

Department of Civil Engineering
Dr B R Ambedkar
National Institute of Technology Jalandhar – 144008, Punjab

Five Days Online Short-Term Course
Recent Advances in Transportation Geotechnics: Industry Perspective (RATG-IP)
24th to 28th June, 2024

Program Completion Report

Day 01, Inaugural Session

Date 24/06/2024

STC_RATG-IP_Day-1

01:07:22

IGS Jalandhar Chapter
Inauguration
Five Days Online Short-Term Course
Recent Advances in Transportation Geotechnics: Industry Perspective (RATG-IP)
24th to 28th June, 2024

Patron
Prof. B. K. Kanaujia
Director, NIT Jalandhar

Guest of Honor
Dr. Anil Joseph
President IGS
MD, Geostrutturals

Guest of Honor
Dr. A P Singh
Hon. Sec. IGS, Director-
Explore Engg. Consult.

Guest of Honor
Prof. R K Srivastava
Chief Advisor, RSVS

Convener of STC
Prof. A K Agnihotri
Chairman, IGS
Jalandhar Chapter

Convener of STC
Dr. H S Chore
Secretary IGS
Jalandhar Chapter

Department of Civil Engineering
Dr B R Ambedkar
National Institute of Technology Jalandhar – 144008, Punjab

Dr. Vinil K. Gade
Dr. K. Jadda
Dr. Roop Kishor
Dr. Rupali S
Coordinators of STC

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ENG 10:44

Day 01, Session 01

Date 24/06/2024

STC_RATG-IP_Day-1

01:29:33

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Participants

Type a name

Share invite

Presenters (4)

- DK Dr Roop Kishor
- Dr Koteswaraao Jadda
- DG Dr Vinil Kumar Gade Organizer
- PS Prof. R K Srivastava (Unverified)

Attendees (71)

- MG Meeting guest (Unverified)
- A Abhishek (Unverified)
- AK Amruta Kulkarni (Unverified)

Conventional and Advanced Geotechnical Investigation

by
Prof. R.K. Srivastava (Retd.)
MNNIT Allahabad, Prayagraj
Chief advisor, RSVS Consulting and research
Pvt. Ltd. Prayagraj

Dr. V.P. Singh, Associate Professor
MNNIT Allahabad, Prayagraj

at STC: Recent Advances in Transportation Geotechnics: Industry Perspective (RATG-IP), NIT Jalandhar

Prof. R. K. Srivastava (Unverified)

ENG IN 11:06
24-06-2024

STC_RATG-IP_Day-1

01:45:54

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Advance Investigation & Testing

- MASW- Multi-Channel Analysis of surface Waves
- NDT- Non Destructive Testing
- PIT- Pile Integrity test
- ERT- Electrical Resistivity Test
- CPT- Cone Penetration Test
- CH- Cross-Hole Test

Prof. R K Srivastava (Unverified)

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Prof. R K Srivastava (Unverified)

Dr Vinil Ku... View all

DK

ENG IN 11:22 24-06-2024

Day 01, Session-2

STC_RATG-IP_Day-1

06:26:43

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DC R DK DK SS RP PS DG

Participants

Type a name

Share invite

AC Avani Chopra (External)

BM Bhanuchtra M (Unverified)

DR Deepak Rana (Unverified)

DK Deepanshu Katoch (Unverified)

DK Dr Abhinay Kumar (Unverified)

DD Dr Anghuman Das (Unverified)

DK Dr Farhan Khan (Unverified)

DS Dr Manish V Shah (Unverified)

DV Dr Sanjay Verma (Unverified)

DP Dr. A C S V PRASA... (Unverified)

DK Dr. Anil Kumar (Unverified)

DC Dr. Jagdish Chand (Unverified)

DT Dr. Kavita Tand... (Unverified) On hold

DN Dr. Maheboobab... (Unverified)

See more

Others invited (1)

