ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04

OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA GRIS Y ROJO

ABSCISA: EJE G SONDEO No: 5 MUESTRA No: 2 PROF. (m): 0,65-1,91

LIMITES DE CONSISTENCIA

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CLASIFICACION


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CURVA GRANULOMETRICA

OBSERVACIONES: ________________________________

Laboratorista: Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
OBRAS: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA MARRON CLARO
LAB: Mataste

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HUMEDAD NATURAL

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| P2 gramos | 1188,40 |
| P3 gramos | 121,30 |
| % Humedad | 24,5 |

RESULTADOS

| Humedad Natural | 24,5 % |
| Limite Líquido | 55 % |
| Limite Plástico | 34 % |
| Indice de Plasticidad | 21 % |

FINOS: 92,1 %

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CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
## RESUMEN ESTUDIO DE SUELO

### S DEL DESARROLLO COLOMBIA-PANAMA

**VILLA SUIZA**

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**OBRA:** URBANIZACION VILLA SUIZA  
**LAB:**  
**LOCALIZACION:** PANAMA  
**ABSCISA:** EJE F  
**EMPRESA:** CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA  
**LADO:**  
**SONDEO No:** 7  
**FECHA:** 23-04-04  
**DE:** 7  

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**APROBÓ**
**PERFIL ESTRATIGRÁFICO DE CAMPO**

**OBRA:** URBANIZACIÓN VILLA SUIZA

**LOCALIZACIÓN:** PANAMA

**EMPRESA:** CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA

**SONDEO No:** 6

**FECHA:** 23-jun-04

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**APROBO**
PERFIL ESTRATIGRÁFICO DE CAMPO

OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
EMPRESA: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
SONDEO No: 5

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OBSERVACION: ________________________________________________________________

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**OBRA:** URBANIZACIÓN VILLA SUÍZA  
**LAB:**  
**LOCALIZACIÓN:** PANAMA  
**ABSCISA:** EJE F  
**EMPRESA:** CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA  
**LADO:**  
**SONDEO No:** 4  
**FECHA:** 23-Jun-04  
**DE:** 7  

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**REVISÓ**

**APROBO**
PERFIL ESTRATIGRAFICO DE CAMPO

OBRA: URBANIZACIÓN VILLA SUIZA
LOCALIZACION: PANAMA
EMPRESA: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
SONDEO No: 3

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PERFIL ESTRATIGRAFICO DE CAMPO

OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
LAB: EJE F
ABSCISA: JR
EMPRESA: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
LADO: HOJA 1
SONDEO No: 2
FECHA: 23-jun-04
DE 7

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ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
LOCALIZACION: PANAMA
OBRAS: URBANIZACION VILLA SUIZA
LAB: ENSAYO DE CLASIFICACION

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<td>34,09</td>
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HUMEDAD NATURAL

| P1 gramos | 756,30 |
| P2 gramos | 618,40 |
| P3 gramos | 95,60 |
| % Humedad | 26,4 % |

RESULTADOS

| Humedad Natural: 26,4 % | Gravas: 5,7 % |
| Limite Líquido: 50 % | Arenas: 15,2 % |
| Limite Plástico: 34 % | Finos: 79,1 % |
| Indice de Plasticidad: 16 % |

CLASIFICACION


GRADACION

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CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
**ENSAYO DE CLASIFICACION**
**LIMITES DE CONSISTENCIA Y GRADACION**

**INVIA S E-122 - E-123 - E-125 - E-126**

**SOLICITANTE:** CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA

**OBRA:** URBANIZACION VILLA SUIZA

**LOCALIZACION:** PANAMA

**DESCRIPCION:** ARCILLA GRIS Y ROJA

**FECHA**

23-jun-04

**LAB**

**ABSCISA:** EJE F

**SONDEO No:** 2

**MUESTRA No:** 2

**PROF. (m):** 0,47-1,07

**TT**

### LIMITES DE CONSISTENCIA

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### LIMITE PLASTICO

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### HUMEDAD NATURAL

| P1 gramos | 1425,10 |
| P2 gramos | 1156,40 |
| P3 gramos | 110,20 |
| % Humedad | 25,7 |

