

# Highway Engineering

## DESIGN OF HORIZONTAL CURVE

### Minimum Radius of Curvature

$$r = \frac{v^2}{g(e + f)}$$

$r$  = min. radius of curvature

$e$  = superelevation in m/m

$f$  = coefficient of side friction or skid resistance

$v$  = design speed in m/s

$g = 9.81 \text{ m/sec}^2$



### Centrifugal Ratio (CR) or Impact Factor (IF)

$$CR \text{ or } IF = \frac{v^2}{gr}$$

$$CR \text{ or } IF = e + f$$

$$CR \text{ or } IF = \frac{F}{W}$$

### Centrifugal Force (CF)

$$CF = W \times CR = \frac{Wv^2}{gr}$$

### Problem

A car having a weight of  $40 \text{ KN}$  is moving at a certain speed around the curve. Assuming no lateral pressure between the tire and pavement and considering a centrifugal ratio of  $0.30$ .

a. Compute the force that will tend to pull the car away from the center of the curve.

b. If the degree of curve is  $40^\circ$  determine the maximum

$$CR = \frac{v^2}{gr}; \quad 0.30 = \frac{v^2}{(9.81)(286.479)}$$

$$v = 29.04 \text{ m/s}^2$$

# Highway And Engineering Lecture Notes Bing Dirff

**Hussin A.Rothana**



**Highway And Engineering Lecture Notes Bing Dirff:**

Highway And Engineering Lecture Notes Bing Dirff: Bestsellers in 2023 The year 2023 has witnessed a noteworthy surge in literary brilliance, with numerous engrossing novels enthralling the hearts of readers worldwide. Lets delve into the realm of popular books, exploring the captivating narratives that have captivated audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This heartfelt tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover expertly weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Highway And Engineering Lecture Notes Bing Dirff : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids absorbing storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Highway And Engineering Lecture Notes Bing Dirff : Delia Owens "Where the Crawdads Sing" This evocative coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These bestselling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of captivating stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and thrilling novel that will keep you guessing until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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classification of angiosperms based on the types of cotyledon present. Angiosperms are divided into two classes they are monocotyledons and dicotyledons. The dicotyledonous angiosperms have two cotyledons in their seeds and the

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they classified all the seed plants into 3 groups or classes i.e. dicotyledons 165 families gymnosperms 3 families and monocotyledons 34 families. 4 they included disputed orders among orders Anomali which they could not place satisfactorily

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division. Angiosperms bear flowers as reproductive organs. Seeds develop inside fruit. Plant embryos in seeds have structures called cotyledons. Seed leaves. Further classification is based on single cotyledonous plants or two cotyledonous dicotyledonous plants

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interpretation of the probable origins of the angiosperms and their most primitive characteristics and some elucidation of realignments that deviate considerably from other recent classifications. Many botanists have complained about the plethora of new classifications of the angiosperms all differing in many details

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angiosperms are classified in a single phylum the Anthophyta. Modern angiosperms appear to be a monophyletic group which

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in any event in this new classification the basal angiosperms contain three superorders or five if one includes magnolianaes and ceratophyllanaes that are coordinate with the monocots also placed in their own superorder and ten additional superorders eudicots for a

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abstract the synopsis of my classification of the angiospermae that was published in aliso thorne 1968 has been much  
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reorganization or deletion of some of the higher categories

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oct 12 2023 although the taxonomy of the angiosperms is still incompletely known the latest classification system  
incorporates a large body of comparative data derived from studies of dna sequences it is known as the angiosperm  
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