Dr S Rupali

ENG IN 18:03 24-06-2024

Analysis of Test Results

Effect of Stabilizer Dosage and Curing Time on Resilient Modulus

Resilient Modulus, M_R (MPa)

Cement Dosage (%)

Curing Period

Control Soil $M_R = 47$ MPa

6 hours 14 days
3 days 28 days
7 days

Increase in M_R with increase in curing period

Increase in M_R with increase in cement dosage

All soils and stabilizers showed an increase in $M_R \rightarrow$ with an increase in dosage and curing period

SP Soil (M_R at $\sigma_d = 41.4$ kPa & $\sigma_c = 13.8$ kPa)

44

STC_RATG-IP_Day-1

06:39:56

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DC Dr. Jagdish... R Dr. Kotesw... REVATHI (L... Dr. Anil Ku... DK Dr. Farhan... DK Siddharth... RP Rakul Pras... PS Prakash V... DG

Major Findings

- An increase in resilient moduli values was observed after treatment:
 - Cement treatment → Significant increase
 - Lime treatment → Moderate increase
 - Polymer treatment → Slight increase or decrease or almost same → depends on soil types
 - Stabilizer dosage and curing time influenced the resilient moduli results
 - Three-parameter universal model showed excellent fit for all untreated and treated soils
- Compaction energy does have an impact on resilient modulus
- Model parameters can be used in flexible pavement design
- Finite element-based software is needed to better implement model parameters

50

Kumar, Prince (External)

Attendees (50) Mute all

- Abhishek (Unverified)
- AA Aditya Ahirwar (Unverified)
- AC Anuj Chandiwala (Unverified)
- AK anurag khadse (Unverified)
- AK arun kumar (Unverified)
- AR Aswathy R (Unverified)
- BM Bhanuchitra M (Unverified)
- DR Deepak Rana (Unverified)
- DK Deepanshu Katoch (Unverified)
- DK Dr Abhinay Kumar (Unverified)
- DD Dr Angshuman Das (Unverified)
- DK Dr Farhan Khan (Unverified)
- DS Dr Manish V Shah (Unverified)
- DV Dr Sanjay Verma L. (Unverified)
- DP Dr. A C S V PRASA... (Unverified)
- DK Dr. Anil Kumar (Unverified)
- DC Dr. Jagdish Chand (Unverified)
- DT Dr. Kavita Tandon (Unverified)

16:16 24-06-2024

Day 02, Session-03

Date 25/06/2024

Meeting | Microsoft Teams

Stay in the know. Turn on desktop notifications.

03:30

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Pyhäsalmi Mined PSP, Finland

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LOWER RESERVOIR TUNNELS
ACCESS TUNNEL POWER GAVEN
ACCESS TUNNEL ROCK TRAP
CENTRAL AERATION TUNNEL
EASTERN AERATION TUNNEL
ENERGY TUNNEL
POWERHOUSE (1 + 2) TUNNEL
OPTIONAL ACCESS TUNNEL FOR EXPANSION
TEMPORARY ACCESS TUNNEL FOR CAVERN EXCAVATION
SURGE TANK
PRESSURE SHAFT
TEMPORARY ACCESS TUNNEL FOR CONSTRUCTION OF SHAFT
ACCESS TUNNEL FOR CONSTRUCTION AND TO ROCK TRAP

WEATHERED ROCK
WEATHERED ROCK
UPPER INTAKE
GATE BUILDING
UPPER RESERVOIR
HEADRACE
intake
new vertical pressure shaft
operation shaft
Tinto shaft (conveyance and lift shaft)
lower reservoir in 1400 m depth
moat-like cavern ~200 mW depth about 150m