### RESULTADOS

- Humedad Natural: 25,7 %
- Límite Líquido: 60 %
- Límite Plástico: 42 %
- Indice de Plasticidad: 18 %

### CLASIFICACION

- Índice de Grupo: 15
- U.S.C.S.: OH-MH

### GRADACION

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<th>TAMIZ</th>
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<th>% Ret Acum</th>
<th>% Pasa</th>
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### OBSERVACIONES

Laboratorista: Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA MARRON CLARO
LAB
ABSCISA: EJE F
SONDEO No: 2
MUESTRA No: 3
PROF. (m): 1,07-1,55

LIMITES DE CONSISTENCIA

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</table>

HUMEDAD NATURAL

| P1 gramos | 899,30 |
| P2 gramos | 672,10 |
| P3 gramos | 83,60  |
| % Humedad | 34,1   |

RESULTADOS

| Humedad Natural: | 34,1 % |
| Limite Líquido:  | 49 %   |
| Limite Plástico: | 30 %   |
Indice de Plasticidad: 19 %

CLASIFICACION

| Indice de Grupo: | 14 |
| A.A.S.H.T.O.:    | A-7-5 |

GRADACION

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<tr>
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<th>% Reten</th>
<th>% Pasa</th>
<th>Inf.</th>
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CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
ABSCISA: EJE F
SONDEO N°: 3
MUESTRA N°: 1
PROF. (m): 0,00-0,82

LIMITES DE CONSISTENCIA

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HUMEDAD NATURAL

| HUMEDAD NATURAL | P1 gramos | 1313,60 |
| P2 gramos       | 1086,50  |
| P3 gramos       | 124,50   |
| % Humedad       | 23,6     |

RESULTADOS

- Humedad Natural: 23,6 %
- Límite Líquido: 52 %
- Límite Plástico: 34 %
- Índice de Plasticidad: 19 %

GRADACION

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<td>% Pasa Inf.</td>
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OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA GRIS Y ROJA
LAB

LIMITES DE CONSISTENCIA

<table>
<thead>
<tr>
<th>LÍMITE LIQUIDO</th>
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<td>No Golpes</td>
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</tr>
<tr>
<td>% Humedad</td>
</tr>
</tbody>
</table>

RESULTADOS

<table>
<thead>
<tr>
<th>Humedad Natural: 22,0 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravas: 0,0 %</td>
</tr>
<tr>
<td>Arenas: 5,5 %</td>
</tr>
<tr>
<td>Finos: 94,5 %</td>
</tr>
<tr>
<td>Índice de Plasticidad: 13 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NORMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAMIZ</td>
</tr>
<tr>
<td>W Reten</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>3&quot;</td>
</tr>
<tr>
<td>2 1/2&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
</tr>
<tr>
<td>1&quot;</td>
</tr>
<tr>
<td>3/4&quot;</td>
</tr>
<tr>
<td>1/2&quot;</td>
</tr>
<tr>
<td>3/8&quot;</td>
</tr>
<tr>
<td># 4</td>
</tr>
<tr>
<td># 10</td>
</tr>
<tr>
<td># 40</td>
</tr>
<tr>
<td># 200</td>
</tr>
<tr>
<td>FONDO</td>
</tr>
</tbody>
</table>

CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIA E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA GRIS Y ROJA
FECHA: 23-jun-04
LABORATORIO: SOLICUENTA DEL DESARROLLO COLOMBIA-PANAMA

LIMITES DE CONSISTENCIA

**LIMITE LIQUIDO**

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50,50</td>
<td>37,90</td>
<td>16,50</td>
<td>58,88</td>
</tr>
<tr>
<td>2</td>
<td>49,70</td>
<td>37,60</td>
<td>16,00</td>
<td>56,02</td>
</tr>
<tr>
<td>3</td>
<td>49,10</td>
<td>37,60</td>
<td>16,30</td>
<td>53,99</td>
</tr>
</tbody>
</table>

