

SANT BABA BHAG SINGH UNIVERSITY



Field Project: Department of Civil Engineering

Report on Survey Camp

Department of Civil Engineering conducted their Survey Camp for B.Tech. 2nd year students of Civil Engineering successfully from 21st June 2022 to 1st July 2022 at Naddi - Dharamshala, Himachal Pradesh.

This camp was aimed to groom civil engineering students with essential knowledge and exposure to the real work, and to encourage leadership and teamwork skills. This survey camp resulted in encouraging and supporting students, emerging as leaders in several areas of academic provision.

The ten days camp was divided into various surveying exercises- Fly leveling, Compass Surveying, Theodolite Surveying and Plane Table Surveying and Contouring. In the camp, all the students of Civil Engineering Department learnt all the technical aspect which is required in Surveying.

Surveying Camp Coordinator

Er. Susheel Kumar, Assistant Professor, Civil Engineering Department

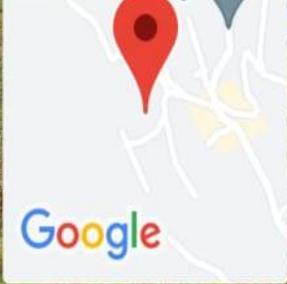
Er. Madhu Bala, Assistant Professor & Co-ordinator, Civil Engineering Department

Mr. Dalvir Singh Manj, Lab Technician, Civil Engineering Department



 GPS Map Camera

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Dharamshala, Himachal Pradesh, India

7832+2MV, Naddi, Dharamshala, Himachal Pradesh 176219, India

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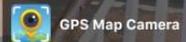






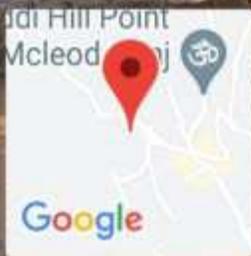


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Dharamshala, Himachal Pradesh, India

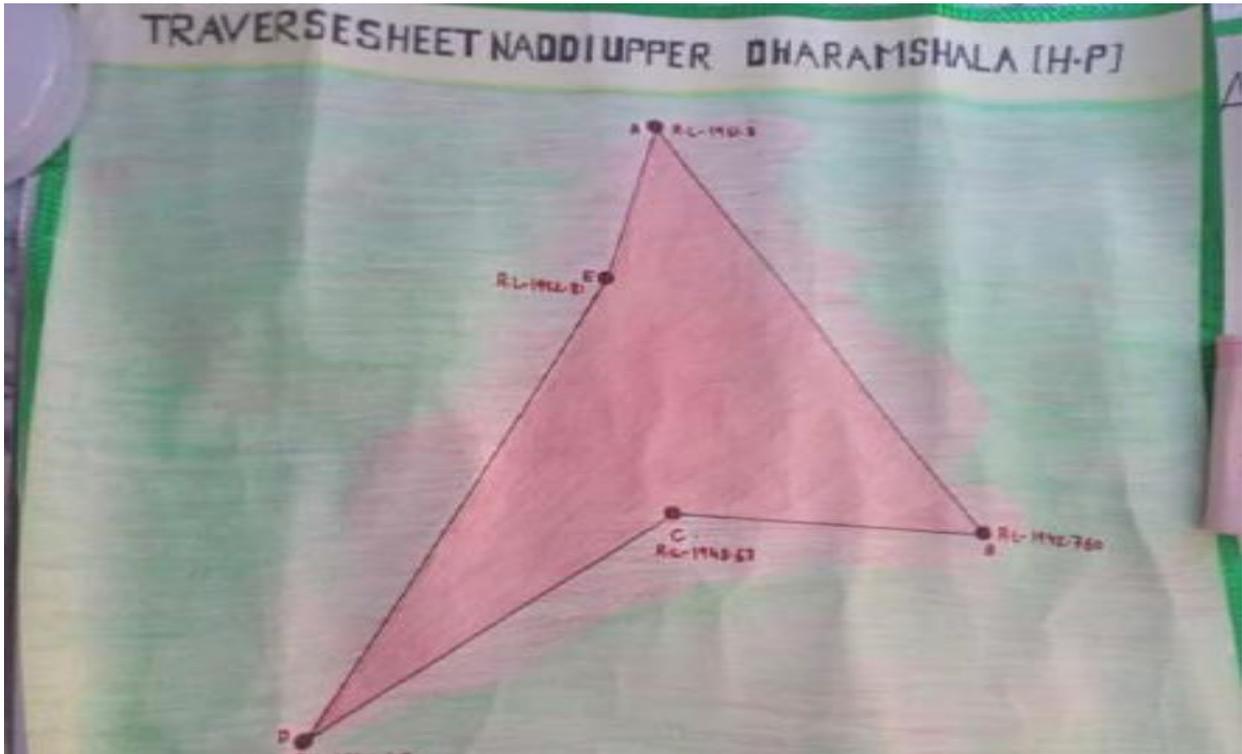
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 **GPS Map Camera**