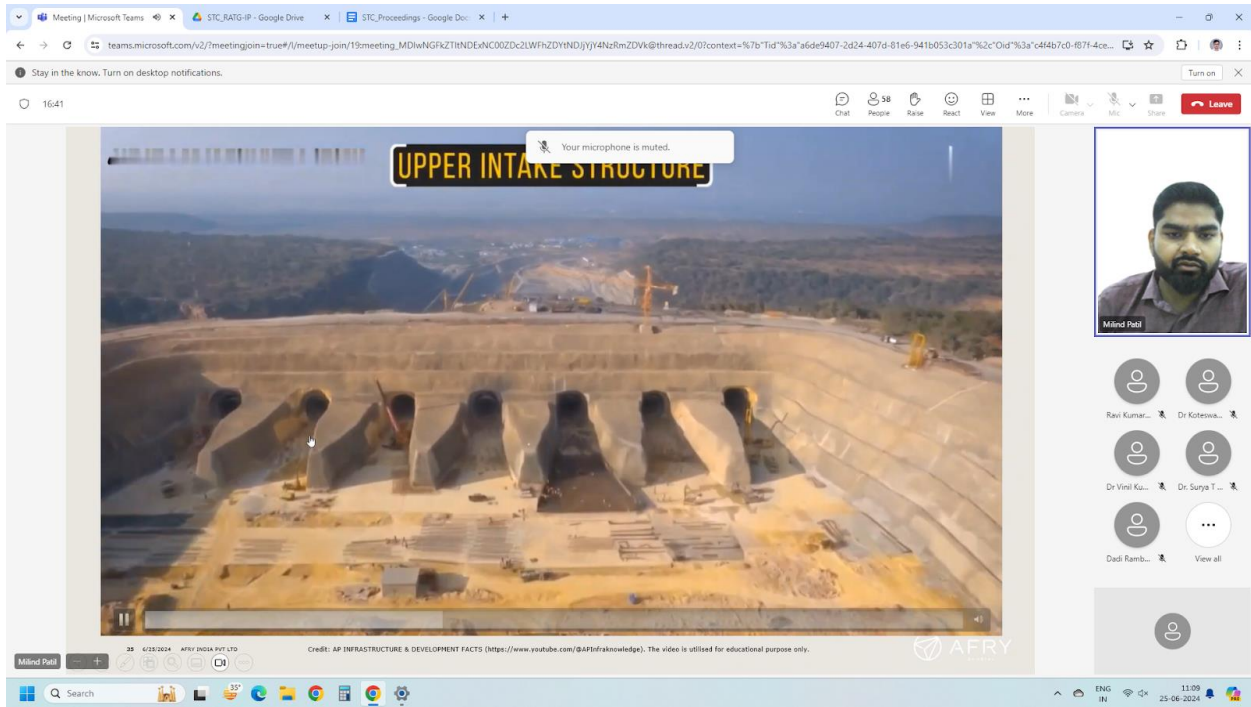
head H = 1400 m

AFRY

Milind Podd

6/25/2024 AFRY INDIA PVT LTD

18:56 25-06-2024



Day 02, Session - 4

Calculation of BT's

Plastic zones in unsupported 3-tracked cross section (vertical stress in MPa)

Calculated deformations for unsupported 3-tracked cross section

STC_RATG-IP_Day-2

01:38:31

Participants: SM, DK, SS, SB, RT, A, DK, DG

Vector orientation longitudinal

chainage: 480, 500, 520, 540, 560, 580, 600

geological situation: E_1 , E_2 , E_1

advance: α

$E = \text{stiffness}$, $E_1 < E_2$

average vector orientation: S , L , $+\Lambda\alpha$, $+\alpha$, $-\Lambda\alpha$, $-\alpha$

Participants: DG, Dr Vinit Kumar Gade, Dr Koteswararao Jadda, DK, Dr Roop Kishor, NG, Ravi Kumar, Abhishek, arun kumar, Bhanuchitra M, DR, Deepak Rana, DK, Dr Abhinay Kumar, DD, Dr Angshuman Das, DK, Dr Farhan Khan, DS, Dr Manish V Shah, DT, Dr Kavita Tandon, DN, Dr. Maheboobsabab

