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diary on          % begin recording

% FEMA appeal for The Town of Kennebunkport, York county, Maine
% TRANSECT ID: YK-103
% calculation by SJH, Ransom Consulting, Inc. 02-Apr-2020
% 100-year wave runup using TAW methodology
% including berm and weighted average with foreshore if necessary
%
% chk nld 20200220
%
% This script assumes that the incident wave conditions provided
% as input in the configuration section below are the
% appropriate values located at the end of the foreshore
% or toe of the slope on which the run-up is being calculated
% the script does not attempt to apply a depth limit or any other
% transformation to the incident wave conditions other than
% conversion of the peak wave period to the spectral mean wave
% as recommended in the references below
%
% references:
%
% Van der Meer, J.W., 2002. Technical Report Wave Run-up and
% Wave Overtopping at Dikes. TAW Technical Advisory Committee on
% Flood Defence, The Netherlands.
%
% FEMA. 2007, Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update
%
%
%-----
% CONFIG
%-----
fname='inpfiles/YK-103sta_ele_include.csv'; % file with station, elevation, include
                                         % third column is 0 for excluded points
imgname='logfiles/YK-103-runup';
SWEL=9.0423; % 100-yr still water level including wave setup.
H0=6.6846; % significant wave height at toe of structure
Tp=13.8007; % peak period, 1/fma,
T0=Tp/1.1;

gamma_berm=0.85269; % this may get changed automatically below
gamma_rough=0.75;
gamma_beta=1;
gamma_perm=1;

setupAtToe=0.96939;
maxSetup=1.5373; % only used in case of berm/shallow foreshore weighted average

plotTitle='Iterative TAW for YK-103'

plotTitle =

Iterative TAW for YK-103

% END CONFIG
%-----

SWEL=SWEL+setupAtToe

SWEL =

10.01169

SWEL_fore=SWEL+maxSetup

SWEL_fore =

11.54899

% FIND WAVELENGTH USING DEEPWATER DISPERSION RELATION
% using English units
L0=32.15/(2*pi)*T0^2

L0 =

805.411764786868

% Find Hb (Munk, 1949)
%Hb=H0/(3.3*(H0/L0)^(1/3))
%Db=-Hb/.78+SWEL; % depth at breaking

% The toe elevation here is only used to determine the average
% structure slope, it is not used to depth limit the wave height.
% Any depth limiting or other modification of the wave height

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% to make it consistent with TAW guidance should be performed
% prior to the input of the significant wave height given above.
Ztoe=SWEL-1.5*H0

Ztoe =

    -0.01520999999999997

% read the transect
[sta,dep,inc] = textread(fname,'%n%n%n%*[\n]', 'delimiter',' ','headerlines',0);

% remove unselected points
k=find(inc==0);
sta(k)=[];
dep(k)=[];

sta_org=sta; % used for plotting purposes
dep_org=dep;

% initial guess at maximum run-up elevation to estimate slope
Z2=SWEL+1.5*H0

Z2 =

    20.03859

% determine station at the max runup and -1.5*H0 (i.e. the toe)
top_sta=-999;
toe_sta=-999;
for kk=1:length(sta)-1
    if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1))) % here is the intersection of z2 with profile
        top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
    end
    if ((Ztoe > dep(kk)) & (Ztoe <= dep(kk+1))) % here is the intersection of Ztoe with profile
        toe_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Ztoe)
    end
end

toe_sta =

    -0.810514014357526

toe_sta =

    7.07565722517106

% check to make sure we got them, if not extend the end slopes outward
S=diff(dep)./diff(sta);
if toe_sta== -999
    dy=dep(1)-Ztoe;
    toe_sta=sta(1)-dy/S(1)
end
if top_sta== -999
    dy=Z2-dep(end);
    top_sta=sta(end)+dy/S(end)
end

top_sta =

    305.072978560918

% just so the reader can tell the values aren't -999 anymore
top_sta

top_sta =

    305.072978560918

toe_sta

toe_sta =

    7.07565722517106

% check for case where the toe of slope is below SWL-1.5*H0
% in this case interpolate setup from the setupAtToe(really setup as first station), and the max setup
% also un-include points seaward of SWL-1.5*H0
if Ztoe > dep(1)
    dd=SWEL_fore-dep;
    k=find(dd<0,1); % k is index of first land point
    staAtSWL=interp1(dep(k-1:k),sta(k-1:k),SWEL_fore);
    dsta=staAtSWL-sta(1);

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dsetup=maxSetup-setupAtToe;
dsetdsta=dsetup/dsta;
setup=setupAtToe+dsetdsta*(toe_sta-sta(1));
sprintf('-!!- Location of SWEL-1.5*H0 is %4.1f ft landward of toe of slope',dsta)
sprintf('-!!- Setup is interpolated between setup at toe of slope and max setup')
sprintf('-!!-          setup is adjusted to %4.2f feet',setup)
SWEL=SWEL-setupAtToe+setup;
sprintf('-!!-          SWEL is adjusted to %4.2f feet',SWEL)
k=find(dep < SWEL-1.5*H0)
sta(k)=[];
dep(k)=[];
else
    sprintf('-!!- The User has selected a starting point that is %4.2f feet above the elevation of SWEL-1.5H0\n',dep(1))
    sprintf('-!!- This may be reasonable for some cases. However the user may want to consider:\n')
    sprintf('-!!- 1) Selecting a starting point that is at or below %4.2f feet elevation, or\n', Ztoe)
    sprintf('-!!- 2) Reducing the incident wave height to a depth limited condition.\n')
end

ans =

-!!- Location of SWEL-1.5*H0 is 198.3 ft landward of toe of slope

ans =

-!!- Setup is interpolated between setup at toe of slope and max setup

ans =

-!!-          setup is adjusted to 1.10 feet

ans =

-!!-          SWEL is adjusted to 10.15 feet

k =

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
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% now iterate converge on a runup elevation
tol=0.01; % convergence criteria
R2del=999;
R2_new=3*H0; %initial guess
R2=R2_new;
iter=0;
R2_all=[];
topStaAll=[];
Berm_Segs=[];
TAW_ALWAYS_VALID=1;
while(abs(R2del) > tol && iter <= 25)
    iter=iter+1;
    sprintf('!----- STARTING ITERATION %d -----!',iter)
    % elevation of toe of slope
    Ztoe
    % station of toe slope (relative to 0-NAVD88 shoreline)
    toe_sta
    % station of top of slope/extent of 2% run-up
    top_sta
    % elevation of top of slope/extent of 2% run-up
    Z2
    % incident significant wave height
    H0
    % incident spectral peak wave period
    Tp
    % incident spectral mean wave period
    T0

    R2=R2_new
    Z2=R2+SWEL
    % determine slope for this iteration
    top_sta=-999;
    for kk=1:length(sta)-1
        if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1))) % here is the intersection of z2 with profile
            top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
            break;
        end
    end
    if top_sta== -999
        dy=Z2-dep(end);
        top_sta=sta(end)+dy/S(end)
    end

    % get the length of the slope (not accounting for berm)
    Lslope=top_sta-toe_sta

    % loop over profile segments to determine berm factor
    % re-calculate influence of depth of berm based on this run-up elevation
    % check for berm, berm width, berm height
    berm_width=0;
    rdh_sum=0;
    Berm_Segs=[];
    Berm_Heights=[];
    for kk=1:length(sta)-1
        ddep=dep(kk+1)-dep(kk);
        dsta=sta(kk+1)-sta(kk);
        s=ddep/dsta;
        if (s < 1/15) % count it as a berm if slope is flatter than 1:15 (see TAW manual)
            sprintf('Berm Factor Calculation: Iteration %d, Profile Segment: %d',iter,kk)
            berm_width=berm_width+dsta; % tally the width of all berm segments
            % compute the rdh for this segment and weight it by the segment length
            dh=SWEL-(dep(kk)+dep(kk+1))/2
            if dh < 0
                chi=R2;
            else
                chi=2* H0;
            end
            if (dh <= R2 & dh >=-2*H0)
                rdh=(0.5-0.5*cos(3.14159*dh/chi)) ;
            else
                rdh=1;
            end
            rdh_sum=rdh_sum + rdh * dsta
            Berm_Segs=[Berm_Segs, kk];
            Berm_Heights=[Berm_Heights, (dep(kk)+dep(kk+1))/2];
        end
        if dep(kk) >= Z2 % jump out of loop if we reached limit of run-up for this iteration
            break
        end
    end
    sprintf('!----- End Berm Factor Calculation, Iter: %d -----!',iter)
    berm_width
    rB=berm_width/Lslope
    if (berm_width > 0)
        rdh_mean=rdh_sum/berm_width
    else
        rdh_mean=1
    end
end

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gamma_berm=1- rB * (1-rdh_mean)
if gamma_berm > 1
    gamma_berm=1
end
if gamma_berm < 0.6
    gamma_berm =0.6
end
% Iribarren number
slope=(Z2-Ztoe)/(Lslope-berm_width)
Irb=(slope/(sqrt(H0/L0)))
% runup height
gamma_berm
gamma_perm
gamma_beta
gamma_rough
gamma=gamma_berm*gamma_perm*gamma_beta*gamma_rough

% check validity
TAW_VALID=1;
if (Irb*gamma_berm < 0.5 | Irb*gamma_berm > 10 )
    sprintf('!!! - - Iribarren number: %6.2f is outside the valid range (0.5-10), TAW NOT VALID - - !!!\n', Irb*gamma_berm)
    TAW_VALID=0;
else
    sprintf('!!! - - Iribarren number: %6.2f is in the valid range (0.5-10), TAW RECOMMENDED - - !!!\n', Irb*gamma_berm)
end
islope=1/slope;
if (slope < 1/8 | slope > 1)
    sprintf('!!! - - slope: 1:%3.1f V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!\n', islope)
    TAW_VALID=0;
else
    sprintf('!!! - - slope: 1:%3.1f V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!\n', islope)
end
if TAW_VALID == 0
    TAW_ALWAYS_VALID=0;
end

if (Irb*gamma_berm < 1.8)
    R2_new=gamma*H0*1.77*Irb
else
    R2_new=gamma*H0*(4.3-(1.6/sqrt(Irb)))
end
% check to see if we need to evaluate a shallow foreshore
if berm_width > 0.25 * L0;
    disp('!   Berm_width is greater than 1/4 wave length')
    disp('!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm')
    % do the foreshore calculation
    fore_H0=0.78*(SWEL_fore-min(Berm_Heights))
    % get upper slope
    fore_toe_sta=-999;
    fore_toe_dep=-999;
    for kk=length(dep)-1:-1:1
        ddep=dep(kk+1)-dep(kk);
        dsta=sta(kk+1)-sta(kk);
        s=ddep/dsta;
        if s < 1/15
            break
        end
        fore_toe_sta=sta(kk);
        fore_toe_dep=dep(kk);
        upper_slope=(Z2-fore_toe_dep)/(top_sta-fore_toe_sta)
    end
    fore_Irb=upper_slope/(sqrt(fore_H0/L0));
    fore_gamma=gamma_perm*gamma_beta*gamma_rough;
    if (fore_Irb < 1.8)
        fore_R2=fore_gamma*fore_H0*1.77*fore_Irb;
    else
        fore_R2=fore_gamma*fore_H0*(4.3-(1.6/sqrt(fore_Irb)));
    end
    if berm_width >= L0
        R2_new=fore_R2
        disp('berm is wider than one wavelength, use full shallow foreshore solution');
    else
        w2=(berm_width-0.25*L0)/(0.75*L0)
        w1=1-w2
        R2_new=w2*fore_R2 + w1*R2_new
    end
end % end berm width check
% convergence criterion
R2del=abs(R2-R2_new)
R2_all(iter)=R2_new;
% get the new top station (for plot purposes)
Z2=R2_new+SWEL
top_sta=-999;
for kk=1:length(sta)-1
    if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1))) % here is the intersection of z2 with profile
        top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
        break;
    end
end
if top_sta== -999

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        dy=Z2-dep(end);
        top_sta=sta(end)+dy/S(end);
    end
    topStaAll(iter)=top_sta;
end
ans =
!----- STARTING ITERATION 1 -----!
Ztoe =
    -0.01520999999999997
toe_sta =
    7.07565722517106
top_sta =
    305.072978560918
Z2 =
    20.03859
H0 =
    6.6846
Tp =
    13.8007
T0 =
    12.5460909090909
R2 =
    20.0538
Z2 =
    30.2003223499491
top_sta =
    494.350314786617
Lslope =
    487.274657561446
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 14
dh =
    6.86657734994911
rdh_sum =
    0.52137398948955
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 15
dh =
    7.01272384994911
rdh_sum =
    1.05988758097302
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 16
dh =
    7.15887034994911
rdh_sum =
    1.61549535557839
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 17
dh =
    7.30501684994911
rdh_sum =
    2.18813173535515
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 18
dh =
    7.45116334994911
rdh_sum =
    2.77771106060995
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 19
dh =
    7.59730984994911
rdh_sum =
    3.38412769092466
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 20
dh =
    7.74345634994911
rdh_sum =
    4.00725612973755
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 21
dh =
    7.88960284994911
rdh_sum =
    4.64695117234071
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    5.30304807711916
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    5.97536275982977
ans =

