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Discover everything Scribd has to offer, including books and audiobooks from major publishers. Start Free Trial Cancel anytime. Report this Document Download Now save Save NHAH Manual 4 laning For Later 5K views 2 2 upvotes 0 0 downvotes NHAH Manual 4 laning Uploaded by Aditya S Description Full description save Save NHAH Manual 4 laning For Later 2 2 upvotes, Mark this document as useful 0 0 downvotes, Mark this document as not useful Embed Share Print Download Now Jump to Page You are on page 1 of 88 Search inside document Browse Books Site Directory Site Language English Change Language English Change Language. Auxiliary lanes i.e., turn lanes at intersections are often the same width as through lanes, and seldom less than 10 feet. The majority of heavy vehicle configurations require less than 3.2m lane width at 90kph and 3.1m at 60kph. Lane widths should vary depending on the speed of a road limit segment. The theoretical operation of heavy vehicles within a traffic lane has been modeled on a computer. 1 Lane width should be considered within the overall assemblage of the street. The width of the TWLT lane provided as part of a lane width conversion typically ranges from 10 to 16 feet. Transportation Research Record Journal of the Transportation Research Board 2138 2009 1, 112119. Traffic Engineering and Management 7.5 Slip roads at diverging or merging points are defined by such factors as lengths of nose, taper, parallel lane and merging lane. But in Kerala, National Highways are being upgraded to 45meterwide highways. A design exception is required when a bridge is proposed to be constructed with narrower lanes, shoulders, or both. Median width The median should have a width of least 50 feet 15 m, and preferably 60 feet 18 m, in rural areas, and 10 feet 3.0 m, plus a barrier, in urban or mountainous areas. Rosey, Florence, JeanMichel Auberlet, Olivier Moisan, and Guy Dupre. The standard lane width on all rural expressways is 12 feet. <http://www.pwpn.co.uk/uploads/userfiles/command-aces-of-the-deep-manual.xml>

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The Highway Capacity Manual should be consulted to determine the number of lanes to be used in the design. For a model railroad, Id keep things on the narrower side, like 912 feet. Table 71 shows the lane width for left and right turn channelizations. The cross slope of both the left and right shoulders should be between 2% and 6%, but not less than the main lanes. Queue jump lanes and bus stop laybys may have a width of 3.3m where possible and an absolute 1. Twoway leftturn lanes are required to be at least 14 feet in width, but it is desirable for the lanes to be 16 feet, allowing for a 4foot divider. What are standard road widths in Australia. Numbers Every Traffic Engineer Should Know. By Mike Spack, PE, PTOE. Width of a commercial driveway. Travel lane widths of 10 feet generally provide adequate safety in urban settings while discouraging speeding. Cities may choose to use 11foot lanes on designated truck and bus routes one 11foot lane per direction or adjacent to lanes in the opposing direction. Class G Airspace. We cant connect to the server for this app or website at this time. There might be too much traffic or a configuration error. Try again later, or contact the app or website owner. Roads carry 85 % of passenger and 70 % of freight traffic. National Highways NH constitute only 2 % of total road network, but carry almost 40 % of the traffic. National Highway Development Project NHDP is the worlds largest PPP road development programme. As per the prevailing Govt. Policies, BOT Mode is the preferred Mode of Bidding for NH Projects. In BOT NH Projects, the Concessionaire is responsible for the Design, Procurement, Finance, Construction, Operation and Maintenance of the Project Highway. On one hand, the Concessionaire is responsible for the Quality Assurance during the Construction Period; on the other hand, the Independent Engineer has a defined role towards the Quality Assurance as per the Model

Concession Agreement MCA. <http://www.adntox.com/userfiles/command-2000-manual.xml>

Due to the flexibility provided to the Concessionaire to use output based specifications in the technical parameters for Design and Execution of the Project Highway, serious challenges may arise towards the Quality Assurance of the Project Highway due to noncompliance by the Concessionaire to its obligations as per the MCA. Such challenges may sometimes pose serious safety concerns leading to major accidents at site. In this context, the paper presents a case study of an accident occurred on a major bridge during construction period while executing a National Highway Project on BOT Toll Mode under DBFOT pattern in India. Download fulltext PDF National Highways NH constitute only 2 % of total road network, but carry almost 40 % of the traffic. National Highway Development Project NHDP is the world's largest PPP road development programme. As per the prevailing Govt. On one hand, the Concessionaire is responsible for the Quality Assurance during the Construction Period; on the other hand, the Independent Engineer has a defined role towards the Quality Assurance as per the Model Concession Agreement MCA. Due to the flexibility provided to the Concessionaire to use output based specifications in the technical parameters for Design and Execution of the Project Highway, serious challenges may arise towards the Quality Assurance of the Project Highway due to noncompliance by the Concessionaire to its obligations as per the MCA. Such challenges may sometimes pose serious safety concerns leading to major accidents at site. In this context, the paper presents a case study of an accident occurred on a major bridge during construction period while executing a National Highway Project on BOT Toll Mode under DBFOT pattern in India. Roads carry 85 % of passenger and 70 % of freight traffic. NH constitutes only 2 % of length of total road network, but carries almost 40 % of the traffic NHAI, 2011. National Highway Development Project NHDP Fig.

