-808,IS-2062,IS-2629
4	Dimensions		As per drawing enclosed
5	Galvanization	mm	Hot dip as per IS-2633
6	Suitable for pole		9mtr PSC pole
7	Steel tensile strength	N/Cm <sup>2</sup>	1200 Kgf/ Cm <sup>2</sup>
8	Size of GI Flat	mm	50x8mm GI flat
9	Hole Size	mm	18mm

**19.0 SCHEDULE OF DEVIATIONS**

**SCHEDULE OF DEVIATIONS**

**(TO BE ENCLOSED WITH TECHNICAL BID)**

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

Initiator		HOD (Engineering)	
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**TECHNICAL SPECIFICATIONS**

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S.No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature  
Designation

Initiator		HOD (Engineering)	
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TECHNICAL SPECIFICATION

Document Title	<b>Specification of 11KV V Cross Arm Back Clamp</b>		
Document No.		Eff. Date:	
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Prepared by: Rajat Kumar Parhi	Reviewed By:	Approved By:	Issued By:

Initiator		HOG (Plant Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED</small> <small>(A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>	
	<b>TECHNICAL SPECIFICATIONS</b>	
<b>Doc. Title</b>	<b>SPECIFICATION FOR 18 MM HT GI STAY SET</b>	
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## **CONTENT**

1. Scope
2. Applicable Standards
3. Climatic Conditions Of The Installation
4. General Technical Requirements
5. General Constructions
6. Marking
7. Tests
8. Type Test Certificates
9. Pre-Dispatch Inspection
10. Inspection After Receipt At Stores
11. Guarantee
12. Packing
13. Tender Sample
14. Quality Control
15. Minimum Testing Facilities
16. Manufacturing Activities
17. DRAWINGS AND DOCUMENTS
18. Guaranteed Technical Particulars
19. Schedule Of Deviations

Initiator		HOD (Engineering)	
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 <b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>	
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## 1. SCOPE OF WORK:

This specification covers the technical requirements of design, manufacture, test at manufacturer's works, packing & forwarding, supply and unloading at stores/ site and performance of 18 mm GI Stay HT Stay Set

## 2. APPLICABLE STANDARDS:

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall conform to the regulations of the local authorities

Ref IS	Description
IS 4579 -96	Hot Dip Galvanizing For Fabrication
IS 1852 – 85	Tolerance For Raw Material
IS 1367part (13) - 1983	Hot Dip Galvanizing For Tension Screw
IS 2062	Manufactured from raw material as per IS 2062 grade E-250 quality 'A'

## 3. CLIMATIC CONDITIONS:

The climatic conditions at site under which the store shall operate satisfactory, are as follows.

i.	Maximum Ambient Temperature	50°c
ii.	Maximum daily average ambient temperature	40°c
iii.	Minimum Ambient Temperature	2°c
iv.	Maximum humidity	99.7%
v.	Minimum humidity	15%
vi.	Average Annual Rainfall	1800mm
vii.	Average wind speed prevailing in the area	200kmph
viii.	Average Thunderstorms prevailing in the area	70 days per annum
ix.	Average Dust storms prevailing in the area	20 days per annum
x.	Average number of rainy days per annum	160
xi.	Maximum Altitude above sea level	1200m
xii.	Rainy months	June to October

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The atmosphere across coastal divisions of TPNODL is very saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

Therefore, outdoor material shall be designed and protected for use in exposed, heavily polluted salty corrosive and humid coastal atmosphere

