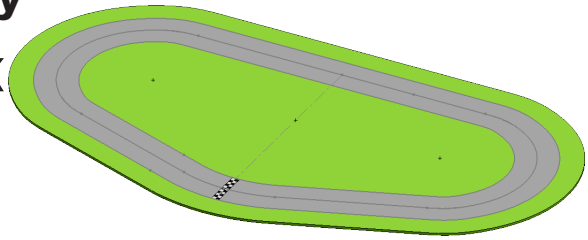


Speedway Track



A. Sketch Construction Line.

Step 1. Click File Menu > New, click **Part** and OK.

Step 2. Click **Top Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 1**.

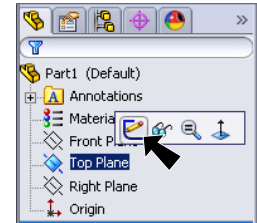




Fig. 1

Step 3. Click **Centerline**  (S) in the **Line flyout**  on the Sketch toolbar.


Step 4. Draw a vertical construction line away from the **Origin**




as shown in **Fig. 2**.

Step 5. **Right click drawing and click Select** from menu to unselect Centerline tool.

Step 6. **Ctrl click vertical construction line**

and **Origin**  to select both, **Fig. 3**.

Release Ctrl key and click **Make Coincident**

 on the Content menu.

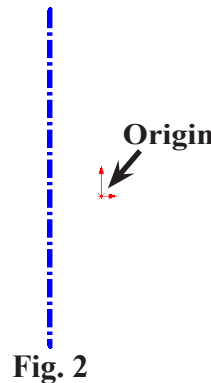


Fig. 2

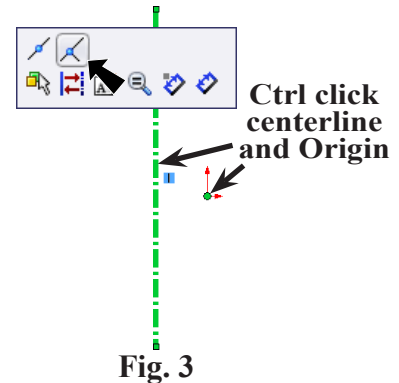


Fig. 3

Step 7. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 8. Add dimensions as shown in **Fig. 4**.

Step 9. Click Zoom to Fit  (F) on the View toolbar.

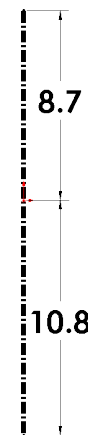


Fig. 4

B. Save as "TRACK".

Step 1. Click File Menu > Save As.

Step 2. Key-in **TRACK** for filename and press ENTER.

C. Lines.

Step 1. Click **Line**  (L) on the Sketch toolbar.

Step 2. Draw the **2 lines** in **Fig. 5**. Draw a horizontal line to the left starting at the top endpoint of the centerline. Draw second line at an angle starting from the bottom endpoint of centerline.

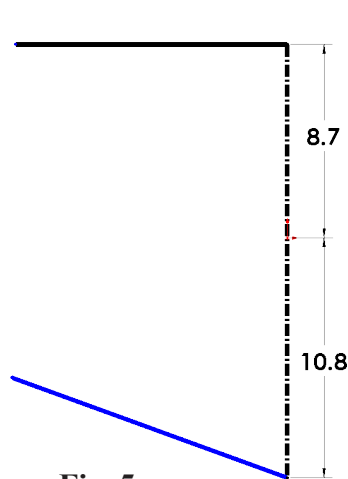


Fig. 5

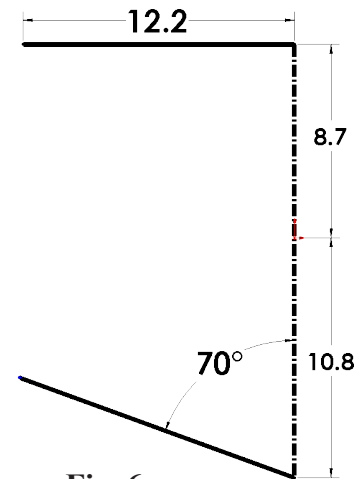



Fig. 6

Step 3. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 4. Add dimensions as shown in **Fig. 6**. To dimension angle, click centerline line and angled line, then move the cursor between lines and click. Key-in **70** for the dimension and press ENTER.

D. Tangent Arc.

Step 1. Click **Tangent Arc**  in the **Arc flyout**  on the Sketch toolbar.

Step 2. Draw an arc between the Position 1 and Position 2 in **Fig. 7**. Draw along path as shown.

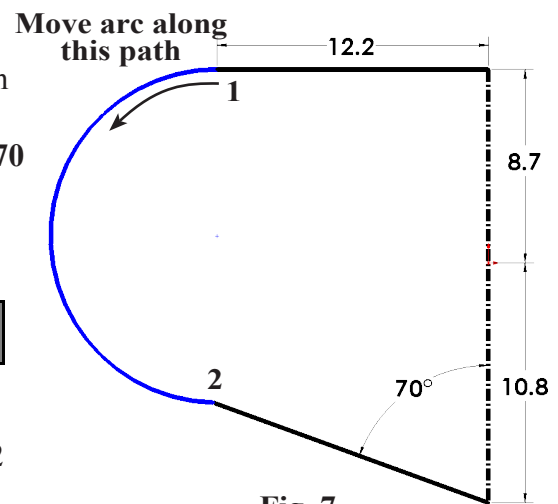



Fig. 7

Step 3. **Right click drawing and click Select** from menu to unselect Arc tool.

Step 4. **Ctrl click the arc and angled line** to select both. Release Ctrl key and click **Make Tangent**  on the Content menu, **Fig. 8**.

Step 5. Save. Use **Ctrl-S**.