**LIMITE PLASTICO**

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16,40</td>
<td>13,60</td>
<td>6,90</td>
<td>41,79</td>
</tr>
<tr>
<td>2</td>
<td>16,20</td>
<td>13,20</td>
<td></td>
<td>42,25</td>
</tr>
<tr>
<td>3</td>
<td>6,10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HUMEDAD NATURAL**

<table>
<thead>
<tr>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,0 %</td>
</tr>
</tbody>
</table>

**RESULTADOS**

<table>
<thead>
<tr>
<th>Gravas:</th>
<th>Arenas:</th>
<th>Finos:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,0 %</td>
<td>5,5 %</td>
<td>94,5 %</td>
</tr>
</tbody>
</table>

**INDICE DE PLASTICIDAD:**

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 %</td>
</tr>
</tbody>
</table>

**CLASIFICACION**

<table>
<thead>
<tr>
<th>Indice de Grupo:</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.A.S.H.T.O.:</td>
<td>A-7-5</td>
</tr>
</tbody>
</table>

**GRADACION**

<table>
<thead>
<tr>
<th>TAMIZ</th>
<th>Inf.</th>
<th>Sup.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 gramos = 692,3</td>
<td>W Reten</td>
<td>% Reten</td>
</tr>
<tr>
<td>3&quot; 75</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>2 1/2&quot; 65</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>2&quot; 60,8</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>1 1/2&quot; 38,1</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>1&quot; 25,4</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>3/4&quot; 18,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>1/2&quot; 12,7</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>3/8&quot; 9,51</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>1/4&quot; 4,76</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td># 10 2,0</td>
<td>10,4</td>
<td>1,5</td>
</tr>
<tr>
<td># 40 0,42</td>
<td>6,6</td>
<td>1,0</td>
</tr>
<tr>
<td># 200 0,074</td>
<td>21,1</td>
<td>3,0</td>
</tr>
<tr>
<td>FONDO 654,2</td>
<td>94,5</td>
<td>100,0</td>
</tr>
</tbody>
</table>

**OBSERVACIONES**

Laboratorista: Ing. De Laboratorio
ENSAYO DE CLASIFICACION  
LIMITES DE CONSISTENCIA Y GRADACION  
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA  
FECHA: 23-jun-04

OBRA: URBANIZACION VILLA SUIZA  
LOCALIZACIÓN: PANAMA  
DESCRIPCIÓN: ARCILLA MARRON CLARO

LAB

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA  
FECHA: 23-jun-04

LOCALIZACIÓN: PANAMA  
DESCRIPCIÓN: ARCILLA MARRON CLARO

LAB

LIMITES DE CONSISTENCIA

LÍMITE LIQUIDO

<table>
<thead>
<tr>
<th>No Golpes</th>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>1</td>
<td>49,80</td>
<td>37,90</td>
<td>15,10</td>
<td>52,19</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>47,80</td>
<td>37,10</td>
<td>15,40</td>
<td>49,31</td>
</tr>
<tr>
<td>35</td>
<td>3</td>
<td>50,40</td>
<td>39,00</td>
<td>15,00</td>
<td>47,50</td>
</tr>
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</table>

LÍMITE PLÁSTICO

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18,10</td>
<td>15,20</td>
<td>5,50</td>
<td>29,90</td>
</tr>
<tr>
<td>2</td>
<td>19,40</td>
<td>16,30</td>
<td>6,00</td>
<td>30,10</td>
</tr>
<tr>
<td>3</td>
<td>19,40</td>
<td>16,30</td>
<td>6,00</td>
<td>30,10</td>
</tr>
</tbody>
</table>