#### 4. GENERAL TECHNICAL REQUIREMENTS:

S No	Description	Units	Requirement	Tolerance
1.	Material		Manufactured from raw material as per IS 2062 grade E-250 quality 'A'	
2.	Anchor Rod	mm		
a	Nominal Diameter of rod	mm	18 mm diameter	(+/-) 0.5 mm
b	Length of rod	mm	2100 mm	(+/-) 0.5 %
3.	RCC Base Plate		Mix of concrete 1:2:4	
a	Dimension [L x B x Thickness]	mm	450 mm x 450 mm x 75 mm	(+/-) 5 mm
b	Rectangular opening at centre	mm	25 mm x 75 mm	(+/-) 0.5 mm
4.	Tension Screw			
a	Eye Bolt	mm	2 No. with 18 mm diameter ; inner diameter of rounded part of screw 22 mm.	(+/-) 0.5 mm
b	Length of the central part	mm	310 mm	
c	Total length after full tightening of both screw / Eye bolt	mm	445 mm	(+/-) 5 mm
d	Total length after full opening of both screw / Eye bolt	mm	665 mm	
5.	MS Angle	mm	50 mm x 50 mm x 6 mm; Long 250 mm	(+/-) 0.5 mm; in length (+/-) 5 mm
6.	Stay Collar	mm	All dimensions shall be provided by bidder along with drawing.	(+/-) 5 mm

#### 5. GENERAL CONSTRUCTIONS:

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**a) ANCHOR ROD WITH MS ANGLE**

Overall length of rod should be 2100 mm to be made out of 18 mm diameter MS rod. One end of rod to be made into a round eye having an inner diameter of 22 mm and outer diameter 64 mm with best quality welding. Other end fitted with MS Angle 50 mm x 50 mm x 6 mm; 250 mm long. Hot Dip galvanized as per IS 4759-1996.

**b) RCC BASE PLATE**

All material shall be of RCC. With concrete ratio 1:2:4 And 6 no's of 8 mm TMT bar both ways shall be used for reinforcement. Reinforcement bars cross point be welded or perfectly tied up with soft wire.

**c) TENSION SCREW**

Two no. of eye bolt to be made of 18mm diameter MS Rod having an overall length of 250 mm. One end of the rod to be threaded up to 185 mm length. The other end of the rod shall be rounded into a circular eye of 22 mm inner diameter with proper and good quality welding. Tension screw central part shall be one piece forging with total width 310 mm. Tension screw being a threaded fastener be hot dip galvanized as per relevant IS : 1367 (part 13) – 1983.

**d) STAY COLLAR**

To be made of 50 x 6 MS plate and hot dip galvanized as per IS 4759 and all other constructional details & dimensions as mentioned in drawing.

**6. MARKING:**

The 18 mm GI HT Stay Set shall carry the following information contained in a label attached to it:

- a) Reference to the Standards.
- b) Manufacturer's name
- c) Year of manufacture.
- d) The following shall be embossed on the Stay Set, " PROPERTY OF TPNODL"

**7. TESTS:**

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All Routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be

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necessarily conducted on the HT Stay Set in additions to others specified in the IS/IEC/SANS Standards

**Following tests shall be applicable**

- 1) Visual examination, Verification of dimension and marking test.
- 2) Tensile Strength.
- 3) Galvanization (Uniformity) test.
- 4) Cube test/ Compression test

**8. TYPE TEST CERTIFICATES:**

The bidder shall furnish the type test certificates of the HT Stay Set for the tests as mentioned as above as per the corresponding standards. All the tests shall be conducted by CPRI/ERDA/Other NABL accredited Laboratory as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPNODL

**9. PRE DISPATCH INSPECTION:**

The Material shall be subject to inspection by a duly authorized representative of the TPNODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TPNODL’s representatives when the work is in progress. Inspection by the TPNODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPNODL.

**Following documents shall be sent along with material**

- a) Test reports
- b) MDCC issued by TPNODL
- c) Invoice in duplicate
- d) Packing list
- e) Drawings & catalogue
- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable).

**10. INSPECTION AFTER RECEIPT AT STORES:**

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The material received at TPNODL store will be inspected for acceptance and shall be liable for rejection, If found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering Department.

### 11. GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements). Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

### 12. PACKING:

Supplier shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport and be packed in such a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

### 13. TENDER SAMPLE:

Bidder shall submit the sample of material with the offer (in case of first supply to TPNODL).