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Lat 31.422436°
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SANT BABA BHAG SINGH UNIVERSITY

SURVEY CAMP

SITE PLAN

SUNSET VIEW POINT AT NADDI UPPER

DHARAMSHALA

(HIMACHAL PRADESH)

Our civil engineering department organized surveying camp at NADDI UPPER DHARAMSHALA {HIMACHAL PRADESH } from 21st JUNE 2022 to 1st JULY 2022 , where we learnt about the practical implementation of the concepts that we had learnt in surveying subject in 4th semester. We learnt about various types of surveying, types of instruments used, their working, adjustments etc. In this time period our teachers were present all the time with us to teach and guide us and clear out our all queries related to the work. With their valuable efforts we were able to complete our work perfectly within the time period.

SURVEYING

- Surveying is the art of determining the relative positions of points on, above or beneath the surface of earth by means of direct or indirect measurements of distance, direction or elevation.

Types of surveying

- Chain Surveying
- Compass surveying
- Plane table surveying
- Theodolite surveying

INSTRUMENTS USED IN SURVEYING

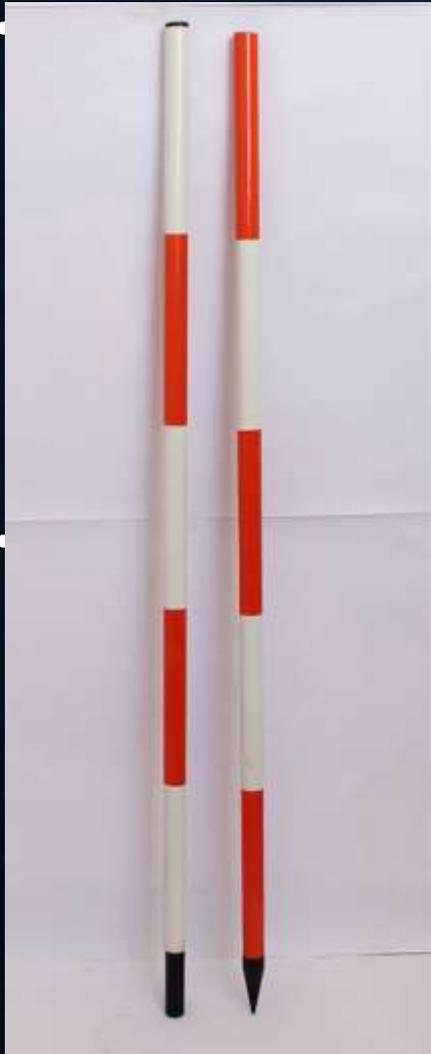
- Ranging rods
- Measuring Tapes
- Prismatic Compass
- Tripod Stand
- Plane Table
- Theodolite
- Dumpy level
- Staff

CHAIN SURVEYING

- It is the method of surveying in which the area or the closed traverse is divided into network of triangles and the sides of the various triangles are measured directly in the field with chain or tape and no angular measurement are taken.
- Firstly we took five points and fixed ranging rods on those points in such a way that they form a close traverse. These points are simply termed as stations, which are represented by A,B,C,D,E. Then we measure the distance between the stations i.e. distance AB,BC,CD,DE,EA with the help of measuring tape.

