

| Bore  | Sample | Depth | Sample Description                                               | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |               |      |
|-------|--------|-------|------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                  | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                  | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %             | %    |
| BH100 | SPT14  | 21.05 | Yellowish grey silty sand with traces of clay binders & kankars. |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 66   | 33            | 1    |
| BH101 | UDS01  | 2.50  | Reddish brown, silty clay / clayey silt with sand mixture        | 2.02   | 1.79   |       | 13 S  |       | UNCONFD               |         | 1.15    | 0      | 43            | 19 |    | CI         |            | 38   | 40            | 22   |
|       |        |       |                                                                  |        |        |       | 13 T  |       | 0.0                   | 1.166   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 0.0                   | 1.145   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 0.0                   | 1.139   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | REMOULD               |         | 1.04    | 0      |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 0.0                   | 1.052   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 0.0                   | 1.048   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 0.0                   | 1.020   |         |        |               |    |    |            |            |      |               |      |
| BH101 | UDS02  | 5.50  | Reddish brown, silty clay / clayey silt with sand mixture        | 1.99   | 1.73   | 2.65  | 16 S  |       | TRSH-UU               |         | 1.33    | 0      |               |    |    | CI*        |            | 24   | 53            | 23   |
|       |        |       |                                                                  |        |        |       | 15 T  |       | 3.0                   | 1.347   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 2.0                   | 1.328   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 1.0                   | 1.315   |         |        |               |    |    |            |            |      |               |      |
| BH101 | SPT07  | 10.50 | Reddish brown, silty clay / clayey silt with sand mixture        |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 33   | 46            | 21   |
| BH101 | SPT08  | 12.10 | Reddish brown silty sand                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 95   | 5 (Silt+Clay) |      |
| BH101 | SPT11  | 16.50 | Reddish brown silty sand                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 97   | 3 (Silt+Clay) |      |
| BH101 | SPT13  | 19.50 | Reddish brown silty sand                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 96   | 4 (Silt+Clay) |      |
| BH101 | SPT14  | 21.00 | Yellowish grey silty clay / clayey silt with sand mixture        |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 37   | 44            | 19   |
| BH102 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.                     |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 42   | 39            | 19   |
| BH102 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                     | 2.09   | 1.88   |       | 10 S  |       | TRSH-UU               |         | 1.47    | 0      | 43            | 17 | 14 | CI         |            |      |               |      |
|       |        |       |                                                                  |        |        |       | 11 T  |       | 3.0                   | 1.482   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 2.0                   | 1.471   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                  |        |        |       |       |       | 1.0                   | 1.457   |         |        |               |    |    |            |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.        | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois.       | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %           |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH102 | UDS03  | 8.50  | Reddish brown clayey silt with sand mixture & decomposed rock dust. | 2.10   | 1.94   |       | 7 S<br>8 T  |       | UNCONFD               |         | 1.30    | 0      |               |    |    | SM         |            | 51   | 45             | 4    |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.309   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.343   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.244   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | REMOULD               |         | 1.08    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.066   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.079   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.079   |         |        |               |    |    |            |            |      |                |      |
| BH102 | SPT07  | 10.40 | Brownish grey silty sand with clay binder                           |        |        |       |             |       |                       |         |         |        |               |    |    | SM-SP      |            | 89   | 11 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH102 | SPT14  | 20.00 | Brownish grey silty sand with clay binder                           |        |        |       |             |       |                       |         |         |        |               |    |    | SM-SP      |            | 89   | 11 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH103 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.                        | 2.11   | 1.92   |       | 9 S<br>10 T |       | TRSH-UU               |         | 1.41    | 0      | 44            | 21 |    | SC         |            | 52   | 38             | 10   |
|       |        |       |                                                                     |        |        |       |             |       | 3.0                   | 1.422   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 2.0                   | 1.413   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 1.0                   | 1.395   |         |        |               |    |    |            |            |      |                |      |
| BH103 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                        |        |        |       |             |       | UNCONFD               |         | 1.31    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.325   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.311   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.294   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | REMOULD               |         | 1.06    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.068   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.055   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       | 0.0                   | 1.057   |         |        |               |    |    |            |            |      |                |      |
| BH103 | SPT05  | 7.50  | Brownish grey silty sand with clay binder.                          |        |        |       |             |       |                       |         |         |        |               |    |    | SM-SP      |            | 88   | 12 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH103 | SPT12  | 18.05 | Brownish grey silty sand with clay binder.                          |        |        |       |             |       |                       |         |         |        |               |    |    | SM-SP      |            | 88   | 12 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH103 | SPT13  | 20.00 | Yellowish grey clayey silt with traces of sand mixture.             |        |        |       |             |       |                       |         |         |        |               |    |    | CI*        |            | 21   | 67             | 12   |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                     |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                     | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                        | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                        | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH104 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture & decomposed rock dust.    | 1.95   | 1.74   |       | 12 S  |       | TRSH-UU               |         | 1.30    | 0      | 47            | 23 |    | CI         |            |      |                |      |
|       |        |       |                                                                        |        |        |       | 12 T  |       | 3.0                   | 1.313   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 2.0                   | 1.298   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 1.0                   | 1.289   |         |        |               |    |    |            |            |      |                |      |
| BH104 | UDS02  | 5.50  | Reddish brown silty sand with traces of clay binders & decomposed rock | 1.72   | 1.59   |       | 8 S   |       | DRSH-CU               |         | 0.16    | 31     |               |    |    | SM         |            | 76   | 24 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       | 8DR   |       | 0.5                   | 0.481   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 1.0                   | 0.744   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 2.0                   | 1.381   |         |        |               |    |    |            |            |      |                |      |
| BH104 | SPT08  | 12.05 | Reddish brown silty sand with traces of clay binders & decomposed rock |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 89   | 11 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH104 | SPT12  | 18.05 | Reddish brown silty sand                                               |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 92   | 8 (Silt+Clay)  |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH104 | SPT13  | 20.00 | Yellowish grey silty clay with sand mixture                            |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 35   | 43             | 22   |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH105 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.                           |        |        | 2.69  |       | 0.427 | UNCONFD               |         | 1.52    | 0      | 43            | 17 |    | CI         |            | 49   | 35             | 16   |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.530   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.526   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.504   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | REMOULD               |         | 1.34    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.353   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.342   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.325   |         |        |               |    |    |            |            |      |                |      |
| BH105 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture & rock dust.               | 2.09   | 1.90   |       | 10 S  |       | TRSH-UU               |         | 1.36    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                        |        |        |       | 10 T  |       | 3.0                   | 1.372   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 2.0                   | 1.364   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       | 1.0                   | 1.344   |         |        |               |    |    |            |            |      |                |      |
| BH105 | SPT06  | 9.05  | Brownish grey silty sand.                                              |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 90   | 10 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH105 | SPT12  | 18.05 | Brownish grey silty sand.                                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH105 | SPT13  | 20.00 | Yellowish brown clayey silt.                                           |        |        |       |       |       |                       |         |         |        | 39            | 18 |    | CI         |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                                      | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-----------------------------------------------------------------------------------------|--------|--------|-------|----------------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                                         | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                                         | gms/cc | gms/cc |       | %                    |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH106 | UDS01  | 2.50  | Reddish brown sitly clay / clayey silt with traces of sand mixture.                     | 2.07   | 1.83   |       | 14 S<br>14 T         |       | UNCONFD               | 1.25    | 0       |        |               |    |    | CI*        |            | 37   | 43             | 20   |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.267   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.244   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.239   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | REMOULD               | 1.11    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.122   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.107   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.101   |         |        |               |    |    |            |            |      |                |      |
| BH106 | UDS02  | 5.50  | Reddish brown clayey silt with traces of sand mixture.                                  |        |        |       |                      |       |                       |         |         |        | 45            | 20 | 13 | CI         |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH106 | UDS03  | 8.50  | Reddish brown clayey silty sand.                                                        |        |        | 2.63  |                      |       |                       |         |         |        |               |    |    | SM         |            | 65   | 27             | 8    |
|       |        |       |                                                                                         |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH106 | UDS04  | 11.60 | Light brown silty sand.                                                                 | 1.74   | 1.61   |       | 8 S<br>8 DR          |       | DRSH-CU               | 0.08    | 30      |        |               |    |    | SM*        |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 0.369   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 1.0                   | 0.657   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 2.0                   | 1.235   |         |        |               |    |    |            |            |      |                |      |
| BH106 | SPT12  | 18.05 | Brownish grey silty sand.                                                               |        |        |       |                      |       |                       |         |         |        |               |    |    | SM-SP      |            | 90   | 10 (Silt+Clay) |      |
|       |        |       |                                                                                         |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH107 | UDS01  | 2.50  | Reddish brown silty clay with traces of sand mixture & decomposed rock dust.            | 2.01   | 1.78   |       | 12 S<br>13 T<br>15 C | 0.473 | TRSH-UU               | 1.28    | 0       |        |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 3.0                   | 1.305   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 2.0                   | 1.277   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 1.0                   | 1.258   |         |        |               |    |    |            |            |      |                |      |
| BH107 | UDS02  | 5.50  | Reddish brown silty clay / clayey silt with traces of sand mixture.                     |        |        | 2.72  |                      |       |                       |         |         |        | 42            | 22 | 13 | CI         |            | 49   | 35             | 16   |
|       |        |       |                                                                                         |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH107 | UDS03  | 8.50  | Reddish brown sandy clayey silt / sandy silty clay with traces of decomposed rock dust. | 2.08   | 1.84   |       | 11 S<br>13 T         |       | UNCONFD               | 1.62    | 0       |        | 45            | 19 |    | CI         |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.634   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.625   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.601   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | REMOULD               | 1.55    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.567   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.541   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                                         |        |        |       |                      |       | 0.0                   | 1.542   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                     | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                        | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                        | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH107 | SPT07  | 11.20 | Brownish grey silty sand with clay binder.             |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 86   | 14 (Silt+Clay) |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH107 | SPT13  | 20.50 | Brownish grey silty sand.                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH107 | SPT14  | 21.80 | Brownish grey clayey silty with traces of sand mix.    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 16   | 66             | 18   |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH108 | UDS01  | 3.00  | Reddish brown silty clay with sand mixture.            | 2.10   | 1.88   |       | 12 S  |       | UNCONFD               |         | 1.22    | 0      |               |    |    | CI*                      |            | 44   | 40             | 16   |
