

Trenchless Technology Specialists

July 2024



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Health, Safety, and Environment (HSE)

Our HSE commitment:



Safety First: Our top priority is safety of our team and clients.



Environmental Stewardship: We are dedicated to minimizing our environmental footprint.



Continuous Improvement: We strive for excellence by continuously improving our HSE practices.

Our HSE practices:

- ❖ Routine inspections and maintenance of all equipment.
- ❖ Provision and strict enforcement of Personal Protective Equipment (PPE) usage.
- ❖ Continuous training of all jobsite employees.
- ❖ Deployment of an HSE Officer at each jobsite.
- ❖ Responsible handling and disposal of drilling fluids.
- ❖ Minimization of land disturbance.

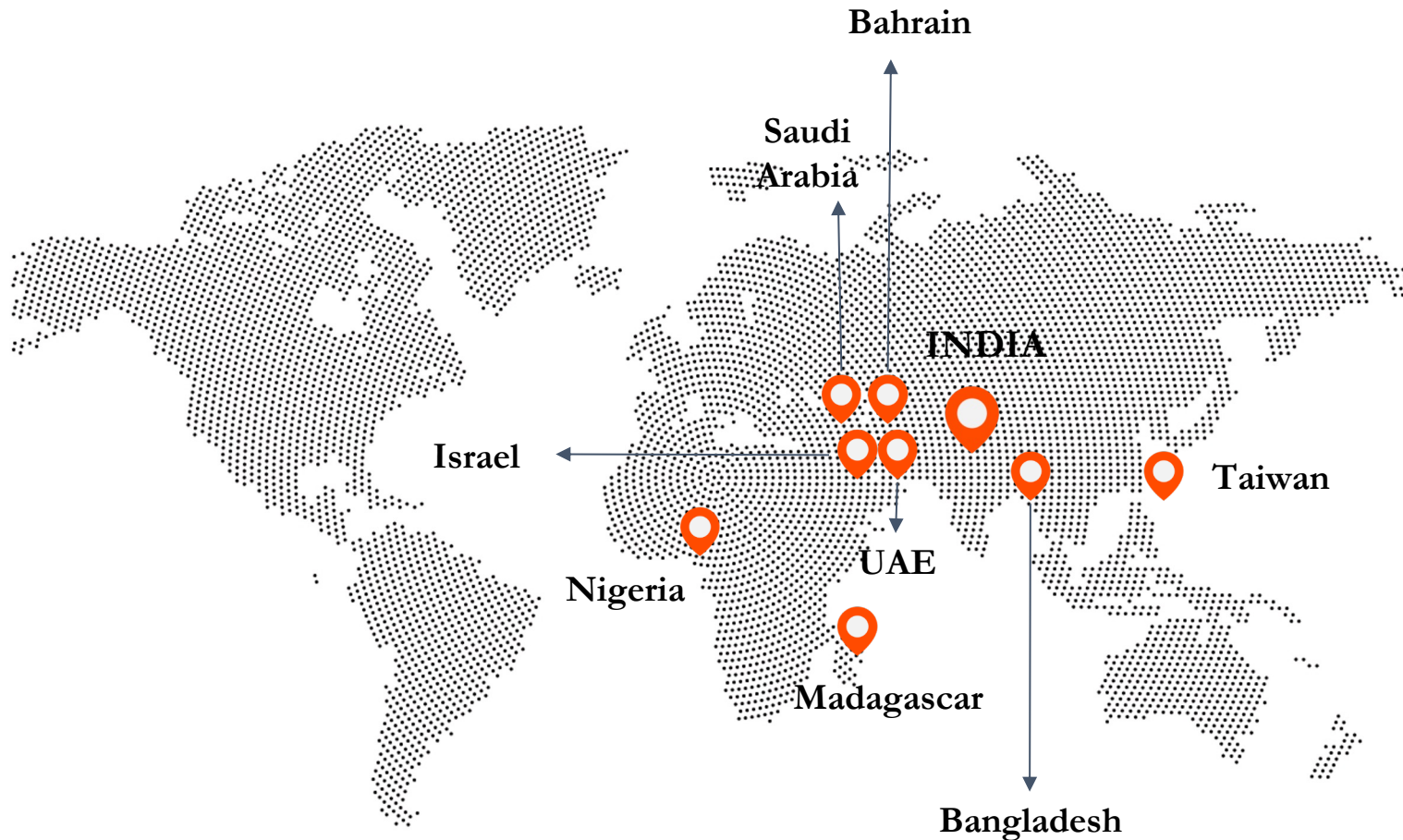
Managing Director

As an industry veteran with **over 30 years of experience** working with technology innovators and extensive international exposure, Vipin Gupta founded Trenchless Engineering Services Pvt Ltd (TESPL) in 2000 as an Engineering Services company specialising in Horizontal Directional Drilling. Underpinned by **innovative mindset** and a **global perspective**, he got involved in active contracting in 2003 to respond to the growing demand for energy infrastructure in India.



VIPIN GUPTA

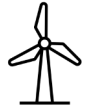
Summary (1/2)



- ❖ Founded in the year **2000**
- ❖ Headquartered in **New Delhi, India**
- ❖ Engaged in **active contracting since 2003**
- ❖ International operations in the **Middle East, Africa, and Asia Pacific.**
- ❖ Employs **400+** experienced professionals.
- ❖ Has one of the **largest fleet of 28 HDD rig spreads** and **5 Microtunneling** machines
- ❖ Nominated for **Gold Standard Award in Innovative Techniques** by China Petroleum Corporation (CPC), Taiwan

Summary (2/2)

Domains



Offshore wind farms



Smart cities



Water and sewage



Power and telecom



Oil and gas



Roads and railways

Services



Horizontal Directional Drilling (HDD)



HDD Consultancy



Microtunneling



Pipe Ramming

in millions

Financial year	Turnover (INR)	Turnover (USD)
FY 2023-24	2,300.00*	27.54*
FY 2022 - 23	1,572.44	19.14
FY 2021 - 22	1,105.00	14.63
FY 2020 - 21	1,022.14	13.96
FY 2019 - 20	1,799.83	23.97
FY 2018 - 19	1,053.06	15.19

* provisional as on Mar 31, 2024

Expertise in Trenchless Technology

HDD Crossings of 3000+ meters

- ❖ **Ganga River, Bihar, India:** 4027-meter length of 26” and 6” pipe for EIL and Numaligarh Refinery Limited completed in April 2024.
- ❖ **Mahanadi river, Odisha, India:** 3,821-meter length of 24” and 6” diameter piping for GAIL completed in July 2023.
- ❖ **Yamuna river, UP - Haryana, India:** 3,000-meter length of 30” and 6” diameter piping for IOCL completed in Jan 2024.
- ❖ **Brahmaputra river, Assam, India:** 3,558-meter length of 24” and 6” diameter piping for GAIL completed in Apr 2023.
- ❖ **Mahanadi river, Odisha, India:** 3,200-meter length of 12” and 6” diameter piping for GAIL completed in 2021.
- ❖ **Sindalah island, Tabuk, Kingdom of Saudi Arabia:** 2750-meter length of 20”, 18” and 14” pipe for NEOM City. 7 crossings across sea channel.

