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#### ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010 
 BOREHOLE No
 BH C52

 SHEET
 1 of 3

 REFERENCE No
 H11138

| PROJECT              |   | <u>w</u> ay l | Jpgrade (Cooroy to Curra) Section C  |   |        |                               |                           |             | DORDINATES 470942.3 E; 7096448.  | /        |
|----------------------|---|---------------|--|---|--------|-------------------------------|---------------------------|-------------|--|----------|
| LOCATION PROJECT No. | Cut 13  |               | SURFACE R.L. <u>81.20m</u> PLUNGE _  |   |        | <br>DATE S                    | — –<br>TARTED             |             |  |          |
| JOB No               |   |               | HEIGHT DATUM AHD BEARING   |   |        |                               |                           |             |  | Contract |
| (m)<br>(m)           | JOGER<br>ASING<br>ASH BORING<br>ASH BORING<br>BASH COSE | AMPLE         | MATERIAL<br>DESCRIPTION  | LOGY                                    | HERING | INTACT<br>STRENGTH<br>급풍士용그루교 | DEFECT<br>SPACING<br>(mm) | GRAPHIC LOG | ADDITIONAL DATA  AND  TEST RESULTS   | SAMPLES  |
| 0 81.20<br>- 81.05   | ₹∂≶ö REC 9  | , o           | TOPSOIL: Grey  | 74 7º                                   | حاد    |                               |                           |             |  | S        |
| 80.80                |   | A             | Silty CLAY (Residual): Brown, minor organics SILTSTONE (XW): Generally exhibits engineering properties of a brown, fine grained, moist, very stiff to hard, high plasticity, gravelly silty clay.  | **********************                  | (CI)   |                               |                           |             | Based on driller's logs only  2,7,10 N=17  | SPT :    |
|                      |   |               |  | X X                                     |        | ‡                             | -                         |             | N>50   | - 1      |
| 78.20                | 100<br>(40)   | :             | SILTSTONE (MW): Grey mottled with brown, fine grained, subtly foliated, generally medium to high strength, indurated and/or slightly metamorphosed.  Defects: -Foliation Parting at 50°-55° (~5/m) -Joint at 20°-30° (1-2/m) -Joint at 40°-45° (5/m) -Joint at 50°-60° (1/m)  Defects are generally close to medium spaced. Defect surfaces are planar, tight or open, slightly rough, thinly clay infilled, iron stained. | *************************************** | MW     |                               |                           |             | FP, 50°, PI, S, T, FeSt Is(50) = 0.70MPa = CLy BZ  — J, 50°, PI, T, CInf, FeSt  — BZ  — J, 30°, PI, O, CInf  — CLy BZ  — FP, 40°, PI, O, S, CInf  Is(50) = 0.62MPa  — J, 20°, PI, O, R, FeSt  — J, 60°, St, T, S, FeSt  — J, ~10°, I, O, R, FeSt  Is(50) = 0.52MPa  — Is(50) = 0.52MPa | -        |
| 8                    | 100<br>(69)   |               |  | **************************************  |        |                               |                           |             | DD = 2.64t/m <sup>3</sup> ; MC = 1.6%;<br>— FP, 60°, PI, T, S, FeSt UCS=19.5MPa<br>— J, 20°, PI, T, R, CInf<br>— J, 30°, PI, T, S, FeSt<br>— J, 40°, PI, T, R, FeSt<br>Is(50) = 1.31MPa<br>Is(50) = 1.44MPa  | UCS      |
| REMARK               | 3 *Point load fa  | iled a        | long existing defect   |   |        |                               |                           |             | LOGGED BY<br>JA/DC   |          |



FG5799-

ENGINEERING BOREHOLE LOG W LITHOLOGY

Log A EN

GLB

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#### **ENGINEERING BOREHOLE LOG**

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

BOREHOLE No. BH C52 SHEET \_\_2\_\_ of \_\_3\_\_ REFERENCE No \_H11138\_

**PROJECT** Bruce Highway Upgrade (Cooroy to Curra) Section C LOCATION Cut 13 \_\_\_\_\_\_ COORDINATES 470942.3 E; 7096448.2 N PROJECT No FG5799 PLUNGE \_ \_ \_ \_ \_. SURFACE R.L. \_\_81.20m\_ DATE STARTED \_15/08/11\_ GRID DATUM MGA94 \_\_\_\_ JOB No 232/10A/2 HEIGHT DATUM \_AHD \_\_ BEARING \_ \_ \_ \_ DATE COMPLETED \_15/08/11\_ DRILLER Cairns Drilling Contract R.L ROD INTACT DEFECT ()% (m) STRENGTH SPACING ADDITIONAL DATA 500  $\widehat{\mathbf{E}}$ MATERIAL (mm) LITHOLOGY AND GRAPHIC SAMPLES SAMPLE DEP AÚGER CASING WASH B CORE D DESCRIPTION TESTS CORE 2000 2000 2000 2000 2000 TEST RESULTS REC % 10 71.20 SILTSTONE (MW): Cont'd \*\*\*\*\* 100 - J, 60°, PI, T. SR, FeSt (43) ΜW - J. 70°, Pl. T, S, FeSt ls(50) = 0.80MPa: ⊐– HW Seam 100 BRUCE HWY UPGRADE SECTION C.GPJ. DWG46352.GDW Datgal CPT Tool gilkt Add-in 12/12/2011 16:30 (21) 68.72 SILTSTONE (SW): FP, 50°, PI, T, S, FeSt Dark grey, fine grained, subtly foliated, high strength, indurated and/or slightly metamorphosed. FP. 60°, Pl. O. SR Defects: 100 -Foliation parting at 50° (2/m) -Joint at 5°-15° (3/m) (62)Is(50) = 1.72MPa -Joint at 30°-35° (2-3/m) J, 30°, Pl, O, S, FeSt Defects are medium to widely spaced. Defect surfaces are generally planar, open or closed, slightly rough, thinly clay infilled. J. 10°, Pl. T. R, FeSt  $DD = 2.63t/m^3$ ; MC = 0.9%; UCS=9.86MPa J, 30°, Pl, T, Cn 100 (93) - FP. 70°, P. T. S. Cn J, 20°, I, T, Cn J, 10°, PI, O, SR, Cn Is(50) = 1.60MPa Is(50) = 1.43MPa o J. 30°, Pl. T. S. Cn SW 100 (72)- J. 50°, Pl. T. S. Cn - J, 30°, Pl, R, FeSt - 17 Is(50) = 1.97MPa 0 ls(50) = 0.62MPaFP, 60°, PI, S, FeSt J's, ~55°, PI, C, Smn 100 (75) - FP, 60°, PI, O, R, FeSt - FP. 60°, Pl. T. Cn 19 FP, 60°, PI, T, Cn Is(50) = 1.00MPa -Smn  $J, 40^{\circ}, I, T_{DD}^{Cn} = 2.66t/m^3; MC = 0.6\%$ REMARKS \*Point load failed along existing defeat LOGGED BY JA/DC



#### ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

| PROJECT  | Bruce   | <u>Highw</u>               | a <u>y</u> U | pgrade (Cooroy to Curra) Section C |                |     |                    |   |              |   |                                      |                 |
|--|---|----------------------------|--------------|------------------------------------|----------------|-----|--------------------|---|--------------|---|--------------------------------------|-----------------|
|  |   |                            |              |                                    |                |     |                    |   |              |   | 470942.3 E; 7096448.                 | <u> 2 N</u>     |
|  |   |                            |              | SURFACE R.L81.20m_ PLUNGE          |                |     |                    |   |              |   | DATUM <u>MGA94</u>                   |                 |
| JOB No   | 232/1   | <u> 10A/2</u>              |              | HEIGHT DATUM _AHD BEARING _        | <del>-</del> - |     | DATE COI           | MPLETED _   | <u>15/08</u> | <u>1/11                                  </u> | RILLER <u>Cairns</u> <u>Drilling</u> | <u>Contract</u> |
| (m)            | AUGER<br>CASING<br>WASH BORING<br>CORE DRILLING | RQD<br>()%<br>CORE<br>REC% | SAMPLE       | MATERIAL<br>DESCRIPTION            | ПТНОГОСУ       | USC | INTACT<br>STRENGTH | DEFECT<br>SPACING<br>(mm)   | GRAPHIC LOG  |   | TIONAL DATA AND ST RESULTS           | SAMPLES         |
| L 1  |   |                            |              | SILTSTONE (SW): Cont'd             | X              | SW  |                    |   | Ť            |   | UCS=4.96MPa                          |                 |
| 60.95  |   | 100                        |              | Borehole terminated at 20.25m      | 13.            |     |                    | + 1   |              |   |                                      |                 |
|  |   |                            |              |                                    |                |     |                    | +<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+ |              |   |                                      |                 |
| -  |   |                            |              |                                    |                |     |                    | Ī   |              |   |                                      |                 |
| 22   |   |                            |              |                                    |                |     |                    | <del> </del>  |              |   |                                      | -               |
| 22 23 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25 |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | ] =             |
|  |   |                            |              |                                    |                |     |                    | <del>-</del>  |              |   |                                      | :               |
| 23   |   |                            |              |                                    |                |     | ,                  | ‡   |              |   |                                      | -               |
| <u> </u>   |   |                            | '            |                                    |                |     |                    | <u> </u>  |              |   |                                      | :               |
| [_<br> -<br> -                                     |   |                            |              |                                    |                |     |                    | ŧ   |              |   |                                      | ]               |
|  |   |                            |              |                                    |                |     |                    | Ŧ   |              |   |                                      | :               |
| 24  <br> -<br> -                                   |   |                            |              |                                    |                |     |                    | Ŧ   |              |   |                                      | -               |
|  |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | -               |
| 5-   |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | :               |
| 25   |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | -               |
|  |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      |                 |
| <u> </u>   |   |                            |              |                                    |                |     |                    | <u>†</u>  |              |   |                                      | -               |
| - 26   |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | ]               |
|  |   |                            |              |                                    |                |     |                    | <u>†</u><br>†   |              |   |                                      |                 |
| -  |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | -               |
| <u> </u>   |   |                            | '            |                                    |                |     |                    | ‡   |              |   |                                      |                 |
| 27   |   |                            |              |                                    |                |     |                    | ŧ   |              |   |                                      | -               |
| \$<br>{-   |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | :               |
|  |   |                            |              |                                    |                |     |                    | Ŧ   |              |   |                                      | -               |
| - 28   |   |                            |              |                                    |                |     |                    | <u>‡</u>  |              |   |                                      | -               |
|  |   |                            |              |                                    |                |     |                    | <del></del>   |              |   |                                      |                 |
|  |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | -               |
| <u>-</u> -   |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      |                 |
| 26 - 26 - 27 - 28 - 29 - 29 - 29 - 30              |   |                            |              |                                    |                |     |                    | ‡   |              |   |                                      | -               |
| -  |   |                            |              |                                    |                |     |                    | +   |              |   |                                      | }               |
| <u> </u>   |   |                            |              |                                    |                |     |                    | İ   |              |   |                                      | ] :             |
|  |   |                            |              |                                    |                |     |                    | Ŧ   |              |   |                                      |                 |
| REMARK   | s <u>*Poin</u>                                  |                            |              |                                    |                |     |                    |   |              | -   | LOGGED BY<br>JA/DC                   |                 |



#### CORE PHOTO LOG - BH C52

| Project Name:  | BRUCE HIGHWAY UPGRADE - SECTION C |                   |            |  |  |  |  |
|----------------|-----------------------------------|-------------------|------------|--|--|--|--|
| Project No.:   | FG5799                            | Date:             | 08/09/2011 |  |  |  |  |
| Details:       | Cut 13                            | Start Depth (m):  | 3.00       |  |  |  |  |
| Reference No.: | H11138                            | Finish Depth (m): | 20.25      |  |  |  |  |

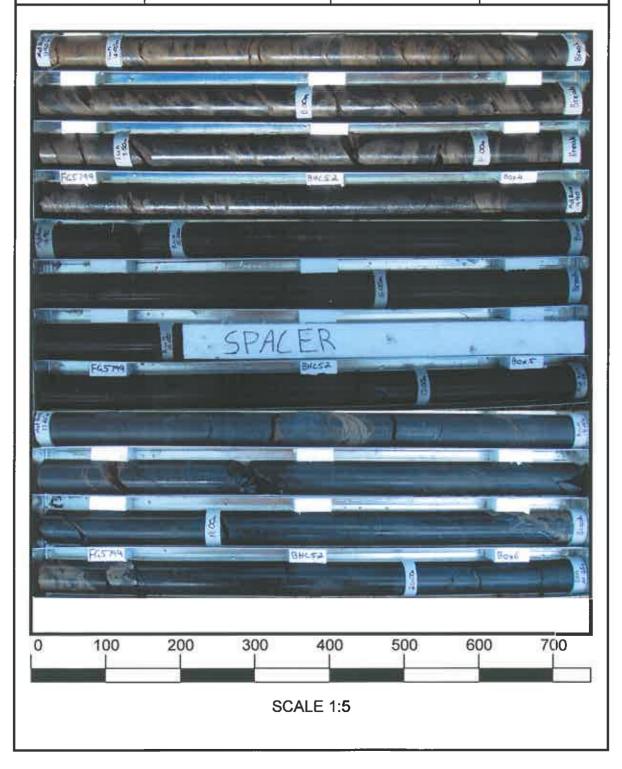


DEPARTMENT OF TRANSPORT & MAIN ROADS Geotechnical Branch 35 Butterfield Street, HERSTON Qld 4006 Phone 07 3115 3035 Fax 07 3115 3011



#### CORE PHOTO LOG - BH C52

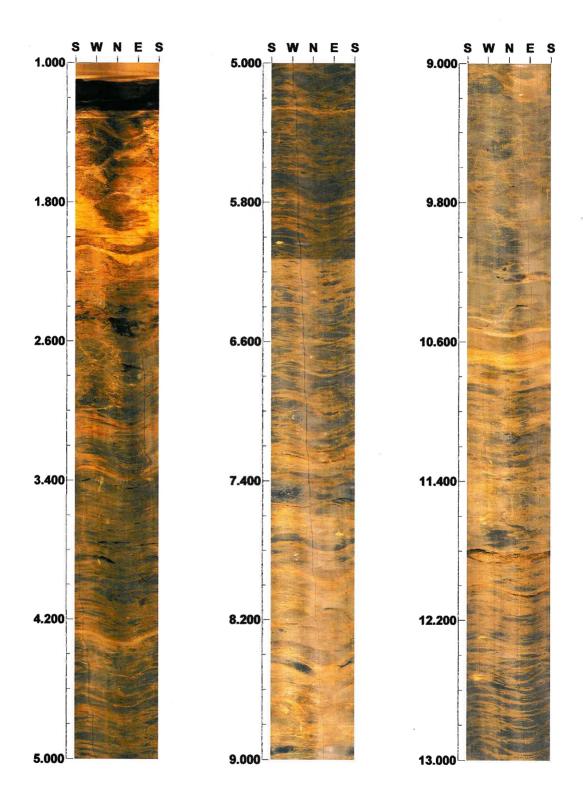
| Project Name:  | BRUCE HIGHWAY UPGRADE - SECTION C |                   |            |  |  |  |  |
|----------------|-----------------------------------|-------------------|------------|--|--|--|--|
| Project No.:   | FG5799                            | Date:             | 08/09/2011 |  |  |  |  |
| Details:       | Cut 13                            | Start Depth (m):  | 3.00       |  |  |  |  |
| Reference No.: | H11138                            | Finish Depth (m): | 20.25      |  |  |  |  |



Project name: BRUCE HIGHWAY UPGRADE SECTION C

Bore hole No.: C-52 Azimuth: 0 Inclination: -90

Depth range: 1.000 - 13.000 m

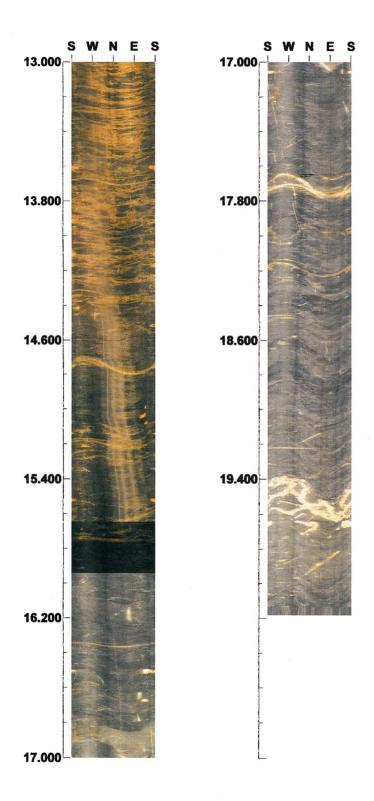


Scale: 1/20 Aspect ratio: 200 %

Project name: BRUCE HIGHWAY UPGRADE SECTION C

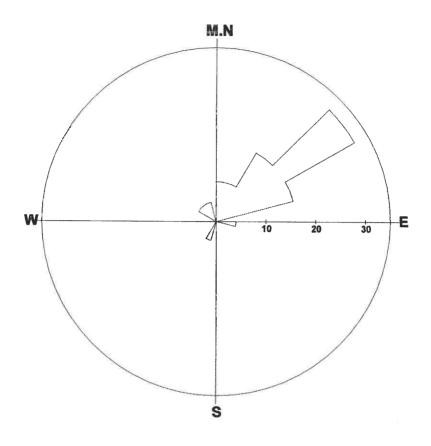
Bore hole No.: C-52 Azimuth: 0 Inclination: -90

Depth range: 13.000 - 20.179 m



Scale: 1/20 Aspect ratio: 200 %

C-52.STR <<SHEAR ZONE>>



Number of Data: 25/71

Max: 32.0%

**Grouping Angle: 15 deg** 

| Dir  | %  | Dir  | % | Dir  | % |
|------|----|------|---|--|---|
| 0-   | 8  | 135- | 0 | 270-   | 0 |
| 15-  | 8  | 150- | 0 | 285-   | 0 |
| 30-  | 16 | 165- | 0 | 300-   | 4 |
| 45-  | 32 | 180- | 0 | 315-   | 4 |
| 60∘  | 16 | 195- | 4 | 330-   | 4 |
| 75-  | 0  | 210- | 0 | 345-   | 0 |
| 90-  | 4  | 225- | 0 |  |   |
| 105- | 0  | 240- | 0 | The state of the s |   |
| 120- | 0  | 255- | 0 |  |   |

Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

Title: C-52.STR Comment: JOINT Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7 Form: 5/5 Condition: 11/11 Remark: 9/9 2011/ 8/ 30

Elevation: 0.000m Water Level: 15.645m

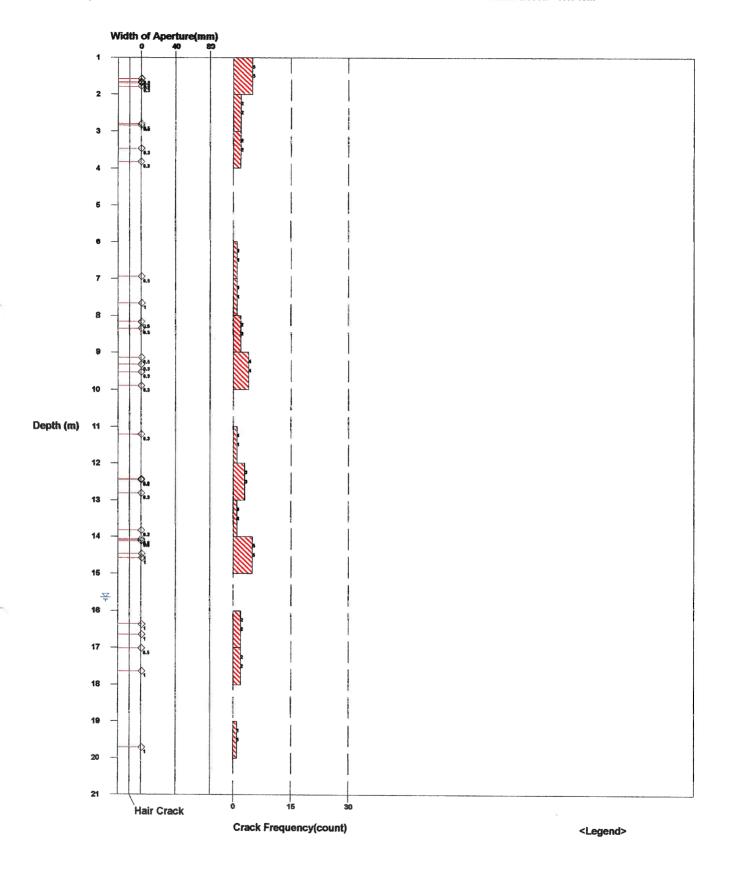


Fig. Rock Mass Condition Graph

All Crack Frequency
Open Crack Frequency

₩ater Level

Title: C-52.STR Comment: PARTING Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7 Form: 5/5 Condition: 11/11 Remark: 9/9 2011/ 8/ 30

Elevation: 0.000m Water Level: 15.645m

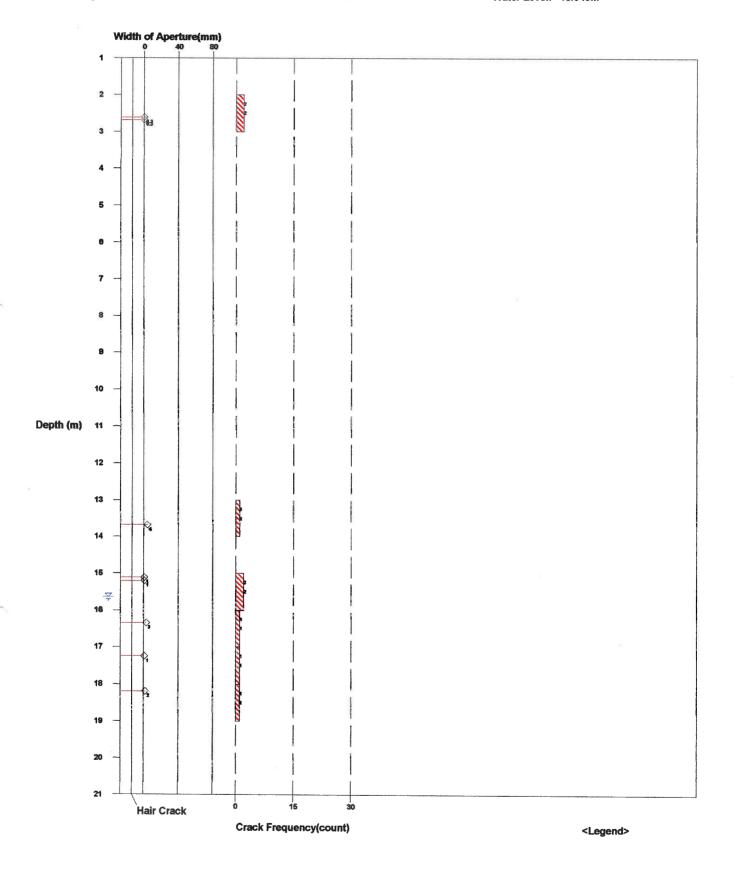


Fig. Rock Mass Condition Graph

All Crack Frequency
Open Crack Frequency

₩ Water Level

Title: C-52.STR Comment: FAULT Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7 Form: 5/5 Condition: 11/11 Remark: 9/9

2011/ 8/ 30

Elevation: 0.000m Water Level: 15.645m

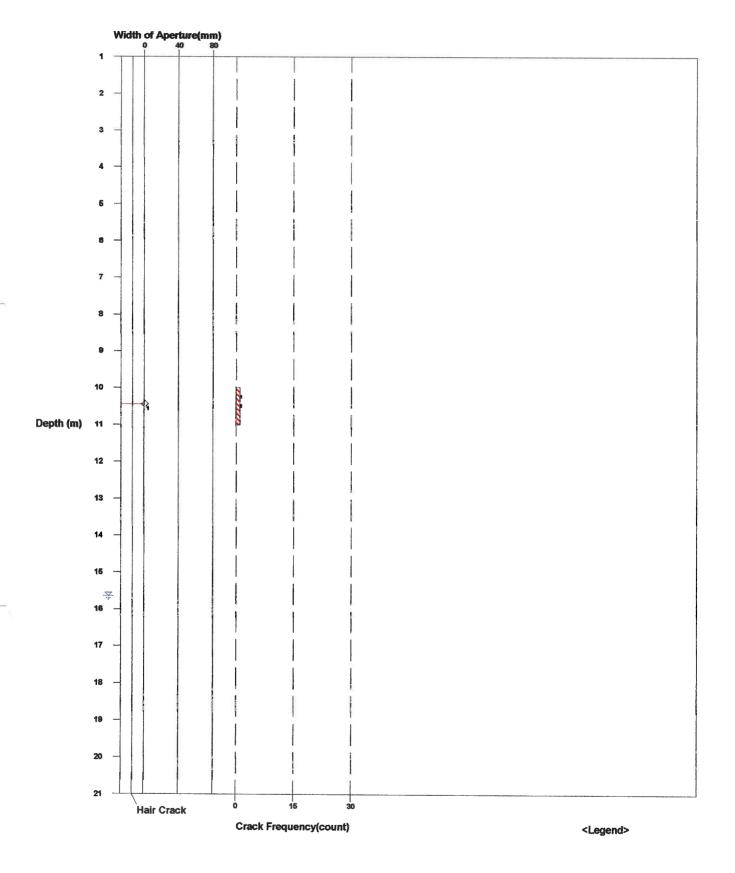


Fig. Rock Mass Condition Graph

All Crack Frequency
Open Crack Frequency

**₩** Water Level

Title: C-52.STR Comment: SHEAR ZONE Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7 Form: 5/5 Condition: 11/11 Remark: 9/9