Day 03, Session 05

Date 26/06/2024

STC_RATG-IP_Day-3

01:40:08

Individual role of flyash and lime in LFA-treatment of expansive soil - CBR tests

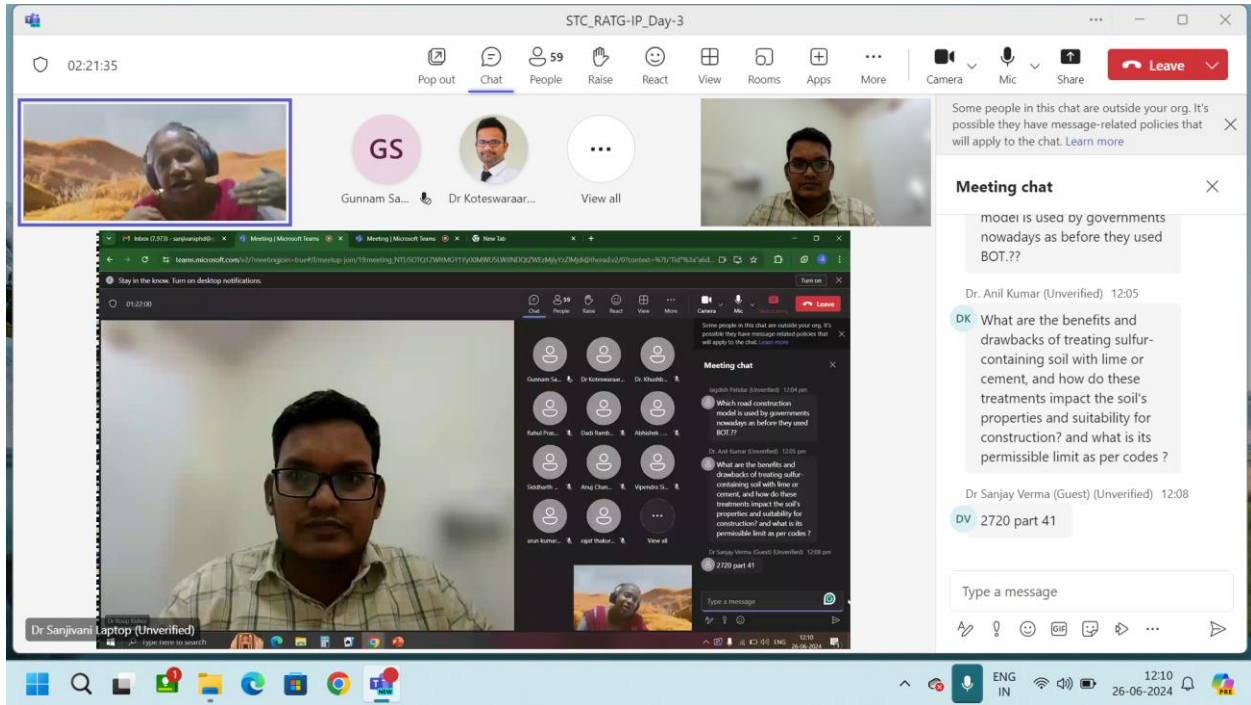
a) Load-penetration Curves
b) Percentage Swell

(Note: U = unsoaked, S = soaked)

Results of CBR tests on stabilized expansive soil

	Untreated Soil	Flyash-treated soil	Lime- treated soil	LFA-treated soil
CBR (%) 11 days curing	6.1	18.4	46.2	59.6
CBR (%) 7 days curing + 4days soaking	1.5	3.1	48.0	59.3
Heave (%) 7 days curing + 4days soaking	9.8	2.0	0.016	0.008

Participants: GS, DK



Day 03, Session 06



IGS Jalandhar Chapter

26th June 2024 - Day 03

Session - 06



Advances in the Deep Foundation Testing



Dr. Sasanka Mouli, Ph.D, IITB

Senior Geotechnical Engineer - Sarathy Geotech and Engineering Services

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24th to 28th June, 2024

Department of Civil Engineering

Dr B R Ambedkar

National Institute of Technology Jalandhar – 144008, Punjab

STC_RATG-IP_Day-3

01:24:18

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QA – HIGH STRAIN DYNAMIC LOAD TEST

