एन एच पी सी लिमिटेड
NHPC LIMITED
(भारत सरकार का उद्धम)
(A GOVT. OF INDIA ENTERPRISE)

तीस्ता-V पावर स्टेशन
Teesta-V Power Station, Balutar

REQUEST FOR PROPOSAL (RFP)

Name of work: Request for technical and commercial proposal for "Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover of Generating Units of Teesta-V Power Station".

एनएचपीसीलिमिटेड
NHPC LIMITED
(भारत सरकार का उद्यम)
(A Govt. of India Enterprise)
तीस्ता v पावर स्टेशन
Teesta V Power Station
सिंगतम, पूर्वीसिक्किम- 737134
Singtam, East Sikkim- 737134.

IS/ISO 9001 IS/ISO 14001 IS 18001
आई एम एस प्रमाणित पावरस्टेशन
IMS certified Power Station
दूरभाष/Ph: 03592-247349
फ़ैक्स/Fax: 03592-247227/349
Email: teestav-contract@nhpc.nic.in
CIN No. L40101HR1975GOI032564

NH/TSV/Cont/MC-148/NIT-1024/2025-26/77 **Dated: 10/06/2025**

REQUEST FOR PROPOSAL (RFP)

1. Online Request for technical and commercial proposal (RFP) from eligible **Sole Bidders** for the work of **"Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover of Generating Units of Teesta-V Power Station."**

A. Brief details of the tender:		
Sl. No.	**Item**	**Description**
i)	Mode of tendering	e-Procurement System
		Cover-I: Online Techno-Commercial Bid and price bid
ii)	Tender ID No.	**2025_NHPC_ 863899_1**
iii)	Tender reference No.	**NH/TSV/Cont/MC-148/NIT-1024/2025-26/77 Dated: 10/06/2025**
iv)	Period of Bid Validity	**120 days**
v)	Tender inviting Authority	**Dy. General Manager (Civil)** **Contract Division, Teesta-V Power Station, Balutar,** **Singtam, Distt : East Sikkim-737134** **E-mail: teestav-contract@nhpc.nic.in**
B. Critical dates of tender:		
vi)	Publishing Date & Time	10/06/2025 at 15:00 Hrs
vii)	Document Download Start Date & Time	10/06/2025 at 15:00 Hrs
viii)	Pre bid meeting Date & Time	Not required.
ix)	Last date of Receipt of clarification of Bid	14/06/2025 at 14:30 Hrs
x)	Bid Submission Start Date & Time	10/06/2025 at 15:00 Hrs
xi)	Online Bid Submission Closing Date & Time	20/05/2025 at 17:30 Hrs
xii)	Online Bid Opening of	Venue: Contract Division, Teesta V Power Station, Balutar

	Technical Bid and price bid (Cover-I)	Date: **23/06/2025** Time: 16:00 Hours

2 Complete Bid Document /Tender Document can be viewed and down loaded from Central Public Procurement (CPP) Portal **https://eprocure.gov.in/eprocure/app**. The site can also be viewed through e-procurement corner of NHPC website **www.nhpcindia.com** and CPP Portal. Any Bidder who wishes to quote for this Tender can download the Tender Document from aforesaid portal after online Bidder registration for e-tendering.

3 **COURT OF COMPETENT JURISDICTION**: Any legal action taken or proceeding initiated on any of the terms of the contract shall be only in the jurisdiction of Hon'ble High Court of Sikkim.

4 Disclaimers

This RFP is neither an agreement and nor an offer by NHPC to the prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in submitting their proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived in relation to the Project. This RFP document and any assumptions, assessments and statements made herein do not purport to contain all the information that each Bidder may require. The Bidder shall bear all its costs associated with or relating to the preparation and submission of proposal pursuant to this RFP. Where necessary, NHPC reserves the right to amend or supplement the information, assessment or assumptions contained in this RFP. NHPC also reserves the right to withdraw the RFP or foreclose the procurement case at any stage. The issuance of this RFP does not imply that NHPC is bound to shortlist a Bidder for the Project. NHPC also reserves the right to disqualify any Bidder should it be so necessary at any stage on grounds of National Security.

Requisite details in this regard are attached herewith as under for proposal:

(i) Detail of Site Location.
(ii) Scope of work.
(iii) Drawings.
(iv) Technical Specifications.
(v) Tentative Special Conditions
(vi) GUARANTEED TECHNICAL REQUIREMENT
(vii) Technical & Commercial Offer

(i) **DETAIL OF SITE LOCATION:**

NHPC Ltd (A Govt. of India Navratna Enterprise), Teesta-V PS desires to construct a Prefab structure for Kendriya Vidyalaya at Teetsa-V Power Station, Balutar.

Teesta-V PS (510MW) is located in Gangtok District of Sikkim. The project envisages harnessing of Teesta water, between Dikchu and Sirwani. The site location (proposed prefab KV school) is in Left Bank side, Balutar. Proper approach road is available with adequate of space available for unloading of materials for the structure.

Nearest Railway Station: - Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Airport: - Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Bus Stop: - Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

(ii) SCOPE OF WORK :

Name of Work: Protective Ceramic Coating on Spiral Casing, Stay Vanes and Turbine Top Cover of 3 nos Generating Units (Unit-1, 2,3) of Teesta-V Power Station for Teesta V Power Station.

Scope of Work

Name of Work: Protective Ceramic coating on Spiral Casing, Stay Vanes and Top Cover of one number Generating Units of Teesta-V Power Station.

Name of Work: Protective Ceramic coating on Spiral Casing, Stay Vanes and Top Cover of one number Generating Units of Teesta-V Power Station.

1. Surface Preparation:

- Surface should be roughened by grit blasting/sand blasting, to achieve mechanical bonding. Surface roughness after grit blasting/sand blasting should be between 65-67 microns and same shall be ensured with profile gauge tester.
- After blasting, surface should be checked for defects, blow holes etc., the defects if any, to be rectified with appropriate action.
- Surface to be ceramic coated should be thoroughly cleaned and should be free from contamination, oil, grease and other foreign particles. Clean surface should be obtained by compressed air or application of an industrial cleaning solvent (solvent to be residue-free if used) based on the condition of substance.
- Area to be sprayed has to be kept confined at the time of sand blasting, so that all sprayed grit is collected in the filter media through the exhauster. The areas in the spiral which are not to be coated are to be properly masked from blasting and spraying.
- All necessary arrangements have to be ensured by the contractor for the blasting and surface preparation. Necessary in-situ assistance such as illumination, power supply and compressed air shall be provided by NHPC free of cost.
- Contractor shall arrange all the materials like ceramic coating, components epoxy filled with small ceramic bread, abrasion resistance material, wear resistance putty etc. which is required for protective ceramic coating.
- The prepared surface shall be checked by Engineer-in-charge or his representative before the application of the materials.

