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Experimental Study on "Road Beautification Work Under Baramati" [Gadima Corner To Abhimanyu Corner]

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ABSTRACT

This project focuses on the comprehensive beautification and functional upgrading of the road networks in Baramati, aiming to transform them into vibrant, sustainable, and pedestrian-friendly corridors. As Baramati continues to evolve as a significant educational and industrial hub, the quality of its public infrastructure plays a vital role in its identity and the well-being of its residents. The proposed initiative integrates landscape architecture, sustainable urban drainage, and modern street furniture to create an aesthetically pleasing environment. Key components of the work include:

Green Infrastructure: Planting of indigenous, drought-resistant flora and decorative shrubs to improve air quality and provide natural shade.

Artistic Integration: Installation of public art and murals that reflect the local culture and heritage of the region.

Pedestrian Safety: Upgrading sidewalks with non-slip pavers, energy-efficient LED street lighting, and tactile paving for improved accessibility.

Geometric Improvements: Redesigning intersections and medians to optimize traffic flow while maintaining a cohesive visual theme.

By prioritizing both form and function, this road beautification work aims to boost local tourism, increase property values, and foster a sense of civic pride. Ultimately, the project serves as a model for modern urban development in Maharashtra, balancing rapid growth with environmental stewardship and high-quality public spaces.

1. Introduction

The road beautification project for the Vidya Pratishthan (VP) College road Gadima Corner To Abhimanyu Corner in Baramati aims to enhance the aesthetic appeal and functionality of this key educational artery. It involves planting green belts, improving infrastructure, and ensuring a safe, clean environment for students, faculty, and residents, aligning with the campus's reputation for green, sustainable, and well-maintained surroundings.

* **Eco-Friendly Infrastructure:** Implementation of green landscaping, native trees, and potential water conservation measures to enhance the "green campus" vibe.

* **Safety & Pedestrian Focus:** Development of safe pathways, walkways, and enhanced street lighting to ensure a secure environment for students and pedestrians during evening hours.

* **Urban Upgrading:** Installation of modern, durable street furniture, improved signage, and clean waste management solutions to ensure the area looks pleasant.

* **Aesthetic Improvements:** Designing designated areas for plantation and aesthetic painting/murals that reflect the academic and cultural spirit of Vidya Pratishthan.

This project intends to turn the area from Pencil Chowk to the surrounding college campus into a and mark stretch in Baramati.

1.1 About the company

Uddhav Gawade and Associates is a Baramati based construction and engineering firm providing comprehensive services as builders, contractors. and consultants. Known for high- quality, professional, and timely project delivery, the firm handles residential and commercial construction with expertise in engineering building restoration, and architectural design, government projects also.

* **Location:** Based In Bhigwan Road, Near Jain Mandir, Baramati, Pune, Maharashtra.

* **Services:** Offers a wide range of services including civil engineering, architectural design, building consultation, and structural contracting.

* **Reputation:** Recognized for professional communication, high-quality materials, and technical expertise in residential and commercial projects.

* **Experience:** The firm has operated in the Baramati construction industry for over 29 years.

* **Performance:** Reviews highlight the company as a reliable entity with strong, detailed-oriented proiect management.

1.1.1 Main Activities :- Industrial Projects, Bunglow Projects, Institutional Projects, Commercial-Recidentional Projects Etc.

1.2 Execution of project

i) Surveying
ii) Planning
iii) Analysis and Design of Construction
iv) Construction Sequence on Site
v) Providing Storm Water Line

- **FOOTHPATH**

a) Cleaning and Grading
b) Original Ground level
c) Earthwork
d) Compaction
e) Kerb fixing
f) Murum filling
g) Granular Subbase GSB
h) Compaction & watering
i) PCC work
j) Pving Block Fixing

- **PARKING**
- **CR SEATING**
- **SEATING MUDA**
- **STAMP CONCRETE**
- **PLANTATION**
- **STREET LIGHT**

1.3. Project Overview

Company Name - Uddhav Gawade & Associates, Pvt. Ltd. Baramati.

