```
D = 2100 ; d = 1500;
fck = 40 ; fy = 500;
%Inputting T Matrix which consists of no. of layers of steel in 1st column,
% its respective depth from top in 2nd column and Area in 3rd column
T = readmatrix('myfile.csv');
P = []; M = [];Phi = [];Xu =[];Emax =[];P =[];
for phi = 0:0.0000001:0.00003
    for ecmax = 0.00005:0.0000001:0.0035
        pct = 0 ;mct =0;pst=0;mst=0;
        xu = ecmax/phi;
        if(xu>=2100)
            t = 42 ;
        else
            t = xu/50;
        end
        if(t~=0)
            for i = 1:50
                eci = phi*(xu-(2*i-1)*(t/2));
                if(eci<0.002)
                    sigmaci = 18*(eci/0.002)*(2-(eci/0.002));
                else
                    sigmaci = 18;
                end
                pci = sigmaci * strip_area(i,t);
                mci = pci*(1050-(2*i-1)*(t/2));
                pct = pct + pci;
                mct = mct + mci;
            end
        else
            pct = 0;
            mct = 0;
        end
        for j =1 :21
        % esi and sigmasi are strain and stress in given steel layer
        esi = phi* (xu -T(j,2));
        sigmasi = mysteel_stress(esi);
        % psi and msi are force and moment in given steel layer
        psi = sigmasi * T(j,3);
        msi = psi*(1050-T(j,2));
        pst = pst+psi;
        mst = mst+msi;
        end
        pt = (pst+pct)/1000;
        mt = (mst+mct)/10^6;
        if(pt>=1950 && pt<=2050)
            Phi(end+1) = phi ;
            M (end+1) = mt;
            Xu(end+1) = xu;
            Emax(end+1) = ecmax;
            P(end+1) = pt;
            break
        end
    end
end
title("M-Phi Curve")
xlabel("Phi(rad/mm)")
ylabel("M(KNm)")
hold on
plot(Phi,M,"LineStyle","-","LineWidth",1,'Color','b','Marker','o','MarkerEdgeColor','r','MarkerFaceColor','y','MarkerSize',5,'MarkerIndices',[4 24 86])
ax = gca;
ax.XAxisLocation = 'origin';
ax.YAxisLocation = 'origin';
grid on
display(Phi)
display(M)
display(Xu)
display(Emax)
display(P)
```

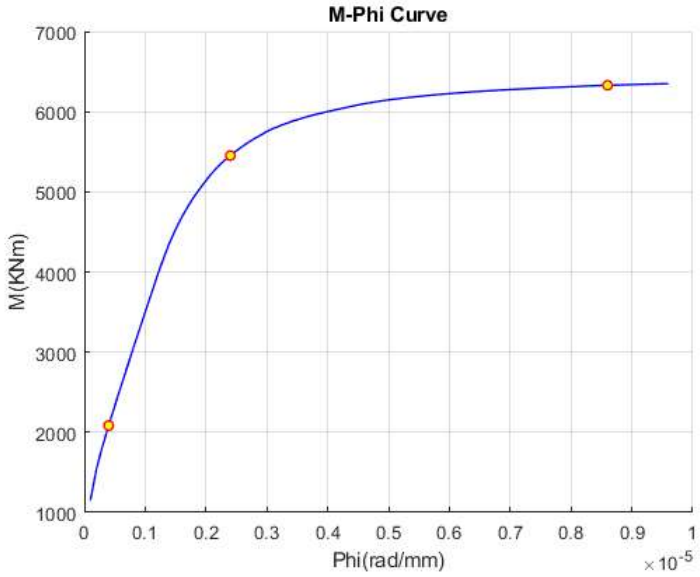
```
Phi =

   1.0e-05 *

  Columns 1 through 7

    0.0100    0.0200    0.0300    0.0400    0.0500    0.0600    0.0700

  Columns 8 through 14

    0.0800    0.0900    0.1000    0.1100    0.1200    0.1300    0.1400

  Columns 15 through 21

    0.1500    0.1600    0.1700    0.1800    0.1900    0.2000    0.2100

  Columns 22 through 28

    0.2200    0.2300    0.2400    0.2500    0.2600    0.2700    0.2800

  Columns 29 through 35
```

```
    0.2900    0.3000    0.3100    0.3200    0.3300    0.3400    0.3500

  Columns 36 through 42

    0.3600    0.3700    0.3800    0.3900    0.4000    0.4100    0.4200

  Columns 43 through 49

    0.4300    0.4400    0.4500    0.4600    0.4700    0.4800    0.4900

  Columns 50 through 56

    0.5000    0.5100    0.5200    0.5300    0.5400    0.5500    0.5600

  Columns 57 through 63

    0.5700    0.5800    0.5900    0.6000    0.6100    0.6200    0.6300

  Columns 64 through 70

