

Full Title of the Project: - Construction of LILO from 400KV D/C Transmission line Lahal to Rajera at Tower no 8 to Pot Head yard for Evacuation of Power of JSW ENERGY (KUTEHR)LTD KUTEHR HEP 3X80 MW Vill. Machhettar Post Chanhota Teh. Bharmour Distt. Chamba. (H.P.)

File no: *FP/HP/TRANS/130156/2021*

Date of Proposal: *13/03/2021*

Check List Serial Number - 4

ANNEXURE-A

DETAILS ABOUT PROJECT

Construction of Transmission line between LILO point at Tower No -8 of HPPTCL Lahal-Rajera 400 kV D/C Transmission Line and Pothead yard of Kutehr HEP (240 MW) of JSW Energy (Kutehr) Ltd located in District Chamba, HP

PROJECT HIGHLIGHTS: -

Project: Construction of Transmission line between LILO point at Tower No -8 of HPPTCL Lahal-Rajera 400 Kv D/C Transmission Line and Pothead yard of Kutehr HEP (240 MW) of JSW Energy (Kutehr) Ltd located in District Chamba, HP

Location of Project : Bharmour, District Chamba, Himachal Pradesh.

- **Beneficiary States : Himachal Pradesh**
- **Project Cost : Rs 3.0 Crore**

1. BACKGROUND

The 240 MW Kutehr Hydro-Electric Project being constructed by JSW Energy (Kutehr) Ltd, whose Powerhouse is located near to Kharamukh is to be connected through 400 kV D/C transmission lines to the LILO point of 400 kV D/C Transmission Line of HPPTCL between Lahal and Rajera Substations. The detailed survey report of the proposed transmission line had been approved by HPPTCL vide Letter no: HPPTCL/DGM/CBA/09/2019-20-744 dated 08/09/2020.

In view of the above, forest clearance may be issued for the execution of the said transmission line.

2. Funding

The project is being funded by **JSW Energy (Kutehr) Ltd.**

3. Employment

About 30 persons will be directly employed for this project during construction and about 2 persons during operations & maintenance stage. Further it will provide developmental potential in all sectors and commissioning of this project shall be leading to employment opportunities.

4. Details of Transmission Line

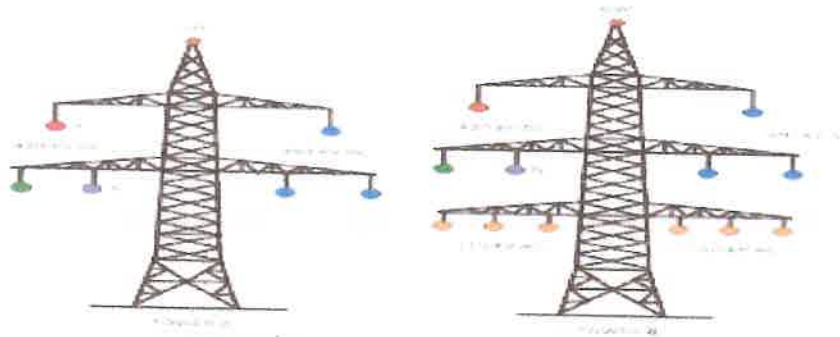
1	Voltage Level	400 kV
2	Line Length	Approx. 887 M
3	Minimum width of Right of Way	46 M
4	No.of Towers to be erected	5 Nos
5	Area of Forest	3.7904 Ha
6	Minimum Height of the Towers	49M

Date:

Place:

For JSW Energy


Sanjeev Kumar Mahajan
Associate Vice President JSW
Energy (Kutehr)Ltd. Village
Machhatter Post chanhouta
Teh Bharmour Distt. Chamba
176309.



JSW Energy Ltd.

Kutehr HEP 240MW

**Village -Machetar P.O. Chanhota Tehsil-
Bharmour District Chamba - 176309.**

***Name of Work: - Carrying out detailed survey for LILO
from 400KV D/C transmission line Lahal to Rajera at
tower no 8 to Pot Head yard for Evacuation of Power
of JSW ENERGY (KUTEHR)LTD KUTEHR HEP 3X80 MW
Vill. Machhettar Post Chanhota Teh. Bharmour Distt.
Chamba.***

FROM:-

S.TECH

VILLAGE-JAGAR,POST OFFICE-PANDOH

TEHSIL-SADAR,DISTT-MANDI (HP)

MOB:-9736742009 , 9805100618

E-mail:- s.techmandi66@gmail.com



HIMACHAL PRADESH POWER TRANSMISSION CORPORATION

(A State Govt. under taking)

HPPTCL Zone , Chamba, Distt. Chamba (H.P.)-176318.

Tel./Fax no.01899-220830 E-mail:-dgmChamba.hpptcl@gmail.com

Head office: Barowalias House, Khalini, Shimla-2,www.hpptcl.gov.in

No.HPPTCL/DGM/CBA/ 09 /2019-20 - 744

Dated:- 08/09/2020

To

The Associate Vice President,
Kuthar HEP (240 MW)
Village Machhettar, PO Chanhouta
Tehsil Bharmour Distt. Chamba (H.P.)

Subject:- Transmission Line LILO Route from Tower No.8 of 400 KV D/C Transmission Line Lahal to Rajera to JSW Pot Head Yard, 240 MW at Kharamukh. Approval for Detailed survey thereof.

Reference :- Your office Letter no. JSWEKL/KUTHER/TRANMISSION-LINE/2020-4262 dated 7-9-2020
JAIHIND !

The detailed survey in respect of subject cited transmission line is hereby approved on the basis of profile sheets & tower location chart, submitted vide your letter under reference .The mandatory clearances i.e. PTCC clearance and forest clearance etc. may be obtained from the concerned authorities. It is also requested to submit the one spare set of detailed survey in this office for record please.

It is for your kind information and taking further necessary action accordingly please.

DA /- As above

*Spares set
Received
10/09/2020*

AGM (projects)
HPPTCL, Chamba Zone.