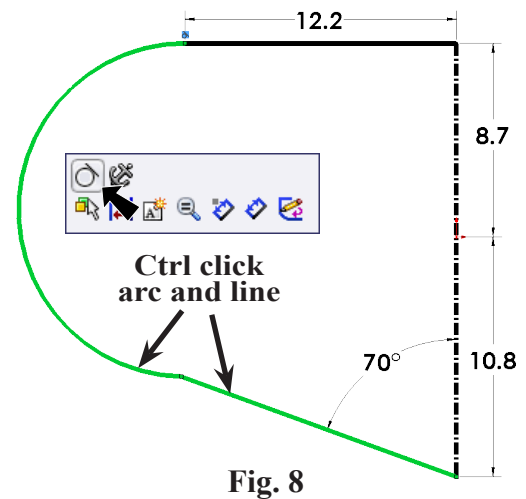


Fig. 8

E. Mirror Geometry.

Step 1. **Drag selection around the sketch** to select all entities, **Fig. 9**. To drag selection, click above and to left of sketch and drag down and to right to drag around all.

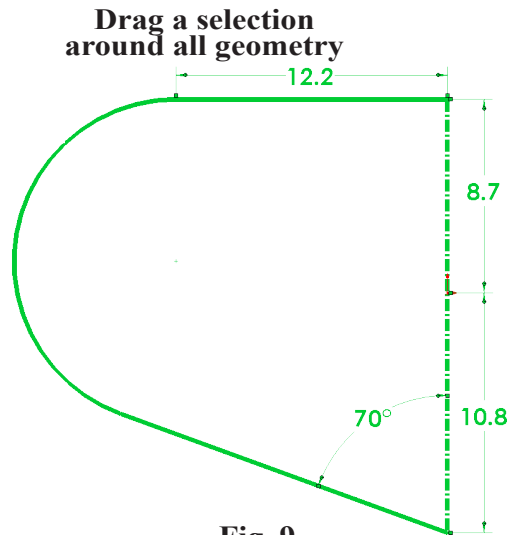
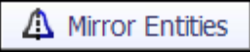


Fig. 9

Step 2. Click **Mirror Entities**  on the Sketch toolbar.

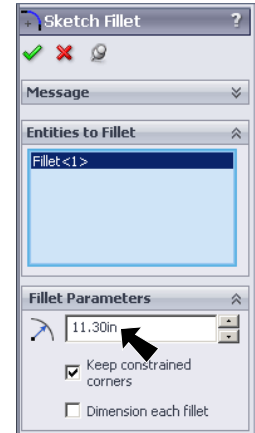



Fig. 10

F. Sketch Fillet.

Step 1. Click **Sketch Fillet**  on the Sketch toolbar.

Step 2. In the Sketch Fillet Property Manager set:

Radius  **11.3**, **Fig. 10**

click bottom end-point of centerline or the front stretch, **Fig. 11**, click OK twice ,

Step 3. Save. Use **Ctrl-S**.

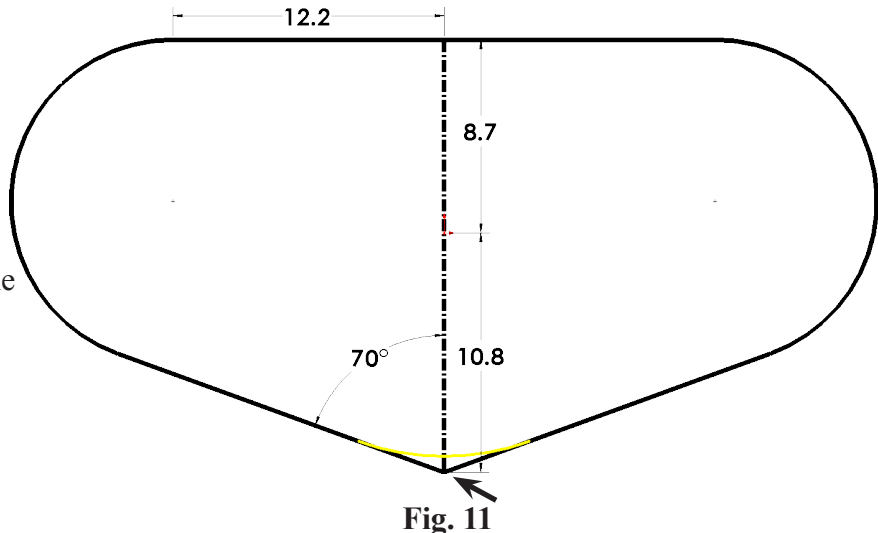


Fig. 11

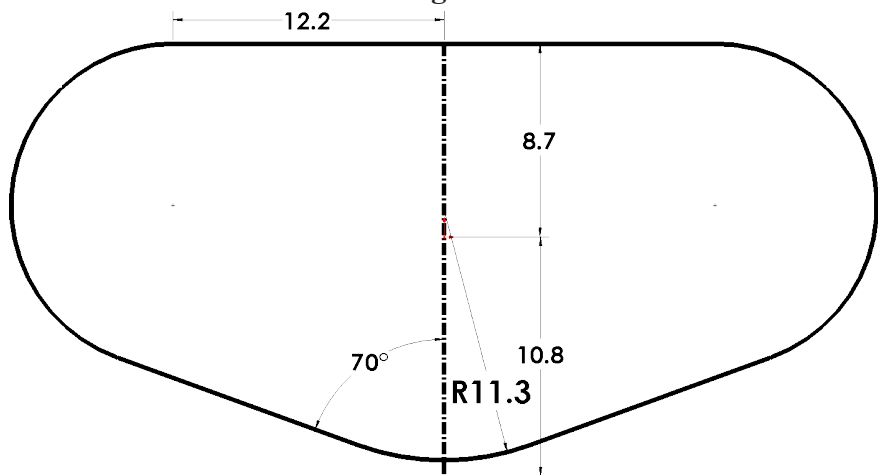



Fig. 12

G. Fit Spline.

Step 1. Right click any geometry of the sketch (not centerline) and click **Select Chain** from the menu, Fig. 13.