Microtunneling crossings

- ❖ **Raidak river, West Bengal, India:** 480-meter length of 1200mm internal diameter concrete pipe in cobbles and boulders strata.
- ❖ **Delhi Jal Board, Delhi, India:** Multiple crossings of 1800mm diameter with average length of 150 m – 200 meter completed.
- ❖ **LRS - KB joint venture:** Multiple crossings of 700 mm diameter, total 1100 meters.
- ❖ **L&T:** 450-meter length of 1200 mm diameter.

Single order value > USD 5 mn

- ❖ **Delhi Jal Board:** USD 32.8 million.
- ❖ **CPC Corporation, Taiwan:** USD 32 million.
- ❖ **CPC Corporation Taiwan:** USD 26 million.
- ❖ **Indian Oil Corporation:** USD 16.5 million.
- ❖ **L&T - MNPL:** USD 10 million.
- ❖ **Gas Authority of India Limited:** USD 7.9 million and USD 5.2 million.
- ❖ **L&T - PPPL, AMPL, BPPL:** USD 5 million.
- ❖ **NRL - EIL:** USD 10 million

Multiple crossings in one project

- ❖ **Bahrain:** 35 kilometers while deploying 4 rigs on the project.
- ❖ **Telangana and Andhra Pradesh, India:** 53 crossings while deploying 7 rigs on the project for L&T
- ❖ **Delhi, India:** Multiple Crossing of 1800-, 2000- and 2200-mm diameter pipe.
- ❖ **L&T - MNPL:** Over 60 crossings of 24” and 6”.

Current Projects Under Execution

	Client Name	Crossing Name	Type	Crossing details	Location
1.	Ahmedabad Municipal Corp.	Khyati circle	Microtunneling	3600 m x 1800 mm (multiple X-ings)	Gujarat, India
2.	Numaligarh Refinery	Gangia River	Microtunneling	300 m x 1200 mm	Assam, India
3.	Larsen and Toubro	Multiple Crossings	HDD	200 - 1500 m x 24 Inch	Maharashtra, India
4.	Gujarat Heavy Chemicals Limited	Shore Approach	Microtunneling-Sea Outfall	400 m x 2000 mm	Gujarat, India
5.	Indian Oil	Und River	HDD	450 m x 28 Inch	Gujarat, India
6.	Indian Oil	Balram River	HDD	550 m x 28 Inch	Gujarat, India
7.	KEC International	Multiple Crossings	HDD	350 - 1500 m x 32 Inch	Odisha, India
8.	Delhi Jal Board	Bhagirathi WTP	Microtunneling	1800, 2000 and 2200 mm	New Delhi, India
9.	NEOM	Multiple Crossings (3 X-ings)	HDD-Shore Approach	300 m x 20 Inch	Susha Island, KSA
10.	NEOM	Multiple Crossings (3 X-ings)	HDD-Shore Approach	800 m x 20 Inch	Susha Island, KSA
11.	Aramco-Larsen and Toubro	Multiple Crossings (11 X-ings)	HDD	300 - 750 m x 36 Inch	Jafurrah, KSA

Innovation: Indigenously-built Pipe Thruster



- ❖ TESPL pipe thruster has been entirely designed, engineered and fabricated in-house.
- ❖ We own a fleet of **5 Pipe Thrusters** with capacity ranging from **150 to 750 tons**.
- ❖ Major uses include:
 1. Shore approaches
 2. Long HDD crossings (tight pull contingency equipment)
 3. Direct pipe

Indigenously-built Pipe Thruster (animation video)



TESPL Pipe Thruster: At work



Innovation: Intersection crossing technique



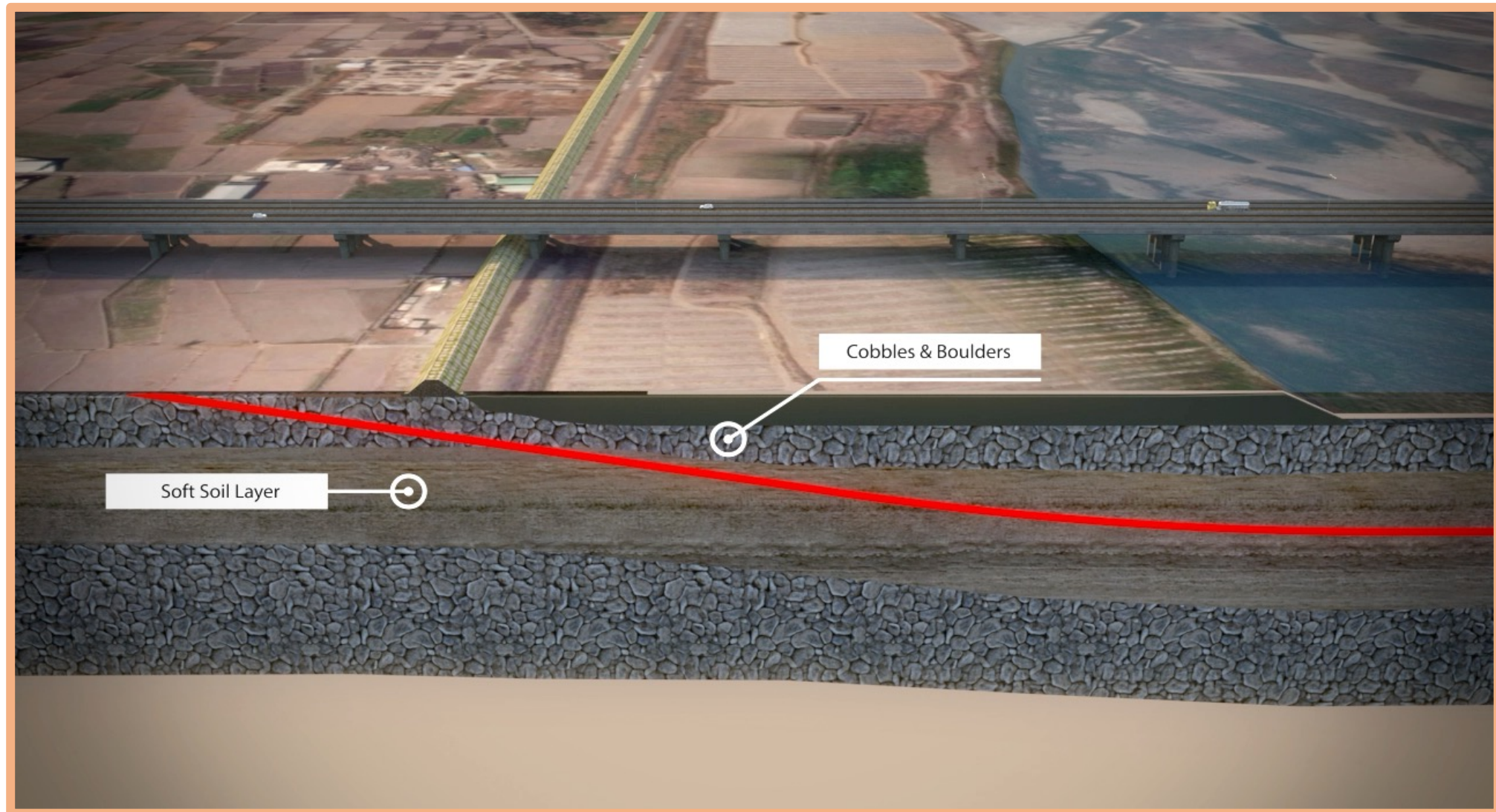
It utilizes Electromagnetic Steering Technology for precise real-time tracking, wherein pilot holes are drilled from both ends using two separate drilling arrangements.

