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Ensus plans to build a number of these world-scale plants in Europe

Ensus PLC Bioethanol Plant

Steve Jones

Documentation Manager, Simon Carves

Construction work is due to commence on the largest Bioethanol production facility of its type in the world. Simon Carves has been awarded the design and construction contract by Ensus, to build the facility that will produce fuel grade bioethanol by fermenting and distilling wheat grain. The plant, which is due to be completed by Simon Carves in early 2009, will produce over 400 million litres per year and is the first world-scale facility to be built in the UK.

This prestigious project, which is anticipated to employ up to 800 people during the construction phase and approximately 100 once the plant is fully operational, is to be constructed at the Wilton International site, Teesside, UK, close to the SABIC UK Petrochemicals LDPE Project, which Simon Carves is also building.

Ensus plans to build a number of these world-scale plants in Europe, therefore, working with world leading technology providers, this significant contract further establishes Simon Carves prominent position in the



design and construction of world scale biofuel facilities.

The project will draw upon the expertise of Simon Carves' offices in UK, India and Singapore.

Biofuels are a source of renewable energy made from

biomass materials. These differ from fossilised fuels such as coal and oil, which are not renewable and limited. The two most commonly talked about biofuels are bioethanol and biodiesel.

Bioethanol

Bioethanol fuel production has existed since Henry Ford first started to mass-produce cars and is commercially produced around the world today from a wide range of crops such as corn, wheat, barley, maize, sorghum, sugar beet and sugar cane.

Bioethanol is a bio-alcohol, which is produced from organic biomass materials that contain starch and sugars. It is made by fermenting these organic materials

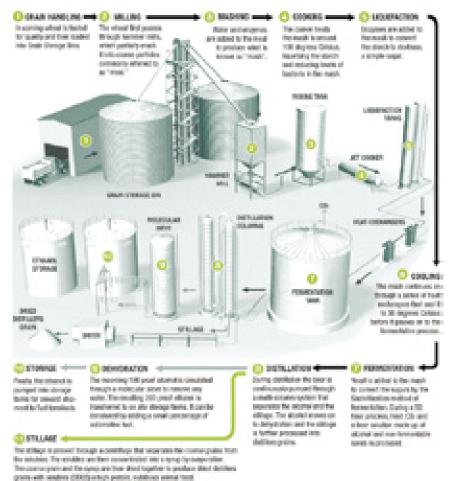


to produce ethanol from their natural starch and sugar content. Bioethanol is a biodegradable and non-toxic alternative to conventional fossil fuels. A main advantage of bioethanol is that it can be easily blended with petrol; a mix of 5 per cent bioethanol and 95 per cent petrol can be used in any vehicle today without the need for modifications to the engine.

Environment

Bioethanol has a number of advantages over conventional fuels. It comes from rotational crops and not from a finite fossil fuel resource. Another benefit over fossil fuels is the associated greenhouse gas emissions. The road transport network accounts for a significant percentage of these. Through the use of bioethanol, greenhouse gas emissions can be reduced as the fuel crops used to produce bioethanol absorb CO₂ through their growing cycle.

The production of bioethanol from the plant will form a key contribution to the EU's strategy to scale-back dependency on fossil fuels and reduce greenhouse gas emissions. As recently as March 9, 2007, the EU Council of Ministers endorsed a 10 per cent binding