2011/ 8/ 30

Elevation: 0.000m Water Level: 15.645m

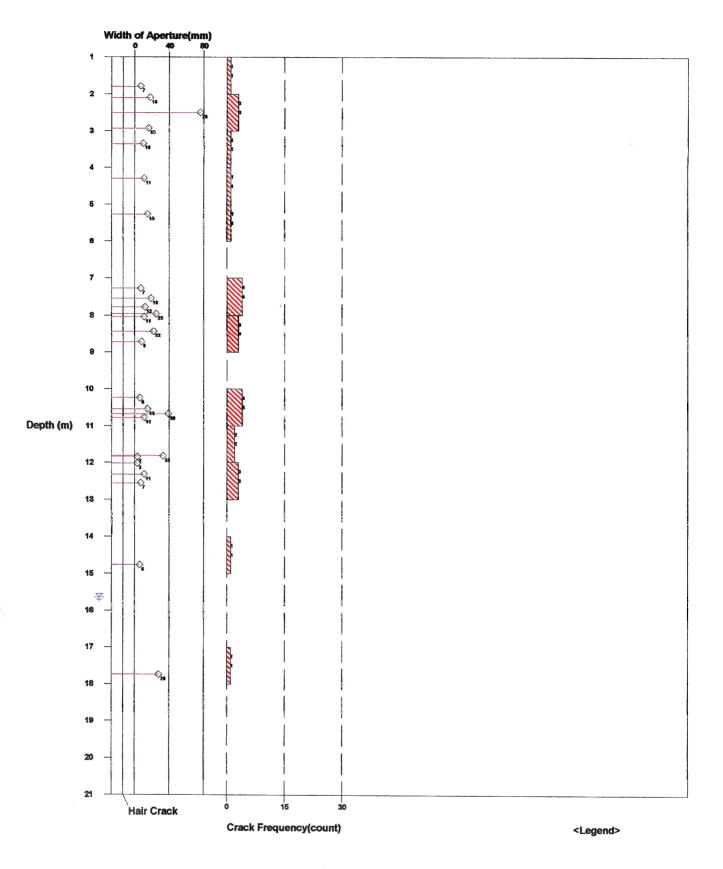


Fig. Rock Mass Condition Graph

All Crack Frequency
Open Crack Frequency

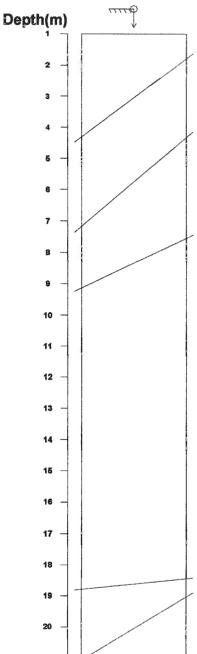
₩ Water Level

Title: C-52.STR

Comment: FOLIATION Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7 Form: 5/5 Condition: 11/11

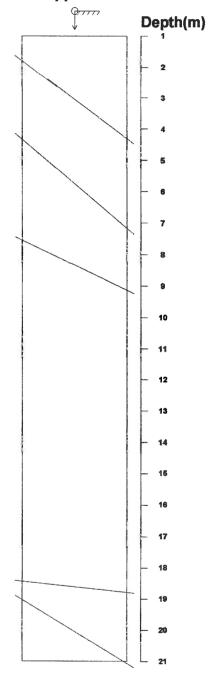
Condition: 11/11 Remark: 9/9

## View Point 2 Profile of Apparent Borehole



## View Point2View Point1 Up(+) N V 2 1 E Down(-)

View Point 1
Profile of Apparent Borehole



Direction: 0 deg

Inclination: Vertical(Down)

<Legend>
Entrance ⊕----- G.L.

Bottom

Fig. Apparent Dip

Title: C-52.STR **Comment: JOINT** Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

**View Point 2 Profile of Apparent Borehole** 

**View Point2View Point1 Up(+) Up(+)** Down(-) Down(-)

17

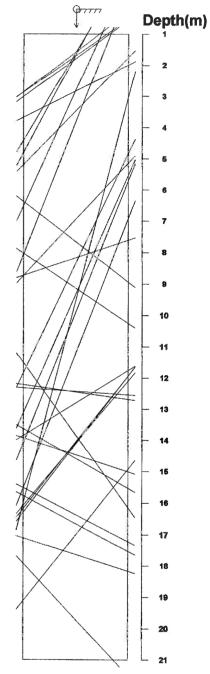
18

Sort: Form:

1/7 5/5 Condition: 11/11

Remark: 9/9

> **View Point 1 Profile of Apparent Borehole**



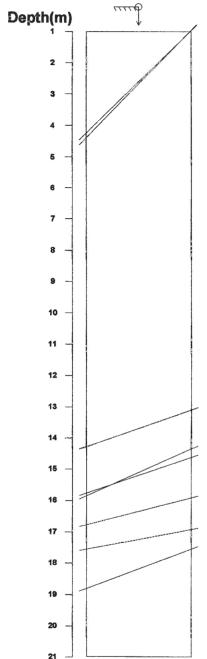
Direction: 0 deg

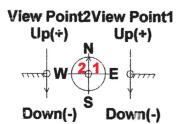
Inclination: Vertical(Down)

<Legend> Entrance @ G.L Bottom

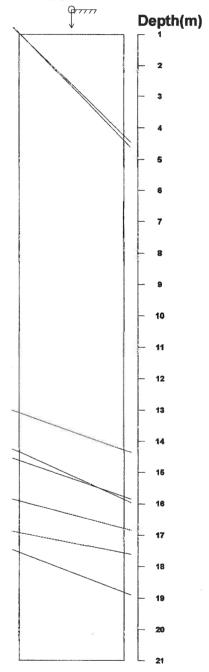
Fig. **Apparent Dip**  Title: C-52.STR Comment: PARTING Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm Sort: 1/7
Form: 5/5
Condition: 11/11
Remark: 9/9

### View Point 2 Profile of Apparent Borehole





View Point 1
Profile of Apparent Borehole



Direction: 0 deg

Inclination: Vertical(Down)

<Legend>
Entrance ⊕----- G.L.

Bottom

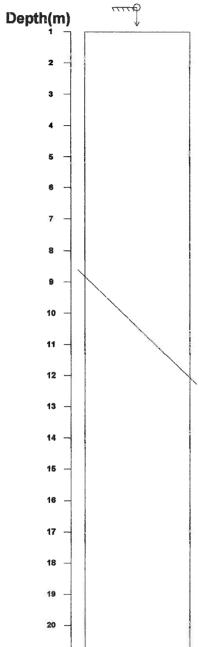
Fig. Apparent Dip

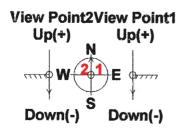
Title: C-52.STR **Comment: FAULT** Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

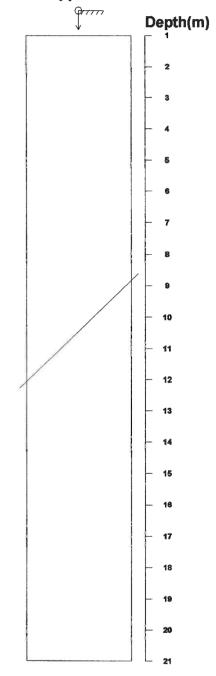
Sort: 1/7 Form: 5/5 Condition: 11/11 Remark: 9/9

#### **View Point 2 Profile of Apparent Borehole**





**View Point 1 Profile of Apparent Borehole** 



Direction: 0 deg

Inclination: Vertical(Down)

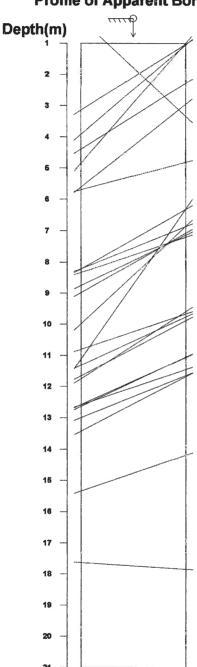
<Legend> Entrance @ G.L **↓** Bottom

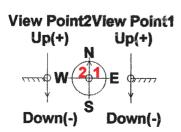
Fig. **Apparent Dip** 

Title: C-52.STR

Comment: SHEAR ZONE Depth: 1.574 - 20.051 m Aperture: 0.0 - 76.0 mm

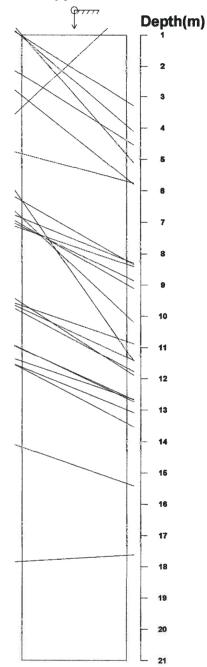
View Point 2
Profile of Apparent Borehole





Sort: 1/7
Form: 5/5
Condition: 11/11
Remark: 9/9

View Point 1
Profile of Apparent Borehole



Direction: 0 deg

Inclination: Vertical(Down)