|       |        |       |                                                        |        |        |       | 12 T  |       | 0.0                   | 1.231   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 0.0                   | 1.218   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 0.0                   | 1.211   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | REMOULD               |         | 1.16    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 0.0                   | 1.171   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 0.0                   | 1.155   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 0.0                   | 1.154   |         |        |               |    |    |                          |            |      |                |      |
| BH108 | UDS02  | 6.00  | Reddish brown clayey silt with sand mixture.           |        |        | 2.70  |       |       |                       |         |         |        |               |    |    | CI*                      |            | 45   | 41             | 14   |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH108 | UDS03  | 9.00  | Reddish brown clayey silt with traces of sand mixture. |        |        |       |       |       |                       |         |         |        | 44            | 18 | 14 | CI                       |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH108 | SPT08  | 12.60 | Brownish grey silty sand.                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       | 7          | 89   | 4 (Silt+Clay)  |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH108 | SPT13  | 20.50 | Brownish grey silty sand.                              |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH108 | SPT14  | 21.70 | Brrownish grey clayey silt with sand mixture.          |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 22   | 58             | 20   |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH109 | UDS01  | 2.50  | Reddish brown silty clay with sand mixture             | 2.06   | 1.84   |       | 11 S  |       | TRSH-UU               |         | 1.55    | 0      |               |    |    | CI*                      |            | 42   | 38             | 20   |
|       |        |       |                                                        |        |        |       | 12 T  |       | 3.0                   | 1.566   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 2.0                   | 1.551   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       | 1.0                   | 1.533   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                 | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                    | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                    | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH109 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                       |        |        |       |       |       |                       |         |         |        | 42            | 22 | 12 | CI                       |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH109 | UDS03  | 8.50  | Reddish brown clayey silt with sand mixture.                       |        |        | 2.72  |       |       |                       |         |         |        |               |    |    | CI*                      |            | 48   | 40             | 12   |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH109 | SPT08  | 12.05 | Brownish grey silty sand.                                          |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH109 | SPT12  | 18.05 | Brownish grey silty sand.                                          |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 96   | 4 (Silt+Clay)  |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH109 | SPT13  | 20.00 | Yellowish brown clayey silt with traces of sand mixture.           |        |        |       |       |       |                       |         |         |        | 34            | 16 |    | CL                       |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH110 | UDS01  | 2.50  | Reddish brown silty clay with sand mixture.                        | 2.02   | 1.79   |       | 13 S  |       | UNCONFD               |         | 1.03    | 0      |               |    |    | CI*                      |            |      |                |      |
|       |        |       |                                                                    |        |        |       | 13 T  |       | 0.0                   | 1.055   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 1.022   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 1.013   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | REMOULD               |         | 0.99    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 1.007   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.986   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.977   |         |        |               |    |    |                          |            |      |                |      |
| BH110 | UDS02  | 5.60  | Reddish brown silty clay with sand mixture & decomposed rock dust. | 2.08   | 1.87   | 2.72  | 10 S  | 0.393 | TRSH-UU               |         | 1.35    | 0      |               |    |    | SM                       |            | 51   | 37             | 12   |
|       |        |       |                                                                    |        |        |       | 11 T  |       | 3.0                   | 1.366   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       | 11 C  |       | 2.0                   | 1.349   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 1.0                   | 1.335   |         |        |               |    |    |                          |            |      |                |      |
| BH110 | UDS03  | 8.50  | Reddish brown clayey silt with traces of sand mixture.             |        |        |       |       |       |                       |         |         |        | 41            | 19 | 13 | SC                       |            | 52   | 42             | 6    |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH110 | SPT07  | 10.60 | Brownish grey silty sand with clay binder.                         |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 77   | 23 (Silt+Clay) |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH110 | SPT10  | 15.00 | Brownish grey silty sand.                                          |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 93   | 7 (Silt+Clay)  |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH111 | UDS01  | 3.00  | Reddish brown silty clay / clayey silt with traces of sand mixture. |        |        |       |       |       |                       |         |         |        | 42            | 23 |    | CI                       |            | 46   | 43             | 11   |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH111 | UDS02  | 6.00  | Reddish brown silty clay with sand mixture.                         | 2.04   | 1.79   |       | 12 S  |       | TRSH-UU               |         | 1.21    | 0      |               |    |    | CI*                      |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 14 T  |       | 3.0                   | 1.224   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.213   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.193   |         |        |               |    |    |                          |            |      |                |      |
| BH111 | UDS03  | 9.05  | Reddish brown silty sand with traces of clay binders & kankars.     |        |        | 2.68  |       |       |                       |         |         |        |               |    |    | SM                       |            | 70   | 25             | 5    |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH111 | SPT07  | 11.00 | Brownish grey silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH111 | SPT13  | 20.00 | Brownish grey silty sand with clay binder, gravels & pebbles.       |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       | 36         | 45   | 19 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH111 | SPT14  | 21.70 | Yellowish brown clayey silt with traces of sand mixture.            |        |        |       |       |       |                       |         |         |        | 42            | 20 |    | CI                       |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH112 | UDS01  | 1.50  | Reddish brown clayey silt with traces of sand mixture.              | 2.02   | 1.84   |       | 10 S  |       | UNCONFD               |         | 1.09    | 0      |               |    |    | CI*                      |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 10 T  |       | 0.0                   | 1.100   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.097   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.073   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 0.96    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.971   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.967   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.942   |         |        |               |    |    |                          |            |      |                |      |
| BH112 | UDS02  | 4.50  | Reddish brown silty clay with sand mixture.                         | 2.06   | 1.87   | 2.68  | 9 S   |       | TRSH-UU               |         | 1.39    | 0      | 44            | 19 |    | SC                       |            | 54   | 33             | 13   |
|       |        |       |                                                                     |        |        |       | 10 T  |       | 3.0                   | 1.404   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.394   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.372   |         |        |               |    |    |                          |            |      |                |      |
| BH112 | UDS03  | 7.50  | Reddish brown silty clay with sand mixture.                         |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 49   | 44             | 7    |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                                     | Bulk   | Dry    | Spec. | Nat.        | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |                |      |      |
|-------|--------|-------|----------------------------------------------------------------------------------------|--------|--------|-------|-------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|----------------|------|------|
| Hole  | Number | M     |                                                                                        | Dens.  | Dens.  | Grav. | Mois.       | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand           | Silt | Clay |
|       |        |       |                                                                                        | gms/cc | gms/cc |       | %           |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %              | %    | %    |
| BH112 | UDS04  | 10.50 | Reddish brown silty sand with traces of decomposed rock dust.                          | 1.74   | 1.67   |       | 2 S<br>4DR  |       | DRSH-CU               | 0.04    | 31      |        |               |    |    | SM-SP*     |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.5                   | 0.340   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 1.0                   | 0.641   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 2.0                   | 1.242   |         |        |               |    |    |            |            |                |      |      |
| BH112 | UDS05  | 13.50 | Reddish brown silty sand.                                                              |        |        |       |             |       | DRSH-CU               | 0.03    | 30      |        |               |    |    | SM-SP*     |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.5                   | 0.319   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 1.0                   | 0.607   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 2.0                   | 1.185   |         |        |               |    |    |            |            |                |      |      |
| BH112 | UDS06  | 17.00 | Reddish brown silty sand.                                                              |        |        |       |             |       | DRSH-CU               | 0.01    | 29      |        |               |    |    | SM-SP*     |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.5                   | 0.287   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 1.0                   | 0.564   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 2.0                   | 1.119   |         |        |               |    |    |            |            |                |      |      |
| BH112 | SPT13  | 21.00 | Brownish grey silty sand.                                                              |        |        |       |             |       |                       |         |         |        |               |    |    | SP         | 99         | 1 (Silt+Clay)  |      |      |
|       |        |       |                                                                                        |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |                |      |      |
| BH113 | UDS01  | 1.50  | Reddish brown clayey silt with sand & traces of kankars.                               |        |        | 2.72  |             |       |                       |         |         |        |               |    |    | CI*        | 48         | 35             | 17   |      |
|       |        |       |                                                                                        |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |                |      |      |
| BH113 | UDS02  | 4.50  | Reddish brown clayey silt / silty clay with traces of sand mixture.                    |        |        |       |             |       |                       |         |         |        | 54            | 20 | 12 | CH         |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       |                       |         |         |        |               |    |    |            |            |                |      |      |
| BH113 | UDS03  | 7.50  | Reddish brown silty clay with traces of sand mixture & traces of decomposed rock dust. | 2.07   | 1.86   |       | 9 S<br>11 T |       | UNCONFD               | 1.45    | 0       |        |               |    |    | SM         | 56         | 36             | 8    |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.476   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.432   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.432   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | REMOULD               | 1.26    | 0       |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.277   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.250   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.0                   | 1.250   |         |        |               |    |    |            |            |                |      |      |
| BH113 | UDS04  | 10.50 | Reddish brown silty sand with clay binder.                                             | 1.76   | 1.68   |       | 4 S<br>5DR  |       | DRSH-CU               | 0.07    | 32      |        |               |    |    | SM-SP      | 88         | 12 (Silt+Clay) |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.5                   | 0.382   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 1.0                   | 0.695   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 2.0                   | 1.320   |         |        |               |    |    |            |            |                |      |      |
| BH113 | UDS05  | 13.50 | Reddish brown silty sand.                                                              |        |        |       |             |       | DRSH-CU               | 0.08    | 32      |        |               |    |    | SM-SP*     |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 0.5                   | 0.392   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 1.0                   | 0.705   |         |        |               |    |    |            |            |                |      |      |
|       |        |       |                                                                                        |        |        |       |             |       | 2.0                   | 1.330   |         |        |               |    |    |            |            |                |      |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS     | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |        | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |        | %          | %    | %              | %    |
| BH113 | SPT12  | 18.50 | Brownish grey silty sand with clay binders.                         |        |        |       |       |       |                       |         |         |        |               |    |    | SM     |            | 64   | 36 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH114 | UDS01  | 1.50  | Reddish brown silty clay with sand mixture.                         | 2.03   | 1.85   |       | 10 S  |       | TRSH-UU               |         | 1.25    | 0      |               |    |    | CI*    |            | 38   | 45             | 17   |
|       |        |       |                                                                     |        |        |       | 10 T  |       | 3.0                   | 1.262   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.247   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.241   |         |        |               |    |    |        |            |      |                |      |
| BH114 | UDS02  | 4.50  | Reddish brown clayey silt with traces of sand mixture.              |        |        |       |       |       |                       |         |         |        | 42            | 20 |    | SC     |            | 51   | 35             | 14   |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH114 | UDS03  | 7.50  | Reddish brown clayey silt with sand mixture & decomposed rock dust. | 2.08   | 1.89   |       | 9 S   |       | UNCONFD               |         | 1.50    | 0      |               |    |    | CI*    |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 10 T  |       | 0.0                   | 1.511   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.503   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.486   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 1.36    | 0      |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.377   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.357   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.346   |         |        |               |    |    |        |            |      |                |      |