2. Coating Requirements:

- Blending and application of the coating material shall be done by qualified/authorized engineer/applicator at site.
- Repair and rebuild the surface of spiral casing, stay vanes and top cover shall be carried out by applying Epoxy based wear resistance putty.
- **For spiral casing:** Application of 2 (two) coats of *Ceramic Base Epoxy brushable putty* to get a wet **thickness of 400-500 microns.**
- **For stay Vanes:** Application of one coat of *Ceramic Base Epoxy brushable putty* to get a wet film **thickness of 250-275 microns**. Once it becomes sticky, apply *Epoxy based wear resistance putty* (**minimum thickness 6 mm**) and then again apply brushable ceramic coating film **thickness of 100-150 microns** on it to make the surface smooth.
- **For Turbine Top cover:** Application of one coat of *Ceramic Base Epoxy brushable putty* to get a wet film **thickness of 250-275 microns**. Once it becomes sticky, apply *Epoxy based wear resistance putty* (**minimum thickness 6 mm**) and then again apply brushable ceramic coating film **thickness of 100-150 microns** on it to make the surface smooth.
- Allow curing of surface for 24 Hrs.
- The **Shore D Hardness** of the used ceramic should be **minimum 85**.
- Oxygen mask, safety belts, safety helmets, exhaust fans etc shall be arranged by the contractor at his own cost as per the safety norms to ensure the safety of personnel. For applying putty at Turbine top cover, extra safety to be ensured for face and eye protection as the work to be performed at upward direction.
- The work shall be executed in winter season, when the temperature may be go down up to 4 to 7° C and the surrounding temperature inside the spiral casing may be less than the recommended temperature of the material to be used. The contractor shall arrange necessary heating arrangement to achieve the desired temperature inside the spiral casing before starting of work.

- After completion of the work successfully as per the scope of work and satisfaction of Engineer-In-Charge or his representative, all empty containers shall be taken back by the contractor and site shall be cleared of the empty containers, packing materials, spilled paint/primer or any other unwanted materials which are not required after completion of work
- **3. Inspection and Testing:**
  - The duly prepared surface prior and after sand/grit blasting and subsequent cleaning with suitable solvent shall be inspected by EIC or his representatives before application of bond coat.
  - The base coat/bond shall be checked for proper thickness i.e 400-500 microns (for spiral casing) and 250-275 microns (for stay vanes) by Elcometer/DFT/WFT gauge. The thickness of coating shall be checked randomly by EIC or his representatives. Duly calibrated instruments shall be provided by the firm along with calibration certificate.
  - The final coat with ceramic beads filled coating of 06 mm thickness (for stay vanes & top cover) shall be checked by Elcometer / DFT/WFT gauge. The thickness of coating shall be

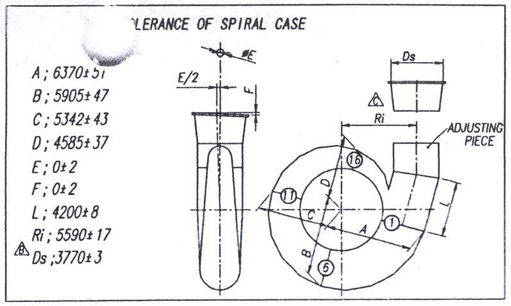
checked randomly by EIC or his representatives. Duly calibrated instruments shall be provided by the firm along with calibration certificate.

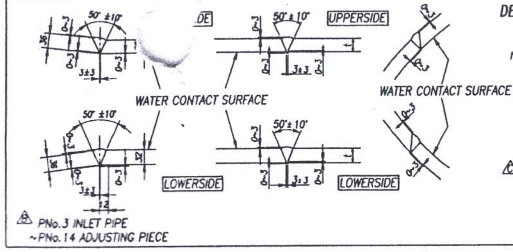
- The hardness of ceramic coating shall be checked randomly by EIC or his representatives by hardness meter/instrument. Duly calibrated instrument shall be provided by the firm along with calibration certificate.

(iii)Drawings.:

C/H	DRAWING NO.	REV	CTQ	TITLE (ABBR)	REMARKS	M.F.
F1	1KQ004523 *	D	B	OUTLINE OF CSG. & SR.	3	3

MODEL CODE: STA22B21. . TESTA. 173P. 217H. 214N. 47 ... 6.