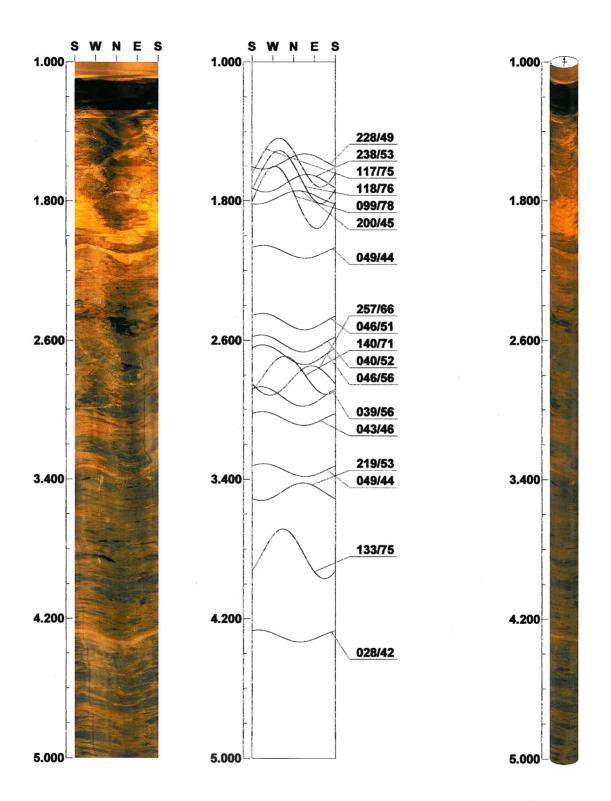
<Legend>
Entrance G.L.
Bottom

Fig. Apparent Dip

Project name: BRUCE HIGHWAY UPGRADE SECTION C

Bore hole No.: C-52 Azimuth: 0 Inclination: -90

Depth range: 1.000 - 5.000 m

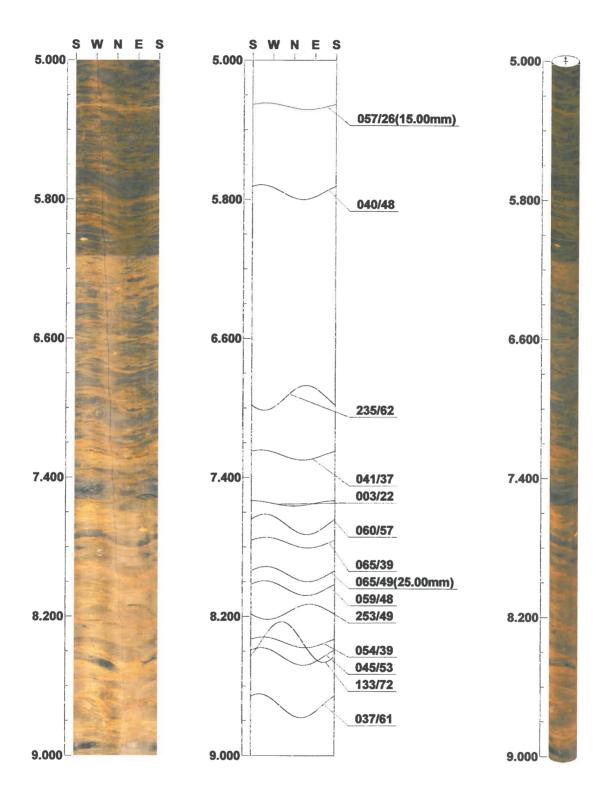


Scale: 1/20 Aspect ratio: 200 %

Project name: BRUCE HIGHWAY UPGRADE SECTION C

Bore hole No.: C-52 Azimuth: 0 Inclination: -90

Depth range: 5.000 - 9.000 m



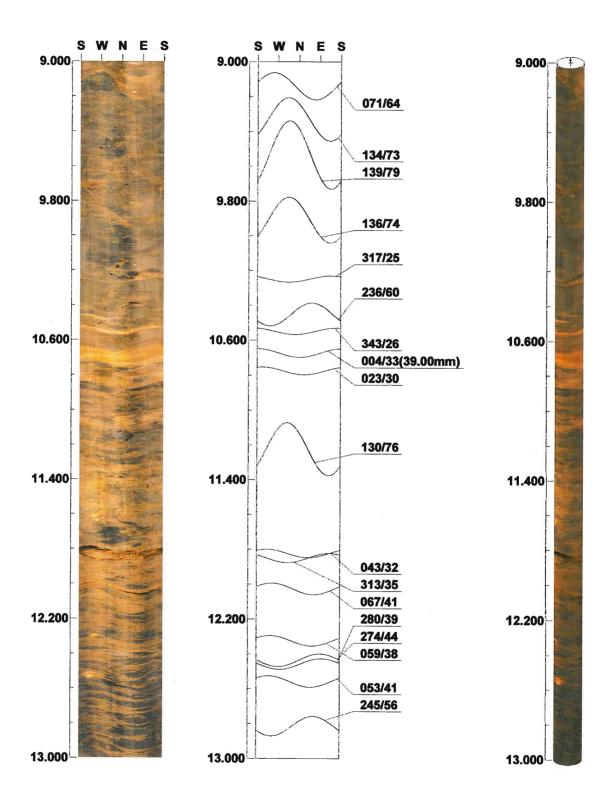
Scale: 1/20 Aspect ratio: 200 %

Project name: BRUCE HIGHWAY UPGRADE SECTION C Bore hole No.: C-52

Azimuth: 0

Inclination: -90

Depth range: 9.000 - 13.000 m



Scale: 1/20

Aspect ratio: 200 %

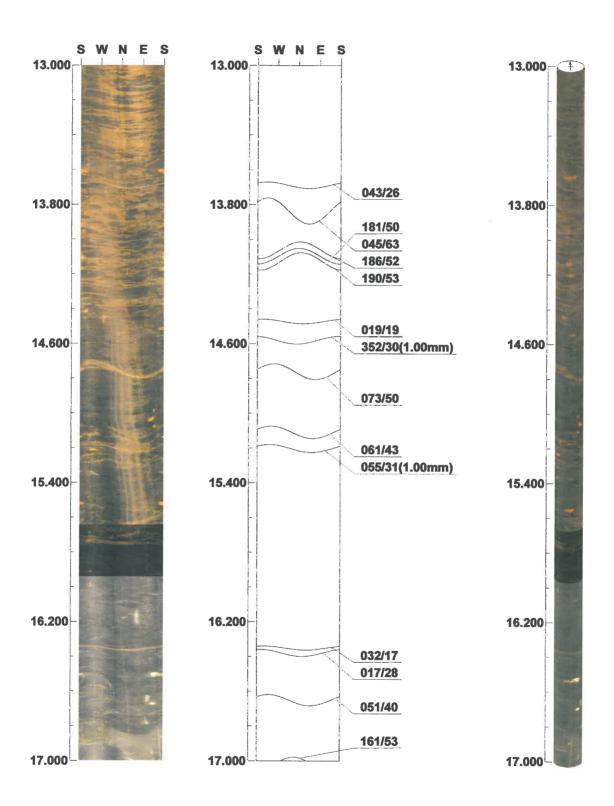
Project name: BRUCE HIGHWAY UPGRADE SECTION C