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Berm Factor Calculation: Iteration 1, Profile Segment: 24
dh =
    rdh_sum = 8.32804234994911
    ans = 6.66369201069084
Berm Factor Calculation: Iteration 1, Profile Segment: 25
dh =
    rdh_sum = 8.43199384994911
    ans = 7.36327807722119
Berm Factor Calculation: Iteration 1, Profile Segment: 26
dh =
    rdh_sum = 8.49375084994911
    ans = 8.06949579243737
Berm Factor Calculation: Iteration 1, Profile Segment: 27
dh =
    rdh_sum = 8.55550784994911
    ans = 8.78230172743214
Berm Factor Calculation: Iteration 1, Profile Segment: 28
dh =
    rdh_sum = 8.61726484994911
    ans = 9.50165106583653
Berm Factor Calculation: Iteration 1, Profile Segment: 29
dh =
    rdh_sum = 8.67902184994911
    ans = 10.2274976132581
Berm Factor Calculation: Iteration 1, Profile Segment: 30
dh =
    rdh_sum = 8.74077884994911
    ans = 10.9597938070091
Berm Factor Calculation: Iteration 1, Profile Segment: 31
dh =
    rdh_sum = 8.80253584994911
    ans = 11.6984907261237
Berm Factor Calculation: Iteration 1, Profile Segment: 32
dh =
    rdh_sum = 8.86429284994911
    ans = 12.4435381016598
Berm Factor Calculation: Iteration 1, Profile Segment: 33
dh =
    rdh_sum = 8.92850634994911
    ans = 13.1951337899271
Berm Factor Calculation: Iteration 1, Profile Segment: 34
dh =
    rdh_sum = 8.99763184994911
    ans = 13.9537146358556
Berm Factor Calculation: Iteration 1, Profile Segment: 35
dh =
    rdh_sum = 9.06921334994911
    ans = 14.7194568909352
Berm Factor Calculation: Iteration 1, Profile Segment: 36
dh =
    rdh_sum = 9.14079534994911
    ans = 15.4922854178496
Berm Factor Calculation: Iteration 1, Profile Segment: 37
dh =
    rdh_sum = 9.21237734994911
    ans = 16.2721230240528
Berm Factor Calculation: Iteration 1, Profile Segment: 38
dh =
    rdh_sum = 9.28395934994911
    ans = 17.0588905338898
ans =
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Berm Factor Calculation: Iteration 1, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    17.8463394704828
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    18.6282428019156
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    19.4045491665145
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    20.1752083188606
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    20.8834483989456
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    21.6083638749372
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    22.3418439264898
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    23.0056388129801
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    23.66932962336
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    24.3329164051988
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    24.994628543774
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    25.6526883041245
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    25.7522215297308
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    25.8665166697112
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    25.9964548007975
ans =
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Berm Factor Calculation: Iteration 1, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    26.1428812659861
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    26.3037481766994
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    26.4737420432197
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    26.650100668802
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    26.8329156226893
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    27.0222766474083
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    27.2182716333774
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    27.4324443979863
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    27.6774033642637
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    27.9545160108855
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    28.2649774693291
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    28.362564161054
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    28.4655999207198
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    28.5742154071602
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    28.6885394082926
ans =
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Berm Factor Calculation: Iteration 1, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    28.8086987954031
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    28.9348185561857
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    29.0670217170552
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    29.2054293432393
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    29.3521914274872
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    29.5096001962242
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    29.6779568494316
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    29.8575529619094
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    30.0486702269297
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    30.2515802558285
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    30.4599376101971
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    30.6052755135891
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    30.7583035136458
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    30.9191832886589
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    31.0880728582343
ans =
```

```

Berm Factor Calculation: Iteration 1, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    31.2651265096597
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    31.2941090777345
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    31.3245191861876
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    31.3563900645176
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    31.3897548257553
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    31.4246464772624
ans =
!----- End Berm Factor Calculation, Iter: 1 -----!
berm_width =
    76
rB =
    0.155969531393937
rdh_mean =
    0.413482190490294
gamma_berm =
    0.908521092096573
slope =
    0.0734680141224963
Irb =
    0.80643538025949
gamma_berm =
    0.908521092096573
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.681390819072429
ans =
!!! - - Iribaren number: 0.73 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:13.6 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    6.5015145934109
R2del =
    13.5522854065891
Z2 =
    16.64803694336
ans =
!----- STARTING ITERATION 2 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    241.918899237432
Z2 =
    16.64803694336
H0 =
    6.6846
Tp =
    13.8007
T0 =
    12.5460909090909
R2 =
    6.5015145934109
Z2 =
    16.64803694336
top_sta =

```

```
241.918899237432
Lslope = 234.843242012261
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 1
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 15
dh = 7.01272384994911
rdh_sum = 2
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 16
dh = 7.15887034994911
rdh_sum = 3
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 17
dh = 7.30501684994911
rdh_sum = 4
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 18
dh = 7.45116334994911
rdh_sum = 5
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 6
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 20
dh = 7.74345634994911
rdh_sum = 7
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 21
dh = 7.88960284994911
rdh_sum = 8
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 22
dh = 8.03574934994911
rdh_sum = 9
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 23
dh = 8.18189584994911
rdh_sum = 10
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 24
dh = 8.32804234994911
rdh_sum = 11
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 25
dh = 8.43199384994911
rdh_sum = 12
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 26
dh = 8.49375084994911
rdh_sum = 13
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 27
dh = 8.55550784994911
rdh_sum = 14
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 28
dh =
```

```
8.61726484994911
rdh_sum =
15
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
16
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
17
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
18
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
19
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
20
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
21
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
22
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
23
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
24
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
25
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
26
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
27
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
28
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
29
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 46
dh =
```

```
8.51266434994911
rdh_sum =
30
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
31
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
32
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
33
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
34
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
35
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
36
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
37
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
37.0995332256064
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
37.2138283655867
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
37.3437664966731
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
37.4901929618617
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
37.6510598725749
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
37.8210537390953
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
37.9974123646775
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 88
dh =
```

```
3.76021834994911
rdh_sum = 38.1802273185649
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 89
dh = 3.83180034994911
rdh_sum = 38.3695883432838
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 90
dh = 3.90338234994911
rdh_sum = 38.5655833292529
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 91
dh = 4.09501334994911
rdh_sum = 38.7797560938618
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 39.0247150601392
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 39.301827706761
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 39.6122891652046
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 39.7098758569295
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 39.8129116165953
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 39.9215271030358
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 40.0358511041681
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 40.1560104912787
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 40.2821302520612
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 40.4143334129307
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 40.5527410391149
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 109
dh =
```

```
3.34609834994911
rdh_sum = 40.6995031233627
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 40.8569118920998
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 41.0252685453071
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 41.2048646577849
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 41.3959819228052
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 41.5988919517041
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 41.8072493060726
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 41.9525872094646
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 42.1056152095213
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 123
dh = 3.51266384994911
rdh_sum = 42.2664949845345
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 42.4353845541099
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 42.6124382055352
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 42.8659813832505
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 43.1308918102581
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 43.4073277926284
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 157
dh =
```



```

-2.34512665005089
rdh_sum = 43.6954397753278
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 43.9953703460856
ans =
!----- End Berm Factor Calculation, Iter: 2 -----!
berm_width = 76
rB = 0.323620127829917
rdh_mean = 0.578886451922179
gamma_berm = 0.863719179740146
slope = 0.104903719744487
Irb = 1.15149527496043
gamma_berm = 0.863719179740146
gamma_perm = 1
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.647789384805109
ans =
!!! - - Iribaren number: 0.99 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:9.5 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.82560890240623
R2del = 2.32409430899533
Z2 = 18.9721312523553
ans =
!----- STARTING ITERATION 3 -----!
Ztoe = -0.0152099999999997
toe_sta = 7.07565722517106
top_sta = 285.208602685107
Z2 = 18.9721312523553
H0 = 6.6846
Tp = 13.8007
T0 = 12.5460909090909
R2 = 8.82560890240623
Z2 = 18.9721312523553
top_sta = 285.208602685107
Lslope = 278.132945459936
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 0.52137398948955
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 15
dh = 7.01272384994911
rdh_sum = 1.05988758097302
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 16
dh = 7.15887034994911
rdh_sum = 1.61549535557839
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 17
dh = 7.30501684994911
rdh_sum =

```

```
2.18813173535515
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
5.97536275982977
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
6.66369201069084
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
7.36327807722119
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
8.06949579243737
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
8.78230172743214
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
9.50165106583653
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
10.2274976132581
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
10.9597938070091
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
11.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
```

```
12.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
13.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
14.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
15.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
16.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
17.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
18.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
19.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
20.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
21.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
22.6984907261237
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
23.4067308062087
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
24.1316462822004
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
24.8651263337529
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
25.5289212202432
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
```

```
26.1926120306231
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
26.856198812462
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
27.5179109510372
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
28.1759707113876
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
28.275503936994
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
28.3897990769744
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
28.5197372080607
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
28.6661636732493
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
28.8270305839625
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
28.9970244504829
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
29.1733830760652
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
29.3561980299525
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
29.5455590546714
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
29.7415540406406
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
29.9557268052494
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
```

```
30.2006857715269
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
30.4777984181487
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
30.7882598765922
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
30.8858465683171
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
30.9888823279829
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
31.0974978144234
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
31.2118218155558
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
31.3319812026663
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
31.4581009634488
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
31.5903041243183
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
31.7287117505025
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
31.8754738347504
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
32.0328826034874
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
32.2012392566947
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
32.3808353691726
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
```

```

32.5719526341929
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
32.7748626630917
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
32.9832200174602
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
33.1285579208523
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
33.281585920909
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
33.4424656959221
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
33.6113552654975
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
33.7884089169228
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
33.9320556475873
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
34.0824695911214
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
34.2397784775575
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
34.4041074564951
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
34.5755791138205
ans =
!----- End Berm Factor Calculation, Iter: 3 -----!
berm_width =
76
rB =
0.273250620757358
rdh_mean =
0.454941830445006
gamma_berm =
0.851062516820228
slope =
0.0939349159987319
Irb =
1.03109415175937
gamma_berm =
0.851062516820228
gamma_perm =

```

```

1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.638296887615171
ans =
!!! - - Iribaren number: 0.88 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.6 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
7.7869922301058
R2del =
1.03861667230043
Z2 =
17.9335145800549
ans =
!----- STARTING ITERATION 4 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
265.862826756103
Z2 =
17.9335145800549
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
7.7869922301058
Z2 =
17.9335145800549
top_sta =
265.862826756103
Lslope =
258.787169530932
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
5.00725612973755
ans =

```

```
Berm Factor Calculation: Iteration 4, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    6.00725612973755
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    7.00725612973755
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    8.00725612973756
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    9.00725612973756
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    10.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    11.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    12.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    13.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    14.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    15.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    16.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    17.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    18.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    19.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    20.0072561297376
ans =
```



```
Berm Factor Calculation: Iteration 4, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    21.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    22.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    23.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    24.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    25.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    26.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    27.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    28.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    29.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    30.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    31.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    32.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    33.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    34.0072561297376
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    34.1067893553439
ans =
```

```
Berm Factor Calculation: Iteration 4, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    34.2210844953243
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    34.3510226264106
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    34.4974490915992
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    34.6583160023124
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    34.8283098688328
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    35.0046684944151
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    35.1874834483024
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    35.3768444730214
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    35.5728394589905
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    35.7870122235993
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    36.0319711898768
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    36.3090838364986
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    36.6195452949422
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    36.717131986667
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    36.8201677463329
ans =
```

```
Berm Factor Calculation: Iteration 4, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    36.9287832327733
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    37.0431072339057
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    37.1632666210162
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    37.2893863817988
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    37.4215895426683
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    37.5599971688524
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    37.7067592531003
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    37.8641680218373
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    38.0325246750446
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    38.2121207875225
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    38.4032380525428
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    38.6061480814416
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    38.8145054358102
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    38.9598433392022
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    39.1128713392589
ans =
```

```

Berm Factor Calculation: Iteration 4, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    39.273751114272
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    39.4426406838474
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    39.6196943352728
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    39.8015590221505
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    39.9918523110472
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    40.1907195656338
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    40.3983020496559
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    40.6147369384765
ans =
!----- End Berm Factor Calculation, Iter: 4 -----!
berm_width =
    76
rB =
    0.293677619867147
rdh_mean =
    0.534404433401007
gamma_berm =
    0.863265002180512
slope =
    0.0981946633678659
Irb =
    1.07785206444378
gamma_berm =
    0.863265002180512
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.647448751635384
ans =
!!! - - Iribaren number: 0.93 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.2 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.25682816897574
R2del =
    0.469835938869943
Z2 =
    18.4033505189249
ans =
!----- STARTING ITERATION 5 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    274.614217947079
Z2 =

```

```
H0 = 18.4033505189249
Tp = 6.6846
T0 = 13.8007
R2 = 12.5460909090909
Z2 = 8.25682816897574
top_sta = 18.4033505189249
Lslope = 274.614217947079
ans = 267.538560721908
Berm Factor Calculation: Iteration 5, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 0.52137398948955
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 15
dh = 7.01272384994911
rdh_sum = 1.05988758097302
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 16
dh = 7.15887034994911
rdh_sum = 1.61549535557839
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 17
dh = 7.30501684994911
rdh_sum = 2.18813173535515
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 18
dh = 7.45116334994911
rdh_sum = 2.77771106060995
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 3.38412769092466
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 20
dh = 7.74345634994911
rdh_sum = 4.00725612973755
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 21
dh = 7.88960284994911
rdh_sum = 4.64695117234071
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 22
dh = 8.03574934994911
rdh_sum = 5.30304807711916
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 23
dh = 8.18189584994911
rdh_sum = 5.97536275982977
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 24
dh = 8.32804234994911
rdh_sum = 6.97536275982977
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 25
dh = 8.43199384994911
rdh_sum = 7.97536275982977
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 26
dh =
```

```
      8.49375084994911
rdh_sum =      8.97536275982977
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 27
dh =      8.55550784994911
rdh_sum =      9.97536275982977
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 28
dh =      8.61726484994911
rdh_sum =      10.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 29
dh =      8.67902184994911
rdh_sum =      11.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 30
dh =      8.74077884994911
rdh_sum =      12.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 31
dh =      8.80253584994911
rdh_sum =      13.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 32
dh =      8.86429284994911
rdh_sum =      14.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 33
dh =      8.92850634994911
rdh_sum =      15.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      16.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      17.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      18.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 37
dh =      9.21237734994911
rdh_sum =      19.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 38
dh =      9.28395934994911
rdh_sum =      20.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 39
dh =      9.29104334994911
rdh_sum =      21.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 40
dh =      9.23362884994911
rdh_sum =      22.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 41
dh =
```

```
          9.17621384994911
rdh_sum = 23.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 42
dh =
          9.11879934994911
rdh_sum = 24.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 46
dh =
          8.51266434994911
rdh_sum = 25.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 47
dh =
          8.67014434994911
rdh_sum = 26.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 48
dh =
          8.75216534994911
rdh_sum = 27.9753627598298
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 54
dh =
          8.10490234994911
rdh_sum = 28.6391576463201
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 55
dh =
          8.10396484994911
rdh_sum = 29.3028484566999
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 56
dh =
          8.10302784994911
rdh_sum = 29.9664352385388
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 57
dh =
          8.08615484994911
rdh_sum = 30.628147377114
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 58
dh =
          8.05334634994911
rdh_sum = 31.2862071374645
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 81
dh =
          2.73182434994911
rdh_sum = 31.3857403630708
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 82
dh =
          2.93523634994911
rdh_sum = 31.5000355030512
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 83
dh =
          3.13864834994911
rdh_sum = 31.6299736341375
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 84
dh =
          3.34206034994911
rdh_sum = 31.7764000993261
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 85
dh =
          3.51251484994911
rdh_sum = 31.9372670100394
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 86
dh =
```