The technique becomes indispensable for longer crossings as the torque available at mud motor for driving and steering the drill is compromised and directional control of the drill becomes difficult in HDD for longer crossings

Intersection crossing technique (animation video)



Innovation: Navigating unfavorable geology (video)



HORIZONTAL DIRECTIONAL DRILLING



HDD Equipment

28
HDD RIGS



30-90 T

08 Nos.

100-150 T

07 Nos.

250-500 T

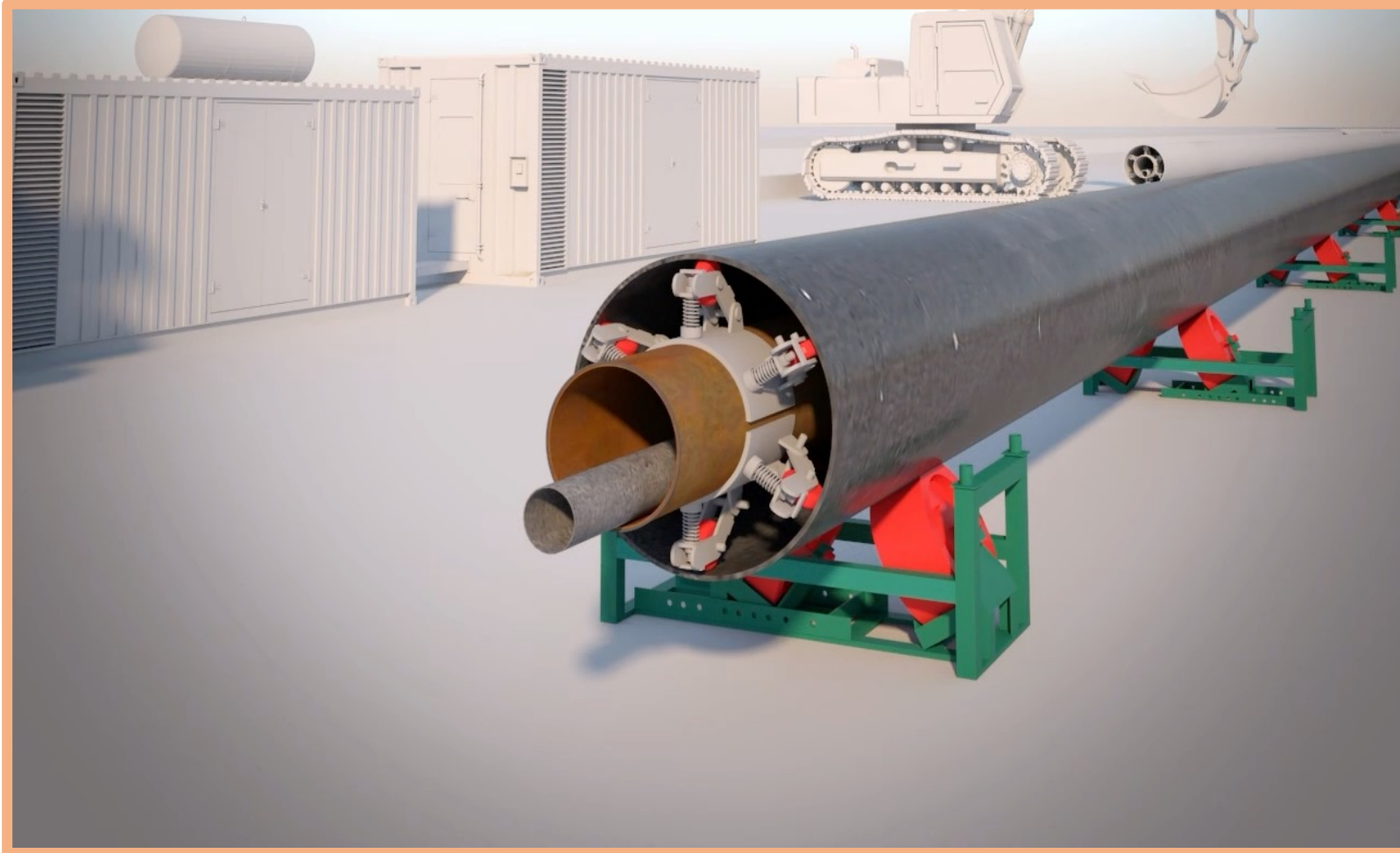
1 Nos.



HDD Process (video)



HDD process: Buoyancy control (video)



- ❖ When a pipeline section is pulled through a bore hole, the **buoyant weight of the pipe** may be substantial.
- ❖ Add to this the **frictional force** between pipe/pipe coatings and the borehole wall which creates more resistance.
- ❖ Buoyancy control is essential to **minimizing pressure** on borehole walls, **managing fluid dynamics**, and **preventing collapse** in unstable soils.

Contingency: Pneumatic Hammering (video)



- ❖ Pneumatic hammering delivers **rapid repetitive blows** to break through hard formations.
- ❖ It can effectively penetrate **tough ground conditions** like rock.
- ❖ It **minimizes the wear on drill pipe** by concentrating impact forces at the drill bit

1. Ganga river : 4027 meters X (26''+6'')

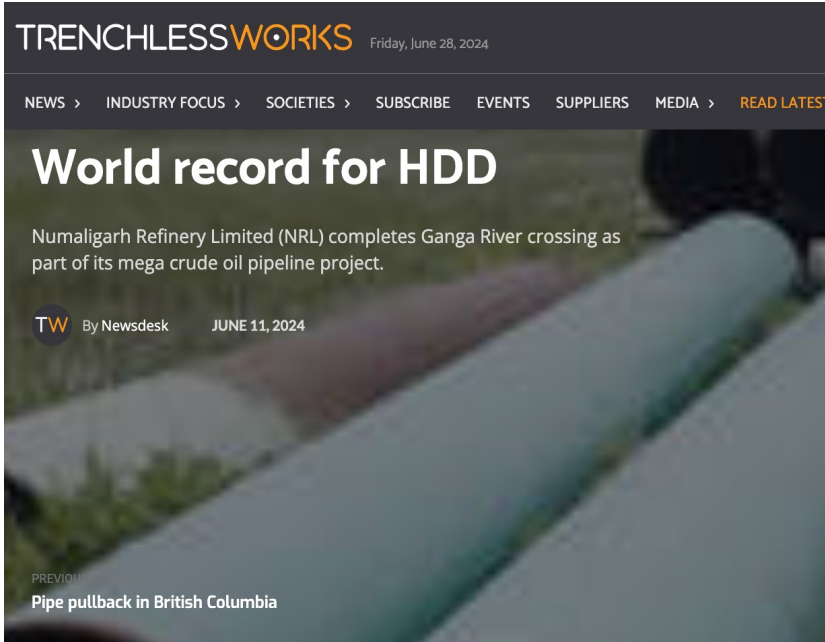
1. **Length:** 4027 m
 2. **Diameter:** 26'' Main line + 6'' Auxiliary line
 3. **Depth:** 49.9 m
 4. **Location:** Bihar, India
 5. **Client:** Numaligarh Refinery Ltd and Engineers India Ltd
 6. **Geology:** Sand and silt with small gravel on one side
 7. **Equipment:** 2 X 1100 American Augers
TESPL 500-ton Pipe Thruster
- Intersection method was employed.
 - The project was executed in a record time of 76 days and completed in April 2024.