Bore hole No.: C-52

Azimuth: 0

Inclination: -90

Depth range: 13.000 - 17.000 m

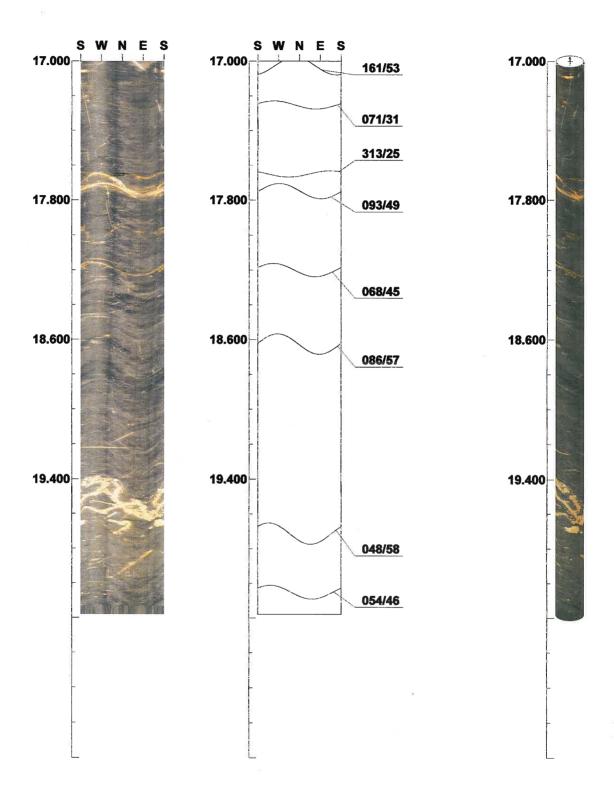


Scale: 1/20 Aspect ratio: 200 %

Project name: BRUCE HIGHWAY UPGRADE SECTION C

Bore hole No.: C-52 Azimuth: 0 Inclination: -90

Depth range: 17.000 - 20.179 m



Scale: 1/20 Aspect ratio: 200 %

File name: C-52.STR

11

| No. | Depth<br>(m) | Dir/Dip | Sort      | Aperture (mm) | Form       | Condition   | Rema        |
|-----|--------------|---------|-----------|---------------|------------|-------------|-------------|
| 1   | 1.574        | 228/49  | Joint     | 0.5           | Planar     | Weathered   | Open/fil'd  |
| 2   | 1.580        | 117/75  | Joint     | 0.3           | Planar     | Rough       | Tight/fil'd |
| 3   | 1.663        | 118/76  | Joint     | 0.3           | Planar     | Rough       | Tight/fil'd |
| 4   | 1.699        | 238/53  | Joint     | 0.3           | Planar     | Smooth      | Tight       |
| 5   | 1.780        | 099/78  | Joint     | 0.3           | Planar     | Smooth      | Tight       |
| 6   | 1.781        | 200/45  | ShearZone | 7.0           | Planar     | Brec/crus'd | Open/loose  |
| 7   | 2.092        | 049/44  | ShearZone | 18.0          | Planar     | Weathered   | Open/loose  |
| 8   | 2.492        | 046/51  | ShearZone | 76.0          | Planar     | Brec/crus'd | Open/loose  |
| 9   | 2.617        | 040/52  | Parting   | 0.3           | Planar     | Smooth      | Open        |
| 10  | 2.682        | 046/56  | Parting   | 0.3           | Planar     | Smooth      | Open        |
| 11  | 2.801        | 140/71  | Joint     | 0.5           | Planar     | Rough       | Open        |
| 12  | 2.831        | 257/66  | Joint     | 0.3           | Planar     | Smooth      | Open        |
| 13  | 2.924        | 039/56  | ShearZone | 16.0          | Planar     | Brec/crus'd | Open        |
| 14  | 3.051        | 043/46  | Foliation | 0.0           | Planar     | Smooth      | Tight       |
| 15  | 3.347        | 049/44  | ShearZone | 10.0          | Planar     | Brec/crus'd | Open        |
| 16  | 3.471        | 219/53  | Joint     | 0.3           | Planar     | Smooth      | Tight       |
| 17  | 3.826        | 133/75  | Joint     | 0.3           | Planar     | Rough       | Tight       |
| 18  | 4.299        | 028/42  | ShearZone | 11.0          | Planar     | Smooth      | Open        |
| 19  | 5.264        | 057/26  | ShearZone | 15.0          | Planar     | Brec/crus'd | Open        |
| 20  | 5.758        | 040/48  | Foliation | 0.0           | Planar     | Smooth      | Tight       |
| 21  | 6.941        | 235/62  | Joint     | 0.5           | Planar     | Rough       | Open        |
| 22  | 7.270        | 041/37  | ShearZone | 7.0           | Planar     | Brec/crus'd | Open        |
| 23  | 7.548        | 003/22  | ShearZone | 19.0          | Planar     | Brec/crus'd | Open        |
| 24  | 7.669        | 060/57  | Joint     | 1.0           | Planar     | Brec/crus'd | Open        |
| 25  | 7.774        | 065/39  | ShearZone | 12.0          | Planar     | Brec/crus'd | Open        |
| 26  | 7.955        | 065/49  | ShearZone | 25.0          | Planar     | Brec/crus'd | Open        |
| 27  | 8.036        | 059/48  | ShearZone | 11.0          | Planar     | Brec/crus'd | Open        |
| 28  | 8.172        | 253/49  | Joint     | 0.5           | Planar     | Rough       | Tight/fil'd |
| 29  | 8.346        | 133/72  | Joint     | 0.5           | Planar     | Rough       | Open        |
| 30  | 8.348        | 054/39  | Foliation | 0.0           | Planar     | Smooth      | Tight       |
| 31  | 8.429        | 045/53  | ShearZone | 22.0          | Planar     | Brec/crus'd | Open        |
| 32  | 8.713        | 037/61  | ShearZone | 8.0           | Undulating | Brec/crus'd | Open        |
| 33  | 9.141        | 071/64  | Joint     | 0.5           | Planar     | Rough       | Open        |
| 34  | 9.331        | 134/73  | Joint     | 0.3           | Planar     | Rough       | Tight/fil'd |
| 35  | 9.535        | 139/79  | Joint     | 0.3           | Planar     | Rough       | Tight       |
| 36  | 9.909        | 136/74  | Joint     | 0.3           | Planar     | Rough       | Tight       |
| 37  | 10.249       | 317/25  | ShearZone | 6.0           | Planar     | Brec/crus'd | Open        |
| 38  | 10.451       | 236/60  | Fault     | 1.0           | Planar     | Smooth      | Tight/fil'd |
| 39  | 10.548       | 343/26  | ShearZone | 15.0          | Planar     | Brec/crus'd | Open        |
| 40  | 10.673       | 004/33  | ShearZone | 39.0          | Planar     | Brec/crus'd | Open        |
| 41  | 10.775       | 023/30  | ShearZone | 11.0          | Planar     | Brec/crus'd | Open        |
| 42  | 11.223       | 130/76  | Joint     | 0.3           | Planar     | Rough       | Tight       |
| 43  | 11.823       | 043/32  | ShearZone | 33.0          | Planar     | Brec/crus'd | Open/loose  |
| 44  | 11.849       | 313/35  | ShearZone | 3.0           | Planar     | Brec/crus'd | Open/loose  |
| 45  | 12.026       | 067/41  | ShearZone | 3.0           | Planar     | Brec/crus'd | Open/loose  |
| 46  | 12.322       | 059/38  | ShearZone | 11.0          | Planar     | Brec/crus'd | Open        |
| 47  | 12.434       | 274/44  | Joint     | 0.3           | Planar     | Smooth      | Tight       |
| 48  | 12.456       | 280/39  | Joint     | 0.3           | Planar     | Smooth      | Tight       |
| 49  | 12.557       | 053/41  | ShearZone | 7.0           | Planar     | Brec/crus'd | Open        |
| 50  | 12.814       | 245/56  | Joint     | 0.3           | Planar     | Smooth      | Tight       |

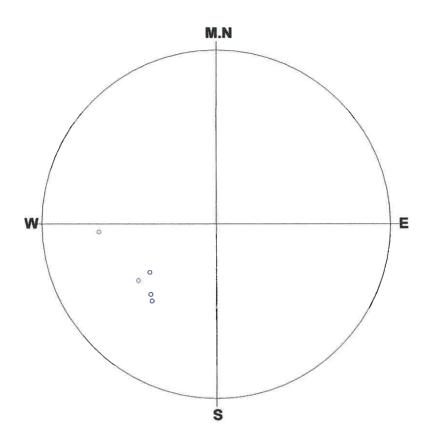
Tab. Table of Discontinuity (2/2)

File name: C-52.STR

1.

| No. | Depth<br>(m) | Dir/Dip | Sort      | Aperture<br>(mm) | Form       | Condition   | Rema        |
|-----|--------------|---------|-----------|------------------|------------|-------------|-------------|
| 51  | 13.689       | 043/26  | Parting   | 4.0              | Planar     | Brec/crus'd | Open        |
| 52  | 13.837       | 045/63  | Joint     | 0.3              | Planar     | Rough       | Tight/fil'd |
| 53  | 14.063       | 186/52  | Joint     | 0.3              | Planar     | Smooth      | Tight       |
| 54  | 14.097       | 181/50  | Joint     | 0.3              | Planar     | Smooth      | Tight       |
| 55  | 14.127       | 190/53  | Joint     | 0.3              | Planar     | Smooth      | Tight       |
| 56  | 14.472       | 019/19  | Joint     | 1.0              | Undulating | Smooth      | Open        |
| 57  | 14.580       | 352/30  | Joint     | 1.0              | Undulating | Smooth      | Open        |
| 58  | 14.761       | 073/50  | ShearZone | 6.0              | Planar     | Brec/crus'd | Open        |
| 59  | 15.110       | 061/43  | Parting   | 1.0              | Planar     | Smooth      | Open/fil'd  |
| 60  | 15.203       | 055/31  | Parting   | 1.0              | Planar     | Smooth      | Open/fil'd  |
| 61  | 16.351       | 032/17  | Parting   | 3.0              | Planar     | Brec/crus'd | Open        |
| 62  | 16.379       | 017/28  | Joint     | 1.0              | Planar     | Rough       | Open        |
| 63  | 16.651       | 051/40  | Joint     | 1.0              | Planar     | Rough       | Open/fil'd  |
| 64  | 17.029       | 161/53  | Joint     | 0.5              | Planar     | Rough       | Tight/fil'd |
| 65  | 17.252       | 071/31  | Parting   | 1.0              | Planar     | Smooth      | Open/fil'd  |
| 66  | 17.650       | 313/25  | Joint     | 1.0              | Planar     | Rough       | Open/fil'd  |
| 67  | 17.749       | 093/49  | ShearZone | 28.0             | Planar     | Brec/crus'd | Open/fil'd  |
| 68  | 18.199       | 068/45  | Parting   | 2.0              | Planar     | Rough       | Open/fil'd  |
| 69  | 18.625       | 086/57  | Foliation | 0.0              | Planar     | Smooth      | Tight       |
| 70  | 19.714       | 048/58  | Joint     | 1.0              | Planar     | Rough       | Tight/fil'd |
| 71  | 20.051       | 054/46  | Foliation | 0.0              | Planar     | Smooth      | Tight       |

