CONSTRUCTION OF 200Mts. NON-STANDARD TRACK

Find out the total area required for a 200Mts non-standard track by using the following formula. Total area =Total length x Total width

Total length =Straight + 2CDR +(No. of lanes X width of the lane)+2Extra space.

Total width=2CDR + (No. of lanes X width of the lane)+2Extra space.

RDR(Running Distance Radius) is the imaginary line through which the athlete is supposed to run, for example if the straight is 37.5m, the distance to be coveredin the two curves is 125m.

The two curves forms a circle and the circumference of the circle is $2\pi r = 125m$, r = 125 / 2 * 7 / 22 = 19.89m.

r
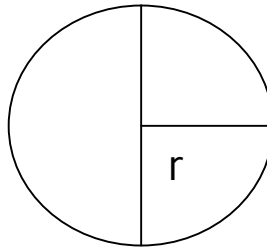
CDR (Curb Distance Radius) is the actual line used for marking. Since the athlete has to run the race without touching the inner line at the same time he should not run the distance more, for that the CDR is used for marking. CDR=RDR - 20cm (= 19.89 - 0.20 = 19.69m) for non-standard track, CDR=RDR-30cm for standard track)

For example if the straight is 37.5Mts,width of the lane is 1.22 and extra space is 1Mts, then the required length =98.40Mts and required width =60.90Mts Total area required $=5992.56m^2$

Based on the required length and width located the center point in the ground. In a irregular field first we have to mark a rectangular maximum space as ABCD as shown in the first figure.

Layout of 200 m Non-Standard Track

98.38m

60.88m

K' P L'

back straight - 37.5m

K L

I F

R H X O Y E S

3 4

5

J G

II curve I curve

N M

home straight - 37.5m

A B

D N' Q M' C

STAGGERED START FOR 200m(S1-S8), ARC START FOR 10000m, 5000m, 3000m, 800m (A1) AND 1500m (A2) IN 200m NON-STANDARD TRACK

98.38m

60.88m

A2 K' P L'

back straight - 37.5m

K L

I F

R H X O Y E S

3 4

5

J G

II curve I curve

N

home straight - 37.5m

S1

S2

S3 S8

S4 S5 S6 S7

A1

A B

D N' Q M' C

(From 2004-2005 onwards the width of the lane is 1.22 ± 1cm)

- Take the center point of AB and CD (half of AB and CD) & mark the points P&Q.
- Take the center of BC & AD and mark the points as R & S and peg the nails at R&S.
- Now tie the steel wire from P to Q and R to S .
- Where both the thread bisects each other i.e. at O is the field center (draw the diagonals from AC&BD it meet at O)
- Remove the steel wire and nails from P&Q and retain the steel wire between R&S. peck nail at the field center O.
- Now take XY the straight on the either side of O (OX&OY) 17.75 m on either side if it's a 37.5m straight.
- Peg a nail at X&Y so that OX=18.75m, OY=18.75m then by using Pythagoras theorem ((3,4,5),(6,8,10),(9,12,15),(12,16,20)....) construct the right angles at   the point XY
- Measure three meters from Y and peg a nail at E so that YE=3m, from Y take 4m as radius draw an arc on either side of Y, take 5m as radius from the point E, draw an arc on either side of Y, so that it interacts at point FG. Now EYF &EYG are the right angles.
- Extended the line YF &YG to the maximum, the same method should be   followed   to construct a right angle at the point X.
- Measure 19.69m(CDR) towards the XI & XJ from the point X and also measure 19.69m towards YF & YG from the point Y, and mark them as K, L, M and N.
   (XK = XN = XL = YM =19.69m(CDR))
- Then join KLMN, it gives the inner rectangle of the track, check the right angles at each corners by using Pythagoras theorem.
- Fix the steel wire at X and extended it to the XK^{1}.
- XK = 19.69m, from K measure 1.22m and mark it with gum tape for 8 lanes (1.22m, 2.44m, 3.66m, 4.88m,6m, 7.22m, 8.44, 9.66m,)

A person who is holding the extreme end of steel wire should move uniformly   about   2ft. a time, by giving uniform tension to the wire.