Before Test QA Checks

- Valid calibration and functionality of Equipment and Sensors
- Qualification of testing personnel & agency
- Ideal selection of the weight of drop weight according to the pile diameter, depth, and the required capacity.
- Proper pile top preparation
- All recommended good practices to be followed during the drilling and tapping process to attach the sensors to the pile
- Proper setup with the guide and the cushion
- Effective drop system with ideal verticality to be maintained during the drop of dead weight

Dr. Sasanka (Unverified)

DS Dr. Sasanka (Un... Dr. Koteswa...
SS Siddharth ... Seemon S (...
KS keerthana s... View all
DK

15:34 26-06-2024

Day 04, Session 07

Date 27/06/2024

SCT_RATG_IP_Day 04

28:24

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An Introduction to Geosynthetics

Classification of Geosynthetics

```

    graph TD
      Geosynthetics --> Geotextiles
      Geosynthetics --> Geonets
      Geosynthetics --> Geomembranes
      Geosynthetics --> Geosynthetic_Clay_Liners_GCL[Geosynthetic Clay Liners (GCL)]
      Geosynthetics --> Geo_others[Geo-others]
      Geosynthetic_Clay_Liners_GCL --> Geocomposite_Drains_Geodrains[Geocomposite Drains (Geodrains)]
      Geosynthetic_Clay_Liners_GCL --> Geogrids
      Geosynthetic_Clay_Liners_GCL --> Geocells
      Geocomposite_Drains_Geodrains --> Geomats
      Geocomposite_Drains_Geodrains --> Geoblankets
  
```

Kiran Kumar Rumandla (External)

SOLMAX

ES ER PRINCE ... DG Dr. Sneha ...
KR Kiran Kumar Ru... DR Dr. S Rupali ...
AP Dr. C Prakas... View all
DK

10:44 27-06-2024

SCT_RATG_IP_Day 04

38:28

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Contamination of subbase aggregate required for stabilization

Subbase stone

Soft subgrade

Clay migrates upward

pumping

Original design thickness

Effective road thickness due to loss of fill

Kiran Kumar Rumandla (External)

SOLMAX

ES DG ER PRINCE ... Dr. Sneha ... KR DR Kiran Kumar Ru... Dr S Rupali AP ... Dr C Prakas... View all DK

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Day 04, Session 08

SCT_RATG_IP_Day 04

46:48

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What does PLAXIS do?

What does PLAXIS do?

S

Rajendra Bisht (External)

DV DR Dr. Surya T ... Dr S Rupali RB KS Rajendra Bisht (... keerthana s... DD ... Dr. Plaban ... View all DK

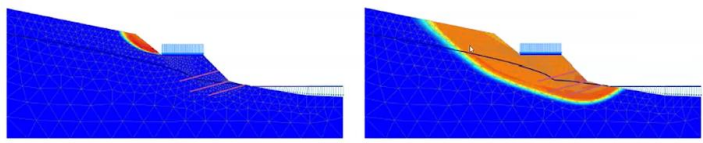
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SCT_RATG_IP_Day 04

01:13:53

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Failure Mechanism



(e) Winter conditions (all nails, no suction) (f) Winter conditions (all nails, with suction)

Rajendra Bisht (External)

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RB DR
Rajendra Bisht (... Dr.S Rupali

KS DD
keerthana s... Dr. Malay Kr. D...

BM ...
Bhanuchitra M (... View all

DK

15:53
27-06-2024

Day 05, Session 09

Date : 28/06/2024

STC_RATG_IP_Day 05

37:52


Take control Pop out Chat People Raise React View Rooms Apps More Camera Mic Share Leave

Brief Intro to types of Infra projects (Pertaining to Roads and Highways)

MoRTH (Ministry of Road Transport and highways) Erstwhile (MOST Ministry of Surface Transport)

- National highways (NHA)
- Expressways (NHA) (Access controlled, elevated)
- State and district highways (State R&B, PWD etc)
- Border roads (BRO)

Budget allocation
ROW
Approval authorities



Do you on an average how many kms of Highways getting constructed?

