NOTARY ★ GOVT. OF INDIA ★
CHARANJIT SINGH
Distt. Courts
PATIALA (Pb.)
Regd. No. 11511

BEFORE THE PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
CHANDIGARH

FILING NO..... **IN PETITION NO.....**

IN THE MATTER OF:

Petition under Regulation-9 of PSERC (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations and Section 40 of the Electricity Act, 2003- For improvement initiative to be taken up for 400KV Transmission Network.

AND

IN THE MATTER OF:

Punjab State Transmission Corporation Limited.
Regd. Office: PSEB H.O. The Mall, Patiala.

AFFIDAVIT

I, Jatinder Tageja, son of Sh. Radhe Sham aged 44 residing at Patiala do hereby solemnly affirms and states as under:

I am the CAO/Finance and Audit of Punjab State Transmission Corporation Limited, the petitioner in the above matter and am duly authorized by the Corporation to make this affidavit on its behalf.

The statements made in the petition are true to my knowledge and are based on the information collected from the concerned offices of the PSTCL and believe them to be true.

There is no case pending in any court of law with regard to the subject cited matter of the petition.

DEPONENT
CA. Jatinder Tageja

The Contents of this affidavit document have been read over to the deponent He/She has accepted the true & correct

VERIFICATION:

I, the deponent above named do hereby verify that the content of my above affidavit are true to my knowledge and belief and nothing material has been concealed there from.

Verified at Patiala on the day of 21st October, 2020.

Attested As Identified
NOTARY (Govt. of India)
Distt. PATIALA (Pb.)

21 OCT 2020

DEPONENT
CA. Jatinder Tageja

BEFORE THE PUNJAB STATE ELECTRICITY REGULATORY COMMISSION, CHANDIGARH

PETITION NO. of 2020

IN THE MATTER OF:

PETITION UNDER REGULATION-9 OF PSERC (TERMS AND CONDITIONS FOR DETERMINATION OF GENERATION, TRANSMISSION, WHEELING AND RETAIL SUPPLY TARIFF) REGULATIONS, 2014 AND SECTION 40 OF THE ELECTRICITY ACT, 2003-FOR IMPROVEMENT INITIATIVES TO BE TAKEN UP TRANSMISSION NETWORK.

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Chief Engineer/ TS,
PSTCL, Patiala.

BEFORE THE PUNJAB STATE ELECTRICITY REGULATORY COMMISSION, CHANDIGARH

PETITION NO. of 2020

IN THE MATTER OF:

PETITION UNDER REGULATION-9 OF PSERC (TERMS AND CONDITIONS FOR DETERMINATION OF GENERATION, TRANSMISSION, WHEELING AND RETAIL SUPPLY TARIFF) REGULATIONS, 2014 AND SECTION 40 OF THE ELECTRICITY ACT, 2003-FOR IMPROVEMENT INITIATIVES TO BE TAKEN UP FOR TRANSMISSION NETWORK.

AND

IN THE MATTER OF:

Punjab State Transmission Corporation Limited

The Mall,

Patiala -147001

....Petitioner

PETITION UNDER REGULATION-9 OF PSERC (TERMS AND CONDITIONS FOR DETERMINATION OF GENERATION, TRANSMISSION, WHEELING AND RETAIL SUPPLY TARIFF) REGULATIONS, 2014 AND SECTION 40 OF THE ELECTRICITY ACT, 2003-SEEKING REGULATORY APPROVAL FOR SYSTEM IMPROVEMENT INITIATIVES TO BE TAKEN UP FOR TRANSMISSION NETWORK.

MOST RESPECTFULLY SHOWETH:

It is most respectfully submitted that the following works are required for evacuation of Power of upcoming 206 MW Shahpur Kandi Hydel project schduled for 2022 and N-1 compliance of 400 kV S/Stn. Nakodar.

A. <u>Shahpur Kandi Evacuation Hydel Project</u>

Evacuation system of Shahpur Kandi Project was planned by PSTCL on dated 16.03.15 vide Amendment No. 40 issued on dated 16-03-15, **Annexure-A**. However, the Civil works of main dam of Shahpur Kandi HEP was stopped by the GoP authorities on 30.08.14 and only less than 10% work of Civil construction was completed. Accordingly, PSPCL had put on hold all the electro-mechanical works under its control till resolution of dispute with the Govt. of Punjab. Therefore, above said evacuation work was not included in the MYT plan for 2017-20. Now, as intimated by PSPCL on dated 05-09-2019, GOP has approved the project on 31.10.18 to go ahead for the construction activities and the project is likely to be commissioned by 30.04.2022, **Annexure- B**. As such, the work needed to be included in the MYT plan for 2020-23. Accordingly the work was re-planned by Planning office vide Amendment No. 31 dated 16.09.2019 with the approval of Director/T. (Copy attached as **Annexure-C**). The detail for the same is tabulated as below:

Sr. no.	Planning Amendment No.	Name of work	Line length (in km)	Amount (in Cr)
1.	Amendment No. 31 dated 16.09.2019	220kV Shahpur Kandi PH-I 220kV Shahpur Kandi PH-II	4 km (SC on DC, 0.5 Sq." Conductor)	3.71
		LILO of one circuit of 220kV RSD - 220kV Sarna at 220kV Shahpur Kandi PH-I & PH-II	9 km (DC on DC, 0.5 Sq." Conductor)	9.81
		220kV bays	4 (2 No. bays at PH-I and 2 No. bays at PH-II)	5.20

Afterwards, the said work was submitted for its approval to PSERC by CAO/F&A, PSTCL office vide memo No. 09-10-2019 (Pettition No. 19 of 2019, Copy attached as **Annexure-D**). However, as the said work was submitted subsequent to the main petition of MYT 2020-23, the same was not inconsidered by PSERC.

Since this work is of power evacuation plan, it needs to be commissioned on priority. The estimated cost of Project is Rs. 18.73 Crores as per Amendment No. 31 dated 16.09.2019 and bifurcation of cost component has been envisaged vide DPR XXXIV shown as **Annexure-E** with expenditure to be incurred during 2020-21 & 2021-22. The said work stands approved by BOD as Emergent Work in its 59th meeting dated 05.02.2020 (Copy of decision attached as **Annexure-F**) against Agenda No. 68/P-II/224 dated 27.12.2019 submitted by PSTCL .

B. <u>400 kV Sus station Nakodar</u>

The work of augmentation of transformer from 315 MVA to 500MVA was planned during 2018-19, vide amendment no. 43/2018-19 and scheme was approved by the BODs in FY 2019-20

The above planning was based upon following facts:-

(a) As per the load flow study on planning file for Punjab load of 13242MW the loading of Nakodar ICT with Jallandhar-Kartarpur and Jamsher - Mahilpur link open works out to be 77% and with links closed the same works to be 61% only **(Annexure-G).**

(b) Similarly, the lean period for Punjab load of 8000 MW and with generation of Ropar as off Bhakra @50% and with Jallandhar-Kartarpur and Jamsher - Mahilpur link open, the loading of Nakodar sub-station is only 45% **(Annexure-H)**.

Work of 400kV Sub-station Nakodar with detailed scope for replacement of 1x315 MVA, 400/220kV I.C.T. with 1x500MVA, 400/220kV I.C.T. and dismantlement at 1x315 MVA, 400/220kV I.C.T. at Nakodar has been approved in Capital Investment Plan for MYT control period 2020-23 at Sr. No. 3a & 3b of table 13 by PSERC. The detail of the same is tabulated as below:-

Table 13: CIP to MYT control period 2020-23.

Sr. No.	Particular	Network Addition		FY-2020-21	FY-2021-22	FY-2022-23	Total (In Cr.)
		Line (KM)	Sub-station				
3a	400 kV S/s Nakodar (2x315MVA, 400/220 kV) (Amendment No. 43/2018-19		Replacement of 1x315 MVA, 400/220 kV ICT with 1x500 MVA, 400/220 kV ICT	7.85	4.98	3.34	16.17
3b	Cost of dismantlement of 1x315 MVA, 400/220 kV ICT at 400 kV Nakodar		Cost of dismantlement of 1x315 MVA, 400/220 kV ICT at 400 kV Nakodar	0.28	0.18	0.12	0.58

Accordingly tender for procurement was floated and opened on dated: - 04.10.2019 by SE/TS (D) & purchase proposal was finalized & submitted to BODs in its 60th meeting on dated 05.05. 2020 for consideration. CMD/PSTCL had sought the comments of newly appointed Director/Technical.

The Director/Tech. has appended the remarks as under:-

"Considering the demands recorded this summer season & the loading on Nakodar ICTs, implementation plan for augmentation of 1x315MVA with 1x500MVA in consultation with P&M organization please be brought out on file.

P&M Organization is of the view that the Maximum loadings on ICT-1 & ICT-2 in MVA at Nakodar are as under:-

Sr. No.	Year	Date/Time	Loading of ICT-I	ICT-II
1.	2018-19	15.00hrs, 31.8 2018	86.81%	87.50%
2.	2019-20	16.00 hrs. 13.9.2019	78.99%	80.12%
3.	2020-15/7/2020	15.00hrs, 14.7 2020	88.04%	87.77%

Keeping in view of the above loading scenario, the arrangement of augmentation of 1x315MVA ICT with 500MVA will not be possible without a shutdown of one of the ICT's, which will render Nakodar S/S N-1 **non-complaint**. It will take probable three months for replacement. So, it will not be possible for single 315MVA ICT to take such loads as any fault on this single ICT will result in total blackout because 220KV Nurmehal is being fed radially from Nakodar without any second source of supply. 220KV Kartarpur is also running radially and connection with PGCIL Jalandhar increases loading on 220KV PGCIL- Kartarpur line, which is beyond control. **On the basis of above** observations, **P&M recommends that proposal of augmentation of one 1X315MVA. ICT to 500MVA may be reviewed and instead additional 1×500MVA ICT with new bay and plinth be planned to make Nakodar S/S N-1 complaint.**

TS (Design) office has provided that the scope of work be modified to the extent that 1x315 MVA, 400/220/33 kV auto T/F be augmented to 1x500 MVA, 400/220/33 KV Auto T/F by installing it on new plinth along with associated 400 kV & 220 KV ICT bays. 1x315 MVA, 400/220/33 KV auto T/F be shifted after energization of new 1x500 MVA, 400/220/33 KV auto T/F. Approximately cost of works comes out to be 6.0 Crores in case of Nakodar as the transfer bus bay is already existing in one dia which can be used in this case, which shall restrict the work to only 400KV ICT Bay and 220kV Bay.

Accordingly, agenda no. 23/TS-III dated 28-07-2020 regarding replacement of 1 no. 315MVA, 400/220 kV autotransformer with 1 no. 500MVA, 400/220kV autotransformer at 400kV sub-station Nakodar was prepared and submitted to BODs for consideration during its 61st meeting held on 14-08-2020 and it was proposed that:-

i. BOD may consider the change of scope of work as above.
ii. In case of change of scope of work is considered, modification of the scope of the work of the previous tender will have to be made & call of new tender for bay work.