### 14. QUALITY CONTROL:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

### 15. MINIMUM TESTING FACILITIES:

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.

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## 16. MANUFACTURING ACTIVITIES:

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

## 17. DRAWINGS AND DOCUMENTS:

Following documents shall be prepared based on TPNODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) Completely filled in Technical Particulars.
- b) General description of the equipment and all components including brochures.
- c) Type test Certificates
- d) Experience List.

After the after of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser

### Following Drawings/Documents shall be submitted after the award of the contract

S. No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/drawings for all components.		√	
3	Technical details and test certificates.		√	√
4	Installation Instructions		√	√
5	Transport/shipping dimension drawing		√	√
6	QA & QC Plan	√	√	√

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7	Routine, Acceptance and Type test Certificates	√	√	√
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All the Documents and Drawings shall be in English Language

**Instruction Manuals:** Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in English Language) covering erection and maintenance instructions and all relevant information pertaining to the main equipment as well as auxiliary devices

### 18. GUARANTEED TECHNICAL PARTICULARS:

Sr. No	Description	Units	Bidder Offer
1.	Material		
2.	Anchor Rod	mm	
a	Nominal Diameter of rod	mm	
b	Length of rod	mm	
3.	RCC Base Plate		
a	Dimension [L x B x Thickness]	mm	
b	Rectangular opening at centre	mm	
4.	Tension Screw		
a	Eye Bolt	mm	
b	Length of the central part	mm	
c	Total length after full tightening of both screw / Eye bolt	mm	

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d	Total length after full opening of both screw / Eye bolt	mm	
5.	MS Angle	mm	
6.	Stay Collar	mm	

## 19. SCHEDULE OF DEVIATIONS:

### (TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications

Sr No.	Clause No.	Details of deviation with justification,

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
	<b>TECHNICAL SPECIFICATIONS</b>		
<b>Doc. Title</b>	<b>SPECIFICATION FOR GI CLAMP FOR LT STAY</b>		
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- 3.0 CLIMATIC CONDITIONS OF INSTALLATION
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- 20.0 SCHEDULE OF DEVIATIONS

### 1.0 SCOPE

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store and performance of GI Clamp for trouble free and efficient operation.

## 2.0 APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International standards / IEC and shall conform to the regulations of the local authorities.

- a) IS 808 : Dimension for Hot Rolled Steel Beam, Column, Channel and Angle sections
- b) IS 2062 : Specification for Hot Rolled medium and high Tensile Structural Steel.
- c) IS 2633 : Methods for testing uniformity of coating on zinc coated articles.
- d) IS 2629 : Recommended Practice for Hot Dip Galvanizing of iron and steel

## 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

The material shall be suitable for following climatic conditions,

i.	Maximum Ambient Temperature	50°c
ii.	Maximum daily average ambient temperature	40°c
iii.	Minimum Ambient Temperature	2°c
iv.	Maximum humidity	99.7%
v.	Minimum humidity	15%
vi.	Average Annual Rainfall	1800mm
vii.	Average wind speed prevailing in the area	200kmph
viii.	Average Thunderstorms prevailing in the area	70 days per annum
ix.	Average Dust storms prevailing in the area	20 days per annum
x.	Average number of rainy days per annum	160
xi.	Maximum Altitude above sea level	1200m
xii.	Rainy months	June to October

The atmosphere across coastal divisions of TPNODL is very saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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#### 4.0 GENERAL TECHNICAL REQUIREMENTS

