BIM Modelling of Urban Corridors

Akshay Zadap[1] , Harshavardhan Deore[2], Kartik Vichare[3],Sharad Kurhat[4],Aavani P Thampi[5]
[1,2,3,4]U.G. Students, Dr. D.Y. Patil Institute of Engineering, Management and Research, Pune-411044
[5] Assistant Professor, Dr. D.Y. Patil Institute of Engineering, Management and Research,Pune-411044

Abstract- *Traffic flow can be divided into two primary types. Understanding what type of flow is occurring in a given situation will help you decide which analysis methods and descriptions are the most relevant. The first type is called uninterrupted flow, and is flow regulated by vehicle-vehicle interactions and interactions between vehicles and the roadway. For example, vehicles traveling on an interstate highway are participating in uninterrupted flow. The second type of traffic flow is called interrupted flow. Interrupted flow is flow regulated by an external means, such as a traffic signal. Under interrupted flow conditions, vehicle-vehicle interactions and vehicle-roadway interactions play a secondary role in defining the traffic flow. In this project various case studies are analysed with traffic volume data and effective solutions are made using BIM softwares.*

Keywords- Traffic management, BIM, Traffic flow, Diversion.

I. INTRODUCTION

Introduction

Congestion of traffic is a solemn experience faced by the traffic users who travel on urban roads. Due to traffic congestion, traffic commuters spoil valuable time, fuel and money. Congestion on urban roads can be mitigated by creating additional infrastructure, however, it is sometimes not feasible or possible to create additional infrastructure due to several reasons, such as unavailability of required fund, unbreakable permanent structure and so on. However, the existing infrastructure may be slightly modified to minimize the congestion on urban roads. As for an example, creation of a bypass over a city may decrease the number of vehicles entered in the city, and thus minimizing traffic loads on urban roads.

Congestion sometimes occurs due to unorganized flow of vehicles on urban roads and an organized traffic flow may lead to minimization of congestion. Random distribution of traffics at different paths of an urban traffic may cause traffic breakdown at the peak hours. Therefore, an optimized allocation of paths is necessary to mitigate the traffic breakdown. A traffic stream is a group of vehicles those are to pass towards a road trough a junction. In general, the traffic stream, when flows through a junction, the flow can be categorized as free flow, merged flow and a crossing. A free flow refers the streams of vehicles without any interruption, which generally available at the left hand directions at the junctions from one road to another road. A merged flow refers to merge of two or more streams of vehicles at the road junction, which are merged together to become a single stream towards another road. However, a crossing may be described as a stream of vehicles which has to wait for another stream which is flowing through the junction. When there is a crossing, it always has to be controlled by traffic lights or traffic police. When the traffic police or light stops a vehicle flow it increases the travel time. Out of all the three categories, free flow incurs zero waiting time and the crossing incurs maximum waiting time. The merged flow incurs extra time to adjust the flow and merge it with other streams. It means that time required for free flow is less than the time required for merged flow and time required for merged flow is less than the time required for crossing. The aim of the developed system is to avoid the crossing and thus allowing only merged flow and free flow through a junction. To do so, the system allowed only free flow and merged flow at the junctions without disturbing the overall traffic network. The flow allocation technique has discussed in two situations. In the first situation, a four road junction which acts as a gateway to the urban traffic network has been taken into consideration for uninterrupted flow system. This type of junction daily incurs numerous vehicles entry and vehicle exit.

A four road junction has always crossings, so there may be traffic jam at peak hours mostly in morning and evening time when large number of vehicles enters and exits to and from the urban roads. In the second situation, a busy market in an urban area has been considered to build an uninterrupted flow system. The busy urban area are consists of several market places a there are many three road and four road junctions exists in that urban area

Fig1.1Traffic flow

Problem Statement

Congestion Of traffic is solemn experience faced by the traffic users who travel on urban roads.Due to traffic congestion traffic commuters spoil valuable time,fuel and money. Wagholi has rapidely developed as a suburb of pune city with mega housing n schooling projects hence leading to a mass increase in traffic congestion time taken for travelling.Schools,colleges,IT parks & major housing projects been constructed has led to serious increase in traffic problems.