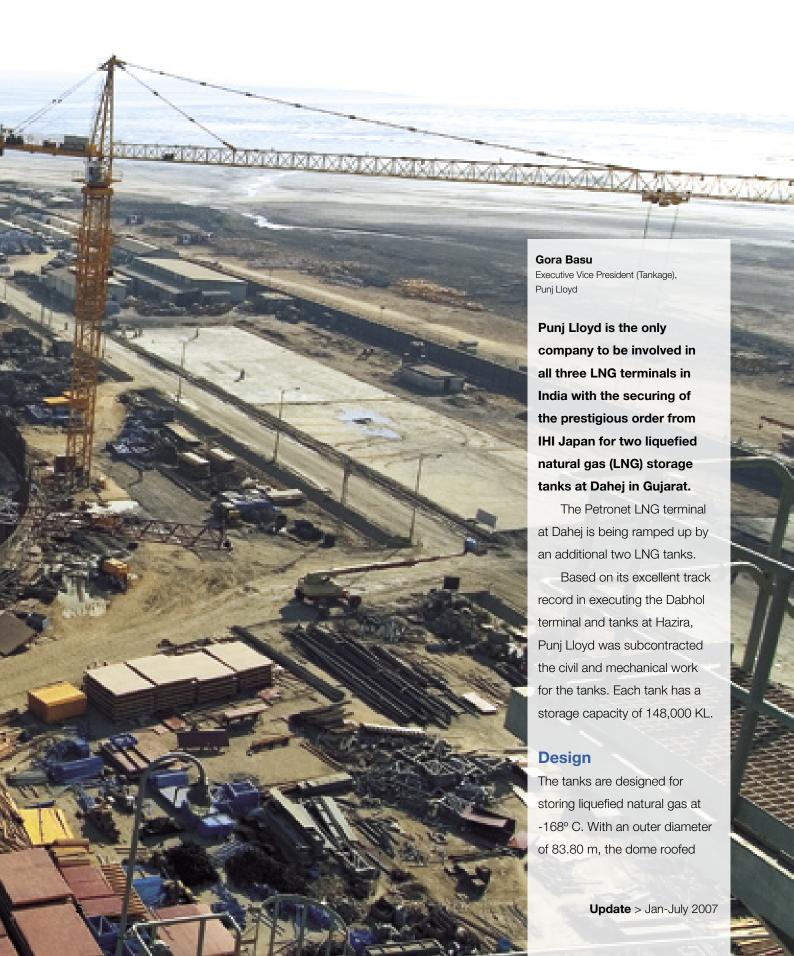
minimum target to be achieved by all Member States for the share of biofuels in overall EU transport fuels by 2020. Within this framework the UK Government has announced that from April 2008 it will set a mandatory target of 5 per cent of transportation fuels to be made up of biofuels by 2010. The facility when fully operational, substantially underpin the UK's entire target.

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The execution of a job of such magnitude requires methodical planning





double integrity refrigerated tanks have a height of 63.5 m at the topmost point of the dome. The internal diameter of the tank is 79 m making it almost as big as a full sized football field. The working height of the tank is 37 m. Each tank rests on as many as 578 bored cast insitu piles, each having a diameter of 1 m, with a depth 36 m.

Execution

The execution of a job of such magnitude requires methodical planning. Nine piling rigs were mobilized. Three batching plants -

90 cum/hr and 30 cum/hr - were installed at site to meet the huge requirement. Feed material like cement, stone aggregate, GGBS and rebars were stocked at locations taking into account the site logistics. Placer booms were put into service to pour concrete into the boreholes. Stringent quality control procedures were adopted at every point of the concreting process.

Most of the piling work was carried out in the period of peak monsoon. The black cotton soil is very difficult to work in. It is of very hard consistency when dry and





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Very difficult to work in, black cotton soil is of very hard consistency when dry and very sticky when wet. Therefore the workability of the soil is often limited to very short periods of medium water status.

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The surrounding areas experienced devastating floods which made logistical support extremely difficult. Sand and bentonite became scarce as most of the supply points were submerged under water. In spite of the breakdown in the supply chain, team Punj Lloyd rose to the occasion and continued with their 'can do' spirit. A total of 1156 piles were finally installed and the piling work was completed.

The base slabs 1 m thick were cast for both the tanks. The base slab is subjected to pre-stressing. Conduits for insertion of the pre-

stressing cables have already been placed and buttresses for carrying out the pre-stressing have been completed. The upper side of the base slab has Krybars, which are rebars conditioned for low temperature applications.

On completion of the base slab, walls are cast in jump form method, using Doka shuttering. Conduits for prestressing cables have been provided for longitudinal stressing of the concrete tank walls. Three tower cranes in each tank have been pressed into service to handle the shuttering and material. As a parallel activity, dome roof panels in 12 long and 12 short assemblies are being constructed outside the tank. These roof panels are then assembled on a



King post and wall supports to form the complete roof. The suspended deck will also be constructed in tandem with the assembly of the roof panels.

On completion of the roof assembly and with the completion of the wall to sufficiently cured state, the roof will be airlifted to the desired height and will be welded to the compression insert. All work pertaining to the internals of the tank, including the secondary bottom, corner protection, installation of foam glass, placement and welding of the annular and sketch plates will then begin.