Sl. No.	Technical Parameter	Desired Value
1	Materials	Hot-Dip Galvanized, Flat(50X6) GI Flat, Grade Fe-410 WA
2	Relevant Standard	IS: 808, IS: 2062, IS: 2633, IS: 2629
3	Grade Of Steel	E 250 A
4	Minimum Tensile Strength	410 N/mm <sup>2</sup>
5	Yield Stress	250 N/mm <sup>2</sup>
6	Percentage Elongation (Min.) at Gauge length	23%
7	Bend Test (Internal Dia)	Min-2t
8	Mass of Zinc Coating	705 gm/m <sup>2</sup>
9	Zinc Coating Thickness	100-micron, 6 Dip (min)
10	Chemical Composition	Grade: E 250 (As per IS: 2062)
a.	Marking /Embossing	TPNODL ,Manufacture's trademark

#### 5.0 GENERAL CONSTRUCTION

Steel may be supplied of Grade Fe-410 WA in semi-killed/killed condition. The steel may be ingot cast or continuously cast. All finished steel shall be well and cleanly rolled to the dimensions, sections and masses specified. The finished material shall be reasonably free from surface flaws; laminations; rough/jagged and imperfect edges and all other harmful defects. Minor surface defects may be removed by the manufacturer/supplier by grinding provided the thickness is not reduced locally by more than 4 percent below the minimum specified thickness. Reduction in thickness by grinding greater than 4 percent but not exceeding 7 percent. The steels are suitable for welded, bolted and riveted structures and for general engineering purposes:

#### 6.0 MARKING

The LT GI Clamp shall carry the following information contained in a label attached to it:

- a) Reference to the Standards.
- b) Manufacturer's name
- c) Year of manufacture.

The following shall be embossed on the GI clamp," PROPERTY OF TPNODL, BALASORE."

#### 7.0 TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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Routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the GI Clamp for LT Stay set in additions to others specified in the IS/IEC/SANS Standards.

**Following tests shall be applicable**

- 1) Visual examination, Verification of dimension and marking test.
- 2) Tensile Strength.
- 3) Galvanization (Uniformity) test.
- 4) Cube test/ Compression test

**8.0 TYPE TEST CERTIFICATES**

The bidder shall furnish the type test certificates of the Stay Clamp for the tests as mentioned as above as per the corresponding standards. All the tests shall be conducted by CPRI, ERDA or from any NABL accredited laboratory as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPNODL.

**9.0 PRE-DISPATCH INSPECTION**

The Material shall be subject to inspection by a duly authorized representative of the TPNODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TPNODL’s representatives when the work is in progress. Inspection by the TPNODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPNODL.

Following documents shall be sent along with material:

- a) Test reports
- b) PO copy
- c) MDCC issued by TPNODL
- d) Invoice in duplicate
- e) Packing list
- f) Inspection report
- g) Drawings (if applicable) & catalogue
- h) Guarantee / Warrantee card
- i) Delivery Challan
- j) Other Documents (as applicable).

**10.0 INSPECTION AFTER RECEIPT AT STORES**

The material received at TPNODL, BALASORE, Odisha store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering and Contracts department.

**11.0 GUARANTEE**

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract whichever is later, (the time scale of 48/60 months could be enhanced subject to mutual agreements). Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by TPNODL.

## 12.0 PACKING

Supplier shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport and be packed in such a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

## 13.0 TENDER SAMPLE

Bidder shall submit the sample of material with the offer. (In case of first supply to TPNODL)

## 14.0 QUALITY CONTROL

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

## 15.0 MINIMUM TESTING FACILITIES

Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant Indian standards. In case of supply by the channel partner, the manufacturer shall have the in-house testing facilities to carry out the routine and acceptance tests.