C-52.STR <<FOLIATION>>



Number of Data: 5/71

## <Legend> :Foliation -- 5 +:Mineralban- 0

:Joint -- 0

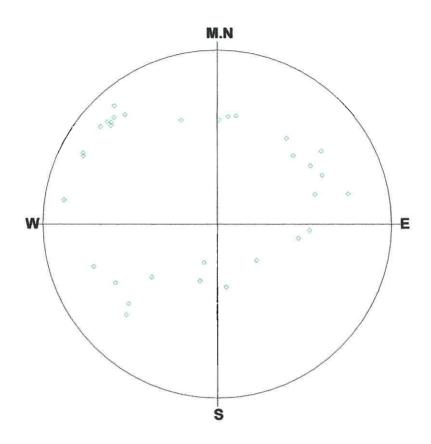
\_\_\_:Fault -- 0

 $\nabla$ :ShearZone- 0

 $\times$ :Vein -- 0

#### Schmidt (L.H)

## C-52.STR <<JOINT>>

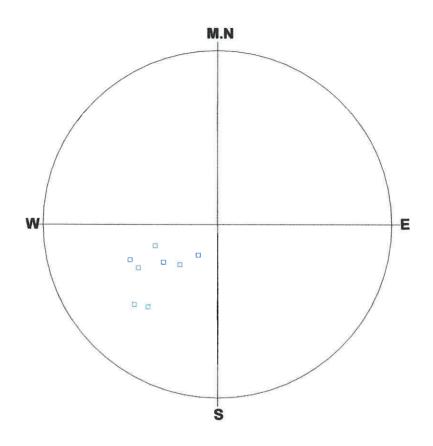


Number of Data: 32/71

#### 

#### Schmidt (L.H)

## C-52.STR <<PARTING>>



Number of Data: 8/71

#### 

\_\_:Fault -- 0

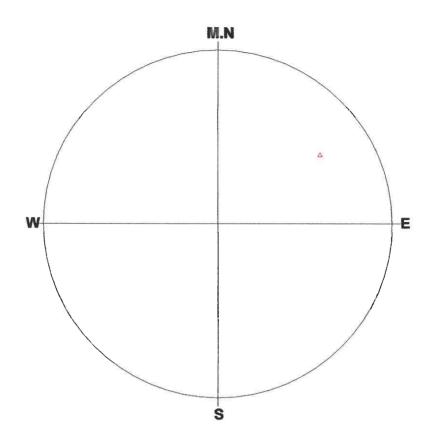
:Parting -- 8

▽:ShearZone- 0

 $\times$ :Vein -- 0

#### Schmidt (L.H)

## C-52.STR <<FAULT>>



Number of Data: 1/71

#### <Legend>

:Foliation -- 0 +:Mineralban- 0
∴Joint -- 0

-- 0

∴:Fault -- 1

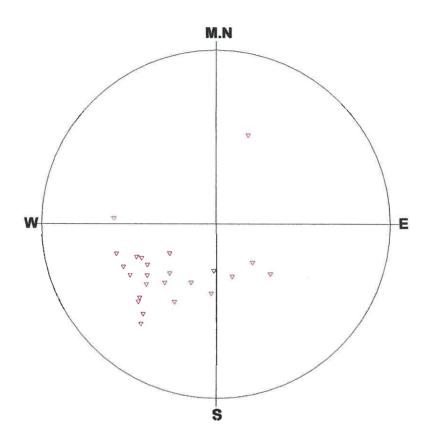
:Parting

▽:ShearZone- 0

 $\times$ :Vein -- 0

#### Schmidt (L.H)

## C-52.STR <<SHEAR ZONE>>



Number of Data: 25/71

#### <Legend>

:Foliation -- 0

+:Mineralban- 0

⇒:Joint -- 0

Parting -- 0

∴:Fault -- 0

 $\nabla$ :ShearZone- 25

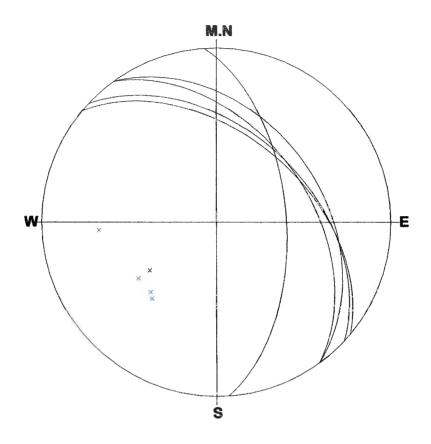
 $\times$ :Vein -- 0

#### Schmidt (L.H)

Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

## C-52.STR <<FOLIATION>>



#### Number of Data:5/71

1:043/46(14)

2:040/48(20)

3:054/39(30)

4:086/57(69)

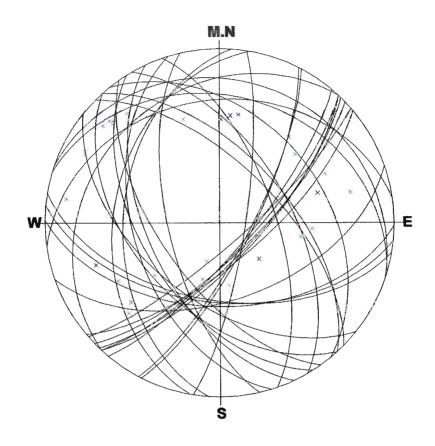
5:054/46(71)

#### Schmidt (L.H)

Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

## C-52.STR <<JOINT>>

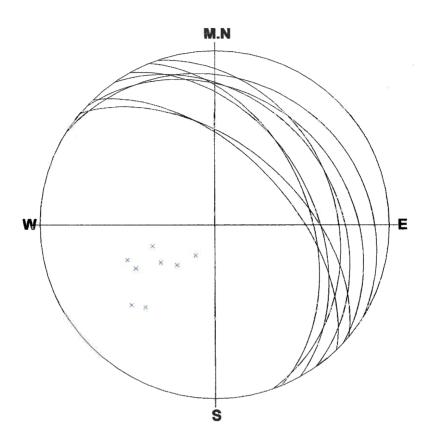


#### Number of Data:32/71

1: 228/49(1) 6: 140/71(11) 2: 117/75(2) 7: 257/66(12) 3: 118/76(3) 8: 219/53(16) 4: 238/53(4) 9: 133/75(17) 5: 099/78(5) 10: 235/62(21)

#### Schmidt (L.H)

## C-52.STR <<PARTING>>



#### Number of Data:8/71

 1:040/52(9)
 6:032/17(61)

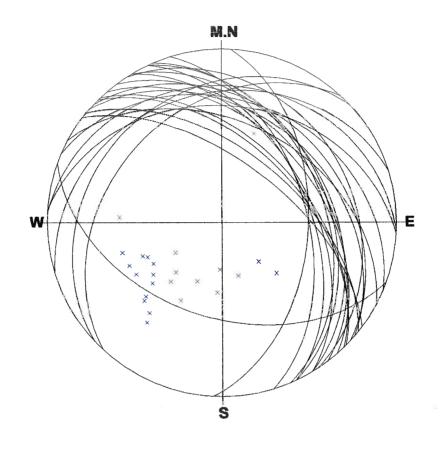
 2:046/56(10)
 7:071/31(65)

 3:043/26(51)
 8:068/45(68)

4:061/43(59) 5:055/31(60)

#### Schmidt (L.H)

## C-52.STR <<SHEAR ZONE>>



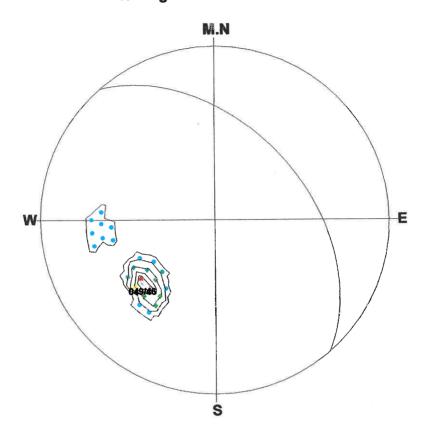
#### Number of Data:25/71

1:200/45(6) 6:028/42(18) 2:049/44(7) 7:057/26(19) 3:046/51(8) 8:041/37(22) 4:039/56(13) 9:003/22(23) 5:049/44(15) 10:065/39(25)

#### Schmidt (L.H)

C-52.STR <<FOLIATION>>

\*\*\*\*\* % Diagram \*\*\*\*\*\*



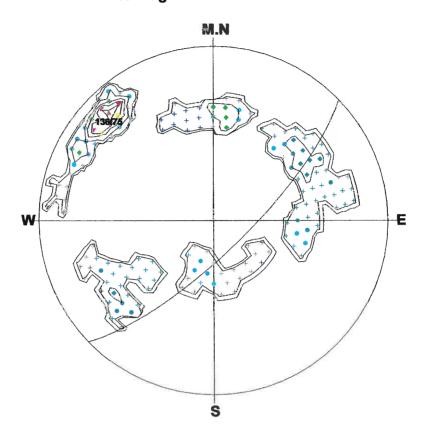
#### Number of Data: 5

| <legend> Sym. (%)</legend> | Contour Value (%) |  |  |  |  |  |
|----------------------------|-------------------|--|--|--|--|--|
| <b>A</b> : 80              | Contour 1: 0      |  |  |  |  |  |
| . 64 00                    | Contour 2: 16     |  |  |  |  |  |
| <b>V</b> : 64 - 80         | Contour 3: 32     |  |  |  |  |  |
| : 48 - 64                  | Contour 4: 48     |  |  |  |  |  |
| A . 00 40                  | Contour 5: 64     |  |  |  |  |  |
| <b>•</b> : 32 - 48         | Contour 6: 80     |  |  |  |  |  |
| <b>:</b> 16 - 32           | Lancard           |  |  |  |  |  |
| →· 0 - 16                  |                   |  |  |  |  |  |