WORLD RECORD

This is the longest installation of a 26'' oil pipeline in the world.



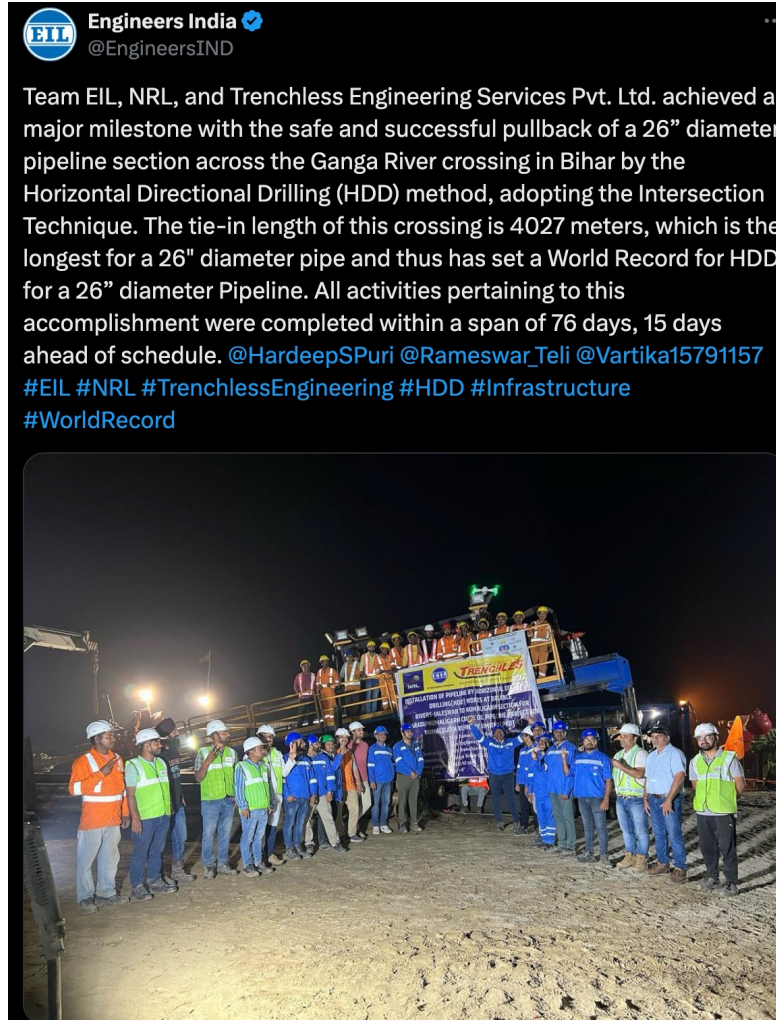
1. Ganga river : 4027 meters X (26”+6”): In the media!



Numaligarh Refinery Limited (NRL) completes Ganga River crossing as part of its mega crude oil pipeline project.

NRL is continuing to execute its 'Numaligarh Refinery Expansion Project (NREP) which includes laying a 1635km cross country pipeline from Paradip Port in Odisha to Numaligarh alongside a significant expansion of the refinery itself.

As part of the project, a team comprising NRL, Engineers India Limited (EIL), and Trenchless Engineering Services Pvt. Ltd has achieved a major milestone with the safe and successful pullback of a 26" diameter pipeline section across the Ganga River in the East Indian state of Bihar.



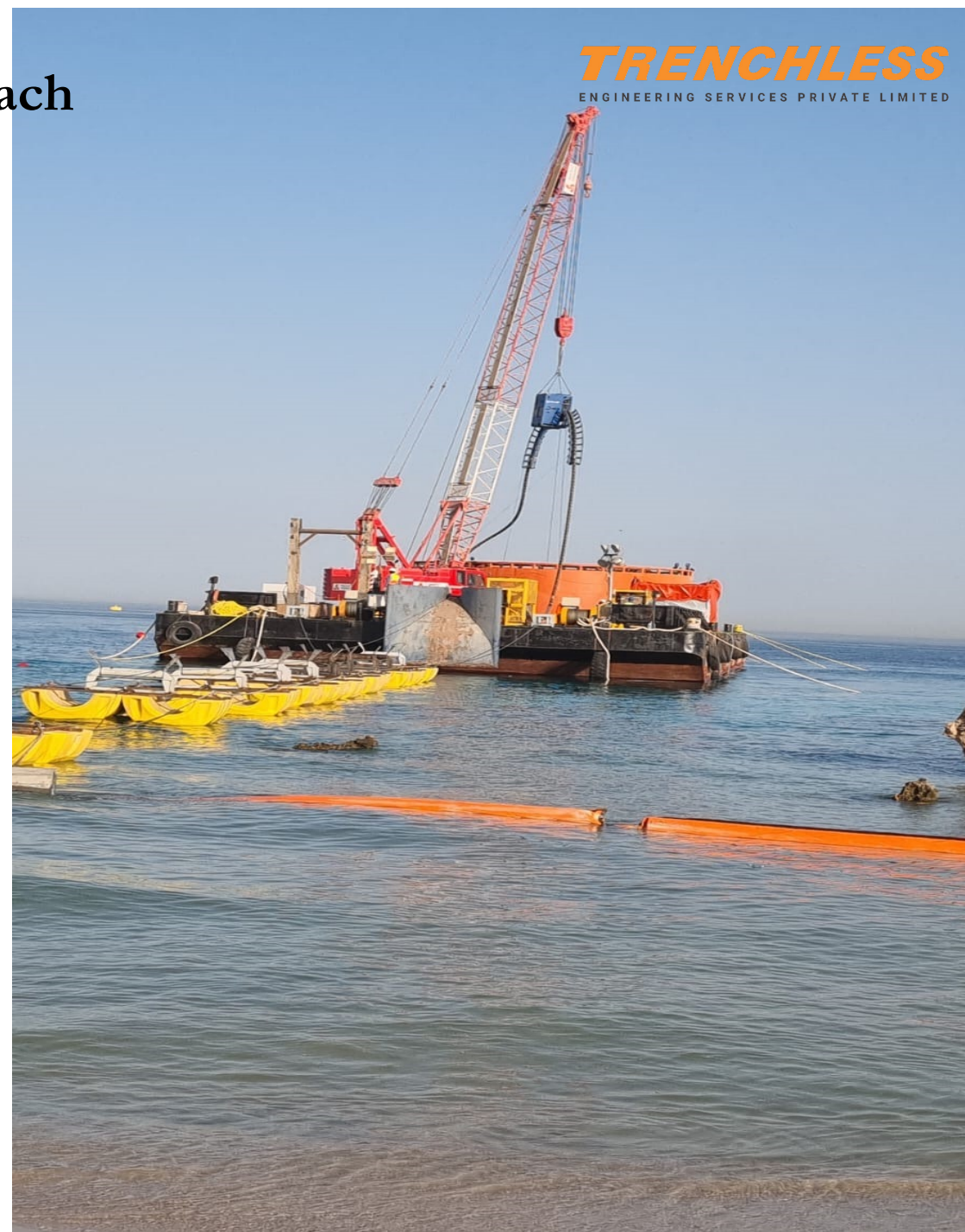
2. Yamuna river : 3021 meters X (30''+6'')

1. **Length:** 3021 m
 2. **Diameter:** 30'' Main line + 6'' Auxiliary line
 3. **Depth:** 36 m
 4. **Location:** Uttar Pradesh, India
 5. **Client:** Indian Oil
 6. **Geology:** Sand and silt
 7. **Equipment:** DD 1100 American Augers
HK-400
TESPL 500-ton Pipe Thruster
- Intersection method was used.
 - The crossing had a challenging 22-degree horizontal curve despite which, the project was executed in 55 days.
 - The project was completed in January 2024.