INSTRUMENTS USED IN CHAIN SURVEYING

- **RANGING ROD**



MEASURING TAPES

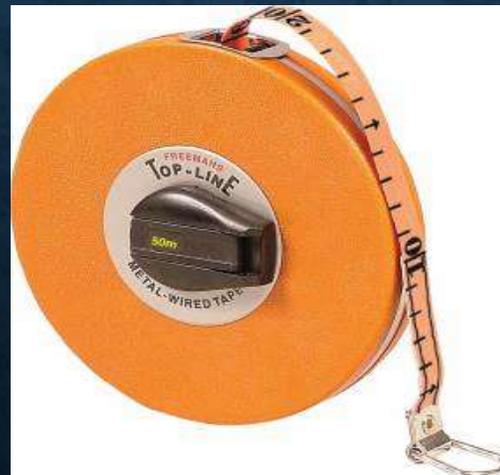
100M



30M



50M



DISTANCE

- $AB = 69.90\text{m}$
- $BC = 35.83\text{m}$
- $CD = 47.76\text{m}$
- $DE = 69.26\text{m}$
- $EA = 23.70\text{m}$

- After that, we measured the distance AC and CE and hence divided the traverse into a network of triangles. Then we calculated the area of triangles ABC, ACE and CDE by Heron's formulae.
- Thus the area of the traverse is obtained by adding the area of triangles ABC, ACE and CDE.
- Area of the traverse =

COMPASS SURVEYING

- **Compass surveying** is a type of surveying in which the directions of surveying lines are determined with the help of magnetic compass.
- **Compass** : A compass is an instrument which consists of a magnetic needle, a graduated circle and a line of sight and is used for measuring bearings.
- **Bearing** : It is defined as the horizontal angle which a line makes with some reference direction known as meridian.