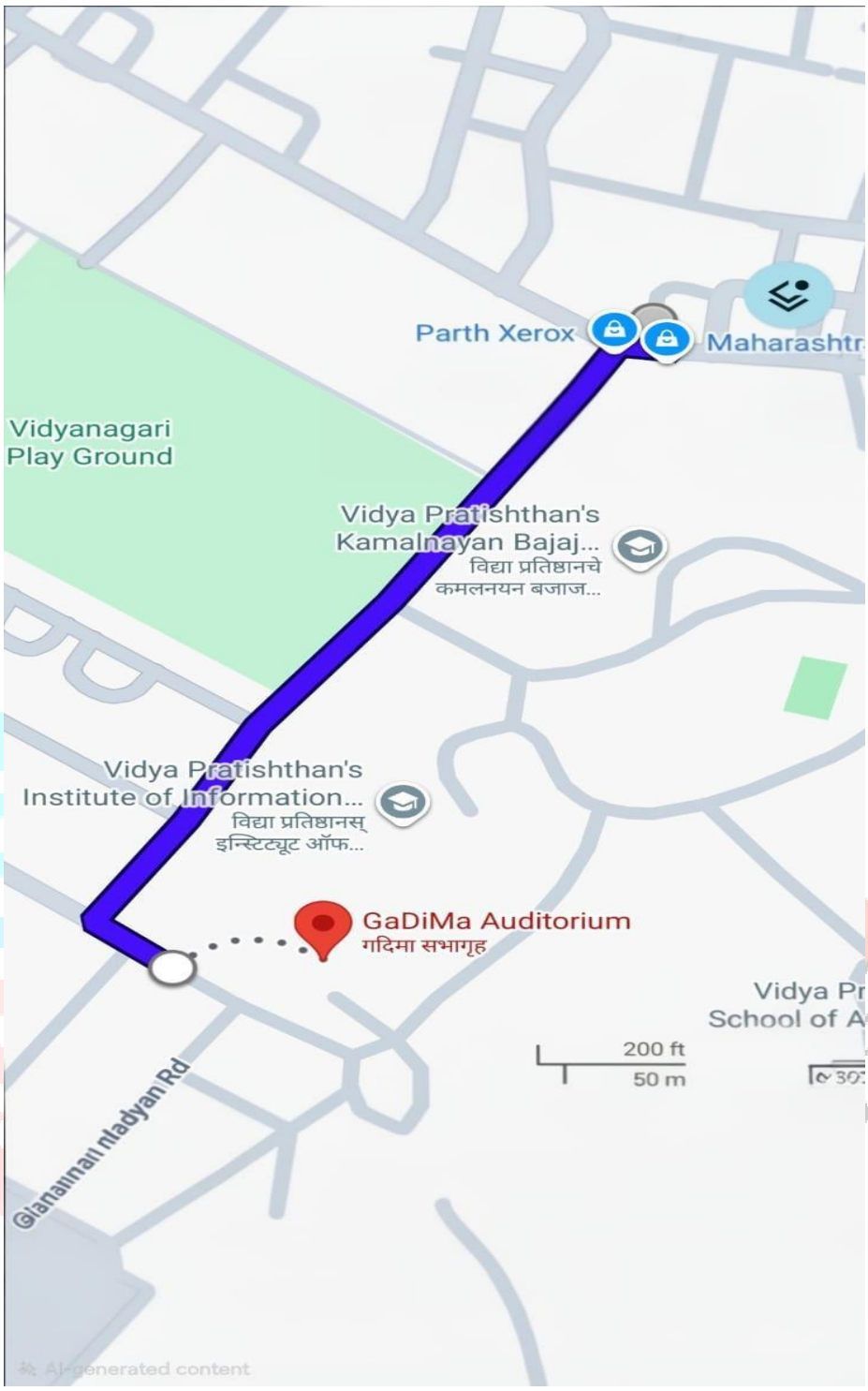
Independent Engineer - RK Construction

Type - Builders Engineers & Contractor

Client - Public Works Department (PWD) Of The Government Of Maharashtra,

OR The Baramati Municipal Council.