DETAIL OF FIELD WELDING GROOVE AT SPIRAL CASE SPLIT LINE

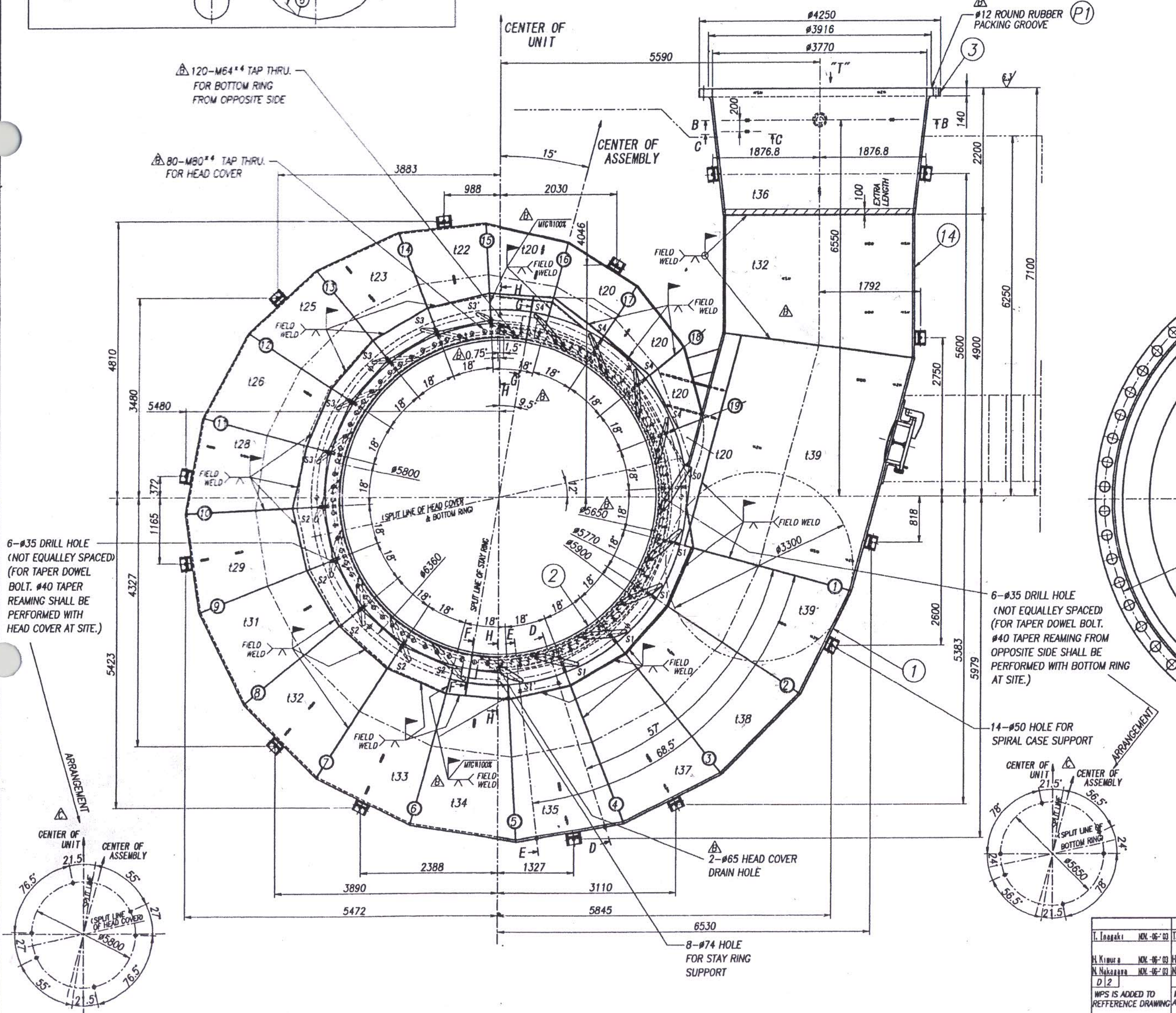
NOTE FOR FIELD WELDING

- FULL PENETRATION WELDING SHALL BE APPLIED
- WELD OVERLAY ON WATER CONTACT SURFACE SHALL NOT EXCEED A PROJECTION OF 3mm.
- NON-DESTRACTIVE EXAMINATION
  RT (RADIOGRAPHIC TEST) SHALL BE FULLY (100%) APPLIED FOR LONGITUDINAL AND CIRCUMFERENTIAL BUTT WELD JOINT. ACCORDING TO ASME SEC. VIII
  ACCEPTANCE CRITERIA
  ASME SEC. VIII DIV.1 UW-51

PNo.	NAME OF PARTS	MATERIAL	Q'TY	REMARKS
1	SPIRAL CASE	JIS G 3106 SM570	1	6 PIECES
2	STAY RING	JIS G 3106 SM490B	1	2 PIECES
3	INLET PIPE	JIS G 3106 SM570 (SHELL PLATE PORTION) JIS G 3106 SM490B (FLANGE PORTION)	1	
4	MANHOLE COVER	JIS G 3106 SM570	1	
9	DOWEL PIN	JIS G 4051 S35C	8	
11	COVER PLATE	JIS G 3101 SS400	2	
12	GROUTING HOLE PLUG	JIS G 3101 SS400	20	G2
13	AIR VENT HOLE PLUG	JIS G 3101 SS400	10	G1/4
14	ADJUSTING PIECE	JIS G 3106 SM570	1	

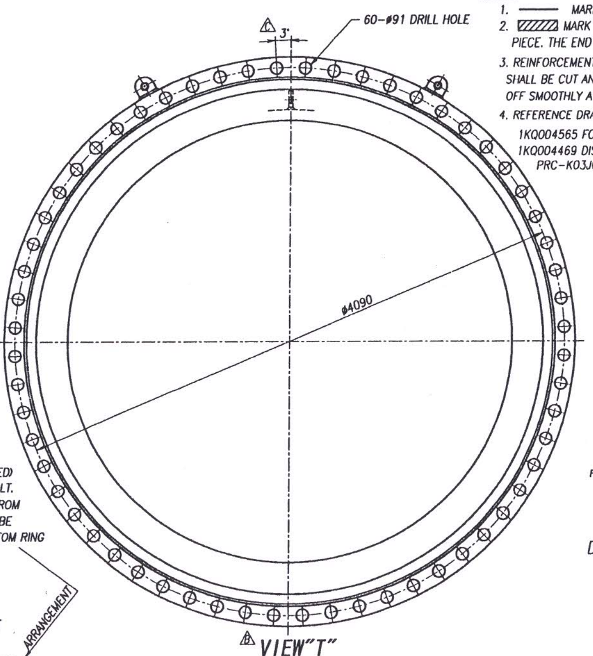
PNo.	NAME OF PARTS	APPLY PORTION	MATERIAL	SIZE	Q'TY	REMARKS
B1	HEX. BOLT HEX. NUT PLANE WASHER	FOR MANHOLE HINGE	JIS G4303 SUS403 JIS G4303 SUS304 JIS G3101 SS400	M48×3	2	
B2	HEX. BOLT HEX. NUT	MANHOLE COVER	JIS G4303 SUS403 JIS G4303 SUS304	M36×3	30	
B3	HEAT SHRINKAGE BOLT	SPLIT FLANGE	JIS G 4051 S45C	M120×6 M110×6	4 8	
B4	ROUND NUT	SPLIT FLANGE	JIS G 4051 S35C	M120×6 M110×6	8 16	
B5	HEX. BOLT	PNo.11 COVER PLATE	JIS G3101 SS400	M16	16	

No.	APPLY PORTION	SIZE	MATERIAL	Q'TY	REMARKS
P1	INLET PIPE ~ LOOSE FLANGE	ø12	NBR	1	ROUND RUBBER PACKING
P2	SPIRAL CASE MANHOLE COVER	ø6	NBR	1	ROUND RUBBER PACKING
P3	PNo.11 COVER PLATE	G60	NBR	2	O-RING

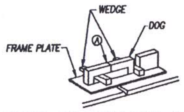


NOTE

1. MARKED LINES SHOW FIELD WELDING LINE.
2. MARK SHOWS EXTRA LENGTH OF THE ADJUSTING PIECE. THE END SHALL BE CUT AND WELDED AFTER ADJUSTMENT.
3. REINFORCEMENT BRACES ON WATER CONTACT SURFACE SHALL BE CUT AND THE SURFACE SHALL BE GROUND OFF SMOOTHLY AT SITE.
4. REFERENCE DRAWING
   1KQ004565 FOUNDATION LAYOUT OF SPIRAL CASE & STAY RING
   1KQ004469 DISTRIBUTOR SECTION
   PRC-K03J0018 WELDING PROCEDURE SPECIFICATION AND PROCEDURE QUALIFICATION RECORD FOR WATER TURBINE



VIEW "T"
(S=1/20) (1/3 4-B)



DETAIL OF GROOVE FITTING JIG

- MARKED PORTION (A) IS CUT OFF AFTER TEMPORARY ASSEMBLY IN SHOP.
- THESE GROOVE FITTING JIG AND ALIGNMENT JIG WILL BE USED TO ASSEMBLY OF SPIRAL CASE.
- DOGS SHALL BE REMOVED (BY GAS CUT) AFTER ASSEMBLY AT SITE.