## 16.0 MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

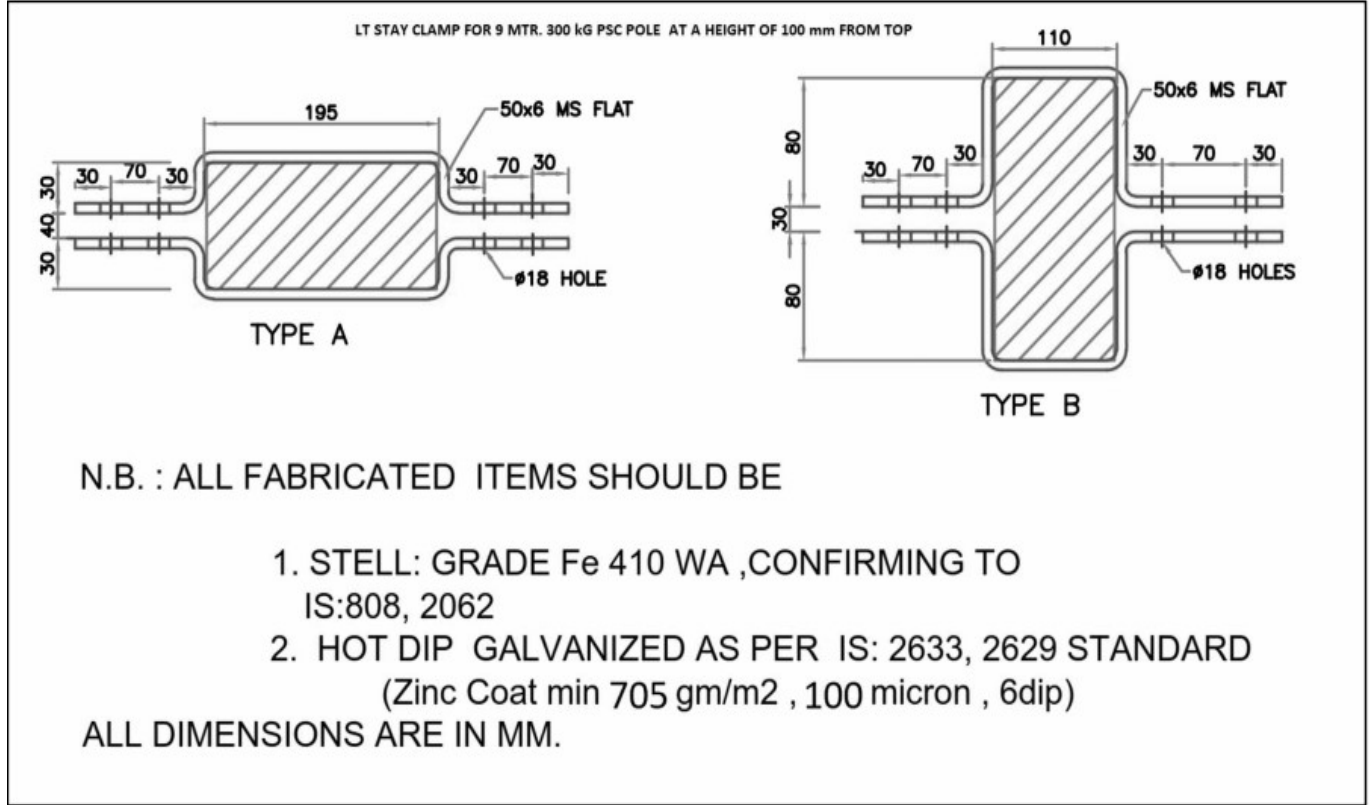
## 17.0 SPARES, ACCESSORIES AND TOOLS

Not applicable

Initiator		HOD (Engineering)	
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<b>TPNODL</b> TP NORTHERN ODISHA DISTRIBUTION LIMITED <small>(A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
	<b>TECHNICAL SPECIFICATIONS</b>		
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## 18.0 DRAWINGS AND DOCUMENTS



Initiator		HOD (Engineering)	
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<b>TPNODL</b> TP NORTHERN ODISHA DISTRIBUTION LIMITED <small>(A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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**LT STAY CLAMP FOR 9 mtr. 300 KG PSC POLE AT A HEIGHT OF 1000mm**