| BH114 | UDS04  | 10.50 | Reddish brown silty sand with traces of kankars.                    |        |        |       |       |       | DRSH-CU               |         | 0.03    | 30     |               |    |    | SM-SP* |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.5                   | 0.319   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 0.607   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.185   |         |        |               |    |    |        |            |      |                |      |
| BH114 | SPT11  | 17.05 | Brownish grey silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP  | 9          | 85   | 6 (Silt+Clay)  |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH114 | SPT13  | 20.05 | Brownish grey silty sand with clay binder.                          |        |        |       |       |       |                       |         |         |        |               |    |    | SM     |            | 63   | 37 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH115 | UDS01  | 1.50  | Reddish brown clayey silt with sand & traces of kankars.            |        |        | 2.69  |       |       |                       |         |         |        |               |    |    | CI*    |            | 44   | 47             | 9    |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH115 | UDS02  | 4.50  | Reddish brown silty clay with sand mix.                             | 2.04   | 1.82   |       | 10 S  |       | UNCONFD               |         | 1.74    | 0      |               |    |    | CI*    |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 12 T  |       | 0.0                   | 1.755   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.739   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.729   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 1.55    | 0      |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.561   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.548   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.541   |         |        |               |    |    |        |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-----------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                           | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                           | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH115 | UDS03  | 7.50  | Reddish brown clayey silt with sand mixture.              |        |        |       |       |       |                       |         |         |        | 39            | 19 |    | SC         |            | 71   | 21             | 8    |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH115 | SPT05  | 7.95  | Brownish grey silty sand with clay binder.                |        |        |       |       |       |                       |         |         |        |               |    |    | SM         | 7          | 65   | 28 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH115 | SPT13  | 20.05 | Brrownish grey clayey silt with sand mixture and kankars. |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 51   | 39             | 10   |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH116 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.              | 2.00   | 1.75   |       | 16 S  |       | UNCONFD               |         | 1.35    | 0      |               |    |    | CI*        |            | 45   | 43             | 12   |
|       |        |       |                                                           |        |        |       | 14 T  |       | 0.0                   | 1.363   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.349   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.338   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               |         | 1.09    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.102   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.094   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.074   |         |        |               |    |    |            |            |      |                |      |
| BH116 | SPT04  | 6.05  | Reddish brown clayey silt.                                |        |        |       |       |       |                       |         |         |        | 43            | 20 |    | CI         |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH116 | UDS03  | 8.50  | Reddish brown clayey sandy silt.                          |        |        |       |       |       | UNCONFD               |         | 1.48    | 0      |               |    |    | SM         |            | 53   | 37             | 10   |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.493   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.477   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.470   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               |         | 1.20    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.213   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.208   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.179   |         |        |               |    |    |            |            |      |                |      |
| BH116 | SPT08  | 11.60 | Brownish grey silty sand with traces of kankar.           |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 70   | 20             | 5    |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH116 | UDS05  | 14.50 | Yellowish brown silty sand                                | 1.76   | 1.60   |       | 9 S   |       | DRSH-CU               |         | 0.03    | 32     |               |    |    | SM-SP*     |            |      |                |      |
|       |        |       |                                                           |        |        |       | 10 T  |       | 3.0                   | 0.342   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 2.0                   | 0.655   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 1.0                   | 1.280   |         |        |               |    |    |            |            |      |                |      |
| BH116 | SPT13  | 19.50 | Brownish grey silty sand with clay binder                 |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 63   | 37 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                      | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-------------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                         | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                         | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH116 | UDS07  | 20.75 | Brownish grey silty clay with sand mixture.                             |        |        | 2.68  |              |       |                       |         |         |        | 41            | 22 | 14 | CI         |            | 38   | 40             | 22   |
| BH116 | SPT15  | 22.70 | Whitish grey clayey silt with sand, kankar & decomposed rock fragments. |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 55   | 36             | 9    |
| BH116 | SPT17  | 25.60 | Yellwoish brown clayey silt.                                            |        |        |       |              |       |                       |         |         |        | 42            | 17 |    | CI         |            |      |                |      |
| BH117 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture & kankar.                   | 2.09   | 1.90   |       | 12 S<br>10 T |       | UNCONFD               |         | 1.51    | 0      |               |    |    | SM         |            | 51   | 44             | 5    |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.522   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.514   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.494   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | REMOULD               |         | 1.22    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.231   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.218   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.211   |         |        |               |    |    |            |            |      |                |      |
| BH117 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                            | 2.04   | 1.79   |       | 13 S<br>14 T |       | TRSH-UU               |         | 1.33    | 0      |               |    |    | CI*        |            | 38   | 46             | 16   |
|       |        |       |                                                                         |        |        |       |              |       | 3.0                   | 1.342   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 2.0                   | 1.331   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 1.0                   | 1.317   |         |        |               |    |    |            |            |      |                |      |
| BH117 | UDS03  | 8.50  | Reddish brown clayey silt with sand mixture & decomposed rock dust.     |        |        |       |              |       | UNCONFD               |         | 1.36    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.375   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.360   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.345   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | REMOULD               |         | 1.09    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.101   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.091   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       | 0.0                   | 1.078   |         |        |               |    |    |            |            |      |                |      |
| BH117 | SPT10  | 15.00 | Reddish brown clayey silt with sand                                     |        |        |       |              |       |                       |         |         |        |               |    |    | CI*        |            | 45   | 39             | 16   |
| BH117 | SPT11  | 16.50 | Brownish grey silty sand with clay binder.                              |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 78   | 22 (Silt+Clay) |      |
| BH117 | SPT14  | 21.10 | Brownish grey silty sand.                                               |        |        |       |              |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                                         |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                         |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                                        | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|---------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                                           | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                                           | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH117        | SPT15            | 22.50      | Yellowish brown clayey silt<br>with traces of sand mixture.               |        |        |       |       |       |                       |         |         |        | 34            | 15 |    | CL                       |            |      |                |      |
| BH118        | UDS01            | 2.50       | Reddish brown clayey silt /<br>silty clay with traces of sand<br>mixture. |        |        |       |       |       | UNCONFD               | 1.52    | 0       |        |               |    |    | CI*                      |            | 37   | 53             | 10   |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.534   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.526   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.500   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | REMOULD               | 1.35    | 0       |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.364   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.347   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 0.0                   | 1.339   |         |        |               |    |    |                          |            |      |                |      |
| BH118        | UDS02            | 5.50       | Reddish brown clayey silt<br>with traces of sand mixture.                 |        |        |       |       |       |                       |         |         |        | 44            | 17 |    | CI                       |            |      |                |      |
| BH118        | UDS04            | 11.50      | Yellowish brown silty sand.                                               | 1.75   | 1.59   |       | 8 S   |       | DRSH-CU               | 0.05    | 31      |        |               |    |    | SM-SP*                   |            |      |                |      |
|              |                  |            |                                                                           |        |        |       | 10 DR |       | 0.5                   | 0.350   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 1.0                   | 0.651   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 2.0                   | 1.252   |         |        |               |    |    |                          |            |      |                |      |
| BH118        | SPT08            | 11.95      | Reddish brown silty sand<br>with clay binder.                             |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 79   | 21 (Silt+Clay) |      |
| BH118        | SPT15            | 22.50      | Brownish grey, clayey silt<br>with sand mixture.                          |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 29   | 71 (Silt+Clay) |      |
| BH118        | SPT16            | 24.05      | Yellowish grey, clayey silt<br>with sand mixture.                         |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 36   | 55             | 9    |
| BH118        | SPT17            | 25.50      | Yellowish grey clayey silt<br>with traces of sand mixture.                |        |        |       |       |       |                       |         |         |        | 36            | 16 |    | CI                       |            |      |                |      |
| BH119        | UDS01            | 2.50       | Reddish brown silty clay /<br>clayey silt with traces of<br>sand mixture. | 2.09   | 1.88   | 2.66  | 11 S  | 0.397 | TRSH-UU               | 1.30    | 0       |        |               |    |    | CI*                      |            | 37   | 51             | 12   |
|              |                  |            |                                                                           |        |        |       | 11 T  |       | 3.0                   | 1.314   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       | 11 C  |       | 2.0                   | 1.306   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                           |        |        |       |       |       | 1.0                   | 1.280   |         |        |               |    |    |                          |            |      |                |      |
| BH119        | UDS02            | 5.50       | Reddish brown clayey silt<br>with traces of sand mixture.                 |        |        |       |       |       |                       |         |         |        | 38            | 20 |    | CI                       |            |      |                |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                             | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|----------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                                | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                                | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH119        | UDS03            | 8.50       | Reddish brown, clayey silt<br>with sand & traces of<br>kankar. |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 49   | 39             | 12   |
| BH119        | SPT08            | 11.80      | Reddish brown clayey silt<br>with sand mixture.                |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 48   | 35             | 17   |
| BH119        | SPT09            | 13.50      | Yellowish brown silty sand.                                    |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 83   | 17 (Silt+Clay) |      |
| BH120        | UDS01            | 2.50       | Reddish brown clayey silt<br>with traces of sand mixture.      |        |        |       |              |       |                       |         |         |        | 38            | 19 |    | CI                       |            |      |                |      |
| BH120        | UDS02            | 5.50       | Reddish brown clayey silt<br>with sand mixture.                |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 51   | 36             | 13   |
| BH120        | UDS03            | 8.50       | Reddish brown, silty clay<br>with traces of sand mixture.      | 2.09   | 1.88   |       | 11 S<br>11 T |       | UNCONFD               |         | 1.83    | 0      |               |    |    | CI*                      |            | 44   | 39             | 17   |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.844   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.826   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.820   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | REMOULD               |         | 1.73    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.742   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.726   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       | 0.0                   | 1.722   |         |        |               |    |    |                          |            |      |                |      |
| BH120        | SPT07            | 10.50      | Reddish brown, clayey silt<br>with sand mixture.               |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 44   | 56 (Silt+Clay) |      |
| BH120        | SPT15            | 22.50      | Reddish brown silty sand.                                      |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
| BH120        | SPT16            | 24.05      | Yellowish grey, clayey silt<br>with sand mixture.              |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 51   | 41             | 8    |
| BH120        | SPT19            | 28.50      | Brownish grey, clayey silt<br>with traces of sand mixture.     |        |        |       |              |       |                       |         |         |        | 35            | 15 |    | CI                       |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-----------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                           | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                           | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH121 | UDS01  | 2.50  | Reddish brown clayeyn silt with sand mixture & moorum.    | 2.02   | 1.80   |       | 13 S  |       | UNCONFD               |         | 1.19    | 0      |               |    |    | SM         |            | 52   | 41             | 7    |