[illegible]

Wind Span= 400 M

Note: All spans are in M and All loads are in Kgs

TOWER SPOTTING DATA					
			B	C	D
			Maximum sum of adjacent spans to be limited to 1542m for deviation angle = 0°	Maximum sum of adjacent spans to be limited to 1776m for deviation angle = 10°	Maximum sum of adjacent spans to be limited to 1514m for deviation angle = 44° & below
4	DESIGN LOAD TENSION (Kg)		B	C	D
	GROUND WIRE				
	25°C & 100% Wind- No ice		3059	3059	3059
	25°C & 75% Wind- No ice		2563	2563	2563
	-20 deg C - 36% Wind - 15mm Radi		2003	2003	2003
	OPGW				
	25°C & 100% Wind- No ice		3024	3024	3024

TOWER SPOTTING DATA

75°C & 100% Wind- No ice		2557	2557	2557
-20 deg C - 36% Wind - 15mm Radi		2050	2050	2050
CONDUCTOR				
25°C & 100% Wind- No ice		6458	6458	6458
75°C & 100% Wind- No ice		5402	5402	5402
-20 deg C - 36% Wind - 15mm Radi		4539	4539	4539

Max. Individual Span Calculation

$$L_{\max} = L \sqrt{\frac{K}{S}}$$

L = Wind Span in m. = **400**

S = Max. Sag (including Sag error) in m. = **14.483**

K = Max. Sag factor corresponding to Max. individual span & is given by the equation written below

$$VS = 0.75 \sqrt{K + SI} + \frac{V}{150}$$

VS= Vertical Separation

SI = Suspension Insulator Assembly Length

V = System Voltage in kVs = **400**

Tower Type	VS	SI	K	L _{max} (m)	Span limit for permissible sum of adjacent span (m) [L _{max} *2]
B	9.050	0	72.439	895	1790
C	9.050	0	72.439	895	1790
D/DE	9.150	0	74.726	909	1818

TOWER SPOTTING DATA

GENERAL NOTES FOR TOWER SPOTTING DATA

I) TOWER TYPES :

- 1) Tower Type "B (0-15) deg" shall be used with Tension Insulator.
- 2) Tower Type "C(0-30) deg" shall be used with Tension Insulator.
- 3) Tower Type "D(0-60)deg/DE(0-15)deg " shall be used with Tension Insulator.

II) SPANS :

- 1) The number of consecutive spans between the section (tension tower) points shall not exceed 10 nos. in Hilly Terrain and 15 nos. in Plain Terrain.
- 2) The Intermediate spans in a section shall be as near as possible to the Normal Span.
- 3) Minimum Ground Clearance required : 8.840M

III) For arrangement of Body & Leg Extensions, refer attached **Annexure-I**

IV) ROAD CROSSING :

- 1) For important road crossing tension towers shall be used with tension strings depending on the deviation angle; for a reduced span of 250M.

V) POWER LINE CROSSING :

Minimum clearance for crossing with power lines

(i)	800 KV	(mm)	7940
(ii)	400 KV	(mm)	5490

VI) ELECTRICAL CLEARANCES FOR RAILWAY CROSSING :

- 1) Prior approval of Railway Authority is to be obtained.
- 2) Minimum Clearance between lowest point of 400kV Line Conductor and Rail level shall be: 19.3m. However, approval of railway crossing from railway authority has to be obtained in
- 3) The crossing shall normally be at right angle to the railway track with double tension insulator string.

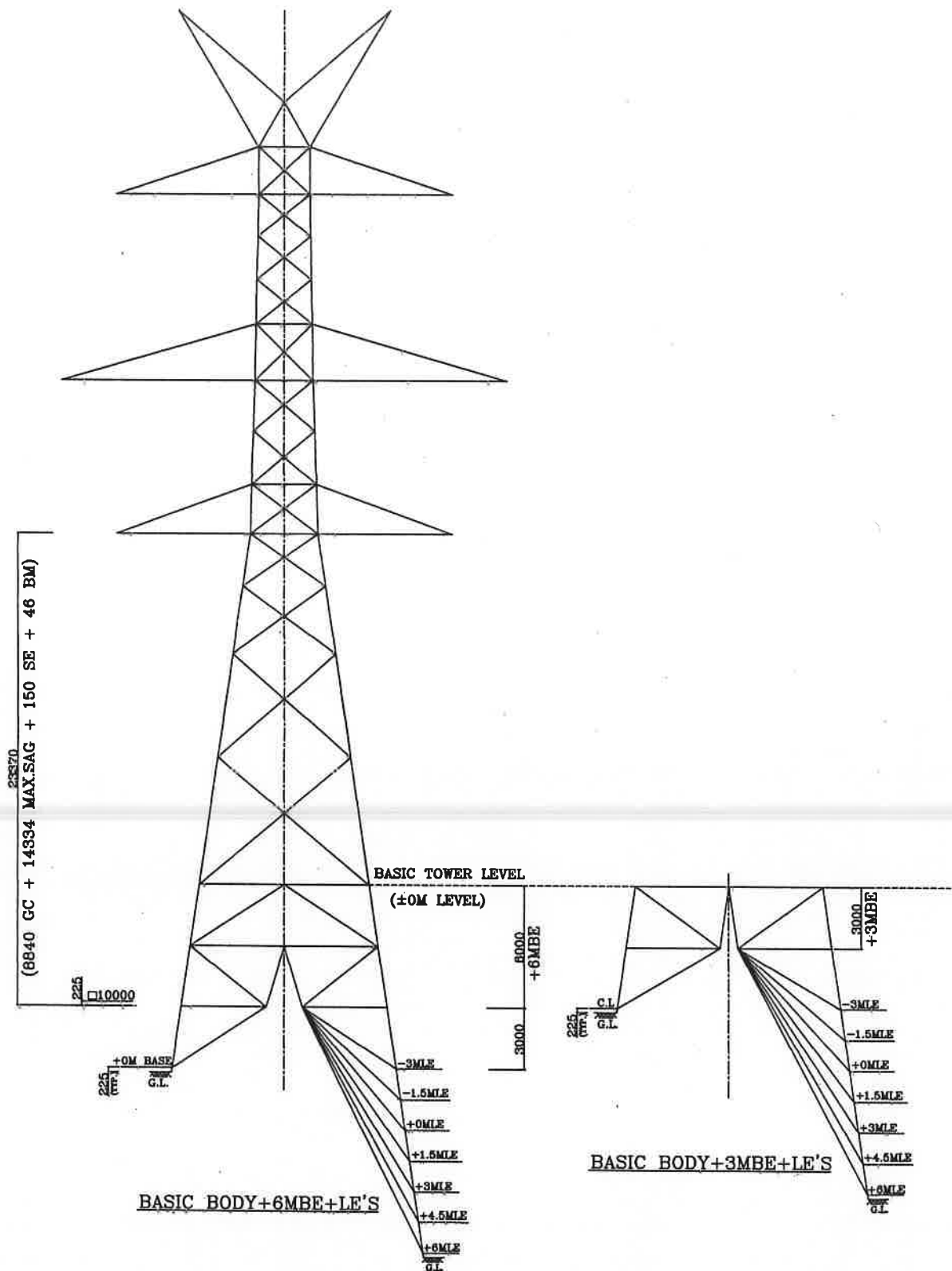
IV) TELECOM CROSSING :

- 1) Minimum Clearance for crossing Telecommunication Line is 4480(mm).