**STAY SET CLAMP ( TYPE A )**

**STAY SET CLAMP ( TYPE B )**

**N.B. : ALL FABRICATED ITEMS SHOULD BE**

1. STEEL: GRADE Fe 410 WA ,CONFIRMING TO IS:808, 2062
2. HOT DIP GALVANIZED AS PER IS: 2633, 2629 STANDARD (Zinc Coat min 705 gm/m<sup>2</sup> , 100 micron , 6dip)

**ALL DIMENSIONS ARE IN MM.**

**STAY CLAMP FOR WPB 160x152mm GI JOIST**

**STAY SET CLAMP ( TYPE A )**

**STAY SET CLAMP ( TYPE B )**

**N.B. : ALL FABRICATED ITEMS SHOULD BE**

1. STEEL: GRADE Fe 410 WA ,CONFIRMING TO IS:808, 2062
2. HOT DIP GALVANIZED AS PER IS: 2633, 2629 STANDARD (Zinc Coat min 705 gm/m<sup>2</sup> , 100 micron , 6dip)

**ALL DIMENSIONS ARE IN MM.**

Following documents shall be prepared based on TPNODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
	<b>TECHNICAL SPECIFICATIONS</b>		
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- a) Completely filled in Technical Particulars.
- b) General description of the equipment and all components including brochures.
- c) Type test Certificates
- d) Experience List.

After the after of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to TPNODL.

Following Drawings/Documents shall be submitted after the award of the contract

S.No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/drawings for all components.		√	
3	Technical details of Stay Clamp.		√	√
4	Installation Instructions		√	√
5	Instructions for use		√	√
7	Transport/shipping dimensions		√	√
8	QA & QC Plan	√	√	√
9	Routine, Acceptance and Type test Certificates	√	√	√

All the Documents and Drawings shall be in English Language.

#### Instruction Manuals:

Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in English Language) covering erection and maintenance instructions and all relevant information pertaining to the main equipment as well as auxiliary devices

#### 19.0 GUARANTEED TECHNICAL PARTICULARS

Sl. No.	Technical Parameter	Desired Value	Bidder's Offer
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Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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1	Materials	Hot-Dip Galvanized, Flat(50X6) GI Flat
2	Relevant Standard	IS: 2062, IS: 2633, IS: 2629
3	Grade Of Steel	E 250 A
4	Minimum Tensile Strength	410 N/mm <sup>2</sup>
5	Yield Stress	250 N/mm <sup>2</sup>
6	Percentage Elongation (Min.) at Gauge length	23%
7	Bend Test (Internal Dia)	Min-2t
8	Mass of Zinc Coating	705 gm/m <sup>2</sup>
9	Zinc Coating Thickness	100-micron, 6 Dip (min)
10	Chemical Composition	Grade: E 250 (As per IS: 2062)
a.	Marking /Embossing	TPNODL ,Manufacture's trademark

## 20.0 SCHEDULE OF DEVIATIONS

**(TO BE ENCLOSED WITH TECHNICAL BID)**

Initiator		HOD (Engineering)	
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<b>TPNODL</b> <small>TP NORTHERN ODISHA DISTRIBUTION LIMITED  (A Tata Power and Odisha Government Joint Venture)</small>	<b>TP NORTHERN ODISHA DISTRIBUTION LIMITED</b>		
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All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature

Designation

Initiator		HOD (Engineering)	
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**TECHNICAL SPECIFICATIONS**

<b>Doc. Title</b>	<b>SPECIFICATION FOR 4/6/8/10/16 SWG GI WIRE</b>		
<b>Doc. No</b>	ENG-GEN-015	<b>Eff. Date: 10.12.2021</b>	
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Initiator		HOD (Engineering)	
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<b>Doc. Title</b>	<b>SPECIFICATION FOR 4/6/8/10/16 SWG GI WIRE</b>		
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**1.0 SCOPE**

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store and performance of SWG GI Wire for trouble free and efficient operation.

**2.0 APPLICABLE STANDARDS**

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International standards / IEC and shall conform to the regulations of the local authorities.