    0.6400    0.6500    0.6600    0.6700    0.6800    0.6900    0.7000

  Columns 71 through 77

    0.7100    0.7200    0.7300    0.7400    0.7500    0.7600    0.7700

  Columns 78 through 84

    0.7800    0.7900    0.8000    0.8100    0.8200    0.8300    0.8400

  Columns 85 through 91

    0.8500    0.8600    0.8700    0.8800    0.8900    0.9000    0.9100

  Columns 92 through 96

    0.9200    0.9300    0.9400    0.9500    0.9600

M =

   1.0e+03 *

  Columns 1 through 7

    1.1496    1.5459    1.8285    2.0835    2.3285    2.5676    2.8029

  Columns 8 through 14

    3.0365    3.2679    3.4980    3.7267    3.9541    4.1656    4.3625

  Columns 15 through 21

    4.5302    4.6812    4.8139    4.9348    5.0401    5.1406    5.2345

  Columns 22 through 28

    5.3149    5.3885    5.4523    5.5107    5.5665    5.6182    5.6653

  Columns 29 through 35

    5.7087    5.7516    5.7874    5.8180    5.8480    5.8752    5.9001

  Columns 36 through 42

    5.9230    5.9449    5.9646    5.9829    6.0004    6.0174    6.0341

  Columns 43 through 49

    6.0508    6.0675    6.0836    6.0982    6.1117    6.1241    6.1359

  Columns 50 through 56

    6.1465    6.1564    6.1656    6.1741    6.1820    6.1900    6.1977

  Columns 57 through 63

    6.2053    6.2118    6.2185    6.2246    6.2309    6.2369    6.2429

  Columns 64 through 70

    6.2483    6.2531    6.2578    6.2623    6.2666    6.2710    6.2752

  Columns 71 through 77

    6.2793    6.2831    6.2873    6.2910    6.2947    6.2981    6.3013

  Columns 78 through 84

    6.3047    6.3079    6.3111    6.3142    6.3174    6.3206    6.3234

  Columns 85 through 91
```

```
    6.3262    6.3285    6.3306    6.3329    6.3351    6.3373    6.3393

  Columns 92 through 96

    6.3415    6.3434    6.3453    6.3473    6.3490

Xu =

   1.0e+03 *

  Columns 1 through 7

    1.5880    1.1220    0.9340    0.8307    0.7654    0.7202    0.6870

  Columns 8 through 14

    0.6619    0.6421    0.6263    0.6134    0.6027    0.5930    0.5842

  Columns 15 through 21

    0.5754    0.5669    0.5588    0.5510    0.5434    0.5364    0.5298

  Columns 22 through 28

    0.5233    0.5170    0.5109    0.5050    0.4996    0.4943    0.4893

  Columns 29 through 35

    0.4846    0.4801    0.4756    0.4711    0.4669    0.4629    0.4589

  Columns 36 through 42

    0.4551    0.4515    0.4480    0.4446    0.4414    0.4383    0.4354

  Columns 43 through 49

    0.4326    0.4300    0.4275    0.4250    0.4226    0.4202    0.4180

  Columns 50 through 56

    0.4158    0.4137    0.4116    0.4096    0.4076    0.4057    0.4038

  Columns 57 through 63

    0.4021    0.4003    0.3986    0.3970    0.3955    0.3940    0.3926

  Columns 64 through 70

    0.3912    0.3899    0.3885    0.3872    0.3860    0.3848    0.3836

  Columns 71 through 77

    0.3825    0.3814    0.3804    0.3794    0.3784    0.3774    0.3764

  Columns 78 through 84

    0.3755    0.3746    0.3738    0.3729    0.3721    0.3713    0.3705