The exceedingly low temperature requirement for LNG storage calls for metallurgically complex materials. The inner tank will be made of 9 per cent Ni steel. This special steel is impact tested to withstand low temperatures without getting brittle. Punj Lloyd will carry out the erection of these plates to form the internal shell. The welding of plates is an elaborate process and will be carried out by deploying the latest welding machinery to maintain high standards of quality.

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Health, Safety & Environment

We have achieved three million man-hours without any loss time injury, with our proactive approach towards risk assessment. The identified risks were managed through prevention, protection and education initiatives. Regular HSE programs were conducted to develop and enhance competency of employees. Employees with high safety performance were rewarded.

Punj Lloyd is confident of completing the project within the stipulated time - October 2008.





Introducing new technologies Sembawang forges alliance in the Middle East

Brandon Lye

Assistant Vice President, Marketing & Business Development, Sembawang

Sembawang Engineers &

Constructors, one of Asia's largest and most renowned construction companies, has forged an alliance with Capital Industries and Investments (CII), a private equity firm to form the first company to introduce integrated Pre Cast Construction in GCC.

The new joint venture, known as Sembawang Pre Cast Systems LLC, will see the entry of advanced construction technologies for

faster and more efficient project completion.

While Pre Cast systems involve standard industry construction elements such as columns, beams and walls, being manufactured offsite and then installed onsite, Integrated Pre Cast systems go a step further and create combinations of these 'building blocks', which are custom designed for particular projects, and incorporated into the structure as one, such as a column-beam-wall combination.

An equal partnership between its founders, it will introduce for the first time in the region, an integrated

and custom-configured total solution technology for Pre Cast Concrete components and facilitate the unique ability to erect four storeys at a time.

Construction work on a new 624,000 ft² Pre Cast manufacturing plant in Dubai Industrial City is due to begin shortly, and is expected to be completed by October this year. 75 per cent of the plant area will be used in the first phase, which will initially run at 50 per cent capacity, with 200 m³ output per day custommade for each project. The facility will enable architectural projects in the region to be built using advanced integrated Pre Cast systems.



Construction work on a new 624,000 ft² Pre Cast manufacturing plant in Dubai Industrial City is due to begin shortly

These have been widely used in Asian countries such as Singapore to enable rapid project completion and to address a pressing demand for urban development, limited resources and land area.

'Sembawang Pre Cast Systems will make a significant change in the landscape of the Gulf construction industry,' commented Sheikh Sultan Bin Saud Al Qassemi, Chairman of Capital Industries and Investments and of the newly-formed Sembawang Pre Cast Systems. 'Architects and contractors, whether working on buildings, tunnels or lightrail systems, can now take construction processes to a much more sophisticated level and for the first time in the region, apply an integrated approach to the use of Pre Cast technology.'

This technology developed by Sembawang Engineers & Constructors has the unique ability to erect four storeys at a time instead of the current one-storey approach being adopted in the region. This reduces project construction time, by up to 40 per cent. In addition, the advanced technology coupled with Sembawang's technical expertise,

can also significantly help in improving the quality of tunnel lining processes.

'The advantage of integrated
Pre Cast Systems is that they allow
for swift erection of buildings with
better quality and cost control,'
explained Alwyn Keith Bowden,
President of Sembawang Engineers
& Constructors.

Faster implementation and on-time project completion are not the only advantages that come integrated with this technology. With production taking place offsite in the controlled environment of a plant, the system offers improved cost control, quality control, safety standards, as well as lower dependence on an on-site workforce. It enables a more environmentfriendly way of working, with cleaner sites and more space available. Integrated Pre Cast Systems are also a practical and less disruptive way of adding space extensions to existing buildings, with the possibility of attaching complete rooms and balconies to building exteriors.

This is an important milestone for Sembawang. The combination of its years of technical expertise and CII's knowledge of the regional construction market will bring these advantages to the region.

With a multitude of urban development and infrastructure projects underway in the Middle East, this progressive approach to construction will serve better the ambitious deadlines set for projects locally and across the region.

Safeguarding

Sumatra Island, Indonesia





There is a pleasure in the pathless woods, There is a rapture on the lonely shore, There is society, where none intrudes, By the deep sea, and music in its roar: I love not man the less, but Nature more.

> ~ George Gordon, Lord Byron, Childe Harold's Pilgrimage

the Environment

A strong supporter of Environment Protection and Conservation, Punj Lloyd celebrated the World Environment Day on of June 5, 2007 at its various project sites globally. Some activities included tree plantation, awareness programs for local communities and cleaning the surrounding localities.