```
3.61705434994911
rdh_sum = 32.1072608765597
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 87
dh = 3.68863634994911
rdh_sum = 32.283619502142
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 88
dh = 3.76021834994911
rdh_sum = 32.4664344560293
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 89
dh = 3.83180034994911
rdh_sum = 32.6557954807483
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 90
dh = 3.90338234994911
rdh_sum = 32.8517904667174
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 91
dh = 4.09501334994911
rdh_sum = 33.0659632313263
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 33.3109221976037
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 33.5880348442255
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 33.8984963026691
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 33.996082994394
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 34.0991187540598
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 34.2077342405002
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 34.3220582416326
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 34.4422176287431
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 34.5683373895257
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 107
dh =
```



```
3.16721034994911
rdh_sum = 34.7005405503952
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 34.8389481765793
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 34.9857102608272
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 35.1431190295642
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 35.3114756827716
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 35.4910717952494
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 35.6821890602697
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 35.8850990891685
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 36.0934564435371
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 36.2387943469291
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 36.3918223469858
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 123
dh = 3.51266384994911
rdh_sum = 36.5527021219989
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 36.7215916915743
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 36.8986453429997
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 37.0615775312209
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 155
dh =
```

```

-2.23775365005089
rdh_sum = 37.232123154949
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 37.4104197465115
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 37.596601533953
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 37.7907994552863
ans =
!----- End Berm Factor Calculation, Iter: 5 -----!
berm_width = 76
rB = 0.284071200035339
rdh_mean = 0.497247361253767
gamma_berm = 0.857182454590424
slope = 0.0961611095411042
Irb = 1.05553038101256
gamma_berm = 0.857182454590424
gamma_perm = 1
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.642886840942818
ans =
!!! - - Iribaren number: 0.90 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.4 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.02886148319496
R2del = 0.22796668578078
Z2 = 18.1753838331441
ans =
!----- STARTING ITERATION 6 -----!
Ztoe = -0.0152099999999997
toe_sta = 7.07565722517106
top_sta = 270.368000319334
Z2 = 18.1753838331441
H0 = 6.6846
Tp = 13.8007
T0 = 12.5460909090909
R2 = 8.02886148319496
Z2 = 18.1753838331441
top_sta = 270.368000319334
Lslope = 263.292343094163
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 0.52137398948955
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 15
dh = 7.01272384994911
rdh_sum =

```

```
1.05988758097302
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.64695117234071
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
```

```
13.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
```

```
28.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
29.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
30.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
31.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
32.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
33.6469511723407
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
33.7464843979471
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
33.8607795379274
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
33.9907176690138
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
34.1371441342024
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
34.2980110449156
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
34.468004911436
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
34.6443635370182
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
34.8271784909056
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
35.0165395156245
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
```

```
35.2125345015936
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
35.4267072662025
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
35.6716662324799
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
35.9487788791017
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
36.2592403375453
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
36.3568270292702
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
36.459862788936
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
36.5684782753765
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
36.6828022765089
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
36.8029616636194
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
36.9290814244019
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
37.0612845852714
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
37.1996922114556
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
37.3464542957034
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
37.5038630644405
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
```

```

37.6722197176478
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
37.8518158301256
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
38.0429330951459
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
38.2458431240448
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
38.4542004784133
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
38.5995383818054
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
38.7525663818621
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
38.9134461568752
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
39.0823357264506
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
39.2593893778759
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
39.4311282986431
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
39.6108617863717
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
39.7987312391432
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
39.9948743910867
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
40.1994253253889
ans =
!----- End Berm Factor Calculation, Iter: 6 -----!
berm_width =
76
rB =

```

```

0.288652526339589
rdh_mean =
0.528939806913012
gamma_berm =
0.864027285207426
slope =
0.0971240656859027
Irb =
1.06610044900853
gamma_berm =
0.864027285207426
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.64802046390557
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.17401702540508
R2del =
0.145155542210119
Z2 =
18.3205393753542
ans =
!----- STARTING ITERATION 7 -----!
Ztoe =
-0.01520999999999997
toe_sta =
7.07565722517106
top_sta =
273.071737578076
Z2 =
18.3205393753542
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.17401702540508
Z2 =
18.3205393753542
top_sta =
273.071737578076
Lslope =
265.996080352905
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =

```



```
Berm Factor Calculation: Iteration 7, Profile Segment: 20
dh =
    7.74345634994911
rdh_sum =
    4.00725612973755
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 21
dh =
    7.88960284994911
rdh_sum =
    4.64695117234071
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    5.30304807711916
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    6.30304807711916
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    7.30304807711916
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 7, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    28.9668429636094
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    29.6305337739893
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    30.2941205558282
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    30.9558326944034
ans =
```

```
Berm Factor Calculation: Iteration 7, Profile Segment: 58
dh =
    ans =
    rdh_sum = 8.05334634994911
    31.6138924547539
Berm Factor Calculation: Iteration 7, Profile Segment: 81
dh =
    ans =
    rdh_sum = 2.73182434994911
    31.7134256803602
Berm Factor Calculation: Iteration 7, Profile Segment: 82
dh =
    ans =
    rdh_sum = 2.93523634994911
    31.8277208203406
Berm Factor Calculation: Iteration 7, Profile Segment: 83
dh =
    ans =
    rdh_sum = 3.13864834994911
    31.9576589514269
Berm Factor Calculation: Iteration 7, Profile Segment: 84
dh =
    ans =
    rdh_sum = 3.34206034994911
    32.1040854166155
Berm Factor Calculation: Iteration 7, Profile Segment: 85
dh =
    ans =
    rdh_sum = 3.51251484994911
    32.2649523273288
Berm Factor Calculation: Iteration 7, Profile Segment: 86
dh =
    ans =
    rdh_sum = 3.61705434994911
    32.4349461938491
Berm Factor Calculation: Iteration 7, Profile Segment: 87
dh =
    ans =
    rdh_sum = 3.68863634994911
    32.6113048194314
Berm Factor Calculation: Iteration 7, Profile Segment: 88
dh =
    ans =
    rdh_sum = 3.76021834994911
    32.7941197733187
Berm Factor Calculation: Iteration 7, Profile Segment: 89
dh =
    ans =
    rdh_sum = 3.83180034994911
    32.9834807980377
Berm Factor Calculation: Iteration 7, Profile Segment: 90
dh =
    ans =
    rdh_sum = 3.90338234994911
    33.1794757840068
Berm Factor Calculation: Iteration 7, Profile Segment: 91
dh =
    ans =
    rdh_sum = 4.09501334994911
    33.3936485486156
Berm Factor Calculation: Iteration 7, Profile Segment: 92
dh =
    ans =
    rdh_sum = 4.40669284994911
    33.6386075148931
Berm Factor Calculation: Iteration 7, Profile Segment: 93
dh =
    ans =
    rdh_sum = 4.71837234994911
    33.9157201615149
Berm Factor Calculation: Iteration 7, Profile Segment: 94
dh =
    ans =
    rdh_sum = 5.03005234994911
    34.2261816199585
ans =
```

```
Berm Factor Calculation: Iteration 7, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    34.3237683116834
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    34.4268040713492
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    34.5354195577896
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    34.649743558922
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    34.7699029460325
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    34.8960227068151
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    35.0282258676846
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    35.1666334938687
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    35.3133955781166
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    35.4708043468536
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    35.639161000061
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    35.8187571125388
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    36.0098743775591
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    36.2127844064579
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    36.4211417608265
ans =
```

```

Berm Factor Calculation: Iteration 7, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    36.5664796642185
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    36.7195076642752
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    36.8803874392883
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    37.0492770088637
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    37.2263306602891
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    37.3923838904462
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    37.5661860103546
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    37.7478759664534
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    37.9375892755161
ans =
Berm Factor Calculation: Iteration 7, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    38.1354580384678
ans =
!----- End Berm Factor Calculation, Iter: 7 -----!
berm_width =
    76
rB =
    0.285718495923581
rdh_mean =
    0.501782342611419
gamma_berm =
    0.857650000288365
slope =
    0.096505934971378
Irb =
    1.05931542175863
gamma_berm =
    0.857650000288365
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.643237500216274
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.4 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.06204729116473
R2del =

```

```

0.111969734240351
Z2 =
18.2085696411138
ans =
!----- STARTING ITERATION 8 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
270.986135211761
Z2 =
18.2085696411138
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.06204729116473
Z2 =
18.2085696411138
top_sta =
270.986135211761
Lslope =
263.91047798659
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 24
dh =

```

```
      8.32804234994911
rdh_sum =      7.30304807711916
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 25
dh =      8.43199384994911
rdh_sum =      8.30304807711916
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 26
dh =      8.49375084994911
rdh_sum =      9.30304807711916
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 27
dh =      8.55550784994911
rdh_sum =      10.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 28
dh =      8.61726484994911
rdh_sum =      11.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 29
dh =      8.67902184994911
rdh_sum =      12.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 30
dh =      8.74077884994911
rdh_sum =      13.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 31
dh =      8.80253584994911
rdh_sum =      14.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 32
dh =      8.86429284994911
rdh_sum =      15.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 33
dh =      8.92850634994911
rdh_sum =      16.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      17.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      18.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      19.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 37
dh =      9.21237734994911
rdh_sum =      20.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 38
dh =      9.28395934994911
rdh_sum =      21.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 39
dh =
```

```
          9.29104334994911
rdh_sum = 22.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 40
dh =
          9.23362884994911
rdh_sum = 23.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 41
dh =
          9.17621384994911
rdh_sum = 24.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 42
dh =
          9.11879934994911
rdh_sum = 25.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 46
dh =
          8.51266434994911
rdh_sum = 26.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 47
dh =
          8.67014434994911
rdh_sum = 27.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 48
dh =
          8.75216534994911
rdh_sum = 28.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 54
dh =
          8.10490234994911
rdh_sum = 29.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 55
dh =
          8.10396484994911
rdh_sum = 30.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 56
dh =
          8.10302784994911
rdh_sum = 31.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 57
dh =
          8.08615484994911
rdh_sum = 32.3030480771192
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 58
dh =
          8.05334634994911
rdh_sum = 32.9611078374696
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 81
dh =
          2.73182434994911
rdh_sum = 33.060641063076
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 82
dh =
          2.93523634994911
rdh_sum = 33.1749362030563
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 83
dh =
          3.13864834994911
rdh_sum = 33.3048743341427
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 84
dh =
```



```
3.34206034994911
rdh_sum =
33.4513007993313
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
33.6121677100445
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
33.7821615765649
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
33.9585202021471
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
34.1413351560345
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
34.3306961807534
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
34.5266911667225
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
34.7408639313314
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
34.9858228976088
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
35.2629355442306
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
35.5733970026742
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
35.6709836943991
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
35.7740194540649
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
35.8826349405054
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
35.9969589416378
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 105
dh =
```

```
3.01281834994911
rdh_sum =
36.1171183287483
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
36.2432380895308
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
36.3754412504003
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
36.5138488765845
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
36.6606109608323
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
36.8180197295694
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
36.9863763827767
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
37.1659724952545
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
37.3570897602748
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
37.5599997891737
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
37.7683571435422
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
37.9136950469343
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
38.066723046991
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
38.2276028220041
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
38.3964923915795
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 125
dh =
```

```

3.69639084994911
rdh_sum = 38.5735460430048
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 38.7439602549885
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 38.9223119190847
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 39.1087418765652
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 39.3033873600131
ans =
Berm Factor Calculation: Iteration 8, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 39.5063820065219
ans =
!----- End Berm Factor Calculation, Iter: 8 -----!
berm_width =
76
rB = 0.287976440267982
rdh_mean = 0.519820815875288
gamma_berm = 0.861719707864981
slope = 0.0969811786781487
Irb = 1.06453202307776
gamma_berm = 0.861719707864981
gamma_perm = 1
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.646289780898736
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.14019315622765
R2del = 0.0781458650629201
Z2 = 18.2867155061768
ans =
!----- STARTING ITERATION 9 -----!
Ztoe = -0.0152099999999997
toe_sta = 7.07565722517106
top_sta = 272.441717849326
Z2 = 18.2867155061768
H0 = 6.6846
Tp = 13.8007
T0 = 12.5460909090909
R2 = 8.14019315622765
Z2 = 18.2867155061768
top_sta = 272.441717849326
Lslope =

```

```
265.366060624155
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.30304807711916
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
```

```
11.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
```

```
26.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
28.9668429636094
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
29.6305337739893
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
30.2941205558282
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
30.9558326944034
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
31.6138924547539
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
31.7134256803602
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
31.8277208203406
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
31.9576589514269
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
32.1040854166155
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
32.2649523273288
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
32.4349461938491
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
32.6113048194314
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
```

```
32.7941197733187
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
32.9834807980377
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
33.1794757840068
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
33.3936485486156
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
33.6386075148931
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
33.9157201615149
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
34.2261816199585
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
34.3237683116834
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
34.4268040713492
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
34.5354195577896
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
34.649743558922
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
34.7699029460325
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
34.8960227068151
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
35.0282258676846
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
35.1666334938687
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
```

```
35.3133955781166
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
35.4708043468536
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
35.639161000061
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
35.8187571125388
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
36.0098743775591
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
36.2127844064579
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
36.4211417608265
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
36.5664796642185
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
36.7195076642752
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
36.8803874392883
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
37.0492770088637
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
37.2263306602891
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
37.393683879611
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
37.568842284524
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
37.7519453962116
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
```



```

37.9431292532922
ans =
Berm Factor Calculation: Iteration 9, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
38.1425264254531
ans =
!----- End Berm Factor Calculation, Iter: 9 -----!
berm_width =
76
rB =
0.28639683545531
rdh_mean =
0.50187534770333
gamma_berm =
0.857338675919957
slope =
0.0966483933068746
Irb =
1.06087914228829
gamma_berm =
0.857338675919957
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.643004006939968
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07101735524952
R2del =
0.0691758009781296
Z2 =
18.2175397051986
ans =
!----- STARTING ITERATION 10 -----!
Ztoe =
-0.01520999999999997
toe_sta =
7.07565722517106
top_sta =
271.153215959145
Z2 =
18.2175397051986
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.07101735524952
Z2 =
18.2175397051986
top_sta =
271.153215959145
Lslope =
264.077558733974
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =

```