1, the world's largest PPP road development programme for improvement of National Highways in India covering a total length of 54,454 km. The technical parameters proposed in the MCA are mainly based on output specifications. Only the core requirements of design, construction, operation and maintenance of Project Highway are to be specified and enough room is left for the Concessionaire to innovate and add value. Thus, the Concessionaire is provided the requisite flexibility in evolving and adopting cost-effective designs without compromising on the quality of service for the road users. Cost efficiencies could occur due to the provision of output based specifications in place of conventional input-based procurement specifications, which could provide the opportunity to the private sector to innovate and optimise designs. As per MCA, Monitoring and Supervision of Construction, Operation, and Maintenance is proposed to be undertaken through an Independent Engineer IE a qualified firm that is appointed by the owner agency. As per the MCA, the IE has a defined Terms of Reference NHAI, 2006. Due to the provided flexibility to the Concessionaire to use output based technical parameters in design and construction, and the time bound milestones of the construction schedule, it has been observed that NH BOT Projects have been facing typical challenges in Quality Assurance on account of noncompliance by the Concessionaire to its obligations as per MCA IRC, 1998. Such challenges may sometimes pose serious safety concern leading to major accidents during the construction period in NH Projects IRC, 2001, Newmann, 2011. In this context, the paper presents a case study of an accident occurred on a major bridge during construction period while executing a National Highway Project on BOT Toll Mode under DBFOT pattern in India NHAI, 2010. PREFERRED MODE OF DELIVERY OF NATIONAL HIGHWAY NH PROJECTS IN INDIA As per the prevailing Govt.

<http://www.drupalitalia.org/node/69606>

In the present scenario, there are a handsome number of NH projects which are being executed on BOT Mode. CONCESSIONAIRE'S OBLIGATIONS TOWARDS QUALITY ASSURANCE As per the MCA Planning Commission, 2011, the Concessionaire has the following obligations. The Concessionaire shall, at its own cost and expense, procure finance for and undertake the design,

engineering, procurement, construction, operation and maintenance of the Project Highway and observe, fulfill, comply with and perform all its obligations as per MCA. The Concessionaire shall ensure that the personnel engaged by it in the performance of its obligations under the Concession Agreement are at all times properly trained for their respective functions. The license, right of way and right to the Site granted to the Concessionaire as per MCA shall always be subject to the right of access of the Authority and the Independent Engineer and their Employees and Agents for inspection, viewing and exercise their rights and performance of their obligations under the MCA. MONITORING OF CONSTRUCTION WORKS AS PER MCA Relevant guidelines of MCA Planning Commission, 2011 are as follows. It shall send the copy of the Inspection Report to the Authority and the Concessionaire within seven days of such Inspection and upon receipt thereof, the Concessionaire shall rectify and remedy the defects or deficiencies, if any, stated in the Inspection Report. Such Inspection or submission of Inspection Report by the Independent Engineer shall not relieve or absolve the Concessionaire of its obligations and liabilities hereunder in any manner whatsoever. The Concessionaire shall, with due diligence, carry out or cause to be carried out all the tests in accordance with the instructions of the Independent Engineer and furnish the results thereof to the Independent Engineer.