V) RIGHT OF WAY (ROW) :

- 1) Client will arrange for statutory clearance of Right of Way".
- 2) Minimum width of Right-of-way (ROW) is 48M.

ANNEXURE I



**GENERAL ARRANGEMENT DIAGRAM
FOR BODY & LEG EXTENSIONS**

NAME OF THE EXECUTING AGENCY :- JSW Energy Ltd.
NAME OF LINE :- Carrying out detailed survey for LILO from 400KV D/C transmission line Lahal to Rajera at tower no 8 to Pot Head yard for Evacuation of Power of JSW ENERGY (KUTEHR) LTD KUTEHR HEP 3X80 MW VIII. Machhetar Post Chanhota Teh. Bharmour Distt. Chamba.

Detailed Survey Report (EXT.8 - GANTRY POINT)

S. No.	TOWER No.	Type of Tower	Angle of Deviation	Span Length (m)	Sum of adjusted Span (m)	Cumulative change (m)	Reduced Level (m)	Wind Span (m)	Weight Span Hot (m)			Weight Span Cold (m)			Latitude	Longitude	Village Name	Crossing Details	LEG EXTENSION		
									Left	Right	Total	Left	Right	Total					1.5m	3.0m	6.0m
1	EXT.8	D+3	0	28°38' L		0.00	1735.806	25.33		-34.2	-34.2	166.0	-56.3	109.7	32°28'3.84"N	76°27'13.19"E	Khani Village				
					50.66																
2	T-1	D+6		36°46' R	247.78	50.66	1757.449	123.89	84.9	113.9	198.8	107.0	119.5	226.5	32°28'2.29"N	76°27'14.69"E	Khani Village			2	
					197.12																
3	T-2	D+6		9°13' L	702.93	247.78	1666.735	351.47	83.3	249.9	333.2	77.6	248.8	326.4	32°27'56.26"N	76°27'14.79"E	Khani Village				1
					505.81												1No. Proposed 33kV line Crossing, 2No. Road, 1No. River				
4	T-3	D+0		59°16' L	556.54	753.59	1496.209	279.27	255.9	55.0	310.9	267.0	65.6	322.6	32°27'39.73"N	76°27'17.86"E	Ulasna Village			1	1
					52.73																
5	T-4	D+0		58°53' L	97.46	806.32	1484.909	48.73	-2.2	22.4	20.2	-12.9	22.4	9.5	32°27'39.32"N	76°27'19.73"E	Ulasna Village				1
					44.73												1No. 33kV line Crossing, 1No. Road,				
6	T-5	D+0		15°53' L	80.78	851.05	1442.198	40.39	22.4	18.0	40.4	166.0	18.0	184.0	32°27'39.95"N	76°27'21.62"E	Ulasna Village			1	1
					36.05												1No. Road				
7	GANTRY				923.15	887.10	1420.000	461.58	18.0		18.0	18.0		18.0	32°27'40.92"N	76°27'22.01"E	Ulasna Village				
Total				887.10															1	3	4

Checked By Submitted By

STECH
H.O. Sakiani Traders Vm, Jager, Teh. Sadar
P.O. Pandori, Distt. Mandi (H.P.)
B.O. Thakur Baral Mousing Beal Colony
Sanjauli, Shimla (H.P.)

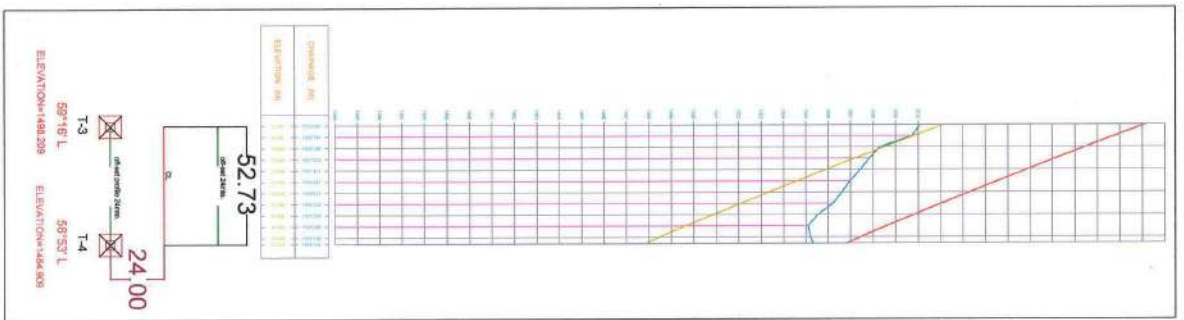
Checked By

Recommended By

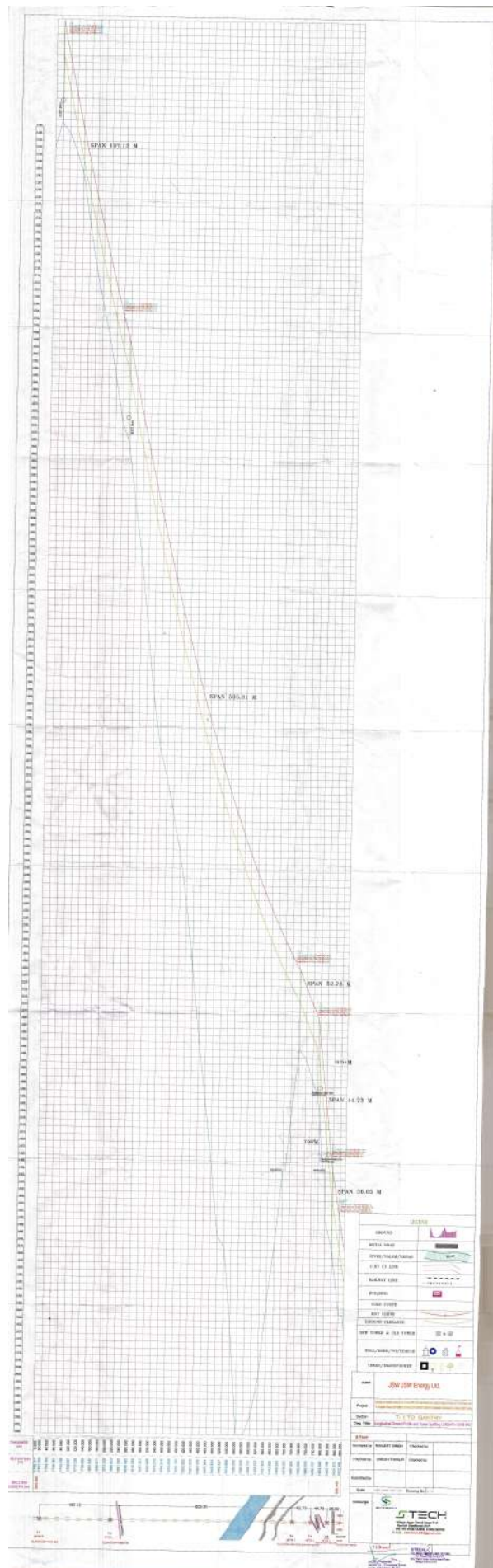
Approved By

Approved
AGM (Projects)
HPPTCL, Chamba Zone
Distt. Chamba (H.P.)