Specialization - Buildings, Roads, Bunglows, etc.



1.3.1. Project Location.

2. Construction Methodology

2.1. EARTHWORK / EXCAVATION

excavation is often a necessary initial step in landscaping and beautification projects, laying the groundwork for durable, functional, and visually appealing improvements. While often invisible in the finished product, proper excavation ensures that landscaping features are stable and long-lasting.

Installation of Utilities: Trenching is require for laying underground pipes for storm water collection, drainage system, irrigation, sprinkler systems, or electrical lines for garden lighting etc.

Pathways & Paving: Excavation is needed to create a stable base for laying paved, stone, or gravel paths.

2.1.1. BASE PREPARATION

Proper base preparation for fixing a kerb involves creating a stable, compacted foundation that ensures the kerb remains level, aligned, and securely in place, typically involving excavation, a granular sub-base, and a concrete bedding layer. The foundation must be able to support vehicular loads and resist shear forces, with the depth determined by the kerb type and intended traffic level.

2.1.2. COMPACTION / ROLLING

- Increasing soil density, improving load bearing capacity and preventing subsidence in construction projects.
- It is vital for preparing stable foundations, paving roads with asphalt, constructing trenching/utilities, and managing landfills.
- It removes air voids, ensuring long-term structural integrity and stability.

2.2. Kerb Fixing

Kerb fixing in beautification projects involves installing concrete or stone edging to define, enhance, and structure landscaped areas. driveways, and road medians. It often combines functional structural support with aesthetic enhancements like specialized shapes (bullnose), colours, or polished surfaces to elevate the overall look of a streetscape or garden.

Fixing Methods: Mortar Bedding: Kerbstones are laid on a 25mm thick, 1:4 cement mortar bed, levelled and tapped into place.

Jointing: Joints are filled with cement mortar (1:2) and kept 3-4 mm recessed from the surface for a cleaner, more aesthetic look

Haunching: Concrete is added to the rear and bottom of the kerb for lateral support. Finishing The exposed surface of the kerb is often finished with a 1:2 cement plaster mix, polished, or painted with road marking paints <yellow/white/black) for higher visibility and aesthetic appeal

2.2.1. GSB FILLING

Purpose of GSB acts as a structural layer to ensure the pathway does not settle or develop cracks. It improves drainage, allowing water to pass through and preventing the subgrade (soil) from becoming saturated, Typically a mix of crushed stone (around 50%), gravel, and coarse sand. The material must be well- graded to ensure proper compaction and strength.

2.3. PCC

Plain Cement Concrete (PCC) is generally considered a necessary foundation layer rather than just a "beautification" step in pathway work. While it contributes to a neat finished appearance, its primary functions are structural and practical. **Stable Base:-** It provides a solid, uniform, and stable base for laying pavers, tiles, or further concrete surfaces, preventing uneven settling.

2.3.1. PAVERS FIXING

Enhanced Aesthetics: Paver blocks come in various colours, shapes (zigzag, rectangular), and patterns that can be customized to match the surrounding architecture.

High Durability & Strength: Properly installed paver blocks are engineered with stand heavy vehicle loads, making them suitable for driveways and industrial parking spaces. In a parking area 80 mm thick pavers are used. Or Pathway area 60 mm pavers are used

Weather Resistance: These blocks withstand heat, heavy rain, and frost, making them suitable for diverse climatic conditions, Easy Repair and Maintenance: Unlike solid concrete slabs, individual blocks can be removed and replaced without leaving visible scars, allowing for easy access to underground utilities.

Safety (Non-Slip): They provide a non-slip, secure surface for walking or driving. particularly in rainy conditions.

2.3.2 PLANTATION WORK

Laying a well quality plants in a site region, about 20 Types plants are suggested by Architects Or Former DCM HON. AJIT DADA PAWAR.