Scope of Project Work

In recent years popularity of private motor vehicles is getting urban traffic more and more crowded. As result traffic monitoring is becoming one of important problems in big smart-city infrastructure all over the world. Some of these concerns are traffic congestion and accidents that usually cause a significant waste of time, property damage and environmental pollution. Any type of congestion on roads ultimately leads to financial losses. Therefore, there is an urgent need to improve traffic management. Through collected real-time traffic data, the system can recognize current traffic operation, traffic flow conditions and can predict the future traffic flow. The system may issue some latest real-time traffic information that helps drivers choosing optimal routes. Therefore, the system can precisely administrate, monitor and control moving vehicles.On most significant / complex projects, design teams are now documenting in 3D. This is delivering the benefits of improved coordination. Coordinated 3D modelling is only one aspect of the BIM process. To date the focus on BIM implementation has been at a project level. However, over the past couple of years there has been a push in the department to expand BIM to a network level, from design into construction and finalisation, to provide better data for Asset Management which is managed at a network level via a suite of internal asset management systems.

II. METHODOLOGY

Introduction:

In the ancient times, there was no transportation system. With the passage of time human beings tamed animals and used them as mode of transportation. Invention of wheel marked the turning point in human civilization. Carriages that could carry three-four passengers, driven by animals, came into usage. In the sixteenth century invention of automatic mechanized vehicles helped people travel from one place to another faster. The world’s first car was invented in 1769 by Nicholas Joseph Cugnot. After that there was no turning back, vehicles of different shapes and sizes began to be developed and introduced. All this brought with them a new threat to human life i.e. roadside accident. Ways and means were introduced for safety and smoothness of traffic on roads. Several rules were introduced to make the road safe and reduce the number of accidents. Even Manusmriti and Kautilya’sArthashastra contain road rules and regulations in great detail.

The rules have been modified from time to time, keeping in view the local/topical needs and requirements. New regulations have been laid down for different categories of road users.

- As wheel got invented in the Mesopotamian Civilization, our own civilization was set to motion, for it wheeled our imaginations. In 1645 a sort of cycle was invented by Jean Theson but it had no Brakes, Peddle or Steering and needed feet motion. Lau machine cycle was then created by Karl Von (1817). Soon this was made into the regal Dandy Horse by Dennis Johnson. In 1839 the proper cycle was shaped by K. Macmillan. It had iron wheels and a wooden frame. The manifestation of automobile horse-power was taught in 1769 by Nicolas Joseph Cugnot, who invented the first 'Steam Truck' which the French army thought was useful.

- Then after, automobiles enveloped our life and culture. But the notion called ‘accident’ endangered our future. The first accident of the Steam Truck in 1771 was the eye opener. During 1899 the first fatal accident took place with the death of a driver. Then onward, the world coined several road safety measures. Still, today12 lakh people are killed and 50 millions get seriously injured all over the world every year.

- This accident menace makes our citizens an endangered species of the future. So let us follow the Road Safety Culture and be cautious about traffic rules today’s informed child can only ensure a safe future.

The Firsts in the History of World Traffic:

- The First Accident:- In 1771 the first accident involving a motor vehicle took place in Paris when Cugnot's steam tractor hit a low wall in the grounds of the Paris arsenal.
- The First Act: - The Locomotives and Highway Act was the first piece of British motoring legislation. This was also known as the red Flag act of 1865. The act required three persons in attendance one to steer, one to stoke and

one to walk 60 yards ahead with a red flag to warm the oncoming traffic.

- First Man to Be Challenged: - In 1895 John Henry Knight was convicted and fined for using a motor-tricycle on the highway. He was probably the first motorist to appear in court.
- First Fatal Car Accident:- The first motor-car accident in Britain resulting in the death of the driver occurred in Grive Hill, Harrow-on-the Hill, London on 25th February 1899.
- Dusty Road to Tar Surface: - In 1902 Tar was first used on a Macadam surface to prevent dust in Monte Carlo. It was the idea of Dr. Guglieminetti, a Swiss. At first the tar was brushed on cold, but soon it was applied hot.
- The First Number Plate of London: - The Motor car Act of Britain came into force on 1st January 1904. It required that all cars be registered and carry a number plate, and all motorists to have a driving licence. But there was no driving test to pass and the licence was obtained by filling up a form and paying the fee at a post office. The act made dangerous driving an indictable offence.
- The First Petrol Pump: - The first petrol pump was installed in USA in 1906.
- The First Traffic Light of the World: - The World’s first traffic lights were installed in Detroit, USA in 1919. The first traffic lights in Britain were installed in Wolverhampton during 1928. However, they did not come to London till 1932.
- Pedestrian Crossing: - The pedestrian crossing was instituted in Britain in 1934. The roads were marked by dotted lines. On the pavement there were striped Belisha beacon light poles named after Britain’s Minister of transport L. Hore-Belisha. The Zebra crossing with black and white stripes was developed after the Second World War.
- First Traffic Police Woman: - Police woman were used for traffic control duties for the first time in Paris, in 1964. In Delhi, we introduced woman traffic police, in 1989.
- First Box Junction: - Box junctions, marked with yellow cross-hatching, were introduced in London during 1964. The aim was to prevent traffic blocking junctions when it could not proceed and this was successful.