Drawing Code	6	03	0106	03

NATIONAL HYDROELECTRIC POWER CORPORATION LIMITED

M/S MITSUI & CO. LTD CONTRACT NO.NH/CONT. (E&M) / LOT-6/TEESTA-V / 579 / 2001 / 1

LOT - 6 ; ELECTRICAL & MECHANICAL WORKS

TEESTA H.E.PROJECT (3 X 170MW STAGE-V) SIKKIM, INDIA

REV.	CONTENTS	APPROVED BY	REVIEWED BY	PREPARED BY
D 2	WPS IS ADDED TO REFFERENCE DRAWING	T. Inagaki NOV.-06-'03	H. Kimura NOV.-06-'03	N. Nakagawa NOV.-06-'03
C 16	MARKED △C PORTIONS ARE REVISED.	T. Inagaki OCT.-24-'03	H. Kimura OCT.-24-'03	N. Nakagawa OCT.-24-'03
B 38	MARKED △B PORTIONS ARE REVISED.	T. Inagaki JUL.-25-'03	H. Kimura JUL.-25-'03	N. Nakagawa JUL.-25-'03

SCALE 1:40 UNITS mm

APPROVED BY: T. Arai OCT.-18-'02
REVIEWED BY: T. Inagaki OCT.-18-'02
REVIEWED BY: H. Kimura OCT.-18-'02
PREPARED BY: N. Nakagawa OCT.-18-'02

TITLE: OUTLINE OF SPIRAL CASE AND STAY RING

NHPC TEESTA H. E. PROJECT

TOSHIBA 株式会社東芝 TOSHIBA CORPORATION

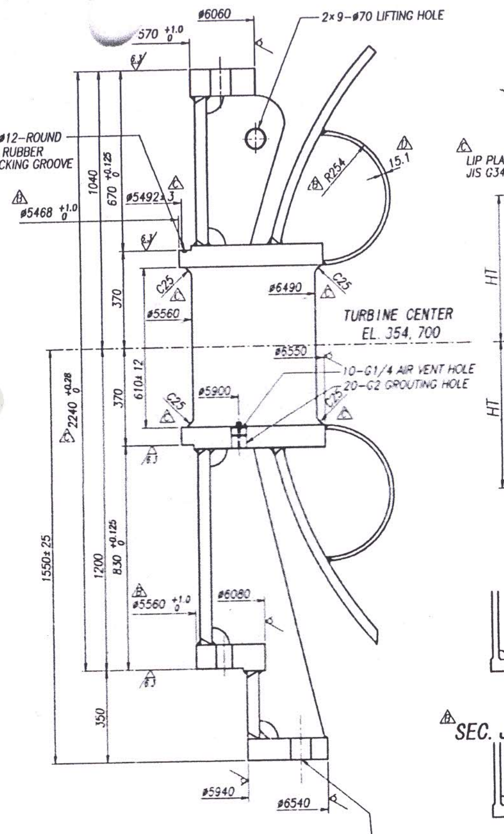
DRAWING NO. 1KQ004523 (1/3) REV. MARK (D)

T REGISTERED NOV.-06-'03

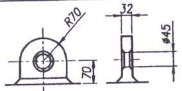
1KQ004523 (3/3) D

OUTLINE OF CSG. & SR.

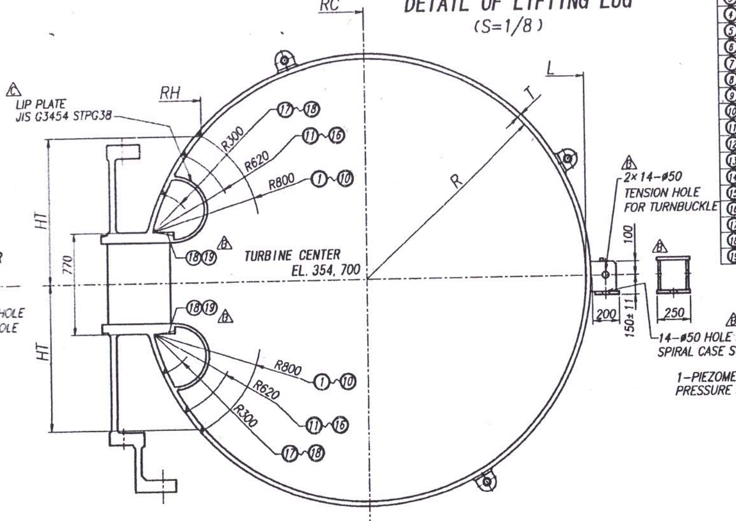
STA22B21. TEESTA. 173P. 217H. 214N.



(S=1/10)

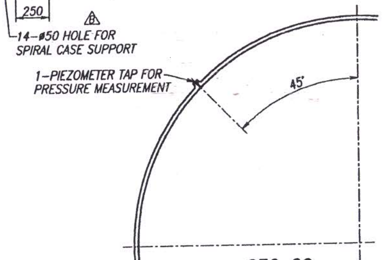


DETAIL OF LIFTING LUG (S=1/8)

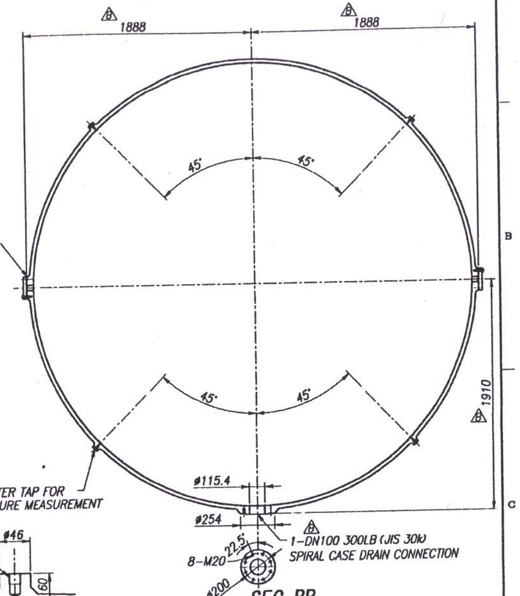


(S=1/20)

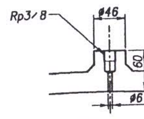
	R	Rc	[illegible]	RH	HT	T
1	1650	4720	[illegible]	3485	1094	39
2	1607	4675	6282	3494	1090	38
3	1562	4630	6192	3505	1084	37
4	1517	4582	6099	3515	1078	35
5	1469	4533	6002	3527	1071	34
6	1422	4483	5905	3539	1063	33
7	1370	4431	5801	3555	1054	32
8	1318	4376	5694	3570	1043	31
9	1264	4319	5583	3587	1031	29
10	1207	4258	5465	3606	1016	28
11	1146	4196	5342	3475	891	26
12	1084	4128	5212	3491	877	25
13	1017	4056	5073	3513	860	23
14	945	3979	4924	3540	837	22
15	868	3893	4761	3570	806	20
16	785	3800	4585	3609	761	20
17	688	3686	4374	3657	687	20
18	580	3548	4128	3710	557	20
19	452	3354	3806	—	—	20



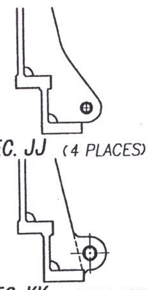
SEC. CC (S=1/20) (3-B)



SEC. BB (S=1/20) (4-B)

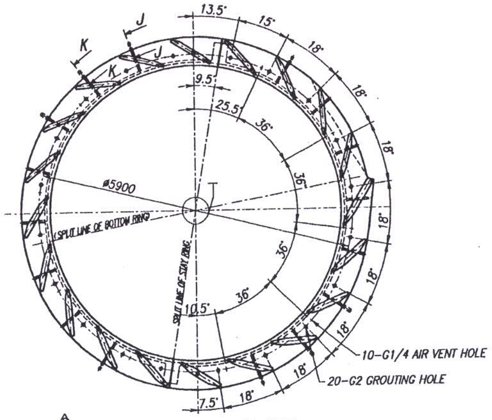


DETAIL OF PIEZOMETER TAP (S=1/4) (9 PLACES)

