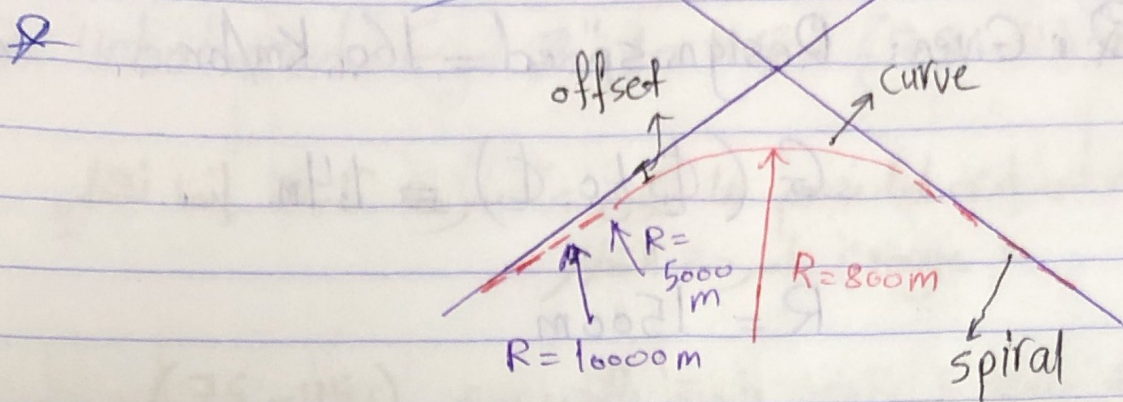


for Rail Roads

Lecture #7



* واحد جاري من طريق ($R = \infty$) ، فإنه يدخل مباشرة
 لطريق ($R = 800$) ، واحد يكون الآخر غير مرئى ، لذلك
 يعمل (Spiral easement Curve) ، بحيث أنصف
 أفطار منصفه ، بحيث الشخص يمشى تدريجياً

* Intercity RR spirals:

for UB lateral accelerations on passengers of 0.03g

* In metric system: $L = 0.01216 E_u V$
 the

$$L = 0.744 E_a$$

* In the traditional U.S. units: $L = 1.63 E_u V$

$$L = 62 E_a$$

* يمشى العادتين وينافذ الأعلى

Where: L = desired minimum length of spiral, m (ft)

E_u = unbalanced elevation, mm (in.)

E_a = actual elevation, mm (in.)

V = maximum train speed, Km/hr (mph)

(Intracity) * For UB lateral acceleration on passengers of $0.04g$:

* In the metric: $L = 0.0091 E_u V$

* In the U.S system: $L = 1.22 E_u V$

* Urban RR spirals (Atlanta Rail Transit system):

* In the metric: $L = 0.0104 E_u V$

* $L = 0.72 E_a$

* In the U.S system: $L = 1.4 E_u V$

* $L = 60 E_a$

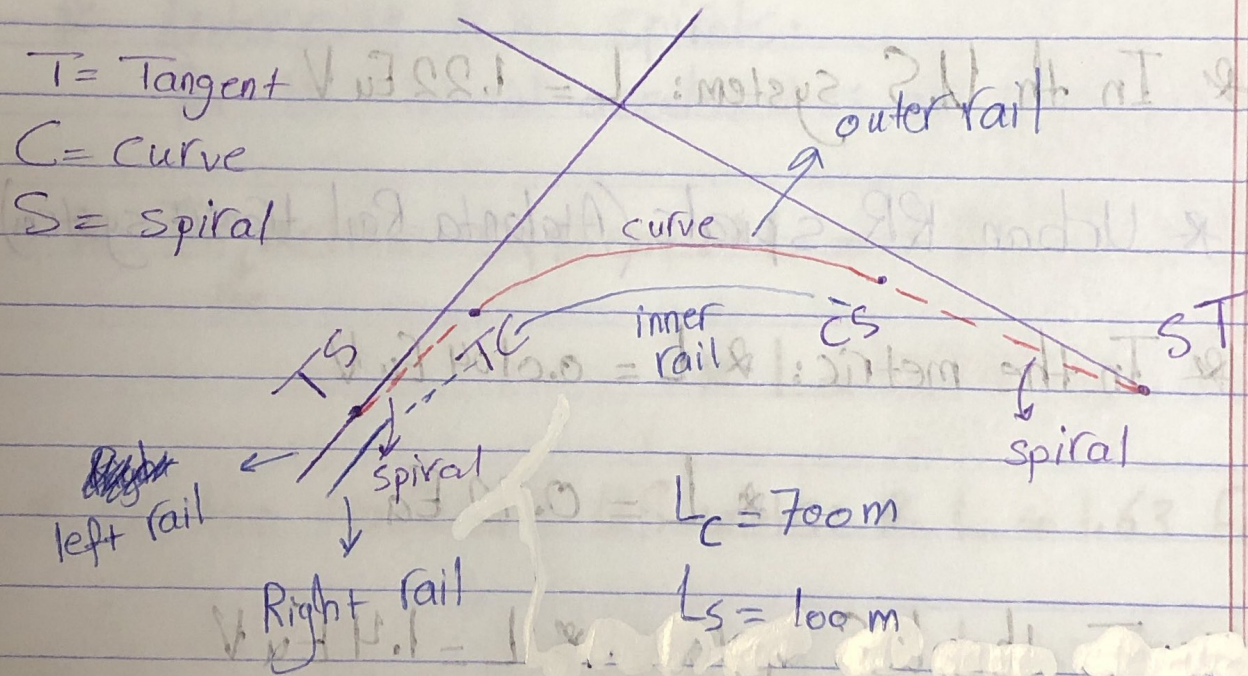
* Attainment of Balanced Elevation in Railroads:

* length = spiral curve, increase of outer rail from TS-SC

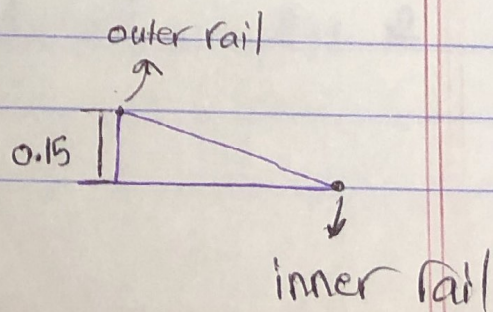
(ii) full balanced elevation SC-CS
 , then decrease outer rail to level CS-ST

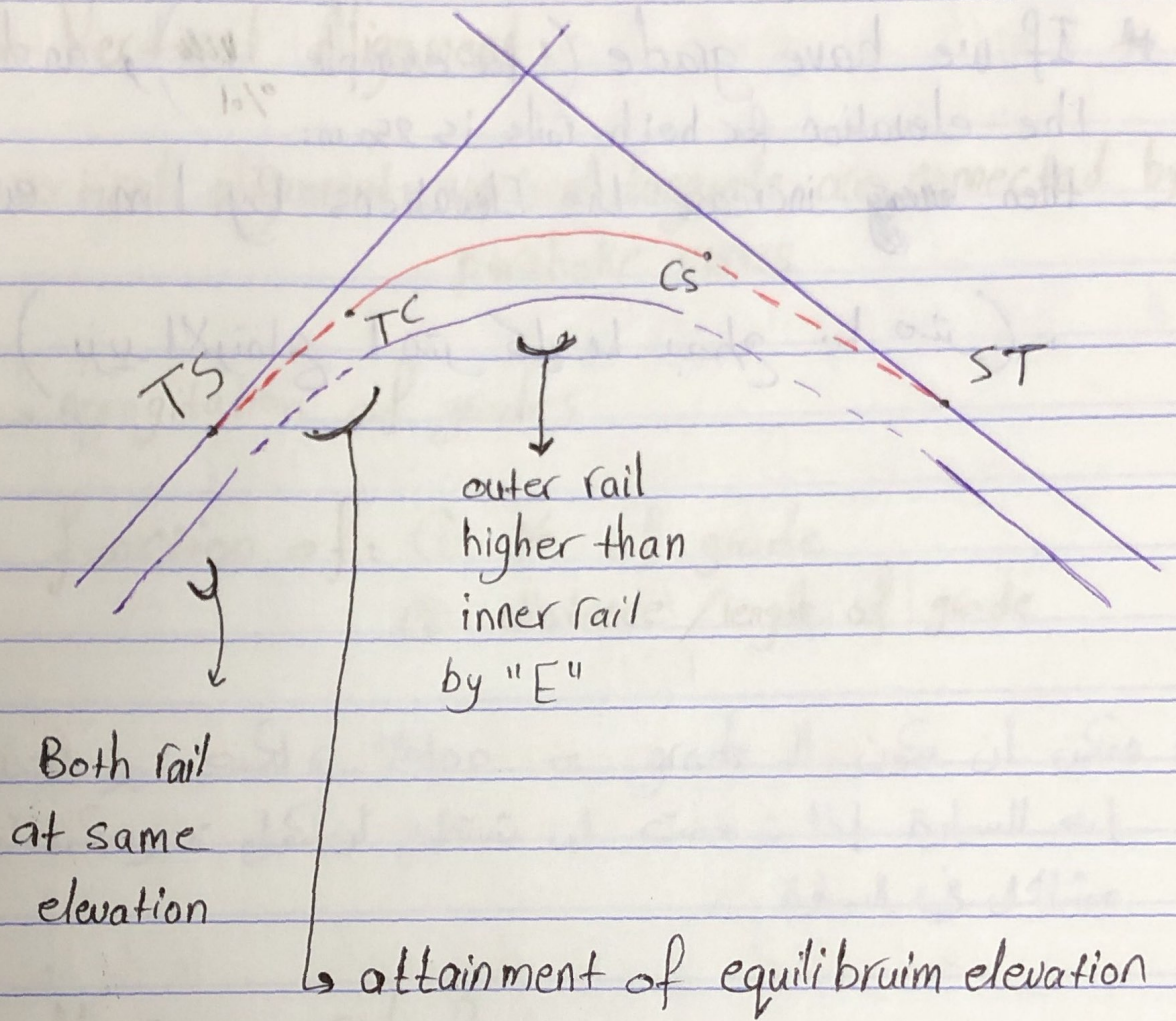
* The inner rail is usually maintain at same angle

Explanation:



* $E = 150 \text{ mm} = 0.15 \text{ m}$





* inner rail elevation does not change if there is no grade

* من خلال الرسمة لو قطع المسار 40 متر من TS كم ارتفاع الـ outer ؟

$$\frac{40}{100} (0.15) = 0.06$$

$$\text{elevation of outer rail} = 240 + 0.06 = \text{240.06 m}$$

* If we have grade (for example $\frac{1\%}{100}$), and the elevation for both rails is 250 m; then ~~every~~ increase the Elevations By 1 m every 100 m

(بزیاد الارتفاع اتر كل 100 بقدر 1 متر)

higher than
inner rail
pa "E"

Both rail
at same
elevation

attainment of equilibrium elevation

* inner rail elevation does not change if there is no grade

$$\frac{10}{100} \times 10 = 1.0$$

$$250 + 1.0 = 251$$