Each time a dot of the marking power should be marked by 8 person on each   mark   of   the gum tape on the wire.

Half curve should be marked from the point K. The remaining half curve should be marked from the point N. The same method should be followed to mark the other curve from the point Y.

Dots should be joined and the curves are to be joined by the straights, we can   mark the track and get the lanes. The width of the line should not be more than   5cm.

STAGGER :-

It is excess distance covered by the runners from 2nd lane to 8th lane, on their running path in one lap, when compared to the distance covered by the first lane runner on his running path in one lap.

The formula to find out the stagger for standard track = [(W * (N-1))-0.10] * 2π

And for non standard track = W * (N-1) * 2π

(W=Width of Lane, N= Lane Number).

For example for a 200m non standard track with 1.22m as width of lane, for lane II = (W * (N-1) * 2π.= (1.22 *(2- 1) * 2* 22/7 = 7.678. Like this, find out for the other lanes.

(III= 15.34m, IV=23.01m, V=30.67m, VI=38.34m, VII=46.01m, VIII=53.68m).

If an athlete (2nd –8th lane) runs on his own lane for one curve, we have to give half stagger, for two curves full stagger and for three curves one and half stagger must be given (maximum - one and half stagger)

DIAGONAL EXCESS-

Break line

C

A

Back Straight

B
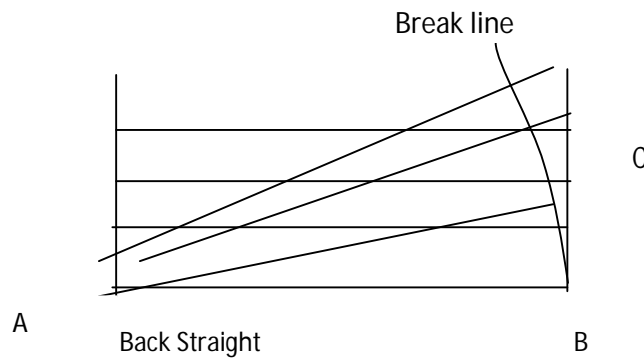
The excess distance to be run while running diagonally, it depends on the lane width and length of the straight. The formula to find out DE=AC – AB
(AB= Straight (37.5m) BC= Width of the previous lane

$$AC=\sqrt{AB^2 +BC^2}$$

For example for 2nd lane $AC=\sqrt{37.5^2+1.22^2}$ =37.52

DE= 37.52-37.5= 0.02m like that find out for other lanes

(3rd lane=0.08m, 4th=0.18m, 5th=0.32m, 6th=0.48, 7th=0.69, 8th=0.94m)

Starting point for the following events in 200m non standard track

200=full stagger, 400m, 4x100m, and 4x400m = one and half stagger + DE (the athlete (2nd –8th lane) has to run three curves on the same lane after that he can cut in to first lane by using DE)

4X100m RELAY	I LANE (scratch line)	II- VIII LANE (scratch line)
I Exchange	At the 100m point	At the full stagger +DE
II Exchange	At the finish line	At the half stagger + DE
III Exchange	At the 100m point	Common zone.
4X 400m RELAY	I LANE (scratch line)	II- VIII LANE (scratch line)
I,II,III,Exchange	Common zone.	Common zone.
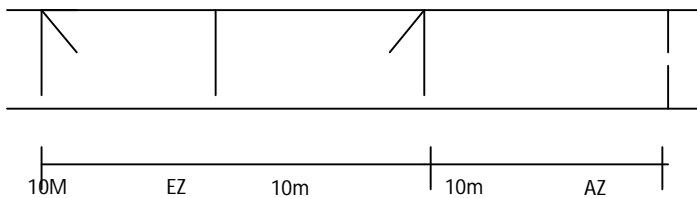
Note:-

Advance Zone is only for 4x 100m

Scratch line is center point of the

| 10M | EZ | 10m | 10m | AZ |

COMPENSATED ARC START:-

(The stating point for 800,1500,3000,5000,and 10000m)

Formula = 1/No of lanes x Total curve distance.