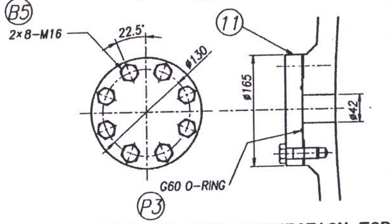


SEC. JJ (4 PLACES)

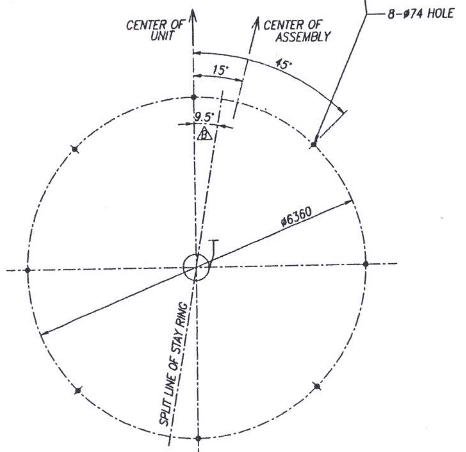
SEC. KK (4 PLACES)



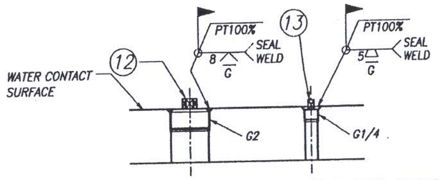
DETAIL OF MAIN PLATE AND LOWER RIB (S=1/50)



DETAIL OF PIPE CONNECTION FOR EFFICIENCY MEASUREMENT (S=1/4)

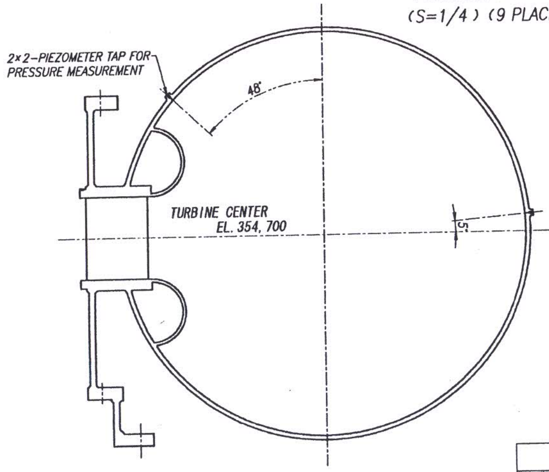


ARRANGEMENT FOR STAY RING LEVLING BOLT (S=1/50)



DETAIL OF GROUTING HOLE & AIR VENT HOLE

(· GROUTING HOLE WILL BE PLUGGED DURING PRESSURED EMBEDMENT. AND GROUTING WILL BE PERFORMED AFTER EMBEDMENT. AIR VENT HOLE WILL BE PIPED TO AIR VENT HOLE ON PRESSURE CYLINDER DURING EMBEDMENT.
· PLUGGING AND SEAL WELD SHALL BE PERFORMED AFTER GROUTING. PLUG HEAD SHALL BE GROUND OFF SMOOTHLY AFTER WELDING.
FOR SEAL WELD SEAMS OF PLUGS, PT (LIQUID PENETRANT TEST) SHALL BE FULLY APPLIED ACCORDING TO ASME SEC.VIII . AND ACCEPTANCE CRITERIA SHALL BE ASME SEC. VIII DIV.1 APPENDIX 8.)



SEC. DD, SEC. EE (S=1/20) (3-E)

Drawing Code	6	03	0106	03

NATIONAL HYDROELECTRIC POWER CORPORATION LIMITED

M/S MITSUI & CO. LTD CONTRACT NO.NH/CONT. (E&M) / LOT-6/TEESTA-V / 579 / 2001 / 1

LOT - 6 ; ELECTRICAL & MECHANICAL WORKS

TEESTA H.E.PROJECT (3 X 170MW STAGE-V) SIKKIM, INDIA

Rev.	Contents	Approved by	Reviewed by	Prepared by
D	LIP THICKNESS IS ADDED.	T. Inagaki NOV.-06-'03	H. Kimura NOV.-06-'03	N. Nakagawa NOV.-06-'03
C	MARKED (C) PORTIONS ARE REVISED.	T. Inagaki OCT.-24-'03	H. Kimura OCT.-24-'03	N. Nakagawa OCT.-24-'03
B	MARKED (B) PORTIONS ARE REVISED.	T. Inagaki JUL.-25-'03	H. Kimura JUL.-25-'03	N. Nakagawa JUL.-25-'03

尺度 SCALE 1:40 単位 UNITS mm

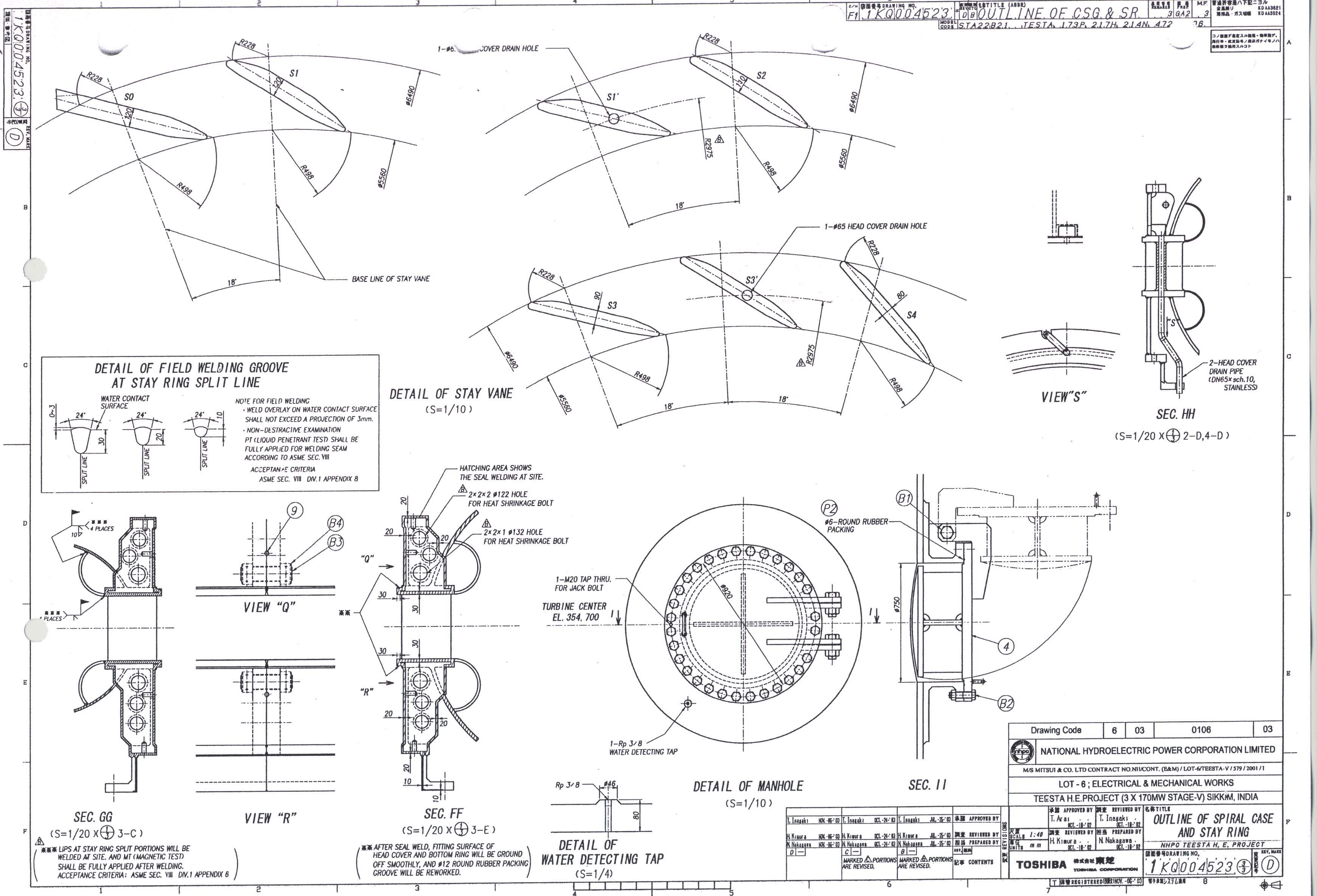
承認 APPROVED BY T. Arai OCT.-18-'02
調査 REVIEWED BY T. Inagaki OCT.-18-'02
調査 REVIEWED BY H. Kimura OCT.-18-'02
担当 PREPARED BY N. Nakagawa OCT.-18-'02