HUMEDAD NATURAL

<table>
<thead>
<tr>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1563,20</td>
<td>1194,80</td>
<td>153,20</td>
<td>35,4</td>
</tr>
</tbody>
</table>

RESULTADOS

<table>
<thead>
<tr>
<th>Humedad Natural</th>
<th>Gravas</th>
<th>Arenas</th>
<th>Finos</th>
<th>Indice de Plasticidad</th>
</tr>
</thead>
<tbody>
<tr>
<td>35,4</td>
<td>0,0</td>
<td>15,0</td>
<td>85,0</td>
<td>20</td>
</tr>
</tbody>
</table>

GRADACION

<table>
<thead>
<tr>
<th>TAMIZ</th>
<th>Puig.</th>
<th>Tamiz (mm)</th>
<th>W</th>
<th>Reten</th>
<th>% Ret</th>
<th>% Ret Acum</th>
<th>% Pasa</th>
<th>Inf.</th>
<th>Sup.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>76</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>2 1/2&quot;</td>
<td>48</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>2&quot;</td>
<td>60,8</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>38,1</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1&quot;</td>
<td>25,4</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>19,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>12,7</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9,51</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>4,76</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>#10</td>
<td>2,0</td>
<td>1,8</td>
<td>1,8</td>
<td>1,8</td>
<td>99,4</td>
<td>99,4</td>
<td>99,4</td>
<td>99,4</td>
<td></td>
</tr>
<tr>
<td>#40</td>
<td>0,42</td>
<td>3,9</td>
<td>3,9</td>
<td>3,9</td>
<td>94,5</td>
<td>94,5</td>
<td>94,5</td>
<td>94,5</td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>0,074</td>
<td>9,5</td>
<td>9,5</td>
<td>9,5</td>
<td>85,0</td>
<td>85,0</td>
<td>85,0</td>
<td>85,0</td>
<td></td>
</tr>
<tr>
<td>FONDO</td>
<td>538,1</td>
<td>85,0</td>
<td>100,0</td>
<td>0,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACIÓN
LIMITES DE CONSISTENCIA Y GRADACION
INVIA S E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA MARRON CLARO

ABSCISA: EJE F
SONDEO No: 4
MUESTRA No: 1
PROF. (m): 0,00-0,55

LIMITES DE CONSISTENCIA

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>49,80</td>
<td>37,90</td>
<td>15,10</td>
<td>52,19</td>
</tr>
<tr>
<td>2</td>
<td>47,80</td>
<td>37,10</td>
<td>15,40</td>
<td>49,31</td>
</tr>
<tr>
<td>3</td>
<td>50,40</td>
<td>39,00</td>
<td>15,00</td>
<td>47,50</td>
</tr>
</tbody>
</table>

LIMITE LÍQUIDO

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18,10</td>
<td>15,20</td>
<td>5,50</td>
<td>29,90</td>
</tr>
<tr>
<td>2</td>
<td>19,40</td>
<td>16,30</td>
<td>6,00</td>
<td>30,10</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LIMITE PLÁSTICO

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

HUMEDAD NATURAL

<table>
<thead>
<tr>
<th>P1 gramos</th>
<th>P2 gramos</th>
<th>P3 gramos</th>
<th>% Humedad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1563,20</td>
<td>1194,80</td>
<td>153,20</td>
<td>35,4</td>
</tr>
</tbody>
</table>

RESULTADOS

| Humedad Natural: | 35,4 % |
| Gravas:          | 0,0 %  |
| Arenas:          | 15,0 % |
| Finos:           | 85,0 % |