Need of Road Safety:

Modern metropolitan living is getting more and more associated with traffic hazards. This can be attributed to complex and complicated road structures as well as increasing human and vehicular population. Enhanced life style and increase in the number of privately owned vehicles especially two-wheelers have made travelling on roads the most dangerous tasks to be undertaken. Globalisation, free market economy and free trade policies have had a direct impact on the increase of automobiles on roads, which in turn have led to vehicular congestion. Though the number of vehicles increased, the length and breadth of roads remained static. The only way left with the authorities to cope up with problem was to make improvisation on the already existing structures. Hence, construction of flyovers and other road accessories to ease vehicular movement. All such high-tech construction works involved engineering skill of a higher order and traversing on them requires driving skills of the higher order, which only a few road users have. Though this has eased congestion, chances of accidents have increased. And in maximum cases, accidents occurred because of human folly. Free flow of traffic has resulted in increase in speed of vehicles, which in turn has resulted in maximum number of accidents on flyovers because of drivers’ inability or incompetence to manipulate the speed properly. Most of the drivers lack intuitive judgment and defensive driving skills, the necessary qualities that a driver must possess

2.3 Introduction to BIM

While numerous individuals instinctively consider BIM programming, actually BIM is the way toward making and utilizing computerized models for outline, development or potentially activities of building ventures. Programming is essentially the component by which the BIM procedure is accomplished.

The BIM process involves participants from the entire project life cycle (architect, engineer, contractor, owner, facilities management, etc.) who all contribute and communicate through the shared models. These models consolidate canny 2D and 3D objects used to characterize a building outline, alongside outer factors, for example, geographic area and nearby conditions, into a virtual building database that gives a solitary, coordinated hotspot for all data related with that building's design.

The “intelligence” attributed to the objects includes parametrically-defined graphical and non-graphical information, giving the architects, MEP engineers, and contractors the ability to represent geometric and functional relationships between building elements.

This data nourishes an incorporated database, which thusly sustains all outline archives and timetables for the building project. When a change is made to the building model, every graphical view (design, height, detail, and other development illustrations), and also non-graphical perspectives, for example, the plan documents and schedules automatically reflect the change.

Key Features of BIM

1. Improved information flow
2. Better design visualization
3. Improved cost estimating
4. Change Management
5. Data management
6. Sustainable Design
7. Improved energy analysis
8. Reduced construction costs
9. Building history

Building data displaying (BIM) and related issues has been a subject of serious innovative work, as revealed in the ongoing academic writing. Improvements in the efficiency of the planning and design processes, construction planning and control, design-construction integration, and facilities management have been analysed. Also, benefits got from BIM execution have been characterized in view of enhancements accomplished all through building-related processes. It is broadly acknowledged by specialists and confirm by earlier research that BIM and 4D approaches can give quicker and more compelling correspondence of data between interested project parties and yield improved and innovative solutions stemming from better design, along with many other benefits. Building data demonstrating (BIM) is a procedure including the age and administration of computerized portrayals of physical and practical qualities of places. Building data models (BIMs) are documents (regularly yet not generally in restrictive configurations and containing exclusive information) which can be separated, traded or arranged to help basic leadership with respect to a building or other built asset. Current BIM software is used by individuals, businesses and government agencies who plan, design, construct, operate and maintain diverse physical infrastructures, such as water, refuse, electricity, gas, communication utilities, roads, bridges, ports, tunnels, etc.

The Benefits Of Building Information Modeling (BIM)

a) Maximum Efficiency In Planning & Management:

With limited budgets and accelerated schedules, today's facility managers, architects and construction teams often struggle to communicate their needs clearly to each other – this can lead to lost time and productivity as well as increased waste on the jobsite.