Step 2. Click Tools Menu > Spline Tools > Fit Spline.

Step 3. In the Fit Spline Manager set:
 uncheck **Delete geometry**, Fig. 14 and Fig. 15.
 click OK .

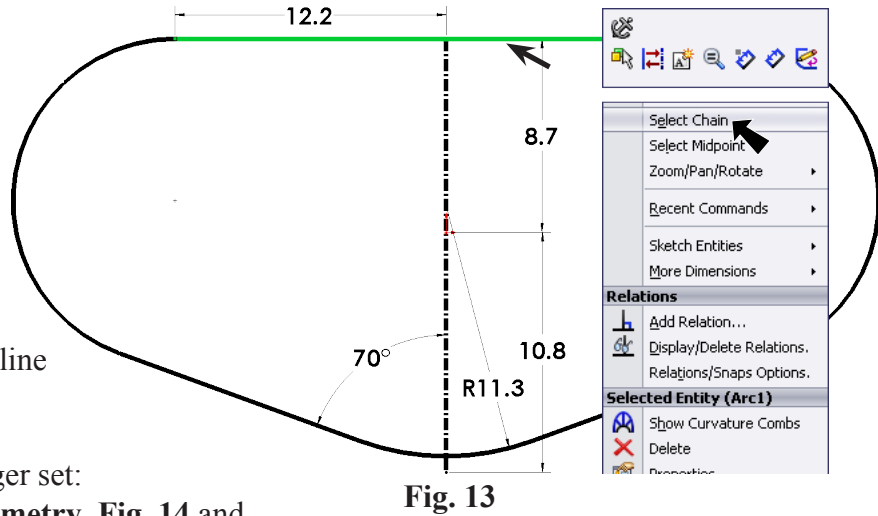


Fig. 13

The Fit Spline tool fits selected entities to a spline. If you look close at the sketch you can see fit spline on top and geometry converted to construction entities below fit spline. You can come back and change the geometry and the spline updates. In the assembly, a spline for our car path will be much easier to mate in the path mate that the car will follow around the track.

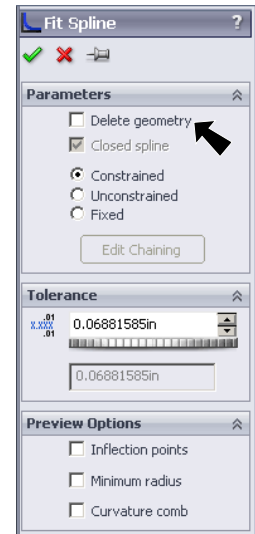


Fig. 14

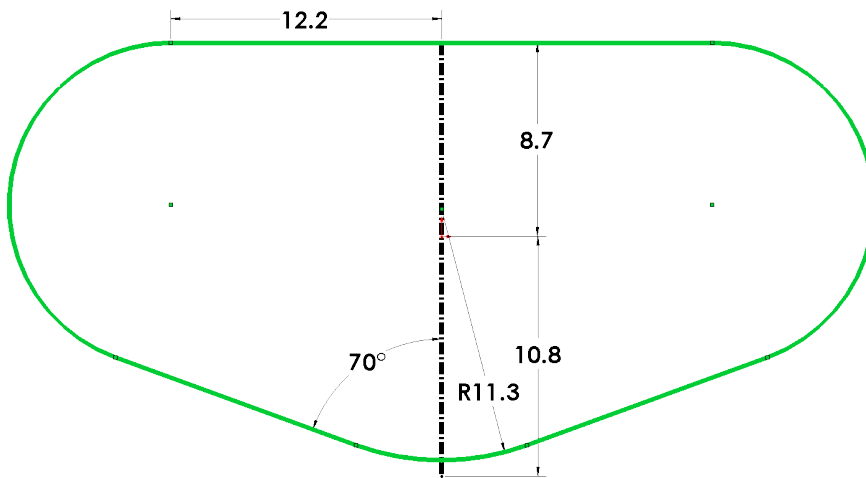


Fig. 15

Step 4. Click **Exit Sketch**  on the Sketch toolbar.

H. Rename FIT SPLINE PATH.

Step 1. Rename Sketch1 to **FIT SPLINE PATH** in the Feature Manager, Fig. 16. To rename, click Sketch1 name in Feature Manager and press F2 on keyboard. Key-in **FIT SPLINE PATH**.

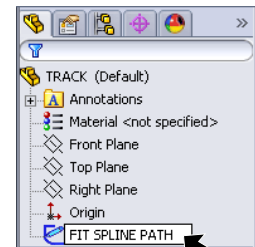


Fig. 16

I. Offset Extrude.

Step 1. Click **Trimetric**  on the Standard Views toolbar.

Step 2. Click **Top Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 17**.

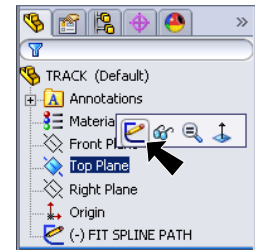


Fig. 17

Step 3. Click **Offset Entities**  on the Sketch toolbar.

Step 4. In the Offset Entities Property Manager set:

Distance  **3.6** **Fig. 18**

uncheck **Reverse**

uncheck **Bi-directional**

click FIT SPLINE PATH sketch, Fig. 19

The yellow offset should be outside original fit spline, **Fig. 19**.

If it is not, check Reverse.

Click OK .

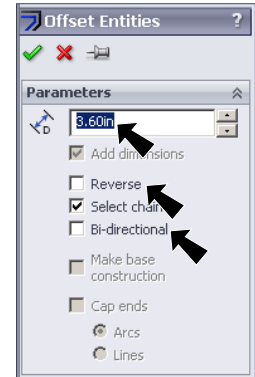
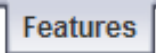
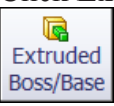


Fig. 18

Step 5. Click **Features**  on the Command Manager toolbar.