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



ITEM NO	DESCRIPTION
1	BRIDGE DECK
2	BRIDGE PILES/PIERS
3	BRIDGE GIRDERS
4	BRIDGE CURBS
5	BRIDGE FILLING
6	BRIDGE LIGHTS
7	BRIDGE PAINTING
8	BRIDGE MAINTENANCE
9	BRIDGE INSULATION
10	BRIDGE DRAINAGE

SW-20W Energy Ltd.

Project: **SW-20W Energy Ltd.**

Client: **SW-20W Energy Ltd.**

Design: **SW-20W Energy Ltd.**

Drawn: **SW-20W Energy Ltd.**

Checked: **SW-20W Energy Ltd.**

Approved: **SW-20W Energy Ltd.**

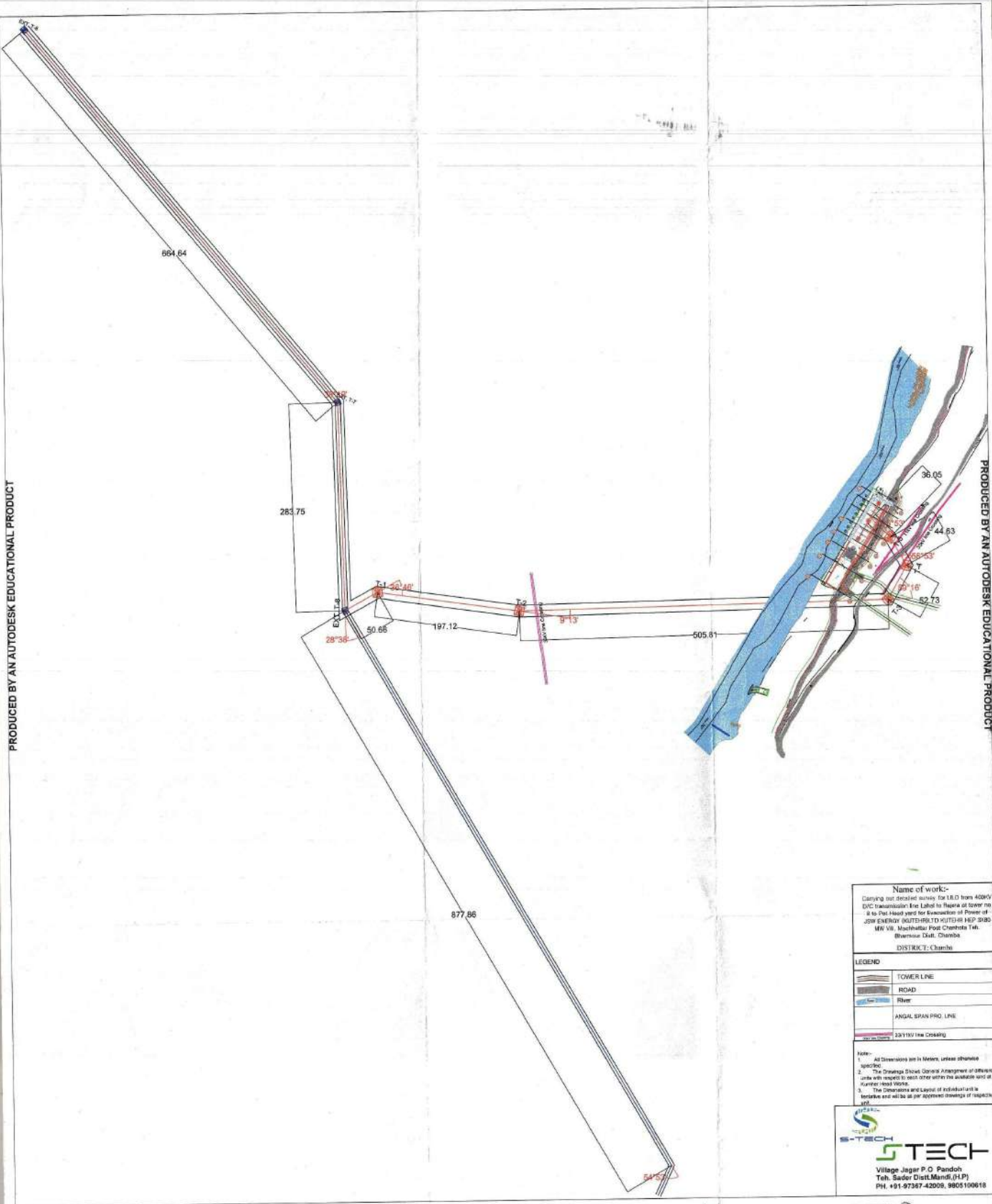
Date: **SW-20W Energy Ltd.**

Scale: **SW-20W Energy Ltd.**

Notes: **SW-20W Energy Ltd.**

SW-20W Energy Ltd.