|       |        |       |                                                           |        |        |       | 12 T  |       | 0.0                   | 1.200   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.194   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.176   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               |         | 1.07    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.088   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.066   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.056   |         |        |               |    |    |            |            |      |                |      |
| BH121 | UDS02  | 5.50  | Reddish brown clayey silt with traces of sand mixture.    |        |        |       |       |       |                       |         |         |        | 45            | 20 |    | CI         |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH121 | UDS03  | 8.50  | Reddish brown silty clay / clayey silt with sand mixture. | 2.08   | 1.70   |       | 21 S  | 0.425 | TRSH-UU               |         | 1.79    | 0      |               |    |    | CI*        |            | 45   | 39             | 16   |
|       |        |       |                                                           |        |        |       | 22 T  |       | 3.0                   | 1.798   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       | 13 C  |       | 2.0                   | 1.796   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 1.0                   | 1.780   |         |        |               |    |    |            |            |      |                |      |
| BH121 | SPT08  | 12.05 | Brownish grey silty sand with clay binder.                |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 71   | 29 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH121 | SPT13  | 19.50 | Brownish grey silty sand with clay binder.                |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 80   | 20 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH121 | SPT14  | 21.05 | Yellowish brown clayey silt with traces of sand mixture.  |        |        |       |       |       |                       |         |         |        | 34            | 15 |    | CL         |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH121 | SPT18  | 27.00 | Brownish grey clayey silt with sand.                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 51   | 37             | 12   |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH122 | UDS01  | 2.50  | Reddish brown silty clay with sand mix.                   | 2.03   | 1.81   |       | 12 S  |       | UNCONFD               |         | 1.34    | 0      |               |    |    | CI*        |            | 43   | 41             | 16   |
|       |        |       |                                                           |        |        |       | 12 T  |       | 0.0                   | 1.355   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.337   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.328   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               |         | 1.20    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.212   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.202   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.186   |         |        |               |    |    |            |            |      |                |      |
| BH122 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.              |        |        |       |       |       |                       |         |         |        | 43            | 22 | 12 | CI         |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore Hole | Sample Number | Depth M | Sample Description                                       | Bulk Dens.<br>gms/cc | Dry Dens.<br>gms/cc | Spec. Grav. | Nat. Mois.<br>%      | Void Ratio | Strength Test Results        |                                 |                   |                | Atter. Limits |         |         | IS Classification | Grain Size |           |                |           |
|-----------|---------------|---------|----------------------------------------------------------|----------------------|---------------------|-------------|----------------------|------------|------------------------------|---------------------------------|-------------------|----------------|---------------|---------|---------|-------------------|------------|-----------|----------------|-----------|
|           |               |         |                                                          |                      |                     |             |                      |            | Pc/Pn<br>kg/sqcm             | Shear<br>kg/sqcm                | Cohesn<br>kg/sqcm | Frictn<br>Deg. | LL<br>%       | PL<br>% | SL<br>% |                   | Gravl<br>% | Sand<br>% | Silt<br>%      | Clay<br>% |
| BH122     | UDS03         | 8.50    | Reddish brown silty clay with sand mixture & moorum      | 2.10                 | 1.91                |             | 10 S<br>10 T         |            | TRSH-UU<br>3.0<br>2.0<br>1.0 | 1.77<br>1.782<br>1.777<br>1.751 | 1.77              | 0              |               |         |         | SM                |            | 59        | 27             | 14        |
| BH122     | SPT08         | 12.05   | Brownish grey silty sand with clay binder.               |                      |                     |             |                      |            |                              |                                 |                   |                |               |         |         | SM-SP             |            | 88        | 12 (Silt+Clay) |           |
| BH122     | SPT13         | 19.50   | Brownish grey silty sand with clay binder.               |                      |                     |             |                      |            |                              |                                 |                   |                |               |         |         | SM-SP             |            | 89        | 11 (Silt+Clay) |           |
| BH122     | SPT14         | 21.05   | Brrownish grey clayey silty sand.                        |                      |                     |             |                      |            |                              |                                 |                   |                |               |         |         | SM                |            | 65        | 23             | 12        |
| BH122     | SPT17         | 25.00   | Yellowish brown clayey silt with traces of sand mixture. |                      |                     |             |                      |            |                              |                                 |                   |                | 41            | 20      |         | CI                |            |           |                |           |
| BH123     | UDS01         | 2.50    | Reddish brown silty clay with sand mixture.              | 2.02                 | 1.82                |             | 10 S<br>11 T<br>12 C | 0.392      | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.55<br>1.562<br>1.547<br>1.541 | 1.55              | 0              |               |         |         | CI*               |            | 44        | 38             | 18        |
|           |               |         |                                                          |                      |                     |             |                      |            | REMOULD<br>0.0<br>0.0<br>0.0 | 1.38<br>1.404<br>1.372<br>1.364 | 1.38              | 0              |               |         |         |                   |            |           |                |           |
| BH123     | UDS02         | 5.50    | Reddish brown clayey silt with traces of sand mixture.   |                      |                     | 2.70        |                      |            |                              |                                 |                   |                | 45            | 20      |         | SC                |            | 50        | 39             | 11        |
| BH123     | UDS03         | 8.50    | Reddish brown silty clay with sand and kankars.          | 2.01                 | 1.81                |             | 9 S<br>11 T          |            | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.60<br>1.612<br>1.599<br>1.589 | 1.60              | 0              |               |         |         | CI*               |            |           |                |           |
|           |               |         |                                                          |                      |                     |             |                      |            | REMOULD<br>0.0<br>0.0<br>0.0 | 1.45<br>1.461<br>1.453<br>1.436 | 1.45              | 0              |               |         |         |                   |            |           |                |           |
| BH123     | SPT07         | 10.50   | Brownish grey silty sand with clay binder.               |                      |                     |             |                      |            |                              |                                 |                   |                |               |         |         | SM                |            | 84        | 16 (Silt+Clay) |           |

| Bore  | Sample | Depth | Sample Description                                                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS    | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |       | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |       | %          | %    | %              | %    |
| BH123 | SPT14  | 21.05 | Brownish grey silty sand.                                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SM    |            | 76   | 24 (Silt+Clay) |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH123 | SPT15  | 22.50 | Yellowish brown clayey silt with traces of sand mixture & rock dust.         |        |        |       |       |       |                       |         |         |        | 45            | 17 |    | CI    |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH124 | UDS01  | 2.50  | Reddish brown silty clay with traces of sand mixture & decomposed rock dust. | 2.07   | 1.85   |       | 11 S  |       | TRSH-UU               |         | 1.57    | 0      | 46            | 23 |    | CI    |            | 43   | 42             | 15   |
|       |        |       |                                                                              |        |        |       | 12 T  |       | 3.0                   | 1.582   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.573   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.555   |         |        |               |    |    |       |            |      |                |      |
| BH124 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                                 | 2.08   | 1.87   |       | 10 S  |       | TRSH-UU               |         | 2.25    | 0      |               |    |    | SM    |            | 51   | 36             | 13   |
|       |        |       |                                                                              |        |        |       | 11 T  |       | 3.0                   | 2.264   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 2.247   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 2.239   |         |        |               |    |    |       |            |      |                |      |
| BH124 | SPT08  | 12.05 | Brownish grey silty sand with clay binder.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP |            | 88   | 12 (Silt+Clay) |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH124 | SPT14  | 21.05 | Brownish grey silty sand with clay binders.                                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM    |            | 64   | 36 (Silt+Clay) |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH125 | UDS01  | 3.00  | Reddish brown silty clay with sand mixture & decomposed rock dust.           | 2.02   | 1.79   |       | 8 S   |       | TRSH-UU               |         | 1.12    | 0      |               |    |    | CI*   |            | 45   | 41             | 14   |
|       |        |       |                                                                              |        |        |       | 13 T  |       | 3.0                   | 1.130   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.154   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.076   |         |        |               |    |    |       |            |      |                |      |
| BH125 | UDS02  | 6.00  | Reddish brown clayey silt.                                                   |        |        |       |       |       |                       |         |         |        | 43            | 20 | 13 | CI    |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH125 | UDS03  | 9.10  | Reddish brown clayey silt with sand mixture.                                 |        |        |       |       |       | UNCONFD               |         | 1.44    | 0      |               |    |    | SM    |            | 55   | 38             | 7    |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.456   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.449   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.415   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 1.32    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.330   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.325   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.305   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                 | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                    | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                    | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH125 | UDS04  | 12.00 | Reddish brown silty sand with traces of decomposed rock dust.      | 1.75   | 1.68   |       | 3 S<br>4DR   |       | DRSH-CU               | 0.05    | 32      |        |               |    |    | SM-SP*     |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.5                   | 0.362   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 1.0                   | 0.675   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 2.0                   | 1.300   |         |        |               |    |    |            |            |      |                |      |
| BH125 | SPT10  | 15.60 | Brownish grey silty sand.                                          |        |        |       |              |       |                       |         |         |        |               |    |    | SP         |            | 97   | 3 (Silt+Clay)  |      |
|       |        |       |                                                                    |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH125 | SPT13  | 20.00 | Brownish grey silty sand traces of clay binders & kankar.          |        |        |       |              |       |                       |         |         |        |               |    |    | SM         | 5          | 62   | 32 (Silt+Clay) |      |
|       |        |       |                                                                    |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH126 | UDS01  | 1.50  | Reddish brown sandy silty clay.                                    | 1.99   | 1.81   |       | 11 S<br>10 T |       | UNCONFD               | 0.97    | 0       |        | 49            | 23 |    | CI         |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.984   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.963   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.963   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | REMOULD               | 0.83    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.844   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.829   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.817   |         |        |               |    |    |            |            |      |                |      |
| BH126 | UDS02  | 4.50  | Reddish brown clayey silt with sand mixture.                       |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 52   | 36             | 12   |
|       |        |       |                                                                    |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH126 | UDS03  | 7.50  | Reddish brown clayey silt with sand mixture.                       |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 51   | 43             | 6    |
|       |        |       |                                                                    |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH126 | UDS04  | 10.50 | Reddish brown silty sand with traces of decomposed rock fragments. | 1.74   | 1.67   |       | 3 S<br>4DR   |       | DRSH-CU               | 0.08    | 31      |        |               |    |    | SM-SP*     |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.5                   | 0.380   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 1.0                   | 0.681   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 2.0                   | 1.282   |         |        |               |    |    |            |            |      |                |      |
| BH126 | SPT12  | 18.50 | Brownish grey silty sand with clay binder.                         |        |        |       |              |       |                       |         |         |        |               |    |    | SM         | 3          | 68   | 29 (Silt+Clay) |      |
|       |        |       |                                                                    |        |        |       |              |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH127 | UDS01  | 3.00  | Reddish brown silty clay with traces of sand mixture.              |        |        |       |              |       | UNCONFD               | 0.99    | 0       |        |               |    |    | CI*        |            | 44   | 42             | 14   |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 1.008   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.984   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.978   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | REMOULD               | 0.87    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.883   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.875   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |              |       | 0.0                   | 0.852   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                           | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results        |                                 |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------------------------|--------|--------|-------|----------------------|-------|------------------------------|---------------------------------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                              | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                        | Shear                           | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                              | gms/cc | gms/cc |       | %                    |       | kg/sqcm                      | kg/sqcm                         | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH127 | UDS02  | 6.00  | Reddish brown clayey silt / silty clay with traces of sand mixture.          |        |        |       |                      |       |                              |                                 |         |        | 45            | 20 | 12 | SC         |            | 53   | 38             | 9    |