Step 6. Click **Extruded Boss/Base**  on the Features toolbar.

Step 7. In the Property Manager set:
under Direction 1, **Fig. 20**

click **Reverse direction** 
the **Direction arrow** should point down, **Fig. 21**

Depth  **.2**

click OK .

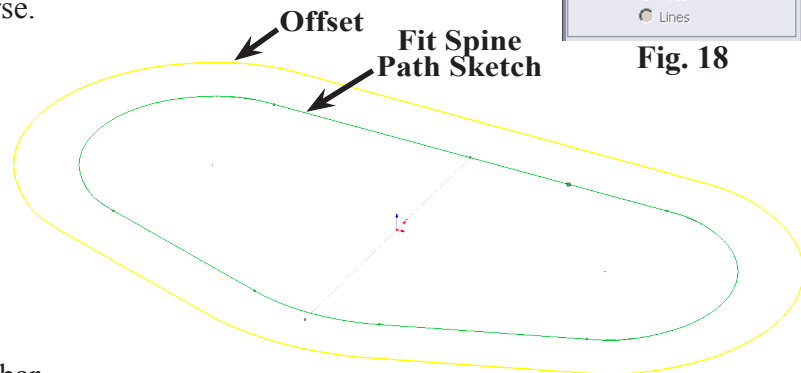


Fig. 19

Step 8. Save. Use **Ctrl-S**.

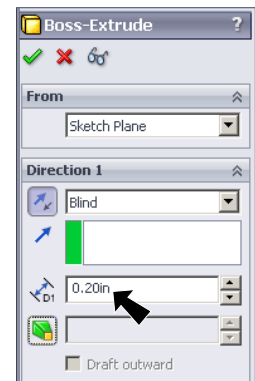


Fig. 20

J. Offset Track Spline

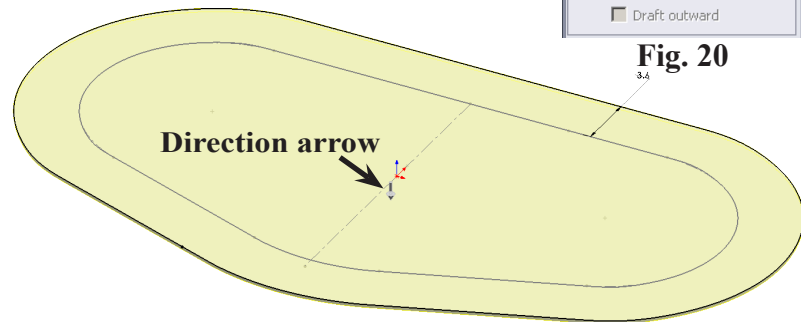




Fig. 21

Line Extrude.

Step 1. Click **Top Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 22**.

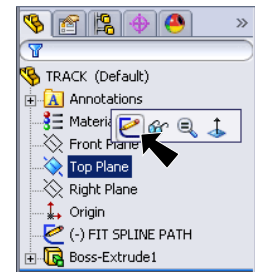


Fig. 22

Step 2. Click **Offset Entities**  on the Sketch toolbar.

Step 3. In the Offset Entities Property Manager set:

Distance  **1.7** **Fig. 23**

check Bi-directional

click FIT SPLINE PATH sketch, Fig. 24

click OK .

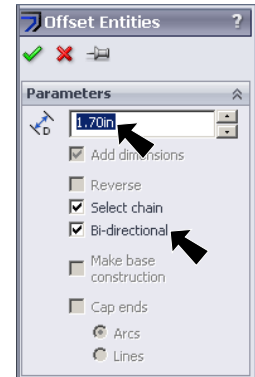



Fig. 23

Step 4. Click Insert Menu > Curve > Split Line.

Step 5. In the Split Line Property Manager:

under Type of Split, **Fig. 25**
select **Projection**

under Selections 
if the Sketch is not selected click the Sketch in drawing

in the Faces to Split box , **Fig. 25**
click top face of Track, Fig. 26

click OK , **Fig. 27**.

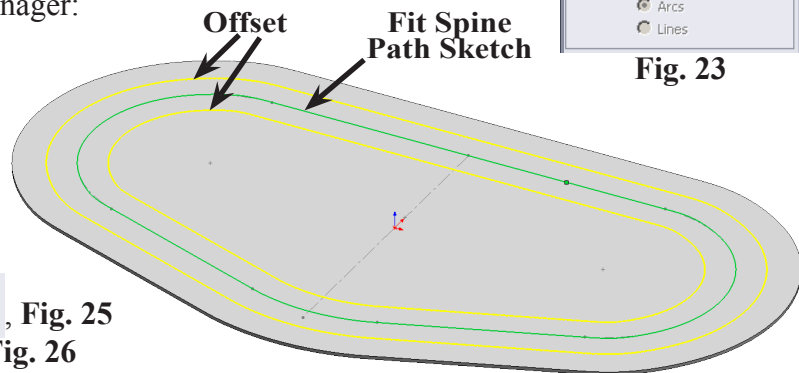


Fig. 24

Step 6. Save. Use **Ctrl-S**.