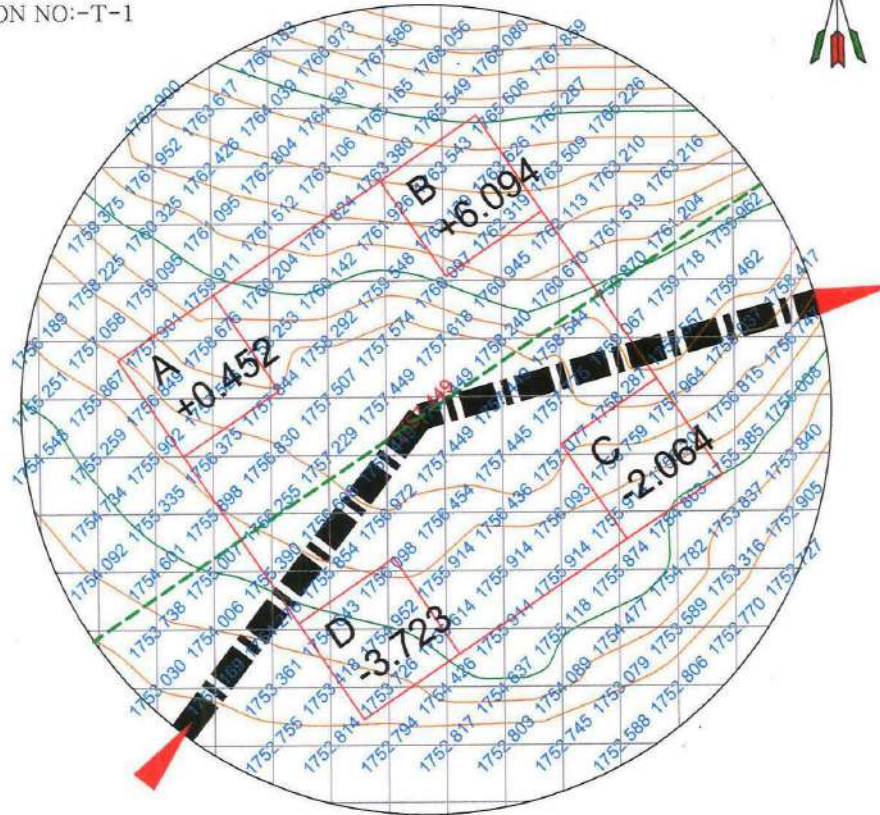


Name of Work:-Carrying out Detailed Survey of the Construction of LILO from
400 KV D/C Transmission line Lahal-Rajera.the Tower No. 8. Distt. Chamba
Himachal Pradesh.

T-1

CLIENT: O/O
CONTOUR GRID 2:0 MTR
SCALE: 1:200

LOCATION NO:-T-1



T-1 R.L. 1757.449 36°46' R

NOTES:-	DESCRIPTION:-	S-TECH														
1. All dimensions are in millimeterets	TOWER NO:- T-1	Prepared by	Checked By	Submitted by												
2. Working Space to be taken 0.5 mtr	TYPE OF TOWER:- D+6	RANJEET SINGH	UMESH THAKUR	S.TECH												
3. Dimensions are taken as per DFR Classification	CP POSITION:- 1757.449															
4. Grid Size Interval - 2m x 2m	FORMATION LEVEL:- 1757.449															
5. Reduced Level (RL) = 1757.449	BENCHING VOL; (cum):-	Checked by	Recommended by	Approved by												
6. Angle of Deviation = 36°46' R	LEG EXTENSION:-															
<table><tr><td>Cutting</td><td>Filling</td></tr><tr><td>A,B</td><td>C,D</td></tr></table>	Cutting	Filling	A,B	C,D	<table><tr><td>Pit-A</td><td>Pit-B</td><td>Pit-C</td><td>Pit-D</td></tr><tr><td></td><td></td><td>3.0M</td><td>3.0M</td></tr></table>	Pit-A	Pit-B	Pit-C	Pit-D			3.0M	3.0M	Assistant Engineer STECH Executive Engineer		
Cutting	Filling															
A,B	C,D															
Pit-A	Pit-B	Pit-C	Pit-D													
		3.0M	3.0M													

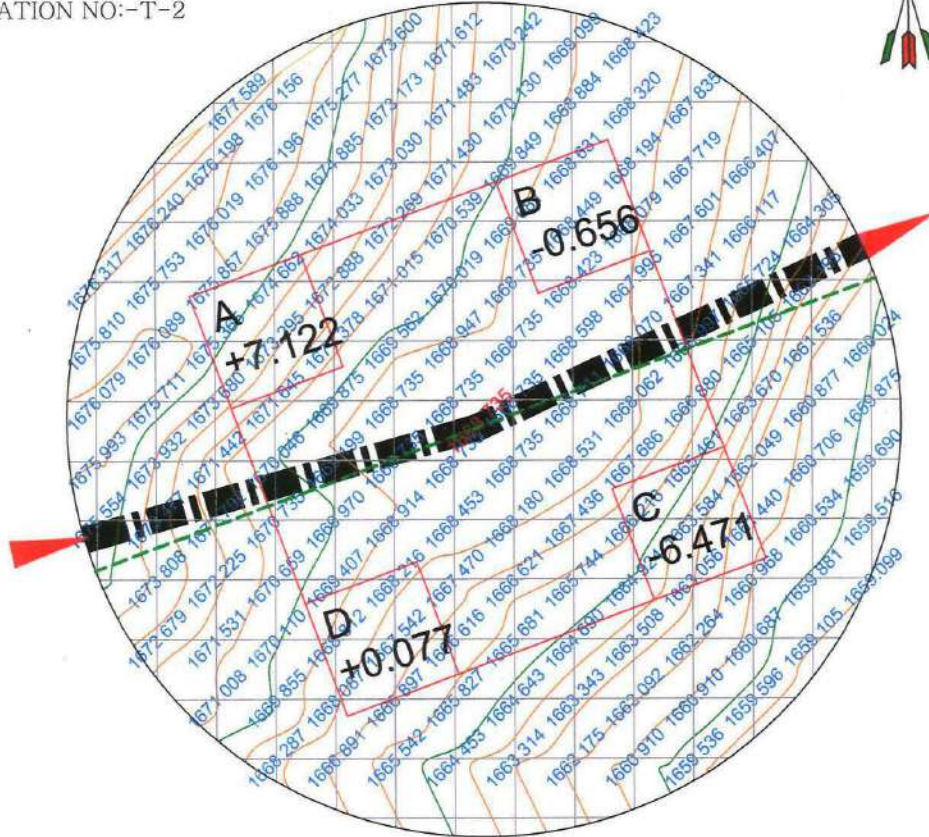
H.O. Sakiani Tribeni, Vill. Jager, Teh. Sadar
P.O. Pandoh Distt. Mandi (H.P.)
P.O. Shikhar Housing Board Colony
Sanjauli, Shimla (H.P.)

Name of Work:-Carrying out Detailed Survey of the Construction of LILO from 400 KV D/C Transmission line Lahal-Rajera.the Tower No. 8. Distt. Chamba Himachal Pradesh.

