

परियोजना (PROJECT) :

उपस्कर का नाम (NAME OF EQUIPMENT) : EOT Crane

ग्राहक (CLIENT) :

विक्रेता (VENDOR) :

एनआईटी/ क्रय आदेश संदर्भ (NIT/P.O. REFERENCE) :

MODEL QUALITY ASSURANCE PLAN (MQAP)

SET Special instructions: -	
1	Contractors/Manufacturers/Sub-suppliers are advised to submit QAP for equipments/ materials after incorporating all tests for bought out items, in process inspection and final inspections as per their latest manufacturing practice and Indian/ International Standards (with latest amendments, if any).
2	Contractors/Manufacturers/Sub-suppliers are required to use properly calibrated instruments /equipments during testing/inspection, for which necessary calibration certificates are required to be provided/presented to the Inspecting Officer.
3	Contractors/Manufacturers/Sub-suppliers has to make on their own all arrangements for testing facilities at their works for testing of equipments/materials.
4	One set of complete test certificates as per the requirement of QAP be made available to the Inspecting Officer at the time of inspection/testing.
5	All the records, as per the requirement of QAP are to be made available for review by the Inspecting Officer during inspection.
6	Field tests are to be carried out as per the requirements of the contract / purchase order.

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क्र. सं. SR. NO.	मद/घटक एवं विशेषता ITEM /COMPONENTS & CHARACTERISTICS	जाँच की प्रकृति NATURE OF CHECKS	जाँच की मात्रा QUANTUM OF CHECKS	संदर्भ दस्तावेज़ / स्वीकृति मानदंड REFERENCE DOCUMENTS / ACCEPTANCE NORMS	रिकॉर्ड प्रारूप RECORD FORMAT	निरीक्षण एजेंसी (INSP. AGENCY)			टिप्पणी REMARKS
						प्रदर्शन Perform	गवाह Witness	सत्यापन Verify	
1	Raw Material								
1.1	Structural Steel (Box Girder, End Trucks, Trolley, Rails, Beam etc.)	Chemical Analysis Mech. Properties Ultrasonic Test (UT for above 19 mm)	Sample/Batch -do- 100%	Appd. drawings/ Tech. specs./ Relevant Standard	TC	3/2	-	1	TC
1.2	Cast/Forged Steel (Wheels, Shafts, Pulley, Pins,Gears, Pinions, Brake Drum , Couplings, Hook etc.)	Chemical Analysis Mech. Properties Ultrasonic Test (UT for above 50 mm)	Sample/Batch -do- 100%	-do-	TC	3/2	-	1	TC
1.3	Bought Out Items								
a)	Drive Motor, Bearing, Gear Box, Plumber Block, EHT Brakes, EM Beakes, Wire Rope, Electrical Cables, Remote Radio Control, Load cell system, Monorail Hoist etc	Make, Type &,Rating, Routine Test	100%	-do-	TC	3/2	-	1	TC
b)	Detection devices (Anti collision limit switch, Over load detection device,Load control device, Detection of Brake Wear, Over speed detection device, Circumferential cable staggering on drum, Unbalancing detection device etc) - As applicable	Make, Type & Rating, Routine Test	100%	-do-	TC	3/2	-	1	TC
2	In Process Stage Inspection								
2.1	Welder certification	Visual	100%	-do-	TC	3/2	-	1	TC
2.2	NDT-Welding Fillet Welds	UT, MPI, DPT (as applicable)	-do-	-do-	TC	3/2	-	1	TC
2.3	NDT-Butt Welds (Box Girder, Rope Drums and other full strength welds)	UT, MPI, DPT (as applicable)	100%	-do-	TC	3/2	-	1	TC
2.4	Post Weld Heat Treatment (Fabricated Rope Drums, Gear Box Housing, Forged Crane hooks)	Heat Treatment Chart	-do-	-do-	TC	3/2	-	1	TC
2.5	Machining								
a)	Surface Finish (Rope drum shaft, Rope Drum grooves, Brake Drum)	Visual/Measurement	-do-	-do-	TC	3/2	-	1	TC
b)	Dimensions	Measurement	-do-	-do-	IR	3/2	-	1	RR
2.6	Sub-Assembly Stage- Drive Mechanism, Hoist / Trolley arrangements, Brakes								
a)	Alignment/Layout	Visual/Measurement	100%	-do-	IR	3/2	-	1	RR
b)	Dimensional check	Visual/Measurement	-do-	-do-	IR	3/2	-	1	RR
c)	Running Performance (Drive Motors, Gear Boxes)-Noise level, Vibration, Temp. rise, Leakage Test - Gear Boxes etc	Visual/Measurement	-do-	-do-	TC	3/2	-	1	TC
d)	Crane Hook-Proof Load Test	Load Test	-do-	-do-	TC	3/2	-	1	TC
f)	NDT-after Proof Load Test Butt Welds (Box Girder, Rope Drums and other full strength welds)	UT, MPI, DPT (as applicable)	-do-	-do-	TC	3/2	-	1	TC
3	Final inspection/Tests on assembled Crane at manufacturer's works								
3.1	Operator's cabin- Dim. Check & its accessories check	Visual/Measurement	-do-	-do-	JIR	3/2	1	-	CHP
3.2	BOM Checking & Verification of TR of drawing	Visual	-do-	-do-	JIR	3/2	1	-	CHP