Índice de Plasticidad: 20 %

CLASIFICACION

| Índice de Grupo: | 14 |
| AAS.H.T.O.:      | A-7-5 |

GRADACION

<table>
<thead>
<tr>
<th>TAMIZ</th>
<th>% Reten</th>
<th>% Reten Acum</th>
<th>% Pasa</th>
<th>Inf.</th>
<th>Sup.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pu.</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>100.0</td>
</tr>
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<td>2 1/2&quot;</td>
<td>65</td>
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<td>100.0</td>
</tr>
<tr>
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<td>50,8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>38,1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1&quot;</td>
<td>25,4</td>
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<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>19,0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>12,7</td>
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<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9,51</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td># 4</td>
<td>4,76</td>
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<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td># 10</td>
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<td>1.6</td>
<td>98.4</td>
<td></td>
</tr>
<tr>
<td># 40</td>
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<td>3.9</td>
<td>5.5</td>
<td>94.6</td>
<td></td>
</tr>
<tr>
<td># 200</td>
<td>0,074</td>
<td>9.9</td>
<td>15.0</td>
<td>88.0</td>
<td></td>
</tr>
<tr>
<td># 260</td>
<td>0,074</td>
<td>14.9</td>
<td>15.0</td>
<td>88.0</td>
<td></td>
</tr>
<tr>
<td>FONDO</td>
<td>538,1</td>
<td>85.0</td>
<td>100.0</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

OBSERVACIONES

Laboratorista: ____________________________
Ing. De Laboratorio: ______________________
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA GRIS Y ROJA

LAB
ABSCISA: EJE F
SONDEO No: 4
MUESTRA No: 2
PROF. (m): 0,55-0,96

LIMITES DE CONSISTENCIA

LIMITE LIQUIDO

<table>
<thead>
<tr>
<th>No Golpes</th>
<th>17</th>
<th>21</th>
<th>33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaso No.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>P1 gramos</td>
<td>50,10</td>
<td>52,10</td>
<td>51,40</td>
</tr>
<tr>
<td>P2 gramos</td>
<td>36,80</td>
<td>38,10</td>
<td>38,40</td>
</tr>
<tr>
<td>P3 gramos</td>
<td>16,50</td>
<td>16,00</td>
<td>16,50</td>
</tr>
<tr>
<td>% Humedad</td>
<td>65,52</td>
<td>63,35</td>
<td>59,36</td>
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</tbody>
</table>

LIMITE PLASTICO

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 gramos</td>
<td>17,90</td>
<td>16,90</td>
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</tr>
<tr>
<td>P2 gramos</td>
<td>14,50</td>
<td>13,70</td>
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</tr>
<tr>
<td>P3 gramos</td>
<td>6,50</td>
<td>6,00</td>
<td></td>
</tr>
<tr>
<td>% Humedad</td>
<td>42,50</td>
<td>41,56</td>
<td></td>
</tr>
</tbody>
</table>

HUMEDAD NATURAL

| P1 gramos | 103,50 |
| P2 gramos | 82,40 |
| P3 gramos | 96,30 |
| % Humedad | 24,9 |

RESULTADOS

| Gravas: | 0,0 |
| Arenas: | 7,9 |
| Finos: | 92,1 |

CLASIFICACION

| A.A.S.H.T.O.: | A-7-5 |

GRADACION

| P1 gramos | 482,1 |
| P2 gramos | 37,9 |

| TAMIZ W Reten % Reten % Reten Acum % Pasa Inf. Sup. |
| Pulg. mm | | | | |
| 3" | 76 | 0,0 | 0,0 | 0,0 | 100,0 |
| 2 1/2" | 66 | 0,0 | 0,0 | 0,0 | 100,0 |
| 2" | 50,8 | 0,0 | 0,0 | 0,0 | 100,0 |
| 1 1/2" | 38,1 | 0,0 | 0,0 | 0,0 | 100,0 |
| 1" | 25,6 | 0,0 | 0,0 | 0,0 | 100,0 |
| 3/4" | 19,0 | 0,0 | 0,0 | 0,0 | 100,0 |
| 1/2" | 12,7 | 0,0 | 0,0 | 0,0 | 100,0 |
| 3/8" | 9,51 | 0,0 | 0,0 | 0,0 | 100,0 |
| # 4 | 4,76 | 0,0 | 0,0 | 0,0 | 100,0 |
| # 10 | 2,0 | 0,0 | 0,0 | 0,0 | 100,0 |
| # 40 | 0,42 | 0,0 | 0,0 | 0,0 | 100,0 |
| # 200 | 0,074 | 0,0 | 0,0 | 0,0 | 100,0 |
| FONDO | 444,2 | 92,1 | 100,0 | 0,0 | 0,0 |

CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA MARRON CLARO
LAB

ENVIAS E-122 - E-123 - E-125 - E-126

FECHA: 23-jun-04
SONDEO No: 4
MUESTRA No: 3
PROF. (m): 0,96-2,05

**LIMITES DE CONSISTENCIA**

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<th>Vaso No.</th>
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<tr>
<td>P2 gramos</td>
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<td>37,50</td>
<td>38,20</td>
<td>39,10</td>
</tr>
<tr>
<td>P3 gramos</td>
<td></td>
<td>16,00</td>
<td>15,50</td>
<td>16,00</td>
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<tr>
<td>% Humedad</td>
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<td>52,56</td>
<td>50,22</td>
<td>47,62</td>
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**LÍMITE PLÁSTICO**

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</thead>
<tbody>
<tr>
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<td>20,70</td>
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</tr>
<tr>
<td>P2 gramos</td>
<td>17,90</td>
<td>17,50</td>
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<tr>
<td>P3 gramos</td>
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<tr>
<td>% Humedad</td>
<td>30,84</td>
<td>30,48</td>
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</tr>
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</table>

**HUMEDAD NATURAL**

| P1 gramos | 1224,60 |
| P2 gramos | 988,70 |
| P3 gramos | 99,40 |
| % Humedad | 25,1 |

**RESULTADOS**

- Humedad Natural: 25,1%
- Límite Líquido: 50%
- Límite Plástico: 31%
- Indice de Plasticidad: 19%

**CLASIFICACION**

- Indice de Grupo: 14
- U.S.C.S.: OH-MH

**GRADACION**

<table>
<thead>
<tr>
<th>TAMIZ W Reten</th>
<th>% Reten</th>
<th>% Reten Acum</th>
<th>% Pasa</th>
<th>Inf.</th>
<th>Sup.</th>
</tr>
</thead>
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<tr>
<td>2 1/2&quot; 65</td>
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<td>0,0</td>
<td>100,0</td>
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</tr>
<tr>
<td>2&quot; 60,8</td>
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<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1 1/2&quot; 38,1</td>
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<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1&quot; 25,4</td>
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<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/4&quot; 19,0</td>
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<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>1/2&quot; 12,7</td>
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<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/8&quot; 9,51</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td># 4 4,76</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td># 10 2,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td># 40 0,42</td>
<td>35,5</td>
<td>4,7</td>
<td>4,7</td>
<td>95,3</td>
<td></td>
</tr>
<tr>
<td># 200 0,074</td>
<td>56,8</td>
<td>7,5</td>
<td>12,1</td>
<td>87,9</td>
<td></td>
</tr>
<tr>
<td>FONDO 669,8</td>
<td>87,9</td>
<td>100,0</td>
<td>0,0</td>
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<td></td>
</tr>
</tbody>
</table>

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACIÓN
LIMITES DE CONSISTENCIA Y GRADACION
INVIA'S E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA

FECHA: 23-jun-04

LOCALIZACION: PANAMA

DESCRIPCION: ARCILLA GRIS Y ROJA

ABSCISA: EJE F

SONDEO No: 5

MUESTRA No: 1

PROF. (m): 0,00-0,45

TT

**LIMITES DE CONSISTENCIA**

<table>
<thead>
<tr>
<th>No Golpes</th>
<th>16</th>
<th>22</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaso No.</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>P1 gramos</td>
<td>46,80</td>
<td>48,50</td>
<td>46,10</td>
</tr>
<tr>
<td>P2 gramos</td>
<td>34,20</td>
<td>36,00</td>
<td>34,60</td>
</tr>
<tr>
<td>P3 gramos</td>
<td>15,10</td>
<td>16,50</td>
<td>15,50</td>
</tr>
<tr>
<td>% Humedad</td>
<td>65,97</td>
<td>64,10</td>
<td>60,21</td>
</tr>
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</table>