| BH127 | UDS03  | 9.00  | Reddish brown silty clay / clayey silt with sand mixture.                    | 2.05   | 1.86   |       | 9 S<br>10 T          |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.28<br>1.294<br>1.277<br>1.269 |         | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                              |        |        |       |                      |       | REMOULD<br>0.0<br>0.0<br>0.0 | 1.16<br>1.174<br>1.151<br>1.155 | 1.16    | 0      |               |    |    |            |            |      |                |      |
| BH127 | SPT07  | 11.00 | Brownish grey silty sand with clay binder.                                   |        |        |       |                      |       |                              |                                 |         |        |               |    |    | SM         |            | 84   | 16 (Silt+Clay) |      |
| BH127 | SPT13  | 20.00 | Brownish grey silty sand.                                                    |        |        |       |                      |       |                              |                                 |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
| BH127 | SPT14  | 21.70 | Brrownish grey clayey silt with sand.                                        |        |        |       |                      |       |                              |                                 |         |        |               |    |    | SM         |            | 50   | 39             | 11   |
| BH128 | UDS01  | 1.50  | Reddish brown silty clay with sand mixture.                                  |        |        |       |                      |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.28<br>1.299<br>1.278<br>1.263 |         | 0      |               |    |    | CI*        |            | 43   | 40             | 17   |
|       |        |       |                                                                              |        |        |       |                      |       | REMOULD<br>0.0<br>0.0<br>0.0 | 1.16<br>1.170<br>1.161<br>1.149 | 1.16    | 0      |               |    |    |            |            |      |                |      |
| BH128 | UDS02  | 4.60  | Reddish brown silty clay with traces of sand mixture & decomposed rock dust. | 2.01   | 1.69   |       | 19 S<br>19 T<br>19 C | 0.374 | TRSH-UU<br>3.0<br>2.0<br>1.0 | 1.42<br>1.433<br>1.428<br>1.399 | 1.42    | 0      |               |    |    | CI*        |            |      |                |      |
| BH128 | UDS03  | 7.50  | Reddish brown clayey silt with traces of sand mixture.                       |        |        |       |                      |       |                              |                                 |         |        | 41            | 18 |    | SC         |            | 52   | 38             | 10   |
| BH128 | SPT07  | 10.80 | Brownish grey silty sand with clay binder.                                   |        |        |       |                      |       |                              |                                 |         |        |               |    |    | SM         |            | 77   | 23 (Silt+Clay) |      |

| Bore  | Sample | Depth | Sample Description                                                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH129 | UDS01  | 2.50  | Reddish brown silty clay with sand mix.                                      | 2.07   | 1.80   |       | 14 S  |       | TRSH-UU               |         | 1.33    | 0      |               |    |    | CI*        |            | 42   | 37             | 21   |
|       |        |       |                                                                              |        |        |       | 15 T  |       | 3.0                   | 1.341   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.326   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.323   |         |        |               |    |    |            |            |      |                |      |
| BH129 | UDS02  | 5.50  | Reddish brown silty clay with traces of sand mixture & decomposed rock dust. |        |        |       |       |       | UNCONFD               |         | 1.28    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.306   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.277   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.257   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 1.15    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.162   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.147   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.141   |         |        |               |    |    |            |            |      |                |      |
| BH129 | UDS03  | 8.50  | Reddish brown clayey silt with traces of sand mixture.                       |        |        |       |       |       |                       |         |         |        | 44            | 19 |    | SC         |            | 52   | 40             | 8    |
| BH129 | SPT08  | 12.05 | Brownish grey silty sand with clay binde.                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 78   | 22 (Silt+Clay) |      |
| BH129 | SPT13  | 19.55 | Brownish grey silty sand.                                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
| BH130 | UDS01  | 2.55  | Reddish brown silty clay / clayey silt with sand mixture.                    | 2.06   | 1.82   |       | 11 S  |       | UNCONFD               |         | 1.31    | 0      | 49            | 23 |    | CI         |            | 37   | 43             | 20   |
|       |        |       |                                                                              |        |        |       | 13 T  |       | 0.0                   | 1.322   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.314   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.294   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 1.24    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.255   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.246   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.219   |         |        |               |    |    |            |            |      |                |      |
| BH130 | UDS02  | 5.50  | Reddish brown silty clay with sand mix.                                      | 2.07   | 1.85   | 2.72  | 12 S  | 0.460 | TRSH-UU               |         | 1.87    | 0      |               |    |    | CI*        |            | 43   | 39             | 18   |
|       |        |       |                                                                              |        |        |       | 12 T  |       | 3.0                   | 1.881   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       | 15 C  |       | 2.0                   | 1.874   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.855   |         |        |               |    |    |            |            |      |                |      |
| BH130 | SPT07  | 10.50 | Reddish brown clayey silt with traces of sand mixture .                      |        |        |       |       |       |                       |         |         |        | 47            | 22 |    | CI         |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                                | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|-----------------------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                                   | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                                   | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH130 | SPT08  | 12.70 | Brownish grey silty sand.                                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH130 | SPT13  | 20.00 | Brownish grey silty sand.                                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH131 | UDS01  | 3.00  | Reddish brown silty clay<br>with sand mixture.                                    | 2.01   | 1.79   |       | 11 S<br>12 T |       | TRSH-UU               |         | 1.10    | 0      |               |    |    | CI*                      |            | 48   | 45            | 7    |
|       |        |       |                                                                                   |        |        |       |              |       | 3.0                   | 1.119   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 2.0                   | 1.102   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 1.0                   | 1.079   |         |        |               |    |    |                          |            |      |               |      |
| BH131 | UDS03  | 9.00  | Reddish brown silty clay<br>with sand mixture traces of<br>decomposed rock dust & |        |        |       |              |       | UNCONFD               |         | 1.48    | 0      | 45            | 20 | 13 | SC                       |            | 51   | 39            | 10   |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.495   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.476   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.469   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | REMOULD               |         | 1.30    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.310   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.305   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.285   |         |        |               |    |    |                          |            |      |               |      |
| BH131 | SPT07  | 11.00 | Brownish grey silty sand.                                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay) |      |
|       |        |       |                                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH132 | UDS01  | 3.00  | Reddish brown clayey silt /<br>silty clay with traces of sand<br>mixture.         | 2.07   | 1.86   |       | 11 S<br>11 T |       | UNCONFD               |         | 1.29    | 0      |               |    |    | CI*                      |            | 35   | 44            | 21   |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.303   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.289   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.278   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | REMOULD               |         | 1.08    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.093   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.087   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.0                   | 1.060   |         |        |               |    |    |                          |            |      |               |      |
| BH132 | UDS03  | 9.00  | Reddish brown clayey silt<br>with sand mixture.                                   |        |        |       |              |       | TRSH-UU               |         | 1.36    | 0      | 45            | 23 | 14 | CI                       |            | 48   | 39            | 13   |
|       |        |       |                                                                                   |        |        |       |              |       | 3.0                   | 1.371   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 2.0                   | 1.365   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 1.0                   | 1.344   |         |        |               |    |    |                          |            |      |               |      |
| BH132 | UDS04  | 12.00 | Reddish brown silty sand                                                          | 1.74   | 1.61   |       | 10 S<br>8 DR |       | DRSH-CU               |         | 0.02    | 29     |               |    |    | SM-SP*                   |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 0.5                   | 0.297   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 1.0                   | 0.574   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                                   |        |        |       |              |       | 2.0                   | 1.129   |         |        |               |    |    |                          |            |      |               |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                              | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|-----------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                                 | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                                 | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH132        | SPT10            | 15.60      | Brownish grey silty sand<br>with clay binder.                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 89   | 11 (Silt+Clay) |      |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH132        | SPT13            | 20.00      | Brownish grey silty sand.                                       |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH133        | UDS01            | 2.50       | Reddish brown silty clay /<br>clayey silt with sand<br>mixture. | 2.10   | 1.86   |       | 11 S  |       | UNCONFD               |         | 1.29    | 0      |               |    |    | CI*                      |            |      |                |      |
|              |                  |            |                                                                 |        |        |       | 13 T  |       | 0.0                   | 1.303   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.292   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.275   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | REMOULD               |         | 1.17    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.188   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.164   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.158   |         |        |               |    |    |                          |            |      |                |      |
| BH133        | UDS02            | 5.50       | Reddish brown clayey silt<br>with traces of sand mixture.       |        |        |       |       |       |                       |         |         |        | 43            | 20 |    | SC                       |            | 50   | 34             | 16   |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH133        | UDS03            | 8.50       | Reddish brown silty clay<br>with sand mixtures.                 |        |        |       |       |       |                       |         |         |        | 44            | 19 |    | SC                       |            | 53   | 34             | 13   |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH133        | SPT07            | 10.50      | Brownish grey silty sand<br>with clay binder.                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 77   | 23 (Silt+Clay) |      |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH134        | UDS01            | 2.50       | Reddish brown clayey silt<br>with sand mixture.                 | 2.02   | 1.79   |       | 13 S  |       | TRSH-UU               |         | 1.37    | 0      | 41            | 23 |    | CI                       |            | 42   | 41             | 17   |
|              |                  |            |                                                                 |        |        |       | 13 T  |       | 3.0                   | 1.384   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 2.0                   | 1.378   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 1.0                   | 1.348   |         |        |               |    |    |                          |            |      |                |      |
| BH134        | UDS02            | 5.50       | Reddish brown clayey silt<br>with sand mixture.                 |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 48   | 36             | 16   |
|              |                  |            |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH134        | UDS03            | 8.50       | Reddish brown clayey silt<br>with sand mixture & rock<br>dust.  | 2.07   | 1.86   |       | 10 S  |       | UNCONFD               |         | 1.48    | 0      |               |    |    | CI*                      |            |      |                |      |
|              |                  |            |                                                                 |        |        |       | 11 T  |       | 0.0                   | 1.491   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.482   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.467   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | REMOULD               |         | 1.26    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.264   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.261   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                 |        |        |       |       |       | 0.0                   | 1.255   |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |      |             |
|-------|--------|-------|------------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|------|-------------|
| Hole  | Number | M     |                                                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt | Clay        |
|       |        |       |                                                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %    | %           |
| BH134 | SPT07  | 10.50 | Brownish grey silty sand.                                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1    | (Silt+Clay) |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH135 | UDS01  | 2.50  | Reddish brown clayey silt with traces of sand mixture.                       |        |        |       |       |       |                       |         |         |        | 45            | 21 | 13 | SC         |            | 51   | 35   | 14          |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH135 | UDS02  | 5.50  | Reddish brown silty clay / clayey silt with sand mixture.                    | 2.08   | 1.89   |       | 11 S  | 0.362 | UNCONFD               |         | 1.12    | 0      |               |    |    | CI*        |            |      |      |             |