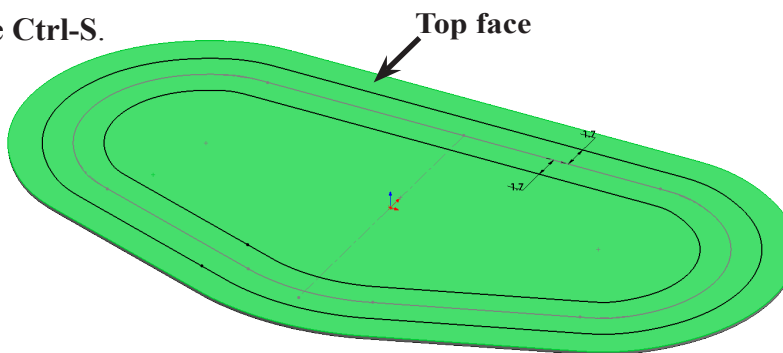


Fig. 26

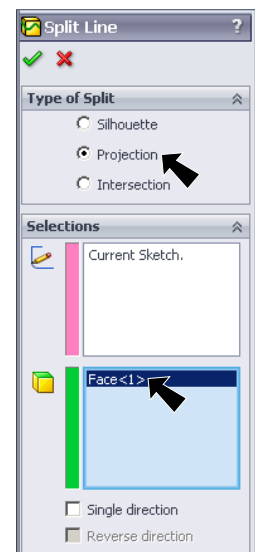


Fig. 25

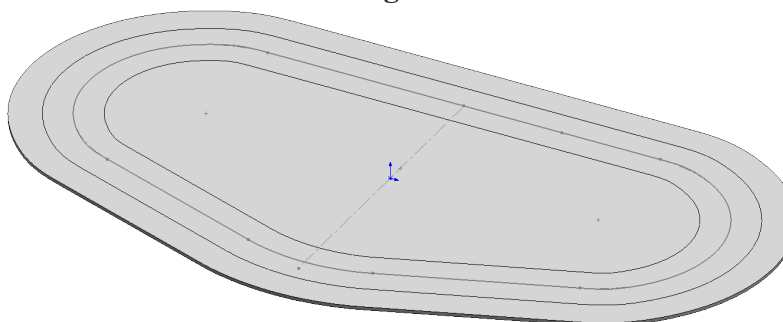




Fig. 27

K. Start/Finish Line Split Line.

Step 1. Click **Top Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 28**.

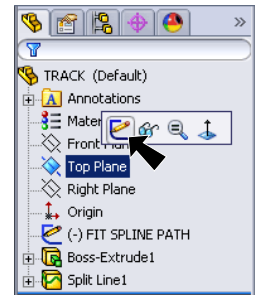





Fig. 28

Step 2. Click **Normal To**  on the Views toolbar (**Ctrl-8**).

Step 3. Click **Center Rectangle**  (S) in the **Rectangle flyout**  on the Sketch toolbar.

Step 4. Draw a small rectangle away from the Origin  and any sketches, **Fig. 29**.

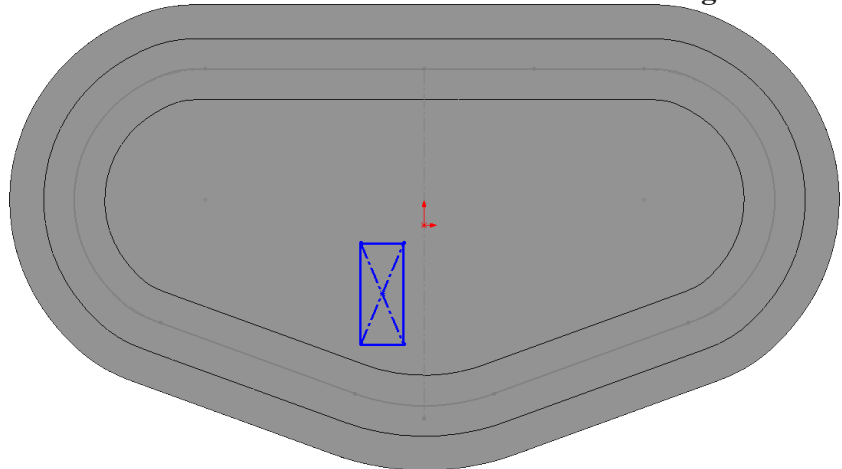




Fig. 29

Step 5. **Right click drawing and click Select** from menu to unselect Rectangle tool.

Step 6. **Ctrl click centerpoint of rectangle and Origin**  to select both, **Fig. 30**. Release Ctrl key and click **Make Vertical**  on the Content menu.

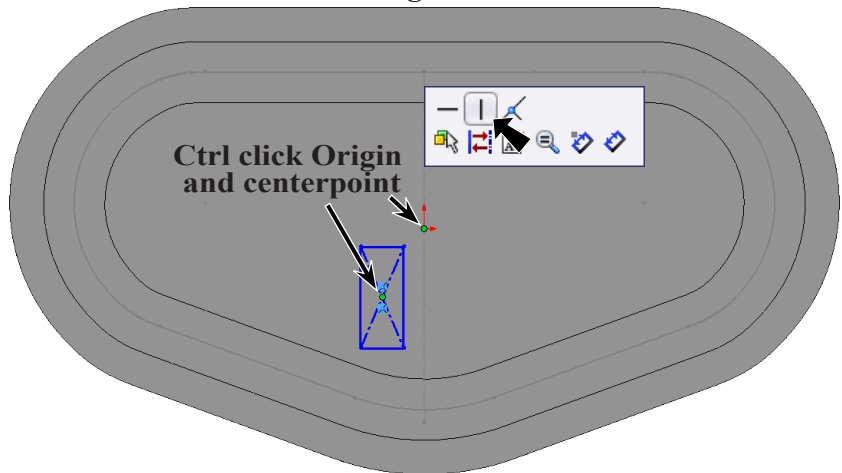



Fig. 30

Step 7. **Ctrl click centerpoint of rectangle and FIT SPLINE PATH sketch** to select both, **Fig. 31**. Release Ctrl key and click **Make Coincident**  on the Content menu.

