DENIS HANYS ENGINEERING SERVICE, LL C 10107 Inwood Drive Houston, Texas 77042-2439 (713) 783-6110

May 24, 2021

Mr. James Elliott 12139 Glen Way Drive Houston, Texas 77070

Dear Mr. Elliott,

Enclosed is the report of the visual inspection that was conducted on the structural foundation of the residence located at 4815 Chantilly Lane, Houston, Texas, by Mr. Denis G. Hanys, PE. This inspection was conducted for you on the date of May 24, 2021.

The information you need should be contained in the attached report. Should you have any questions, however, please give us a call. It was a pleasure to have done business with you, and we hope we may be of additional service to you some time in the future.

Denis Hanys, PÉ President

## FOUNDATION INSPECTION REPORT REPORT NO. 21-25

#### **1.0 INTRODUCTION**

The purpose of this report is to describe the results of a level B inspection that was conducted on the foundation of the residential building described below. This inspection was conducted at the request of the Client to provide an opinion regarding the performance of this foundation as a primary load-bearing structural member of this building.

In the conduct of this work, Denis Hanys Engineering Service, LLC. has acted as an engineering consultant to provide information to the Client for use as the Client may see fit. As such, Denis Hanys Engineering Service, LLC. involvement in any activities related to this residence shall terminate when the final report is submitted unless otherwise requested in writing by the Client. As a consultant to the Client, it is the sole function of Denis Hanys Engineering Service, LLC. to provide information to the Client regarding the condition of the foundation and not to make any binding judgments on any condition reported nor to determine the need for repair. Such judgments are, of course, left to the Client.

This inspection consisted of a visual examination of the accessible portions of the foundation and the remainder of the structure. In such an examination, it is recognized that a diagnosis of foundation performance can possibly be compromised by the inability to gain access to large portions of the foundation for visual examination, the lack of definition of design and construction parameters that often govern the foundation performance, and inherent limitations to the state of the art of engineering analysis of foundation performance. Denis Hanys Engineering Service, LLC. has conscientiously utilized all visual data available to every extent reasonable and has attempted to acquire available information such that a reasonably accurate diagnosis could be made. Where specifically requested by the Client, Denis Hanys Engineering Service, LLC. has provided recommendations for remedial action, should such be warranted. Such recommendations are provided for information, and Denis Hanys Engineering Service, LLC. assumes no responsibility in the event such repair work should be done. Finally, this report was written to satisfy the specific objectives of the Client. Neither the author of this report nor Denis Hanys Engineering Service, LLC. assume any responsibility whatsoever for the use of this report by any third party person. Client(s) agree in using this report that DHES is not required to give testimony or attendance in Court or at any other hearing with reference to matters discussed herein, unless prior arrangements are made.

#### 2.0 PROJECT DESCRIPTION

The residence inspected was located at 4815 Chantilly Lane, Houston, Texas. The Client for this inspection was Mr. James Elliott. The residence was not occupied and the client was present during the inspection.

The residence inspected was a one-story, single family wood frame dwelling with brick veneer and wood siding. The structure had a combination gable, hip and shed roof with a composition shingle covering. A patio was located in the back yard. The garage was detached and was covered with wood siding. The structure had what appeared to be a reinforced concrete grade-beam-stiffened slab-on-ground foundation. The residence outline is depicted on the resident outline sketch.

#### 3.0 INSPECTION RESULTS

### 3.1 OBSERVATIONS

Inspection of the foundation of this residence failed to reveal the existence of a severely deflected condition or evidence indicating that major foundation instabilities were present. A slight out-of-level condition was observed in the master bedroom window stool, although, the counters, sills, etc. were observed to be in a reasonably level condition. Deviations from level were observed at isolated locations in the floor. These deviations were measured using an electronic level manometer and the results have been superimposed upon the resident outline sketch. Compensation was made in the floor coverings so that the measurements shown should reflect the true height of the floors. From this sketch, it can be seen that the interior floors tend to be higher in relative elevation in the center portion of the structure. Although, slope was measured on the interior floors, the doors and windows generally fit properly in their frames and doors opened and closed freely. Minor cracks were on the exterior walls, and minor compression ridges were observed on the interior walls; however, it is our opinion that the magnitude of these distortions was not sufficient to be indicative that a severe foundation problem was present.

The concrete in the visible portion of the foundation was observed to be free of significant honeycomb pockets or exposed reinforcement steel, although, minor cracks were observed on the surface of the perimeter grade beams and on the surface of the garage slab. It is important to understand, however, that cracks can be extremely difficult to see and other cracks could feasibly be detected by the Client at some time after the inspection has been completed. Since cracking is a normal property of concrete, and is not necessarily indicative of a foundation functional failure, neither the author nor Denis Hanys Engineering Service, LLC. assume any responsibility whatsoever should additional cracks be found.

#### 3.2 ANALYSIS

In its report titled "Soil Survey of Harris County", the U. S. Soil Conservation Service has classified the soil in this general area to be a member of the Clodine sandy loam family of soils. The report shows soils in this classification to have moderate shrink/swell potentials on the surface with higher shrink/swell potentials just below the surface because of the percentage of expansive clays present.

A profile analysis was performed across sections of the foundation slab, where it appears as though the most slope is present. This is included in the **PROFILE ANALYSIS** Section of this report. Based upon this analysis the amount of bending in the east portion of the structure exceeds the L/360 bending ratio a slight amount.

The presence of sloping floors combined with the absence of a significant amount of foundation-induced damage leads one to believe that the conditions which were the cause of the sloping floors did not occur in the recent past. This condition also tends to lead one to believe that the foundation has possibly reached some reasonable point of stability. According to the client, several trees were removed from the vard adjacent to the structure at some time in the distant past. This was possibly the cause of the slope. With the trees removed, one would expect that the moisture in the support soil has possibly reached some reasonable point of stability. On this basis, no remedial measures are recommended at this time except for the Owner to maintain the moisture content of the soil in as uniform a condition throughout the year as reasonably possible. During periods of drought soil maintenance procedure (balance moisture content around the perimeter) be continued or implemented immediately, because the slab could undergo a drastic change in a short period of time when the soil is allowed to become too dry. It must be understood that any conclusions regarding foundation performance are based upon a very limited amount of evidence. The acceptability of the limitations used in deriving these conclusions and the acceptability of the sloping condition in the floors is totally left to the Client.

#### 4.0 CONCLUSIONS

Based upon the observations made during this inspection, and the analysis that was performed, it is our opinion, the conditions that produced the slope did not occur in the recent past. It is also our opinion, the foundation has reached some reasonable point of stability. No recommendations for remedial measures are provided, except for normal foundation maintenance. This is described in the previous section of this report.