3. Neom-Sindalah: 6 crossings of 2750 meters each

1. **Length:** 2750 m
 2. **Diameter:** 2 lines each of 14”, 18”, and 20”
 3. **Location:** Sindalah, Kingdom of Saudi Arabia (KSA)
 4. **Client:** NEOM/Rawabi KSA
 5. **Geology:** Sand and mud stones
 6. **Equipment:** DD 625 American Augers
DD 440
TESPL 500-ton Pipe Thruster
- Intersection method was used.
 - The 6 lines were installed parallelly at a distance of 5 meter from each other.
 - Pulled the cable inside 14” pipe for Power and Telecommunications.





String preparation



TESPL team

4. Saudi Aramco-LNT: Multiple crossings (ongoing)

1. **Length:** Ranging from 175 - 400 m
2. **Diameter:** Ranging from 16" - 36"
3. **Location:** Jafurah, KSA
4. **Client:** Saudi Aramco KSA/LNT
5. **Geology:** Mix of soft and rock
6. **Equipment:**
 - DD 440 American Augers
 - TESPL 500-ton Pipe Thruster



Pipe pulling videos



32” steel casing pipe pulling



Installation of 24” HDPE pipe along
with conduits inside the 32” steel casing
pipe

5. Mahanadi river : 3821 meters X (24”+6”)



1. **Length:** 3821 m
 2. **Diameter:** 24” Main line + 6” Auxiliary line
 3. **Depth:** 20.3 m
 4. **Location:** Odisha, India
 5. **Client:** GAIL India
 6. **Geology:** Sand and silt and some clay
 7. **Equipment:** 1100 American Augers
HK - 400
TESPL 500-ton Pipe Thruster
- Intersection method was employed.
 - The project was completed in July 2023.

6. LNG Terminal : (1750 meters X 36") + (1900 X 12")



1. **Length:** 1750 m and 1900 m

3. **Location:** Taichung, Taiwan

5. **Geology:** Sand and silt

7. **Depth:** 56 m

2. **Diameter:** 36" and 12"

4. **Client:** Chinese Petroleum Corporation, Taiwan (CPC)

6. **Equipment:** HK - 400 and HK - 150

HORIZONTAL DIRECTIONAL DRILLING (Offshore Wind Farms)

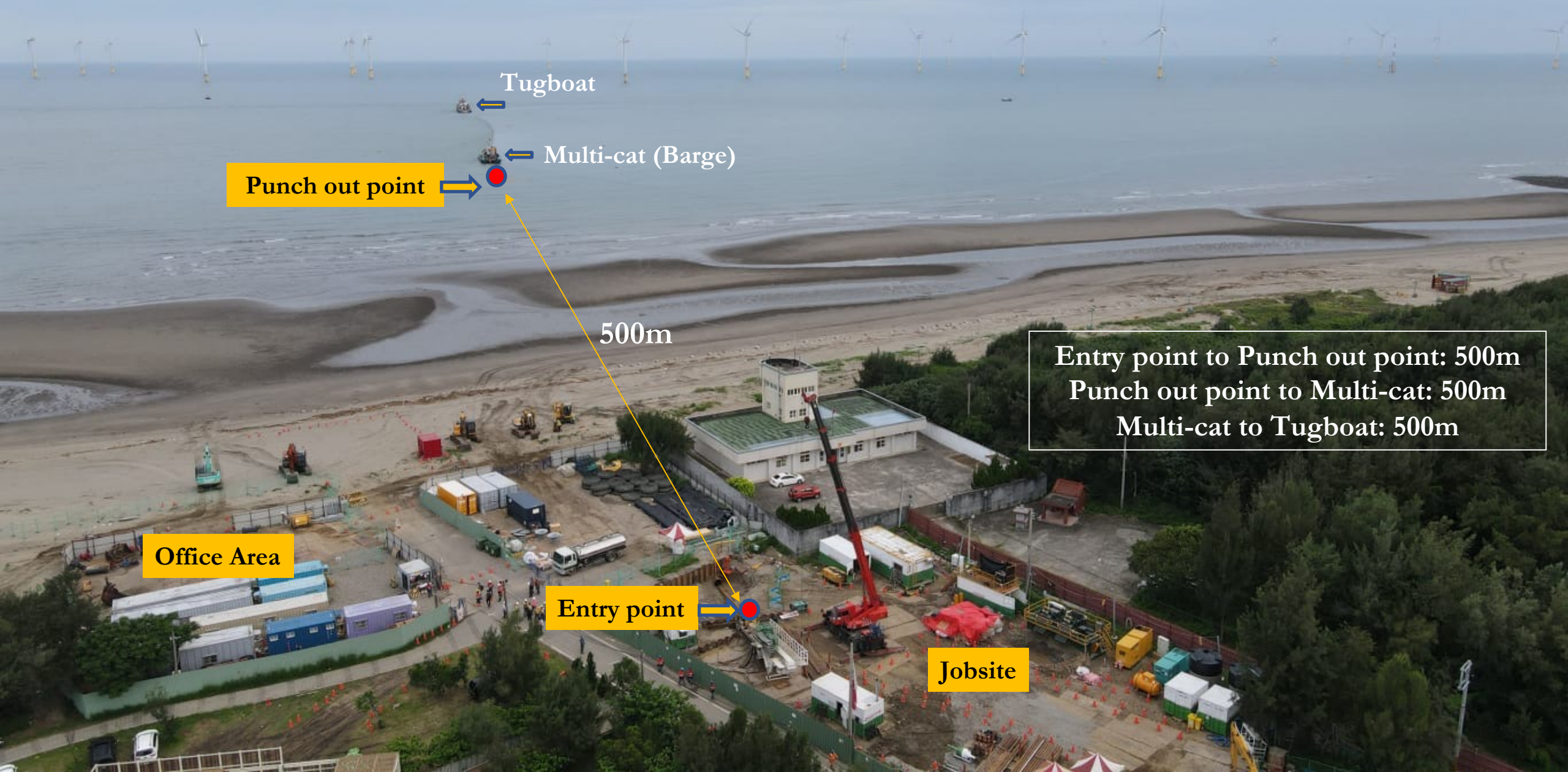


Formosa 2 Taiwan: Overview

Pipe	Grade	Diameter OD (mm)	Length (m)
HDPE	SDR11	500	509
HDPE	SDR11	500	510
HDPE	SDR11	500	524
HDPE	SDR11	500	612
Total length			2155 m

1. **Length:** 2155 m
 2. **Diameter:** 500 mm OD (~20")
 3. **Location:** Taiwan
 4. **Client:** Jan De Nul (**JDN**)
 5. **Geology:** Soft ground with some gravels
 6. **Equipment:** HK - 150
 - A Multi-Cat and a Tugboat were supplied by the Client.
 - The pipes were also supplied by the Client.
- TTESCL welded the pipes along with the Golden Joint with in-duct camera records and test joints.