```
Berm Factor Calculation: Iteration 10, Profile Segment: 18
dh =
    7.45116334994911
rdh_sum =
    2.77771106060995
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 19
dh =
    7.59730984994911
rdh_sum =
    3.38412769092466
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 20
dh =
    7.74345634994911
rdh_sum =
    4.00725612973755
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 21
dh =
    7.88960284994911
rdh_sum =
    4.64695117234071
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    5.30304807711916
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    6.30304807711916
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    7.30304807711916
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 10, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    29.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    30.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 10, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    31.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    32.3030480771192
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    32.9611078374696
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    33.060641063076
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    33.1749362030563
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    33.3048743341427
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    33.4513007993313
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    33.6121677100445
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    33.7821615765649
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    33.9585202021471
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    34.1413351560345
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    34.3306961807534
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    34.5266911667225
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    34.7408639313314
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    34.9858228976088
ans =
```

```
Berm Factor Calculation: Iteration 10, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    35.2629355442306
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    35.5733970026742
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    35.6709836943991
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    35.7740194540649
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    35.8826349405054
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    35.9969589416378
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    36.1171183287483
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    36.2432380895308
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    36.3754412504003
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    36.5138488765845
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    36.6606109608323
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    36.8180197295694
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    36.9863763827767
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    37.1659724952545
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    37.3570897602748
ans =
```

```

Berm Factor Calculation: Iteration 10, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    37.5599997891737
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    37.7683571435422
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    37.9136950469343
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    38.066723046991
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    38.2276028220041
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    38.3964923915795
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    38.5735460430048
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    38.7436047539064
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    38.921585576485
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    39.1076292010954
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    39.3018727241643
ans =
Berm Factor Calculation: Iteration 10, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    39.5044496614399
ans =
!----- End Berm Factor Calculation, Iter: 10 -----!
berm_width =
    76
rB =
    0.287794238799976
rdh_mean =
    0.519795390282105
gamma_berm =
    0.861799879877999
slope =
    0.0969427178230652
Irb =
    1.06410985031775
gamma_berm =
    0.861799879877999
gamma_perm =
    1
gamma_beta =

```

```

1
gamma_rough =
0.75
gamma =
0.646349909908499
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.1377219541138
R2del =
0.0667045988642805
Z2 =
18.2842443040629
ans =
!----- STARTING ITERATION 11 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
272.395688044832
Z2 =
18.2842443040629
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.1377219541138
Z2 =
18.2842443040629
top_sta =
272.395688044832
Lslope =
265.320030819661
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 22
dh =

```

```
      8.03574934994911
rdh_sum =      5.30304807711916
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 23
dh =      8.18189584994911
rdh_sum =      6.30304807711916
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 24
dh =      8.32804234994911
rdh_sum =      7.30304807711916
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 25
dh =      8.43199384994911
rdh_sum =      8.30304807711916
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 26
dh =      8.49375084994911
rdh_sum =      9.30304807711916
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 27
dh =      8.55550784994911
rdh_sum =      10.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 28
dh =      8.61726484994911
rdh_sum =      11.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 29
dh =      8.67902184994911
rdh_sum =      12.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 30
dh =      8.74077884994911
rdh_sum =      13.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 31
dh =      8.80253584994911
rdh_sum =      14.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 32
dh =      8.86429284994911
rdh_sum =      15.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 33
dh =      8.92850634994911
rdh_sum =      16.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      17.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      18.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      19.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 37
dh =
```



```
          9.21237734994911
rdh_sum = 20.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 38
dh =
          9.28395934994911
rdh_sum = 21.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 39
dh =
          9.29104334994911
rdh_sum = 22.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 40
dh =
          9.23362884994911
rdh_sum = 23.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 41
dh =
          9.17621384994911
rdh_sum = 24.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 42
dh =
          9.11879934994911
rdh_sum = 25.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 46
dh =
          8.51266434994911
rdh_sum = 26.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 47
dh =
          8.67014434994911
rdh_sum = 27.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 48
dh =
          8.75216534994911
rdh_sum = 28.3030480771192
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 54
dh =
          8.10490234994911
rdh_sum = 28.9668429636094
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 55
dh =
          8.10396484994911
rdh_sum = 29.6305337739893
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 56
dh =
          8.10302784994911
rdh_sum = 30.2941205558282
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 57
dh =
          8.08615484994911
rdh_sum = 30.9558326944034
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 58
dh =
          8.05334634994911
rdh_sum = 31.6138924547539
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 81
dh =
          2.73182434994911
rdh_sum = 31.7134256803602
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 82
dh =
```

```
2.93523634994911
rdh_sum = 31.8277208203406
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 83
dh = 3.13864834994911
rdh_sum = 31.9576589514269
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 84
dh = 3.34206034994911
rdh_sum = 32.1040854166155
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 85
dh = 3.51251484994911
rdh_sum = 32.2649523273288
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 86
dh = 3.61705434994911
rdh_sum = 32.4349461938491
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 87
dh = 3.68863634994911
rdh_sum = 32.6113048194314
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 88
dh = 3.76021834994911
rdh_sum = 32.7941197733187
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 89
dh = 3.83180034994911
rdh_sum = 32.9834807980377
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 90
dh = 3.90338234994911
rdh_sum = 33.1794757840068
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 91
dh = 4.09501334994911
rdh_sum = 33.3936485486156
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 33.6386075148931
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 33.9157201615149
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 34.2261816199585
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 34.3237683116834
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 34.4268040713492
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 103
dh =
```

```
2.85842584994911
rdh_sum = 34.5354195577896
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 34.649743558922
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 34.7699029460325
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 34.8960227068151
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 35.0282258676846
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 35.1666334938687
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 35.3133955781166
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 35.4708043468536
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 35.639161000061
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 35.8187571125388
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 36.0098743775591
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 36.2127844064579
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 36.4211417608265
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 36.5664796642185
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 36.7195076642752
ans =
Berm Factor Calculation: Iteration 11, Profile Segment: 123
dh =
```

```

rdh_sum = 3.51266384994911
ans = 36.8803874392883
Berm Factor Calculation: Iteration 11, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 37.0492770088637
ans = 37.0492770088637
Berm Factor Calculation: Iteration 11, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 37.2263306602891
ans = 37.2263306602891
Berm Factor Calculation: Iteration 11, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 37.3937794411783
ans = 37.3937794411783
Berm Factor Calculation: Iteration 11, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 37.5690375430521
ans = 37.5690375430521
Berm Factor Calculation: Iteration 11, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 37.7522445290114
ans = 37.7522445290114
Berm Factor Calculation: Iteration 11, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 37.943536475688
ans = 37.943536475688
Berm Factor Calculation: Iteration 11, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 38.1430459868649
ans = 38.1430459868649
!----- End Berm Factor Calculation, Iter: 11 -----!
berm_width = 76
rB = 0.286446521829546
rdh_mean = 0.501882184037696
gamma_berm = 0.857315884156268
slope = 0.0966588386069631
Irb = 1.06099379707582
gamma_berm = 0.857315884156268
gamma_perm = 1
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.642986913117201
ans = 0.642986913117201
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans = 0.642986913117201
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.07167504685843
R2del = 0.0660469072553731
Z2 = 18.2181973968075
ans = 18.2181973968075
!----- STARTING ITERATION 12 -----!
Ztoe = -0.0152099999999997
toe_sta = 7.07565722517106
top_sta = 271.165466440806
Z2 = 18.2181973968075
H0 = 18.2181973968075

```

```

        6.6846
Tp =
        13.8007
T0 =
        12.5460909090909
R2 =
        8.07167504685843
Z2 =
        18.2181973968075
top_sta =
        271.165466440806
Lslope =
        264.089809215635
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 14
dh =
        6.86657734994911
rdh_sum =
        0.52137398948955
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 15
dh =
        7.01272384994911
rdh_sum =
        1.05988758097302
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 16
dh =
        7.15887034994911
rdh_sum =
        1.61549535557839
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 17
dh =
        7.30501684994911
rdh_sum =
        2.18813173535515
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 18
dh =
        7.45116334994911
rdh_sum =
        2.77771106060995
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 19
dh =
        7.59730984994911
rdh_sum =
        3.38412769092466
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 20
dh =
        7.74345634994911
rdh_sum =
        4.00725612973755
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 21
dh =
        7.88960284994911
rdh_sum =
        4.64695117234071
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 22
dh =
        8.03574934994911
rdh_sum =
        5.30304807711916
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 23
dh =
        8.18189584994911
rdh_sum =
        6.30304807711916
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 24
dh =
        8.32804234994911
rdh_sum =
        7.30304807711916
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 25
dh =
        8.43199384994911
rdh_sum =
        8.30304807711916
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 26
dh =
        8.49375084994911
rdh_sum =

```

```
9.30304807711916
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
```

```
24.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
29.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
30.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
31.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
32.3030480771192
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
32.9611078374696
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
33.060641063076
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
33.1749362030563
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
33.3048743341427
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
33.4513007993313
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
33.6121677100445
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
```

```
33.7821615765649
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
33.9585202021471
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
34.1413351560345
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
34.3306961807534
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
34.5266911667225
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
34.7408639313314
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
34.9858228976088
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
35.2629355442306
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
35.5733970026742
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
35.6709836943991
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
35.7740194540649
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
35.8826349405054
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
35.9969589416378
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
36.1171183287483
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
36.2432380895308
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
```



```
36.3754412504003
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
36.5138488765845
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
36.6606109608323
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
36.8180197295694
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
36.9863763827767
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
37.1659724952545
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
37.3570897602748
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
37.5599997891737
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
37.7683571435422
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
37.9136950469343
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
38.066723046991
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
38.2276028220041
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
38.3964923915795
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
38.5735460430048
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
38.7435787309965
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
```

```

38.9215324075195
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
39.1075477518566
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
39.3017618504418
ans =
Berm Factor Calculation: Iteration 12, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
39.5043082101137
ans =
!----- End Berm Factor Calculation, Iter: 12 -----!
berm_width =
76
rB =
0.287780888727685
rdh_mean =
0.519793529080444
gamma_berm =
0.861805755025985
slope =
0.0969399005339196
Irb =
1.0640789258172
gamma_berm =
0.861805755025985
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.646354316269489
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.13754093636152
R2del =
0.0658658895030868
Z2 =
18.2840632863106
ans =
!----- STARTING ITERATION 13 -----!
Ztoe =
-0.01520999999999997
toe_sta =
7.07565722517106
top_sta =
272.392316320722
Z2 =
18.2840632863106
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.13754093636152
Z2 =
18.2840632863106
top_sta =
272.392316320722
Lslope =
265.316659095551
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =

```

```
Berm Factor Calculation: Iteration 13, Profile Segment: 16
dh =
    7.15887034994911
rdh_sum =
    1.61549535557839
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 17
dh =
    7.30501684994911
rdh_sum =
    2.18813173535515
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 18
dh =
    7.45116334994911
rdh_sum =
    2.77771106060995
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 19
dh =
    7.59730984994911
rdh_sum =
    3.38412769092466
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 20
dh =
    7.74345634994911
rdh_sum =
    4.00725612973755
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 21
dh =
    7.88960284994911
rdh_sum =
    4.64695117234071
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    5.30304807711916
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    6.30304807711916
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    7.30304807711916
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
```

Berm Factor Calculation: Iteration 13, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =

```
Berm Factor Calculation: Iteration 13, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    28.9668429636094
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    29.6305337739893
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    30.2941205558282
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    30.9558326944034
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    31.6138924547539
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    31.7134256803602
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    31.8277208203406
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    31.9576589514269
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    32.1040854166155
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    32.2649523273288
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    32.4349461938491
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    32.6113048194314
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    32.7941197733187
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    32.9834807980377
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    33.1794757840068
ans =
```

```
Berm Factor Calculation: Iteration 13, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    33.3936485486156
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    33.6386075148931
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    33.9157201615149
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    34.2261816199585
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    34.3237683116834
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    34.4268040713492
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    34.5354195577896
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    34.649743558922
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    34.7699029460325
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    34.8960227068151
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    35.0282258676846
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    35.1666334938687
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    35.3133955781166
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    35.4708043468536
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    35.639161000061
ans =
```

```

Berm Factor Calculation: Iteration 13, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    35.8187571125388
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    36.0098743775591
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    36.2127844064579
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    36.4211417608265
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    36.5664796642185
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    36.7195076642752
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    36.8803874392883
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    37.0492770088637
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    37.2263306602891
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    37.3937864442864
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    37.5690518523098
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    37.7522664505303
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    37.9435663183635
ans =
Berm Factor Calculation: Iteration 13, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    38.1430840620892
ans =
!----- End Berm Factor Calculation, Iter: 13 -----!
berm_width =
    76
rB =
    0.286450162078324
rdh_mean =

```

```

0.50188268502749
gamma_berm =
0.857314214392105
slope =
0.0966596039341402
Irb =
1.06100219783253
gamma_berm =
0.857314214392105
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.642985660794079
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07172323587584
R2del =
0.0658177004856793
Z2 =
18.2182455858249
ans =
!----- STARTING ITERATION 14 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
271.166364032726
Z2 =
18.2182455858249
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.07172323587584
Z2 =
18.2182455858249
top_sta =
271.166364032726
Lslope =
264.090706807555
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 20
dh =

```



```

    7.74345634994911
rdh_sum =
    4.00725612973755
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 21
dh =
    7.88960284994911
rdh_sum =
    4.64695117234071
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 22
dh =
    8.03574934994911
rdh_sum =
    5.30304807711916
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    6.30304807711916
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    7.30304807711916
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 35
dh =
```

```
          9.06921334994911
rdh_sum = 18.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 36
dh =
          9.14079534994911
rdh_sum = 19.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 37
dh =
          9.21237734994911
rdh_sum = 20.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 38
dh =
          9.28395934994911
rdh_sum = 21.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 39
dh =
          9.29104334994911
rdh_sum = 22.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 40
dh =
          9.23362884994911
rdh_sum = 23.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 41
dh =
          9.17621384994911
rdh_sum = 24.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 42
dh =
          9.11879934994911
rdh_sum = 25.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 46
dh =
          8.51266434994911
rdh_sum = 26.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 47
dh =
          8.67014434994911
rdh_sum = 27.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 48
dh =
          8.75216534994911
rdh_sum = 28.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 54
dh =
          8.10490234994911
rdh_sum = 29.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 55
dh =
          8.10396484994911
rdh_sum = 30.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 56
dh =
          8.10302784994911
rdh_sum = 31.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 57
dh =
          8.08615484994911
rdh_sum = 32.3030480771192
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 58
dh =
```