INSTRUMENTS USED IN COMPASS SURVEYING

- **PRISMATIC COMPASS**



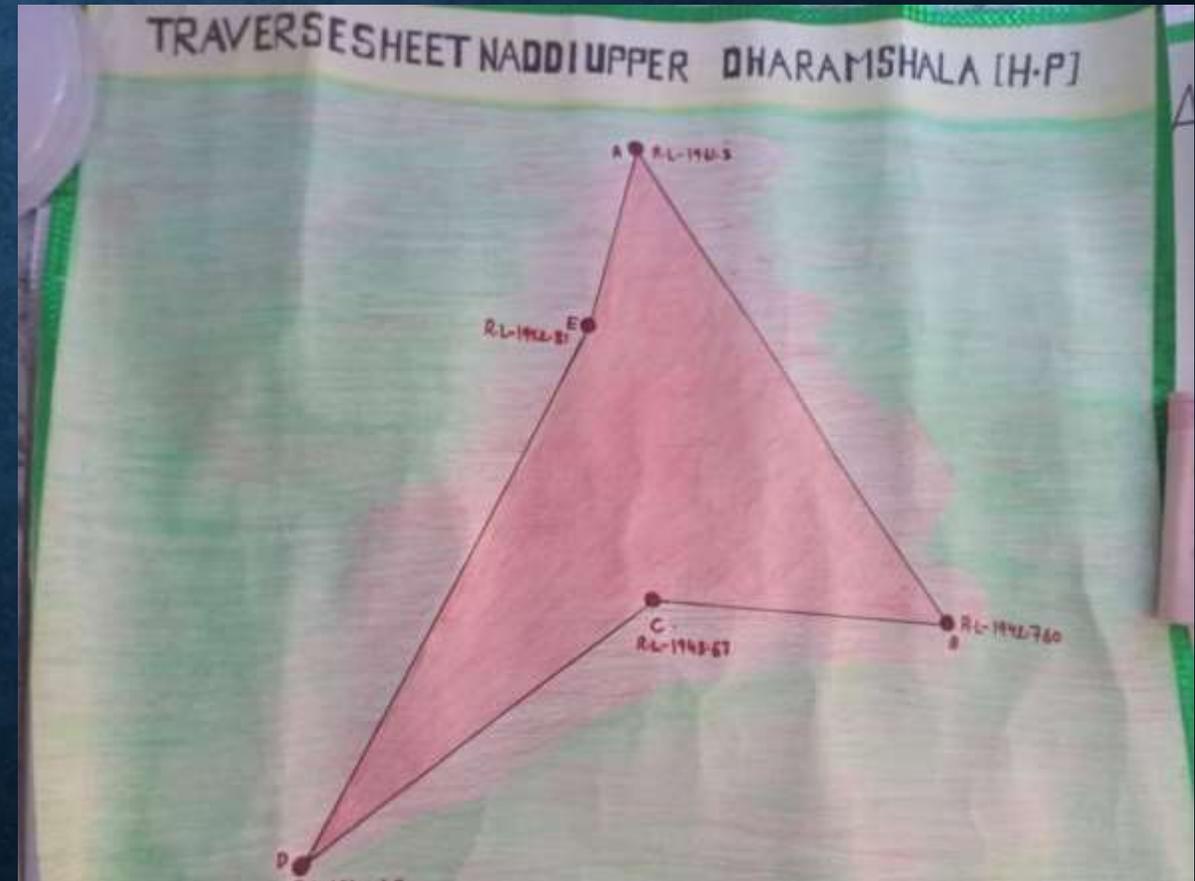
MEASUREMENTS OF ANGLES

The working of compass involves three steps:

- 1) ***Centering*** : The center of compass should be vertically above the station on the ground, which is known as centering. It is done with the help of a plumb-bob.
- 2) ***Levelling*** : The compass is then levelled so that the graduated ring swings quite freely.
- 3) ***Observing the bearing*** : After levelling the compass box is rotated until the ranging rod at the forward station coincides with the line of sight of compass. Then the reading is observed at which the hair at the line of sight intersects the graduated circle.

- For measurement of angles firstly we started from station A . We placed the tripod stand on station A and placed the compass over tripod stand. Then the compass is centered and levelled. After that we rotated the compass box sighting towards station B in such a way that the line of sight coincides with the ranging rod on station B. Then the reading observed is marked as fore bearing of line AB. Then sighting towards station E we got the back bearing of line AE.
- After that we shifted towards the station B. Then sighting towards station C we got the fore bearing of line BC and sighting towards station A we got back bearing of line AB.

- Similarly proceeding towards further stations we got the fore and back bearings of the lines AB, BC, CD, DE and EA. Then we calculated the interior angles from the bearings and performed the necessary check to verify the angles.
- Angle A =
- Angle B =
- Angle C =
- Angle D =
- Angle E =



PLANE TABLE SURVEYING

- Plane table surveying is a graphical method of survey in which the field observations and plotting are done simultaneously. The field observations are taken and side by side plotted on the sheet fixed upon the table and a map of the area is obtained. It is one of the most rapid methods of surveying. It is particularly suitable for filling in details in hilly areas and in magnetic areas where chain and compass survey are not suitable.

INSTRUMENTS USED IN PLANE TABLE SURVEYING

- Plane table
- Tripod stand
- Alidade
- Trough compass
- U- Frame
- Spirit level
- Beside these the other accessories are drawing sheet, pins and drawing instruments like pencil, rubber, scale etc.