BIM is the process of creating an accurately-detailed 3D model of your structure, including as much or as little detail as you like. This allows anyone on any team to easily visualize complex concepts and how they fit into the bigger picture.

Reducing communication error goes a long way towards streamlining projects and improving bottom lines, but that's just the beginning. BIM software creates 5-dimensional representations (a 3D model with time and cost as the 4th and 5th'dimensions', respectively) to describe entire projects and the individual systems within them.

It sounds complex – but in practice, Building Information Modelling is beautiful in its simplicity and effectiveness.

b) Virtual Construction

BIM software lets you construct your entire building virtually, before you ever break ground. This removes uncertainty and doubt in your plan by helping you work out any potential issues before they arise. Time-compressed simulations let you experiment with new ideas, identify any emergent problems, isolate the faulty system and make pre-emptive course-corrections quickly and easily during the design phase. You'll also be able to accurately judge at a glance when to order various materials, avoiding the liability, upfront expense and potential wastage of maintaining an onsite stockpile.

c) Facility Management Made Easy

When you're coordinating teams to execute a project with minimum impact on smooth facility operation, clear communication is crucial. Allowing each team to contribute their expertise to an accurate model reduces the likelihood of mistakes and misunderstandings.

With a perfect model to reference, it's much easier to identify the causes of problems as they occur. For example, imagine you have an electrical short somewhere inside an interior, load-bearing wall. The short compromises your facility's operational capacity and you need it fixed now. You can locate the problematic junction box – down to the manufacturer and part number – precisely on your model to minimize the impact of repair work and get your facility up and running as quickly as possible

III.PROBLEM STATEMENTS

Following TheRefrence Case Study

Solution on Case study :

PUNE RING ROAD (PMRDA,Pune connectivity hub)

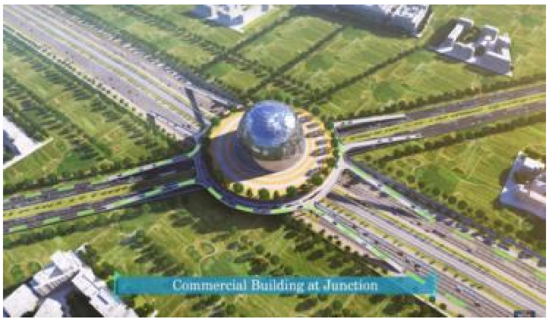


Fig 3.1 : 3rd eye view of actual site

SITE DETAILS
Name of site : PUNE RING ROAD (Pune connectivity hub)
Location Of Site : Pune

A proposed site is taken for case study location is inDeccan,Pune.

Design Team: PMRDA

Builder :PMRDA,Mygov Maharashtra

PMRDA, Pune connectivity hub

Pune is a historic city and PimpriChinchwad Township, which was initially considered a satellite town, has gained importance as a twin city owing to rapid industrial growth and IT hubs. The population of Pune Metropolitan Region is ~73 lakhs as per the 2011 Census of India. The proposed Pune Ring Road, as notified in the year 1997, passes through the Pune Metropolitan Region connecting the above mentioned automobile, IT and educational hubs. The total length of the proposed Ring Road is 128.66 km with width of 110 metres. It will have 3 lanes as service roads on both sides for local traffic needs, 4 lanes of access control intercity road for through traffic on both sides and a 33.5 metre-wide Metro corridor for mass transit. Suitable space is kept for beautification and landscaping so that this Ring Road becomes a tourist destination by itself. It is proposed to execute 46 Town Planning Schemes along the Ring Road to ensure planned development of the areas adjoining the road. Truck terminus, developed marketplaces for agricultural products such as fruits, vegetables, flowers, fish and meat, multi-level car parking at all major highway junctions are also proposed. In short, the proposed Ring Road will not merely remain a transport project, but will be an infrastructure-driven development project for Pune Metropolitan Region.