```
      8.05334634994911
rdh_sum =      32.9611078374696
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 81
dh =      2.73182434994911
rdh_sum =      33.060641063076
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 82
dh =      2.93523634994911
rdh_sum =      33.1749362030563
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 83
dh =      3.13864834994911
rdh_sum =      33.3048743341427
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 84
dh =      3.34206034994911
rdh_sum =      33.4513007993313
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 85
dh =      3.51251484994911
rdh_sum =      33.6121677100445
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 86
dh =      3.61705434994911
rdh_sum =      33.7821615765649
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 87
dh =      3.68863634994911
rdh_sum =      33.9585202021471
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 88
dh =      3.76021834994911
rdh_sum =      34.1413351560345
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 89
dh =      3.83180034994911
rdh_sum =      34.3306961807534
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 90
dh =      3.90338234994911
rdh_sum =      34.5266911667225
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 91
dh =      4.09501334994911
rdh_sum =      34.7408639313314
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 92
dh =      4.40669284994911
rdh_sum =      34.9858228976088
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 93
dh =      4.71837234994911
rdh_sum =      35.2629355442306
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 94
dh =      5.03005234994911
rdh_sum =      35.5733970026742
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 101
dh =
```

```
2.70403334994911
rdh_sum = 35.6709836943991
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 35.7740194540649
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 35.8826349405054
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 35.9969589416378
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 36.1171183287483
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 36.2432380895308
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 36.3754412504003
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 36.5138488765845
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 36.6606109608323
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 36.8180197295694
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 36.9863763827767
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 37.1659724952545
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 37.3570897602748
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 37.5599997891737
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 37.7683571435422
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 121
dh =
```

```

        3.32893684994911
rdh_sum =
        37.9136950469343
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 122
dh =
        3.42080034994911
rdh_sum =
        38.066723046991
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 123
dh =
        3.51266384994911
rdh_sum =
        38.2276028220041
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 124
dh =
        3.60452734994911
rdh_sum =
        38.3964923915795
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 125
dh =
        3.69639084994911
rdh_sum =
        38.5735460430048
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 154
dh =
        -2.18406765005089
rdh_sum =
        38.7435768245287
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 155
dh =
        -2.23775365005089
rdh_sum =
        38.9215285122998
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 156
dh =
        -2.29144015005089
rdh_sum =
        39.1075417847898
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 157
dh =
        -2.34512665005089
rdh_sum =
        39.3017537277002
ans =
Berm Factor Calculation: Iteration 14, Profile Segment: 158
dh =
        -2.39881315005089
rdh_sum =
        39.5042978472169
ans =
!----- End Berm Factor Calculation, Iter: 14 -----!
berm_width =
    76
rB =
        0.287779910617536
rdh_mean =
        0.519793392726538
gamma_berm =
        0.861806185480893
slope =
        0.0969396941257738
Irb =
        1.06407666013963
gamma_berm =
        0.861806185480893
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
        0.75
gamma =
        0.64635463911067
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
        8.13752767412985
R2del =
        0.0658044382540073
Z2 =

```

```

18.284050024079
ans =
!----- STARTING ITERATION 15 -----!
Ztoe =
-0.01520999999999997
toe_sta =
7.07565722517106
top_sta =
272.392069291988
Z2 =
18.284050024079
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.13752767412985
Z2 =
18.284050024079
top_sta =
272.392069291988
Lslope =
265.316412066817
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =

```

```
7.30304807711916
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
```

```
22.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
28.9668429636094
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
29.6305337739893
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
30.2941205558282
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
30.9558326944034
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
31.6138924547539
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
31.7134256803602
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
31.8277208203406
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
31.9576589514269
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
```



```
32.1040854166155
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
32.2649523273288
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
32.4349461938491
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
32.6113048194314
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
32.7941197733187
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
32.9834807980377
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
33.1794757840068
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
33.3936485486156
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
33.6386075148931
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
33.9157201615149
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
34.2261816199585
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
34.3237683116834
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
34.4268040713492
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
34.5354195577896
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
34.649743558922
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
```

```
34.7699029460325
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
34.8960227068151
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
35.0282258676846
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
35.1666334938687
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
35.3133955781166
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
35.4708043468536
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
35.639161000061
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
35.8187571125388
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
36.0098743775591
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
36.2127844064579
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
36.4211417608265
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
36.5664796642185
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
36.7195076642752
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
36.8803874392883
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
37.0492770088637
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
```

```

37.2263306602891
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
37.3937869573847
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
37.5690529007092
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
37.7522680566587
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
37.9435685048528
ans =
Berm Factor Calculation: Iteration 15, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
38.1430868517541
ans =
!----- End Berm Factor Calculation, Iter: 15 -----!
berm_width =
76
rB =
0.286450428784105
rdh_mean =
0.501882721733606
gamma_berm =
0.85731409205582
slope =
0.0966596600067641
Irb =
1.06100281332416
gamma_berm =
0.85731409205582
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.642985569041865
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07172676650239
R2del =
0.0658009076274606
Z2 =
18.2182491164515
ans =
!----- STARTING ITERATION 16 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
271.166429795882
Z2 =
18.2182491164515
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.07172676650239
Z2 =
18.2182491164515
top_sta =
271.166429795882
Lslope =
264.09077257071
ans =

```

```
Berm Factor Calculation: Iteration 16, Profile Segment: 14
dh =
rdh_sum = 6.86657734994911
ans = 0.52137398948955
Berm Factor Calculation: Iteration 16, Profile Segment: 15
dh =
rdh_sum = 7.01272384994911
ans = 1.05988758097302
Berm Factor Calculation: Iteration 16, Profile Segment: 16
dh =
rdh_sum = 7.15887034994911
ans = 1.61549535557839
Berm Factor Calculation: Iteration 16, Profile Segment: 17
dh =
rdh_sum = 7.30501684994911
ans = 2.18813173535515
Berm Factor Calculation: Iteration 16, Profile Segment: 18
dh =
rdh_sum = 7.45116334994911
ans = 2.77771106060995
Berm Factor Calculation: Iteration 16, Profile Segment: 19
dh =
rdh_sum = 7.59730984994911
ans = 3.38412769092466
Berm Factor Calculation: Iteration 16, Profile Segment: 20
dh =
rdh_sum = 7.74345634994911
ans = 4.00725612973755
Berm Factor Calculation: Iteration 16, Profile Segment: 21
dh =
rdh_sum = 7.88960284994911
ans = 4.64695117234071
Berm Factor Calculation: Iteration 16, Profile Segment: 22
dh =
rdh_sum = 8.03574934994911
ans = 5.30304807711916
Berm Factor Calculation: Iteration 16, Profile Segment: 23
dh =
rdh_sum = 8.18189584994911
ans = 6.30304807711916
Berm Factor Calculation: Iteration 16, Profile Segment: 24
dh =
rdh_sum = 8.32804234994911
ans = 7.30304807711916
Berm Factor Calculation: Iteration 16, Profile Segment: 25
dh =
rdh_sum = 8.43199384994911
ans = 8.30304807711916
Berm Factor Calculation: Iteration 16, Profile Segment: 26
dh =
rdh_sum = 8.49375084994911
ans = 9.30304807711916
Berm Factor Calculation: Iteration 16, Profile Segment: 27
dh =
rdh_sum = 8.55550784994911
ans = 10.3030480771192
Berm Factor Calculation: Iteration 16, Profile Segment: 28
dh =
rdh_sum = 8.61726484994911
ans = 11.3030480771192
```

```
Berm Factor Calculation: Iteration 16, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 16, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    29.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    30.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    31.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    32.3030480771192
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    32.9611078374696
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    33.060641063076
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    33.1749362030563
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    33.3048743341427
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    33.4513007993313
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    33.6121677100445
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    33.7821615765649
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    33.9585202021471
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    34.1413351560345
ans =
```

```
Berm Factor Calculation: Iteration 16, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    34.3306961807534
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    34.5266911667225
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    34.7408639313314
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    34.9858228976088
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    35.2629355442306
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    35.5733970026742
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    35.6709836943991
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    35.7740194540649
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    35.8826349405054
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    35.9969589416378
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    36.1171183287483
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    36.2432380895308
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    36.3754412504003
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    36.5138488765845
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    36.6606109608323
ans =
```

```
Berm Factor Calculation: Iteration 16, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    36.8180197295694
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    36.9863763827767
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    37.1659724952545
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    37.3570897602748
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    37.5599997891737
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    37.7683571435422
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    37.9136950469343
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    38.066723046991
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    38.2276028220041
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    38.3964923915795
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    38.5735460430048
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    38.7435766848503
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    38.9215282269144
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    39.1075413476092
ans =
Berm Factor Calculation: Iteration 16, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    39.3017531325829
ans =
```



```

Berm Factor Calculation: Iteration 16, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    39.5042970879734
ans =
!----- End Berm Factor Calculation, Iter: 16 -----!
berm_width =
    76
rB =
    0.287779838955376
rdh_mean =
    0.519793382736492
gamma_berm =
    0.861806217018601
slope =
    0.0969396790031093
Irb =
    1.06407649414288
gamma_berm =
    0.861806217018601
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.646354662763951
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.1375267024614
R2del =
    0.0657999359590136
Z2 =
    18.2840490524105
ans =
!----- STARTING ITERATION 17 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    272.392051193222
Z2 =
    18.2840490524105
H0 =
    6.6846
Tp =
    13.8007
T0 =
    12.5460909090909
R2 =
    8.1375267024614
Z2 =
    18.2840490524105
top_sta =
    272.392051193222
Lslope =
    265.316393968051
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 14
dh =
    6.86657734994911
rdh_sum =
    0.52137398948955
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 15
dh =
    7.01272384994911
rdh_sum =
    1.05988758097302
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 16
dh =
    7.15887034994911
rdh_sum =
    1.61549535557839
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 17
dh =
    7.30501684994911
rdh_sum =
    2.18813173535515
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 18
dh =

```

```
rdh_sum = 7.45116334994911
ans = 2.77771106060995
Berm Factor Calculation: Iteration 17, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 3.38412769092466
ans = 3.38412769092466
Berm Factor Calculation: Iteration 17, Profile Segment: 20
dh = 7.74345634994911
rdh_sum = 4.00725612973755
ans = 4.00725612973755
Berm Factor Calculation: Iteration 17, Profile Segment: 21
dh = 7.88960284994911
rdh_sum = 4.64695117234071
ans = 4.64695117234071
Berm Factor Calculation: Iteration 17, Profile Segment: 22
dh = 8.03574934994911
rdh_sum = 5.30304807711916
ans = 5.30304807711916
Berm Factor Calculation: Iteration 17, Profile Segment: 23
dh = 8.18189584994911
rdh_sum = 6.30304807711916
ans = 6.30304807711916
Berm Factor Calculation: Iteration 17, Profile Segment: 24
dh = 8.32804234994911
rdh_sum = 7.30304807711916
ans = 7.30304807711916
Berm Factor Calculation: Iteration 17, Profile Segment: 25
dh = 8.43199384994911
rdh_sum = 8.30304807711916
ans = 8.30304807711916
Berm Factor Calculation: Iteration 17, Profile Segment: 26
dh = 8.49375084994911
rdh_sum = 9.30304807711916
ans = 9.30304807711916
Berm Factor Calculation: Iteration 17, Profile Segment: 27
dh = 8.55550784994911
rdh_sum = 10.3030480771192
ans = 10.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 28
dh = 8.61726484994911
rdh_sum = 11.3030480771192
ans = 11.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 29
dh = 8.67902184994911
rdh_sum = 12.3030480771192
ans = 12.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 30
dh = 8.74077884994911
rdh_sum = 13.3030480771192
ans = 13.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 31
dh = 8.80253584994911
rdh_sum = 14.3030480771192
ans = 14.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 32
dh = 8.86429284994911
rdh_sum = 15.3030480771192
ans = 15.3030480771192
Berm Factor Calculation: Iteration 17, Profile Segment: 33
dh =
```

```
      8.92850634994911
rdh_sum =      16.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      17.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      18.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      19.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 37
dh =      9.21237734994911
rdh_sum =      20.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 38
dh =      9.28395934994911
rdh_sum =      21.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 39
dh =      9.29104334994911
rdh_sum =      22.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 40
dh =      9.23362884994911
rdh_sum =      23.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 41
dh =      9.17621384994911
rdh_sum =      24.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 42
dh =      9.11879934994911
rdh_sum =      25.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 46
dh =      8.51266434994911
rdh_sum =      26.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 47
dh =      8.67014434994911
rdh_sum =      27.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 48
dh =      8.75216534994911
rdh_sum =      28.3030480771192
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 54
dh =      8.10490234994911
rdh_sum =      28.9668429636094
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 55
dh =      8.10396484994911
rdh_sum =      29.6305337739893
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 56
dh =
```

```
      8.10302784994911
rdh_sum =      30.2941205558282
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 57
dh =      8.08615484994911
rdh_sum =      30.9558326944034
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 58
dh =      8.05334634994911
rdh_sum =      31.6138924547539
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 81
dh =      2.73182434994911
rdh_sum =      31.7134256803602
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 82
dh =      2.93523634994911
rdh_sum =      31.8277208203406
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 83
dh =      3.13864834994911
rdh_sum =      31.9576589514269
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 84
dh =      3.34206034994911
rdh_sum =      32.1040854166155
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 85
dh =      3.51251484994911
rdh_sum =      32.2649523273288
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 86
dh =      3.61705434994911
rdh_sum =      32.4349461938491
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 87
dh =      3.68863634994911
rdh_sum =      32.6113048194314
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 88
dh =      3.76021834994911
rdh_sum =      32.7941197733187
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 89
dh =      3.83180034994911
rdh_sum =      32.9834807980377
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 90
dh =      3.90338234994911
rdh_sum =      33.1794757840068
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 91
dh =      4.09501334994911
rdh_sum =      33.3936485486156
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 92
dh =      4.40669284994911
rdh_sum =      33.6386075148931
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 93
dh =
```

```
4.71837234994911
rdh_sum = 33.9157201615149
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 34.2261816199585
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 34.3237683116834
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 34.4268040713492
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 34.5354195577896
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 34.649743558922
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 34.7699029460325
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 34.8960227068151
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 35.0282258676846
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 35.1666334938687
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 35.3133955781166
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 35.4708043468536
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 35.639161000061
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 35.8187571125388
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 36.0098743775591
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 114
dh =
```