- a) IS 280 : Mild steel wire for general engineering purposes.
- b) IS 4826 : Specification for hot-dipped galvanized coatings on round steel wires.
- c) IS 7887 : Mild steel wire rods for general engineering purposes.
- d) IS 2629 : Recommended practice for hot-dip galvanizing of iron and steel.
- e) IS 6745 : Methods for determination of mass of zinc coating on zinc coated iron and steel articles.

**3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:**

The material shall be suitable for following climatic conditions,

i.	Maximum Ambient Temperature	50°c
ii.	Maximum daily average ambient temperature	40°c
iii.	Minimum Ambient Temperature	2°c
iv.	Maximum humidity	99.7%
v.	Minimum humidity	15%
vi.	Average Annual Rainfall	1800mm
vii.	Average wind speed prevailing in the area	200kmph
viii.	Average Thunderstorms prevailing in the area	70 days per annum
ix.	Average Dust storms prevailing in the area	20 days per annum
x.	Average number of rainy days per annum	160
xi.	Maximum Altitude above sea level	1200m
xii.	Rainy months	June to October

The atmosphere across coastal divisions of TPNODL is very saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

Initiator		HOD (Engineering)	
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<b>Doc. Title</b>	<b>SPECIFICATION FOR 4/6/8/10/16 SWG GI WIRE</b>		
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#### 4.0 GENERAL TECHNICAL REQUIREMENTS

Sl. No.	Technical Particulars	GI WIRE 4 SWG	GI WIRE 6 SWG	GI WIRE 8 SWG	GI WIRE 10 SWG	GI WIRE 16 SWG
1	Diameter of Wire	5.6 mm	5 mm	4 mm	3.15 mm	1.6 mm
2	Tolerance	±2.5% with a minimum of ±0.025	±2.5% with a minimum of ±0.025	±2.5% with a minimum of ±0.025	±2.5% with a minimum of ±0.025	±2.5% with a minimum of ±0.025
3	Tensile Strength of wire	300 to 550 Mpa	300 to 550 Mpa	300 to 550 Mpa	300 to 550 Mpa	300 to 550 Mpa
4	Weight of zinc coating	290 gms/meter <sup>2</sup>	290 gms/meter <sup>2</sup>	290 gms/meter <sup>2</sup>	270 gms/meter <sup>2</sup>	230 gms/meter <sup>2</sup>
5	Process of Galvanizing	Hot dipped	Hot dipped	Hot dipped	Hot dipped	Hot dipped
6	Type of Coating	Heavily coated	Heavily coated	Heavily coated	Heavily coated	Heavily coated
7	Quality	Soft & Annealed	Soft & Annealed	Soft & Annealed	Soft & Annealed	Soft & Annealed

#### 5.0 GENERAL CONSTRUCTION

All material shall be as per IS: 280:1978. The wire shall be drawn from the wire rods conforming to IS 7887. The process of zinc coating should be as per IS 2629. Zinc coating on hot dip galvanized wire should be uniform. All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be sound, free from splits, surface flaws, rough jagged and imperfect edges and other harmful surface defects.

#### 6.0 MARKING

NA.

#### 7.0 TESTS

All routine, acceptance and type tests of GI Wire shall be carried out in accordance with the relevant IS 280 standards. All routine/acceptance tests shall be witnessed by the Purchaser/his authorized representative. Following tests shall be necessarily conducted on the GI wire as specified in IS standards.

#### TYPE TESTS

- Diameter of the individual wire.
- Tensile Strength.
- Wrapping test of the wire.
- Bend test (Applicable for wire of 5mm diameter and above).
- Mass of zinc coating.
- Uniformity of zinc coating.
- Adhesion of zinc coating.

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**ACCEPTANCE TESTS**

- a) Diameter of the individual wire.
- b) Tensile Strength.
- c) Wrapping test of the wire.
- d) Mass of zinc coating.
- e) Uniformity of zinc coating.
- f) Bend test (Applicable for wire of 5mm diameter and above).
- g) Adhesion of zinc coating.