For example for a 200m non-standard track width 37.5m as straight.

= 1/8 x 125 =15.625m.

Use this distance as radius to mark the arc start.

The starting point for 800m, 3000m, 5000m and 10000m is at the first curve and for 1500m at the second curve.

(For a 400m Track (S=80) =1/8 x240=30m. The starting point for 800m, 10000m is at the 1st curve, for 3000m &5000m at 2nd curve and for 1500m at the end of first curve with 100m from the end of back straight)

CONSTRUCTION - FIELD EVENTS

SHOT PUT :

Fix a nail at point O. Draw a circle with 1.0675m as radius.

Fix one end of the thread at O and extend it to the desired direction and fix the other end.

Measure 20m from O i.e OA=20m and peg a nail.

Draw an arc from the point A by taking 12m radius.

Again from the point O draw an arc by taking 20m as radius.

Both arcs meet at a point (B). AOB= 34.92^o

Mark a point C at 6m i.e center of AB. From the point C extent the thread passing through the center point. Construct right angle on either side at center point O and extend the line to an extent of 75cm out side the circle. The width of the scratch line is 5cm and it is in the front half.

 (for Hammer and Discus extend the point AB for desired distance and for Discus the radius of the circle is 1.25m)

JAVELIN :

Draw a straight a line AE in the throwing direction.

The length of AE =30- 36.5m (33.5m if place available).

Mark D 3m away from A in the line AE.

Mark B at the cutting point where the two arcs with 4m radius from A and 5m radius from D.

Mark an arc with 3m from point B and another arc from point A with 5m, two arcs cut at point C.

Now extend point BC to F (30m- 36.5m).

Mark O 8m away from the point A and B in side the runway.

From the X draw arc from the point A to B with 8m radius.

Take 8.07m from point O and draw an arc in front of AB.

Extent this arc with 7cm width and 75cm length in a straight line.

R is the end point of a straight line drawn from the point O and passing through A to landing area.

S is the end point of another straight line staring from point O and passing through point B. Distance of RS should be Half of OR or OS distance.

In other words it the half distance of the distance measured from O for getting 28.95^o sector in Javelin throw i.e.,R/2 (OR=100m,100/2=50=RS)

LONG JUMP :

Draw a straight line AB with 3m.

Draw two arcs, taking 4m radius from A and 5mfromB,in the place where landing area is going to be made and these point cut point C.

In the same way taking 4 m radius from B and 5m radius from A, cut the arc at point D. Extend the parallel line AC and BD as required for landing area mark the end points as EF join the points AEFB is the rectangular space for landing area. Runway should be marked towards the center of landing area.

The center point of AB is P. Mark G1 and G2 61cm away towards both the sides from point P.

Mark H 30cm away from G1-P. Draw two arcs with 40cm radius from G1 and 50cm from H and cut them at J. In the same way mark I at 30cm away from G2 in G2-P. Draw two arcs taking 40cm radius from G2 and 50m from I and cut at point K on the side of the runway.
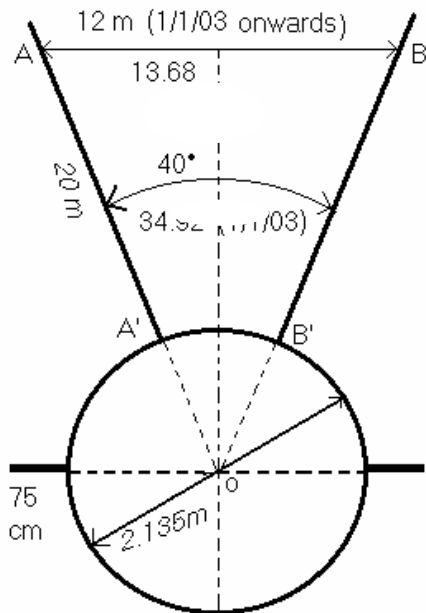
Then extend G1-J and G2-K straight lines required for run way and the end at points Land M.