```

        3.97702884994911
rdh_sum = 36.2127844064579
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 36.4211417608265
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 36.5664796642185
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 36.7195076642752
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 123
dh = 3.51266384994911
rdh_sum = 36.8803874392883
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 37.0492770088637
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 37.2263306602891
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 37.3937869949773
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 37.5690529775213
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 37.7522681743333
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 37.9435686650481
ans =
Berm Factor Calculation: Iteration 17, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 38.1430870561417
ans =
!----- End Berm Factor Calculation, Iter: 17 -----!
berm_width =
76
rB = 0.286450448324546
rdh_mean = 0.501882724422917
gamma_berm = 0.857314083092743
slope = 0.0966596641149773
Irb = 1.06100285841873
gamma_berm = 0.857314083092743
gamma_perm = 1
gamma_beta = 1
gamma_rough =

```

```

                                0.75
gamma =
0.642985562319557
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07172702517704
R2del =
0.0657996772843585
Z2 =
18.2182493751261
ans =
!----- STARTING ITERATION 18 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
271.166434614081
Z2 =
18.2182493751261
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.07172702517704
Z2 =
18.2182493751261
top_sta =
271.166434614081
Lslope =
264.090777388909
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =

```

```
5.30304807711916
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.30304807711916
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
```



```
20.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
29.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
30.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
31.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
32.3030480771192
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
32.9611078374696
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
33.060641063076
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
```

```
33.1749362030563
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
33.3048743341427
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
33.4513007993313
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
33.6121677100445
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
33.7821615765649
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
33.9585202021471
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
34.1413351560345
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
34.3306961807534
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
34.5266911667225
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
34.7408639313314
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
34.9858228976088
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
35.2629355442306
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
35.5733970026742
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
35.6709836943991
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
35.7740194540649
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
```

```
35.8826349405054
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
35.9969589416378
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
36.1171183287483
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
36.2432380895308
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
36.3754412504003
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
36.5138488765845
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
36.6606109608323
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
36.8180197295694
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
36.9863763827767
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
37.1659724952545
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
37.3570897602748
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
37.5599997891737
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
37.7683571435422
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
37.9136950469343
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
38.066723046991
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
```

```

38.2276028220041
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
38.3964923915795
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
38.5735460430048
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
38.7435766746166
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
38.9215282060054
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
39.1075413155788
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
39.3017530889811
ans =
Berm Factor Calculation: Iteration 18, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
39.5042970323467
ans =
!----- End Berm Factor Calculation, Iter: 18 -----!
berm_width =
76
rB =
0.287779833704983
rdh_mean =
0.519793382004562
gamma_berm =
0.861806219329241
slope =
0.0969396778951335
Irb =
1.06407648198098
gamma_berm =
0.861806219329241
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.64635466449693
ans =
!!! - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.13752663127123
R2del =
0.0657996060941919
Z2 =
18.2840489812203
ans =
!----- STARTING ITERATION 19 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
272.392049867199
Z2 =
18.2840489812203
H0 =
6.6846
Tp =

```

```

13.8007
T0 =
R2 = 12.5460909090909
Z2 = 8.13752663127123
top_sta = 18.2840489812203
Lslope = 272.392049867199
265.316392642028
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 0.52137398948955
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 15
dh = 7.01272384994911
rdh_sum = 1.05988758097302
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 16
dh = 7.15887034994911
rdh_sum = 1.61549535557839
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 17
dh = 7.30501684994911
rdh_sum = 2.18813173535515
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 18
dh = 7.45116334994911
rdh_sum = 2.77771106060995
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 3.38412769092466
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 20
dh = 7.74345634994911
rdh_sum = 4.00725612973755
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 21
dh = 7.88960284994911
rdh_sum = 4.64695117234071
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 22
dh = 8.03574934994911
rdh_sum = 5.30304807711916
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 23
dh = 8.18189584994911
rdh_sum = 6.30304807711916
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 24
dh = 8.32804234994911
rdh_sum = 7.30304807711916
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 25
dh = 8.43199384994911
rdh_sum = 8.30304807711916
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 26
dh = 8.49375084994911
rdh_sum = 9.30304807711916
ans =

```

```
Berm Factor Calculation: Iteration 19, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 19, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    28.9668429636094
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    29.6305337739893
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    30.2941205558282
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    30.9558326944034
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    31.6138924547539
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    31.7134256803602
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    31.8277208203406
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    31.9576589514269
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    32.1040854166155
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    32.2649523273288
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    32.4349461938491
ans =
```

```
Berm Factor Calculation: Iteration 19, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    32.6113048194314
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    32.7941197733187
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    32.9834807980377
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    33.1794757840068
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    33.3936485486156
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    33.6386075148931
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    33.9157201615149
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    34.2261816199585
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    34.3237683116834
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    34.4268040713492
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    34.5354195577896
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    34.649743558922
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    34.7699029460325
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    34.8960227068151
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    35.0282258676846
ans =
```



```
Berm Factor Calculation: Iteration 19, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    35.1666334938687
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    35.3133955781166
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    35.4708043468536
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    35.639161000061
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    35.8187571125388
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    36.0098743775591
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    36.2127844064579
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    36.4211417608265
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    36.5664796642185
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    36.7195076642752
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    36.8803874392883
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    37.0492770088637
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    37.2263306602891
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    37.3937869977316
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    37.569052983149
ans =
```

```

Berm Factor Calculation: Iteration 19, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    37.7522681829549
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    37.943568676785
ans =
Berm Factor Calculation: Iteration 19, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    38.1430870711163
ans =
!----- End Berm Factor Calculation, Iter: 19 -----!
berm_width =
    76
rB =
    0.286450449756194
rdh_mean =
    0.501882724619951
gamma_berm =
    0.857314082436055
slope =
    0.0966596644159693
Irb =
    1.06100286172263
gamma_berm =
    0.857314082436055
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.642985561827041
ans =
!!! - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.07172704412907
R2del =
    0.0657995871421573
Z2 =
    18.2182493940782
ans =
!----- STARTING ITERATION 20 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    271.16643496709
Z2 =
    18.2182493940782
H0 =
    6.6846
Tp =
    13.8007
T0 =
    12.5460909090909
R2 =
    8.07172704412907
Z2 =
    18.2182493940782
top_sta =
    271.16643496709
Lslope =
    264.090777741919
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 14
dh =
    6.86657734994911
rdh_sum =
    0.52137398948955
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 15
dh =
    7.01272384994911
rdh_sum =
    1.05988758097302
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 16
dh =

```

```
7.15887034994911
rdh_sum = 1.61549535557839
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 17
dh = 7.30501684994911
rdh_sum = 2.18813173535515
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 18
dh = 7.45116334994911
rdh_sum = 2.77771106060995
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 3.38412769092466
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 20
dh = 7.74345634994911
rdh_sum = 4.00725612973755
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 21
dh = 7.88960284994911
rdh_sum = 4.64695117234071
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 22
dh = 8.03574934994911
rdh_sum = 5.30304807711916
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 23
dh = 8.18189584994911
rdh_sum = 6.30304807711916
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 24
dh = 8.32804234994911
rdh_sum = 7.30304807711916
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 25
dh = 8.43199384994911
rdh_sum = 8.30304807711916
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 26
dh = 8.49375084994911
rdh_sum = 9.30304807711916
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 27
dh = 8.55550784994911
rdh_sum = 10.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 28
dh = 8.61726484994911
rdh_sum = 11.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 29
dh = 8.67902184994911
rdh_sum = 12.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 30
dh = 8.74077884994911
rdh_sum = 13.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 31
dh =
```

```
      8.80253584994911
rdh_sum =      14.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 32
dh =      8.86429284994911
rdh_sum =      15.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 33
dh =      8.92850634994911
rdh_sum =      16.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      17.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      18.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      19.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 37
dh =      9.21237734994911
rdh_sum =      20.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 38
dh =      9.28395934994911
rdh_sum =      21.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 39
dh =      9.29104334994911
rdh_sum =      22.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 40
dh =      9.23362884994911
rdh_sum =      23.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 41
dh =      9.17621384994911
rdh_sum =      24.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 42
dh =      9.11879934994911
rdh_sum =      25.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 46
dh =      8.51266434994911
rdh_sum =      26.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 47
dh =      8.67014434994911
rdh_sum =      27.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 48
dh =      8.75216534994911
rdh_sum =      28.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 54
dh =
```

```
      8.10490234994911
rdh_sum =      29.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 55
dh =      8.10396484994911
rdh_sum =      30.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 56
dh =      8.10302784994911
rdh_sum =      31.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 57
dh =      8.08615484994911
rdh_sum =      32.3030480771192
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 58
dh =      8.05334634994911
rdh_sum =      32.9611078374696
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 81
dh =      2.73182434994911
rdh_sum =      33.060641063076
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 82
dh =      2.93523634994911
rdh_sum =      33.1749362030563
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 83
dh =      3.13864834994911
rdh_sum =      33.3048743341427
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 84
dh =      3.34206034994911
rdh_sum =      33.4513007993313
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 85
dh =      3.51251484994911
rdh_sum =      33.6121677100445
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 86
dh =      3.61705434994911
rdh_sum =      33.7821615765649
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 87
dh =      3.68863634994911
rdh_sum =      33.9585202021471
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 88
dh =      3.76021834994911
rdh_sum =      34.1413351560345
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 89
dh =      3.83180034994911
rdh_sum =      34.3306961807534
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 90
dh =      3.90338234994911
rdh_sum =      34.5266911667225
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 91
dh =
```

```
4.09501334994911
rdh_sum = 34.7408639313314
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 34.9858228976088
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 35.2629355442306
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 35.5733970026742
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 35.6709836943991
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 35.7740194540649
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 35.8826349405054
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 35.9969589416378
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 36.1171183287483
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 36.2432380895308
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 36.3754412504003
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 36.5138488765845
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 36.6606109608323
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 36.8180197295694
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 36.9863763827767
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 112
dh =
```

```

        3.72465634994911
rdh_sum =
        37.1659724952545
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 113
dh =
        3.85084234994911
rdh_sum =
        37.3570897602748
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 114
dh =
        3.97702884994911
rdh_sum =
        37.5599997891737
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 115
dh =
        4.03438634994911
rdh_sum =
        37.7683571435422
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 121
dh =
        3.32893684994911
rdh_sum =
        37.9136950469343
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 122
dh =
        3.42080034994911
rdh_sum =
        38.066723046991
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 123
dh =
        3.51266384994911
rdh_sum =
        38.2276028220041
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 124
dh =
        3.60452734994911
rdh_sum =
        38.3964923915795
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 125
dh =
        3.69639084994911
rdh_sum =
        38.5735460430048
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 154
dh =
        -2.18406765005089
rdh_sum =
        38.7435766738668
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 155
dh =
        -2.23775365005089
rdh_sum =
        38.9215282044734
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 156
dh =
        -2.29144015005089
rdh_sum =
        39.1075413132321
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 157
dh =
        -2.34512665005089
rdh_sum =
        39.3017530857866
ans =
Berm Factor Calculation: Iteration 20, Profile Segment: 158
dh =
        -2.39881315005089
rdh_sum =
        39.5042970282712
ans =
!----- End Berm Factor Calculation, Iter: 20 -----!
berm_width =
    76
rB =
        0.287779833320308
rdh_mean =
        0.519793381950936
gamma_berm =

```

```

slope = 0.861806219498532
Irb = 0.0969396778139567
gamma_berm = 1.06407648108992
gamma_perm = 0.861806219498532
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.646354664623899
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.13752662605542
R2del = 0.0657995819263419
Z2 = 18.2840489760045
ans =
!----- STARTING ITERATION 21 -----!
Ztoe = -0.0152099999999997
toe_sta = 7.07565722517106
top_sta = 272.392049770047
Z2 = 18.2840489760045
H0 = 6.6846
Tp = 13.8007
T0 = 12.5460909090909
R2 = 8.13752662605542
Z2 = 18.2840489760045
top_sta = 272.392049770047
Lslope = 265.316392544876
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 14
dh = 6.86657734994911
rdh_sum = 0.52137398948955
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 15
dh = 7.01272384994911
rdh_sum = 1.05988758097302
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 16
dh = 7.15887034994911
rdh_sum = 1.61549535557839
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 17
dh = 7.30501684994911
rdh_sum = 2.18813173535515
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 18
dh = 7.45116334994911
rdh_sum = 2.77771106060995
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 19
dh = 7.59730984994911
rdh_sum = 3.38412769092466
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 20
dh = 7.74345634994911
rdh_sum =

```



```
4.00725612973755
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.30304807711916
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
16.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
```

```
18.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
28.9668429636094
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
29.6305337739893
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
30.2941205558282
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
30.9558326944034
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
```

```
31.6138924547539
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
31.7134256803602
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
31.8277208203406
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
31.9576589514269
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
32.1040854166155
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
32.2649523273288
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
32.4349461938491
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
32.6113048194314
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
32.7941197733187
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
32.9834807980377
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
33.1794757840068
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
33.3936485486156
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
33.6386075148931
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
33.9157201615149
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
34.2261816199585
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
```

```
34.3237683116834
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
34.4268040713492
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
34.5354195577896
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
34.649743558922
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
34.7699029460325
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
34.8960227068151
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
35.0282258676846
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
35.1666334938687
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
35.3133955781166
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
35.4708043468536
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
35.639161000061
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
35.8187571125388
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
36.0098743775591
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
36.2127844064579
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
36.4211417608265
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
```

```

36.5664796642185
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
36.7195076642752
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
36.8803874392883
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
37.0492770088637
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
37.2263306602891
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
37.3937869979334
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
37.5690529835613
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
37.7522681835865
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
37.9435686776449
ans =
Berm Factor Calculation: Iteration 21, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
38.1430870722134
ans =
!----- End Berm Factor Calculation, Iter: 21 -----!
berm_width =
76
rB =
0.286450449861085
rdh_mean =
0.501882724634387
gamma_berm =
0.857314082387942
slope =
0.0966596644380218
Irb =
1.06100286196469
gamma_berm =
0.857314082387942
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.642985561790957
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07172704551761
R2del =
0.0657995805378064
Z2 =
18.2182493954667
ans =

```

```

!----- STARTING ITERATION 22 -----!
Ztoe =
  -0.01520999999999997
toe_sta =
  7.07565722517106
top_sta =
  271.166434992954
Z2 =
  18.2182493954667
H0 =
  6.6846
Tp =
  13.8007
T0 =
  12.5460909090909
R2 =
  8.07172704551761
Z2 =
  18.2182493954667
top_sta =
  271.166434992954
Lslope =
  264.090777767783
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 14
dh =
  6.86657734994911
rdh_sum =
  0.52137398948955
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 15
dh =
  7.01272384994911
rdh_sum =
  1.05988758097302
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 16
dh =
  7.15887034994911
rdh_sum =
  1.61549535557839
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 17
dh =
  7.30501684994911
rdh_sum =
  2.18813173535515
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 18
dh =
  7.45116334994911
rdh_sum =
  2.77771106060995
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 19
dh =
  7.59730984994911
rdh_sum =
  3.38412769092466
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 20
dh =
  7.74345634994911
rdh_sum =
  4.00725612973755
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 21
dh =
  7.88960284994911
rdh_sum =
  4.64695117234071
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 22
dh =
  8.03574934994911
rdh_sum =
  5.30304807711916
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 23
dh =
  8.18189584994911
rdh_sum =
  6.30304807711916
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 24
dh =
  8.32804234994911
rdh_sum =
  7.30304807711916
ans =

```