#### Schmidt (L.H)

## C-52.STR <<JOINT>>

\*\*\*\*\* % Diagram \*\*\*\*\*



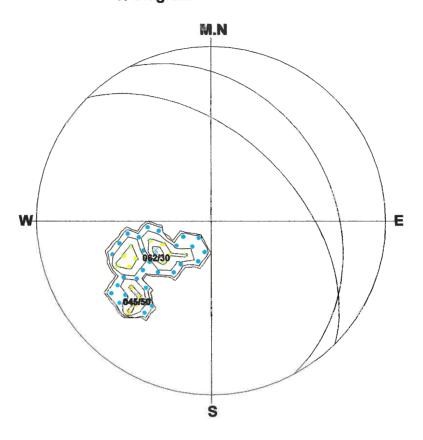
#### Number of Data: 32

# <Legend> Sym. (%) ∴ 21 ∵ 17 - 21 ∴ 13 - 17 ∴ 8 - 13 ∴ 4 - 8 ∴ 0 - 4 Contour Value (%) Contour 1 : 0 Contour 2 : 4 Contour 3 : 8 Contour 4 : 13 Contour 5 : 17 Contour 6 : 21 Contour 6 : 21

#### Schmidt (L.H)

## C-52.STR <<PARTING>>

\*\*\*\*\* % Diagram \*\*\*\*\*\*



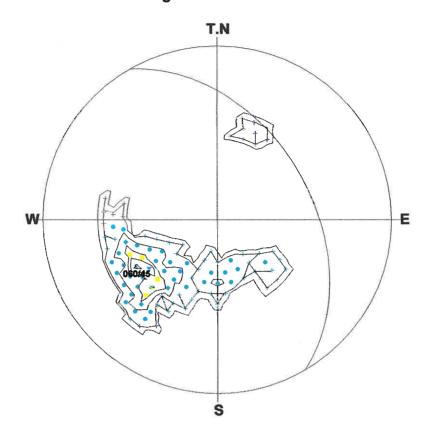
#### Number of Data: 8

| <legend> Sym. (%)</legend> | Contour Value (%) |  |  |  |  |
|----------------------------|-------------------|--|--|--|--|
| <b>: 37</b>                | Contour 1: 0      |  |  |  |  |
| <b>V</b> : 30 - 37         | Contour 2: 7      |  |  |  |  |
| V. 30 - 31                 | Contour 3: 15     |  |  |  |  |
| : 22 - 30                  | Contour 4: 22     |  |  |  |  |
| A. 45 22                   | Contour 5: 30     |  |  |  |  |
| <b>•</b> : 15 - 22         | Contour 6: 37     |  |  |  |  |
| <b>  - 7 - 15</b>          | C                 |  |  |  |  |
| <b>-</b> : 0 - 7           |                   |  |  |  |  |

#### Schmidt (L.H)

C-52.STR <<SHEAR ZONE>>

\*\*\*\*\* % Diagram \*\*\*\*\*\*

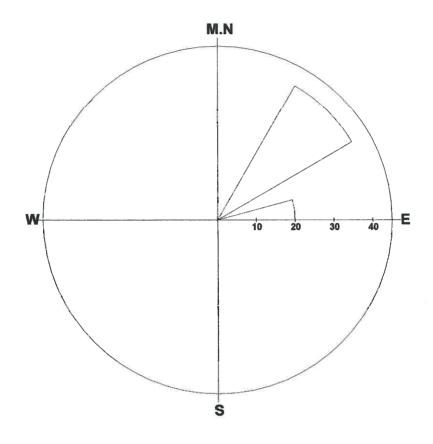


#### Number of Data: 25

| <legend> Sym. (%)</legend> | Contour Value (%) |
|----------------------------|-------------------|
| <b>:</b> 32                | Contour 1: 0      |
| : 25 - 32                  | Contour 2: 6      |
| V. 25 - 32                 | Contour 3: 12     |
| <mark>:</mark> 19 - 25     | Contour 4: 19     |
| <b>•</b> : 12 - 19         | Contour 5 : 25    |
| . 12 - 19                  | Contour 6: 32     |
| : 6 - 12                   | -                 |
| ±· 0- 6                    |                   |

#### Schmidt (L.H)

C-52.STR <<FOLIATION>>



Number of Data: 5/71

Max: 40.0%

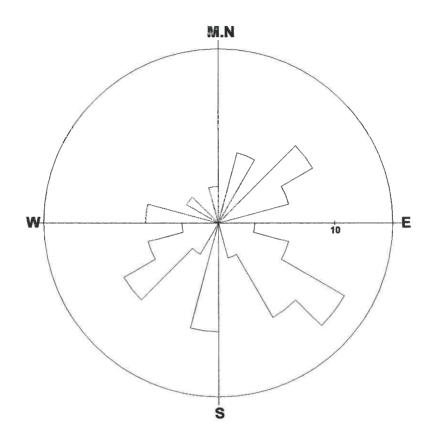
**Grouping Angle: 15 deg** 

| Dir  | %  | Dir  | % | Dir  | % |
|------|----|------|---|------|---|
| 0-   | 0  | 135- | 0 | 270- | 0 |
| 15-  | 0  | 150- | 0 | 285- | 0 |
| 30-  | 40 | 165- | 0 | 300- | 0 |
| 45-  | 40 | 180- | 0 | 315- | 0 |
| 60-  | 0  | 195- | 0 | 330- | 0 |
| 75-  | 20 | 210- | 0 | 345- | 0 |
| 90-  | 0  | 225- | 0 |      |   |
| 105- | 0  | 240- | 0 |      |   |
| 120- | 0  | 255- | 0 |      |   |

Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm

## C-52.STR <<JOINT>>



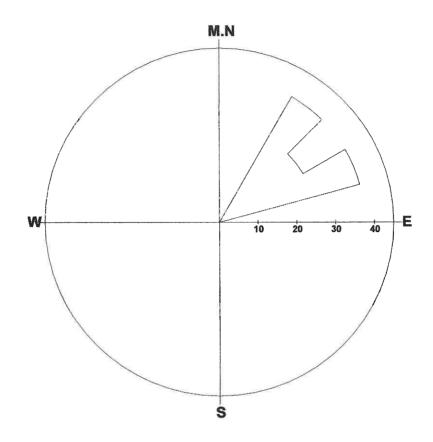
Number of Data: 32/71

Max: 12.5%

**Grouping Angle: 15 deg** 

| Dir  | %  | Dir  | % | Dir  | % |
|------|----|------|---|--|---|
| 0-   | 0  | 135- | 9 | 270-   | 6 |
| 15-  | 6  | 150- | 3 | 285-   | 0 |
| 30-  | 0  | 165- | 0 | 300-   | 3 |
| 45-  | 9  | 180- | 9 | 315-   | 0 |
| 60-  | 6  | 195- | 0 | 330-   | 0 |
| 75-  | 0  | 210- | 3 | 345-   | 3 |
| 90-  | 3  | 225- | 9 |  |   |
| 105- | 6  | 240- | 6 | And the second s |   |
| 120- | 13 | 255- | 3 |  |   |

## C-52.STR <<PARTING>>



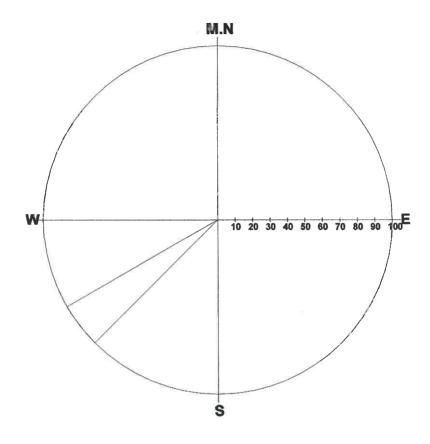
Number of Data: 8/71

Max: 37.5%

**Grouping Angle: 15 deg** 

| Dir  | %  | Dir  | % | Dir  | % |
|------|----|------|---|------|---|
| 0-   | 0  | 135- | 0 | 270- | 0 |
| 15-  | 0  | 150- | 0 | 285- | 0 |
| 30-  | 38 | 165- | 0 | 300- | 0 |
| 45-  | 25 | 180- | 0 | 315- | 0 |
| 60-  | 38 | 195- | 0 | 330- | 0 |
| 75-  | 0  | 210- | 0 | 345- | 0 |
| 90-  | 0  | 225- | 0 |      |   |
| 105- | 0  | 240- | 0 |      |   |
| 120- | 0  | 255- | 0 |      |   |

C-52.STR <<FAULT>>



Number of Data: 1/71

Max: 100.0%

**Grouping Angle: 15 deg** 

| Dir  | % | Dir  | %   | Dir  | % |
|------|---|------|-----|------|---|
| 0-   | 0 | 135- | 0   | 270- | 0 |
| 15-  | 0 | 150- | 0   | 285- | 0 |
| 30-  | 0 | 165- | 0   | 300- | 0 |
| 45-  | 0 | 180- | 0   | 315- | 0 |
| 60-  | 0 | 195- | 0   | 330- | 0 |
| 75-  | 0 | 210- | 0   | 345- | 0 |
| 90-  | 0 | 225- | 100 |      |   |
| 105- | 0 | 240- | 0   |      |   |
| 120- | 0 | 255- | 0   |      |   |

Depth: 1.574 - 20.051 m

Aperture: 0.0 - 76.0 mm