**LIMITE PLASTICO**

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 gramos</td>
<td>15,30</td>
<td>17,20</td>
<td></td>
</tr>
<tr>
<td>P2 gramos</td>
<td>12,30</td>
<td>14,20</td>
<td></td>
</tr>
<tr>
<td>P3 gramos</td>
<td>5,10</td>
<td>7,10</td>
<td></td>
</tr>
<tr>
<td>% Humedad</td>
<td>41,67</td>
<td>42,25</td>
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</tr>
</tbody>
</table>

**HUMEDAD NATURAL**

| P1 gramos | 1356,60 |
| P2 gramos | 1100,20 |
| P3 gramos | 101,50 |
| % Humedad | 25,7 |

**RESULTADOS**

<table>
<thead>
<tr>
<th>Gravas</th>
<th>Arenas</th>
<th>Finos</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,0 %</td>
<td>6,8 %</td>
<td>93,2 %</td>
</tr>
</tbody>
</table>

**Indice de Plasticidad:** 21 %

**CLASIFICACION**

| Índice de Grupo: 16 |
| A.A.S.H.T.O.: A-7-5 |

**GRADACION**

<table>
<thead>
<tr>
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<th>TAMIZ</th>
<th>P2 = 42,3</th>
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<td>W Reten</td>
<td>% Reten</td>
<td>% Reten Acum</td>
</tr>
<tr>
<td>3&quot;</td>
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<tr>
<td>2 1/2&quot;</td>
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<td>2&quot;</td>
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<tr>
<td>1 1/2&quot;</td>
<td>38,1</td>
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<td>0,0</td>
</tr>
<tr>
<td>1&quot;</td>
<td>26,4</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>3/4&quot;</td>
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<tr>
<td>1/2&quot;</td>
<td>12,7</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9,51</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td># 4</td>
<td>4,76</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td># 10</td>
<td>2,0</td>
<td>7,8</td>
<td>12,2</td>
</tr>
<tr>
<td># 40</td>
<td>0,42</td>
<td>12,9</td>
<td>21,1</td>
</tr>
<tr>
<td># 200</td>
<td>0,074</td>
<td>21,6</td>
<td>35,0</td>
</tr>
<tr>
<td># FONDO</td>
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<td>625,1</td>
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</tbody>
</table>

**CURVA GRANULOMETRICA**

OBSERVACIONES

Laboratorista

Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-Jun-04
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA

DESCRIPCION: ARCILLA MARRON CLARO
LAB OBRAS:
ABSCISA: EJE F  SONDEO No: 5  MUESTRA No: 2  PROF. (m): 0.45-1.50

LIMITES DE CONSISTENCIA

LIMITE LIQUIDO

<table>
<thead>
<tr>
<th>Vaso No.</th>
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<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Golpes</td>
<td>19</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>P1 gramos</td>
<td>50,50</td>
<td>51,20</td>
<td>50,70</td>
</tr>
<tr>
<td>P2 gramos</td>
<td>38,40</td>
<td>38,80</td>
<td>38,80</td>
</tr>
<tr>
<td>P3 gramos</td>
<td>16,30</td>
<td>15,50</td>
<td>15,10</td>
</tr>
<tr>
<td>% Humedad</td>
<td>54,75</td>
<td>53,22</td>
<td>50,21</td>
</tr>
</tbody>
</table>