Fig 3.2: Pune traffic condition

Fig 3.3: connectivity hub (128.66km with 10 junctions)

Fig 3.4: metro with solar street light

Fig 3.5

Fig 3.6: elevated metro design

Fig 3.7

Fig 3.8: river bank

Fig 3.9: traffic free junction

Fig 3.10: Tunnel

1. Solution on Case study :

Automated Vertical Car Parking Station

Fig3.12 : 3rdEye View Of Actual Site

Revit model:

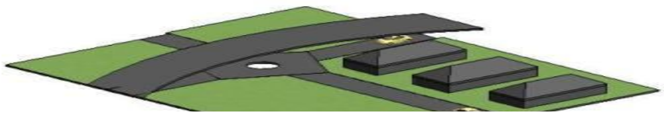


Fig 4.1 Revit Model

Revit model

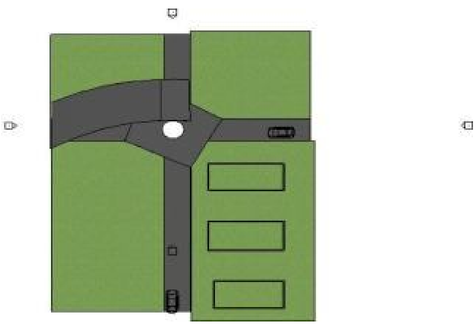


Fig 4.2 Top View Of Model

Ring road introduction:

A ringroad (alsoknownas beltline, beltway, circumferential (high)way, loop or orbital) is a road or a series of connected roads encircling a town, city, or country. The most common purpose of a ring road is to assist in reducing traffic volumes in the urban centre, such as by offering an alternate route around the city for drivers who do not need to stop in the city core. he name "ring road" is used for the majority of metropolitan circumferential routes in the European Union, such as the Berliner Ring, the Brussels Ring, the Amsterdam Ring,the BoulevarPériphérique around Paris andthe Leeds Inner and Outer ring roads. Australia, Pakistan and India also use the term ring road, as in Melbourne's Western Ring Road, Lahore's Lahore Ring Road and Hyderabad's Outer Ring Road. In Canada the term is the most commonly used, with "orbital" also used, but to a much lesser extent.In Europe, some ring roads, particularly those of motorway standard which are longer in length, are often known as "orbital motorways". Examples include the London Orbital (188 km) and Rome Orbital (68 km).

Fig 4.3 Ring Road Model

In the United States, many ring roads are called beltlines, beltways, or loops, such as the Capital Beltway around Washington, D.C. Some ring roads, such as Washington's Capital Beltway, use "Inner Loop" and "Outer Loop" terminology for directions of travel, since cardinal (compass) directions cannot be signed uniformly around the entire loop. The term 'ring road' is occasionally – and inaccurately – used interchangeably with the term 'bypass'

Fig 4.4 road model

Pune ring road:

Pune Ring Road is a proposed circular road for Pune city. This decision was taken on 12 June 2007 by the then Chief Minister of Maharashtra Shri VilasraoDeshmukh. The Pimpri-Chinchwad Municipal Corporation, Pune Municipal Corporation and the Pune Metropolitan Region.
Development Authority are responsible to make necessary provisions for this plan. The total length of road is 161.73 kilometers. The total cost will be □104.08 billion.
The passenger and freight traffic in and around the city has been increasing at a rapid pace due to increase in the number of industries, IT hubs and other socio-economic development. Vehicular traffic from highways such as Mumbai-Pune-Solapur highway pass through the city, causing traffic congestion. The purpose of the ring road is to divert the passing-by traffic from outside towards other cities, without letting them enter Pune. It will also provide connectivity to important areas of the city. It is predicted that nearly 10 lakh vehicles will use the ring road to enter, leave or pass through the twin city.