T-2

CLIENT: O/O
CONTOUR GRID 2:0 MTR
SCALE: 1:200

LOCATION NO:-T-2



T-2 R.L. 1668.735 9°13' L

NOTES:-	DESCRIPTION:-	S-TECH														
1. All dimensions are in millimeters	TOWER NO:- T-2	Prepared by	Checked By	Submitted by												
2. Working Space to be taken 0.5 mtr	TYPE OF TOWER:- D+6	RANJEET SINGH	UMESH THAKUR	S.TECH												
3. Dimensions are taken as per DFR Classification	CP POSITION:- 1668.735															
4. Grid Size Interval - 2m x 2m	FORMATION LEVEL:- 1668.735															
5. Reduced Level (RL) = 1668.735	BENCHING VOL: (cum):-	Checked by	Recomended by	Approved by												
6. Angle of Deviation = 9°13' L	LEG EXTENSION:-															
<table border="1"><tr><td>Cutting</td><td>Filling</td></tr><tr><td>A,D</td><td>B,C</td></tr></table>	Cutting	Filling	A,D	B,C	<table border="1"><tr><td>Pit-A</td><td>Pit-B</td><td>Pit-C</td><td>Pit-D</td></tr><tr><td></td><td></td><td>6.0M</td><td></td></tr></table>	Pit-A	Pit-B	Pit-C	Pit-D			6.0M		STECH Assistant Engineer Senior Engineer		
Cutting	Filling															
A,D	B,C															
Pit-A	Pit-B	Pit-C	Pit-D													
		6.0M														

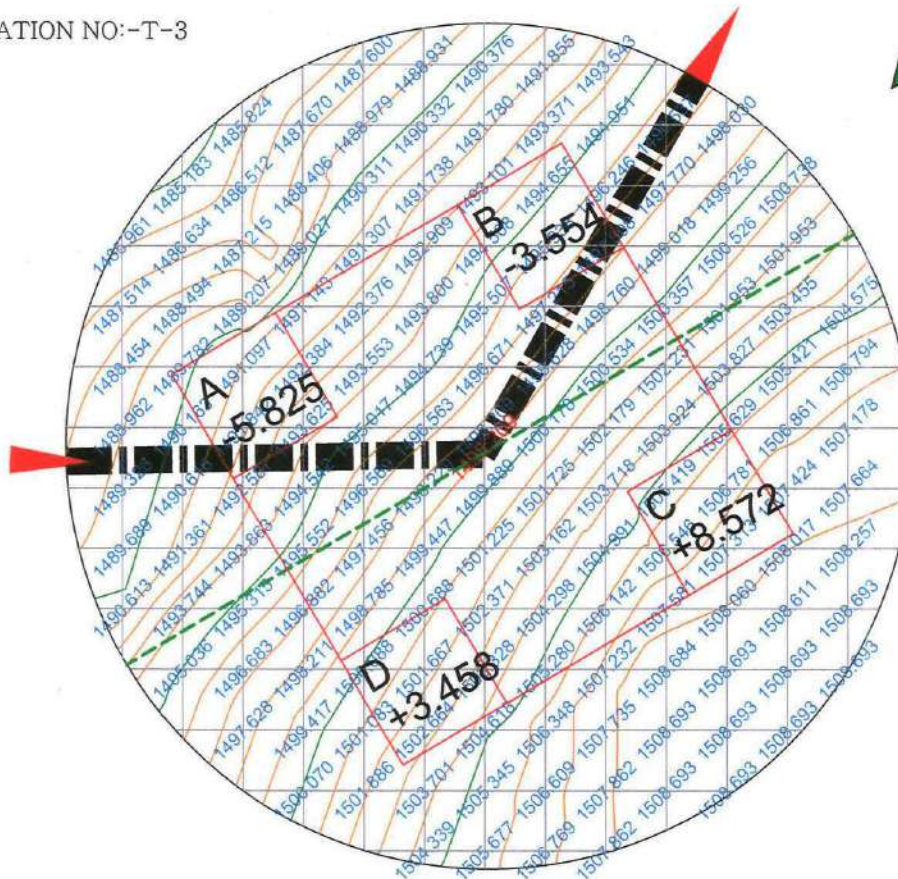
H.O. Sakiani Traders Vill Jager, Teh. Sagar
P.O. Pandeh Distt. Mandi (H.P.)
P.O. Thakur, Housing Board Colony
Sanjauli, Shimla (H.P.)

Name of Work:-Carrying out Detailed Survey of the Construction of LILO from 400 KV D/C Transmission line Lahal-Rajera.the Tower No. 8. Distt. Chamba Himachal Pradesh.

T-3

CLIENT: O/O
CONTOUR GRID 2:0 MTR
SCALE: 1:200

LOCATION NO:-T-3



T-3 R.L. 1498.209 59°16' L

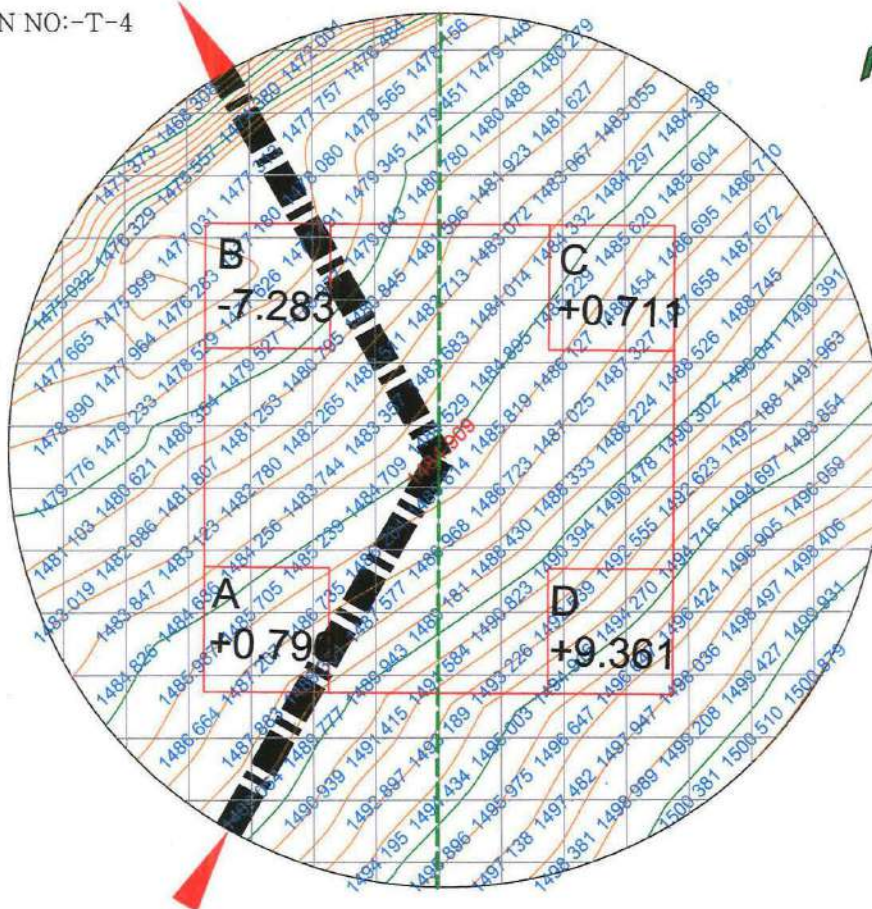
NOTES:-	DESCRIPTION:-	S-TECH														
1. All dimensions are in millimeterets	TOWER NO:- T-3	Prepared by	Checked By	Submitted by												
2. Working Space to be taken 0.5 mtr	TYPE OF TOWER:- D+0	RANJEET SINGH	UMESH THAKUR	S.TECH												
3. Dimensions are taken as per DFR Classification	CP POSITION:- 1498.209															
4. Grid Size Interval - 2m x 2m	FORMATION LEVEL:- 1498.209															
5. Reduced Level (RL) = 1498.209	BENCHING VOL: (cum):-	Checked by	Recommended by	Approved by												
6. Angle of Deviation = 59°16' L	LEG EXTENSION:-															
<table><tr><td>Cutting</td><td>Filling</td></tr><tr><td>C,D</td><td>A,B</td></tr></table>	Cutting	Filling	C,D	A,B	<table><tr><td>Pit-A</td><td>Pit-B</td><td>Pit-C</td><td>Pit-D</td></tr><tr><td>6.0M</td><td>3.0M</td><td></td><td></td></tr></table>	Pit-A	Pit-B	Pit-C	Pit-D	6.0M	3.0M			Assistant EngineerExecutive Engineer		
Cutting	Filling															
C,D	A,B															
Pit-A	Pit-B	Pit-C	Pit-D													
6.0M	3.0M															