The foregoing discussion is based upon an analysis of information which was obtained through a visual inspection of the foundation and its associated structure combined with such engineering information that was otherwise available. Although this process yields reliable results the majority of the time, it must be recognized that occasionally latent conditions may exist which are not always amenable to detection during a visual inspection of this type. Thus, any inspection of this type is essentially an opinion upon which the Client may place a reasonable degree of reliance; but, under no conditions can such an opinion be considered absolute nor can such opinion be used without any assumption of risk. Also, this inspection was conducted to provide specific information to the Client. The author of this report, therefore, assumes no responsibility whatsoever for the use of this information by another.

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# 5.0 CERTIFICATION

I hereby certify that I did conduct the assessment of the foundation performance of the residence located at 4815 Chantilly Lane, Houston, Texas, on the date of May 24, 2021. I further certify that I am a Licensed Professional Engineer in the State of Texas, whose registration number is 49157. I further certify that the findings and conclusions contained in this report have been, to the best of my knowledge, correctly and completely stated without bias and are based upon my observations and my experience. No responsibility is assumed for events that occur subsequent to the submission of this report and no warranty, either expressed or implied, is hereby made.

Han Denis G. Hanys

Licensed Professional Engineer FIRM # 3665



| DENIS HANYS ENGINEERING SERVICE, LLC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | FOUNDATION INSPECTION CHECKLIST                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DENIS HANYS ENGINEERING SERVICE, LLC<br>10107 INWOOD DR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The other many a state,                                                                                                                                       |
| HOUSTON, TEXAS 77042-2439                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CLIENT: JIM ELLIOTT                                                                                                                                           |
| (713) 783-6110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CLIENT: Jim EULIOTT<br>12139 GEN WAY DE.<br>Houston, Tekas 77070                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ADDRESS: 4815 CHANTING LN                                                                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 451 M, Ce, 21-25                                                                                                                                              |
| STRUCTURAL CONFIGURATION<br>RESIDENCE OCCUPIED: Y N WITNESSED BY: CLIENT: N<br>NO. OF STORIES: ON & Brack FIREPLACE LOCATION:<br>TYPE ROOF: GABLE!, Hip, SHOD TYPE ROOF COVERING: C<br>GARAGE: ATTACHED (DETACHED) CARPORT NONE SIDING IF DETACHED<br>FOUNDATION: REINFOTICED SLAB -ON - GROUND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CLIENT'S AGENT Y N OWNER'S AGENT: Y N<br><u>NIA</u><br>PATIO LOCATION: <u>BACK YARD</u><br>POOL LOCATION: <u>NIA</u><br>CHED:                                 |
| OBSERVATIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                               |
| EXTERIOR CRACKS: ON DIAG HL > 1/3"ON WEST WALL /<br>WEST OF NECORNAL JUNG GB, DIAG HLON NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12-19 50.00 NW COL. DIAG HL(+) ON NO. WALLID<br>WAL NOME CONDE VINTO GB                                                                                       |
| CASING SEPARATION: Y 🛞                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                               |
| FASCIA SEPARATION ON DO EAST FB SUP C NE OF OF SE OF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 165 G                                                                                                                                                         |
| AVERAGE HEIGHT OF VISIBLE SLAB SHOWING:<br>REINFORCING STEEL VISIBLE: Y@<br>FOUNDATION SOIL ADEQUATELY COVERED: ON<br>CRACKS IN SIDEWALK/PATIO/DRIVEWAY ON<br>INTERIOR WALL CRACKS ON VOIT CRON FOYDE SO. WALL OU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | HONEYCOMB POCKETS: Y(N)                                                                                                                                       |
| FOUNDATION SOIL ADEQUATELY COVERED:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CRACKS IN GARAGE FLOOR: ON                                                                                                                                    |
| CRACKS IN SIDEWALK/PATIO/DRIVEWAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TREE ROOTS NEXT TO STRUCTURE: YN                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                               |
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| FLOORS LEVEL: Y N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| DOORS FIT: (Y) N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                               |
| COUNTER TOPS LEVEL ON MASION BOD WST W 10"/12'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                               |
| PIER & BEAM ONLY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                               |
| PADS AND BLOCKS TILTED: Y N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DETERIORATED WOODVISIBLE: Y N                                                                                                                                 |
| EXCESSIVE MOISTURE IN CRAWL SPACE: V N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | UNSUPPORTED SILLS: Y N<br>ADEQUATE VENTIDATION: Y N                                                                                                           |
| SOIL CONTACTING WOOD: YW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                               |
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| RECOMMENDATIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                               |
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| RECOMMENDATIONS:<br>THE CONDITION THAT PRODUCED SCORE DOGS A<br>PAST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | NOT APPOAR TO HAVE OCCURRED IN RECONT                                                                                                                         |
| THE CONDITION THAT PRODUCED SLOPE DOGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NOT APPOAR TO HAVE OCCURRED IN RECONT                                                                                                                         |
| THE CONDITION THAT PRODUCED SLOPE DOGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NG SERVICE                                                                                                                                                    |
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| THE CONDITION THAT PEDBULCED SCORE POES /         PAST         FEE         A FEE OF \$ 375 00         FOR PROFESSIONAL ENGINEERING         WAS PAID AT THE INSPECTION         CHECK # 1955         WAS NOT PAID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NG SERVICE                                                                                                                                                    |
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# **SKETCHES**

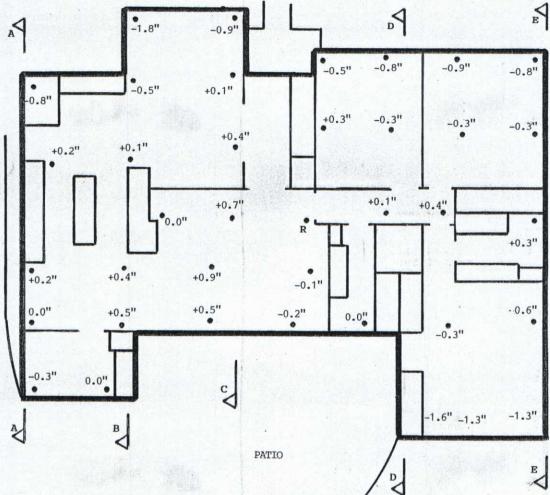
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AND LOCATIONS OF SECTIONS 4815 CHANTILLY LANE

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RESIDENCE OUTLINE SHOWING MEASURED RELATIVE HEIGHTS

4815 CHANTILLY LANE HOUSTON, TEXAS



**R** - SIGNÍFIES THE 0.0" DATUM. ALL LEVEL MEASUREMENTS ÁRE RELATIVE TO THIS DATUM. COMPENSATION WAS MADE IN THE FLOOR COVERINGS SO THAT THE MEASUREMENTS SHOWN, REFLECT THE TRUE HEIGHT OF THE FLOORS.