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McLeod
Google

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Lat 32.252756°

Long 76.301416°

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GPS Map Camera

SETTING UP THE PLANE TABLE

The setting of the plane table involves three operations:

- 1) ***LEVELLING*** : The plane table is placed upon the tripod stand over the station and is levelled with the help of a spirit level. The spirit level is placed in two positions at right angles to each other. The bubble being in the center indicates that the table is properly levelled.
- 2) ***CENTERING*** : The point representing any station on the paper should be vertically above that particular station on ground. This is known as centering. It is done with the help of U-Frame or plumbing fork.
- 3) ***ORIENTATION*** : The table is said to be oriented when it is placed in such a way that all the lines on the paper are parallel to the corresponding lines on the ground. It is done by back sighting.

- To draw the traverse by plane table surveying firstly we started from station A. We placed the drawing board over the tripod stand on the station A and then levelled and centered the table. After that we fixed the drawing sheet on the table and marked the station on sheet by a pin. Then we marked north direction on the sheet and selected a scale of 1cm:2m. After that we placed the alidade on the table and sighted the ranging rod at station B. The hair at the site vane of the alidade should coincide with the ranging rod. Then we marked the line AB and mark the point B by converting the distance AB into selected scale. Thus we got the position of station B on the sheet.

- Then we shifted the table to station B and oriented the table by placing the alidade along BA in such a way that the line of sight struck station A. Then we centered and levelled the table. After that we placed the alidade in such a way that the line of sight strikes ranging rod at station C and converted the distance BC according to the selected scale and marked the point C on the sheet. We proceeded at other stations similarly and plotted the other stations. In this way we obtained the traverse.

LEVELLING

- Levelling is the art of finding the relative heights and depths of the objects on the surface of the earth . It deals with the measurements in vertical plane.

Levelling is of prime importance to an engineer for the purposes of planning , designing and executing the various engineering projects such as roads, railways , canals , dams, water supply and sanitary schemes etc.

INSTRUMENTS USED IN LEVELLING

- Dumpy Level
- Staff



DETERMINATION OF REDUCED LEVELS

- **REDUCED LEVEL:** Reduced level of any point is the height or depth of that point above or below any datum
- **DATUM SURFACE :** It is an imaginary level surface or line from which vertical distance of the points above or below this line are measured.

In levelling , we determined the reduced level of the stations of the traverse. For this we started from a point away from the site whose Reduced level was known, which we took as Bench mark. We adopted height of instrument method for determination of reduced levels. We placed the instrument on the Bench mark and performed the temporary adjustments i.e. centering , levelling and focussing.

- Levelling is done with the help of foot screws and then the eye-piece and object glass are focused to have a clear and sharp image.
- Firstly we placed the staff on a point and took a back sight reading.
- Then we calculated the height of instrument by adding the back sight reading and reduced level of the Bench mark. The intermediate sight and fore sight readings were taken by placing the staff on the respective points and their reduced level were determined by subtracting their readings from the height of instrument. After that we shifted the instrument to another point which is known as change point.
- At change point the first reading is taken as back sight reading on the point where we took last reading or fore sight reading. The height of instrument at this point changes which is determined by adding the reduced level of the change point to the back sight reading. Then we took successive readings and determined their respective reduced levels.

- Following the same steps we proceeded the further work and took the last reading on station A. Hence we obtained the reduce level of station A which was necessary for the determination of reduced level of other stations.
- Then we shifted from A to B, B to C, C to D, D to E and E to A. In this way we obtained reduce level of all the stations.
- RL of A = 1961.875
- RL of B = 1942.760
- RL of C = 1943.67
- RL of D = 1940.47
- RL of E = 1952.81

INSTRUMENTS USED IN THEODOLITE SURVEYING



Dharamshala, Himachal Pradesh, India
7832+2MV, Naddi, Dharamshala, Himachal Pradesh 176219, India
Lat 32.252698°
Long 76.30162°
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TEMPORARY ADJUSTMENTS OF THEODOLITE

- The temporary adjustments of the theodolite involve the following steps:

1). **CENTERING**: The instrument is placed on the tripod stand over the required station. Then the theodolite is placed exactly above the station which is known as centering. It is done with the help of a plumb bob.