<https://javisintlmedia.com/images/canon-mp500-user-manual-pdf.pdf>

In the event that results of any tests conducted establish any defects or deficiencies in the Construction Works, the Concessionaire shall carry out remedial measures and furnish a report to the Independent Engineer in this context. The Independent Engineer shall require the Concessionaire to carry out or cause to be carried out tests to determine that such remedial measures have brought the Construction Works into compliance with the Specifications and Standards, and the procedure set forth in the MCA shall be repeated until such Construction Works conform to the Specifications and Standards. During the Construction Period, the Concessionaire shall provide to the Authority for each calendar quarter, a Video Recording, which will be compiled into a three hour compact disc or digital video disc, as the case may be, covering the status and progress of Construction Works in that quarter. The Sub structure of Piers has a circular type RCC Cross Section with 3 m diameter. The EPC Contractor proposed the casting of Pier Cap using Support Trusses on to the Pier sub structure Fig.3 to Fig.5. By the time of accident, the status of the then ongoing construction work was as follows. Foundation raft for Piers, P4 to P10, and P14 to P23 was completed. Foundation excavation was in progress for the Abutment, A2. Substructure up to full height was completed for Piers, P4 to P10, P14, and P16 to P23. Substructure's casting was in progress for Pier, P15. After de shuttering, the same sets of Trusses were shifted from P22 to P20. Erection of Form work at P20 was done and reinforcement was put in place and P20 was ready for concreting. Description of the accident A total of 48 cum of concrete was proposed to be used in the construction of the Pier Cap of P20. Before concreting, the reinforcement, form work bracing, support, working plate forms, railing, were checked by the Concessionaire's Project Management Consultant PMC.

<http://energysatrap.com/images/canon-mp500-printer-manual.pdf>

The angle beam metal sheered and the truss collapsed under the load around 12.30 PM on the day of the accident. At the time of the accident, there were 12 persons on the top of the Pier Cap including one EPC Engineer. Out of 12 persons, 7 persons fell on the ground and 5 persons remained at the top of the Pier Cap of P20. These 7 persons were rushed to the hospital, out of which 3 persons died and the remaining 4 were seriously injured. Probable reasons for failure of the truss Detailed investigations were got carried out through the Independent Engineer to know the probable reasons for failure of the supporting truss. The observations of the Independent Engineer are as follows. The failure could have occurred due to slippage of Nuts used for fixing of Support Truss frame to the vertical Tie Rods. Collapse of Support Truss could also have occurred

due to failure of one of the welded joints. The Concessionaire did not follow proper Safety Procedures Outer side welded with 2 pieces. 10 mm thick welded with only Top portion that too without any Inside Welding Fig.. Thickness of the welding was varying in the range, 1mm to 2 mm for sections wherever welding was done. At End portion of Plate form truss which is able to carry load up to 3.5 T, is supported by welding only. It is not a continuous member of a truss B and D. The used Support Truss was not used in further construction work. Design of the Support Truss System was carried out afresh by removing the short falls. The Shop Drawing was verified by the Designer of the Support Truss to conform that it fulfilled the design requirement. CONCLUSIONS In BOT Projects, the Concessionaire is responsible for the Design, Engineering, Procurement, Finance, Construction, Operation and Maintenance of the Project Highway. As per MCA, the Concessionaire has defined obligations towards the Quality Assurance during the Construction Period.

In National Highways Projects on BOT Mode, typical challenges in Quality Assurance may arise on account of noncompliance by the Concessionaire to its obligations as per the MCA. These Quality Assurance challenges may pose serious safety concern during Construction Period leading to major accidents. As per MCA, the Independent Engineer has a defined Role towards the Quality assurance during the construction Period. For ensuring proper Quality Assurance during Construction Period, the Concessionaire and the Independent Engineer have to fulfill their defined obligations as per the MCA. Proper Safety Measures as per the Good Industry Practice must be followed during the Construction Period. ACKNOWLEDGEMENTS The Authors sincerely express their gratitude to the Director, CSIRCRRRI, and the Chairman, NHAI, for their permission and guidance to prepare and publish this paper. The Authors also acknowledge the assistance received directly or indirectly from the concerned Staff Members of CSIRCRRRI for the preparation of this paper. Revised Strategy for Implementation of the National Highways Development Project NHDP Framework and Financing Jan 1996 Report of B.K. Chaturvedi Committee on NHDP 2010, Revised Strategy for. Implementation of the National Highways Development Project NHDP Framework and Prestressed and Composite Concrete, IRC Prestressed and Composite Concrete, IRC. The first tool is named PANDA and was developed for quality control services for inspection of Medical Devices. PANDA is used directly in connection with inspection of a wide range of medical devices. Extended reuse of previous work and modular construction assists in the construction and maintenance of the inspection procedures. The sequence of inspection instructions can be controlled by a logic language. Object oriented programming is also used throughout for the database. The tool is characterised by its ability to fully document the circumstances under which the inspection is performed.

avenirpourtous.fr/wp-content/plugins/formcraft/file-upload/server/content/files/1626bfea7b591f--computational-fluid-mechanics-and-heat-transfer-solution-manual-pdf.pdf