Assam Road project site, Deuduar





Pipeline site, Tripoli, Libya







Punj Lloyd

The First Corporate to fund the 'Indo-US Initiative for HIV/AIDS'

Siddharth Goel

Project Director, Medicity, Punj Lloyd

Launches 'Pilot Project Medicity'

Although Punj Lloyd is the first corporate to fund the Indo-US Corporate Fund for HIV/AIDS Initiative, it is not the first time the company has addressed the issue of HIV/AIDS. We have been at war against this deadly pandemic for years. 16 workshops at sites, stringent measures for safety at the work place and community awareness programs are just a few steps taken by us.

We are committed to spread awareness and knowledge about HIV/AIDS prevention and address the stigma associated with it. Funding this initiative gave us opportunity to fight the disease on a larger footing.

The Indo-US Corporate Fund for HIV/AIDS initiative was launched in 2006 as part of an agreement between US President, George Bush and Indian Prime Minister, Manmohan Singh, to strengthen public-private cooperation to fight against HIV/AIDS. ICICI Bank and Givelndia (a non-profit organization) are jointly managing the initiative with the objective of enabling Indian





corporates and the US to support the combat against HIV/AIDS in India. While ICICI Bank is marketing the initiative, GiveIndia identifies and manages projects on the NGO side. USAID is covering the initial operating costs of the initiative so that 100 per cent of corporate contributions go to the projects supported.

Realising that construction workers are the mainstay of any project and that their community





is the most vulnerable to HIV, we partnered with SNS Foundation, an NGO in Gurgaon, to focus on our worker community. GiveIndia did a due diligence of SNS Foundation (SNSF) and on February 1, 2007, the pilot 'Life Enrichment- HIV/AIDS Awareness Program' was launched at Medicity, Gurgaon - the unique multi-specialty medical institute under construction. The cheque was presented to SNS Foundation by Luv Chhabra, Director - Corporate Affairs, Punj Lloyd. ICICI supported the occasion with Dr Nachiket Mor, Deputy MD and Ramu Kennedy, Deputy Zonal Manager - Corporate Banking Group. Sheena Chhabra, Division Chief - USAID, Indira

Varadarajan, Executive Director - SNS Foundation, Kala Balan and Shruti from Givelndia also graced the event. The program will be repeated across our sites in 8 states of India, benefiting millions.

Medicity - Setting a precedent

The one-year pilot project at the Medicity will involve 1400 workers and employees of Punj Lloyd towards arresting the spread of HIV/AIDS and removal of the accompanying stigma and discrimination against people living with it. The program aims to institutionalize a Punj Lloyd employee - driven and worker-owned program of HIV/AIDS awareness.

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Educating while entertaining

SNS Foundation marked the beginning of the Life Enrichment HIV/AIDS Awareness Program by organizing an entertaining and unusual street theatre at Medicity. The theatre group presented its first show on February 10, 2007, and was viewed by more than 400 workers, touching upon various modes of HIV transmission, prevention and the importance of a balanced diet to ensure a healthy life.

Baseline Survey

SNSF also conducted a baseline survey to learn about the target group's background, their understanding of HIV/AIDS. A eight member team from SNSF was deployed for conducting the survey among both the workers and staff at Medicity. The survey team underwent a one day orientation training at SNSF. Every question was explained with their options to minimize perceptive error. SNSF also had Focused Group Discussions (FGDs) among workers and staff, which will aid in identifying peer educators

and ambassadors. Health screening camps for the workers and staff were carried out with regular follow up.

Givelndia will provide monthly reports and quarterly feedbacks on the status of the Medicity project while at the same time identifying systems and indicators to measure the project impact and outcome. It has outlined a tracking mechanism by which SNSF can track and report the percentage of awareness levels among the workers.

Complete Health Screening

A team of eye specialist, general physician, dentist and gynaecologist along with paramedical staff undertook complete health screening of all construction workers and staff. Individual health cards were provided to each for proper records, referrals and follow-ups. X ray, ultrasound and other detailed investigations were conducted. Emergency first aid was also provided. 15 women sought treatment, out of which 30 to 40 per cent were pregnant. They were provided antenatal check-ups.

Capacity Building and Awareness Sessions

At the onset, SNSF identified 20 ambassadors and 4 mentors (from among 200 of our employees) 12 peer coordinators, 120 peer influencers (from among our 1200 workers). Capacity building, awareness and counseling sessions were conducted with them, which covered cause of HIV prevention, myths & misconceptions, stigma and STDs.