2). **LEVELLING**: Levelling is done by placing the horizontal bubble tube parallel to any two of the foot screws and then rotating the foot screw in opposite direction to bring the bubble at center. After the bubble has been placed into the center, it is then placed to the perpendicular of its initial position then the third foot screw is rotated at either direction to bring the bubble at center.

3). **FOCUSING**: The eye-piece of the theodolite is focused to make the crosshairs in diaphragm clear and distinct. The objective of the theodolite is focused to bring the image of object in the plan of cross hairs.

MEASUREMENTS OF ANGLES

- Firstly we placed the digital theodolite on tripod stand over the station A and performed the temporary adjustments. To measure angle A we sighted the ranging rod at Station B and set the reading at ZERO. After that we turned the theodolite towards line AE and sighted the station E. The reading at the scale was noted which gave the value of interior angle A. Thus following the same steps we proceeded towards further stations and determined all the interior angles. Then we compared the angles calculated by compass surveying with the angles calculated by theodolite surveying. We found them equal and hence verified the angles.

Detail of actual expenditure likely to be incurred for three faculty members and one Lab Technician for their stay at Naddi from 21.06.2022 to 01.07.2022 which is to be paid by the university is as under please:

| S.NO | Faculty Member | Rs. Per day | No. Of days | Total |
|------|---------------------|-------------|-------------|--------------|
| 1 | Er. Susheel Kumar | 1000 | 11 | 11000 |
| 2 | Er. Madhu Bala | 1000 | 11 | 11000 |
| 3 | Mr. Dalvir Singh | 1000 | 7 | 7000 |
| 4 | Dr. Sandeep Chandel | 1000 | 5 | 5000 |
| | | | | 34000 |

List Of students for Survey Camp :

| S.No. | Roll No. | Name | Rs. Per day | No. of Days | Total(Paid by Students) |
|-------|----------|-----------------|-------------|-------------|-------------------------|
| 1 | 20007001 | Vishal Kumar | 1000 | 11 | 11000 |
| 2 | 20007002 | Ankita | 1000 | 11 | 11000 |
| 3 | 20007004 | Jaskaran | 1000 | 11 | 11000 |
| 4 | 20007005 | Priyanka Mattu | 1000 | 11 | 11000 |
| 5 | 20007007 | Harshdeep Singh | 1000 | 11 | 11000 |
| 6 | 20007011 | Varsha Sen | 1000 | 11 | 11000 |
| 7 | 21109001 | Shiv Dev Singh | 1000 | 11 | 11000 |
| 8 | 21109002 | Prashant Sandhu | 1000 | 11 | 11000 |
| 9 | 21109003 | Akhil Joria | 1000 | 11 | 11000 |
| 10 | 21109005 | Harman Singh | 1000 | 11 | 11000 |
| 11 | 21109006 | Dalvir Singh | 1000 | 11 | 11000 |
| 12 | 21109007 | Sahil Thakur | 1000 | 11 | 11000 |
| 13 | 21109008 | Aryan Gautam | 1000 | 11 | 11000 |
| 14 | 21109010 | Qauseen Quyum | 1000 | 11 | 11000 |
| 15 | 21109011 | Tawheeda Mehraj | 1000 | 11 | 11000 |

Thanks & Regards,

S. Chandel
 Dr. Sandeep Kumar Chandel
 CoD, Deptt. CE
 UIET, SBBSU

Forward to Respected Dean UIET
 Depty

Forwarded to respected Dean UIET for approval of the Survey Camp as this is part of curriculum. for *Sumant* (as 27/6/2022) (Dy. Dean UIET)

forwarded to Dean (A).