This makes PANDA a candidate for ISO 9000 work. The second tool is a European Database for Quality Assurance Data EuroQADB. The purpose of the EuroQADB is the exchange of inspection procedures and inspection data gathered using PANDA. Read more Article Quality assurance at construction sites with the digital pen January 2010 U. Crombach Regional utility Lechwerke AG LEW, which supplies with 1700 employees energy to the area between the rivers Iller in the west, Lech in the east, Danube in the north and the alps in the south and to other regions nearby, relies on the Digital Pen for mobile data gathering in quality assurance. A reasonable number of unannounced routine checks follow. LEW started a pilot with the digital pen solution FelixPen. LEWs QA experts regularly and with no announcement check a large number of construction and maintenance sites. Forms used have been systematically redesigned for easy, comprehensive and fast use which also eases later analysis. This allows for an even better quality management and customer service, improving LEWs already excellent position in the market. Read more Article Quality Control and Quality Assurance in Bituminous Road Construction in India October 2018 Prithvi Singh Kandhal Rajan Choudhary Abhinay Kumar Published in Indian Highways, Indian Roads Congress, 4610, 1118.

Abstract. Quality assurance is the responsibility of the owner such as NHAI, representative of NHAI, or a concessionaire. For quality assurance paving project is first divided into lots and sublots. Quality assurance is done with the help of percent within limits PWL and pay factors price adjustments, which are determined for each lot from test values of sublots. For QA a computer software program based on Excel has been developed at IIT Guwahati exclusively for this paper and is available online.

With this program it is quite easy to calculate the mean, standard deviation, and PWL once the five subplot test results are entered along with the minimum and maximum specified limits for the test parameter. Read more Book Aerospace Design for Manufacturing, Assembly, Quality, Inspection, Service, Hitech Project Management. January 2016 Paul Ranky Aerospace Design for Manufacturing, Assembly, Quality, Inspection, Service, Hitech Project Management and Maintenance Engineering Challenges and Solutions. Aviation Quality Assurance for Design, Development, Production, Installation, Servicing and Maintenance. RIS BibTeX Plain Text What do you want to download. Citation only Citation and abstract Download ResearchGate iOS App Get it from the App Store now. Install Keep up with your stats and more Access scientific knowledge from anywhere or Discover by subject area Recruit researchers Join for free Login Email Tip Most researchers use their institutional email address as their ResearchGate login Password Forgot password. Keep me logged in Log in or Continue with LinkedIn Continue with Google Welcome back. Keep me logged in Log in or Continue with LinkedIn Continue with Google No account. All rights reserved. Terms Privacy Copyright Imprint. The National Highway planning manual of National Highways Authority of India NHAI clearly points out that there should not be any direct access to the main highway and any such connectivity should be made through deceleration and acceleration lanes. According to Project Director NHAI 17B P S Doddamani, the Highway Ministry has clearly laid guidelines that in order to avail access to National Highway from any internal road one should construct a service road on his own that too following all specifications. However, several projects for which the NHAI has given its NOC for connecting their internal roads to NH have violated the norms, which in turn has been root cause behind accidents taking place on the NH17 B road.

“The most essential elements which NHAI follows while planning any national highway project is that there shall be no direct access to the main highway and all access from local road network to the main highway shall be from service roads or through an acceleration lane and not 90 degree road directly connecting the highway so that traffic on the national highway should not face any inconvenience or risk of accident,” Doddamani said. Interestingly, the Highway Ministry has also suggested that, before local authorities grant any permission to the commercial or residential projects, a copy of the project files should be made available to the NHAI and only after the NHAI conducts inspection and issues NOC to the project proponent, the files should be cleared. However, in Goa, such rules are not been followed. “In other States, the PDAs, municipalities and panchayats follow the procedure and mark a copy of the project located close the national highway. To implement the same, we requested the local PDA, municipality and panchayats to do the same. However, till date we have not received any reply to our official correspondence. Today, plenty of direct accesses have been made to NH17 B road which have literary become a death traps for motorists” Doddamani said. Likewise, there has been no control on encroachments on NHAI property. From Varunapuri to Verna part of NH17 B project, several people have already encroached NHAI land, some of them have even laid pavers touching the gutters located at the end of National Highway road, while some have even constructed a slab which directly connects to the highway from their home. Many people engaged in supplying building materials have even started their business on NHAI land. “Even we have come across cases where people have encroached NHAI property.

