

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION		PY 52 246
		TECHNICAL SPECIFICATION		Rev. No. 01
		CONCRETE STUD ANCHORS		Page 1 of 3

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CONCRETE STUD ANCHORS

1.0 INTRODUCTION & SCOPE

- 1.1 The intent of this document is to specify minimum specification requirements for procurement of **Mechanical type Concrete Stud Anchors**.
- 1.2 The purpose of these stud anchors is to fasten the structural plate to concrete. The plate in turn shall be used for supporting purposes. These anchor fasteners may be installed on the bottom/side/top of the concrete. Supplier is to ensure that the stud is suitable for all these applications.
- 1.3 All the codes/standards mentioned in this specification shall be of latest issue.

2.0 INPUTS & STANDARDS

2.1 DESIGN:

- The concrete stud anchors shall be stud type torque controlled mechanical expansion fasteners having 3-way expansion sleeve with nut and washer.
- Type of fixing this anchor fastener shall be Pre-fastening & Through-fastening.
- The concrete stud anchor shall carry cracked concrete and fire approval.
- Anchor must be tested and approved as per Seismic C1 and C2 Category.
- **The safe tensile load carrying capacity of the anchors shall be arrived by providing the minimum factor of safety of 2.5 on the characteristic load of the anchor.**
- The minimum Load bearing capacity of each individual bolt shall be as per the below table for minimum concrete strength of M20 in cracked concrete.

Sl.no	Size of Anchor Bolt	Effective Anchorage depth (mm)	Tensile Load (kN)	Shear Load (kN)
01	M8	45	2.4	7.4
02	M10	60	4.3	11.3
03	M12	70	7.6	17.1
04	M16	85	11.9	26.9

- Concrete Stud anchors shall be designed as per ETAG-001 code & Supplier shall ensure that anchors shall meet the cracked concrete requirements.
- The Anchor should be third party tested, possess ETA approval and should be pre-assembled with a galvanized nut and washer.

2.2 MATERIAL AND DIMENSIONAL DETAILS:

- The concrete stud anchors shall be of cold formed carbon steel (minimum grade 5.8 as per IS 1367 Part 3), galvanised to minimum 5 microns as per IS 1367 Part 11 / EN ISO 4042 & externally threaded.
- The 3-way expansion sleeve shall be of SS316 material.
- The Size and Length of the Stud Anchor shall be as mentioned in Material description.

Form No:	LAYOUTS & PIPING ENGINEERING	PREPARED	CHECKED	APPROVED	DATE
	PROJECT ENGINEERING & SYSTEMS DIVISION	 PARAMESH	 V UDAY	 SRIKANTH G	20.08.18

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2.3 IMPORTANT NOTES:

- Vendors' scope is limited to Supply of mechanical concrete stud anchors.
- Applications shall be in Wide range of applications, which includes cracked concrete.
- Heavy-duty fastenings in highly safety-relevant or dynamic applications, which includes applications in power plants.
- Applications may include e.g. heavy equipment, steel columns, heavy pipe supports, beam supports, cantilevers, etc.
- Application of this stud anchors shall be in Minimum concrete strength of M20. The supplied anchor stud should be suitable for this concrete strength as a minimum.
- Vendor to follow latest relevant Indian and International Standards for Anchor Fasteners.
- Vendor shall furnish the following along with their offer
 - Model of the Stud Anchor being quoted.
 - Catalogue of the Stud Anchor indicating the technical details.
 - Maximum load bearing capacity of Stud Anchor.
- Post order, vendor shall furnish the data sheets of Stud anchor for approval along with the installation instructions such as
 - Diameter of hole to be provided in concrete
 - Drill bit to be used
 - Anchor embedment depth & fixing details or any other details necessary for completion of installation at site etc.

3.0 INSPECTION

Scope of inspection shall be as called for in the data sheets enclosed / specified in the purchase order / approved quality plan. Inspection agency shall be BHEL / BHEL Third Party Inspection agency.

4.0 TEST CERTIFICATES

Three copies of all the test certificates required as per this document shall also be furnished.

5.0 PACKING AND MARKING

5.1 All the items shall be packed suitably in closed wooden cases / hard cardboard boxes, enclosed in a moisture resistant wrapping in order to avoid damage, ingress of moisture & corrosion during transit and storage. Suitable supports shall be provided inside the cases in order to avoid internal movement. Each packing case must contain 2 copies of the shipping list giving details of all the contents of the case.

5.2 The following marking shall be done on each packing case minimum on two sides and also at the top:

- Complete address of the consignee and destination as per BHEL Purchase Order.
- BHEL Purchase Order Number (c) Number of pieces in each packing case
- Net Weight
- Gross Weight
- Packing case number and total number of packing
- Arrow indicating top of the packing case.

6.0 WARRANTY

Vendor shall warranty all supplies against the defects due to manufacturing effecting performance for a period of sixty month from the date of supply and shall repair/ replace promptly, without cost, any part or parts of the material that fails within said period.

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7.0 DOCUMENTATION:

Bidder shall confirm in their bid for compliance in all respect for the submission of documents along with no. of copies (indicated in brackets) to be submitted at various stages to Purchaser as indicated below:

Sl No	Description	Along with Offer	After placement of Order	After Supply completion
1	Leaflet / catalogue for the offered item indicating complete cross sectional arrangement, binding dimensions, bill of materials with material specification details	I (1)		
2	GA Drawing.	I (1)	A (4)	
3	Quality Assurance Plan (QAP)	I (1)	A (4)	
4	Any deviations to this standard	A (1)		
5	Shelf life of each item in scope of supply and recommended storage precautions		I (3)	
6	Test Certificates		I (5)	
7	Warrantee Certificate		I (2)	
8	Installation, maintenance, safety procedures, catalogues, list of spares if any, contact addresses of vendor & dealers, phone nos. etc).		I (2)	I (4)

Note: **I** : For Information **A** : For Approval

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RECORD OF REVISIONS				
Rev. No.	Date	Revision Details	Revised	Approved
00	20.08.2018	First Issue	--	--
01	02.11.2019	Generally Revised	V UDAY	SRIKANTH G