The decisions taken by Board of Directors in its 61st meeting held on 14.08.2020 on the subject is as under (Annexure-I):-

"Director/Technical apprised the Board that pursuant to the decision taken by the Board in its 60th meeting held on 05.05.2020, the Committee has made price negotiation with L-1 bidder, M/s Kanohar Electricals Ltd. through video conferencing. The firm has offered discount of Rs. 1,00,000/-. Director/Technical was of the view that augmentation job as per the present enquiry will face difficulties in execution of work of augmentation of 1 no. 315 MVA, 400/220/33 KV autotransformer with 1 no. 500 MVA 400/220/33 kV autotransformer on same plinth as explained by CE/P&M in the agenda, the scope of work need to be amended. For additional bays, fresh tender can be floated with required scope of work as per site requirement. Board considered the view of Director/Technical and decided that present tender enquiry shall be dropped and new tender shall be issued with revised scope of work as per requirement proposed in agenda. Simultaneously, the case for approval of Northern Region Standing Committee, NRPC & PSERC shall be submitted. The work will be allotted after obtaining such approval".

In view of the BOD decision, revised scope of work is as under:-

1. **Revised Scope of Nakodar (Phase-I). (Drawing attached as Annexure- J)**

- Supply, Freight, Erection, Testing and commissioning of 1No. 500MVA, 400/220/33kV autotransformer at 400kV Sub-station Nakodar.
- Construction of 1 No. 400kV I.C.T. bay and 1 No. 220kV I.C.T. bay at 400kV Sub-station Nakodar with interlinking link of 220 kV.
- Dismantlement of 1 No. 315MVA, 400/220/33kV autotransformer at 400kV sub-station Nakodar along with transformer oil tank and accessories.
- Transportation of dismantled 1No. 315MVA, 400/220/33kV autotransformer from 400kV Sub-station Nakodar to 400kV Sub-station Dhanansu as and when 400kV S/s Dhanansu becomes ready.

Further the perusal of MYT Plan, in case of Dhanansu Sub-Station at Sr. No. 14 of Table 11 of MYT plan 2020-23, there is proposal of 2nd 315MVA T/F to be spared from the system as per requirement. It has been observed that as per load flow study of 2023, the 2nd ICT at 400kV Nakodar of 315MVA also becomes due for augmentation, as it starts showing N-1 Constraint. Accordingly, since arrangement of the additional bay is already proposed to be constructed at Nakodar, the augmentation of 2nd ICT i.e. 315MVA to 500MVA is quite convenient and easy to execute. It is proposed that 2nd ICT of 400kV Dhanansu shall be spared by augmentation of 2nd 315 MVA T/F at Nakodar to 500MVA please, which is also submitted for approval.

It may be mentioned here that 2nd 500MVA, 400/220kV transformer at 400kV sub-station Nakodar shall be executed during FY-2022-23.

Accordingly, the revised scope of Nakodar along with the revised cost of the work (Based on the price foutnd out through competitive bidding) shall work out as under:-

Sr. No.	Particular	Revised scope	FY- 2020-21	FY- 2021-22	FY- 2022-23	Total (In Cr.)
1	400 kV S/s Nakodar (2x315MVA, 400/220 kV) (Amendment No. 43/2018-19	• Replacement of 1x315 MVA, 400/220 kV ICT with 1x500 MVA, 400/220 kV ICT	0	15.00	3.72	18.72
		• Cost of dismantlement of 1x315 MVA, 400/220 kV ICT at 400 kV Nakodar	0	0.28	0.30	0.58
		• Construction of 1 No. ICT bay and 1 No. 220 kV ICT bay at 400 kV S/Stn. Nakodar with interlinking link of 220 kV.	0	5.00	1.66	6.66
2	400 kV S/Stn Nakodar	• Replacement of 2nd 315 MVA, 400/220 kV ICT with 2nd 500 MVA, 400/220 kV ICT	**FY- 2020-21**	**FY- 2021-22**	**FY- 2022-23**	**Spillover**
			0	0	15.00	3.72
		• Cost of dismantlement of 2nd 315 MVA, 400/220 kV ICT at 400 kV Nakodar	0	0	0.28	0.30

REVISED PRAYER:-

In the facts and circumstances mentioned above, it is respectfully prayed that the Hon'ble Commission may be pleased to:

1. Admit and take on record the present petition filed by PSTCL for evacuation of power from upcoming 206 MW Shahpur Kandi Project and change of scope of 400 kV S/Stn. Nakodar.

2. To approve the above works as capital works -
   For evacuation of 206 MW Shahpur Kandi Hydel project schduled for 2022 and to take these evacuation works in hand as per Regulation -9.9 as the works have already been approved as emergent works by BOD's of PSTCL.
3. To approve to undertake the work of 400 kV S/Stn. Nakodar with revised scope in line with the decision of BOD's of PSTCL in its 61st meeting dated 14.08.2020.
4. To approve to undertake the work of augmentation of 2nd 315 MVA 400/220 kV ICT to 500 MVA, 400/220 kV ICT at 400 kV S/Stn. Nakodar.
5. Pass such other further order(s) as the Hon'ble Commission may deem just in the facts of the present case.

Chief Engineer/TS,
PSTCL, Patiala.

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Annexure-A

PUNJAB STATE TRANSMISSION CORPORATION LIMITED
Regd. Office:- PSEB Head Office, The Mall, Patiala – 147001, Punjab, India
O/o Dy. CE/Planning & Communication, PSTCL, Patiala
Fax/Ph:- 0175-2205502, Email:- se-planning@pstcl.org
CIN-U 40109 PB 2010 SGCO 33814

To

i) Dy CE/TLSC Circle
PSTCL,Patiala

ii) SE/Grid Construction Circle,
PSTCL,Ludhiana.

Memo No. 100/01 /P-I/223 Dated -16-3-15

Sub:- Amendment in Transmission work list – 2012-17 (Amendment No. 40)

It has been decided to include the following transmission work in the transmission work list for the year 2015-16 :-

S.N.	Name of work	scope of work	Estimated cost (in lacs)	Remarks
1 a)	220 KV Shahpur Kandi PH-1-220 KV Shahpur Kandi PH-2 .	4Km, (SC on DC,0.5Sq" conductor.)	285.9 (approx.)	Evacuation system has been reviewed, keeping in view the evacuation of Shahpur Kandi PH-I & II individually.
b)	LILO of one circuit of 220 KV RSD-220 KV sarna at 220KV Shahpur Kandi PH-1 & PH-2	9 Km (DC on DC with 0.5 Sq".)	774.9 (approx.)	
c)	220 KV bays	4 (2 no. bays at PH-1 & 2 no. bays at PH-2.)	284 (approx.)	

This issues with the approval of competent Authority.

Dy. CE/Plg. & Comm,
PSTCL, Patiala.
13/3/15 13/3/15

No 102/07
01-16/3/15

CC:-
i) Dy. Secy to the Director/T,PSTCL, Patiala
ii) PS to CE/TS, PSTCL, Patiala
iii) CE/Hydel Projects,PSPCL,Patiala
iv) CE/ Planning, PSPCL, Patiala
v) CE/ P&M Circle, PSTCL, Ludhiana
vi) Dy CE/TS (D),PSTCL, Patiala

Annexure -B'

AEE/

PSPCL

PUNJAB STATE POWER CORPORATION LIMITED

(Regd. Office. PSEB Head Office, The Mall, Patiala (Punjab)-147001)
Corporate ID No. U40109PB2010SGC033813
(OFFICE OF CHIEF ENGINEER/HYDEL PROJECTS, PATIALA)
FAX no. +91 -175-2205249, Tel: +91 -175-2301578
E-mail: ce-hydel@pspcl.in **Website:** www.pspcl.in

8/124/SE/H
6/9/19

To

Dy.Chief Engineer/Planning.
PSTCL, Patiala.

Memo no. 1220/22 SE / SKPP/HD/201 Dated 5.7.19

Subject **206MW Shahpurkandi HEP – Transmission of Energy & Generation data through OPGW.**

Please this office memo no.1294/99 dated 4.12.2018 addressed to CE/TS, PSTCL. Patiala with a copy to your office and memo no.929/331 dated 3.7.2019 regarding providing OPGW from 220 KV Grind S/Stn. Sarna to RSD & SKPP (copies enclosed)

In this context, it is intimated that PSPCL is setting up the Hydro Electric Project of capacity 206 MW PH-I (3 x 33) + PH-II (3 x 33 +1 x 8). The civil works of this project are executed by the Dept. of Water Resources, GoP since March 2013 and E&M works of the project are carried out by PSPCL through BHEL against E&M contract awarded in Jan. 2014. Shahpurkandi Dam Project was declared as 'National Project' by Ministry of Water Resources Govt of India during Feb. 2008. Shahpurkandi project is being constructed on the land 1/3rd part of which falls in Punjab territory and 2/3rd part falls in J&K state.

The construction work of Main Dam was in progress, when, it was stopped by J&K Govt. in its territory on 30.8.2014. A bilateral agreement signed by Chief Secretaries of Punjab and J&K at Srinagar on 08.09.2018 resolving therein all pending issues. Punjab & J&K Cabinets have ratified the above

decision on 20.09.18 & 28.09.18 respectively and GoP has issued strict instructions to WR Dept. to complete the project within 42 months counted from the zero date 01.11.18. CWC/CEA has approved the revised cost of the project at Feb., 2018 Price Level as Rs.2715.70 Cr. (excluding IDC). GoI has also approved the project on 31 10 18 to go ahead for the construction activities.

The E & M Contract with BHEL has been revived with the approval of BODs As per revised E & M contract the project is likely to be commissioned within 42 months (i.e. 30.04.2022) counted from the effective date of 01.11.2018

In view of the above, it is again requested that requisite action may please be taken up for commissioning of OPGW from 220KV Grid S/Station Sarna to RSD and RSD to Shahpurkandi HEP (under construction) for uninterrupted transmission of generation data to SLDC through OPGW instead of old & obsolete PLCC technology. The same may kindly be communicated to this office please.

Dy. CE/SKPP
PSPCL,Patiala

CC 1. EIC/HPs, PSPCL, Patiala.
2. Dy. CE/O & M Circle, RSD, PSPCL, Shahpurkandi T/Ship

'Annexure - C'

pstcl

PUNJAB STATE TRANSMISSION CORPORATION LIMITED
Regd. Office:- PSEB Head Office, The Mall, Patiala – 147001, Punjab, India
O/o SE/Planning & Communication, PSTCL, Patiala
Fax/Ph:- 0175-2205502, Email:- se-planning@pstcl.org
CIN-U40109PB2010SGCO33814

Amendment No: 31
2019-20

To,

1) Dy. CE/Grid Construction, PSTCL, Ludhiana.
2) Dy. CE/TS (Design), PSTCL, Patiala.
3) Dy. CE/Civil Works, PSTCL, Patiala.

Memo No. 983/85 /P-I/ Dated: 16/9/2019

Subject: - Evacuation system of Shahpur Kandi Project.

The scope of work is planned as follows:-

Sr. No.	Name of substation	Scope of Work	Est. Cost (Rs. Lac)	Remarks
1	a. 220 kV Shahpur Kandi PH-I – 220 kV Shahpur Kandi PH II	4 km (SC on DC, 0.5 sq" conductor)	371.24 (approx.)	I. Evacuation system has been reviewed keeping in view the evacuation of Shahpur Kandi PH-I & PH-II individually. II. The work is being re-planned on the basis of latest status of the project received from Dy. Chief Engineer/SKPP, PSPCL, Patiala vide memo no. 1220/22/SE/SKPP/HD/201 dated 5.9.19. III. Estimated cost has been considered as per Cost data 2019-20 supplied by TS (D). IV. The work shall be included in MYT plan 2020-23 as new work and its cost shall be distributed as Rs. 9.73 Cr. & Rs. 9 Cr. for FY 2020-21 and FY 2021-22, respectively. V. This supersedes the Amendment No. 40 issued by this office vide memo no. 100/01 dated 16.03.15.
	b. I/L/O of one circuit of 220 kV RSD 220 kV Sarna at 220 kV Shahpur Kandi PH-I & PH-II.	9 km (DC on DC, 0.5 sq" conductor)	981.45 (approx.)	
	c. 220 kV bays	4 (2 No. bays at PH-I and 2 No. bays at PH-II)	520 (approx.)	