|       |        |       |                                                                              |        |        |       | 10 T  |       | 0.0                   | 1.129   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       | 12 C  |       | 0.0                   | 1.118   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.113   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 0.98    | 0      |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.993   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.980   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.967   |         |        |               |    |    |            |            |      |      |             |
| BH135 | UDS03  | 8.50  | Reddish brown clayey silt with traces of sand mixture.                       |        |        | 2.71  |       |       |                       |         |         |        | 45            | 21 |    | CI         |            | 43   | 41   | 16          |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH135 | SPT07  | 10.50 | Brownish grey silty sand with clay binder.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 72   | 28   | (Silt+Clay) |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH135 | SPT14  | 21.10 | Brrownish grey clayey silty sand.                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 61   | 29   | 10          |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH136 | UDS01  | 2.50  | Reddish brown silty clay with traces of sand mixture & decomposed rock dust. | 2.08   | 1.89   |       | 12 S  |       | TRSH-UU               |         | 1.56    | 0      |               |    |    | CI*        |            | 40   | 42   | 18          |
|       |        |       |                                                                              |        |        |       | 12 T  |       | 3.0                   | 1.571   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.559   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.550   |         |        |               |    |    |            |            |      |      |             |
| BH136 | UDS02  | 5.50  | Reddish brown clayey silt with traces of sand mixture.                       |        |        |       |       |       |                       |         |         |        | 45            | 21 | 13 | CI         |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |      |             |
| BH136 | UDS03  | 8.50  | Reddish brown silty clay/ clayey silt with sand mixture.                     | 2.09   | 1.87   |       | 9 S   |       | UNCONFD               |         | 1.49    | 0      |               |    |    | SM         |            | 51   | 42   | 7           |
|       |        |       |                                                                              |        |        |       | 12 T  |       | 0.0                   | 1.508   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.488   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.474   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 1.35    | 0      |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.362   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.358   |         |        |               |    |    |            |            |      |      |             |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.330   |         |        |               |    |    |            |            |      |      |             |

| Bore Hole | Sample Number | Depth M | Sample Description                                     | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |                |      |
|-----------|---------------|---------|--------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------------------|------------|------|----------------|------|
|           |               |         |                                                        | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt           | Clay |
|           |               |         |                                                        | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %              | %    |
| BH136     | SPT07         | 10.50   | Brownish grey silty sand with clay binder.             |        |        |       |       |       |                       |         |         |        |               |    |    | SM                |            | 81   | 19 (Silt+Clay) |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH137     | UDS01         | 2.50    | Reddish brown clayey silt with sand mixture & kankars. |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 35   | 45             | 20   |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH137     | UDS02         | 5.50    | Reddish brown silty clay with traces of sand mixture.  | 2.06   | 1.82   |       | 12 S  |       | UNCONFD               |         | 1.49    | 0      | 46            | 23 |    | CI                |            |      |                |      |
|           |               |         |                                                        |        |        |       | 13 T  |       | 0.0                   | 1.502   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.490   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.478   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | REMOULD               |         | 1.34    | 0      |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.357   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.334   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.329   |         |        |               |    |    |                   |            |      |                |      |
| BH137     | UDS03         | 8.50    | Reddish brown silty clay with sand mix.                | 2.08   | 1.87   |       | 11 S  |       | TRSH-UU               |         | 1.72    | 0      |               |    |    | SM                |            | 54   | 36             | 10   |
|           |               |         |                                                        |        |        |       | 11 T  |       | 3.0                   | 1.733   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 2.0                   | 1.724   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 1.0                   | 1.703   |         |        |               |    |    |                   |            |      |                |      |
| BH137     | SPT07         | 10.50   | Brownish grey silty sand.                              |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP             |            | 93   | 7 (Silt+Clay)  |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH138     | UDS01         | 3.00    | Reddish brown clayey silt with sand mixture.           | 2.07   | 1.86   |       | 12 S  |       | UNCONFD               |         | 1.42    | 0      |               |    |    | CI*               |            | 40   | 41             | 19   |
|           |               |         |                                                        |        |        |       | 12 T  |       | 0.0                   | 1.433   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.419   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.408   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | REMOULD               |         | 1.34    | 0      |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.350   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.337   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 0.0                   | 1.333   |         |        |               |    |    |                   |            |      |                |      |
| BH138     | UDS02         | 6.00    | Reddish brown clayey silt with sand mixture.           | 2.10   | 1.93   | 2.70  | 9 S   | 0.353 | TRSH-UU               |         | 2.25    | 0      |               |    |    | CI*               |            | 49   | 37             | 14   |
|           |               |         |                                                        |        |        |       | 9 T   |       | 3.0                   | 2.261   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       | 9 C   |       | 2.0                   | 2.255   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       | 1.0                   | 2.234   |         |        |               |    |    |                   |            |      |                |      |
| BH138     | UDS03         | 9.00    | Reddish brown clayey silt with traces of sand mixture. |        |        |       |       |       |                       |         |         |        | 38            | 19 | 14 | CI                |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|-------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                   | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                   | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH138 | SPT07  | 10.80 | Brownish grey silty sand with clay binder.                        |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 84   | 16 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH138 | SPT12  | 18.70 | Brownish grey silty sand.                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH138 | SPT13  | 20.50 | Yellowish brown clayey silt.                                      |        |        |       |              |       |                       |         |         |        | 40            | 18 |    | CI                       |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH139 | UDS01  | 2.50  | Reddish brown, silty clay / clayey silt with sand mixture         |        |        | 2.61  |              |       | UNCONFD               |         | 1.35    | 0      |               |    |    | SM                       |            | 52   | 37             | 11   |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.366   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.347   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.337   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | REMOULD               |         | 1.22    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.231   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.225   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.204   |         |        |               |    |    |                          |            |      |                |      |
| BH139 | UDS02  | 5.50  | Reddish brown, clayey silt with sand & decomposed rock fragments. | 1.99   | 1.73   |       | 13 S<br>15 T |       | UNCONFD               |         | 1.44    | 0      |               |    |    | CI*                      |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.450   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.438   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.432   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | REMOULD               |         | 1.28    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.291   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.276   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 0.0                   | 1.273   |         |        |               |    |    |                          |            |      |                |      |
| BH139 | UDS03  | 8.50  | Reddish brown, clayey silt with sand mixture                      | 2.02   | 1.74   |       | 15 S<br>16 T |       | TRSH-UU               |         | 1.58    | 0      | 42            | 17 |    | SC                       |            | 51   | 39             | 10   |
|       |        |       |                                                                   |        |        |       |              |       | 3.0                   | 1.595   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 2.0                   | 1.576   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       | 1.0                   | 1.569   |         |        |               |    |    |                          |            |      |                |      |
| BH139 | SPT07  | 10.50 | Brownish grey silty sand with clay binder.                        |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 77   | 23 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH139 | SPT11  | 16.50 | Brownish grey silty sand                                          |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH139 | SPT15  | 22.50 | Brownish grey silty sand.                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|-----------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                           | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                           | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH139        | SPT18            | 27.00      | Yellowish brown clayey silt with traces of sand mixtures. |        |        |       |       |       |                       |         |         |        | 36            | 15 |    | CI                       |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH139        | SPT20            | 30.00      | Light grey clayey silt with sand mixtures.                |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 28   | 54             | 18   |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | UDS01            | 2.50       | Reddish brown clayey silt with sand mixture.              | 1.97   | 1.73   |       | 14 T  |       | UNCONFD               |         | 1.26    | 0      |               |    |    | CI*                      |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.275   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.258   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.247   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | REMOULD               |         | 1.09    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.101   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.089   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       | 0.0                   | 1.080   |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT04            | 5.80       | Reddish brown clayey silt.                                |        |        |       |       |       |                       |         |         |        | 42            | 18 |    | CI                       |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT07            | 10.50      | Reddish brown clayey silt with sand.                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 54   | 35             | 11   |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT08            | 12.05      | Reddish brown silty sand with clay binder.                |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 70   | 30 (Silt+Clay) |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT13            | 19.50      | Brownish grey silty sand.                                 |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT14            | 21.05      | Yellowish grey, clayey silt with sand mixture & mica.     |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 24   | 28             | 18   |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT17            | 25.50      | Yellowish grey clayey silt.                               |        |        |       |       |       |                       |         |         |        | 46            | 17 |    | CI                       |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH140        | SPT20            | 30.00      | Reddish brown clayey silt with traces of sand mixture     |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 14   | 61             | 25   |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                      | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS  | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-----|------------|------|----------------|------|
| Hole  | Number | M     |                                                         | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |     | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                         | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |     | %          | %    | %              | %    |
| BH141 | UDS01  | 3.00  | Reddish brown, clayey silt with sand mixture            | 2.02   | 1.80   |       | 12 S  |       | UNCONFD               |         | 1.76    | 0      |               |    |    | CI* |            |      |                |      |
|       |        |       |                                                         |        |        |       | 12 T  |       | 0.0                   | 1.777   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.754   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.749   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | REMOULD               |         | 1.48    | 0      |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.490   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.488   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.462   |         |        |               |    |    |     |            |      |                |      |
| BH141 | UDS02  | 6.00  | Reddish brown, clayey silt with sand mixture            |        |        |       |       |       | TRSH-UU               |         | 1.52    | 0      |               |    |    | CI* |            | 31   | 46             | 23   |
|       |        |       |                                                         |        |        |       |       |       | 3.0                   | 1.530   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 2.0                   | 1.518   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 1.0                   | 1.512   |         |        |               |    |    |     |            |      |                |      |
| BH141 | UDS03  | 9.00  | Reddish brown, clayey silt with sand mixture            |        |        | 2.63  |       | 0.491 | UNCONFD               |         | 1.36    | 0      |               |    |    | CI* |            | 29   | 52             | 19   |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.375   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.357   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.348   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | REMOULD               |         | 1.22    | 0      |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.231   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.224   |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.205   |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT07  | 11.00 | Reddish brown clayey silt.                              |        |        |       |       |       |                       |         |         |        | 42            | 18 |    | CI  |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT08  | 12.55 | Brownish grey silty sand with clay binder               |        |        |       |       |       |                       |         |         |        |               |    |    | SM  |            | 72   | 28 (Silt+Clay) |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT13  | 20.00 | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP  |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT16  | 24.55 | Brownish grey silty sand with clay binder               |        |        |       |       |       |                       |         |         |        |               |    |    | SM  |            | 65   | 35 (Silt+Clay) |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT17  | 25.50 | Yellowish grey, clayey silt with sand mixture & kankar. |        |        |       |       |       |                       |         |         |        |               |    |    | CI* |            | 38   | 46             | 16   |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