Keerthi Kasyap Sistla (External)

DV ...
Dr. Surya T ... View all

DK

10:47
28-06-2024

STC_RATG_IP_Day 05

01:48:12

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Case studies of Transportation Infrastructure.pdf - Confidential - saved

PDF-XChange 2012 August

Keerthi Kasyap Sista (External)

New avenues in Civil Engineering

- Automation
- Digitalization
- Sustainability
- AI

VP

Vineeta Pal... View all

DK

Keerthi Kasyap Sista (External)

11:58 28-06-2024

Day 05, Session 10

STC_RATG_IP_Day 05

35:44

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Applications

Helical piles exhibit remarkable load-bearing capabilities, with the ability to withstand compressive and tensile loads that surpass those of driven steel piles with similar dimensions by almost **5 times** (Sakr 2009). These versatile foundations are engineered to handle axial loads of up to 5000 kN, as well as inclined and lateral loads.

Their main applications are:

- In foundation for poles, **towers, lighting structures, electric utility structures.**
- As **tiebacks** for temporary or permanent **retaining walls** and foundation tie-downs.
- They are also used for supporting structures subjected to **dynamic loads**, such as power generation and petrochemical **plants, oil refineries, offshore structures, and wind turbines.**
- To support **elevated walkways and boardwalks**, and tilt-up wall braces.
- In **solar foundations** to support solar energy racks and panels.
- In **underpinning** offshore oil pump jack and oil pipeline.
- For supporting lateral load, like **stabilization**

Dr. Arnab Debnath (Unverified)

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Transmission tower

Fig. 6. Transmission tower

Offshore structures

Fig. 7. Offshore structures

Retaining walls

Fig. 9. Retaining walls

DD

Dr. Arnab Debnath...

SS

Seemon S (...)

DG

Dr. Gaurav ...

JP

Jagdish Pat...

DS

Dr. Abhishe...

View all

DK

15:21 28-06-2024

STC_RATG_IP_Day 05

01:54:00

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Dr. S Rupali

Dr. Angshuman Das (Unverified)

Dr. TEJAS BHAIKAR (External)

Dr. Khushbu Bhatt (Unverified)

Dr. Vageesha Salanki Mahada (Unverified)

Dr. Arnab Debnath (Unverified)

Piyush Kolhe (External)

Rakesh Shambharkar (Unverified)

Adiki Purandhar (Unverified)

Smita Dobhal (Unverified)

SS DG

Seemon S (Unverified) Dr. Gaurav (Unverified)

DD KN

Dr. Plaban (Unverified) K N (External)

LS

Lakshman (Unverified) View all

Participants

Type a name

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Presenters (3)

- DK Dr Roop Kishor Organizer
- DR Dr S Rupali
- DD Dr. Arnab Debnath (Unverified)

Attendees (33) Mute all

- DM Dr. Vagees... (Unverified) 1
- AP Adiki Purandhar (Unverified)
- AC Anuj Chandiwala (Unverified)
- AK anurag khadse (Unverified)

ENG IN 16:39 28-06-2024

Fee Collection Statement

In the “Recent Advances in Transportation Geotechnics: Industry Perspective (RATG-IP) from 24-28th June, 2024.” Organised by the Department of Civil Engineering.

There is **no fee collected** from the participants.

Expert Expenditure Statement

In the “Recent Advances in Transportation Geotechnics: Industry Perspective (RATG-IP) from 24-28th June, 2024.” Organised by the Department of Civil Engineering.

There is no money paid to the experts, so that there is **no expenditure**.