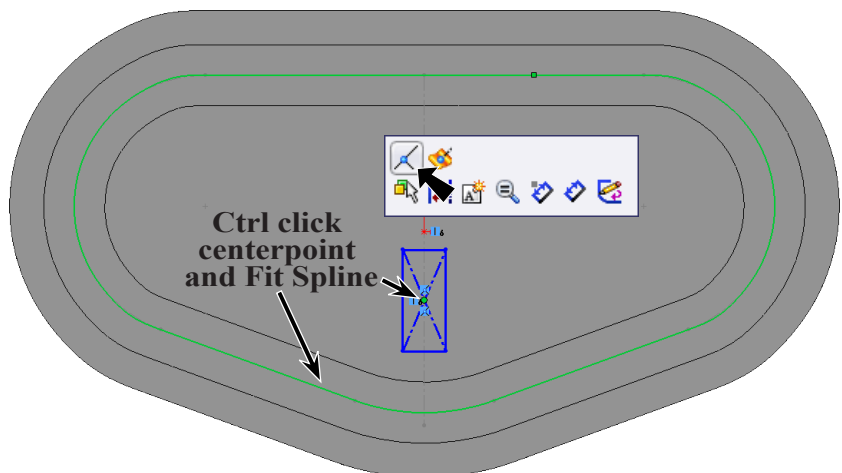



Fig. 31



Step 8. Click **Smart Dimen-**

sion  (S) on the Sketch toolbar.

Step 9. Dimension rectangle **.6** by **3.5**, **Fig. 32**.

Step 10. Click Insert Menu > Curve > Split Line.

Step 11. In the Split Line Property Manager: under Type of Split, **Fig. 33** select **Projection**

in the Faces to Split box  click **track split line face**, **Fig. 34** click OK , **Fig. 35**.

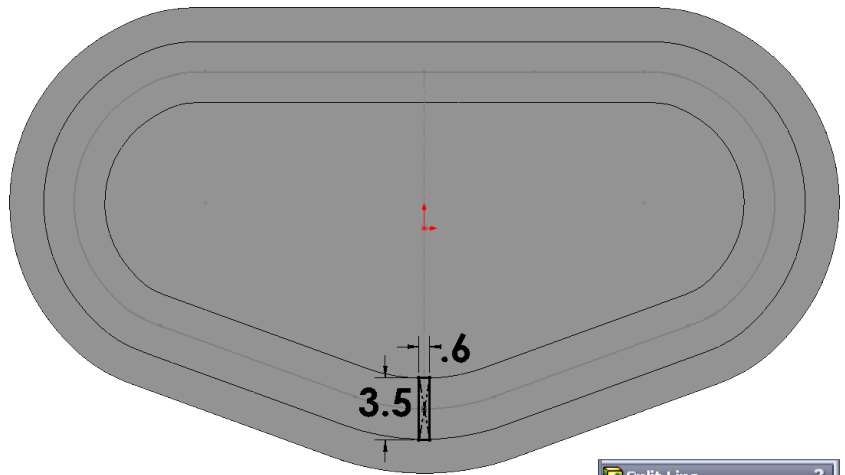


Fig. 32

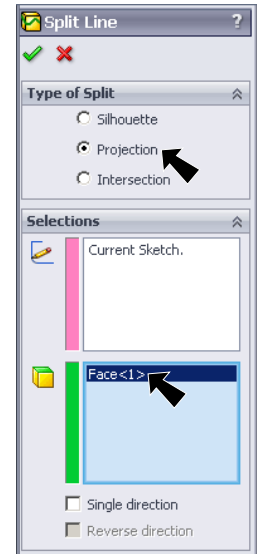


Fig. 33

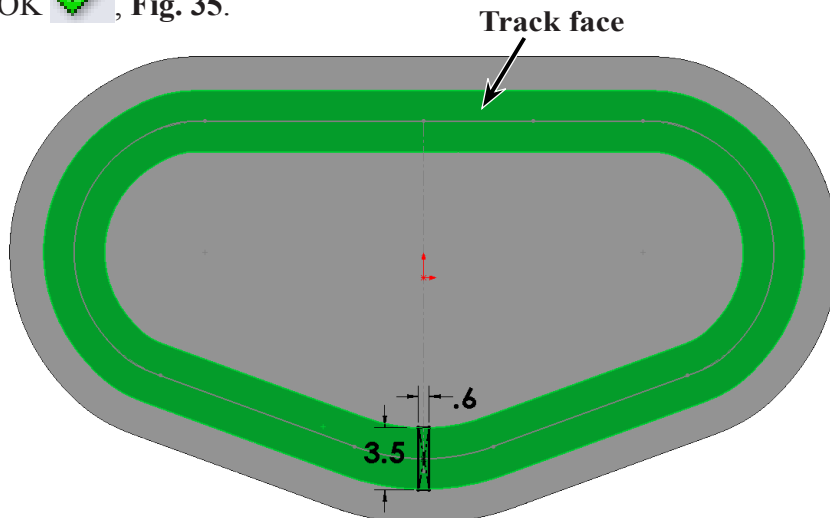


Fig. 34

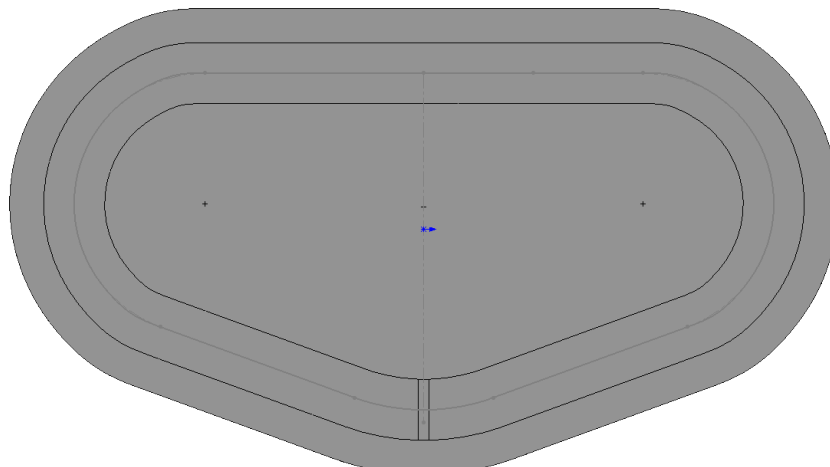




Fig. 35

L. Material Pine.

Step 1. Right click Material  in the Feature Manager and click Edit Material , Fig. 36.