All the expenses will be beared by the students as they did in year M 2018 (Attached). No amount will be paid by the University. However, Survey camp may be allowed from 21-6-22 to 01-7-22.

Recommended for consideration as it is part of
Student's curriculum.

Arun
31/5/22

- Honible Vice Chancellor

Survey Camp is an integral part of Curriculum of
B. Tech civil engineering. We need transport service for
18 to 20 members on 21/06/2022 (Departure from University)
and 01/07/2022 (Return to University) along with applicable
(tax) entry charges, toll taxes etc. as per HP government
Rules. No other financial Requirement is required from
the University.

→ Survey Camp is pre-requisite for degree completion.
→ Apropos to discussion with Manager Facilities
(Capt. Sir) and HOD Civil Engg, transport
facility for B.Tech CE students has been
provided by University but the taxes are
high in H.P. for the transport services.
Therefore, for dropping and picking up
the students and escorting staff, the charges
applicable (as per date of travelling) and
transport services may kindly be considered,
please.

adhy
02/06/2022

Honible VC Sir, please.

Hill area bus to be
arranged from outside
preferably of HPRTC

1. Please intimate
To and From (Two
Bus Fare of Mini Bus
32 seater and arrange vehicle,
Bicycle
2 seater 5/6/22

Respected Secretary Sir,
Forwarded for the kind consideration and
approval of the Management, please
Secretary, SBBSMCS
Vice Chancellor

13100 + 1000
+ 30000 = 44000/-
40125000 = 13000/-
500000000
1000/-

Manager Facilities

132 buses not available instead 40000 as per schedule
Bus Con not David Moshan as per limit
3 HP Tax for Seat Conbakanur as per HP Border.
02/6/22

286/2/6/22

Managa facilities

903/13/1/22

1/2



Sant Baba Bhag Singh UNIVERSITY

Village: Khiala; PO: Pashiana, Distt: Jalandhar 144030

Website: www.sbbsuniversity.ac.in Phone: 0181-2711163 Fax: 0181-2711555

Ref. No: SBBSU/CIVIL/111/2022

Date: 27/05/2022

To
The Vice Chancellor
SBBSU, Khiala (Jalandhar)

Subject: Regarding the Permission for the Survey Camp of B.Tech Civil Engineering, 4th semester students at SAHIMA HOTEL, Naddi (Upper Dharamshala) H.P during the period of 21 June 2022 to 1 July 2022.

Respected Sir,

I am writing this letter to request permission for the Survey Camp of B.Tech Civil Engineering, 4th semester from 21 June 2022 to 1 July 2022 at SAHIMA HOTEL, Naddi (Dharamshala). Faculty members will accompany the students for the conduct of **Survey Camp** and we require the bus facility for students and faculty from university on 21-6-2022 at 10:00AM to reach the Naddi (Sahima Hotel) and also in return from survey camp to university on 1 July 2022 (9:00AM) at Naddi, sahima hotel.

Please provide university transport for the survey camp and also includes the bus tax charges to the survey camp.

The detail of the faculty members to accompany the students and list of students is enclosed.

| S.NO | Name | Designation | REMARK |
|------|---------------------|---|-------------------------|
| 1 | Er. Susheel Kumar | A.P in Civil Engineering Department | Incharge of survey Camp |
| 2 | Er. Madhu Bala | A.P in Civil Engineering Department | Member |
| 3 | Mr. Dalvir Singh | Lab Tech. in Civil Engineering Department | Member |
| 4 | Dr. sandeep Chandel | CoD in Civil Engineering Department | Member |

With reference to the memo by VC regarding hired bus, The Transport officer has stated that the hired bus of HRTC will be very costly rather than an other bus. Therefore he recommended our bus having 40 seats capacity which will cost about ₹45000/- instead of ₹60,70 thousand of HRTC. Hence our university bus is recommended.

30000
9/6/22

OK
Vice President

S/S
Chancellor