Mark of Honour

On March 15, 2007, we were awarded a Certificate of Recognition for being the First Corporate to fund this initiative, at a function organized by the US Consular General, Michael Owen at the American Consulate in Mumbai. The reception provided a platform for business leaders to seek greater engagement



on HIV/AIDS related issues and was held under the auspices of the Indo-American Chambers of Commerce and the famous Hollywood Star Ashley Judd who is also the Youth AIDS Global Ambassador.

Up in arms against HIV/AIDS,
Punj Lloyd is confident of making a
tangible difference in the arrest of this
deadly pandemic.

A Tribute to the Hands that Labour

Team from South Sumatra West Java Gas Pipeline project focuses on Safe Working

World Day for Safety and Health at Work is an international campaign to promote safe, healthy and decent work. It is a major component of the International Labour Organization's efforts to raise awareness about occupational health and safety by engaging employers and workers in highlighting the importance of a preventative health and safety.

PT Punj Lloyd Indonesia conducted awareness camps on work-related accidents and ill health, focusing on safety procedures, personnel protective equipment, training, first aid and providing welfare facilities such as clean drinking water and hygienic conditions.

The main emphasis this year is on 'Making decent work a reality'. Safety during construction is a significant focus area as the sector generates high employment. The work is dangerous and may involve working at heights, excavation work,



using lifting equipment, among others.

All employees who maintained high safety were duly awarded.

In remembrance -International Workers' Memorial Day

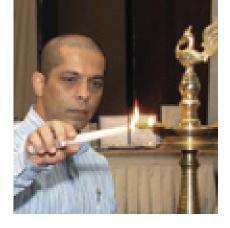
Each year thousands of workers are killed and millions more are injured or diseased world-over, owing to the nature of their jobs. Work kills more people than wars. 28th April is now celebrated annually as the Workers' Memorial Day.

'Remember the Dead and Fight for the Living', the slogan for the

Awareness camps were conducted

on work-related accidents and ill health, focusing on safety procedures, personnel protective equipment, training, first aid and welfare facilities

Workers' Memorial Day urges us to highlight the preventable nature of most workplace accidents and ill health, to promote safety campaigns for improvements at workplace.



Celebrating 26th of June

Louise Sharma

General Manager, Corporate Communication

For a Group that has grown rapidly from a small company to the major force that it is today, 26th of June is much more than a date. It is remembering our humble beginnings and paying homage to our founder - Pandit Kanahya Lal Punj.

On this special day, the efforts of all those who have been with the group are recognised by way of long service awards for 35, 25, 20, 15 and 10 years of service.

Reminiscing, Chairman Atul Punj attributed the group's success to the core team of people who have stood by through thick and thin. He also marvelled at the synergy between the three companies and how well the expertise of Simon Carves and Sembawang meshed with the Punj Lloyd range of services.

'We are in an environment never experienced before, where we can cherrypick our projects, thanks to the high global prices of oil & gas and boom in infrastructure development. We are in the right space at the right time. We have the building blocks to make our presence felt.'

If someone were to ask him which company he would like to benchmark against, his answer would be none.' He would like Punj Lloyd to become the benchmark against which others measure themselves.

Well we second his thoughts! We



are confident that this is achievable as at Punj Lloyd 1 plus 1 is not 2 but 11. We believe in stretching ourselves to the limit. ◆



CEOs Mission

The visit was aimed at sharing India's recent policy changes

Courtesy CII Communique Vol 16, No 6, June 2007

The CEOs Delegation to the US from 3-6 June explored new opportunities for greater India-US economic coopertation and strengthening existing ties. The visit was aimed at sharing India's recent policy changes, rapidly improving business climate and emerging with the American business community, US

government officials, think tanks and Indian Americans.

The CEOs also met with key US Administration officials. On Capitol Hill, the CEOs met with Senator Hillary Clinton.
Issues on immigration, the Civil Nuclear Agreement, Doha Round outsourcing, H1B visas, investment etc were discussed. The investment climate in both countries, India's growing

strength on overseas acquisitions, competitiveness, the US and India's role in the global arena, geopolitical issues etc were also discussed.

In Washington DC, at a joint CII/USIBC luncheon event, Mr Mittal addressed a 250 strong audience, which included CEOs from US business, US Administration officials, the Think Tank community, academia and other members of the media.