```
Berm Factor Calculation: Iteration 22, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
```

```
Berm Factor Calculation: Iteration 22, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    29.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    30.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    31.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    32.3030480771192
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    32.9611078374696
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    33.060641063076
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    33.1749362030563
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    33.3048743341427
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    33.4513007993313
ans =
```



```
Berm Factor Calculation: Iteration 22, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    33.6121677100445
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    33.7821615765649
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    33.9585202021471
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    34.1413351560345
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    34.3306961807534
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    34.5266911667225
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    34.7408639313314
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    34.9858228976088
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    35.2629355442306
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    35.5733970026742
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    35.6709836943991
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    35.7740194540649
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    35.8826349405054
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 104
dh =
    2.93562234994911
rdh_sum =
    35.9969589416378
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 105
dh =
    3.01281834994911
rdh_sum =
    36.1171183287483
ans =
```

```
Berm Factor Calculation: Iteration 22, Profile Segment: 106
dh =
    3.09001434994911
rdh_sum =
    36.2432380895308
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 107
dh =
    3.16721034994911
rdh_sum =
    36.3754412504003
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 108
dh =
    3.24440684994911
rdh_sum =
    36.5138488765845
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 109
dh =
    3.34609834994911
rdh_sum =
    36.6606109608323
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 110
dh =
    3.47228434994911
rdh_sum =
    36.8180197295694
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 111
dh =
    3.59847034994911
rdh_sum =
    36.9863763827767
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 112
dh =
    3.72465634994911
rdh_sum =
    37.1659724952545
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 113
dh =
    3.85084234994911
rdh_sum =
    37.3570897602748
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 114
dh =
    3.97702884994911
rdh_sum =
    37.5599997891737
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 115
dh =
    4.03438634994911
rdh_sum =
    37.7683571435422
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 121
dh =
    3.32893684994911
rdh_sum =
    37.9136950469343
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 122
dh =
    3.42080034994911
rdh_sum =
    38.066723046991
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 123
dh =
    3.51266384994911
rdh_sum =
    38.2276028220041
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    38.3964923915795
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    38.5735460430048
ans =
```

```

Berm Factor Calculation: Iteration 22, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    38.7435766738119
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    38.9215282043612
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    39.1075413130601
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    39.3017530855525
ans =
Berm Factor Calculation: Iteration 22, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    39.5042970279726
ans =
!----- End Berm Factor Calculation, Iter: 22 -----!
berm_width =
    76
rB =
    0.287779833292124
rdh_mean =
    0.519793381947008
gamma_berm =
    0.861806219510935
slope =
    0.0969396778080092
Irb =
    1.06407648102464
gamma_berm =
    0.861806219510935
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.646354664633201
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.13752662567328
R2del =
    0.0657995801556677
Z2 =
    18.2840489756224
ans =
!----- STARTING ITERATION 23 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    272.392049762929
Z2 =
    18.2840489756224
H0 =
    6.6846
Tp =
    13.8007
T0 =
    12.5460909090909
R2 =
    8.13752662567328
Z2 =
    18.2840489756224
top_sta =
    272.392049762929
Lslope =
    265.316392537758
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 14
dh =

```

```
        6.86657734994911
rdh_sum =
        0.52137398948955
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 15
dh =
        7.01272384994911
rdh_sum =
        1.05988758097302
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 16
dh =
        7.15887034994911
rdh_sum =
        1.61549535557839
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 17
dh =
        7.30501684994911
rdh_sum =
        2.18813173535515
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 18
dh =
        7.45116334994911
rdh_sum =
        2.77771106060995
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 19
dh =
        7.59730984994911
rdh_sum =
        3.38412769092466
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 20
dh =
        7.74345634994911
rdh_sum =
        4.00725612973755
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 21
dh =
        7.88960284994911
rdh_sum =
        4.64695117234071
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 22
dh =
        8.03574934994911
rdh_sum =
        5.30304807711916
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 23
dh =
        8.18189584994911
rdh_sum =
        6.30304807711916
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 24
dh =
        8.32804234994911
rdh_sum =
        7.30304807711916
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 25
dh =
        8.43199384994911
rdh_sum =
        8.30304807711916
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 26
dh =
        8.49375084994911
rdh_sum =
        9.30304807711916
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 27
dh =
        8.55550784994911
rdh_sum =
        10.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 28
dh =
        8.61726484994911
rdh_sum =
        11.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 29
dh =
```

```
      8.67902184994911
rdh_sum =      12.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 30
dh =      8.74077884994911
rdh_sum =      13.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 31
dh =      8.80253584994911
rdh_sum =      14.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 32
dh =      8.86429284994911
rdh_sum =      15.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 33
dh =      8.92850634994911
rdh_sum =      16.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 34
dh =      8.99763184994911
rdh_sum =      17.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 35
dh =      9.06921334994911
rdh_sum =      18.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 36
dh =      9.14079534994911
rdh_sum =      19.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 37
dh =      9.21237734994911
rdh_sum =      20.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 38
dh =      9.28395934994911
rdh_sum =      21.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 39
dh =      9.29104334994911
rdh_sum =      22.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 40
dh =      9.23362884994911
rdh_sum =      23.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 41
dh =      9.17621384994911
rdh_sum =      24.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 42
dh =      9.11879934994911
rdh_sum =      25.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 46
dh =      8.51266434994911
rdh_sum =      26.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 47
dh =
```

```
      8.67014434994911
rdh_sum =      27.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 48
dh =      8.75216534994911
rdh_sum =      28.3030480771192
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 54
dh =      8.10490234994911
rdh_sum =      28.9668429636094
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 55
dh =      8.10396484994911
rdh_sum =      29.6305337739893
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 56
dh =      8.10302784994911
rdh_sum =      30.2941205558282
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 57
dh =      8.08615484994911
rdh_sum =      30.9558326944034
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 58
dh =      8.05334634994911
rdh_sum =      31.6138924547539
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 81
dh =      2.73182434994911
rdh_sum =      31.7134256803602
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 82
dh =      2.93523634994911
rdh_sum =      31.8277208203406
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 83
dh =      3.13864834994911
rdh_sum =      31.9576589514269
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 84
dh =      3.34206034994911
rdh_sum =      32.1040854166155
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 85
dh =      3.51251484994911
rdh_sum =      32.2649523273288
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 86
dh =      3.61705434994911
rdh_sum =      32.4349461938491
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 87
dh =      3.68863634994911
rdh_sum =      32.6113048194314
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 88
dh =      3.76021834994911
rdh_sum =      32.7941197733187
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 89
dh =
```

```
3.83180034994911
rdh_sum = 32.9834807980377
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 90
dh = 3.90338234994911
rdh_sum = 33.1794757840068
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 91
dh = 4.09501334994911
rdh_sum = 33.3936485486156
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 33.6386075148931
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 33.9157201615149
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 34.2261816199585
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 34.3237683116834
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 34.4268040713492
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 34.5354195577896
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 34.649743558922
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 34.7699029460325
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 34.8960227068151
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 35.0282258676846
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 108
dh = 3.24440684994911
rdh_sum = 35.1666334938687
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 35.3133955781166
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 110
dh =
```

```
3.47228434994911
rdh_sum = 35.4708043468536
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 35.639161000061
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 35.8187571125388
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 36.0098743775591
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 36.2127844064579
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 36.4211417608265
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 36.5664796642185
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 36.7195076642752
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 123
dh = 3.51266384994911
rdh_sum = 36.8803874392883
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 37.0492770088637
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 37.2263306602891
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 37.3937869979482
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 37.5690529835915
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 156
dh = -2.29144015005089
rdh_sum = 37.7522681836328
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 37.9435686777079
ans =
Berm Factor Calculation: Iteration 23, Profile Segment: 158
dh =
```



```

-2.39881315005089
rdh_sum = 38.1430870722938
ans =
!----- End Berm Factor Calculation, Iter: 23 -----!
berm_width =
76
rB =
0.28645044986877
rdh_mean =
0.501882724635445
gamma_berm =
0.857314082384417
slope =
0.0966596644396375
Irb =
1.06100286198242
gamma_berm =
0.857314082384417
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =
0.642985561788313
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.07172704561934
R2del =
0.0657995800539339
Z2 =
18.2182493955685
ans =
!----- STARTING ITERATION 24 -----!
Ztoe =
-0.0152099999999997
toe_sta =
7.07565722517106
top_sta =
271.166434994849
Z2 =
18.2182493955685
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.07172704561934
Z2 =
18.2182493955685
top_sta =
271.166434994849
Lslope =
264.090777769678
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =

```

```
2.77771106060995
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.30304807711916
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 27
dh =
8.55550784994911
rdh_sum =
10.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 28
dh =
8.61726484994911
rdh_sum =
11.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 29
dh =
8.67902184994911
rdh_sum =
12.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 30
dh =
8.74077884994911
rdh_sum =
13.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 31
dh =
8.80253584994911
rdh_sum =
14.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 32
dh =
8.86429284994911
rdh_sum =
15.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 33
dh =
8.92850634994911
rdh_sum =
```

```
16.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 34
dh =
8.99763184994911
rdh_sum =
17.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 35
dh =
9.06921334994911
rdh_sum =
18.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 36
dh =
9.14079534994911
rdh_sum =
19.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 37
dh =
9.21237734994911
rdh_sum =
20.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 38
dh =
9.28395934994911
rdh_sum =
21.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 39
dh =
9.29104334994911
rdh_sum =
22.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 40
dh =
9.23362884994911
rdh_sum =
23.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 41
dh =
9.17621384994911
rdh_sum =
24.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 42
dh =
9.11879934994911
rdh_sum =
25.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 46
dh =
8.51266434994911
rdh_sum =
26.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 47
dh =
8.67014434994911
rdh_sum =
27.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 48
dh =
8.75216534994911
rdh_sum =
28.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 54
dh =
8.10490234994911
rdh_sum =
29.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 55
dh =
8.10396484994911
rdh_sum =
30.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 56
dh =
8.10302784994911
rdh_sum =
```

```
31.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 57
dh =
8.08615484994911
rdh_sum =
32.3030480771192
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 58
dh =
8.05334634994911
rdh_sum =
32.9611078374696
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 81
dh =
2.73182434994911
rdh_sum =
33.060641063076
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 82
dh =
2.93523634994911
rdh_sum =
33.1749362030563
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 83
dh =
3.13864834994911
rdh_sum =
33.3048743341427
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 84
dh =
3.34206034994911
rdh_sum =
33.4513007993313
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 85
dh =
3.51251484994911
rdh_sum =
33.6121677100445
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 86
dh =
3.61705434994911
rdh_sum =
33.7821615765649
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 87
dh =
3.68863634994911
rdh_sum =
33.9585202021471
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 88
dh =
3.76021834994911
rdh_sum =
34.1413351560345
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 89
dh =
3.83180034994911
rdh_sum =
34.3306961807534
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 90
dh =
3.90338234994911
rdh_sum =
34.5266911667225
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 91
dh =
4.09501334994911
rdh_sum =
34.7408639313314
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 92
dh =
4.40669284994911
rdh_sum =
34.9858228976088
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 93
dh =
4.71837234994911
rdh_sum =
```

```
35.2629355442306
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 94
dh =
5.03005234994911
rdh_sum =
35.5733970026742
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 101
dh =
2.70403334994911
rdh_sum =
35.6709836943991
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 102
dh =
2.78122934994911
rdh_sum =
35.7740194540649
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 103
dh =
2.85842584994911
rdh_sum =
35.8826349405054
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 104
dh =
2.93562234994911
rdh_sum =
35.9969589416378
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 105
dh =
3.01281834994911
rdh_sum =
36.1171183287483
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 106
dh =
3.09001434994911
rdh_sum =
36.2432380895308
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 107
dh =
3.16721034994911
rdh_sum =
36.3754412504003
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 108
dh =
3.24440684994911
rdh_sum =
36.5138488765845
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 109
dh =
3.34609834994911
rdh_sum =
36.6606109608323
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 110
dh =
3.47228434994911
rdh_sum =
36.8180197295694
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 111
dh =
3.59847034994911
rdh_sum =
36.9863763827767
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 112
dh =
3.72465634994911
rdh_sum =
37.1659724952545
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 113
dh =
3.85084234994911
rdh_sum =
37.3570897602748
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 114
dh =
3.97702884994911
rdh_sum =
```

```

37.5599997891737
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 115
dh =
4.03438634994911
rdh_sum =
37.7683571435422
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 121
dh =
3.32893684994911
rdh_sum =
37.9136950469343
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 122
dh =
3.42080034994911
rdh_sum =
38.066723046991
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 123
dh =
3.51266384994911
rdh_sum =
38.2276028220041
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 124
dh =
3.60452734994911
rdh_sum =
38.3964923915795
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 125
dh =
3.69639084994911
rdh_sum =
38.5735460430048
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 154
dh =
-2.18406765005089
rdh_sum =
38.7435766738079
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 155
dh =
-2.23775365005089
rdh_sum =
38.921528204353
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 156
dh =
-2.29144015005089
rdh_sum =
39.1075413130475
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 157
dh =
-2.34512665005089
rdh_sum =
39.3017530855354
ans =
Berm Factor Calculation: Iteration 24, Profile Segment: 158
dh =
-2.39881315005089
rdh_sum =
39.5042970279507
ans =
!----- End Berm Factor Calculation, Iter: 24 -----!
berm_width =
76
rB =
0.287779833290059
rdh_mean =
0.51979338194672
gamma_berm =
0.861806219511844
slope =
0.0969396778075734
Irb =
1.06407648101986
gamma_berm =
0.861806219511844
gamma_perm =
1
gamma_beta =
1
gamma_rough =
0.75
gamma =

```