Name of Work:-Carrying out Detailed Survey of the Construction of LILO from 400 KV D/C Transmission line Lahal-Rajera.the Tower No. 8. Distt. Chamba Himachal Pradesh.

T-4

CLIENT: O/O
CONTOUR GRID 2:0 MTR
SCALE: 1:200

LOCATION NO:-T-4



T-4 R.L. 1484.909 58°53' L

NOTES:-	DESCRIPTION:-	S-TECH										
1. All dimensions are in millimeterets	TOWER NO:- T-4	Prepared by	Checked By	Submitted by								
2. Working Space tobe taken 0.5 mtr	TYPE OF TOWER:- D+0	RANJBET SINGH	UMESH THAKUR	S.TECH								
3. Dimensions are taken as per DFR Classification	CP POSITION- 1484.909											
4. Grid Size Interval - 2m x 2m	FORMATION LEVEL:- 1484.909											
5. Reduced Level (RL) = 1484.909	BENCHING VOL; (cum):-	Checked by	Recomended by	Approved by								
6. Angle of Deviation = 58°53' L	LEG EXTENSION:- <table><tr><td>Pit-A</td><td>Pit-B</td><td>Pit-C</td><td>Pit-D</td></tr><tr><td></td><td>6.0M</td><td></td><td></td></tr></table>	Pit-A	Pit-B	Pit-C	Pit-D		6.0M					
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	6.0M											
<table><tr><td>Cutting</td><td>Filling</td></tr><tr><td>A,C,D</td><td>B</td></tr></table>	Cutting	Filling	A,C,D	B		Assistant Engineer	Executive Engineer					
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A,C,D	B											

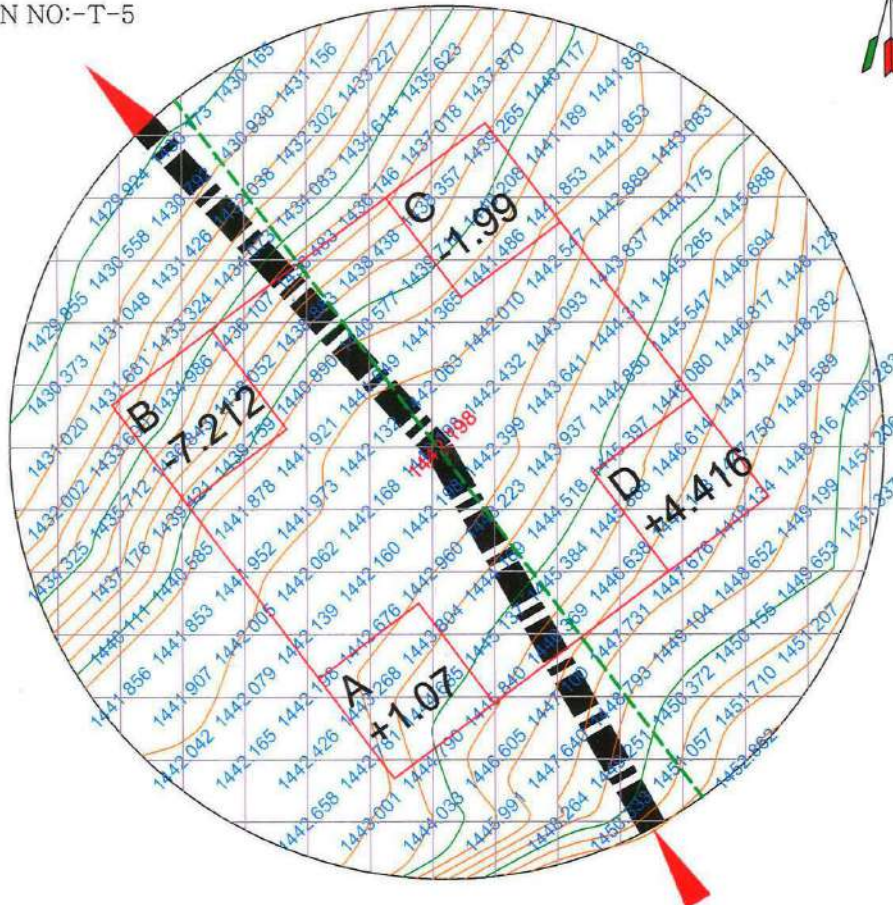
H.O. Saklani Trade's Vill. Jager, Teh. Sadar
P.O. Panch Distt. Mandi (H.P.)
Sanjauli, Shimla (H.P.)

Name of Work:-Carrying out Detailed Survey of the Construction of LILO from 400 KV D/C Transmission line Lahal-Rajera.the Tower No. 8. Distt. Chamba Himachal Pradesh.