名称 TITLE: OUTLINE OF SPIRAL CASE AND STAY RING
NHPC TEESTA H. E. PROJECT

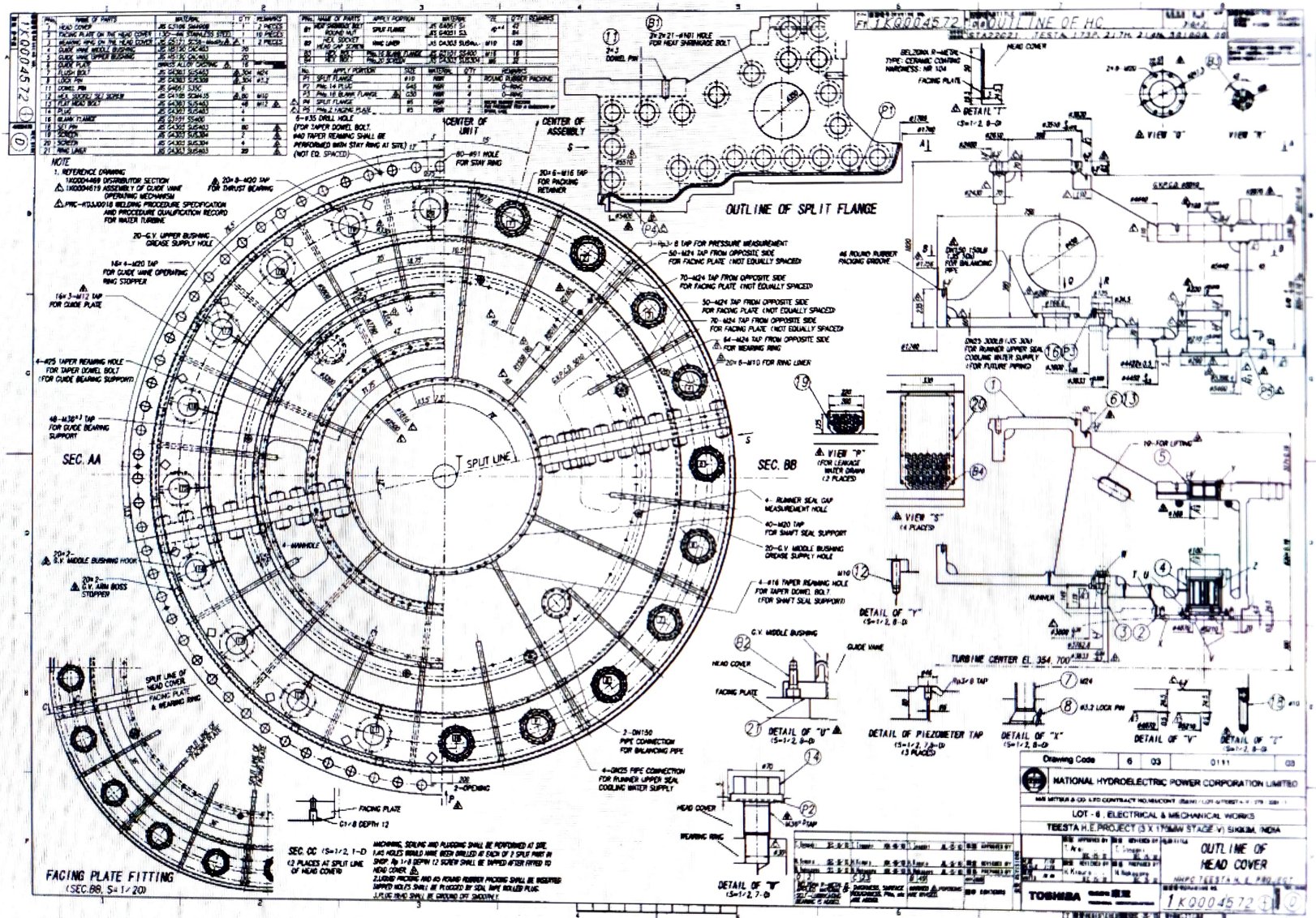
TOSHIBA 株式会社東芝 TOSHIBA CORPORATION

図面番号 DRAWING NO. 1KQ004523 (2/3) REV. MARK D

REGISTERED NOV.-06-'03



1KQ004523 (3/3)
OUTLINE OF CSG.& SR
STA22B21. TESTA 173P, 217H, 214N, 472
1-ø65 HEAD COVER DRAIN HOLE
S0
S1
S1'
S2
S3
S3'
S4
R228
R498
R2975
ø6490
ø5560
18°
BASE LINE OF STAY VANE
DETAIL OF STAY VANE
(S=1/10)
VIEW"S"
2-HEAD COVER DRAIN PIPE (DN65×sch.10, STAINLESS)
SEC. HH
(S=1/20 X 2-D,4-D)
DETAIL OF FIELD WELDING GROOVE AT STAY RING SPLIT LINE
WATER CONTACT SURFACE
SPLIT LINE
NOTE FOR FIELD WELDING
· WELD OVERLAY ON WATER CONTACT SURFACE SHALL NOT EXCEED A PROJECTION OF 3mm.
· NON-DESTRACTIVE EXAMINATION
PT (LIQUID PENETRANT TEST) SHALL BE FULLY APPLIED FOR WELDING SEAM ACCORDING TO ASME SEC. VIII
ACCEPTANCE CRITERIA
ASME SEC. VIII DIV.1 APPENDIX 8
HATCHING AREA SHOWS THE SEAL WELDING AT SITE.
2×2×2 ø122 HOLE FOR HEAT SHRINKAGE BOLT
2×2×1 ø132 HOLE FOR HEAT SHRINKAGE BOLT
4 PLACES
VIEW "Q"
VIEW "R"
SEC. GG
(S=1/20 X 3-C)
SEC. FF
(S=1/20 X 3-E)
※※※ LIPS AT STAY RING SPLIT PORTIONS WILL BE WELDED AT SITE. AND MT (MAGNETIC TEST) SHALL BE FULLY APPLIED AFTER WELDING. ACCEPTANCE CRITERIA: ASME SEC. VIII DIV.1 APPENDIX 6
※※ AFTER SEAL WELD, FITTING SURFACE OF HEAD COVER AND BOTTOM RING WILL BE GROUND OFF SMOOTHLY, AND ø12 ROUND RUBBER PACKING GROOVE WILL BE REWORKED.
P2
ø6-ROUND RUBBER PACKING
1-M20 TAP THRU. FOR JACK BOLT
TURBINE CENTER EL. 354, 700
1-Rp 3/8 WATER DETECTING TAP
ø920
ø750
DETAIL OF MANHOLE
(S=1/10)
SEC. II
B1
B2
Rp 3/8
ø46
DETAIL OF WATER DETECTING TAP
(S=1/4)
Drawing Code 6 03 0106 03
NATIONAL HYDROELECTRIC POWER CORPORATION LIMITED
M/S MITSUI & CO. LTD CONTRACT NO.NH/CONT. (E&M) / LOT-6/TEESTA-V / 579 / 2001 / I
LOT - 6 ; ELECTRICAL & MECHANICAL WORKS
TEESTA H.E.PROJECT (3 X 170MW STAGE-V) SIKKIM, INDIA
OUTLINE OF SPIRAL CASE AND STAY RING
NHPO TEESTA H. E. PROJECT
APPROVED BY T. Arai
REVIEWED BY H. Kimura
REVIEWED BY T. Inagaki
PREPARED BY N. Nakagawa
SCALE 1:40
UNITS mm
MARKED PORTIONS ARE REVISED.
TOSHIBA 株式会社東芝 TOSHIBA CORPORATION
1KQ004523 (3/3) D


OUTLINE OF HC
OUTLINE OF SPLIT FLANGE
SEC. AA
SEC. BB
SPLIT LINE
FACING PLATE FITTING
(SEC.BB, S=1/20)
DETAIL OF "T"
DETAIL OF "U"
DETAIL OF PIEZOMETER TAP
DETAIL OF "X"
DETAIL OF "V"
DETAIL OF "Y"
DETAIL OF "Z"
TURBINE CENTER EL. 354.700
NOTE
1. REFERENCE DRAWING
2-ON150 PIPE CONNECTION FOR BALANCING PIPE
4-DN25 PIPE CONNECTION FOR RUNNER UPPER SEAL COOLING WATER SUPPLY
NATIONAL HYDROELECTRIC POWER CORPORATION LIMITED
LOT - 6 : ELECTRICAL & MECHANICAL WORKS
TEESTA H.E.PROJECT (3 X 170MW STAGE V) SIKKIM, INDIA
OUTLINE OF HEAD COVER
TOSHIBA
1K00045721 0

(iv) TECHNICAL SPECIFICATIONs:

Name of Work: Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover of Generating Units of Teesta-V Power Station.

Technical Specifications

1. Consumable Materials for providing for surface protective coating on Spiral Casing, stay vanes and turbine top cover.

Sl. No.	Material Description	Material specifications