Fig. 2.3.2. Plantation Work Or Site Visit Former DCM Ajit Dada Pawar.

3. Visit Testing Lab and Equipment's.

- Concrete Compression Testing Machine (CTM)- Typically 200 tonne capacity for testing compressive strength.

Fig. 3.1.2 Concrete Compression Machine (CTM)

- **Cube Filling / Testing.** Concrete cube filling for compression testing involves pouring freshly mixed concrete into 150mm steel moulds in three equal layers. compacting each layer with at least 35 strokes of a
standard tamping bar, and ensuring proper vibration to remove air voids.

Fig.3.1.3. Concrete Cube filling

4. Foothpath / Pathway Paver Fixing

Paver block fixing involves preparing a compacted sub- sand bedding layer (coarse, angular sand), placing pavers in a tight, predefined pattern with 2- 4mm joints, compacting with a plate vibrator, and sealing joints with fine sand.

Specifications:

* Paver Grade: M-30 to M-50 depending on traffic load (minimum 35-50 N/mm² depending on thickness)
* Thickness: 60 mm (pedestrian), 80 mm (light traffic), 100 mm (heavy traffic)
* Sand Bedding: 20-40 mm compacted thick layer of coarse, angular sand, free from clay
* Joints: 2-4 mm wide, filled with fine, jointing sand.