T-5

CLIENT: O/O
CONTOUR GRID 2:0 MTR
SCALE: 1:200

LOCATION NO:-T-5



T-5 R.L. 1442.198 15°53' L

NOTES:-	DESCRIPTION:-	S-TECH													
1. All dimensions are in millimeterets	<u>TOWER NO:-</u> T-5	Prepared by	Checked By	Submitted by											
2. Working Space tobe taken 0.5 mtr	<u>TYPE OF TOWER:-</u> D+0	RANJEET SINGH	UMESH THAKUR	S.TECH											
3. Dimensions are taken as per DFR Classification	<u>CP POSITION:-</u> 1442.198														
4. Grid Size Interval - 2m x 2m	<u>FORMATION LEVEL:-</u> 1442.198	Checked by	Recomended by	Approved by											
5. Reduced Level (RL) = 1442.198	<u>BENCHING VOL: (cum):-</u>														
6. Angle of Deviation = 15°53' L	<u>LEG EXTENSION:-</u>														
<table border="1"><tr><td>Cutting</td><td>Filling</td></tr><tr><td>A,D</td><td>B,C</td></tr></table>	Cutting	Filling	A,D	B,C	<table border="1"><tr><td>Pit-A</td><td>Pit-B</td><td>Pit-C</td><td>Pit-D</td></tr><tr><td></td><td>6.0M</td><td>1.5M</td><td></td></tr></table>	Pit-A	Pit-B	Pit-C	Pit-D		6.0M	1.5M		Assistant Engineer	
Cutting	Filling														
A,D	B,C														
Pit-A	Pit-B	Pit-C	Pit-D												
	6.0M	1.5M													
		S.TECH													

H.O. Saktant, Traders Vill. Jager, Teh. Sadar
P.O. Pandey Diatt. Mandi (H.P.)
G.O. Nagar Niwas Housing Board Colony
Sanjauli, Shimla (H.P.)

KML JSW LALH 400KV FINAL.kml

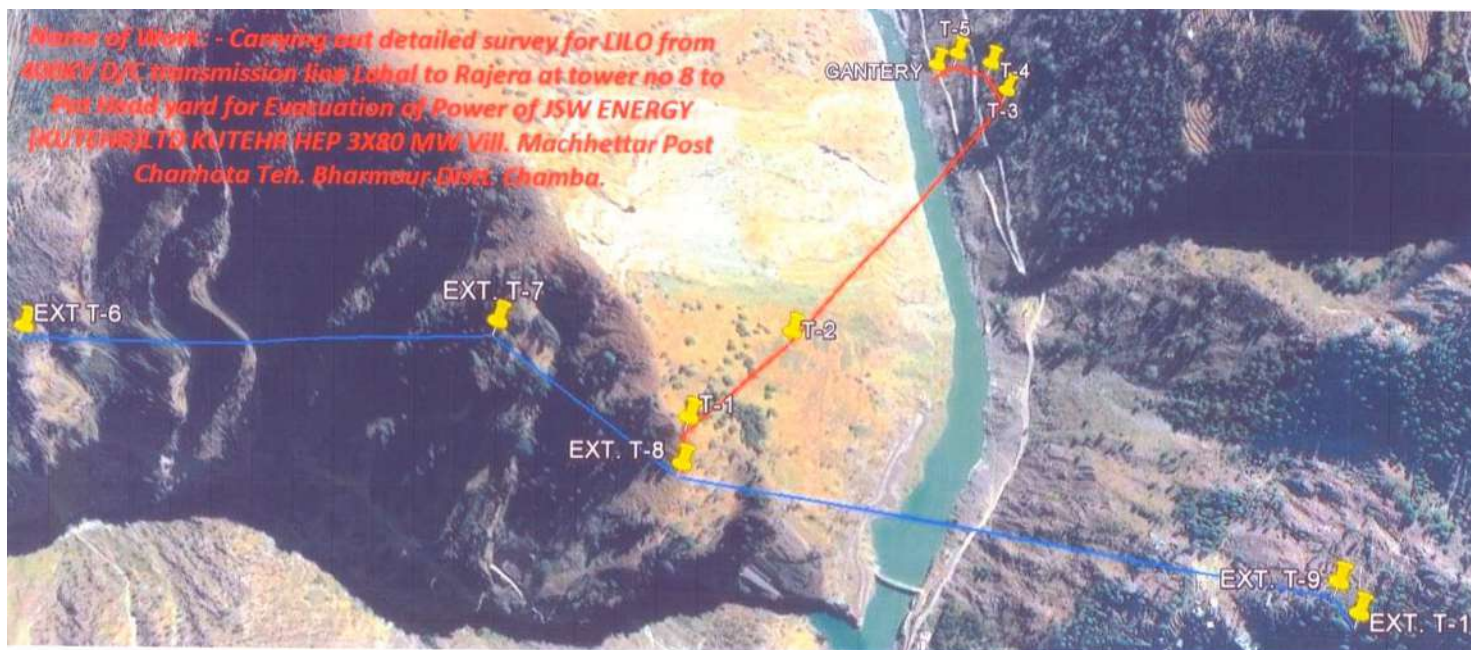
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Sr.No	Tower No.	Northing	Easting
1	EXT T-6	32°28'21.94"N	76°27'41.02"E
2	EXT. T-7	32°28'5.71"N	76°27'24.26"E
3	EXT. T-8	32°28'3.84"N	76°27'13.19"E
4	EXT.T-9	32°27'46.08"N	76°26'47.40"E
5	EXT.T-10	32°27'46.45"N	76°26'45.84"E
6	T-1	32°28'2.29"N	76°27'14.69"E
7	T-2	32°27'56.26"N	76°27'14.79"E
8	T-3	32°27'39.73"N	76°27'17.86"E
9	T-4	32°27'39.32"N	76°27'19.73"E
10	T-5	32°27'39.95"N	76°27'21.62"E
11	GANTRY	32°27'40.92"N	76°27'22.01"E

STECH

H.O. Saklan Traders Vill. Jager, Teh. Sadar
P.O. Panchet Distt. Mandi (H.P.)
B.O. Thakur Nivas Housing Board Colony
Sanjauli, Shimla (H.P.)

Name of Work: - Carrying out detailed survey for LJO from 400KV D/C transmission line Lahal to Rajera at tower no 8 to the Head yard for Evaluation of Power of JSW ENERGY (KUTERA) LTD KUTEHA HEP 3X80 MW Vill. Machhettar Post Chanhota Teh. Bharmour Distt. Chamba.



STECH

M.O. Sekhani Tehsildar-VIII, Jager, Teh. Sadar
P.O. Panch Datt, Mandi (H.P.)
B.O. Thakur Nivas Housing Board Colony
Sanjeuli, Shimla (H.P.)