This issues with the approval of Director/Technical.

Dy. Chief Engineer/Planning,
PSTCL, Patiala.

12/9/19

CC:- 986/990 /P-I/ Dated: 16/9/2019

1) Director/Technical, PSTCL, Patiala.
2) Chief Engineer/TS, PSTCL, Patiala.
3) Chief Engineer/P&M, PSTCL Ludhiana.
4) Chief Engineer/Planning, PSPCL, Patiala.
5) Dy. Chief Engineer /P&M, PSTCL, Amritsar.

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-1-

Subject: Evacuation system of Shahpur Kandi Project.

In the context of the subject cited, it is submitted that an Amendment No. 40 regarding evacuation system of Shahpur Kandi Project was issued by this office memo no. 100/01 dated 16.03.15 (CP–1). However, as per the status report regarding the progress of the project received from Dy. Chief Engineer/SKPP, PSPCL, Patiala, the work of main dam of Shahpur Kandi HEP was stopped by the authorities on 30.08.14 and only less than 10% work of construction was completed. It was also mentioned that PSPCL has put on hold all the electro-mechanical works under its control till resolution of dispute with the Govt. So, the work was not included in the MYT plan for 2017-20.

Now, as per the latest status requested from Dy. Chief Engineer/SKPP, PSPCL, Patiala (CP–2), Govt has approved the project on 31.10.18 to go ahead for the construction activities and the project is likely to be commissioned by 30.04.2022.

In view of the above, the work of evacuation system of Shahpur Kandi Project needs to be included in the MYT plan for 2020-23 and accordingly the amendment for the same needs be re-issued with the latest cost data.

So, the following work is proposed to be included in the transmission works list:

Sr. No.	Name of substation	Scope of Work	Est. Cost (Rs. Lac)	Remarks
1	a. 220 kV Shahpur Kandi PH-I – 220 kV Shahpur Kandi PH-II	4 km (SC on DC, 0.5 sq" conductor)	371.24 (approx.)	I. Evacuation system has been reviewed keeping in view the evacuation of Shahpur Kandi PH-I & PH-II individually. II. The work is being re-planned on the basis of latest status of the project received from Dy. Chief Engineer/SKPP, PSPCL, Patiala vide memo no. 1220/22/SE/SKPP/HD/201 dated 5.9.19. III. Estimated cost has been considered as per Cost data 2019-20 supplied by TS (D). IV. The work shall be included in MYT plan 2020-23 as new work and its cost shall be distributed as Rs. 9.73 Cr. & Rs. 9 Cr. for FY 2020-21 and FY 2021-22, respectively. V. This supersedes the Amendment No. 40 issued by this office vide memo no. 100/01 dated 16.03.15.
	b. LILO of one circuit of 220 kV RSD – 220 kV Sarna at 220 kV Shahpur Kandi PH I & PH-II.	9 km (DC on DC, 0.5 sq" conductor)	981.45 (approx.)	
	c. 220 kV bays	4 (2 No. bays at PH-I and 2 No. bays at PH-II)	520 (approx.)	

Submitted for consideration and approval please.

10/9/19

ASE/P-I (O.L.)
Dy. Chief Engineer/Plg.

AEE/P-II

Submitted as above for consideration and approval of Worthy Director/T please

C.E/TS.

In view of the above

10/9/19

29/11/19

Since the work was not provided in old MYT 17-20 nor was anticipated while framing MYT 20-23, need to be incorporated in MYT 20-23 as amendment & shall be got approved from BOD's as new work.

11/9/19
C.E./T.S.

Approved

11/9

CE/TS To the Amendment

11/9/19
C.E./T.S.

SE/P&C

12/9/19

ASE/P-I

AEE/P-I 12/9/19

As approved above, draft amendment is put up for signatures of Dy. CE/Planning, PSTCL please

12/9/19

ASE/P-I (O.L.)

ASE/P-II

Dy CE/Planning

12/9/19

ASE/P-II

Annexure - D

PUNJAB STATE TRANSMISSION CORPORATION LIMITED
Regd. Office: PSEB Head Office, The Mall Patiala-147001,Punjab, India.
Corporate Identity Number: U40109PB2010SGC033814 (www.pstcl.org)
(O/o CAO/F&A (Commercial & Regulatory Cell) 3rd Floor, Shakti Sadan, Patiala)
Fax/Ph.No.0175-2970183 Email : fa@pstcl.org

To

The Secretary,
Punjab State Electricity Regulatory Commission,
Site No.3, Sector-18-A, Madhya Marg,
Chandigarh.

Memo No. 3265 /FA/Comml.-803
Dated: 09-10-2019

Subject: Petition No. 19 of 2019:- Approval of PSTCL's Business Plan including Capital Investment Plan for 2nd Control Period from FY2020-21 to FY 2022-23.

In reference to PSERC order dated 01.10.2019, enclosed please find herewith PSTCL's submissions for the kind consideration of Hon'ble Commission.

DA/As above

CAO/Finance & Audit,
PSTCL, Patiala.

CC: 1. Chief Engineer/TS,PSTCL,Patiala w.r.t SE/Planning email dated 03.10.2019.
2. Chief Engineer/SLDC,PSTCL,Patiala w.r.t their email dated 04.10.2019.

a summary of all key information and tentative ARR for each year and the same have already been submitted for the perusal of the Hon'ble Commission.

b. **Clubbing of Alternate Schemes:**

- It is submitted that the Serial Number 15, 16, 17 at Page No.102 of the Petition is to be considered as a substitute for Sr. No. 30 at Page No. 104 of Petition. Besides this, work of Jhoke Hari Har has been kept as *'under study'* in the MYT 2020-23 and has been kept to give relief to Firozepur. Alternate work for the same has not been included in the MYT 2020-23. In case this work is not feasible, then a possible alternate work will be included in the MYT list 2020-23. It may be noted that maximum outlay has to be considered.
- Besides this, some new works have been planned as Amendments (i.e. Amendment Nos. 26/2019-20 to 35/2019-20) attached as **Annexure-A** (Performa C1 & C3).
- The Revised formats T-14 and T-15 incorporating the effect of above changes duly segregating the schemes under separate headings and details as to be provided against pending deficiencies 1(e), 1(f) & 1(g) has been mailed vide email dated 09.10.2019. Copy of email enclosed as **Annexure-B**.

c. **Submission for creation of Corpus amount towards deviation charges:**

The deviation charges in respect of 3 no. of large IPPs (M/s NPL, TSPL and GVK) and open access customers are being billed/paid by PSPCL on the monthly UI/deviation accounts issued by SLDC and the deviation charges for the Punjab State as a whole are also paid/realised by PSPCL based on the weekly deviation settlement accounts issued by the NRPC. As such at present, al the payments pertaining to UI/deviation charges are being dealt with by PSPCL.

As per provisions of the State Grid Code, these UI/deviation charges are to be paid/realized by SLDC through the state deviation pool account. However, in view of non-implementation of Intra- state ABT DSM regulations, the operation of pool account was not started by SLDC. The Hon'ble Commission had issued the PSERC (Forecasting, Scheduling and Deviation Settlement and related matters of Solar & Wind

generation Sources) Regulations, 2011. Further, the Hon'ble Commission has emphasized the operation of State Deviation Pool Account. Accordingly, in line with the directions of the Hon'ble Commission, a current bank account was opened by SLDC for payment/receipt of deviation charges, named as State Deviation Pool Account.

Accordingly a one time corpus amount towards estimated monthly deviations needs to be added into this account for initializing the pool account transactions. Based on analysis for data for last 7 months, it is observed that the highest amount paid during April 2019 had been Rs 16.13 crore.

UI/ Deviation Charges paid by PSPCL From Feb-19 onwards

Week No.	Schedule (LU)	Actual (LU)	UI/Deviation on Quantum	UI/ Deviation amount payable (+)/receivable (-) by PSPCL (in Lakh Rs.)	Sustained Deviations	Sustained Deviation Amount	Additional UI/ Deviation Charges (in Lakh Rs.)	Adjustment on A/C OF Nuc. Stn & IW payable (+) / receivable (-) by PSPCL (in Lakh Rs.)	Net UI/ Deviation amount payable (+)/ receivable (-) by PSPCL (in Lakh Rs.)
Feb-19	10317.9631	10298.19	-19.7689	128.11912	70	292.38739	182.66238	6.02768	609.19657
Mar-19	15795.709	15637.3	-158.414	-39.43394	64	223.09125	292.70415	-12.13564	464.22582
Apr-19	12620.6065	12714.49	93.88538	622.85214	112	730.83805	282.27906	-23.01758	1612.95167
May-19	27144.8408	26907.67	-237.17	-271.68479	99	442.09183	406.0632	11.62795	588.09819
Jun-19	34149.0911	33914.43	-234.664	629.58335	24	3.46863	450.14379	21.8483	1105.04407
Jul-19	37780.2096	37565.89	-214.323	2.74474	10	0.76058	145.5006	11.41954	160.42546
Aug-19	47515.7593	47148.1	-367.661	-615.95791	38	2.68606	79.51666	11.78499	-521.8666

PSTCL requests the Hon'ble Commission to consider the amount and approve the same in the Business plan.

Dated: 9.10.2019

CAO/Finance & Audit
PSTCL, Patiala.

Annexure- A

Annexure C-1 Additional (Rs in Crores)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Bathinda	220	132 KV S/Stn. Gidderbaha (Amendment No. 26 /2019-20	2nd 132 KV bus-bar at 132 KV S/Stn. Gidderbaha			0.6					2019-20	2019-20			0.53					
2	Amritsar	220	220 KV S/Stn. Bottianwala (Amendment No. 27 /2019-20	Installation of 4 nos. CVTs (2 Nos. per bay) for 2 Nos. O/G 220 KV Bays for 220 KV S/S Goindwal Sahib as detailed below:-1) Civil Works			0..122					2019-20	2019-20			0.6					
3	Jalandhar	220	132 KV S/Stn. Kapurthala (Amendment No. 28 /2019-20	Change of tap position from 33 KV to 66 KV of 132/33-66 KV, 20/25 MVA T/F, T-4 at 132 KV S/S Kapurthala			0.0375					2019-20	2019-20			1.47					
4	Bathinda	220	220 kV S/Stn. Sadik (Amendment No. 29 /2019-20	LILO of 132 kV Ferozepur-Mukatsar line at 220 kV S/Stn. Sadik by providing 3 no. Isolator controlled arrangement for increasing reliability of 132 kV S/Stn. Sadik Road, Faridkot.			1.21					2019-20	2019-20			1.07					
5	Ludhiana	220	220 KV S/Stn.Sahnewal (Amendment No. 30 /2019-20	1 No. 66 kV line bay at 220 kV S/Stn. Sahnewal for 66 kV S/Stn. Kanganwal (3rd Ckt).			0.4					2019-20	2019-20			0.048					
6	Ludhiana	220	SE/Grid construction circle, PSTCL, Ludhiana (Type-5 Quarter) (Amendment No. 32 /2019-20	Extension of building of the office of SE/Grid construction, PSTCL, Ludhiana (Addition of accommodation at First Floor of existing building).			0.15					2019-20	2019-20			0.095					
7	Bathinda /Amritsar	220	132 kV S/Stn. Dhalleke (Moga) (Amendment No. 33 /2019-20	New Carrier room for PLCC			0.04					2019-20	2019-20			0.33					
			132 kV S/Stn. Fatehgarh Churian	Extension in existing Carrier room			0.04														
8	Amritsar	220	132 KV S/Stn Beas (Amendment No. 34 /2019-20	1 No. additional 132/11 kV, 10/12.5 MVA T/F at 132 kV S/stn. Beas, (spare T/F from the system will be used)			1.00					2019-20	2019-20			0.17					
9	Amritsar	220	132 KV S/Stn Batala (Amendment No. 35 /2019-20	1 No. additional 132/11 kV, 10/12.5 MVA T/F at 132 kV S/Stn. Batala. (spare T/F from the system will be used)			1.00					2019-20	2019-20			0.78					