Step 2. Expand Woods in the material tree and click Pine. Click Apply and Close.

Step 3. Save. Use Ctrl-S.

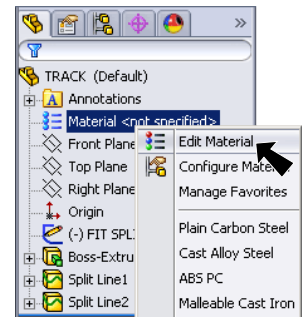




Fig. 36

M. Appearance.

Step 1. Click the Track to select the part, click Appearances Callout  on the Content menu and click TRACK , Fig. 37.

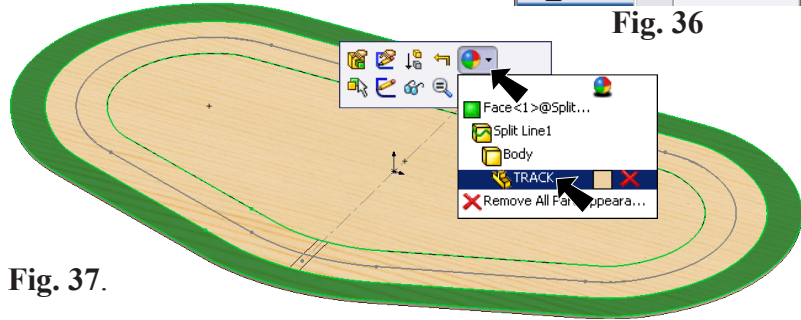



Fig. 37

Step 2. In the Appearances Task pane, expand Painted, click Car and in the lower pane select white, Fig. 38.

Step 3. In the Appearances Property Manager, Fig. 39 under Color:

set RGB values to:
R 132
G 222
B 14

click Keep Visible  and OK .

Fig. 39. The Push Pin  on allows selection of another appearance.

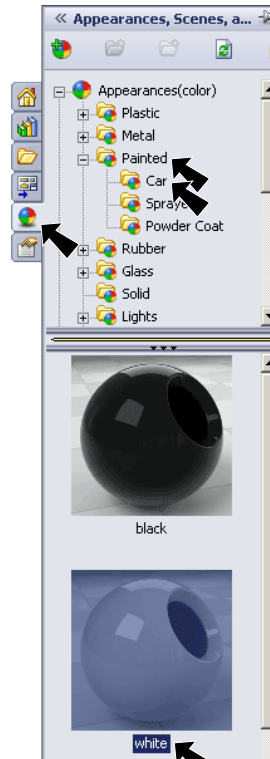


Fig. 38

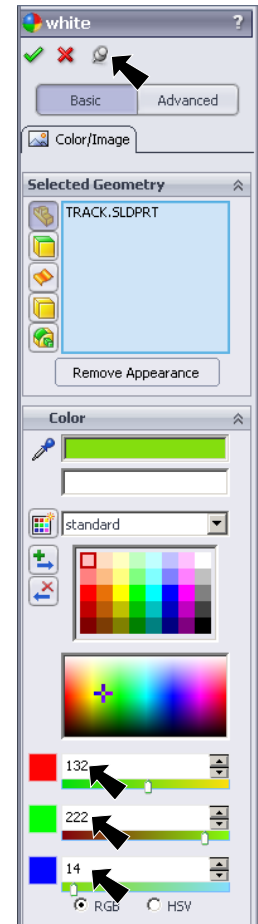


Fig. 39

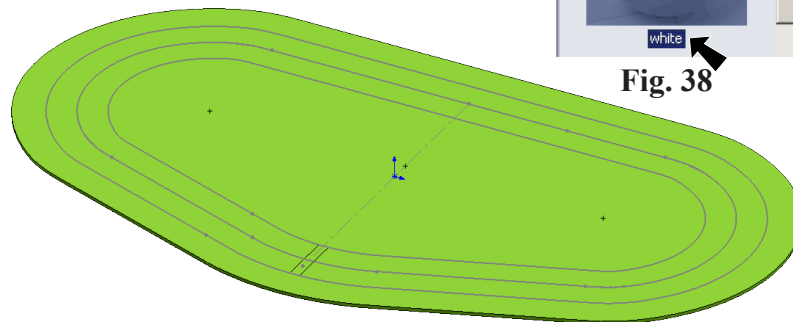


Fig. 40

Step 4. In the Appearances Property Manager, under Selected Geometry

click **Select Faces**  **Fig. 41**

click **track split line face**, **Fig. 42**

under Color:

click **gray swatch**, **Fig. 41**

and OK 

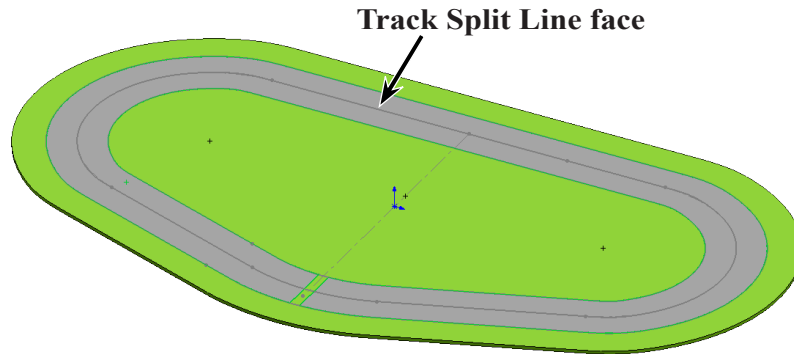


Fig. 42

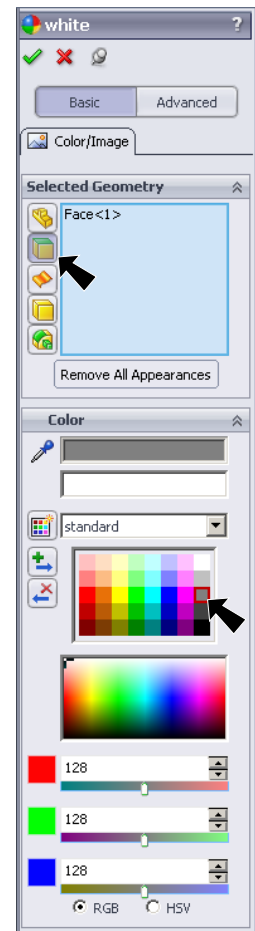


Fig. 41

Step 5. In the Appearances Task pane, expand **Miscellaneous**, click **Pattern** and in the lower pane select **checker pattern**, Fig. 43.

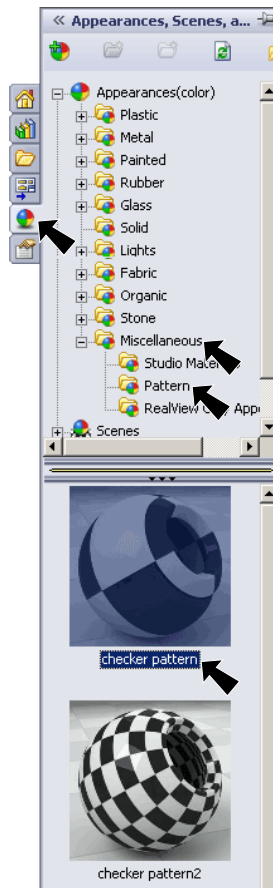


Fig. 43

Step 6. Back over in the Appearances Property Manager, click **Advanced** button, Fig. 44

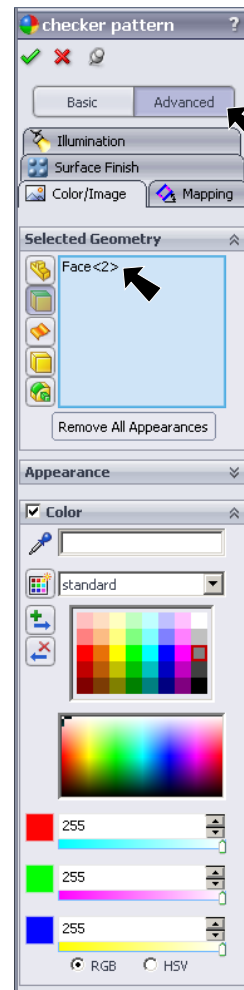


Fig. 44

under Selected Geometry click **start/finish split line face**, Fig. 45.

click **Mapping** tab under Mapping **Mapping Type Surface**

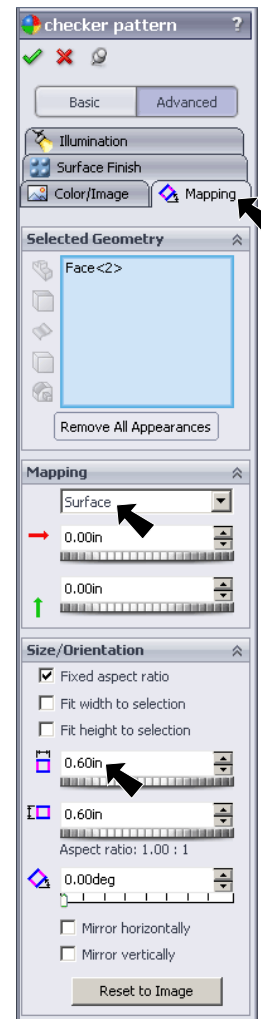


Fig. 46

under Size/Orientation **Width** .6 press **Tab** key, Fig. 46

click OK  and click Cancel .

Step 7. Save. Use **Ctrl-S**.

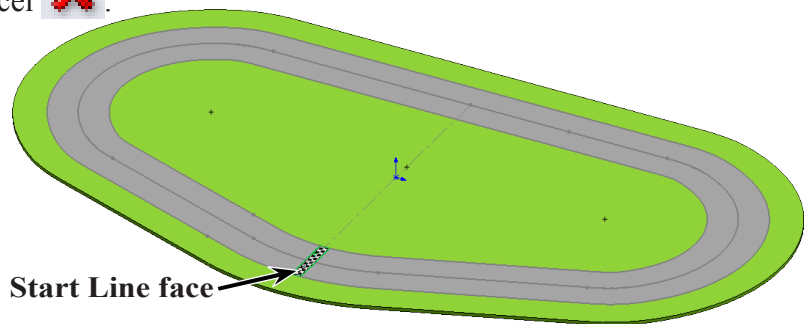


Fig. 45

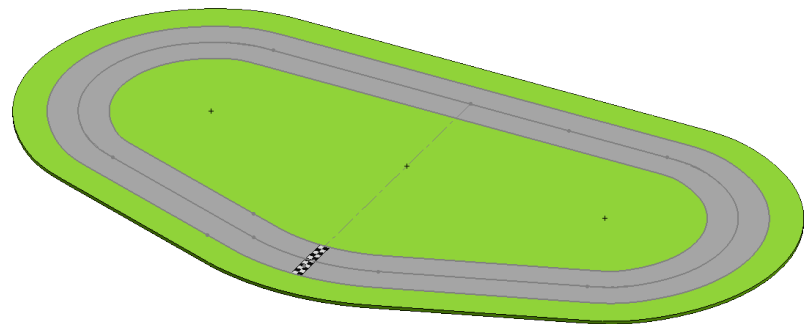


Fig. 47