1	Ceramic Based Epoxy Brushable Putty	1. Compressive strength equal or more than 10000 psi Conforming ASTM D695 or its equivalent standard. 2. Shore Hardness equal or more than 80 Shore D Conforming to ASTM D2240 or its equivalent standard. 3. Tensile Strength equal or more than 4000 psi conforming to ASTM D638 / its equivalent standard OR Adhesive Tensile Strength equal or more than 2000 psi conforming to ASTM D1002 or its equivalent standard. 4. Flexural strength equal or more than 8000 psi conforming to ASTM D790 or its equivalent standard.
2	Epoxy Base Wear Resistant (breads-filled) coating	1. Compressive strength equal or more than 11000 psi conforming to ISO 604 or its equivalent standard. 2. Shore Hardness more than 80 Shore D conforming to ASTM D2240 or its equivalent standard. 3. Tensile Strength more than 2500 psi conforming to ISO 527-2 or its equivalent standard. 4. Flexural strength more than 7000 psi conforming to ASTM D790 or its equivalent standard.

The bidder shall submit the test certificates of the materials from manufacturer before carrying out the work as per scope of work.

(v) Special Terms & Conditions

Name of work: Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover of Generating Units of Teesta-V Power Station.

1. Brief Details of Work: Work will be executed during upcoming annual maintenance of the units (tentatively in lean season i.e., Oct'25 to Jan'26 or any suitable period) as per schedule intimated by Engineer-In-Charge separately. 45 days' prior intimation regarding commencement of work will be notified by Engineer-In-Charge for mobilization of man power, equipments & materials to carry out the "***Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover***". In case contractor do not mobilize their man power well in advance or sufficient man power/ material are not arranged by the contractor which may likely affects the schedule of annual maintenance or to delay in completion of annual maintenance, in such a situation NHPC will foreclose the contract for the particular unit. On the event of non execution of the contract due to the reasons attributable to the contractor, no claim of any nature shall be entertained by the Corporation and compensation if any to be levied shall be dealt as per provision of contract.

2. Contractor will supply all the requisite materials related to the work of protective ceramic coating well in advance at least 30 days before commencement of work.

3. Inspection: NHPC representative shall carry out stage inspection as per following manner:

(i) Material Inspection: The supplied materials for commencement of work shall be inspected by E-I-C or his authorized representative on receipt of the same at site. At the time of Inspection of the material product expiry date of the materials should be at least one year.

(ii) After carry out grit blasting / sand blasting the roughness of the surface shall be checked by E-I-C or his authorized representative as per scope of work.

(iii) Inspection after application of coating: The thickness of coating in spiral casing to be achieved in the range of 400 to 500 micron. The thickness of coating at stay vane to be maintained in the range of 250 to 270 micron after first coating and all the applicable process should be carried out as per sequence of scope of work, thereafter for preparation of smooth surface, application of 100 to 150 micron brushable putty to be ensured by the inspector. Similar inspection procedure shall be adopted to carry out stage inspection of Top cover as well.