1. Overview of drilling & marine activities



Tugboat

Multi-cat (Barge)

Punch out point

500m

Entry point to Punch out point: 500m
Punch out point to Multi-cat: 500m
Multi-cat to Tugboat: 500m

Office Area

Entry point

Jobsite



**2. Seabed punch out & recovery of
drill string**



3. HDPE String in preparation

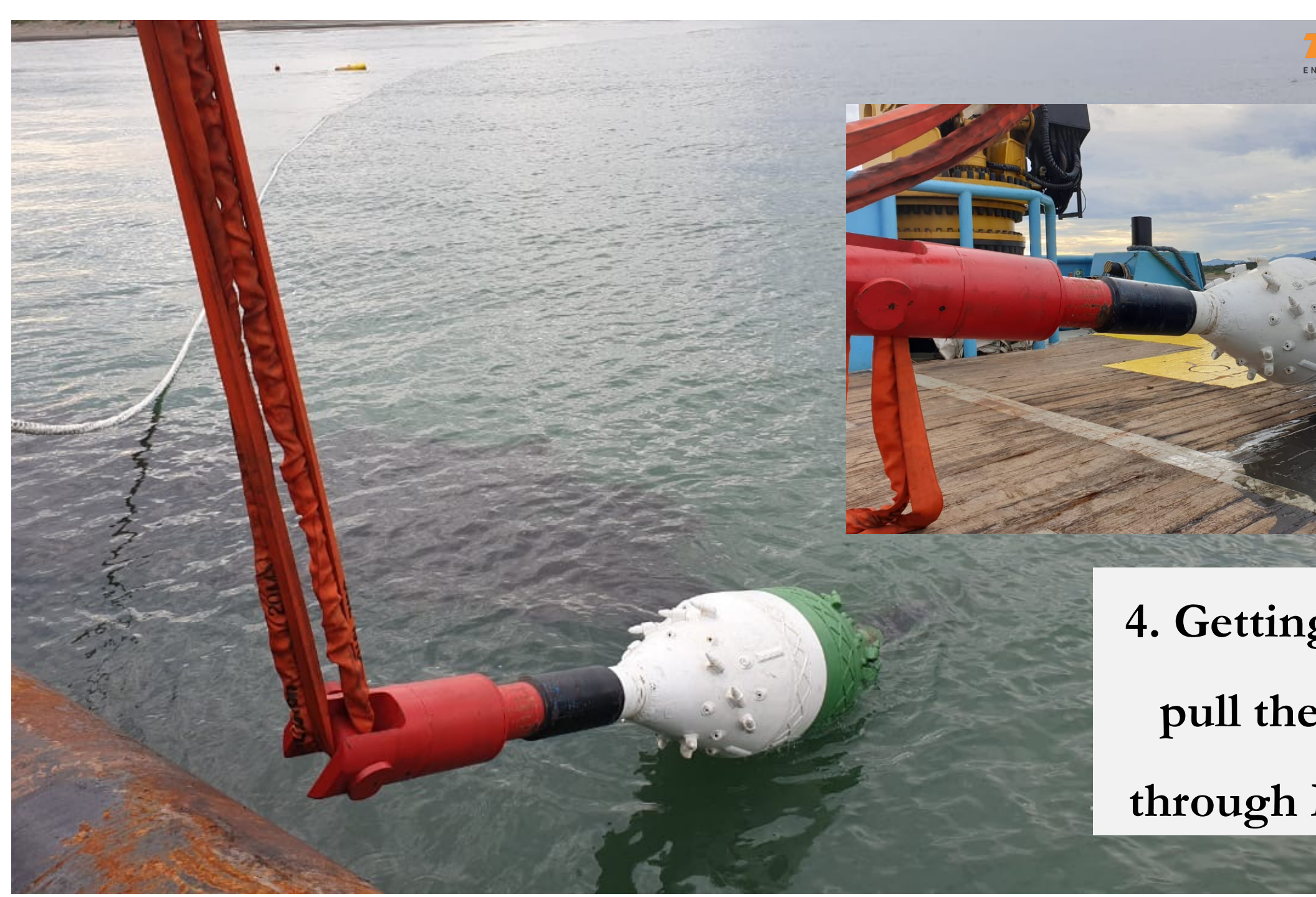
This Multi-cat is located at 1000m from the entry point
(beach front)

Onshore



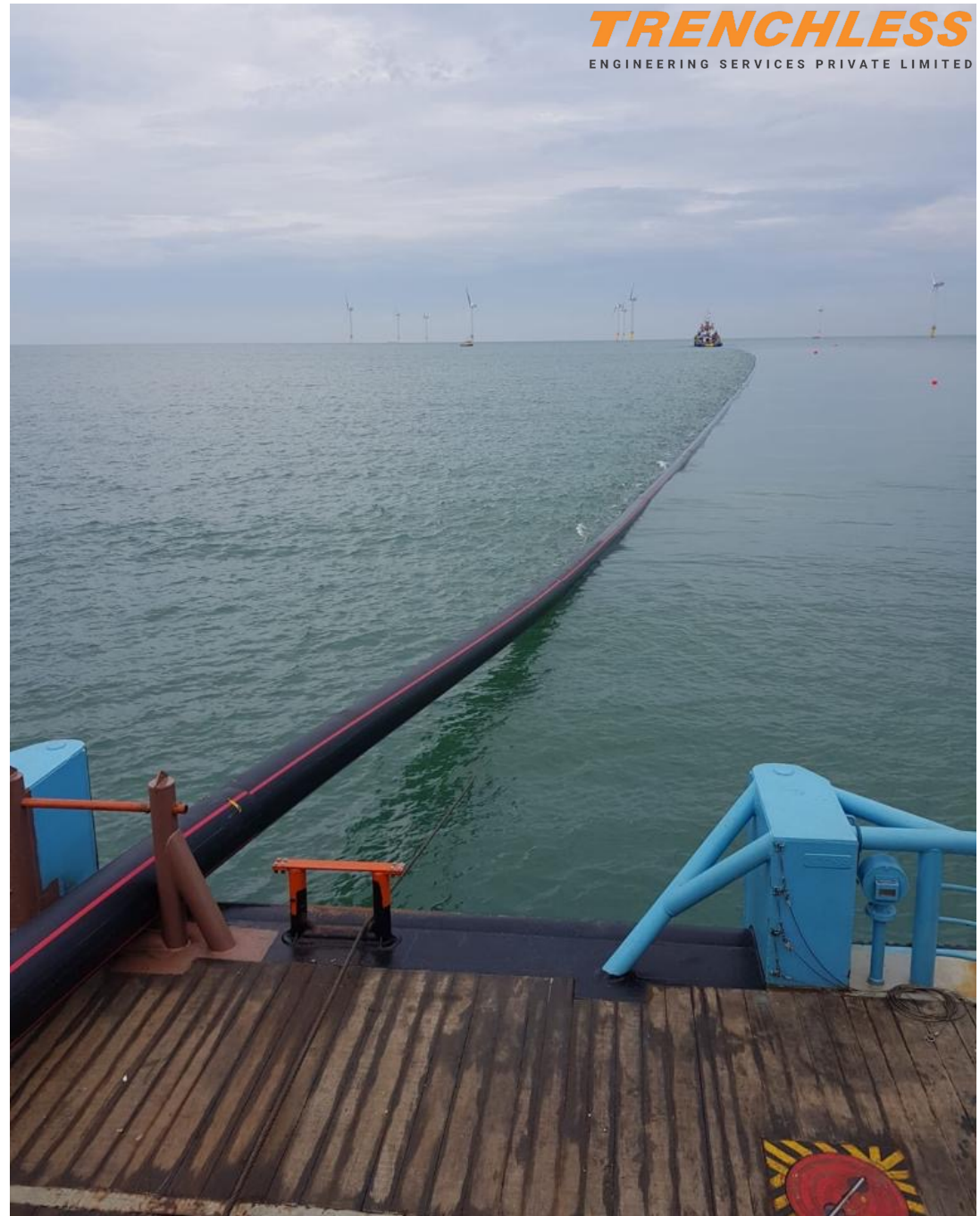


**4. Getting ready to
pull the HDPE
through Multi Cat**



Reaming video





5. Pulling the HDPE pipe



6. Project delivered




The winning team!