  Columns 85 through 91

    0.3697    0.3689    0.3681    0.3674    0.3666    0.3659    0.3652

  Columns 92 through 96

    0.3646    0.3639    0.3632    0.3626    0.3619

Emax =

  Columns 1 through 7

    0.0002    0.0002    0.0003    0.0003    0.0004    0.0004    0.0005

  Columns 8 through 14

    0.0005    0.0006    0.0006    0.0007    0.0007    0.0008    0.0008

  Columns 15 through 21

    0.0009    0.0009    0.0009    0.0010    0.0010    0.0011    0.0011

  Columns 22 through 28

    0.0012    0.0012    0.0012    0.0013    0.0013    0.0013    0.0014

  Columns 29 through 35

    0.0014    0.0014    0.0015    0.0015    0.0015    0.0016    0.0016

  Columns 36 through 42
```

```
    0.0016    0.0017    0.0017    0.0017    0.0018    0.0018    0.0018

  Columns 43 through 49

    0.0019    0.0019    0.0019    0.0020    0.0020    0.0020    0.0020

  Columns 50 through 56

    0.0021    0.0021    0.0021    0.0022    0.0022    0.0022    0.0023

  Columns 57 through 63

    0.0023    0.0023    0.0024    0.0024    0.0024    0.0024    0.0025

  Columns 64 through 70

    0.0025    0.0025    0.0026    0.0026    0.0026    0.0027    0.0027

  Columns 71 through 77

    0.0027    0.0027    0.0028    0.0028    0.0028    0.0029    0.0029

  Columns 78 through 84

    0.0029    0.0030    0.0030    0.0030    0.0031    0.0031    0.0031

  Columns 85 through 91

    0.0031    0.0032    0.0032    0.0032    0.0033    0.0033    0.0033

  Columns 92 through 96

    0.0034    0.0034    0.0034    0.0034    0.0035

P =

   1.0e+03 *

  Columns 1 through 7

    1.9507    1.9516    1.9513    1.9503    1.9509    1.9508    1.9502

  Columns 8 through 14

    1.9508    1.9507    1.9510    1.9510    1.9509    1.9501    1.9504

  Columns 15 through 21

    1.9507    1.9500    1.9506    1.9502    1.9500    1.9506    1.9501

  Columns 22 through 28

    1.9503    1.9507    1.9501    1.9505    1.9507    1.9503    1.9500

  Columns 29 through 35

    1.9500    1.9503    1.9501    1.9501    1.9504    1.9503    1.9505

  Columns 36 through 42

    1.9504    1.9505    1.9502    1.9502    1.9505    1.9503    1.9500

  Columns 43 through 49

    1.9501    1.9503    1.9504    1.9503    1.9505    1.9502    1.9503

  Columns 50 through 56

    1.9502    1.9502    1.9500    1.9500    1.9500    1.9501    1.9502

  Columns 57 through 63

    1.9502    1.9501    1.9503    1.9500    1.9503    1.9503    1.9504

  Columns 64 through 70

    1.9502    1.9503    1.9503    1.9502    1.9501    1.9503    1.9503

  Columns 71 through 77

    1.9503    1.9500    1.9503    1.9501    1.9503    1.9502    1.9501

  Columns 78 through 84

    1.9502    1.9502    1.9502    1.9501    1.9503    1.9503    1.9500

  Columns 85 through 91

    1.9502    1.9502    1.9501    1.9502    1.9501    1.9502    1.9500

  Columns 92 through 96
```

```
1.9501    1.9501    1.9500    1.9502    1.9501
```



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