## Results of Moisture Content, Plasticity and Linear Shrinkage Tests

**Client:** HEALTH INFRASTRUCTURE  
**Project:** WAGGA WAGGA BASE HOSPITAL  
**Location:** WAGGA WAGGA  
**Project No:** 72320  
**Report No:** S11-075 B  
**Report Date:** 27-04-11  
**Date Sampled:** 04-04-11  
**Date of Test:** 19-04-11  
**Page:** 1 of 1  

<table>
<thead>
<tr>
<th>Test Location</th>
<th>Depth (m)</th>
<th>Description</th>
<th>Code</th>
<th>W&lt;sub&gt;F&lt;/sub&gt; %</th>
<th>W&lt;sub&gt;L&lt;/sub&gt; %</th>
<th>W&lt;sub&gt;P&lt;/sub&gt; %</th>
<th>PI %</th>
<th>*LS %</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH 101</td>
<td>4.00 – 4.45</td>
<td>SILTY CLAY – Orange brown silty clay with some ironstone gravel</td>
<td>2,5</td>
<td>-</td>
<td>35</td>
<td>18</td>
<td>17</td>
<td>11.0</td>
</tr>
<tr>
<td>BH 106</td>
<td>2.50 – 2.95</td>
<td>SILTY CLAY – Orange brown silty clay with traces of ironstone gravel</td>
<td>2,5</td>
<td>-</td>
<td>33</td>
<td>18</td>
<td>15</td>
<td>10.0</td>
</tr>
<tr>
<td>BH 108</td>
<td>1.40 – 1.85</td>
<td>SILTY CLAY – Red brown silty clay</td>
<td>2,5</td>
<td>-</td>
<td>28</td>
<td>15</td>
<td>13</td>
<td>8.5</td>
</tr>
<tr>
<td>BH 109</td>
<td>4.00 – 4.45</td>
<td>SILTY CLAY – Orange brown silty clay</td>
<td>2,5</td>
<td>-</td>
<td>34</td>
<td>17</td>
<td>17</td>
<td>10.5</td>
</tr>
</tbody>
</table>

**Legend:**  
- W<sub>F</sub>: Field Moisture Content  
- W<sub>L</sub>: Liquid limit  
- W<sub>P</sub>: Plastic limit  
- PI: Plasticity index  
- LS: Linear shrinkage from liquid limit condition (Mould length125mm)  

**Code:**  
- Sample history for plasticity tests  
  1. Air dried  
  2. Low temperature (<50°C) oven dried  
  3. Oven (105°C) dried  
  4. Unknown  
- Method of preparation for plasticity tests  
  5. Dry sieved  
  6. Wet sieved  
  7. Natural  

**Test Methods:**  
- Moisture Content: AS 1289 2.1.1  
- Liquid Limit: AS 1289.3.1.2  
- Plastic Limit: AS 1289 3.2.1  
- Plasticity Index: AS 1289 3.3.1  
- Linear Shrinkage: AS 1289 3.4.1  

**Sampling Methods:** Sampled by Engineering Department  

**Remarks:**
Determination of Emerson Class Number of Soil

Client: HEALTH INFRASTRUCTURE  
Project: WAGGA WAGGA BASE HOSPITAL  
Location: WAGGA WAGGA

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth (m)</th>
<th>Description</th>
<th>Water Type</th>
<th>Water Temp</th>
<th>Class No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH 102</td>
<td>1.00 – 1.45</td>
<td>SILTY CLAY – Orange brown silty clay with some ironstone gravel and traces of sand</td>
<td>Distilled</td>
<td>20°C</td>
<td>3</td>
</tr>
<tr>
<td>BH 106</td>
<td>4.00 – 4.45</td>
<td>SILTY CLAY – Mottled orange brown and grey silty clay with traces of ironstone gravel and sand</td>
<td>Distilled</td>
<td>20°C</td>
<td>3</td>
</tr>
</tbody>
</table>

Test Methods: AS 1289 3.8.1  
Sampling Methods: AS 1289.1.2.1, AS 1289.1.1

Remarks:

NATA Accredited Laboratory Number: 828

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 Accredited for compliance with ISO/IEC 17025

Tested: MO  
Checked: NW

Norman Weimann
Laboratory Manager
Results of Compaction Test

Client: HEALTH INFRASTRUCTURE
Project: WAGGA WAGGA BASE HOSPITAL REDEVELOP
Location: EDWARD STREET - WAGGA WAGGA

Project No.: 72320
Report No.: S11 - 063 A
Report Date: 19/04/2011
Date of Test: 11/04/2011
Page: 1 of 1

Sample Details:
Location: BH 101
Depth: 0.3m

Description: SILTY CLAY - Red orange silty clay

Particles > 19mm: 0%

Maximum Dry Density: 1.80 t/m³
Optimum Moisture Content: 13.5 %

Remarks:

Test Methods: AS1289.5.1.1, AS1289.2.1.1

Sampling Methods: By Engineering Dept

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Tested: RA
Cracked: NW

Norman Weimann
Laboratory Manager
Result of California Bearing Ratio Test

<table>
<thead>
<tr>
<th>Client</th>
<th>HEALTH INFRASTRUCTURE</th>
<th>Project No.</th>
<th>72320</th>
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<tbody>
<tr>
<td>Project</td>
<td>WAGGA WAGGA BASE HOSPITAL</td>
<td>Report No.</td>
<td>S11 - 063 B</td>
</tr>
<tr>
<td>Location</td>
<td>EDWARD STREET - WAGGA WAGGA</td>
<td>Report Date</td>
<td>19/04/2011</td>
</tr>
<tr>
<td>Test Location</td>
<td>BH1101</td>
<td>Date Sampled</td>
<td>1-7/04/2011</td>
</tr>
<tr>
<td>Depth / Layer</td>
<td>0.3</td>
<td>Date of Test</td>
<td>14/04/2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Page</td>
<td>1 of 1</td>
</tr>
</tbody>
</table>