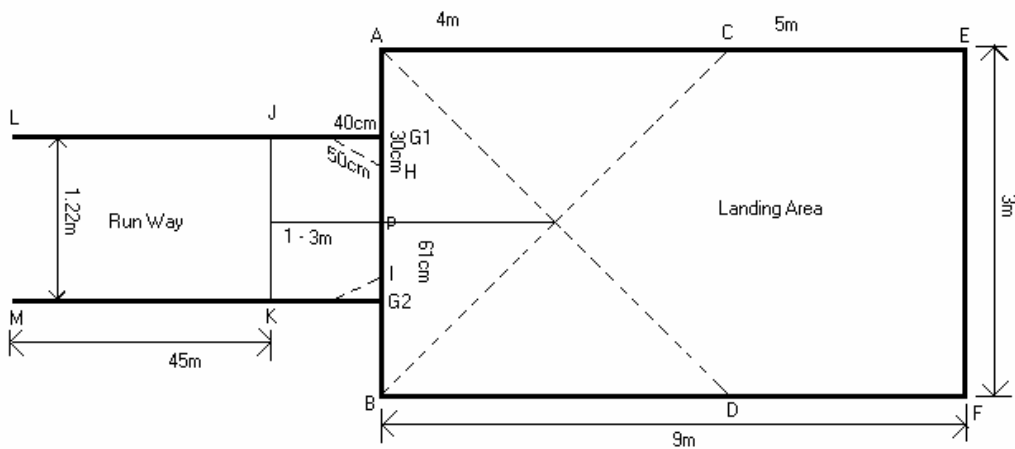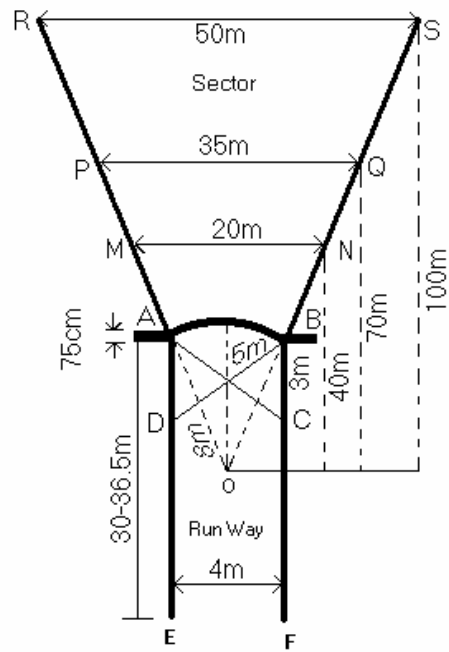The lines of the runway are not included in the width of the runway.

Take off board should be fixed in the run way between 1and 3m from the landing area. (the distance between the take off line and the far end of the landing area shall be atleast 10m.)

The same procedure of marking shall be followed for Triple jump (the distance between the take off line and the far end of the landing area shall be atleast 21m.)

SHOT PUT

12 m (1/1/03 onwards)

13.68

A — B

40°

20 m

34.92 (1/1/03)

A' B'

75 cm

2.135m

O

JAVELIN

R — 50m — S

Sector

P — 35m — Q

M — 20m — N

75cm

A B'

6m

D C

3m

40m

70m

100m

O

Run Way

4m

E F

30-36.5m

8m

Long Jump

4m

5m

A C E

L J 40cm

30cm G1

50cm H

1.22m Run Way

1 - 3m P

61cm

I G2

M K

45m

B D F

9m

3m

Landing Area

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