Annexure C-3 Additional (Rs in Crores)

Sr. No.	Location/ Zone/District	Voltage Level(KV)	Name of Scheme/Project	Line Length(Ckm)	General Description of Scheme/Total MVA	Nature of Investment/Asset	Total Project Cost	Loan Amount	Internal Source/Equity Amount	Grant if Any	Approval Date	Project Start Date/Zero Date	Actual/Anticipated Year of Completion	Actual During 2018-19	Actual Expenditure upto 2018-19	Projected Expenditure					Remarks (Cabinet/PIT)
																2019-20	2020-21	2021-22	2022-23	5th Qtr. Beyond 22-23	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Bathinda		a. 220 kV Shahpur Kandi PH-I – 220 kV Shahpur Kandi PH-II	4 Km (SC on DC, 0.5 sq" conductor)			3.71														
			LILO of one circuit of 220 kV RSD – 220 kV Sarna at 220 kV Shahpur Kandi PH-I & PH-II	9 Km (DC on DC, 0.5 sq" conductor)			9.81														
		220	c. 220 kV bays (Amendment No. 31 /2019-20	4 (2 No. bays at PH-I and 2 No. bays at PH-II)			5.20					2019-20	2019-20			0.53					

Annexure- B

Revised Formats T-14 & T-15

From: ASE/Commercial O/O CAO (F&A), PSTCL (srxen-comml@pstcl.org)

To: secretarypsercchd@gmail.com

Cc: fa@pstcl.org

Bcc: se-planning@pstcl.org; ce-tl@pstcl.org

Date: Wednesday, October 9, 2019, 4:15 PM GMT+5:30

Pls find enclosed said formats being an attachment of PSTCL letter no. 3265/FA/comml-803 dated 9.10.2019.

Final Trans_V2_Transmission_08102019.xlsx
1.2MB

T14 and T 15 reworked.xlsx
405.1kB

ANNEXURE-E

DPR - XXXIV

ESTIMATED COST OF PROJECT

Sr. no.	CIP No. /Planning Amendment No.	Name of work Sub-stations	Amount (Rs. in lakhs)
1.	Amendment No. 31 dated 16.09.2019	**220kV Shahpur Kandi PH-I** **220kV Shahpur Kandi PH-II** 4 km (SC on DC, 0.5 Sq." Conductor) (Cost details on **Page: 16-20)**	371.24 (92.81X4)
		LILO of one circuit of 220kV RSD - 220kV Sarna at 220kV Shahpur Kandi PH-I & PH-II 9 km (DC on DC, 0.5 Sq." Conductor) (Cost details on **Page: 21-25)**	981.45 (109.05X9)
		4 (2 No. bays at PH-I and 2 No. bays at PH-II) 220kV bays (Cost details on **Page:26)**	520.00 (130X4)

DETAIL OF COST FOR 220KV SC LINE ON DC TOWERS WITH 'MOOSE' ACSR CONDUCTOR NOMINAL ALUMINIUM AREA 520mm ^{2} OR CALCULATING THE COST PER KM RUN OF LINE, 10KM OF LINE HAS BEEN CONSIDERED. THIS COST DATA HAS BEEN PREPARED FOR ESTIMATION PURPOSES ONLY.

1	**TOWER STRUCTURES**		
	Span.	300 Mtrs.	
	Total No. of towers in 10 Kms (allowing 2 Towers for short span and one for other end).	10x1000/300 = 33.33 Nos. Say 34+2+1=37 Nos.	
	Angle towers (taking 30% of total No. of towers).	11 Nos.	
	No. of straight towers.	37-11 = 26 Nos.	
	Average weight of Angle towers.	11.6 MT	
	Average weight of straight towers.	6.5 MT	
	Total weight	11.6x11+6.5x26 = 127.60+169 = 296.60 MT	
	Add 20% for extension & templates.	59.32 MT	
	Total tonnage.	355.92 MT	
	Cost of fabricated galvanized steel @ Rs 80476/ MT.	355.92 *80476	28643017.92
	G.I. Nuts & Bolts @ 3.5% of tower material Cost @ Rs 95580/- per MT.	12.46 MT 12.46x 95580	1190926.8
	Total		**29833944.72**

2	**ACSR**		
	Length of ACSR (allowing 1.5% for sag & wastage).	520 mm². " Moose" 3x10x1.015 = 30.45 Kms.	
	Cost @ Rs 3,59,122.38/- per Km	30.45x3,59,122.38/-	10935276.47
3	**GROUNDWIRE**		
	Size of single Earthwire 110Kgs quality.	7/3.15mm	
	Length of ground wire (allowing 1.5% for sag & wastage). (0.47 per KG)	10x1.015 = 10.15 Kms	
	54350.80/- @ Rs / Km	10.15x54350.80/-	551660.62
4	**STRING ASSEMBLIES**		
i)	No. of S.S. String assemblies complete with suspension clamps and 14 Disc Insulators of 90 KN EMS.	24x3 = 72 Nos.	
	(1240+14x613.13) = Cost @ Rs. 9823.82/-	72x9823.82	707315.04
ii)	No. of D.S. String assemblies complete with suspension clamps and 28 disc insulators of 90 KN EMS.	2x3 = 6 Nos.	
	(2580+28x613.03) = Cost @ Rs 19752.40/-	6x19752.40	118514.4
iii)	No. of S.T. String assemblies complete with tension clamps and 15 disc insulators of 160KN EMS.	7x6 = 42 Nos.	
	(2425+15x794) =Cost @ Rs. 14,335/-	42x14,335/-	602070
iv)	No. of D.T. String assemblies complete with T- Clamps and 30 disc insulators of 160KN EMS.	4x6 = 24 Nos.	
	(4480+30X794)= Cost @ Rs 28,300/-	24x28,300/-	679200
	Total:	**21,07,099.44/-**	**2107099.44**

5	**ACSR ACCESSORIES**	
i)	No. of armored rod sets complete with ferrules.	26x3 = 78 Nos.
	Cost @ Rs 1874.64/- per set.	78x1874.64 = 146221.92
ii)	No. of Mid Span compression joints (assuming average drum length 1100 Mtrs.).	30.45x1000/1100 = 27.68Nos. Say 28 Nos.
	Cost @ Rs 979.85/- per joint.	28x979.85 = 27435.80
iii)	4 RSB Vibration dampers.	2x3x37 = 222 Nos.
	Cost @ Rs 820.44/-	222x820.44 = 182137.68
iv)	Repair sleeves.	5 Nos.
	Cost @ Rs 369/-	5x369 = 1,845
	Total:	357640.4
6)	**GROUNDWIRE ACCESSORIES**	
i)	No. of bonding pieces for suspension and tension towers.	26+11x2 = 48 Nos.
	Cost @ Rs. 363/-	48x363 = 17,424
ii)	No. of suspension clamps.	26 Nos.
	Cost @ Rs 326.92/-	26x326.92 = 8499.92
iii)	No. of dead end body including linking devices.	11x2 = 22 Nos.
	Cost @ Rs 284.58/-	22x284.58 = 6260.76
iv)	No. of Mid Span compression joints/straight joints (assuming average drum length 1600 Mtrs.).	10x1000/1600 = 6.25 Nos Say 7 Nos.
	Cost @ Rs. 43.76/-	7x43.76 = 306.32
v)	4 RSB Vibration damper 74 Nos. @ Rs 329.16/-	74x329.16 = 24357.84
	Total:	**56848.74**

7) TOWER FIXTURES

Sr. No.	**Material**	**Unit**	**No. of Fixtures**	**Rate (In Rs.)**	**Amount (in Rs.)**
1	Earthing sets	Set	37	1159.18	42889.66
2	Danger plates.	No	37	162.54	6013.98
3	Number plates.	No.	37	151.33	5599.21
4	Bird guards for suspension towers (set 3 Nos.)	Set	As per Assumption No. 4		
5	Phase plates (set).	Set	37	276	10,212.00
6	Anti-climbing devices.	No.	As per Assumption No. 4		
7	Circuit Plates.	No.	37	302.67	11,198.79
8	Barbed wire (No of towers x 10kg)	Kg	370	76.23	28,205.10
	Total:				**104118.74**

8. CONCRETE FOR TOWER FOUNDATIONS

Type of Towers	No. of towers.	Cement (Bag) (50Kg) @ Rs. 263.47	Sand in (Cum) @ Rs. 1202	Crusher in (Cum) @ Rs. 1385	Steel in (Kgs) @ Rs. 50
Rate per Unit.		263.47	1202	1385	50
(A) STRAIGHT TOWERS	26 Nos.				
Qty. reqd. for 1 No.		102	6.97	13.91	1073
Amount.		26873.94	8377.94	19265.35	53650
Total	108167.23				
Sub cost for 26 Nos. Towers.	26x108167.23	2812347.98			
(B) ANGLE TOWERS 30°	6 Nos.				
Qty. reqd. for 1 No.		266	15.61	31.22	2781
Amount.		70,083.02	18,763.22	43,239.70	139,050.00
Total	271,135.94				
Sub cost for 6 Nos. Towers.	6x271135.94	1626815.64			
(C) ANGLE TOWERS 60°	5 Nos.				
Qty. reqd. for 1 No.		302	19.48	38.58	2810
Amount.		79,567.94	23,414.96	53,433.30	140,500.00
Sub Total Angle Towers.	296,916.20				
Cost for 5 Nos. Towers.	5x296916.20	1484581			
Total (a + b + c)	5923744.62				
5% extra for wastage & 10% for wet locations.	0.15*5923744.62	888561.69			
Total:	**6,812,306.31**				

ABSTRACT OF COST

Sr. No.	Particulars	Cost (In Rs.)
1	Tower Structures	29,833,944.72
2	ACSR	10,935,276.47
3	Ground wire.	551,660.62
4	String assemblies.	2,107,099.44
5	ACSR accessories.	357640.4
6	Ground wire accessories.	56848.74
7	Tower Fixtures.	104,118.74
8	Concrete for foundations.	6,812,306.31
9	**Sub-Total**	**50,758,895.44**
10	Erection charges @20% of material cost.	10,151,779.09
11	Transportation chargers @ 2.5%	1,268,972.38
12	Cost of 10 Kms run of completely erected line.	62,179,646.91
13	Cost of the one Km run of line.	6,217,964.69

Say Rs 62.18 Lacs only.