MICROTUNNELING



Microtunneling Equipment

5
MT



800
MM
01 No

1600 MM
1 No

1200 MM
02 Nos

2000 MM
1 No



With a capability to drill upto 2400 mm dia..

Raidak river : 1200 mm ID x 480 meters



1. **Diameter:** 1200 mm internal diameter (~47.2")
2. **Length:** 480 m
3. **Depth:** 13 m on one side and 11 m on the other
4. **Location:** West Bengal, India
5. **Client:** GAIL India
6. **Geology:** Cobbles and boulders
7. **Equipment:** AVN 1200



ACHIEVEMENTS



LONGEST - HDD

Completed world's Longest HDD crossings of dimensions **26" X 4027 meters** in Ganga river in Bihar, India



LONGEST - MICROTUNNELING

Completed India's Longest for **1200 mm ID** under river in cobbles and boulders strata – **480 meters**.



DEEPEST CROSSING

Completed World's then-deepest HDD crossing with a mix of 16" and 6" X 1,450 meters at **140-meter depth** at Chambal river, India



MAXIMUM CROSSINGS

Completed over **20 Intersections**. Maximum number of HDD crossings by the Intersection technique in Asia.



MULTIPLE CROSSINGS

Completed Multiple crossings (**53**) at a single location deploying up to 7 HDD rigs.

Accomplishments in Microtunneling

**PIONEERING
UNDERGROUND
TOGETHER**



CONGRATULATIONS!



Herrenknecht AG congratulates Trenchless Engineering Services Pvt Ltd for the break-through of the AVN1200 at the Barauni Guwahati Gas Pipeline Project on Dec 7th, 2022.

We would like to thank everyone who contributed to this great success and are looking forward to our collaboration on the future drives of the project.

PROJECT DATA

› Country: India	› Workshop acceptance: 11th January 2022
› Machine type: AVN1200TB	› Launching: 29 September 2022
› Diameter: 1505 mm	› Best daily performance: 6th October 2022 - 20 m
› Tunnel length: 480 m	› Best weekly performance: CW 42/2022 - 80 m

Chennai, 13th December 2022


Weis Christian
Project Manager
Utility Tunnelling


Rimmalapudi Chaitanya
Project Manager PM
Herrenknecht India Pvt Ltd


Kaushal Mohit
VP-Business Development
Utility Tunnelling


Mayilsamy Prakash
Field Service
Herrenknecht India Pvt Ltd



गेल (इण्डिया) लिमिटेड
(भारत सरकार का उपक्रम-महारत्न कंपनी)
GAIL (India) Limited
(A Govt. of India Undertaking - A Maharatna Company)

होटेल हेरिटेज, 2 सरी मंजिल
बाबुरहाट, कुचबिहार - 736101
Hotel Heritage, 2nd Floor,
Baburhat, Cooch Behar - 736101

16-12-2022.

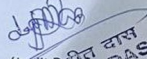
PROVISIONAL COMPLETION CERTIFICATE

This is to certify that M/s Trenchless Engineering Services Pvt Ltd has completed 480 mtrs Micro-Tunneling activity by installing MTBM across Raidak River near North Bengal – Assam border against work order number : GAIL/20-065/5600004492/C-21/021 dated 04/06/2021.

Project Name	: Barauni Guwahati Pipeline Project
Work Done Under River Bed	: Raidak River
River width (Bund to Bund)	: 399.33 meters
Micro Tunneling Length	: 480 meters
Depth of Tunnel	: 11 meters
Strata of Ground	: Cobbles, Boulders & Sand.

The Micro-tunneling work has been satisfactory completed on 09th Dec 2022.

However further activities like installation of 24" natural gas steel make pipeline with OFC dust, etc are in the process. All other activities as per tender scope are yet to complete. Only the 480 mtrs tunneling activity is complete as per tender scope.


जयजित दास
JOYJIT DAS
उप महा प्रबंधक (निर्माण)
Dy General Manager (Construction)
गेल (इण्डिया) लिमिटेड, बंगुरी
GAIL (India) Limited, Bimguri

पंजिकृत कार्यालय
गेल भवन, 16 भीकराजी कामा प्लेस
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REGD OFFICE
GAIL BHAWAN 16 BHIKAJI CAMA PLACE
NEW DELHI - 110066, INDIA

सीआरएल/सिन
L40200DL1984GO1018976
www.gailonline.com

Award: Nominated for Gold Standard Award by CPC, Taiwan

S. NO.	CROSSING NAME	DIAMETER	LENGTH (M)	COMPLETION
1	Taichung Harbour (Section A)	26"	1418 m	Jun 2016
2	Wusi River (Section D)	26"	709 m	Dec 2016
3	Dudu Irrigation Canal (Section C)	26"	705 m	Apr 2017
4	Shanjiao Dapai (Section B)	26"	798 m	Dec 2017
5	Taichung Harbour	36"	1796 m	May 2019
6	Taichung Harbour	12"	1750 m	Jul 2019

SILKYARA TUNNEL COLLAPSE RESCUE

A section of the Silkyara tunnel in Uttarakhand collapsed in **November 2023** trapping 41 workers. Approached by the **Indian Prime Minister's Office** to lead the rescue operations, we swiftly deployed our American Augers boring machine.



Despite multiple stoppages due to girders locking with augers, we augered 48 meters out of 60 meters of debris, showing our mettle in auger boring operations.

SILKYARA TUNNEL COLLAPSE RESCUE



TESPL team was felicitated by **Shri Nitin Gadkari**,
Minister of Road Transport and Highways in
February 2024.



This achievement is a testament to the rigorous training,
meticulous planning, and cutting-edge technology that
defines our approach.

SILKYARA TUNNEL COLLAPSE RESCUE: In the news



Home News Sport Business Innovation Culture Travel Earth Video Live

In the Uttarakhand tunnel, the auger machine was cutting through the earth and pushing in pipes of 900mm (3ft) diameter through a 60m wall of debris to create an escape passage for the trapped workers.

Last week, the auger's drilling blades came to an abrupt halt at 39m when they hit a rebar. "We withdrew the machine because the auger blades cannot cut through steel," explains Vipin Gupta, managing director of Trenchless Engineering Services, one of the firms engaged in the operation.

It was then that a team of mechanics and manual excavators, armed with gas torches, entered the pipe and skilfully cut through the impediment of steel rebars.