List of candidates who have successful completed program

S.no.	Participant Name	S.no.	Participant Name
1	Anuj Chandiwala	41	ANURAG MAHESH KHADSE
2	Arun kumar	42	Ashish Kishore
3	Dr Abhinay Kumar	43	Dr C Prakasam
4	Dr Farhan Khan	44	Dr. A C S V PRASAD
5	Dr Sanjay Kumar Verma	45	Dr. Anil Kumar
6	Dr. Plaban Deb	46	Dr. Saurabh Upadhyay
7	Dr. Sreeja Balakrishnan	47	Gunnam Sanijya
8	Dr. Surya T V	48	JAGDISH CHAND
9	Gaurav Singh	49	Mani Mahesh
10	Jagdish Patidar	50	Manish Kumar
11	Kshitija Nadgouda	51	Manish V Shah
12	Kuldeep singh	52	Pallavi Amit Padalkar
13	Rahul Prashar	53	Piyush V. Kolhe
14	Ravi kumar	54	Pushpendra Kumar
15	Revathi Bhupathiraju	55	Rakesh Shambharkar
16	Sathyapriya S	56	Ranjodh Singh
17	Seemon S	57	Subham
18	Sunita Danu	58	Vipendra Singh
19	Tarsem	59	Abhishek Sharma
20	Venkateswara Rao Ramanolla	60	Amruta Prakash Kulkarni
21	Deepak Rana	61	Chetan R Bhole
22	Deepali Anand	62	Deepanshu Katoch
23	Dr Angshuman Das	63	Dr. Sikandar Ankush Rasal
24	Dr. Murtaza Hasan	64	Kunal Jee Thakur
25	Dr. Pawan Kumar	65	Mithilesh thakur
26	Dr. Sagar Dattatray Turkane	66	Rahul Diwakar
27	Dr. TEJAS PRAKASH BHATKAR	67	Rahul Gulati
28	Dr.(Mrs) B. Manjula Devi	68	Rajat thakur
29	Dr.Khushbu Bhatt	69	Adiki Purandhar
30	Lakshman Singh	70	AJAI KUMAR
31	MAHESWARAM BHANUCHITRA	71	Dadi Rambabu
32	Prakash V Surya	72	Kushanabh Baruah
33	Prince Sharma	73	Shriram Marathe
34	Samatha Chowdary Ponduri	74	Sneha Gupta
35	Saurabh Gwasikoti	75	Venkata K.Ch
36	SIDDHARTH AMBER SWAMI	76	Sachin Kumar Gupta
37	Smita Dobhal	77	ADITYA AHIRWAR
38	Vineeta Pal	78	Ayushi Gupta
39	Vipin C	79	Dr. Kavita Tandon
40	Abhishek	80	Keerthana S

S.no.	Participant Name	S.no.	Participant Name
81	Rama Vara Prasad Chavali	99	Dr. Gaurav Gupta
82	S.M.Nawghare	100	Dr. Maheboobsab Nadaf
83	SYEDA SABINA YASHMIN	101	Gaurav Suman
84	Ushir Ketan Eknath	102	Gudla Sri Satya
85	Abhishek Aryan	103	Haroon Ali Khan
86	Ankush Kumar Dogra	104	KEERTHANA S
87	Dave komal Ketan	105	Kulpreet Singh
88	Dr. Vageesha Salanki Mathada	106	MALAY KUMAR DEB
89	NITESH THAKUR	107	Neeraj Mansingh Meena
90	Radhika Rohit Jadhav	108	NEHA JOY
91	Sajan Sharma	109	Nitin Arora
92	Susmita Sharma	110	Pravez Alam
93	Venkata Lokesh Bayya	111	Rajay Balwan
94	Abhishek Badalia	112	Rohan Kumar Choudhary
95	Aman Sharma	113	Samirsinh P Parmar
96	Amruta Ram Joshi	114	YERUVA TIRUMALA
97	Ankita Sharma	115	Dr. Dharmendra Singh
98	Dr. G.V. Rama Subba Rao		