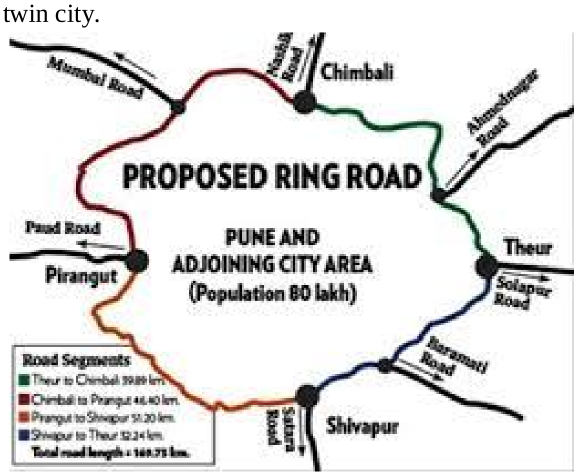


Fig 9 Pune Ring Road

	Name of the Road	Length in m	Flyovers		Major bridges length in m	Minor bridges length in m	Viaducts bridges length in m	Under pass length		Tunnels length in m	Elevated road	Land Acquisition	
			Road Length in m	Railway length in m								100 m width area in hectares	300m width road area in hectares
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	¦**Part I** – Theurphata, NH9, Kesnand, Wagholi, Bhavdi, Tulapur, Alandi, Kelgaon, Chimbli, NH50	39.89	650	300	490	450		1260			2750	355	132
2	¦**Part II** – Chimboliphata to Nighoje to Sangurde, Shelarwadi, NH4, Shirgaon, Chandkhed, Rihe, Ghotawde, Pirangut.	46.400	160	200	850	300		630	120	650	3490	242.6	695.8
3	**Part III** – Pirangut, Urwade, Mutha Bahuli, Sangrun, Nigde, Khamgaon, Ghera Sinhgad, Kalyan, Kondanpur, Shriramnagar.	51.200	1850		1520	300	3070	90		2928		425	255.00
4	**Part IV** – NH4. Gogalwadi, Patharwadi, Bhivri, Kanifnath, New Mula – Mutha canal, Theurphata, NH9	32.240	500	150		150	2250	980		8050	1200	203.00 55.70	45.00
		169.940	**3160**	**650**	**2860**	**1200**	**5320**	**2960**	**120**	**11628**	**7440**	**1281.4**	**1116.8**

Expressways, Public Housing and Renewal

During World War 11, Russell Van Nest Black, the author of the 1931 Philadelphia Tri-State Regional Plan, characterized the Quaker City as either a “growing child in late adolescence,” or “an ailing adult . . . rotting at the core.”’ Black’s despairing sentiment, expressed in a letter of mid-1943, soon faded as the scintillating vision of postwar urban renaissance captured the imagination of planners, political reformers and businessmen alike. In many American cities, not only Philadelphia, once moribund city planning commissions were resurrected and their powers and staffs enlarged and professionalized. By war’s end a diverse body of urban actors rallied behind redevelopment, housing construction and highway buildings. Planners, housing reformers, mayors, labor leaders, bankers, home builders, developers, and the heads of major universities, hospitals and other city institutions, seemed to agree with this three-part approach as the best way to rescue the city from decay and decline.2 In order to carry out the postwar vision of urban renaissance, organizations positioned in the van of what political scientist John Mollenkopf labels the “pro-growth coalition” touted urban redevelopment, housing, and highway building as the solution for urban problems, especially for the deteriorating downtown economy.

‘Link’ and ‘Place’

As a Link, a street provides a conduit for through movement; it forms an integral part of the whole urban street network and other, more specialised, urban transport networks (e.g. on-street light rail network, or cycle network). Link users may travel by a variety of modes, from private car or truck to bus, bicycle or on foot.

smart glowing highway tech:

Fig 10 glowing highway

rom the country that gave the world wooden shoes comes a much slicker way to travel: A Dutch design firm is creating a "smart highway" that glows in the dark, charges electric vehicles and displays weather and road conditions on its illuminated surface.

As eco-friendly as it is innovative, the first stretch of this experimental highway will be built in mid-2013 in the Netherlands.DaanRoosegaarde, founder of design lab Studio Roosegaarde, expects the road to be "the Route 66 of the future," according to Popular Science.

The highway will feature lane dividers made from photoluminescent paint that recharges during daylight, then glows throughout the night. And temperature-sensitive paints on the roadway will display ice crystals in below-freezing weather to warn drivers of possible icy conditions, according to Wired.

Some of the designers' other ideas remain in the conceptual stage, however, and will be implemented over the next five years as more "smart highways" are constructed, according to Wired.

In one example of the roadway's innovations, the designers will save energy by creating lights that shine only when cars are on the road and switch off when there's no traffic, according to the Telegraph. Other electricity-saving ideas include roadside "pinwheel lights" that are powered by the wind created when a fast-moving car drives past them.

Perhaps the most futuristic concept devised by Studio Roosegaarde is the "induction priority lane," reserved exclusively for the use of electric cars. Magnetic fields under the road's surface would charge an electric car "the same as charging your electric toothbrush," EminaSendijarevic of Studio Roosegaarde told Popular Science.