1	Cost of one Km Line.	Rs. 6217964.69
2.	Cost of other Misc. Expenditure for Erection of one Km Transmission Line.	
	I. Preliminary Expenses for one Km. line (For GEO referencing, survey, preparation of key plan, route plan, profile etc and supply of prints thereof)	Rs.14000.00
	II. Cost of Land under Towers of one Km Trans. Line. (Area in Sq. mtr x No. of Towers x rates per Sq. mtr) (100x4x666).	Rs.266400.00
	III. Crop Compensation charges for one Km. distance under 220/132 KV Transmission line.	Rs.150000.00
	IV. Forest Clearance Charges for one Km line	Rs. 66550.00
	V. Compensation charges for private trees for one km distance under 220/132 KV transmission line	Rs. 50000.00
	VI. PTCC and Re- Engineering charges for one Km. line.	Rs. 15730.00
	VII. Railway Crossing Charges for one Km. Line.	Rs. 2500000.00
	TOTAL	**Rs. 9280644.69**

Say Rs 92.81 Lacs only.

DETAIL OF COST FOR 220KV DC LINE ON DC TOWERS WITH 'MOOSE ACSR CONDUCTOR NOMINAL ALUMINIUM AREA 520mm², FOR CALCULATING THE COST PER KM RUN OF LINE,10KM OF LINE HAS BEEN CONSIDERED. THIS COST DATA HAS BEEN PREPARED FOR ESTIMATION PURPOSES ONLY.

1	**TOWER STRUCTURES**		
	Span.	300 Mtrs.	
	Total No. of towers in 10 Kms (allowing 2 towers for short span and one for other end).	10x1000/300 = 33.33 Nos. Say 34+2+1= 37 Nos.	
	Angle towers (taking 30% of total No. of towers).	11 Nos.	
	No. of straight towers.	37-11 = 26 Nos.	
	Average weight of Angle towers.	11.6 MT	
	Average weight of straight towers.	6.5 MT	
	Total weight	11.6x11+6.5x26 = 169 127.60+169 = 296.6 MT	
	Add 20% for extension & templates.	59.32 MT	
	Total tonnage.(MT)	355.92	
	Cost of fabricated galvanized steel @ Rs 80476/ MT.	355.92x80476	28643017.92
	G.I. Nuts & Bolts 3.5% of tower material Cost @ Rs 95580/- per MT.	12.46 MT 12.46x95580= 11,90,926.80	1190926.8
	Total:	2,98,33,944.72/-	29833944.72
2	**ACSR**		
	Length of ACSR (allowing 1.5% for sag & wastage).	520mm² ACSR 2x3x10x1.015 = 60.90	
	Cost @ Rs 359122.38	60.90x359122.38	21870552.94
3	**GROUNDWIRE**		
	Size of single earthwire 110 Kgs. Quality.	7/3.15mm	
	Length of groundwire (allowing 1.5% for sag & wastage).	10x1.015 = 10.15 Kms.	
	Cost @54350.80 KM	10.15x54350.80	551660.62

4	**STRING ASSEMBLIES**		
i)	No. of S.S. String assemblies complete with suspension clamps and 14 Disc Insulators of 90 KN EMS.	24x3x2 = 144 Nos.	
	(1240+14x613.13) = Cost @ Rs. 9823.82	144x9823.82	1414630.08
ii)	No. of D.S. String assemblies complete with suspension clamps and 28 disc insulators of 90 KN EMS.	2x3x2 = 12 Nos.	
	(2580+28x613.13) = Cost @ Rs19752.40/-	12x19752.40	237028.8
iii)	No. of S.T. String assemblies complete with tension clamps and 15 disc insulators of 160KN. EMS.	7x6x2 = 84 Nos.	
	(2425+15x794) = Cost @ Rs. 14,335/-	84x14,335/-	1204140
iv)	No. of D.T. String assemblies complete with T-clamps and 30 disc insulators of 160 KN EMS.	4x6x2 = 48 Nos.	
	(4480+30x794) = Cost @ Rs28,300/-	48x28,300/-	1358400
	Total:	**4,214,198.88**	**4214198.88**
5	**ACSR ACCESSORIES**		
i)	No. of armoured rod sets complete with ferrules.	26x6 = 156 Nos.	
	Cost @ Rs 1874.64/- per set.	156x1874.64	292443.84
ii)	No. of Mid Span compression joints (assuming average drum length 1100 Mtrs.).	61.2x1000/1100= 55.64 Say 56 Nos.	
	Cost @ Rs 979.85/- per joint.	56x979.85	54871.6
iii)	4 RSB Vibration dampers.	2x6x37 = 444 Nos.	
	Cost @ Rs 820.44/-	444x820.44	364275.36
iv)	Repair sleeves. Cost @ Rs 369/-	10x369	3690
	Total:	**715,280.80**	**715280.80**

6	**GROUNDWIRE ACCESSORIES**	
i)	No. of bonding pieces for suspension and tension towers.	26+11x2= 48 Nos.
	Cost @ Rs. 363/-	48x363 = 17,424/-
ii)	No. of 4 RSB vibration dampers.	2x37 = 74 Nos.
	Cost @ Rs 329.16/-	74x329.16 = 24357.84
iii)	No. of suspension clamps.	26 Nos.
	Cost @ Rs 326.92/-	26x326.92 = 8499.92
iv)	No. of dead end body including linking devices.	11x2 = 22 Nos.
	Cost @ Rs 284.58/-	22x284.58 = 6260.76
v)	No. of compression joints/straight joints (assuming average drum length 1600 Mtrs.).	10x1000/1600 = 6.25 Nos. Say 7 Nos.
	Cost @ Rs. 43.76/-	7x43.76 = 306.32
	Total:	**56848.84**

7) TOWER FIXTURES

Sr. No.	**Material**	**Unit**	**No. of Fixtures**	**Rate (in Rs.)**	**Amount (in Rs.)**
1	Earthing sets.	Set	37	1159.18	42889.66
2	Danger plates.	No.	37	162.54	6013.98
3	Number plates.	No.	37	151.33	5599.21
4	Bird guards for suspension towers (set 3 Nos.)	Set	As per Assumption No. 4		
5	Anti-climbing devices.	No.			
6	Phase Plates (set)	Set	74	276	20424
7	Circuit Plates.(Set of Two)	Set	37	302.67	11,198.79
8	Barbed wire (No. of Towersx10kg)	Kg.	370	76.23	28205.1
	Total:				**114,330.74**

8.CONCRETE FOR TOWER FOUNDATIONS					
Type of Towers	**No. of towers.**	**Cement (Bag) (50kg) @ 263.47**	**Sand in (Cum) @ 1202**	**Crusher in (Cum) @ 1385**	**Steel in (Kgs) @ 50**
A) STRAIGHT TOWERS	26 Nos.				
Qty. reqd. for 1 No.		102	6.97	13.91	1073
Amount.		26873.94	8377.94	19,265.35	53650
Sub-Total	108167.23				
Cost for 26 Nos. Towers.	26x 108167.23 =28,12,347.98				
B) ANGLE TOWERS 30°	6 Nos.				
Qty. reqd. for 1 No.		238	15.61	31.22	2781/-
Amount.		62,705.86	18763.22	43,239.70	139050/-
Sub-Total	263758.78				
Cost for 6 Nos. Towers.	6x263758.78= 15,82,552.68				
C) ANGLE TOWERS 60^0	5 Nos.				
Qty. reqd. for 1 No.		302	19.48	38.58	2810/-
Amount.		79567.94	23414.96	53433.3	140500/-
Sub-Total.	296916.2				
Cost for 5 Nos. Towers.	5x296916.20= 1484581				
Total (a+ b+ c)	5879481.66				
5% extra for wastage & 10% for wet locations.	(15%) 881922.24				
Total:	**6,761,403.90**				

ABSTRACT OF COST

Sr. No.	Particulars	Cost (In Rs.)		
1	Tower Structures	29,833,944.72		
2	ACSR	21,870,552.94		
3	Ground wire	551,660.62		
4	String assemblies.	4,214,198.88		
5	ACSR accessories.	715,280.80		
6	Ground wire accessories.	56848.84		
7	Tower Fixtures.	114,330.74		
8	Concrete for foundations.	6761403.9		
9	Sub-Total	64,015,321.44		
10	Erection charges @20% of material cost	12,803,064.29		
11	Transportation chargers @ 2.5%	1,600,383.03		
12	Cost of 10 Kms run of completely erected line.	78,418,768.77		
13	Cost of the one Km run of line.	7841876.87		

Say Rs 78.42 Lacs only

1.	Cost of one Km Line.	Rs. 7,841,876.87	
2.	Cost of other Misc. Expenditure for Erection of one Km Transmission Line.		
i.	Preliminary Expenses for one Km, line (For GEO referencing survey, preparation for key plan, route plan, profile etc and supply of prints thereof)	Rs. 14,000.00	
ii.	Cost of Land under Towers of one Km Trans. Line. (Area in Sq. mtr x No. of Towers x rates per Sq. mtr) (100x4x666).	Rs. 2,66,400.00	
iii.	Crop Compensation charges for one Km. distance under 220/132 KV Transmission line.	Rs. 1,50,000.00	
iv	Forest Clearance Charges for one Km line.	Rs. 66,550	
v	Compensation charges for private trees for one km. distance under 220/132KV transmission lines	Rs. 50,000	
vi	PTCC and Re-Engineering charges for one Km. line	Rs. 15,730	
vii	Railway Crossing Charges for one Km. Line	2,500,000	
	Total	10,904,556.87	

Say Rs. 109.05 Lacs only

BREAK UP ESTIMATE COST OF 220KV LINEBAY

Sr. No.	Description	Cost ref.	Qty.	Rate Rs. in Lacs)	Amount (Rs. in Lacs)
1	1600 Amps., 40KA RC 220KV ckt. Breaker.	E (3)	1 No.	12.25	12.25
2	Isolators with Earth Switch and Insulators.	G(4)	1 No.	4.7	4.7
3	220KV CTs.	C(3)(ii)	1 set (3)	3.13	9.39
4	220KV C&R Panel.	N (1)	1 No.	13.23	13.23
5	Isolators with Insulators.	F (5)	2 Set	4.04	8.08
6	Coupling Capacitor (CC)		2 Nos.	1.3	2.6
7	Steel structures for single bus.	T (1)	12 MT	0.7	9.8
8	Control cables.		L/S	Lot	5.2
9	Bus bar & connecting Material.		L/S	Lot	5.2
10	Earthing material.		L/S	Lot	2.77
i)	Sub Total (a)				**73.22**
ii)	Transportation, Civil Works, Erection charges, storage & contingency etc. @ 11% on (a)	Annex-I			**8.05**
	Grand Total:				**81.27**

Rs 81.27 Lacs only.

		(Rs. in Lacs)
Cost of Electrical equipments including Erection Charges, Stores and contingency etc.		**81.27**
Cost of Land.		**NIL**
Cost of Civil Works		**10**
Cost of PLCC equipment for 1 line bay		**38.78**
	Total	**130.05**

Rs 130 Lacs only

Note: Land rates are taken as NIL because a space required for one bay is covered under Land required for 220/132 KV Sub-Station, cost of which is already covered under Cost of land for the substation.

Annexure - 4

824/SE/N 16/3/2020

Sr.XEN/T-II Pl discuss 16/03/20 (69) 10/3/2020 AEE/PE

PUNJAB STATE TRANSMISSION CORPORATION LIMITED

(Regd. Office: PSEB Head Office, The Mall, Patiala-147001)
Corporate Identity Number: U40109PB2010SGC033814
www.pstcl.org (O/o Company Secretary) E-mail: comp-secy@pstcl.org
Tel./Fax No. 0175-2970047

Dy. CE/........ Sr.Xen/IMMAT........ AO/TS........ Sr. PS........ CE/TS........