Signature
(QA&I DEPT.)Signature & Seal
(VENDORS Q.C. DEPT. OR REPRESENTATIVE)

परियोजना (PROJECT) :

ग्राहक (CLIENT) :

उपस्कर का नाम (NAME OF EQUIPMENT) : EOT Crane

विक्रेता (VENDOR) :

एनआईटी/ क्रय आदेश संदर्भ (NIT/P.O. REFERENCE) :

क्र. सं. SR. NO.	मद/घटक एवं विशेषता ITEM /COMPONENTS & CHARACTERISTICS	जाँच की प्रकृति NATURE OF CHECKS	जाँच की मात्रा QUANTUM OF CHECKS	संदर्भ दस्तावेज़ / स्वीकृति मानदंड REFERENCE DOCUMENTS / ACCEPTANCE NORMS	रिकॉर्ड प्रारूप RECORD FORMAT	निरीक्षण एजेंसी (INSP. AGENCY)			टिप्पणी REMARKS
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3.3	Dimensional check on assembled crane - bridge structure (Box girders, end trucks) hoisting trolley frame, travelling mechanism	Measurement	100%	Appd. drawings/ Tech. specs./ Relevant Standard	JIR	3/2	1	-	CHP
3.4	Deflection test at Rated load	-do-	-do-	-do-	JIR	3/2	1	-	CHP
3.5	Operational/functional test								
a)	Hoisting and LT & CT Speeds - without load	Measurement	-do-	-do-	JIR	3/2	1	-	CHP
b)	Hoisting and CT Speeds at Rated load	-do-	-do-	-do-	JIR	3/2	1	-	CHP
c)	Hoisting and CT Travel test at 125% of rated load	-do-	-do-	-do-	JIR	3/2	1	-	CHP
d)	Function of brakes for trolley and hoistings	Visual/Measurement	-do-	-do-	JIR	3/2	1	-	CHP
e)	Creeping speed/ Jog movement with rated load(VVVF Drive)	-do-	-do-	-do-	JIR	3/2	1	-	CHP
f)	Functional Test of Monorail Hoist	-do-	-do-	-do-	JIR	3/2	1	-	CHP
g)	Radio control test of speed control of bridge travels, trolley travel & Hoist motion, control of master contactor, indication and alarm (if applicable) (Bridge travel motion in idle condition only)	-do-	-do-	-do-	JIR	3/2	1	-	CHP
h)	Pendant Control test (If applicable)	-do-	-do-	-do-	JIR	3/2	1	-	CHP
4	Control Panel								
4.1	Resistors, Capacitors, Limit Switches, Master Controllers, Thyristors, VVVF Modules, Transformers, Circuit Breakers, Switches etc. (As applicable)	Electrical Test	-do-	-do-	TC	3/2	-	1	TC
4.2	BOM, Verification of scheme, make and rating of components	Visual	-do-	-do-	JIR	3/2	1	-	CHP
4.3	Cubicle Dimensions	Measurement	-do-	-do-	JIR	3/2	1	-	CHP
4.4	Functional check including HV and IR tests	Visual/Test	-do-	-do-	JIR	3/2	1	-	CHP
4.5	Sequence of operation and interlock tests	Visual/Test	-do-	-do-	JIR	3/2	1	-	CHP
4.6	Protection Test (Single phase protection, over current protection, thermal over load, under voltage protection etc as per approved scheme.) -As applicable	Visual/Test	-do-	-do-	JIR	3/2	1	-	CHP
4.7	Radio control tests of speed control of bridge travel, trolley travel & hoist motion, control of master contactor, indication and alarm	-do-	-do-	-do-	JIR	3/2	1	-	CHP
4.8	Pendant control test	-do-	-do-	-do-	JIR	3/2	1	-	CHP
5	Surface Preparation & Painting	Visual / Measurement	-do-	-do-	TC	3/2	-	1	TC

Note: a. In 'Inspection Agency' column figure 1,2,or 3 to be filled. 1- will indicate 'EMPLOYER', 2- will indicate 'supplier' & 3- will indicate 'sub-supplier'.

b. In 'Remarks' column following abbreviations shall be used - RR-Review of Records, T.C. - Test Certificate, JIR-Joint Inspection Report & CHP - Customer Hold Point.

c. The firm shall obtain acceptance/clearance of finished product for further activities based on Test Certificates & Internal Report (IR)

d. At the time of Inspection the supplier shall arrange the requisite calibrated measuring instruments i.e. micrometer, vernier caliper, pie tape, surface roughness tester, dial gauge etc.