The road design, which has attracted inquiries from India, the United Kingdom and other countries, was born partly out of frustration with the slow pace of infrastructure improvements.

"Research on smart transportation systems and smart roads has existed for over 30 years," Sendijarevic told Wired, and designers "are not going to wait any longer for innovations to find their way through the political system, but will start building this highway now."

IV. MODELLING

FLOW CHART OF BUILDING INFORMATION MODELLING FOR ROAD PROJECT

Steps for design of Building model:

STEP 1: Collection of AutoCAD 2D drawings of the project from site and project manager.

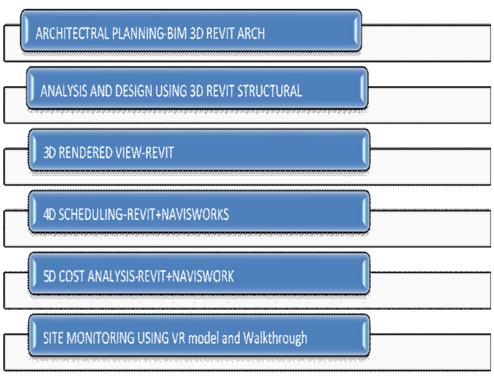
STEP 2: Creation of 3D model by importing 2D drawings in REVIT software.

STEP 3: Conversion of the REVIT 3D model into Naviswork readable (.nwf) format by using an extension tool in REVIT.

STEP 4: Preparation of work breakdown structure for the project and creation of task schedule using the quantity data from REVIT in Microsoft project.

STEP 5: Creation of 5D model by importing and attaching 3D model and the MSP schedules (time and cost) in Naviswork software.

STEP 6: Simulation and visualization of 5D model in Naviswork software.



Architectural Planning-BIM

In InfraWorks 360 it is to create multiple proposals. It is easy to create multiple design concepts with ease in design of Infraworks 360, which allows the; developers to select the best feasible design concepts for the project. It is also beneficial to crate multiple design proposals, so that the project can get reviewed and approved much faster, so construction work can begin at an earlier stage. Infraworks 360 by default creates the master proposal, whether we create a new project from scratch or use the Model Builder

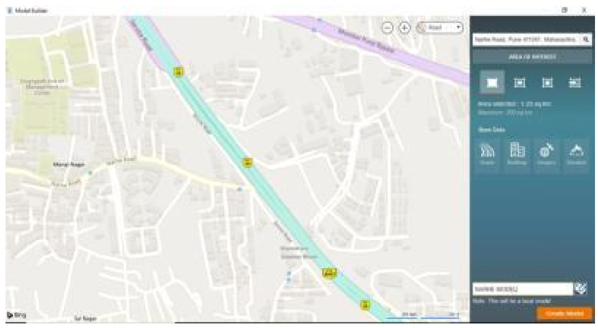


Fig 11 Infraworks 360

Analysis & Design using 3D Revit

To export an Infraworks bridge model directly to Revit, simply select the bridge, right-click to edit it and once in edit mode, another right-click will give the option to "Send to Revit". From there, the program does the rest, and while it does take some time, what it does is quite impressive:

- It converts all bridge components to Inventor Models, then proceeds to create Revit Elements from these parts.
- The bridge girders get converted to Revit Structural Framing Families along with Analytical Beams.
- All other components get converted to Generic Models.
- The Project Base Point in Revit gets updated with the proper Northing and Easting from the Infraworks model, therefore georeferencing the Revit model (although the Survey Base Point remains at 0,0 – which is understandable since no reference point can be given).
- The Revit model opens up in Revit with predefined views and levels. The file name is the same as the bridge name from Infraworks, therefore it is it recommended to give the bridge a name which easily identifies it prior to sending it to Revit.

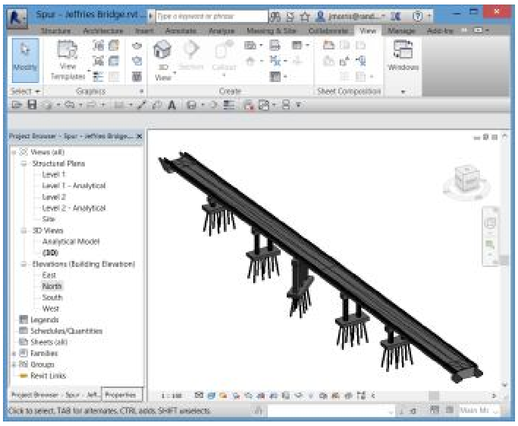


Fig 12 Revit Structure

3D Rendered View-REVIT

Revit consists of different views in which the user is able to work on the model. The default views are 3D-view, elevations, and plan views. The plan views are aligned to the default levels in the model, allowing the user to evaluate the model either looking upwards or downwards from those levels. The user can define multiple 3D-views displaying the model differently or create more levels from which plan views are automatically included. In addition to these views, other views can be created, displaying the model differently or focusing on different parts of the model.