```

0.646354664633883
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
8.13752662564528
R2del =
0.0657995800259314
Z2 =
18.2840489755944
ans =
!----- STARTING ITERATION 25 -----!
Ztoe =
-0.01520999999999997
toe_sta =
7.07565722517106
top_sta =
272.392049762408
Z2 =
18.2840489755944
H0 =
6.6846
Tp =
13.8007
T0 =
12.5460909090909
R2 =
8.13752662564528
Z2 =
18.2840489755944
top_sta =
272.392049762408
Lslope =
265.316392537237
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =

```

```
Berm Factor Calculation: Iteration 25, Profile Segment: 23
dh =
    8.18189584994911
rdh_sum =
    6.30304807711916
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 24
dh =
    8.32804234994911
rdh_sum =
    7.30304807711916
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 25
dh =
    8.43199384994911
rdh_sum =
    8.30304807711916
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 26
dh =
    8.49375084994911
rdh_sum =
    9.30304807711916
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 27
dh =
    8.55550784994911
rdh_sum =
    10.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 28
dh =
    8.61726484994911
rdh_sum =
    11.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 29
dh =
    8.67902184994911
rdh_sum =
    12.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 30
dh =
    8.74077884994911
rdh_sum =
    13.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 31
dh =
    8.80253584994911
rdh_sum =
    14.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 32
dh =
    8.86429284994911
rdh_sum =
    15.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 33
dh =
    8.92850634994911
rdh_sum =
    16.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 34
dh =
    8.99763184994911
rdh_sum =
    17.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 35
dh =
    9.06921334994911
rdh_sum =
    18.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 36
dh =
    9.14079534994911
rdh_sum =
    19.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 37
dh =
    9.21237734994911
rdh_sum =
    20.3030480771192
ans =
```



```
Berm Factor Calculation: Iteration 25, Profile Segment: 38
dh =
    9.28395934994911
rdh_sum =
    21.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 39
dh =
    9.29104334994911
rdh_sum =
    22.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 40
dh =
    9.23362884994911
rdh_sum =
    23.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 41
dh =
    9.17621384994911
rdh_sum =
    24.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 42
dh =
    9.11879934994911
rdh_sum =
    25.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 46
dh =
    8.51266434994911
rdh_sum =
    26.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 47
dh =
    8.67014434994911
rdh_sum =
    27.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 48
dh =
    8.75216534994911
rdh_sum =
    28.3030480771192
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 54
dh =
    8.10490234994911
rdh_sum =
    28.9668429636094
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 55
dh =
    8.10396484994911
rdh_sum =
    29.6305337739893
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 56
dh =
    8.10302784994911
rdh_sum =
    30.2941205558282
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 57
dh =
    8.08615484994911
rdh_sum =
    30.9558326944034
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 58
dh =
    8.05334634994911
rdh_sum =
    31.6138924547539
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 81
dh =
    2.73182434994911
rdh_sum =
    31.7134256803602
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 82
dh =
    2.93523634994911
rdh_sum =
    31.8277208203406
ans =
```

```
Berm Factor Calculation: Iteration 25, Profile Segment: 83
dh =
    3.13864834994911
rdh_sum =
    31.9576589514269
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 84
dh =
    3.34206034994911
rdh_sum =
    32.1040854166155
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 85
dh =
    3.51251484994911
rdh_sum =
    32.2649523273288
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 86
dh =
    3.61705434994911
rdh_sum =
    32.4349461938491
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 87
dh =
    3.68863634994911
rdh_sum =
    32.6113048194314
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 88
dh =
    3.76021834994911
rdh_sum =
    32.7941197733187
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 89
dh =
    3.83180034994911
rdh_sum =
    32.9834807980377
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 90
dh =
    3.90338234994911
rdh_sum =
    33.1794757840068
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 91
dh =
    4.09501334994911
rdh_sum =
    33.3936485486156
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 92
dh =
    4.40669284994911
rdh_sum =
    33.6386075148931
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 93
dh =
    4.71837234994911
rdh_sum =
    33.9157201615149
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 94
dh =
    5.03005234994911
rdh_sum =
    34.2261816199585
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 101
dh =
    2.70403334994911
rdh_sum =
    34.3237683116834
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 102
dh =
    2.78122934994911
rdh_sum =
    34.4268040713492
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 103
dh =
    2.85842584994911
rdh_sum =
    34.5354195577896
ans =
```

```
Berm Factor Calculation: Iteration 25, Profile Segment: 104
dh =
    rdh_sum = 2.93562234994911
    ans = 34.649743558922
Berm Factor Calculation: Iteration 25, Profile Segment: 105
dh =
    rdh_sum = 3.01281834994911
    ans = 34.7699029460325
Berm Factor Calculation: Iteration 25, Profile Segment: 106
dh =
    rdh_sum = 3.09001434994911
    ans = 34.8960227068151
Berm Factor Calculation: Iteration 25, Profile Segment: 107
dh =
    rdh_sum = 3.16721034994911
    ans = 35.0282258676846
Berm Factor Calculation: Iteration 25, Profile Segment: 108
dh =
    rdh_sum = 3.24440684994911
    ans = 35.1666334938687
Berm Factor Calculation: Iteration 25, Profile Segment: 109
dh =
    rdh_sum = 3.34609834994911
    ans = 35.3133955781166
Berm Factor Calculation: Iteration 25, Profile Segment: 110
dh =
    rdh_sum = 3.47228434994911
    ans = 35.4708043468536
Berm Factor Calculation: Iteration 25, Profile Segment: 111
dh =
    rdh_sum = 3.59847034994911
    ans = 35.639161000061
Berm Factor Calculation: Iteration 25, Profile Segment: 112
dh =
    rdh_sum = 3.72465634994911
    ans = 35.8187571125388
Berm Factor Calculation: Iteration 25, Profile Segment: 113
dh =
    rdh_sum = 3.85084234994911
    ans = 36.0098743775591
Berm Factor Calculation: Iteration 25, Profile Segment: 114
dh =
    rdh_sum = 3.97702884994911
    ans = 36.2127844064579
Berm Factor Calculation: Iteration 25, Profile Segment: 115
dh =
    rdh_sum = 4.03438634994911
    ans = 36.4211417608265
Berm Factor Calculation: Iteration 25, Profile Segment: 121
dh =
    rdh_sum = 3.32893684994911
    ans = 36.5664796642185
Berm Factor Calculation: Iteration 25, Profile Segment: 122
dh =
    rdh_sum = 3.42080034994911
    ans = 36.7195076642752
Berm Factor Calculation: Iteration 25, Profile Segment: 123
dh =
    rdh_sum = 3.51266384994911
    ans = 36.8803874392883
```

```

Berm Factor Calculation: Iteration 25, Profile Segment: 124
dh =
    3.60452734994911
rdh_sum =
    37.0492770088637
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 125
dh =
    3.69639084994911
rdh_sum =
    37.2263306602891
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 154
dh =
    -2.18406765005089
rdh_sum =
    37.3937869979493
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 155
dh =
    -2.23775365005089
rdh_sum =
    37.5690529835937
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 156
dh =
    -2.29144015005089
rdh_sum =
    37.7522681836362
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 157
dh =
    -2.34512665005089
rdh_sum =
    37.9435686777125
ans =
Berm Factor Calculation: Iteration 25, Profile Segment: 158
dh =
    -2.39881315005089
rdh_sum =
    38.1430870722997
ans =
!----- End Berm Factor Calculation, Iter: 25 -----!
berm_width =
    76
rB =
    0.286450449869333
rdh_mean =
    0.501882724635522
gamma_berm =
    0.857314082384159
slope =
    0.0966596644397559
Irb =
    1.06100286198372
gamma_berm =
    0.857314082384159
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.75
gamma =
    0.642985561788119
ans =
!!! - - Iribaren number: 0.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
    8.0717270456268
R2del =
    0.0657995800184725
Z2 =
    18.2182493955759
ans =
!----- STARTING ITERATION 26 -----!
Ztoe =
    -0.0152099999999997
toe_sta =
    7.07565722517106
top_sta =
    271.166434994988
Z2 =
    18.2182493955759
H0 =
    6.6846
Tp =
    13.8007
T0 =

```

```
12.5460909090909
R2 =
8.0717270456268
Z2 =
18.2182493955759
top_sta =
271.166434994988
Lslope =
264.090777769817
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 14
dh =
6.86657734994911
rdh_sum =
0.52137398948955
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 15
dh =
7.01272384994911
rdh_sum =
1.05988758097302
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 16
dh =
7.15887034994911
rdh_sum =
1.61549535557839
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 17
dh =
7.30501684994911
rdh_sum =
2.18813173535515
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 18
dh =
7.45116334994911
rdh_sum =
2.77771106060995
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 19
dh =
7.59730984994911
rdh_sum =
3.38412769092466
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 20
dh =
7.74345634994911
rdh_sum =
4.00725612973755
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 21
dh =
7.88960284994911
rdh_sum =
4.64695117234071
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 22
dh =
8.03574934994911
rdh_sum =
5.30304807711916
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 23
dh =
8.18189584994911
rdh_sum =
6.30304807711916
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 24
dh =
8.32804234994911
rdh_sum =
7.30304807711916
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 25
dh =
8.43199384994911
rdh_sum =
8.30304807711916
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 26
dh =
8.49375084994911
rdh_sum =
9.30304807711916
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 27
dh =
```

```
8.55550784994911
rdh_sum = 10.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 28
dh = 8.61726484994911
rdh_sum = 11.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 29
dh = 8.67902184994911
rdh_sum = 12.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 30
dh = 8.74077884994911
rdh_sum = 13.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 31
dh = 8.80253584994911
rdh_sum = 14.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 32
dh = 8.86429284994911
rdh_sum = 15.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 33
dh = 8.92850634994911
rdh_sum = 16.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 34
dh = 8.99763184994911
rdh_sum = 17.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 35
dh = 9.06921334994911
rdh_sum = 18.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 36
dh = 9.14079534994911
rdh_sum = 19.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 37
dh = 9.21237734994911
rdh_sum = 20.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 38
dh = 9.28395934994911
rdh_sum = 21.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 39
dh = 9.29104334994911
rdh_sum = 22.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 40
dh = 9.23362884994911
rdh_sum = 23.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 41
dh = 9.17621384994911
rdh_sum = 24.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 42
dh =
```

```
          9.11879934994911
rdh_sum = 25.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 46
dh =
          8.51266434994911
rdh_sum = 26.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 47
dh =
          8.67014434994911
rdh_sum = 27.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 48
dh =
          8.75216534994911
rdh_sum = 28.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 54
dh =
          8.10490234994911
rdh_sum = 29.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 55
dh =
          8.10396484994911
rdh_sum = 30.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 56
dh =
          8.10302784994911
rdh_sum = 31.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 57
dh =
          8.08615484994911
rdh_sum = 32.3030480771192
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 58
dh =
          8.05334634994911
rdh_sum = 32.9611078374696
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 81
dh =
          2.73182434994911
rdh_sum = 33.060641063076
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 82
dh =
          2.93523634994911
rdh_sum = 33.1749362030563
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 83
dh =
          3.13864834994911
rdh_sum = 33.3048743341427
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 84
dh =
          3.34206034994911
rdh_sum = 33.4513007993313
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 85
dh =
          3.51251484994911
rdh_sum = 33.6121677100445
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 86
dh =
          3.61705434994911
rdh_sum = 33.7821615765649
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 87
dh =
```

```
3.68863634994911
rdh_sum = 33.9585202021471
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 88
dh = 3.76021834994911
rdh_sum = 34.1413351560345
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 89
dh = 3.83180034994911
rdh_sum = 34.3306961807534
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 90
dh = 3.90338234994911
rdh_sum = 34.5266911667225
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 91
dh = 4.09501334994911
rdh_sum = 34.7408639313314
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 92
dh = 4.40669284994911
rdh_sum = 34.9858228976088
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 93
dh = 4.71837234994911
rdh_sum = 35.2629355442306
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 94
dh = 5.03005234994911
rdh_sum = 35.5733970026742
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 101
dh = 2.70403334994911
rdh_sum = 35.6709836943991
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 102
dh = 2.78122934994911
rdh_sum = 35.7740194540649
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 103
dh = 2.85842584994911
rdh_sum = 35.8826349405054
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 104
dh = 2.93562234994911
rdh_sum = 35.9969589416378
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 105
dh = 3.01281834994911
rdh_sum = 36.1171183287483
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 106
dh = 3.09001434994911
rdh_sum = 36.2432380895308
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 107
dh = 3.16721034994911
rdh_sum = 36.3754412504003
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 108
dh =
```



```
3.24440684994911
rdh_sum = 36.5138488765845
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 109
dh = 3.34609834994911
rdh_sum = 36.6606109608323
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 110
dh = 3.47228434994911
rdh_sum = 36.8180197295694
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 111
dh = 3.59847034994911
rdh_sum = 36.9863763827767
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 112
dh = 3.72465634994911
rdh_sum = 37.1659724952545
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 113
dh = 3.85084234994911
rdh_sum = 37.3570897602748
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 114
dh = 3.97702884994911
rdh_sum = 37.5599997891737
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 115
dh = 4.03438634994911
rdh_sum = 37.7683571435422
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 121
dh = 3.32893684994911
rdh_sum = 37.9136950469343
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 122
dh = 3.42080034994911
rdh_sum = 38.066723046991
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 123
dh = 3.51266384994911
rdh_sum = 38.2276028220041
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 124
dh = 3.60452734994911
rdh_sum = 38.3964923915795
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 125
dh = 3.69639084994911
rdh_sum = 38.5735460430048
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 154
dh = -2.18406765005089
rdh_sum = 38.7435766738076
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 155
dh = -2.23775365005089
rdh_sum = 38.9215282043524
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 156
dh =
```

```

-2.29144015005089
rdh_sum = 39.1075413130466
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 157
dh = -2.34512665005089
rdh_sum = 39.3017530855341
ans =
Berm Factor Calculation: Iteration 26, Profile Segment: 158
dh = -2.39881315005089
rdh_sum = 39.5042970279491
ans =
!----- End Berm Factor Calculation, Iter: 26 -----!
berm_width = 76
rB = 0.287779833289908
rdh_mean = 0.519793381946699
gamma_berm = 0.86180621951191
slope = 0.0969396778075415
Irb = 1.06407648101951
gamma_berm = 0.86180621951191
gamma_perm = 1
gamma_beta = 1
gamma_rough = 0.75
gamma = 0.646354664633933
ans =
!!! - - Iribaren number: 0.92 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:10.3 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new = 8.13752662564323
R2del = 0.0657995800164244
Z2 = 18.2840489755923
% final 2% runup elevation
Z2=R2_new+SWEL
Z2 = 18.2840489755923
diary off
-1.000000e+00

```