e. This QAP does not absolve the Contractor/sub-contractor of his responsibility to supply the correct products, strictly in conformity to the specifications given in the purchase order/contract. The above Model QAP stipulates the bare minimum requirements which shall be complied by the contractor. The above QAP has been made presuming subletting of work shall be allowed in the tender. In case subletting of work is not allowed in the tender, then "3/2" shall be considered as "2" under the column "Perform".

f. Material testing shall be conducted from Govt. Lab, NABL Lab or NABL accredited lab having valid Scope of accreditation of all specified tests mentioned in approved QAP. NDT shall be conducted from NABL accredited lab/Govt. approved lab/Level 2 or level 3 certified person.

g. Any additional test required as per the requirement of equipment in accordance with Contract Agreement/Relevant standard apart from QAP will be carried out by the firm without any additional financial implication.

h. Site test shall be conducted in presence of Project's Representative only.

Signature

(QA&I DEPT.)

Signature & Seal

(VENDORS Q.C. DEPT. OR REPRESENTATIVE)

परियोजना (PROJECT) :

ग्राहक (CLIENT) :

उपस्कर का नाम (NAME OF EQUIPMENT) : Lifting Beam for EOT Crane (As per Applicability)

विक्रेता (VENDOR) :

एनआईटी/ क्रय आदेश संदर्भ (NIT/P.O. REFERENCE) :

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						प्रदर्शन Perform	गवाह Witness	सत्यापन Verify	
1	Raw Material & Bought out items								
1.1	Plates, Angles, Beam etc for Structure			Appd. drawings/ Tech. specs./ Relevant Standard					
1.1.1	Chemical & Mechanical Properties	Chemical & Mechanical Analysis	1 Sample/Heat	-do-	TC	3/2	-	1	TC
1.1.2	NDT for plate thickness > 19 mm)	UT	100%	-do-	IR	3/2	-	1	RR
1.2	Forgings/ Round Bar for Cross Head, Pins								
1.2.1	Chemical & Mechanical Properties	Chemical & Mechanical Analysis	1 Sample/Heat	-do-	TC	3/2	-	1	TC
1.2.2	NDT for thickness > 50 mm)	UT	100%	-do-	IR	3/2	-	1	RR
2	In Process Stage Inspection								
2.1	Welding of Lifting Beam								
2.1.1	Welder Certification	Visual	100%	-do-	IR	3/2	-	1	RR
2.1.2	NDT of Fillet Weld & Full strength Weld	UT, DPT, MPI (As applicable)	100%	-do-	TC	3/2	-	1	TC
2.2	Dimensional Checks	Measurement	-do-	-do-	IR	3/2	-	1	RR
3	Final inspection of Complete Assembly								
3.1	BOM check & verification of TR of Drawing	Visual	-do-	-do-	JIR	3/2	1	-	CHP
3.2	Assembly Dimensions	Measurement	-do-	-do-	JIR	3/2	1	-	CHP
3.3	Welding Examination								
3.3.1	NDT of Fillet Weld	UT, MPI, DPT (as applicable)	10% of weld length	-do-	JIR	3/2	1	-	CHP
4	Surface Preparation and Painting	Visual / Measurement	100%	-do-	TC	3/2	-	1	TC

Note: a. In 'Inspection Agency' column figure 1,2,or 3 to be filled. 1- will indicate 'NHPC LTD', 2- will indicate 'supplier' & 3- will indicate 'sub-supplier'.

b. In 'Remarks' column following abbreviations shall be used - RR-Review of Records, T.C. - Test Certificate, JIR- Joint Inspection Report & CHP - Customer Hold Point.

c. The firm shall obtain acceptance/clearance of finished product for further activities based on Test Certificates & Internal Report (IR)

d. At the time of Inspection the supplier shall arrange the requisite calibrated measuring instruments i.e. micrometer, vernier caliper, pie tape, surface roughness tester, dial gauge etc.

e. This QAP does not absolve the Contractor/sub-contractor of his responsibility to supply the correct products, strictly in conformity to the specifications given in the purchase order/contract. The above QAP stipulates the bare minimum requirements which shall be complied by the contractor. The above QAP has been made presuming subletting of work shall be allowed in the tender. In case subletting of work is not allowed in the tender, then "3/2" shall be considered as "2" under the column " Perform".

f. Material testing shall be conducted from Govt. Lab, NABL Lab or NABL accredited lab having valid Scope of accreditation of all specified tests mentioned in approved QAP. NDT shall be conducted from NABL accredited lab/Govt. approved lab/Level 2 or level 3 certified person.

g. Any additional test required as per the requirement of equipment in accordance with Contract Agreement/Relevant standard apart from QAP will be carried out by the firm without any additional financial implication.

Signature

(QA&I DEPT.)

Signature & Seal

(VENDORS Q.C. DEPT. OR REPRESENTATIVE)