GARAGE

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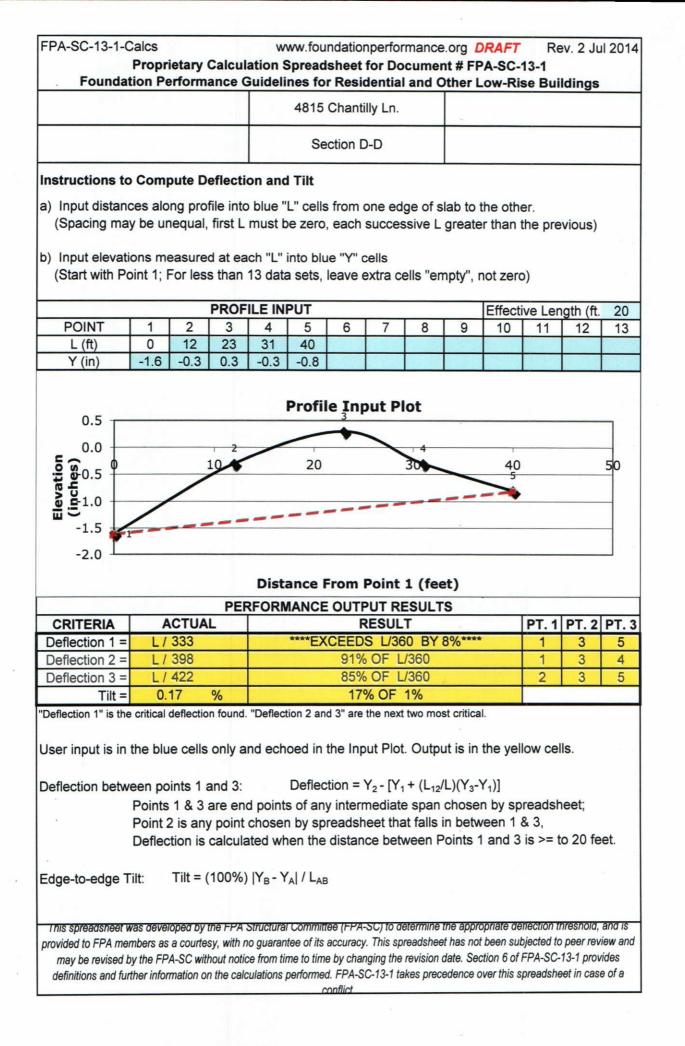
# **PROFILE ANALYSIS**

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|                                                                                                                             |                                                                                       | CTUA                                                              | .L                                                               |                                       |                                           |                                                                            | OF L                                                    |                                                                                          |                                                      |                                                   | No. of Concession, name   | PT. 2           |    |
| CRITERIA                                                                                                                    | 11                                                                                    | 431                                                               |                                                                  |                                       |                                           |                                                                            | OFL                                                     | And the second second                                                                    |                                                      |                                                   | 2                         | 4               | 5  |
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| Deflection 1 =<br>Deflection 2 =                                                                                            | L/4                                                                                   | 459                                                               | %                                                                |                                       |                                           | 79%                                                                        | OF L<br>% OF                                            |                                                                                          |                                                      |                                                   |                           | 4               |    |
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| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>ser input is in                     | L/4<br>L/4<br>0.1<br>e critical d<br>the blue                                         | 459<br>3<br>leflectio<br>e cells                                  | on found.<br>s only a                                            |                                       | oed in                                    | 79%<br>13<br>d 3" are<br>the Inp                                           | % OF<br>the next<br>out Plot                            | 1%<br>two mos                                                                            | ut is in                                             | the yel                                           |                           |                 |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>ser input is in                     | L/4<br>L/4<br>0.1<br>e critical d<br>the blue                                         | 459<br>3<br>leflectio<br>e cells<br>ints 1 a                      | on found.<br>conly at<br>and 3:                                  | nd ech                                | oed in<br>Deflec                          | 79%<br>13<br>d 3" are<br>the Inp<br>tion =                                 | the next<br>out Plot<br>$Y_2 - [Y_1]$                   | 1%<br>: two mo:<br>:. Outpu<br>: + (L <sub>12</sub> /                                    | ut is in<br>′L)(Y <sub>3</sub> -                     | the yel<br>Y <sub>1</sub> )]                      | low ce                    | lls.            |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in                    | L/4<br>0.1<br>e critical d<br>the blue<br>veen point<br>Points<br>Point 2             | 459<br>3<br>effectio<br>e cells<br>ints 1 a<br>1 & 3<br>; is any  | on found.<br>conly as<br>and 3:<br>are end<br>y point            | nd ech<br>d point<br>chose            | Deflects of any<br>n by sp                | 79%<br>13<br>d 3" are<br>the Inp<br>tion =<br>y interr<br>readsh           | % OF<br>the next<br>out Plot<br>$Y_2 - [Y_1$<br>mediate | $\frac{1\%}{1\%}$ two most<br>. Output<br>. + (L <sub>12</sub> /<br>e span<br>at falls i | ut is in<br>/L)(Y <sub>3</sub> -<br>chose<br>in betv | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | low ce<br>preadsl<br>& 3, | lls.<br>neet;   |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in                    | L/4<br>0.1<br>e critical d<br>the blue<br>yeen poin<br>Points                         | 459<br>3<br>leflectio<br>e cells<br>ints 1 a<br>1 & 3<br>; is any | on found.<br>conly as<br>and 3:<br>are end<br>y point            | nd ech<br>d point<br>chose            | Deflects of any<br>n by sp                | 79%<br>13<br>d 3" are<br>the Inp<br>tion =<br>y interr<br>readsh           | % OF<br>the next<br>out Plot<br>$Y_2 - [Y_1$<br>mediate | $\frac{1\%}{1\%}$ two most<br>. Output<br>. + (L <sub>12</sub> /<br>e span<br>at falls i | ut is in<br>/L)(Y <sub>3</sub> -<br>chose<br>in betv | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | low ce<br>preadsl<br>& 3, | lls.<br>neet;   |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in<br>Deflection betw | L / 4<br>0.1<br>e critical d<br>the blue<br>veen poin<br>Points<br>Point 2<br>Deflect | 459<br>Beflection<br>ants 1 a<br>1 & 3<br>I is any<br>tion is     | on found.<br>conly as<br>and 3:<br>are end<br>y point<br>calcula | nd ech<br>d point<br>chose<br>ated wh | Deflect<br>s of any<br>n by sp<br>nen the | 79%<br>13<br>d 3" are<br>the Inp<br>tion =<br>y interr<br>readsh<br>distan | % OF<br>the next<br>out Plot<br>$Y_2 - [Y_1$<br>mediate | $\frac{1\%}{1\%}$ two most<br>. Output<br>. + (L <sub>12</sub> /<br>e span<br>at falls i | ut is in<br>/L)(Y <sub>3</sub> -<br>chose<br>in betv | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | low ce<br>preadsl<br>& 3, | lls.<br>neet;   |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in<br>Deflection betw | L / 4<br>0.1<br>e critical d<br>the blue<br>veen poin<br>Points<br>Point 2<br>Deflect | 459<br>Beflection<br>ants 1 a<br>1 & 3<br>I is any<br>tion is     | on found.<br>conly as<br>and 3:<br>are end<br>y point<br>calcula | nd ech<br>d point<br>chose<br>ated wh | Deflects of any<br>n by sp                | 79%<br>13<br>d 3" are<br>the Inp<br>tion =<br>y interr<br>readsh<br>distan | % OF<br>the next<br>out Plot<br>$Y_2 - [Y_1$<br>mediate | $\frac{1\%}{1\%}$ two most<br>. Output<br>. + (L <sub>12</sub> /<br>e span<br>at falls i | ut is in<br>/L)(Y <sub>3</sub> -<br>chose<br>in betv | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | low ce<br>preadsl<br>& 3, | lls.<br>neet;   |    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =                                                                          | L / 4<br>0.1<br>e critical d<br>the blue<br>veen poin<br>Points<br>Point 2<br>Deflect | 459<br>Beflection<br>ants 1 a<br>1 & 3<br>I is any<br>tion is     | on found.<br>conly as<br>and 3:<br>are end<br>y point<br>calcula | nd ech<br>d point<br>chose<br>ated wh | Deflect<br>s of any<br>n by sp<br>nen the | 79%<br>13<br>d 3" are<br>the Inp<br>tion =<br>y interr<br>readsh<br>distan | % OF<br>the next<br>out Plot<br>$Y_2 - [Y_1$<br>mediate | $\frac{1\%}{1\%}$ two most<br>. Output<br>. + (L <sub>12</sub> /<br>e span<br>at falls i | ut is in<br>/L)(Y <sub>3</sub> -<br>chose<br>in betv | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | low ce<br>preadsl<br>& 3, | lls.<br>neet;   |    |