| BH141 | SPT20  | 30.00 | Yellowish grey clayey silt with traces of kankars.      |        |        |       |       |       |                       |         |         |        | 40            | 15 |    | CI  |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                             | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|----------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH142 | UDS01  | 2.55  | Reddish brown clayey silt with sand mixture & decomposed rock. | 2.04   | 1.84   |       | 11 S  |       | UNCONFD               |         | 1.32    | 0      |               |    |    | CI*        |            | 38   | 43             | 19   |
|       |        |       |                                                                |        |        |       | 11 T  |       | 0.0                   | 1.334   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 1.318   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 1.308   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | REMOULD               |         | 1.15    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 1.164   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 1.147   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 1.139   |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT04  | 6.00  | Reddish brown clayey silt with sand mixture                    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 42   | 40             | 19   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT06  | 9.00  | Reddish brown clayey silt.                                     |        |        |       |       |       |                       |         |         |        | 38            | 18 |    | CI         |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT08  | 12.00 | Reddish brown, clayey silt with sand & traces of kankar.       |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 39   | 49             | 12   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT09  | 13.50 | Brownish grey silty sand with clay binder.                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 87   | 13 (Silt+Clay) |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT13  | 19.50 | Brownish grey silty sand.                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 96   | 4 (Silt+Clay)  |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT16  | 24.00 | Brownish grey silty sand                                       |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT17  | 25.50 | Brownish grey clayey silt with sand mixture                    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 44   | 46             | 10   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH142 | SPT19  | 28.50 | Yellowish grey clayey silt.                                    |        |        |       |       |       |                       |         |         |        | 33            | 13 |    | CL         |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH143 | SPT01  | 1.50  | Reddish brown clayey silt.                                     |        |        |       |       |       |                       |         |         |        | 42            | 18 |    | CI         |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH143 | UDS02  | 5.55  | Reddish brown clayey silt with sand mixture.                        | 1.98   | 1.75   |       | 13 T  |       | TRSH-UU               |         | 1.86    | 0      |               |    |    | CI*                      |            | 37   | 45            | 18   |
|       |        |       |                                                                     |        |        |       |       |       | 3.0                   | 1.873   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.856   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.851   |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT08  | 12.00 | Reddish brown clayey silt with traces of sand mixtures and kankars. |        |        |       |       |       |                       |         |         |        | 46            | 17 |    | CI                       |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT09  | 13.50 | Brownish grey silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT12  | 18.00 | Brownish grey silty sand                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT15  | 22.50 | Brownish grey silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT16  | 24.00 | Yellowish brown clayey silt with traces of sand mixtures.           |        |        |       |       |       |                       |         |         |        | 34            | 15 |    | CL                       |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH143 | SPT19  | 28.50 | Brownish grey clayey silt with sand mixtures.                       |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 35   | 47            | 18   |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH144 | UDS01  | 3.00  | Reddish brown, clayey silt with traces of sand mixture.             | 2.05   | 1.91   |       | 14 S  |       | UNCONFD               |         | 0.80    | 0      |               |    |    | CI*                      |            |      |               |      |
|       |        |       |                                                                     |        |        |       | 15 T  |       | 0.0                   | 0.730   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.827   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.827   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 0.48    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.438   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.494   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 0.494   |         |        |               |    |    |                          |            |      |               |      |
| BH144 | UDS02  | 6.00  | Reddish brown, clayey silt with traces of sand mixture.             | 2.02   | 1.74   | 2.64  | 14 S  | 0.555 | TRSH-UU               |         | 1.24    | 0      |               |    |    | CI*                      |            | 35   | 42            | 23   |
|       |        |       |                                                                     |        |        |       | 16 T  |       | 3.0                   | 1.255   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       | 16 C  |       | 2.0                   | 1.239   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.226   |         |        |               |    |    |                          |            |      |               |      |
| BH144 | UDS03  | 9.00  | Reddish brown, clayey silt with traces of sand mixture.             |        |        |       |       |       | UNCONFD               |         | 1.32    | 0      | 46            | 23 |    | CI                       |            | 40   | 43            | 17   |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.337   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.315   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.308   |         |        |               |    |    |                          |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-----------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                           | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                           | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
|       |        |       |                                                           |        |        |       |              |       | REMOULD               |         | 1.24    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.251   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.237   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.232   |         |        |               |    |    |            |            |      |                |      |
| BH144 | SPT07  | 11.00 | Brownish grey silty sand with clay binder.                |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 76   | 24 (Silt+Clay) |      |
| BH144 | SPT12  | 18.55 | Brownish grey silty sand                                  |        |        |       |              |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
| BH144 | SPT16  | 24.55 | Brownish grey silty sand.                                 |        |        |       |              |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
| BH144 | SPT17  | 26.00 | Brownish grey clayey silt with sand mixtures.             |        |        |       |              |       |                       |         |         |        |               |    |    | CI*        |            | 40   | 48             | 12   |
| BH144 | SPT19  | 30.00 | Yellowish brown clayey silt with traces of sand mixtures. |        |        |       |              |       |                       |         |         |        | 36            | 14 |    | CI         |            |      |                |      |
| BH145 | UDS01  | 3.00  | Reddish brown, clayey silt with traces of sand mixture.   | 2.00   | 1.77   |       | 15 S<br>13 T |       | TRSH-UU               |         | 1.17    | 0      |               |    |    | CI*        |            | 39   | 45             | 16   |
|       |        |       |                                                           |        |        |       |              |       | 3.0                   | 1.184   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 2.0                   | 1.172   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 1.0                   | 1.154   |         |        |               |    |    |            |            |      |                |      |
| BH145 | UDS02  | 6.00  | Reddish brown, clayey silt with traces of sand mixture.   | 1.97   | 1.70   |       | 14 S<br>16 T |       | UNCONFD               |         | 1.48    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.494   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.476   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.470   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | REMOULD               |         | 1.31    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.326   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.315   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.289   |         |        |               |    |    |            |            |      |                |      |
| BH145 | UDS03  | 9.00  | Reddish brown, clayey silt with traces of sand mixture.   |        |        | 2.67  |              |       |                       |         |         |        |               |    |    | CI*        |            | 33   | 49             | 18   |
| BH145 | SPT07  | 11.00 | Brownish grey silty sand with clay binder.                |        |        |       |              |       |                       |         |         |        |               |    |    | SM         |            | 79   | 21 (Silt+Clay) |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                                         | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|----------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                                            | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                                            | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH145        | SPT09            | 15.00      | Brownish grey silty sand.                                                  |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH146        | UDS01            | 2.50       | Reddish brown, clayey silt<br>with traces of sand mixture.                 |        |        |       |       |       | UNCONFD               |         | 1.38    | 0      | 42            | 20 | 15 | CI                       |            | 37   | 43             | 20   |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.394   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.376   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.370   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | REMOULD               |         | 1.26    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.277   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.253   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.250   |         |        |               |    |    |                          |            |      |                |      |
| BH146        | UDS02            | 5.50       | Reddish brown, silty clay /<br>clayey silt with traces of<br>sand mixture. | 2.00   | 1.71   |       | 14 S  |       | TRSH-UU               |         | 1.68    | 0      |               |    |    | CI*                      |            | 39   | 41             | 20   |
|              |                  |            |                                                                            |        |        |       | 17 T  |       | 3.0                   | 1.699   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 2.0                   | 1.684   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 1.0                   | 1.657   |         |        |               |    |    |                          |            |      |                |      |
| BH146        | UDS03            | 8.50       | Reddish brown, silty clay /<br>clayey silt with traces of<br>sand mixture. | 1.99   | 1.72   | 2.65  | 16 S  |       | UNCONFD               |         | 1.52    | 0      |               |    |    | CI*                      |            | 26   | 50             | 24   |
|              |                  |            |                                                                            |        |        |       | 16 T  |       | 0.0                   | 1.531   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.527   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.502   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | REMOULD               |         | 1.39    | 0      |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.404   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.387   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       | 0.0                   | 1.379   |         |        |               |    |    |                          |            |      |                |      |
| BH146        | SPT07            | 10.50      | Reddish brown, clayey silty<br>sand traces of kankar.                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 61   | 31             | 9    |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH146        | SPT08            | 12.00      | Brownish grey silty sand                                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 69   | 32 (Silt+Clay) |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH146        | SPT13            | 19.50      | Reddish brown silty sand .                                                 |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH146        | SPT17            | 25.50      | Brownish grey silty sand.                                                  |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH146        | SPT18            | 27.00      | Brownish grey clayey silt<br>with sand mixtures.                           |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 48   | 39             | 13   |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                                            |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore Hole | Sample Number | Depth M | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results        |                         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |                |      |
|-----------|---------------|---------|---------------------------------------------------------------------|--------|--------|-------|--------------|-------|------------------------------|-------------------------|---------|--------|---------------|----|----|-------------------|------------|------|----------------|------|
|           |               |         |                                                                     | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                        | Shear                   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt           | Clay |
|           |               |         |                                                                     | gms/cc | gms/cc |       | %            |       | kg/sqcm                      | kg/sqcm                 | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %              | %    |
| BH146     | SPT20         | 30.00   | Yellowish grey clayey silt with traces of sand mixtures.            |        |        |       |              |       |                              |                         |         |        | 31            | 13 |    | CL                |            |      |                |      |
| BH147     | UDS01         | 2.50    | Reddish brown silty clay / clayey silt with traces of sand mixture. | 2.07   | 1.88   |       | 9 S<br>10 T  |       | TRSH-UU<br>3.0<br>2.0<br>1.0 | 1.522<br>1.514<br>1.494 | 1.51    | 0      |               |    |    | CI*               |            | 36   | 44             | 20   |
| BH147     | UDS02         | 5.50    | Reddish brown silty clay / clayey silt with traces of sand mixture. |        |        |       |              |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.341<br>1.336<br>1.313 | 1.33    | 0      | 38            | 18 | 12 | CI                |            | 31   | 46             | 23   |
|           |               |         |                                                                     |        |        |       |              |       | REMOULD<br>0.0<br>0.0<br>0.0 | 1.264<br>1.249<br>1.237 | 1.25    | 0      |               |    |    |                   |            |      |                |      |
| BH147     | UDS03         | 8.50    | Reddish brown silty clay / clayey silt with traces of sand mixture. | 2.01   | 1.76   |       | 12 S<br>14 T |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.522<br>1.516<br>1.492 | 1.51    | 0      |               |    |    | CI*               |            | 37   | 43             | 20   |