LIMITE PLASTICO

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 gramos</td>
<td>15,30</td>
<td>16,60</td>
<td></td>
</tr>
<tr>
<td>P2 gramos</td>
<td>13,10</td>
<td>14,10</td>
<td></td>
</tr>
<tr>
<td>P3 gramos</td>
<td>6,10</td>
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</tr>
<tr>
<td>% Humedad</td>
<td>31,43</td>
<td>31,65</td>
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</tr>
</tbody>
</table>

HUMEDAD NATURAL

| P1 gramos | 1352,40 |
| P2 gramos | 1092,30 |
| P3 gramos | 142,50 |
| % Humedad | 32,4 |

RESULTADOS

| | | | Gravas: 0,0 % | Arenas: 16,1 % | Finos: 83,9 % |
|----------------|----------------|----------------|----------------|----------------|
| P1 gramos | 32,4 % | | | | |
| Limite Liquido | 53 % | | | | |
| Limite Plastico | 32 % | | | | |
| Indice de Plasticidad | 21 % | | | | |

GRADACION

<table>
<thead>
<tr>
<th>TAMIZ</th>
<th>W Reten</th>
<th>% Reten</th>
<th>%Ret Acum</th>
<th>% Pasa</th>
<th>Inf.</th>
<th>Sup.</th>
</tr>
</thead>
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<td></td>
</tr>
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<td>100,0</td>
<td></td>
</tr>
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<td>100,0</td>
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</tr>
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<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
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<td>0,0</td>
<td>0,0</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
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<td>0,0</td>
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<td>100,0</td>
<td></td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9,51</td>
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<td>0,0</td>
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<td>100,0</td>
<td></td>
</tr>
<tr>
<td># 4</td>
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<td>100,0</td>
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<td>8,6</td>
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</tbody>
</table>

CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACIÓN
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
LABORATORISTA: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA

Limite Líquido

<table>
<thead>
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<tbody>
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<td>3</td>
</tr>
<tr>
<td>P1 gramos</td>
<td>55,70</td>
<td>55,60</td>
<td>56,20</td>
</tr>
<tr>
<td>P2 gramos</td>
<td>41,30</td>
<td>41,90</td>
<td>43,20</td>
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<tr>
<td>P3 gramos</td>
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<td>16,00</td>
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<tr>
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Limite Plástico

<table>
<thead>
<tr>
<th>Vaso No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
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Humedad Natural

| P1 gramos | 889,60 |
| P2 gramos | 700.80 |
| P3 gramos | 96.60 |
| % Humedad | 31,2 |

RESULTADOS

| Humedad Natural: | 31,2 % |
| Límite Líquido: | 53 % |
| Límite Plástico: | 30 % |
| Indice de Plasticidad: | 23 % |

CLASIFICACION

| Indice de Grupo: | 16 |
| A.A.S.H.T.O.: | A-7-5 |

GRADACION

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CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
ENSAYO DE CLASIFICACION
LIMITES DE CONSISTENCIA Y GRADACION
INVIAS E-122 - E-123 - E-125 - E-126

SOLICITANTE: CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA
FECHA: 23-jun-04
OBRA: URBANIZACION VILLA SUIZA
LOCALIZACION: PANAMA
DESCRIPCION: ARCILLA MARRON CLARO
ABSCISA: EJE F SONDEO No: 7 MUESTRA No: 1 PROF. (m): 0,00-2,00

LIMITES DE CONSISTENCIA

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LIMITE LIQUIDO

LIMITE PLASTICO

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HUMEDAD NATURAL

RESULTADOS

| Humedad Natural: | 29,3 % |
|-----------------------------------------------|
| Gravas: | 0,0 % |
| Arenas: | 14,4 % |
| Finos: | 85,6 % |

CLASIFICACION

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CURVA GRANULOMETRICA

OBSERVACIONES

Laboratorista
Ing. De Laboratorio
### RESUMEN ESTUDIO DE SUELO

**CONSULTORES DEL DESARROLLO COLOMBIA-PANAMA**

**URBANIZACION VILLA SUIZA**

**PANAMA**

**FECHA** 23-jun-O4

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