|                                                                                                                                      |                                                                                       |                                                                                 |                                                           |                                                    | 4815                                                             | Chanti                                                                                                                                                 | lly Ln.                                                                                                              |                                                                                                                                |                                                                                 |                                                  |                                                    |                     |        |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|---------------------|--------|
|                                                                                                                                      |                                                                                       |                                                                                 |                                                           |                                                    | Se                                                               | ection B                                                                                                                                               | -B                                                                                                                   |                                                                                                                                |                                                                                 |                                                  |                                                    |                     |        |
| nstructions to<br>a) Input distanc<br>(Spacing may<br>b) Input elevation<br>(Start with Po                                           | ces alo<br>y be un<br>ons me                                                          | ng pro<br>nequal,<br>easure                                                     | ofile into<br>, first L<br>ed at ea                       | blue "<br>must b<br>ch "L"                         | L" cells<br>be zero<br>into blu                                  | , each :<br>ue "Y" c                                                                                                                                   | succes<br>ells                                                                                                       | sive L                                                                                                                         | greate                                                                          | er than                                          | the pre                                            | evious)             |        |
|                                                                                                                                      |                                                                                       |                                                                                 | PROF                                                      | ILE IN                                             | PUT                                                              |                                                                                                                                                        |                                                                                                                      |                                                                                                                                |                                                                                 | Effect                                           | tive Ler                                           | ngth (ft.           | 20     |
| POINT                                                                                                                                | 1                                                                                     | 2                                                                               | 3                                                         | 4                                                  | 5                                                                | 6                                                                                                                                                      | 7                                                                                                                    | 8                                                                                                                              | 9                                                                               | 10                                               | 11                                                 | 12                  | 13     |
| L (ft)<br>Y (in)                                                                                                                     | 0.0                                                                                   | 7<br>0.5                                                                        | 13                                                        | 24<br>0.1                                          | 33<br>-0.5                                                       | 40                                                                                                                                                     |                                                                                                                      |                                                                                                                                |                                                                                 |                                                  | -                                                  |                     |        |
| 0.5                                                                                                                                  |                                                                                       | *                                                                               |                                                           | -                                                  |                                                                  | 4                                                                                                                                                      |                                                                                                                      |                                                                                                                                |                                                                                 |                                                  |                                                    |                     |        |
| A CONTRACTOR OF                      | <                                                                                     | *                                                                               | 3                                                         | -                                                  |                                                                  | 4                                                                                                                                                      |                                                                                                                      |                                                                                                                                |                                                                                 |                                                  |                                                    |                     |        |
|                                                                                                                                      |                                                                                       |                                                                                 |                                                           |                                                    |                                                                  |                                                                                                                                                        |                                                                                                                      |                                                                                                                                | 5                                                                               |                                                  |                                                    |                     | _      |
| Elevation<br>0.5<br>0<br>1.0                                                                                                         |                                                                                       |                                                                                 | 10                                                        |                                                    | 20                                                               |                                                                                                                                                        |                                                                                                                      | 30                                                                                                                             | 5                                                                               | 40                                               | )                                                  |                     | 50     |
| -1.5                                                                                                                                 |                                                                                       |                                                                                 | 10                                                        |                                                    | 20                                                               |                                                                                                                                                        |                                                                                                                      | 30                                                                                                                             |                                                                                 | 40                                               | •                                                  |                     | _50    |
|                                                                                                                                      |                                                                                       |                                                                                 | 10                                                        | Dist                                               | 20                                                               | From I                                                                                                                                                 | Point                                                                                                                | 30                                                                                                                             |                                                                                 | 40                                               | •                                                  |                     | 50     |
| -1.5                                                                                                                                 |                                                                                       |                                                                                 |                                                           |                                                    |                                                                  |                                                                                                                                                        |                                                                                                                      | 1 (fee                                                                                                                         | et)                                                                             | 40                                               | •                                                  |                     | _50    |
| -1.5<br>-2.0                                                                                                                         |                                                                                       |                                                                                 |                                                           |                                                    |                                                                  | OUTF<br>R                                                                                                                                              | UT RI                                                                                                                | 30<br>1 (fee<br>ESULT                                                                                                          | et)                                                                             | 40                                               | PT. 1                                              | PT. 2               |        |
| -1.5<br>-2.0<br>CRITERIA<br>Deflection 1 =                                                                                           | L/                                                                                    | 407                                                                             |                                                           |                                                    |                                                                  | E OUTF<br>R<br>89%                                                                                                                                     |                                                                                                                      | 30<br>1 (fee<br>ESULT<br>T<br>/360                                                                                             | et)                                                                             | 40                                               | PT. 1                                              | 4                   | 6      |
| -1.5<br>-2.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =                                                                         | L/<br>L/                                                                              |                                                                                 |                                                           |                                                    |                                                                  | E OUTP<br>R<br>89%<br>81%                                                                                                                              | OF L                                                                                                                 | 30<br>1 (fee<br>ESULT<br>T<br>/360<br>/360                                                                                     | et)                                                                             | 40                                               | PT. 1                                              |                     |        |
| -1.5<br>-2.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =                                             | L /<br>L /<br>L /<br>0.3                                                              | 407<br>444<br>487<br>38                                                         | %                                                         | RFORM                                              | MANCE                                                            | E OUTF<br>89%<br>81%<br>74%<br>389                                                                                                                     | OF L<br>OF L<br>OF L<br>OF L<br>OF L                                                                                 | 30<br>1 (fee<br>ESULT<br>T<br>/360<br>/360<br>/360<br>1%                                                                       | et)<br>S                                                                        | 6                                                | PT. 1<br>1<br>3                                    | <b>4</b><br>5       | 6<br>6 |
| -1.5<br>-2.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in | L /<br>L /<br>0.3<br>e critical of<br>the blu<br>een po<br>Points<br>Point 2          | 407<br>444<br>487<br>38<br>deflection<br>ints 1<br>1 & 3<br>2 is any            | %<br>on found.<br>s only a<br>and 3:<br>are en<br>y point | "Deflect<br>nd ech                                 | tion 2 an<br>oed in<br>Deflects<br>s of an<br>n by sp            | E OUTF<br>R<br>89%<br>81%<br>74%<br>389<br>d 3" are                                                                                                    | PUT RI<br>ESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>6 OF<br>the next<br>ut Plot<br>$Y_2 - [Y_1$<br>nediate<br>eet that | 30<br>1 (fee<br>ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>: two mo<br>: Output<br>+ (L <sub>12</sub> /<br>e span<br>at falls | et)<br>S<br>st critica<br>ut is in<br>/L)(Y <sub>3</sub> -'<br>chose<br>in betw | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | PT. 1<br>1<br>3<br>1<br>llow ce<br>preadsł<br>& 3, | 4<br>5<br>3<br>Ils. | 6<br>6 |
| -1.5<br>-2.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =                                                       | L /<br>L /<br>0.3<br>e critical d<br>the blu<br>een po<br>Points<br>Point 2<br>Deflec | 407<br>444<br>487<br>38<br>deflection<br>ints 1<br>1 & 3<br>2 is any<br>tion is | %<br>on found.<br>s only a<br>and 3:<br>are en<br>y point | "Deflect<br>nd ech<br>d point<br>choser<br>ated wh | tion 2 an<br>oed in<br>Deflects<br>s of an<br>n by sp<br>nen the | E OUTF<br>R<br>89%<br>81%<br>74%<br>389<br>d 3" are<br>the Inp<br>the Inp<br>the Inp<br>the Inp<br>the Inp<br>the Inp<br>the Inp<br>the Inp<br>the Inp | PUT RI<br>ESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>6 OF<br>the next<br>ut Plot<br>$Y_2 - [Y_1$<br>nediate<br>eet that | 30<br>1 (fee<br>ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>: two mo<br>: Output<br>+ (L <sub>12</sub> /<br>e span<br>at falls | et)<br>S<br>st critica<br>ut is in<br>/L)(Y <sub>3</sub> -'<br>chose<br>in betw | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | PT. 1<br>1<br>3<br>1<br>llow ce<br>preadsł<br>& 3, | 4<br>5<br>3<br>Ils. | 6<br>6 |