**ROUTINE TESTS**

- a) Diameter of the individual wire.
- b) Tensile Strength.
- c) Wrapping test of the wire.
- d) Mass of zinc coating.
- e) Uniformity of zinc coating.
- f) Bend test (Applicable for wire of 5mm diameter and above).

**8.0 TYPE TEST CERTIFICATES**

The bidder shall furnish the type test certificates of the GI wire for the tests as mentioned as above as per the corresponding standards. All the tests shall be conducted by CPRI, ERDA or from any NABL accredited laboratory as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPNODL.

**9.0 PRE-DISPATCH INSPECTION**

The Material shall be subject to inspection by a duly authorized representative of the TPNODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TPNODL's representatives when the work is in progress. Inspection by the TPNODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPNODL.

Following documents shall be sent along with material:

- a) Test reports
- b) PO copy
- c) MDCC issued by TPNODL
- d) Invoice in duplicate
- e) Packing list
- f) Inspection report
- g) Drawings (if applicable) & catalogue
- h) Guarantee / Warrantee card
- i) Delivery Challan
- j) Other Documents (as applicable).

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**10.0 INSPECTION AFTER RECEIPT AT STORES**

The material received at TPNODL, BALSORE, Odisha store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering and Contracts department.

**11.0 GUARANTEE**

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements). Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by TPNODL.

**12.0 PACKING**

Each coil of wire shall be suitably bound and fastened compactly. Each coil shall be packed by suitable wrapping. The bidder shall ensure that all the GI wire shall be adequately protected and specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

**13.0 TENDER SAMPLE**

Bidder shall submit the sample of material with the technical bid (on or before the tender submission date). Sample should be submitted at TPNODL Central store, Balasore by the Bidder and store receipt copy to be submitted with the technical bid. Tenders received without sample are liable for rejection.

**14.0 QUALITY CONTROL**

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPNODL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

**15.0 MINIMUM TESTING FACILITIES**

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant Indian standards. In case of supply by the channel partner, the manufacturer shall have the in house testing facilities to carry out the routine and acceptance tests.

**16.0 MANUFACTURING ACTIVITIES**

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The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

**17.0 SPARES, ACCESSORIES AND TOOLS**

Not applicable

**18.0 DRAWINGS AND DOCUMENTS**

Following documents shall be prepared based on TPNODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) Completely filled in Technical Particulars.
- b) General description of the equipment and all components including brochures.
- c) Type test Certificates
- d) Experience List.

After the after of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to TPNODL.

Following Drawings/Documents shall be submitted after the award of the contract

S.No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/drawings for all components.		√	
3	Technical details of GI wire.		√	√
4	Installation Instructions		√	√
5	Instructions for use		√	√
7	Transport/shipping dimensions		√	√
8	QA & QC Plan	√	√	√
9	Routine, Acceptance and Type test Certificates	√	√	√

All the Documents and Drawings shall be in English Language.

**Instruction Manuals:** Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in English Language) covering erection and maintenance instructions and all relevant information pertaining to the main equipment as well as auxiliary devices

**19.0 GUARANTEED TECHNICAL PARTICULARS**

Sl. No.	Technical Particulars	GI WIRE 4 SWG	GI WIRE 6 SWG	GI WIRE 8 SWG	GI WIRE 10 SWG	GI WIRE 16 SWG
1	Diameter of Wire	To be submitted by Bidder				
2	Tolerance					

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3	Tensile Strength of wire
4	Weight of zinc coating
5	Process of Galvanizing
6	No. of Dips
7	Type of Coating
8	Quality

**20.0**

**SCHEDULE OF DEVIATIONS**

**(TO BE ENCLOSED WITH TECHNICAL BID)**

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

<b>S. No</b>	<b>Clause No.</b>	<b>Details of deviation with justifications</b>

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature  
Designation

Initiator		HOD (Engineering)	
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