We have also noticed that few builders have even laid pavers over the underground Naphtha as well

as water pipeline, so now we have decided to take encroachment issue very aggressively before local administration and soon we would be issuing notices to all such violators," Doddamani told Herald. Fax 2225622. Also complain if he feels that any bad quality materials are being used in the PWD's work or any bad workmanship has been observed. Also upload any suggestions, queries, information in respect of PWD's work to the above Whatsapp no. Ruling emperors and monarchs of ancient and medieval India continued to construct roads to connect the cities. In 1943, they proposed a twenty-year plan to increase the road network from 350,000 kilometres 220,000 mi to 532,700 kilometres 331,000 mi by 1963, to achieve a road density of 16 km per 100 km² of land. The construction was to be paid in part through the duty imposed, since 1939, on petrol sales. This became known as the Nagpur Plan. The Act empowered NHAI to develop, maintain and manage India's road network through National Highways. However, little happened until India introduced widespread economic liberalization in the early 1990s. The flagship project of the NHDP is the Golden Quadrilateral, a total of 5,846 kilometres 3,633 mi of four-to-six-lane highways connecting the four major cities of Delhi, Mumbai, Chennai and Kolkata. The project aims to connect Srinagar in the north to Kanyakumari in the south including a spur from Salem to Kanyakumari, via Coimbatore and Kochi, and Silchar in the east to Porbandar in the west. National Highways are designated with NH, followed by the highway number. Indian national highways are further classified based on the width of the carriageway of the highway. The NHAI has been undertaking developmental activities under the National Highways Development Project NHDP in five phases. From 2018, the pending projects under NHDP are expected to be subsumed under Bharatmala.

The NHAI is also responsible for implementing other projects on National Highways, primarily road connectivity to major ports in India. They also connect with National Highways or state highways of neighboring states. State Highways are designated with SH, followed by the highway number and preceded by state code. Most of the state highways are developed by state public works departments. Independently of the NHDP program, state governments have been implementing a number of state highway projects since 2000. They also connect with the state highways and national highways. As per the broad classification of roads, the MDRs are to have a minimum width of 15 metres 49 ft with traffic density of 5,000 to 10,000 Passenger car equivalents PCUs. The scheme envisions that these roads will be constructed and maintained by the village panchayats. The effort has aimed to build all-season single-lane asphalted roads to connect India's rural and remote areas. In addition to maintenance, the expansion of the network and widening of existing roads is becoming increasingly important. Because of the congestion, the fuel efficiency of vehicles in India is very low. A Ministry review, carried out in September 2011, found a lack of skilled technicians on construction sites. In contrast, a similar journey takes about half the time in China, and one-third in European Union countries. Some findings of this report include poor rural roads and traffic congestion inside the cities remains a challenge in India. Retrieved 22 March 2020. Retrieved 31 March 2017. Archived from the original on 4 March 2016. Retrieved 16 January 2018. Retrieved 15 January 2018. October 2011. Retrieved 16 September 2016. Retrieved 21 August 2010. Retrieved 18 April 2015. Retrieved 16 July 2019. By using this site, you agree to the Terms of Use and Privacy Policy. We are a nonprofit group that runs this service to share documents. We need your help to maintain and improve this website. To browse Academia.

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The highways ministry on Saturday asked NHAI to take a call on the number of toll lanes where cash payment will be accepted till January 15 and their number shouldn't be more than one-fourth of the total toll collection counters. Earlier, the ministry had announced that vehicles without tags won't be allowed to enter the FASTag lanes and there will be only one lane left on each side for accepting cash payment. But considering issues faced by commuters, the ministry relaxed the norm and said at least 75% toll lanes at toll plazas on national highways must have electronic toll collection. TOI on July 20 had first reported that the government can't deny accepting cash a mode of payment of toll charge by vehicle users and that it would have to allow this on one or two lanes. FASTag trial Long queues at cash lanes take a toll on commuters The government had earlier said that no vehicle will be allowed to pass through any toll plaza without a FASTag from December 1. Later it had said that there will be one hybrid lane at every toll plaza to facilitate over-dimensional or oversized vehicles where FASTag and cash payment will be accepted. The plan was to eventually phase this out as well. NHAI to operate more hybrid lanes until 75% of vehicles are fitted with fastag However, though the highways ministry's direction is silent on whether vehicles without FASTags entering tag lanes would have to pay double of toll charge, NHAI has suggested that they should be allowed to start charging amount after 45 days from December 15. The ministry has said the regional officers of NHAI will be authorised to decide how many lanes need to be earmarked as hybrid lanes to take cash and transact FASTags after assessing the traffic pile up at high volume plazas. Till Saturday, the NHAI and other agencies had sold over 96 lakh FASTags across India. For reprint rights Times Syndication Service. IST and tender may be submitted online following the instruction appearing on the screen.

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