|                                                                                                                                                                            |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              | 4815                                                                             | Chanti                                                                                                          | lly Ln.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 | A 19                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------|----------------------|
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              | Se                                                                               | ection C                                                                                                        | C-C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
| nstructions to                                                                                                                                                             | Comput                                                                                                                                 | te De                                                                                 | eflectio                                                                              | on and                                                                                       | l Tilt                                                                           |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              | 5.<br>14                                                                                     |                                                                       |                                                                               |                                 |                      |
| ) Input distance                                                                                                                                                           |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  | s from (                                                                                                        | one ed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ne of s                                                                                                                                      | lah to t                                                                                     | the oth                                                               | or                                                                            |                                 |                      |
| (Spacing may                                                                                                                                                               |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                                            |                                                                                              |                                                                       |                                                                               | evious)                         |                      |
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       | ÷.                                                                            |                                 |                      |
| ) Input elevation                                                                                                                                                          |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
| (Start with Po                                                                                                                                                             | int 1; For                                                                                                                             | riess                                                                                 | stnan                                                                                 | 13 data                                                                                      | a sets,                                                                          | leave e                                                                                                         | extra ce                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ells "er                                                                                                                                     | npty", r                                                                                     | not zer                                                               | 0)                                                                            |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       | PROF                                                                                  | ILE IN                                                                                       | PUT                                                                              |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              | Effect                                                                | ive Ler                                                                       | ngth (ft                        | 20                   |
| POINT                                                                                                                                                                      | 1                                                                                                                                      | 2                                                                                     | 3                                                                                     | 4                                                                                            | 5                                                                                | 6                                                                                                               | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8                                                                                                                                            | 9                                                                                            | 10                                                                    | 11                                                                            | 12                              | 13                   |
| L (ft)                                                                                                                                                                     |                                                                                                                                        | 6                                                                                     | 14                                                                                    | 19                                                                                           | 27                                                                               | 33                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
| Y (in)                                                                                                                                                                     | 0.5 0                                                                                                                                  | 0.9                                                                                   | 0.7                                                                                   | 0.4                                                                                          | 0.1                                                                              | -0.9                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              | 1.1                                                                                          | ALC: N                                                                |                                                                               |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        | 2                                                                                     |                                                                                       |                                                                                              | Profi                                                                            | le Inp                                                                                                          | out Pl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ot                                                                                                                                           |                                                                                              |                                                                       |                                                                               |                                 |                      |
| 1.0                                                                                                                                                                        | 1                                                                                                                                      | -                                                                                     |                                                                                       |                                                                                              | 3                                                                                |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
| ■ _ 0.5 ■                                                                                                                                                                  |                                                                                                                                        | •                                                                                     |                                                                                       |                                                                                              | ~                                                                                | 4                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  | -                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |                                                                                              |                                                                       |                                                                               |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        | -                                                                                     |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              | 5                                                                                            |                                                                       |                                                                               |                                 |                      |
| 0.0 H                                                                                                                                                                      |                                                                                                                                        |                                                                                       |                                                                                       |                                                                                              |                                                                                  |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              | 5                                                                                            | 1                                                                     |                                                                               |                                 |                      |