Building Infrastructure in **Assam**

Annual rainfall of over 3000 mm is no deterrent to Punj Lloyd Road projects

Akhil Gupta

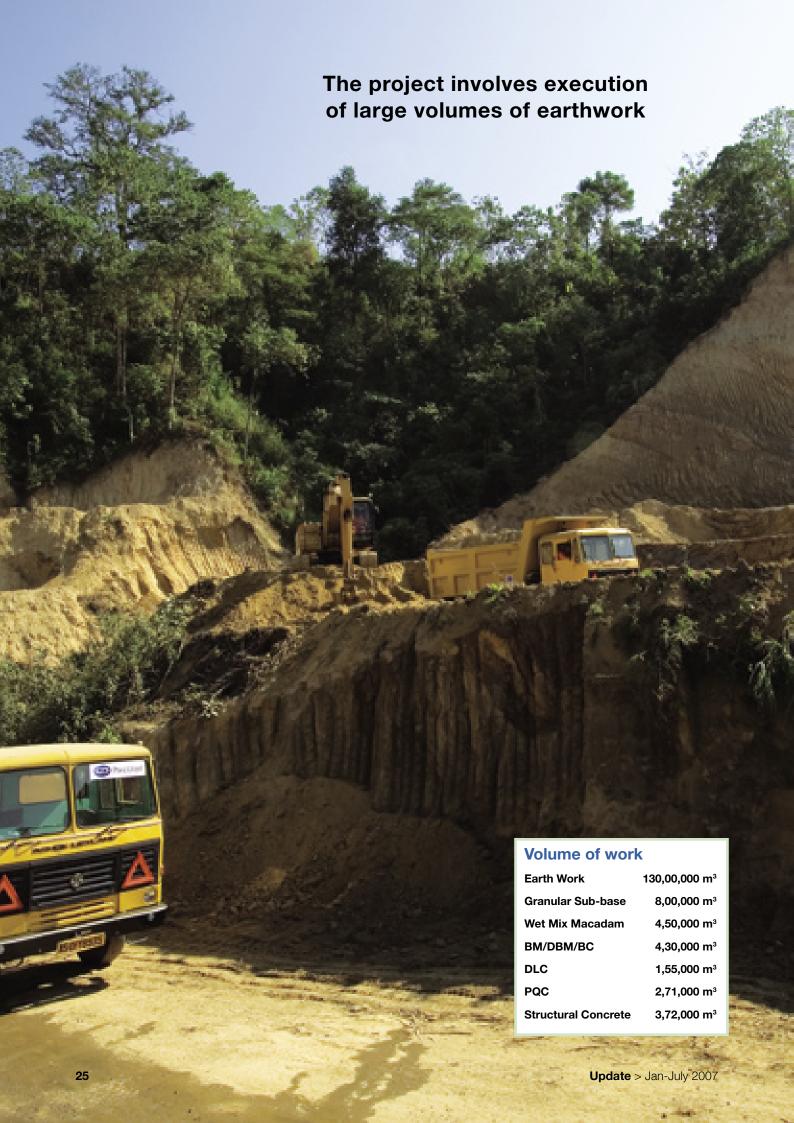
Vice President, Roads & Highways, Punj Lloyd

Punj Lloyd is executing six 4-laning highway projects in the State of Assam. These packages, totalling a length of 157.15 km, were awarded through competitive bidding by National Highways Authority of India (NHAI).

The six road projects are at different locations in Assam. A large number of equipment at a capital cost of Rs 1870 million (US\$ 46.75 million) has been deployed including Slip Form PQC Pavers, Full Width







Six 4-laning highway projects, totalling a length of 157.15 km in Assam Pavers with Hydraulic Sensors, large sized automatic Concrete Batching Plants, Hot Mix Plants, Integrated Stone Crushing and Screening Plants and Earth Moving Equipment.

The projects involve execution of large volumes of earthwork, construction of 25 bridges across the River Beki (400 m long) and River Aie 340 m long), amongst others.

160 well foundations of more than 3000 mm will also be constructed.

Punj Lloyd has set up a fabrication workshop in Rangia, Assam to cater to requirements of over 1000 MT fabricated structured steel. An average annual rainfall of more than 3000 mm in Assam makes civil construction extremely challenging. The projects are being executed independently to speed up the progress.

The projects are slated to be completed by May, 2008. •









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