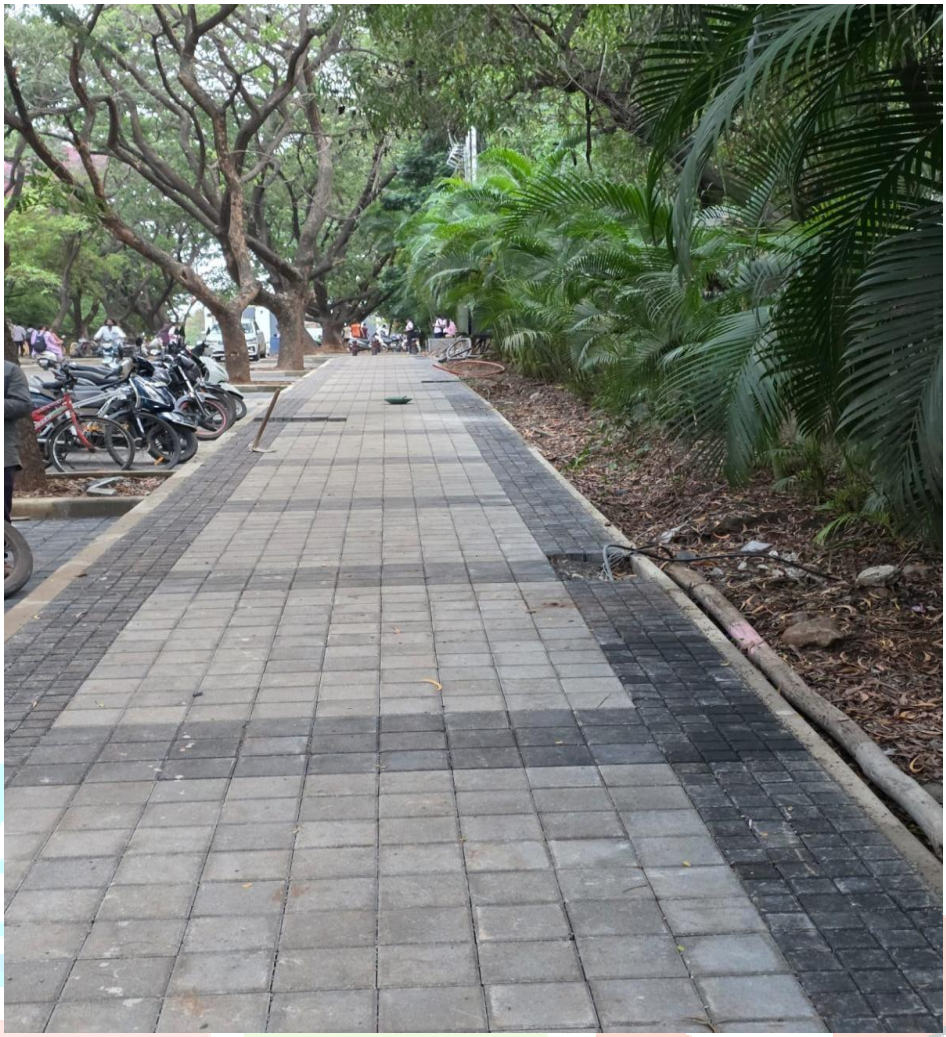


FIG. 4.1 FOOTHPATH PAVER FIXING

4.2 PARKING PAVERS FIXING

Fixing 80 mm thick concrete pavers for parking areas requires a robust specification to handle vehicle loads (medium to high traffic). The standard practice involves creating a stable, interlocked system with proper base preparation, sandy bedding, and strict joint filling.

* Paver Thickness: 80 mm (standard for medium-duty vehicular traffic)

* Concrete Grade: M-30 to M-50 (minimum M-30 or M-40 recommended for parking)

* Compressive Strength: 30-50 MPa.

* Water Absorption: Must be less than 6-7%.

* Shape: Square, Zigzag, I-shape, or rectangular (interlocking shapes are preferred to enhance shear resistance)

FIG. 4.2 PARKING PAVERS FIXING

4.3 TECTILE TILES FIXING

* Warning Tectile (Studs/Dots): Installed at hazards such as staircases, escalators, and crossing edges.

* Directional Tectile (Lines/Bars): Used to create safe, guided pathways for pedestrians.

* Materials: Polyurethane (PU), concrete, or vitrified porcelain, with PU preferred for high durability, UV resistance, and vibrant colour retention.

4.4 BOLLARD FIXING

Bollard installation is a critical component of footpath beautification and pedestrian safety, serving as both a visual delimiter for urban design and a physical barrier against vehicle encroachment. Modern beautification projects often utilize decorative, powder-coated, or lit bollards that enhance the streetscape's aesthetics while protecting Pedestrians**.**

5. FUTURE SCOPE OF BEAUTIFICATION WORK

The beautification work in Baramati has a robust future scope, driven by increased government funding, a push for infrastructure development, and a growing emphasis on enhancing public spaces to improve the quality of life and boost tourism. Beautification work in Baramati is currently a high-priority initiative, driven by the need to elevate its urban appeal, support agro-tourism, and enhance quality of life, with significant future scope driven by high-profile government funding and industrial expansion.

Tourism Enhancement:

As a growing agricultural hub, Baramati requires attractive infrastructure to boost agro -tourism, including the development of scenic spots, agri-centers, and rural aesthetics

Urban Infrastructure Upgrade:

Ongoing efforts focus on improving public spaces to match the city's rapid economic development, including canal beautification and modernization of public areas.

Safety and Connectivity: Beautification includes upgrading roads, such as the proposed service road on the four-lane Baramati Malegaon state highway, enhancing safety and commercial flow.

5.1 Vision

- To make Baramati city role model in Maharashtra.
- To make city district level
- To be a highly Preferred Infrastructure Developer.
- Innovative infrastructure to connect regions and drive economic growth.
- Enhancing user safety and connectivity isolated regions to urban centre.

5.2 Mission

- Timely completion with Enviable Quality.
- To design and develop.
- Maintain safe and efficient.
- Sustainable road infrastructure that connects communities.

6. Conclusion

The road beautification and infrastructure enhancement projects in Baramati, including the Shardanagar area, Bhigwan Road, and Lendhi Nala, represent a strategic investment in urban development. Driven by proactive leadership, these efforts aim to enhance the town's visual appeal while integrating modernization with cultural identity. Overall, the ongoing beautification work in Baramati serves as a model of comprehensive development, merging urban infrastructure improvements with environmental awareness and cultural preservation.

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