Silkyara Tunnel Rescue Operation: TESL Applauds Manual Boring Team, "They Saved the Day."

The 41 labourers trapped in the Silkyara tunnel in Uttarakhand were rescued on the 17th day of the multi-agency rescue mission on Tuesday (November 28).

India • 3 min read

Reported by: Abhishek Raval

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'It was risky', says mechanic who spent 3 hours in a pipe to cut metal girder

By Amit Bathla

Nov 24, 2023 05:42 PM IST

"I had to spend three hours in the pipe to remove the obstacle. There was a shortage of oxygen in the pipe. It's a risky job"

al Offer - HT + The Economist @3999per year. | [Subscribe Now](#)

Silkyara (Uttarkashi): Praveen Kumar Yadav, a mechanic of the Trenchless Engineering Services, has been at the forefront of removing obstacles that have come in the way of an American auger machine drilling the debris in the collapsed portion of the Silkyara tunnel to rescue the 41 trapped workers.

YOU ARE AT: [News](#) > [India](#) > Uttarkashi tunnel collapse: Rescue ops on hold after 'loud cracking sound', another machine to reach today

Uttarkashi tunnel collapse: Rescue ops on hold after 'loud cracking sound', another machine to reach today

A portion of an under-construction Silkyara Tunnel located on the Uttarkashi-Yamnotri road had collapsed on November 12. The operation has continued for seven days now.

Edited By: Ashesh Mallick X @asheshmallick07

Uttarkashi

Updated on: November 18, 2023 12:55 IST



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Visual of rescue and relief operations



The 30-member team from the Trenchless Engineering Services (TESL) played a major role in the rescue mission by employing the Rat-hole mining technique. | Image: Republic

TESPL has the capability and equipment to execute:

HDD projects:

- ❖ Up to 5000 meters in length and 48” in diameter

MT projects:

- ❖ Up to 600 meters in single drive and 2.5 meters in diameter.

Supported by:

- ❖ **Advanced technology:** Utilizes state-of-the-art HDD machinery and equipment for precision drilling
- ❖ **Experienced team:** Skilled professionals with extensive experience in trenchless technology
- ❖ **Wide range of services:** Offers solutions for HDD, Microtunneling, HDD consultancy, pipe ramming across multiple domains
- ❖ **Client-centric approach:** Focuses on delivering tailored solutions to meet client-specific needs

ANNEXURES

Pipeline Installations > 2000 meters (1/2)

S. No.	COMPLETION DATE	CROSSING	LOCATION	COUNTRY	CLIENT	PIPE DIAMETER (inch)	LENGTH (m)
1	Apr 2024	Ganga River, Katihar	Bihar	India	EIL, NRL	26" + 6"	4027
2	Jan 2024	Yamuna River, Baghpat	Uttar Pradesh	India	IOCL	30" + 6"	3000
3	Apr 2024	Red Sea	Sindhlah	Saudi Arabia	NEOM	20"	2750
4	Jan 2024	Red Sea	Sindhlah	Saudi Arabia	NEOM	20"	2750
5	Nov 2023	Red Sea	Sindhlah	Saudi Arabia	NEOM	18"	2750
6	Sep 2023	Red Sea	Sindhlah	Saudi Arabia	NEOM	18"	2750
7	Jul 2023	Red Sea	Sindhlah	Saudi Arabia	NEOM	14"	2750
8	April 2023	Red Sea	Sindhlah	Saudi Arabia	NEOM	14"	2750
9	Oct 2023	Mahanadi River	Odisha	India	GAIL	24"	3,800
10	Apr 2023	Brahmaputra River	Assam	India	GAIL	24"	3,550
11	Oct 2021	Brahmaputra River	Assam	India	GAIL	6"	3,555
12	Aug 2021	Mahanadi River	Odisha	India	GAIL	12"	3,223
13	Aug 2021	Mahanadi River	Odisha	India	GAIL	6"	3,200
14	Aug 2020	Vashi Creek	Mumbai	India	BPCL	18"	2,552
15	Oct 2019	Vashi Creek	Maharashtra	India	BPCL	6"	2,524

Pipeline Installations > 2000 meters (2/2)

S. No.	COMPLETION DATE	CROSSING	LOCATION	COUNTRY	CLIENT	PIPE DIAMETER (inch)	LENGTH (m)
16	Jul 2019	Ganga River	Bihar	India	PLN	10.75"	2,025
17	Dec 2018	Maner River	Telangana	India	KPTL	18"	2,530
18	Dec 2018	Maner River	Telangana	India	KPTL	6"	2,523
19	Feb 2018	Narmada River	Gujarat	India	OPaL	12"	2,110
20	Feb 2018	Narmada River	Gujarat	India	OPaL	6"	2,103
21	May 2017	Ganga River	Barauni, Bihar	India	JSIW	24"	2,317
22	May 2017	Ganga River	Barauni, Bihar	India	JSIW	6"	2,312
23	Jun 2016	Narmada River	Gujarat	India	ONGC	8"	2,250
24	Apr 2016	Ganga River	Allahabad, UP	India	IOAGPL	8"	2,400
25	Apr 2016	Yamuna River	Saharanpur, UP	India	GAIL	36"	2,000
26	Apr 2016	Yamuna River	Saharanpur, UP	India	GAIL	6"	2,015
27	Sep 2014	Ganga River	Farrukhabad, UP	India	NRP	24"	2,325
28	Sep 2014	Ganga River	Farrukhabad, UP	India	NRP	6"	2,320
29	Jan 2014	Mahi River	Gujarat	India	JSIW	12"	2,121
30	Jan 2014	Narmada River	Gujarat	India	GAIL	30"	2,015
31	Jan 2014	Narmada River	Gujarat	India	GAIL	6"	2,003

HDD Equipment List

S. NO.	Make	Model	Pull Back Capacity (Tons)	Torque (KNM)	Nos.
1	American Augers	DD-1100	500	140	2
2	Herrenknecht	HK-400	400	140	1
3	American Augers	DD-625	300	100	2
4	Max Wild	MW400	400	110	1
5	Laney	Laney 400	400	100	1
6	Goodeng	GD-350	350	80	1
7	Berco	Berco-250	250	70	1
8	DrillTech	DT-260	260	90	1
9	American Augers	DD-440	200	80	3
10	Herrenknecht	HK-150	150	70	2
11	American Augers	DD-220	100	50	2
12	Hutte Bohrentek	Hutte	150	60	1
13	American Augers	DD-140	100	35	3
14	Vermeer	130 x 150	60	30	2
15	American Augers	DD-9	45	25	2
16	American Augers	DD-6	30	25	2
TOTAL					28

Microtunneling Equipment

Equipment	Concrete pipe size (mm)	Steel pipe size (mm)
Soltau 800	800	1000
AVN 1200	1200	1505
1400 (up skin)	1400	1600
AVN 1500	1500	1700
1600 (up skin)	1600	1960
1800 (up skin)	1800	2200
AVN 2000	2000	2400
2200 (up skin)	2200	2725
2400 (up skin)	2400	3025

Clientele

TRENCHLESS
ENGINEERING SERVICES PRIVATE LIMITED



LANCO



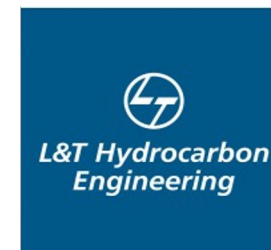
GAIL (India) Limited



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