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| Elevation<br>0.0 (inches)                                                                                                                                                  |                                                                                                                                        |                                                                                       | 10                                                                                    |                                                                                              |                                                                                  | 2                                                                                                               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                              | 5                                                                                            | 2                                                                     | 6                                                                             |                                 | 40                   |
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| Elevati<br>0.0-0.5<br>-1.0                                                                                                                                                 |                                                                                                                                        |                                                                                       | 10                                                                                    | ~~.                                                                                          |                                                                                  | 2                                                                                                               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                              | 5                                                                                            |                                                                       | 6                                                                             |                                 | 40                   |
|                                                                                                                                                                            |                                                                                                                                        |                                                                                       | 10                                                                                    |                                                                                              | ance                                                                             | From                                                                                                            | Point                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 (fee                                                                                                                                       | *                                                                                            | 2                                                                     | 6                                                                             |                                 | 40                   |
| -1.0                                                                                                                                                                       |                                                                                                                                        |                                                                                       | PEF                                                                                   | Dista                                                                                        |                                                                                  |                                                                                                                 | UT RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SULT                                                                                                                                         | et)                                                                                          | 2                                                                     | <b>`</b>                                                                      |                                 |                      |
|                                                                                                                                                                            |                                                                                                                                        | TUAI                                                                                  | PEF                                                                                   | Dista                                                                                        |                                                                                  | E OUTR<br>F                                                                                                     | PUT RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ESULT<br>T                                                                                                                                   | et)                                                                                          | 2                                                                     | PT. 1                                                                         | PT. 2                           |                      |
| -1.0 CRITERIA Deflection 1 =                                                                                                                                               | L / 49                                                                                                                                 | 99                                                                                    | PEF                                                                                   | Dista                                                                                        |                                                                                  | E OUTF<br>F                                                                                                     | OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360                                                                                                                           | et)                                                                                          | 2                                                                     | PT. 1                                                                         | - 3                             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =                                                                                                                       | L / 49<br>L / 53                                                                                                                       | 9 <b>9</b><br>31                                                                      | PEF                                                                                   | Dista                                                                                        |                                                                                  | E OUTR<br>F<br>72%<br>68%                                                                                       | OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360<br>/360                                                                                                                   | et)                                                                                          | ×                                                                     | PT. 1<br>1<br>1                                                               | 3<br>5                          | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =                                                                                                     | L / 49<br>L / 53<br>L / 54                                                                                                             | 99<br>31<br>40                                                                        | PEF                                                                                   | Dista                                                                                        |                                                                                  | E OUTF<br>F<br>72%<br>68%<br>67%                                                                                | OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360<br>/360<br>/360                                                                                                           | et)                                                                                          | ×                                                                     | PT. 1                                                                         | - 3                             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =                                                                                                                       | L / 49<br>L / 53                                                                                                                       | 99<br>31<br>40                                                                        | PEF                                                                                   | Dista                                                                                        |                                                                                  | E OUTF<br>F<br>72%<br>68%<br>67%                                                                                | OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360<br>/360<br>/360                                                                                                           | et)                                                                                          | × ~                                                                   | PT. 1<br>1<br>1                                                               | 3<br>5                          | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =                                                                                           | L / 49<br>L / 53<br>L / 54<br>0.35                                                                                                     | 99<br>31<br>40                                                                        | PEF<br>L                                                                              | Dista                                                                                        | MANCE                                                                            | E OUTF<br>F<br>72%<br>68%<br>67%<br>35%                                                                         | OF L<br>OF L<br>OF L<br>OF L<br>OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>ESULT</b><br>T<br>/360<br>/360<br>/360<br>1%                                                                                              | et)<br>s                                                                                     |                                                                       | PT. 1<br>1<br>1                                                               | 3<br>5                          | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the                                                                   | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical def                                                                                     | 99<br>31<br>40<br>flection                                                            | PEF<br>L<br>%<br>n found.                                                             | Dist:                                                                                        | ion 2 an                                                                         | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>ad 3" are                                                            | OF L<br>OF L<br>OF L<br>OF L<br>OF L<br>OF L<br>OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo                                                                                           | et)<br>S<br>st critica                                                                       |                                                                       | PT. 1<br>1<br>1<br>2                                                          | 3<br>5<br>5                     | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the                                                                   | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical def                                                                                     | 99<br>31<br>40<br>flection                                                            | PEF<br>L<br>%<br>n found.                                                             | Dist:                                                                                        | ion 2 an                                                                         | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>ad 3" are                                                            | OF L<br>OF L<br>OF L<br>OF L<br>OF L<br>OF L<br>OF L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo                                                                                           | et)<br>S<br>st critica                                                                       |                                                                       | PT. 1<br>1<br>1<br>2                                                          | 3<br>5<br>5                     | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the                                           | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defi                                                                                    | 99<br>31<br>40<br>flection                                                            | PEF<br>L<br>%<br>n found.<br>only a                                                   | Dist:                                                                                        | ion 2 an                                                                         | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>d 3° are<br>the Inp                                                  | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>W OF<br>the next                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo                                                                                           | et)<br>S<br>st critica<br>ut is in                                                           | the ye                                                                | PT. 1<br>1<br>1<br>2                                                          | 3<br>5<br>5                     | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the<br>Deflection between                     | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defi                                                                                    | 99<br>31<br>40<br>flection<br>cells<br>ts 1 a                                         | PEF<br>L<br>%<br>n found.<br>only a                                                   | Dista<br>RFORM<br>"Deflect                                                                   | ion 2 an<br>oed in<br>Deflec                                                     | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = 1                                    | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D<br>0 OF L D<br>0 OF L D<br>0 OF L D<br>0 OF L D D D D D D D D D D D D D D D D D D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>. Outpu<br>+ (L <sub>12</sub> /                                                        | et)<br>S<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'                                  | the ye                                                                | PT. 1<br>1<br>2                                                               | 3<br>5<br>5                     | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in formation of the second<br>Deflection between | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>een point<br>Points 1                                           | 99<br>31<br>40<br>flection<br>cells<br>ts 1 a<br>& 3 a                                | PEF<br>L<br>%<br>only a<br>and 3:<br>are end                                          | Dista<br>RFORM<br>"Deflect<br>nd ech                                                         | ion 2 an<br>oed in<br>Deflects                                                   | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>d 3" are<br>the Inp<br>the Inp<br>ction = "<br>y interr              | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>OF L<br>W OF<br>the next<br>out Plot<br>$Y_2$ - $[Y_1]$<br>mediate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span                                                         | et)<br>'S<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose                        | the ye<br>Y₁)]<br>n by sp                                             | PT. 1<br>1<br>1<br>2<br>llow ce                                               | 3<br>5<br>5                     | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the<br>Deflection between                     | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>een point<br>Points 1<br>Point 2 is                             | 99<br>31<br>40<br>flection<br>cells<br>ts 1 a<br>& 3 a<br>s any                       | PEF<br>L<br>%<br>only a<br>and 3:<br>are end<br>point                                 | Dista<br>RFORM<br>"Deflect<br>nd ech<br>d points<br>choser                                   | ion 2 an<br>oed in<br>Deflects<br>of an<br>h by sp                               | E OUTF<br>F<br>72%<br>68%<br>67%<br>350<br>ad 3" are<br>the Inp<br>ction = '<br>y interr<br>readsh              | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF L<br>0 OF L D O                                                                                                          | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls                                             | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw              | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>reen 1                      | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,                            | 3<br>5<br>5<br>Ils.             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the<br>Deflection between                     | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>een point<br>Points 1                                           | 99<br>31<br>40<br>flection<br>cells<br>ts 1 a<br>& 3 a<br>s any                       | PEF<br>L<br>%<br>only a<br>and 3:<br>are end<br>point                                 | Dista<br>RFORM<br>"Deflect<br>nd ech<br>d points<br>choser                                   | ion 2 an<br>oed in<br>Deflects<br>of an<br>h by sp                               | E OUTF<br>F<br>72%<br>68%<br>67%<br>350<br>ad 3" are<br>the Inp<br>ction = '<br>y interr<br>readsh              | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF L<br>0 OF L D O                                                                                                          | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls                                             | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw              | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>reen 1                      | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,                            | 3<br>5<br>5<br>Ils.             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in formation of the second<br>Deflection between | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>the blue of<br>een point<br>Points 1<br>Point 2 is<br>Deflectio | 99<br>31<br>40<br>cells<br>ts 1 a<br>& 3 a<br>s any<br>on is o                        | PEF<br>L<br>%<br>only a<br>and 3:<br>are end<br>point<br>calcula                      | Dista<br>RFORM<br>"Deflect<br>and ech<br>d points<br>choser<br>ated wh                       | ion 2 an<br>oed in<br>Deflects<br>of an<br>o by sp<br>ien the                    | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = "<br>y interr<br>preadsh<br>e distan | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF L<br>0 OF L D O                                                                                                          | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls                                             | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw              | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>reen 1                      | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,                            | 3<br>5<br>5<br>Ils.             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in formation of the second<br>Deflection between | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>the blue of<br>een point<br>Points 1<br>Point 2 is<br>Deflectio | 99<br>31<br>40<br>cells<br>ts 1 a<br>& 3 a<br>s any<br>on is o                        | PEF<br>L<br>%<br>only a<br>and 3:<br>are end<br>point<br>calcula                      | Dista<br>RFORM<br>"Deflect<br>nd ech<br>d points<br>choser                                   | ion 2 an<br>oed in<br>Deflects<br>of an<br>o by sp<br>ien the                    | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = "<br>y interr<br>preadsh<br>e distan | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF L<br>0 OF L D O                                                                                                          | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls                                             | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw              | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>reen 1                      | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,                            | 3<br>5<br>5<br>Ils.             | PT. 3                |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the<br>Deflection between                     | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defit<br>the blue of<br>the blue of<br>een point<br>Points 1<br>Point 2 is<br>Deflectio | 99<br>31<br>40<br>cells<br>ts 1 a<br>& 3 a<br>s any<br>on is o                        | PEF<br>L<br>%<br>only a<br>and 3:<br>are end<br>point<br>calcula                      | Dista<br>RFORM<br>"Deflect<br>and ech<br>d points<br>choser<br>ated wh                       | ion 2 an<br>oed in<br>Deflects<br>of an<br>o by sp<br>ien the                    | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = "<br>y interr<br>preadsh<br>e distan | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF L<br>0 OF L D O                                                                                                          | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls                                             | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw              | the ye<br>Y <sub>1</sub> )]<br>n by sp<br>reen 1                      | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,                            | 3<br>5<br>5<br>Ils.             | PT. 3                |
| CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>Jser input is in f<br>Deflection betwee<br>Edge-to-edge T              | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defi<br>the blue of<br>een point<br>Points 1<br>Point 2 is<br>Deflectio<br>ilt: Til     | 99<br>31<br>40<br>flection<br>cells<br>ts 1 a<br>& 3 a<br>s any<br>on is o<br>lt = (1 | PEF<br>L<br>%<br>n found.<br>only a<br>and 3:<br>are end<br>point<br>calcula<br>100%) | Dista<br>RFORM<br>"Deflect<br>nd ech<br>d points<br>choser<br>ated wh<br> Y <sub>B</sub> - Y | ion 2 an<br>oed in<br>Deflects of an<br>by sp<br>hen the<br>ran by sp            | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = "<br>y interr<br>readsh<br>e distan  | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>0 OF L D OF L<br>0 OF L D OF              | ESULT<br>T<br>/360<br>/360<br>1%<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>t falls<br>ween F                                            | et)<br>S<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chose<br>in betw<br>Points 1  | the yes<br>(1)]<br>n by sp<br>veen 1<br>and 3                         | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,<br>is >= 1                 | 3<br>5<br>5<br>IIs.<br>to 20 fe | PT. 3<br>6<br>6<br>6 |
| -1.0<br>CRITERIA<br>Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>Jser input is in f<br>Deflection between<br>Edge-to-edge T     | L / 49<br>L / 53<br>L / 54<br>0.35<br>critical defi<br>the blue of<br>een point<br>Points 1<br>Point 2 is<br>Deflectio<br>iilt: Til    | error by the courtes                                                                  | PEF<br>L<br>%<br>n found.<br>only a<br>and 3:<br>are end<br>point<br>calcula<br>100%) | Dista<br>RFORM<br>"Deflect<br>nd ech<br>d points<br>choser<br>ated wh<br> Y <sub>B</sub> - Y | tion 2 and<br>oed in<br>Deflects of an<br>h by sp<br>hen the<br>$f_A   / L_{AE}$ | E OUTF<br>F<br>72%<br>68%<br>67%<br>35°<br>dd 3" are<br>the Inp<br>ction = "<br>y interr<br>readsh<br>e distan  | PUT RE<br>RESUL<br>OF L<br>OF L<br>OF L<br>0 OF C DF L<br>0 OF L DF C DF C DF C DF C DF | ESULT<br>T<br>/360<br>/360<br>/360<br>1%<br>two mo<br>two mo<br>+ (L <sub>12</sub> /<br>e span<br>at falls<br>ween F<br>etermine<br>readshee | et)<br>s<br>st critica<br>ut is in<br>'L)(Y <sub>3</sub> -'<br>chosen<br>in betw<br>Points 1 | the yes<br>(1)]<br>n by sp<br>veen 1<br>and 3<br>opnate de<br>been su | PT. 1<br>1<br>1<br>2<br>llow ce<br>preadsl<br>& 3,<br>i is >= i<br>bjected to | 3<br>5<br>5<br>IIs.<br>to 20 fe | PT.:<br>6<br>6<br>6  |