Description: SILTY CLAY - Red orange silty clay

Test Method(s): AS 1289.6.1.1, AS 1289.2.1.1

Sampling Method(s): Sampled by Engineering Dept

<table>
<thead>
<tr>
<th>LEVEL OF COMPACTION:</th>
<th>100% of STD MDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOISTURE RATIO:</td>
<td>102% of STD OMC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>MOISTURE CONTENT %</th>
<th>DRY DENSITY l/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>At compaction</td>
<td>13.6</td>
<td>1.79</td>
</tr>
<tr>
<td>After soaking</td>
<td>17.1</td>
<td>1.78</td>
</tr>
<tr>
<td>After test</td>
<td>Top 30mm of sample</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td>Remainder of sample</td>
<td>-</td>
</tr>
<tr>
<td>Field values</td>
<td>15.2</td>
<td>-</td>
</tr>
<tr>
<td>Standard Compaction</td>
<td>9.7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>13.3</td>
<td>1.80</td>
</tr>
</tbody>
</table>

SURCHARGE: 4.5 kg
SOAKING PERIOD: 4 days

SWELL: 0.8%

Percentage > 19mm: 0.0%

RESULTS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PENETRATION</th>
<th>CBR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOTTOM</td>
<td>2.5 mm</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>5.0 mm</td>
<td>7</td>
</tr>
</tbody>
</table>

Tased: RA
Checked: NW

ATA Accredited Laboratory Number: 828

NATA Accredited Laboratory Number: 828

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Norman Weimann
Laboratory Manager
Results of Compaction Test

Client: HEALTH INFRASTRUCTURE
Project: WAGGA WAGGA BASE HOSPITAL REDEVELOP
Location: EDWARD STREET - WAGGA WAGGA

Project No.: 72320
Report No.: S11 - 063 C
Report Date: 19/04/2011
Date of Test: 11/04/2011
Page: 1 of 1

Sample Details: Location: BH 103
Depth: 0.5m
Description: CLAY - Red orange clay with some gravel

Particles > 19mm: 0%

Maximum Dry Density: 1.89 t/m³
Optimum Moisture Content: 13.5 %

Test Methods: AS1289.5.1.1, AS1289.2.1.1
Sampling Methods: By Engineering Dept

Norman Weimann
Laboratory Manager

NATA Accredited Laboratory Number: 828
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Result of California Bearing Ratio Test

Client: HEALTH INFRASTRUCTURE
Project: WAGGA WAGGA BASE HOSPITAL
Location: EDWARD STREET - WAGGA WAGGA
Test Location: BH103
Depth / Layer: 0.5

Description: CLAY - Red orange clay with some gravel
Test Method(s): AS 1289.6.1.1, AS 1289.2.1.1
Sampling Method(s): Sampled by Engineering Dept
Percentage > 19mm: 0.0%

LEVEL OF COMPACTION: 100% of STD MDD
MOISTURE RATIO: 98% of STD OMC
SURCHARGE: 4.5 kg
SOAKING PERIOD: 4 days
SWELL: 0.3%

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>MOISTURE CONTENT (%)</th>
<th>DRY DENSITY t/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>At compaction</td>
<td>13.2</td>
<td>1.90</td>
</tr>
<tr>
<td>After soaking</td>
<td>14.8</td>
<td>1.89</td>
</tr>
<tr>
<td>After test Top 30mm of sample</td>
<td>14.3</td>
<td>-</td>
</tr>
<tr>
<td>Remainder of sample</td>
<td>13.7</td>
<td>-</td>
</tr>
<tr>
<td>Field values</td>
<td>12.4</td>
<td>-</td>
</tr>
<tr>
<td>Standard Compaction</td>
<td>13.5</td>
<td>1.89</td>
</tr>
</tbody>
</table>

RESULTS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PENETRATION</th>
<th>CBR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOTTOM</td>
<td>2.5 mm</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>5.0 mm</td>
<td>10</td>
</tr>
</tbody>
</table>

Norman Weimann
Laboratory Manager

ATA Accredited Laboratory Number: 828

DOC: 72320
Report No.: S11 - 063 D
Date Sampled: 1-7/04/2011
Date of Test: 14/04/2011
Page: 1 of 1
Results of Compaction Test

Client: HEALTH INFRASTRUCTURE
Project: WAGGA WAGGA BASE HOSPITAL REDEVELOP
Location: EDWARD STREET - WAGGA WAGGA

Project No.: 72320
Report No.: S11 - 063 E
Report Date: 19/04/2011
Date of Test: 11/04/2011
Page: 1 of 1

Sample Details:
Location: BH 106
Depth: 0.3m

Description: SILTY CLAY - Brown silty clay

Particles > 19mm: 0%

Maximum Dry Density: 1.82 t/m³
Optimum Moisture Content: 14.0 %

Remarks:

Test Methods: AS1289.5.1.1, AS1289.2.1.1

Sampling Methods: By Engineering Dept

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Tasted: RA
Checked: NW

Norman Weimann
Laboratory Manager