4.0 **Completion Period:** The total completion period is 30 (Thirty) days for all the three units for the works under the scope of the contractor. One unit will be taken for "Protective Ceramic coating on

Spiral Casing, Stay Vanes and Top Cover of the Generating Unit " at a time and there may be a suitable gap of minimum 3 days in between the commencement of work for the next two units. The actual completion date for each unit shall be taken from the actual date of handing over the unit to the contractor to the actual date of handover of the unit back to the NHPC after completion of the work of each unit. The overall completion of the work shall be computed by adding the number of days taken against each unit. The work will be carried out around the clock, preferably in three shifts. For mobilization of manpower, a mobilization period of 45 days shall be allowed to the contractor from the date of intimation for the commencement of the work.

5.0 **DEFECTS LIABILITY PERIOD**: The "Defect Liability Period" for the entire work under the Contract will be for 03 seasons (01 season means date of completion of annual maintenance in which work is completed, to the date of start of annual maintenance of subsequent financial year). If during the Defects Liability Period complete erosion (means original surface appears) exceeds 10% of the total coating area, same shall be repaired/rectified/replaced during annual maintenance of subsequent financial year. In case contractor does not complete the work in the allocated time slot available during annual maintenance of that particular generating unit, then the PBG/SD of the contractor shall be forfeited. Generally generating units are not run beyond the silt content of 3000 PPM during non-lean season but for a short duration silt content can go up to 8000 PPM not exceeding 24 Hours aggregately during one entire season.

6.0 Arrangement for accommodation of supervisor and working personnel will be provided by NHPC on paid basis if available, otherwise, the contractor shall arrange their accommodation. No local transport facility shall be provided by NHPC.

7.0 Complete Insurance of all the work force and material shall be the total responsibility of the contractor. NHPC will not be liable for any such expenditure. The firm should comply all related labor laws and other statutory regulations required to carry out the work. All liabilities to the workmen will be borne by the firm. Firm should give declaration certificate before final payment that all the statutory laws are complied with by the firm and in case any short fall is found, what so ever, in respect of statutory requirement (such as labor payment, EPF etc.) at any point of time on later stage, the firm will be sole responsible to resolve the issues at our own cost and time for said work.

8.0 The Contractor shall not deploy any person below the age of 18 years.

9.0 The bidder shall submit the test certificates of the materials from manufacturer before carrying out the work as per scope of work.

10.0 CONSIGNEE:

Engineer-in-Charge

(vi) GUARANTEED TECHNICAL REQUIREMENT:

GTR-I

GUARANTEED TECHNICAL REQUIREMENT

Ceramic Based Epoxy Brushable Putty

S.No.	Description	Technical Requirement of NHPC	Offer of the FIRM	Deviation (if any)
1	Name of the Manufacturer	Reputed manufacturer		
2	Model / Technical catalogue No.	As per manufacturer's standard.		
3	Compressive strength	Equal or more than 10000 psi Conforming ASTM D695 or its equivalent standard.		
4	Shore Hardness	Equal or more than 85 Shore D Conforming to ASTM D2240 or its equivalent standard.		
5	Tensile Strength	Equal or more than 4000 psi conforming to ASTM D638 / its equivalent standard OR Adhesive Tensile Strength equal or more than 2000 psi conforming to ASTM D1002 or its equivalent standard.		
6	Flexural strength	Equal or more than 8000 psi conforming to ASTM D790 or its equivalent standard.		

N.B.: The relevant documents in support of the above offered specification required to be submitted.

Signature of the bidder with stamp

GTR-II

GUARANTEED TECHNICAL REQUIREMENT

Ceramic Breads-filled Epoxy Coating

S.No.	Description	Technical Requirement of NHPC	Offer of the FIRM	Deviation (if any)
1	Name of the Manufacturer	Reputed manufacturer.		
2	Model / Technical catalogue No.	As per manufacturer's standard.		
3	Compressive strength	Equal to or more than 11000 psi conforming to ISO 604 or its equivalent standard.		
4	Shore Hardness	More than 80 Shore D conforming to ASTM D2240 or its equivalent standard.		
5	Tensile Strength	More than 2500 psi conforming to ISO 527-2 or its equivalent standard.		
6	Flexural strength	More than 7000 psi conforming to ASTM D790 or its equivalent standard.		

N.B.: The relevant documents in support of the above offered specification required to be submitted.

Signature of the bidder with stamp

(vii) Technical & Commercial Offer:

Name of Work: Protective Ceramic coating on Spiral Casing, Stay Vanes and Turbine Top Cover of Generating Unit # 3 of Teesta-V Power Station.								
Sl. No.	**Description**	**Unit**	**Qty. (Sq. Meter)**	**Rate (Rs.)**	**GST @ ……%**	**Rate (₹) with ……% GST**	**Final Rate (₹)**	**Amount (₹)**
1	Supply & Application of Brushable Ceramic Coating on Spiral Casing as per the scope of work and technical specification.	Sq. Meter	725.67					
2	Supply & Application of Ceramic Breads filled coating on Stay Vanes and top cover as per the scope of work and technical specification.	Sq. Meter	123.63					
							Grand Total (Rs.)	
In words:								

Notes:- 1) SAC Code of BOQ Items of Contract: ……

2) Offered Rates (on RFP) should be inclusive of all taxes including applicable GST, transportation charge, local octroi & all other charges and should be quoted in manually on the above table.

(For & on behalf of NHPC Ltd.)

Dy. General Manager (Elect.)
Contract Division
Teesta-V Power Station
Email: teestav-contract@nhpc.nic.in

(Seal & Signature of Participated Firm)

BRIEF DESCRIPTION OF THE PROJECT

1. 1.1 ABOUT SIKKIM AND TEESTA RIVER.

Sikkim is a small and beautiful state located in the northeast Himalayas. It is one the youngest state of Indian union. It is surrounded by vast stretches of Tibetan plateau in the north, Chubi valley of Tibet and Kingdom of Bhutan in the east, Darjeeling Gorkha Hill council in the south and kingdom of Nepal in the west.

Due to prevalent cold and moderate climatic conditions with very low ambient dual level, the state presents ideal opportunity for development of high-tech industries like microelectronics and ancillary products which impose less burden on transportation facilities and earn rich dividends. However, for such developmental efforts, abundance of cheap and clean power is vital.

Sikkim is drained by a large number of perennial rivers, the prominent ones being Teesta and Ragit. The Teesta river originates from Zemu glacier and Rangit river from Talung glacier in west Sikkim which, after flowing for about 60kms, joins the Teesta river near the state border with West Bengal.

The elevation of Sikkim ranges from 300 m to 8583 m above mean sea level. It consists of lower, middle & higher hills.

1.2 LOCATION OF THE PROJECT

Nearest Railway Station :- Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Airport :- Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Bus Stop :- Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

1.3 BRIEF DESCRIPTION OF THE PROJECT

Teesta HE project, stage-V is located in South-East Sikkim. The project envisages harnessing of Teesta water, between Dikchu (27º 24’ 00’’ E: 88º 31’30’’N) and Sirwani (27º14’54’’E: 88 29’ 56’’N). The scheme comprise; 95m high Concrete Gravity Dam (located 2 Kms downstream of its confluence with Dikchu nala) 17.106 Km long HRT housed on the left bank, a 95m high, 30m dia Surge Shaft and an underground power house near Sirwani, to generate 510MW of Power, utilizing a gross head of 200m.