Diary No. 380/SPS/TS Dated 16/3/2020

Subject: CE/TS Agenda No. 68/P-I/224 dated 27.12.2019-

a. **Grant of administrative approval for inclusion of works in the Capital Investment plan of PSTCL for MYT control period from FY 2017-18 to FY 2019-20.**

b. **Grant of administrative approval for some of transmission works included in MYT 2017-20 by way of Amendments and works included in MYT 2020-23 but required to be started in 2019-20 or at the earliest as 'Emergent Works'.**

The decision taken by Board of Directors in its 59th meeting held on 05.02.2020 at Kothi No. 33, PSPCL Guest House cum Transit Camp, Sector-10-A, Chandigarh on the above subject is as under:-

"It is a matter of concern that against the approval of emergent works for an amount of Rs. 72.55 Crores in the year 2018-19 consisting of works of Rs. 32.33 Crores for FY 2018-19 and Rs. 40.22 Crores for FY 2019-20 & approval of emergent works of Rs. 177.25 Crores during the current financial year with a stipulation to make a part of MYT 2020-23, the current proposal seeks approval for emergent works for another amount of Rs. 114.462 Crores. It needs to be ensured by the Technical Division that proper advance planning is undertaken so that required works are taken up in time.

As transmission works listed in Annexure-'C' of the agenda for an approximate cost of Rs. 102.62 Crores have already been approved by PSERC under the Capital Investment Plan for Control period F.Y. 2020-21 to 2022-23, the same can be given in- principle approval as emergent works. Similarly, as regards Category-1 of Annexure 'B', works already taken up, which are listed at Sr. No. 1-15, 18-19 and 21-22 were also given in principle approval as emergent works.

So, the Board accorded administrative approval for the Transmission works as per Annexure-B of the agenda issued vide Amendment Nos. 16/2019-20 to 38/2019-20 and approved transmission works listed in Category-1 of Annexure-B except works mentioned at Sr. No. 16,17 and 20 therein and Annexure-C except works mentioned at Sr. No. 7 as emergent works for the reasons given by Chief Engineer/TS as under:

CATEGORY 1 of Annexure-B of the Agenda

Sr. No. As per agenda note	Name of the Scheme/Project	General Description of the Scheme	Reasons for declaration of Emergent Works
1	220 KV S/Stn. Kotli Surat Mali	Extension in control room building	The work needs to be started immediately as till the work is done, no further control panels can be accommodated at the Substation.
2	220 KV S/Stn. G-1 Mandi	66 kV bus bar link between 220 KV S/Stn. G-1 Mandi	At the time of damage of 100MVA Transformer at

	Gobindgarh and 220 KV S/Stn. G-4 Mandi Gobindgarh.	Gobindgarh and 220 KV S/Stn. G-4 Mandi Gobindgarh.	220KV Substation Mandi Gobindgarh, it was felt necessary that Bus Bars of G-1 and G-4 should be liked together and the temporary arrangement was made at site. As such the work is emergent in order to have a permanent arrangement.
3	220 kV S/Stn. Kartarpur	2 No. 66 kV line bays for 66 kV Ring main from Kartarpur-Jalandhar	These works relate to 66KV line Bays which are as per the request of PSPCL and to hand over these works at the earliest.
	132 kV S/Stn. Banga	1 No. 66 kV line bay for 66 kV substation Behram	
	220 kV S/Stn. Noormehal	1 No. 66 kV bay for 66 kV substation Shanker	
4	132 kV S/Stn. Panjgrain Kalan	1 No. 132 kV bay at 132 kV substation Panjgrain Kalan for controlling 132 kV Panjgrain Kalan – Kotakpura-II line.	The work is emergent in nature as per written requirement of P&M Organization and for improvement in the system.
5	220 kV S/Stn. Bhateri	1 no. 66 KV line bay for 66 kV S/Stn. Ghanour (2nd ckt) at 220 kV substation Bhateri	These works relate to 66KV line Bays which are as per the request of PSPCL and to hand over these works at the earliest.
6	220 kV S/Stn. Passiana	1 no. 66 KV line bay for new 66 kV S/Stn. Sanouri Adda at 220 kV substation Passiana	
7	220 KV S/Stn. Wadala Granthian	1 no. 66 kV line bay for 66 kV S/Stn. Chahal Kalan (New) at 220 kV S/Stn. Wadala Granthian	
8	220KV S/Stn. Banur.	1 no. 66 kV line bay for 66 kV Banur-Lalru line at 220 kV S/Stn. Banur.	
9	132 kV S/Stn. Faridkot	1 No. 132 kV line bay at 132 kV substation Faridkot for controlling 132 kV Faridkot – Ferozepur line (T-off from 132 kV Shri Mukatsar Sahib-Ferzozepur line).	132 KV Substation Faridkot has radial supply and has witnessed complete darkness due to fault in the feeding line. In order to have double arrangement, it needs to be started immediately.
10	220 KV Lalru	1 no. 66 kV line bay for 66 KV S/Stn. TC Spinner/ Alamgir	These works relate to 66KV line Bays which are as per the request of PSPCL and to hand over these works at the earliest.
11	132 KV S/Stn. Gidderbaha	2nd 132 KV bus-bar at 132 KV S/Stn. Gidderbaha	The work has been planned for better reliability and needs to be completed before next summer.
12	220 KV S/stn.	Installation of 4 Nos. CVTs (2	The work has been carried

	Bottianwala	Nos. per bay) for 2 Nos. O/G 220 kV bays for 220 kV substation Goindwaal Sahib as detailed below: 1. Civil Works expenses 2. Electrical works expenses	out after issue of amendment as the energization of line was held up due to change of guidelines of PT Voltage.
13	132 KV S/Stn. Kapurthala	Change of tap position from 33 KV to 66 KV of 132/33-66 KV, 20/25 MVA T/F, T-4 at 132 KV S/S Kapurthala	Utilization of Transformer can only be ensured after change of tap position and such is required to be done without waste of any time.
14	220 kV S/Stn. Sadik	LILO of 132 kV Ferozepur-Mukatsar line at 220 kV S/Stn. Sadik by providing 3 no. Isolator controlled arrangement for increasing reliability of 132 kV S/Stn. Sadik Road, Faridkot.	132 KV Substation Faridkot has radial supply and has witnessed complete darkness due to fault in the feeding line. In order to have double arrangement, it needs to be started immediately.
15	220 KV S/Stn. Sahnewal	1 No. 66 kV line bay at 220 kV S/Stn. Sahnewal for 66 kV S/Stn. Kanganwal (3rd Ckt).	These works relate to 66KV line Bays which are as per the request of PSPCL and to hand over these works at the earliest.
18	132 KV S/Stn Beas	1 No. additional 132/11 kV, 10/12.5 MVA T/F at 132 kV S/stn. Beas, (spare T/F from the system will be used)	Due to loading conditions of paddy 2019, additional Transformers are required to be energized before next paddy season.
19	132 KV S/Stn Batala	1 No. additional 132/11 kV, 10/12.5 MVA T/F at 132 kV S/Stn. Batala. (spare T/F from the system will be used)	
21	220 kV S/Stn. Badal	66 kV Capacitor Bank at 220 kV S/Stn. Badal	Keeping in view the variation at Substation Voltage Level due to which Transformer tap has to be changed again and again, 66KV Capacitor Bank has been planned.
22	220KV S/s Ghulal	Replacement of 1 no. 10/12.5 MVA, 132/11 KV Power T/F with 1 no. 20 MVA, 66/11 KV Power T/F	The existing Transformer is very old and there is constant leakage as well as regular gas formation inside the transformer. Moreover, 132/11KV load at 220KV Substation Ghulal is to be shifted to its 66KV Bus.

Annexure-C of the Agenda

Sr. No.	Name of the Scheme/Project	General Description of the Scheme	Reasons for declaration of works as Emergent
1	220 kV Patti	Replacement of 1x100	Based on the loading condition of

		MVA, 220/66 KV to 1x160 MVA, 220/66 KV T/F.	Paddy 2019, these works need to be carried out on immediate basis.
2	220 kV Ferozepur road Ludhiana	Replacement of 1x100 MVA, 220/66 KV to 1x160 MVA, 220/66 KV T/F.	Based on the loading condition of Paddy 2019, these works need to be carried out on immediate basis.
3	220 kV Dhandari Kalan 2	2x160 MVA, 220/66 KV T/F at new location to be added (with complete new ICT bays	Based on the loading condition of Paddy 2019, these works need to be carried out on immediate basis.
4	220 kV S/S Ladowal	160 MVA, 220/66 kV T/F, to make the substation N-1 compliant.	At present, 220KV Ladowal is having only single transformer. If that transformer trips, the entire Ludhiana region will face severe overloaded conditions. Hence, in order to make 220KV Ladowal (N-1) compliant, this work need to be carried out on immediate basis.
5	220 kV S/Stn Majitha	Addl. 2nd 100 MVA, 220/66 kV T/F	Based on the loading condition of Paddy 2019, these works need to be carried out on immediate basis.
6	220 kV Gurdaspur (including SAS of Rs. 1 Cr)	2x100 MVA, 220/66 KV T/F. including 2 no. 220 kV bays	132KV Sarna Gurdaspur Line has recorded 80MVA loading (110%) during Paddy 2019. It is worth mentioning that UBDC hydel Generation, adequate generation from Joginder Nagar (110 MW) as well as Bassi (60MW) is also reaching at 132 KV bus Sarna and 132 KV Sarna-Gurdaspur DC link is the only evacuating line from 132KV bus Sarna. Augmentation of its conductor with high capacity HTLS conductor is not possible on account of inadequacy of the supporting structure of the line. Therefore keeping in view the loading conditions of the year 2023 and the fact that it takes nearly 2.5 years for erection of a new substation, the work of up-gradation of 132 KV Gurdaspur to 220 KV Gurdaspur is required to be started immediately.
8	a.220 kV Shahpur Kandi PH-I – 220	4 km (SC on DC, 0.5 sq" conductor)	The work is related with commissioning of Shahpur Kandi

	kV Shahpur Kandi PH-II		**Hydel Project scheduled for 2022. The work needs to be started at the earliest so that the same is completed before scheduled date of power evacuation as being transmission line the ROW problem cannot be anticipated.**
	b. LILO of one circuit of 220 kV RSD – 220 kV Sarna at 220 kV Shahpur Kandi PH-I & PH-II	**9 km (DC on DC, 0.5 sq" conductor)**	
	c. 220 kV bays **Amendment no. 31 /2019-20**	**4 (2 No. bays at PH-I and 2 No. bays at PH-II)**	

This is for information and necessary action under due intimation to this office please.

12 মার্চ 2020

Company Secretary
PSTCL, Patiala.