|                                                                                                                                    |                                                |                                                                    |                                                     |                              |                 | Chanti                                                              |                                                                            | and O                                                                |                                                    |                                                   |                            | 3-            |      |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------|------------------------------|-----------------|---------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------|----------------------------|---------------|------|
|                                                                                                                                    |                                                |                                                                    | 1                                                   |                              | Se              | ection E                                                            | -Е                                                                         |                                                                      |                                                    |                                                   |                            |               |      |
| nstructions to                                                                                                                     | Comp                                           |                                                                    | oflocti                                             | 0.0.000                      | T 114           |                                                                     |                                                                            |                                                                      |                                                    | -                                                 |                            |               |      |
| a) Input distand<br>(Spacing may<br>b) Input elevatio<br>(Start with Po                                                            | y be une<br>ons mea                            | equal,                                                             | first L<br>d at ea                                  | must b<br>ch "L"             | into blu        | , each<br>ue "Y" c                                                  | succes<br>ells                                                             | ssive L                                                              | greate                                             | er than                                           | the pre                    | evious)       |      |
|                                                                                                                                    |                                                |                                                                    | PROF                                                |                              | PUT             |                                                                     |                                                                            |                                                                      |                                                    | Effect                                            | ive Ler                    | ngth (ft.     | 20   |
| POINT                                                                                                                              | 1                                              | 2                                                                  | 3                                                   | 4                            | 5               | 6                                                                   | 7                                                                          | 8                                                                    | 9                                                  | 10                                                |                            | 12            | 13   |
| L (ft)                                                                                                                             | 0                                              | 12                                                                 | 22                                                  | 31                           | 40              |                                                                     |                                                                            |                                                                      | 32.50                                              |                                                   |                            |               |      |
| Y (in)                                                                                                                             | -1.3                                           | -0.6                                                               | 0.3                                                 | -0.3                         | -0.8            |                                                                     |                                                                            |                                                                      | -                                                  |                                                   |                            |               |      |
|                                                                                                                                    |                                                |                                                                    | 10                                                  | /                            | 20              |                                                                     |                                                                            | 4                                                                    |                                                    | 40                                                | 1                          |               | 50   |
| Elevation<br>1.0<br>Elevation                                                                                                      | /                                              | /                                                                  | 2                                                   |                              |                 |                                                                     |                                                                            |                                                                      |                                                    | 5                                                 |                            |               |      |
| -1.5                                                                                                                               |                                                |                                                                    |                                                     |                              |                 |                                                                     |                                                                            | 1 (fee                                                               |                                                    |                                                   | _                          |               |      |
|                                                                                                                                    | AC                                             | TUA                                                                |                                                     | FORM                         | IANCE           |                                                                     | ESUL                                                                       | ESULT                                                                | 5                                                  |                                                   | DT 1                       | DT 2          | DT · |
| CRITERIA                                                                                                                           | AU                                             | _                                                                  | -                                                   |                              | ****EX          |                                                                     |                                                                            | BO BY                                                                | 1%****                                             | C. State                                          | 2                          | PT. 2         | 5    |
| CRITERIA<br>Deflection 1 =                                                                                                         |                                                |                                                                    |                                                     |                              |                 |                                                                     | OF L                                                                       |                                                                      |                                                    |                                                   | 1                          | 3             | 5    |
| Deflection 1 =                                                                                                                     | L/3<br>L/3                                     |                                                                    |                                                     |                              |                 | 0070                                                                | UI L                                                                       |                                                                      |                                                    |                                                   |                            |               |      |
| Deflection 1 =<br>Deflection 2 =                                                                                                   | L/3<br>L/3<br>L/4                              | 62<br>18                                                           |                                                     |                              |                 | 86%                                                                 | OF L                                                                       |                                                                      |                                                    |                                                   | 1                          | 3             | 4    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =                                                                       | L / 3<br>L / 3<br>L / 4<br>0.10                | 62<br>18<br>0                                                      | %<br>n found.                                       | "Deflect                     | ion 2 an        | 86%<br>109                                                          | OF L<br>6 OF                                                               | 1%                                                                   | t critica                                          | I.                                                | 1                          | 3             | 4    |
| Deflection 1 =<br>Deflection 2 =<br>Deflection 3 =<br>Tilt =<br>Deflection 1" is the<br>User input is in the<br>Deflection between | L / 3<br>L / 3<br>L / 4<br>0.10<br>critical de | 62<br>18<br>0<br>eflectio<br>cells<br>nts 1 a<br>1 & 3 a<br>is any | n found.<br>only an<br>and 3:<br>are end<br>y point | nd ech<br>d points<br>choser | Deflects of any | 86%<br>109<br>d 3" are<br>the Inp<br>tion = `<br>y intern<br>readsh | OF L<br>6 OF<br>the next<br>ut Plot<br>$f_2 - [Y_1$<br>nediate<br>eet that | 1%<br>two mos<br>. Outpu<br>+ $(L_{12}/l$<br>e span o<br>at falls in | t is in<br>L)(Y <sub>3</sub> -`<br>chose<br>n betw | the yel<br>Y <sub>1</sub> )]<br>n by sp<br>veen 1 | llow ce<br>preadsł<br>& 3, | lls.<br>neet; |      |

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