Fig 13 Revit 3D Rendered Viewer

4D Scheduling-Navisworks

Scheduling logic can be augmented by the increased visualization that BIM brings to a project. Project teams not only have the ability to view 3D space with BIM, but also have the opportunity to view how their logic looks when simulated with BIM. This enhanced simulation gives feedback that allows team members to adjust their logic to best fit the project's construction sequence.

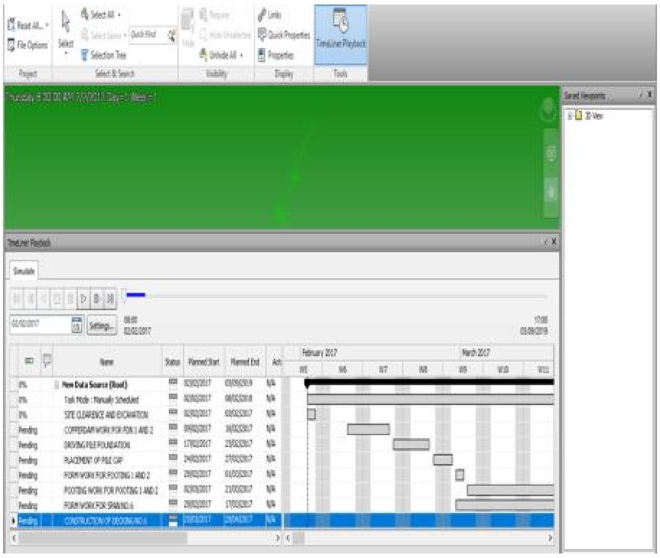


Fig 14 Scheduling in Naviswork

5D Cost Analysis-Navisworks

The cost estimating process involves performing quantity takeoff (QTO). Quantity takeoff list (QTO): a list of item and material quantities needed for the project.BIM model of the bridge is available for the quantity take-off, it is easy to generate the QTO list directly from the bridge model. As mentioned before, the BIM model of the bridge is on a lower LOD. In order to generate a more accurate project cost.
The following steps will be taken:

(1) Export the building model from Revit Architecture to Autodesk QTO: Transfer the available model to a readable file format for quantity takeoff tool.
(2) Generate the QTO list from the building model.
(3) Export the QTO list to MS Excel and map QTO list.
(4) Adjust the cost accordingly and get the total project cost.

Site Monitoring using VR and Walkthrough

There are two ways to create viewpoint animations in Autodesk Navisworks. You can either simply record your real-time walk through, or you can assemble specific viewpoints for Autodesk Navisworks to interpolate into a viewpoint animation later. Viewpoint animation is controlled through the Animation tab and the Saved View points windowIt is worth remembering that you can hide items in viewpoints, override colors and transparencies and set multiple section planes and these will all be respected by a viewpoint animation. This way you can easily create powerful viewpoint animations. Once a viewpoint animation is recorded, you can edit it to set the duration, the type of smoothing and whether it loops or not. There is also nothing to stop you from copying viewpoint animations (hold down the CTRL key when dragging an animation on the Saved Viewpoints window), dragging frames off the animation into a blank space on the Saved Viewpoints window to remove them from the viewpoint animation, editing individual frames attributes, inserting cuts or dragging other viewpoints or viewpoint animations onto the existing one, to continue developing your animations.

V.CONCLUSION

In our project we have study traffic pattern and also carry out traffic analysis of area of Pune at different period of time to provide best traffic solution to that areas. We also used in frawork 360 and navis work for our project. In frawork 360 use existing data to create the model of project by using infrawork 360 we can design the model and also make the visualized videos of structure.

The traffic studies shows most traffic occurs due to insuffient space and heavy traffic at peak time the solutions are given for different cases, for wagholi model flyover is proposed.

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