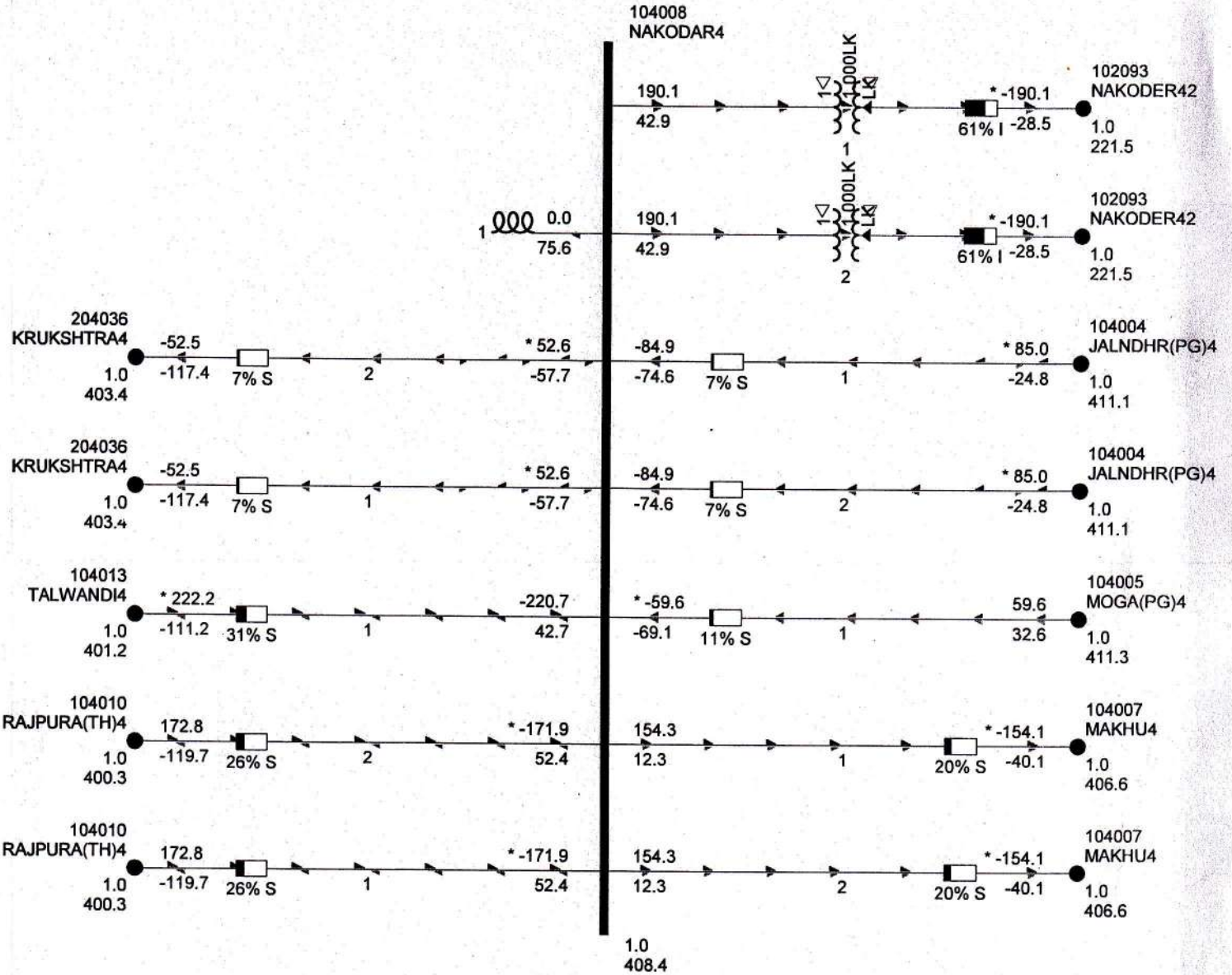
To

Chief Engineer/TS,
PSTCL, Patiala.

U.O. No. 397 /BOD/59.7 /PSTCL

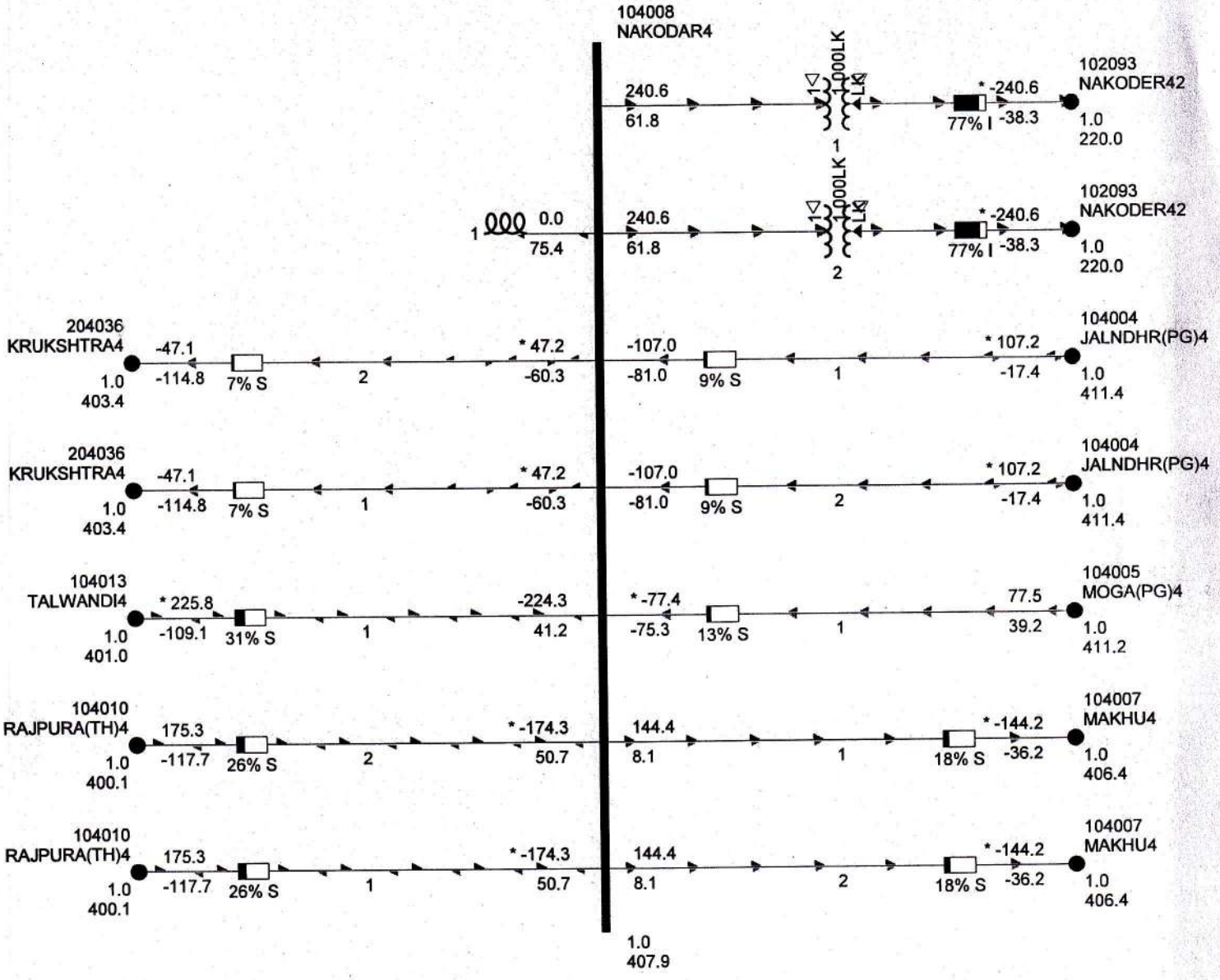
Dated: 12.03.2020

Annex - G



Bus # 104008
NAKODAR4 400.00
Type 1
Area 1 PUNJAB
Zone 13 NORTH ZONE
Voltage 1.02091PU
408.363KV
Angle
(deg) 0.81

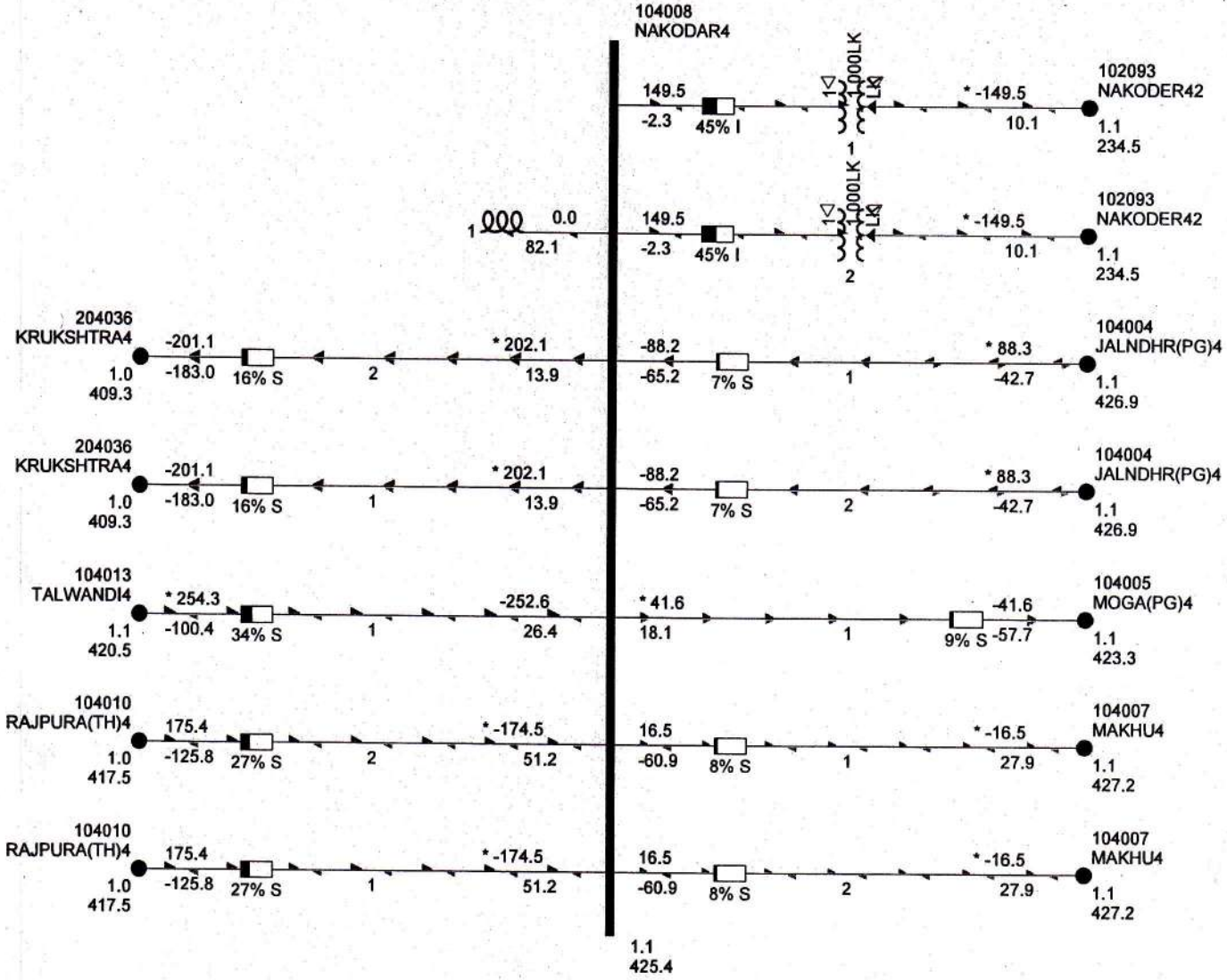
Power Flow in MW/MVar
Pb.load = 13242 MW, Solar Gen = 461 MW
Pb. Gen = 6361 MW
Jalandhar-Kartarpur CLOSE
Jamsher-Mahilpur CLOSE



Bus # 104008
NAKODAR4 400.00
Type 1
Area 1 PUNJAB
Zone 13 NORTH ZONE
Voltage 1.01969PU
407.874KV
Angle
(deg) 0.71

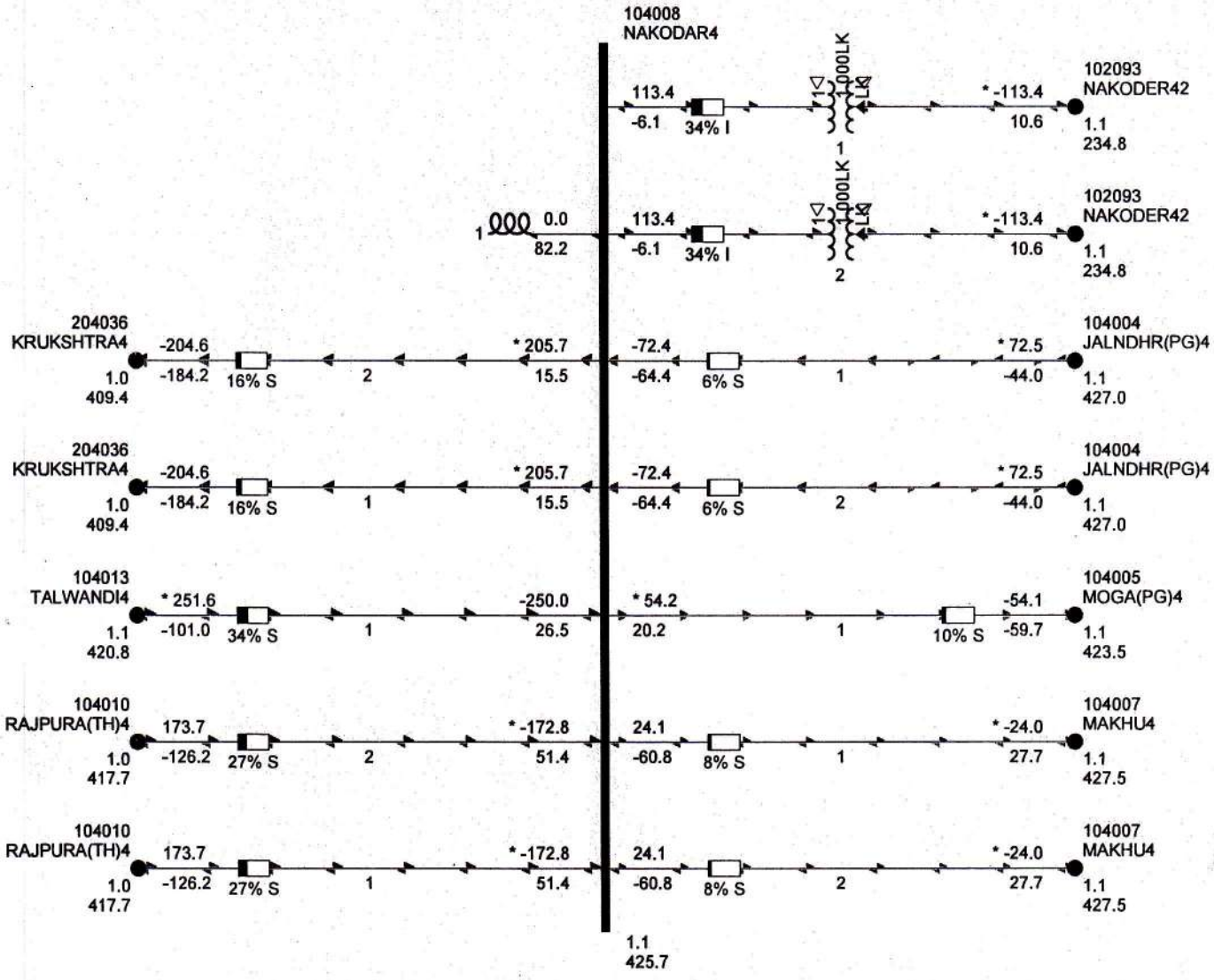
Power Flow in MW/MVar
Pb.load = 13242 MW, Solar Gen = 461 MW
Pb. Gen = 6361 MW
Jalandhar-Kartarpur OPEN
Jamsher-Mahilpur OPEN

Annex - H



Bus # 104008
NAKODAR4 400.00
Type 1
Area 1 PUNJAB
Zone 13 NORTH ZONE
Voltage 1.06349PU
425.396KV
Angle
(deg) 8.18

Power Flow in MW/MVar
Pb. load = 8000 MW, Solar Gen = 461 MW
Pb. Gen = 5573 MW, Ropar Gen OFF, Bhakra Gen 50%
Jalandhar-Kartarpur OPEN
Jamsher-Mahilpur OPEN



Bus # 104008
NAKODAR4 400.00
Type 1
Area 1 PUNJAB
Zone 13 NORTH ZONE
Voltage 1.06431PU
425.725KV
Angle
(deg) 8.24

Power Flow in MW/MVar
Pb. load = 8000 MW, Solar Gen = 461 MW
Pb. Gen = 5573 MW, Ropar Gen OFF, Bhakra Gen 50%
Jalandhar-Kartarpur CLOSE
Jamsher-Mahilpur CLOSE

Annex-I

ASE/TS-3 Dy. CE/TS ... Sr. Xen/WS ... ADE/TS ... ASE/TS-3 ... Dy CE ... Addl. S.E./TS ... P.A./Sr. Asstt. ...

pstcl PUNJAB STATE TRANSMISSION CORPORATION LIMITED

(Regd. Office: PSEB Head Office, The Mall, Patiala-147001)
Corporate Identity Number: U40109PB2010SGC033813
www.pstcl.org (O/o Company Secretary) E-mail: compsecy@pstcl.org
Tel./Fax No. 0175-2970047

Diary No. ... Dated ...

Subject: CE/TS Agenda No. 23/TS-III dated 28.07.2020-Replacement of 1 No. 315 MVA 400/220/33KV Autotransformer with 1 No. 500 MVA 400/220/33KV Autotransformer at 400 KV Substation Nakodar.

Diary No. 3168 Dated 30/9/20 SE/TS

The decision taken by Board of Directors in its 61st meeting held on 14.08.2020 at VIP Guest House, Mohali on the above subject is as under:-

"Director/Technical apprised the Board that pursuant to the decision taken by the Board in its 60th meeting held on 5.5.2020, the Committee has made price negotiation with L-1 bidder, M/s Kanohar Electricals Ltd. through video conferencing. The firm has offered discount of Rs. 1,00,000/-. Director/Technical was of the view that augmentation job as per the present enquiry will face difficulties in execution of work of Augmentation of 1 No. 315 MVA 400/220/33 KV Autotransformer with 1 No. 500 MVA 400/220/33KV Autotransformer on same plinth as explained by CE/ P&M in the agenda, the Scope of work need to be amended. For additional bays, fresh tender can be floated with required scope of work as per site requirement. Board considered the views of Director/Technical and decided that present tender enquiry shall be dropped and new tender shall be issued with revised scope of work as per requirement proposed in agenda. Simultaneously, the case for approval of Northern Region Standing Committee, NRPC and PSERC shall be submitted. The work will be allotted after obtaining such approvals".

This is for information and necessary action under due intimation to this office please.

19/9/20
Supdt/Meeting.
O/o Company Secretary
PSTCL, Patiala.

To

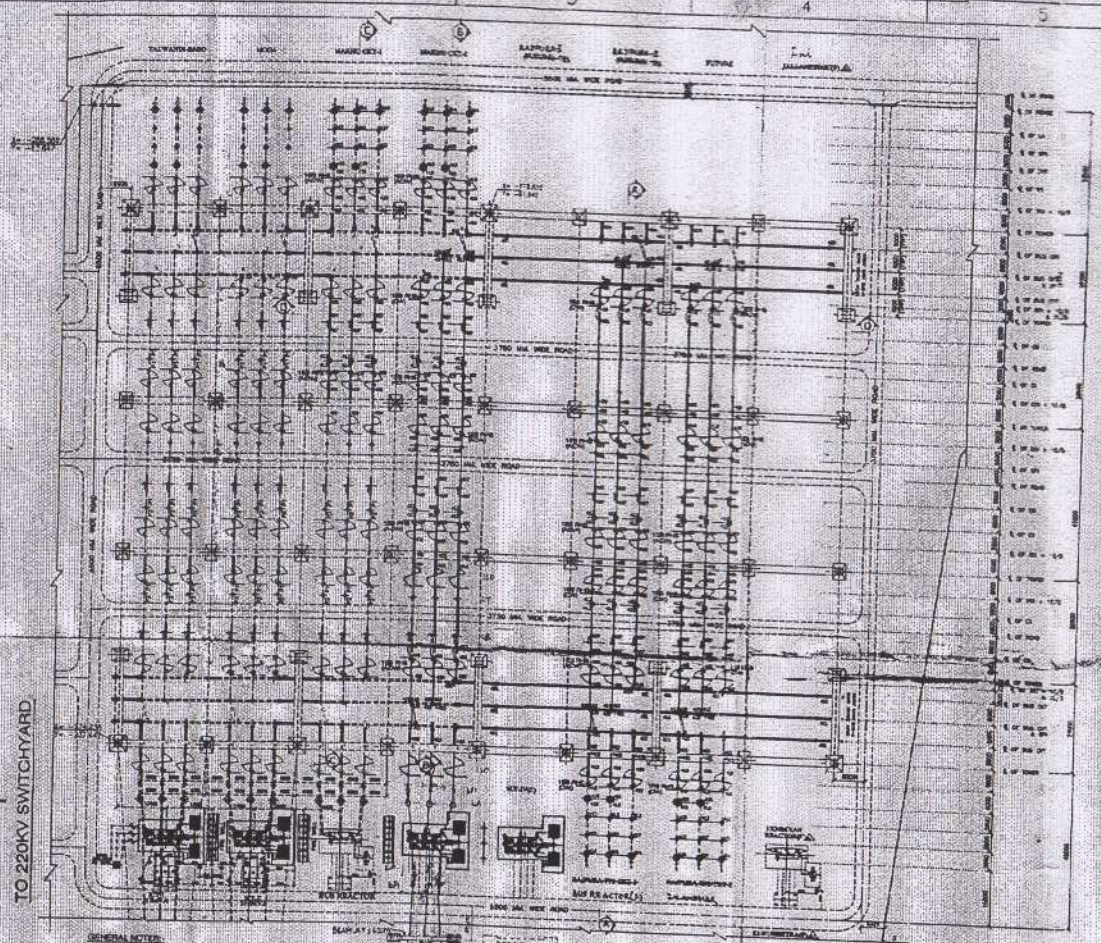
Chief Engineer/TS,
PSTCL, Patiala.

U.O. No. 1085 /BOD/61.26 /PSTCL

Dated: 19.09.2020

2020-9-24

Annex-J



EQUIPMENT FOR 400KV ICT BAY-III		
Sr. No.	Description	Quantity
1	ISO+1E/S	2 Nos.
2	CT's	3 Nos.
3	CB	1 No.
4	BPI	3 Nos.
5	LA's	3 Nos.
6	500MVA, AUTO POWER TRANSFORMER 400/220/33KV	1 No.
7	ACSR Moose	5 Km.

GENERAL NOTES:

REV	DESCRIPTION	SIGN	DATE

PUNJAB STATE TRANSMISSION CORPORATION LTD

400/220KV SUBSTATION
NAKODAR

LAYOUT PLAN FOR 400KV

PSTCL/TS(D)-A-002/R0/NKD (Sheet 1 of 2)