|           |               |         |                                                                     |        |        |       |              |       | REMOULD<br>0.0<br>0.0<br>0.0 | 1.406<br>1.399<br>1.395 | 1.40    | 0      |               |    |    |                   |            |      |                |      |
| BH147     | SPT07         | 10.50   | Reddish brown clayey silt with sand mixtures.                       |        |        |       |              |       |                              |                         |         |        |               |    |    | CI*               |            | 46   | 54 (Silt+Clay) |      |
| BH147     | SPT11         | 16.50   | Brownish grey silty sand.                                           |        |        |       |              |       |                              |                         |         |        |               |    |    | SM-SP             |            | 92   | 8 (Silt+Clay)  |      |
| BH147     | SPT15         | 22.50   | Brownish grey silty sand,                                           |        |        |       |              |       |                              |                         |         |        |               |    |    | SM-SP             |            | 95   | 5 (Silt+Clay)  |      |
| BH147     | SPT18         | 27.00   | Yellowish brown clayey silt with traces of sand mixtures.           |        |        |       |              |       |                              |                         |         |        | 34            | 15 |    | CL                |            |      |                |      |
| BH147     | SPT20         | 30.00   | Brownish grey clayey silt with sand mixture.                        |        |        |       |              |       |                              |                         |         |        |               |    |    | CI*               |            | 34   | 50             | 16   |

| Bore  | Sample | Depth | Sample Description                                      | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                         | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                         | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH148 | UDS01  | 3.00  | Reddish brown, clayey silt with traces of sand mixture. | 2.01   | 1.78   | 2.66  | 9 S   | 0.431 | TRSH-UU               |         | 1.07    | 0      |               |    |    | CI*        |            | 36   | 47             | 17   |
|       |        |       |                                                         |        |        |       | 13 T  |       | 3.0                   | 1.088   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       | 12 C  |       | 2.0                   | 1.065   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 1.0                   | 1.057   |         |        |               |    |    |            |            |      |                |      |
| BH148 | UDS02  | 6.00  | Reddish brown, clayey silt with traces of sand mixture. | 2.09   | 1.89   |       | 11 S  |       | UNCONFD               |         | 1.16    | 0      | 43            | 18 |    | CI         |            |      |                |      |
|       |        |       |                                                         |        |        |       | 11 T  |       | 0.0                   | 1.362   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.362   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 0.756   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | REMOULD               |         | 0.81    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 0.957   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 0.957   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 0.522   |         |        |               |    |    |            |            |      |                |      |
| BH148 | UDS03  | 9.00  | Reddish brown clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 38   | 43             | 19   |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH148 | SPT07  | 11.00 | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH148 | SPT08  | 12.55 | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH148 | SPT13  | 20.00 | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH148 | SPT17  | 26.00 | Brownish grey clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 38   | 62 (Silt+Clay) |      |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH148 | SPT18  | 27.50 | Brownish grey clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 53   | 35             | 12   |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH149 | UDS01  | 3.00  | Reddish brown clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 39   | 43             | 18   |
|       |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH149 | UDS02  | 6.00  | Reddish brown clayey silt with sand mixture             | 1.99   | 1.76   |       | 12 S  |       | UNCONFD               |         | 1.75    | 0      | 44            | 20 |    | CI         |            |      |                |      |
|       |        |       |                                                         |        |        |       | 13 T  |       | 0.0                   | 1.764   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.749   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                         |        |        |       |       |       | 0.0                   | 1.437   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 1.63    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.642   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.626   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.622   |         |        |               |    |    |                          |            |      |                |      |
| BH149 | UDS03  | 9.00  | Reddish brown clayey silt with sand mixture                         | 1.97   | 1.70   |       | 16 S  |       | TRSH-UU               |         | 1.49    | 0      |               |    |    | CI*                      |            | 40   | 39             | 21   |
|       |        |       |                                                                     |        |        |       | 16 T  |       | 3.0                   | 1.502   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.495   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.473   |         |        |               |    |    |                          |            |      |                |      |
| BH149 | SPT07  | 11.00 | Greyish brown silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 63   | 37 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH149 | SPT12  | 18.55 | Reddish brown silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH149 | SPT15  | 24.55 | Brownish grey clayey silt.                                          |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 22   | 78 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH149 | SPT16  | 26.00 | Yellowish grey, clayey silt with traces of sand mixture & kankar.   |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 27   | 54             | 19   |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH149 | SPT19  | 30.00 | Yellowish grey clayey silt.                                         |        |        |       |       |       |                       |         |         |        | 34            | 14 |    | CL                       |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH150 | UDS01  | 3.00  | Reddish brown silty clay / clayey silt with traces of sand mixture. | 2.08   | 1.87   |       | 10 S  |       | UNCONFD               |         | 1.41    | 0      |               |    |    | CI*                      |            | 39   | 44             | 17   |
|       |        |       |                                                                     |        |        |       | 11 T  |       | 0.0                   | 1.422   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.416   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.392   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 1.36    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.367   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.358   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.355   |         |        |               |    |    |                          |            |      |                |      |
| BH150 | UDS02  | 6.00  | Reddish brown silty clay / clayey silt with traces of sand mixture. |        |        | 2.66  |       |       |                       |         |         |        |               |    |    | CI*                      |            | 37   | 40             | 23   |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH150 | UDS03  | 9.00  | Reddish brown silty clay / clayey silt with traces of sand mixture. | 2.00   | 1.72   |       | 14 S  |       | TRSH-UU               |         | 1.66    | 0      | 39            | 18 |    | CI                       |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 16 T  |       | 3.0                   | 1.671   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.662   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.647   |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |               |      |
|-------|--------|-------|----------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|---------------|------|
| Hole  | Number | M     |                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %             | %    |
| BH150 | SPT08  | 12.55 | Reddish brown clayey silt with sand mixture  |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 52   | 33            | 16   |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH150 | SPT09  | 14.00 | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH150 | SPT14  | 21.55 | Brownish grey silty sand,                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH150 | SPT17  | 26.00 | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH150 | SPT18  | 27.50 | Yellowish brown clayey silt.                 |        |        |       |       |       |                       |         |         |        | 45            | 19 |    | CI         |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH151 | UDS01  | 3.00  | Reddish brown clayey silt with sand mixture. |        |        |       |       |       |                       |         |         |        | 42            | 18 | 12 | CI         |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH151 | UDS02  | 6.00  | Reddish brown clayey silt with sand mixture. | 1.99   | 1.70   |       | 16 S  |       | TRSH-UU               |         | 1.85    | 0      |               |    |    | CI*        |            | 28   | 50            | 22   |
|       |        |       |                                              |        |        |       | 17 T  |       | 3.0                   | 1.866   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 2.0                   | 1.847   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 1.0                   | 1.837   |         |        |               |    |    |            |            |      |               |      |
| BH151 | UDS03  | 9.00  | Reddish brown clayey silt with sand mixture. | 2.02   | 1.79   |       | 14 S  |       | UNCONFD               |         | 1.66    | 0      |               |    |    | CI*        |            | 33   | 42            | 25   |
|       |        |       |                                              |        |        |       | 13 T  |       | 0.0                   | 1.674   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 1.659   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 1.647   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | REMOULD               |         | 1.52    | 0      |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 1.533   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 1.525   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 1.502   |         |        |               |    |    |            |            |      |               |      |
| BH151 | SPT07  | 11.00 | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH151 | SPT10  | 15.55 | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 97   | 3 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                                | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|-------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                   | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                   | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH151 | SPT14  | 21.55 | Yellowish grey, clayey silt with traces of sand mixture.          |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 23   | 61            | 16   |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH151 | SPT18  | 27.50 | Yellowish brown clayey silt with traces of sand mixtures.         |        |        |       |       |       |                       |         |         |        | 35            | 15 |    | CI                       |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.           | 2.04   | 1.84   | 2.67  | 11 S  | 0.409 | TRSH-UU               |         | 1.31    | 0      |               |    |    | CI*                      |            | 43   | 40            | 17   |
|       |        |       |                                                                   |        |        |       | 11 T  |       | 3.0                   | 1.322   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       | 11 C  |       | 2.0                   | 1.309   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 1.0                   | 1.299   |         |        |               |    |    |                          |            |      |               |      |
| BH152 | UDS02  | 5.50  | Reddish brown clayey silt.                                        |        |        |       |       |       |                       |         |         |        | 44            | 21 | 14 | CI                       |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | UDS03  | 8.50  | Reddish brown, clayey silt with sand & decomposed rock fragments. | 2.00   | 1.75   |       | 16 S  |       | UNCONFD               |         | 1.55    | 0      |               |    |    | SM                       |            | 51   | 41            | 8    |
|       |        |       |                                                                   |        |        |       | 14 T  |       | 0.0                   | 1.561   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.548   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.541   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | REMOULD               |         | 1.39    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.404   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.387   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.379   |         |        |               |    |    |                          |            |      |               |      |
| BH152 | SPT07  | 10.50 | Brownish grey silty sand,                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | SPT12  | 18.00 | Brownish grey silty sand                                          |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | SPT17  | 25.50 | Brownish grey silty sand.                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | SPT18  | 27.00 | Yellowish grey, clayey silt with traces of sand mixture & kankar. |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 44   | 45            | 11   |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH152 | SPT20  | 30.00 | Yellowish grey clayey silt with traces of sand mixture.           |        |        |       |       |       |                       |         |         |        | 39            | 15 |    | CI                       |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                                        | Bulk            | Dry             | Spec. | Nat.         | Void  | Strength Test Results        |                         |                   |                | Atter. Limits |         |         | IS<br>Classifica<br>tion | Grain Size |           |               |           |
|--------------|------------------|------------|---------------------------------------------------------------------------|-----------------|-----------------|-------|--------------|-------|------------------------------|-------------------------|-------------------|----------------|---------------|---------|---------|--------------------------|------------|-----------|---------------|-----------|
|              |                  |            |                                                                           | Dens.<br>gms/cc | Dens.<br>gms/cc | Grav. | Mois.<br>%   | Ratio | Pc/Pn<br>kg/sqcm             | Shear<br>kg/sqcm        | Cohesn<br>kg/sqcm | Frictn<br>Deg. | LL<br>%       | PL<br>% | SL<br>% |                          | Gravl<br>% | Sand<br>% | Silt<br>%     | Clay<br>% |
| BH153        | UDS01            | 2.50       | Reddish brown clayey silt<br>with traces of sand mixture.                 |                 |                 |       |              |       |                              |                         |                   |                | 45            | 21      | 14      | CI                       |            |           |               |           |
| BH153        | UDS02            | 6.00       | Reddish brown silty clay /<br>clayey silt with traces of<br>sand mixture. | 2.03            | 1.80            | 2.60  | 12 S<br>13 T |       | TRSH-UU<br>3.0<br>2.0<br>1.0 | 1.477<br>1.453<br>1.450 | 1.46              | 0              | 46            | 22      |         | CI                       |            | 43        | 43            | 14        |
| BH153        | UDS03            | 9.00       | Reddish brown clayey silt<br>with traces of sand mixture.                 | 2.00            | 1.74            |       | 14 S<br>15 T |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 1.404<br>1.376<br>1.360 | 1.38              | 0              |               |         |         | CI*                      |            |           |               |           |
|              |                  |            |                                                                           |                 |                 |       |              |       | REMOULD<br>0.0<br>0.0<br>0.0 | 1.234<br>1.220<br>1.206 | 1.22              | 0              |               |         |         |                          |            |           |               |           |
| BH153        | SPT07            | 11.00      | Brownish grey silty sand                                                  |                 |                 |       |              |       |                              |                         |                   |                |               |         |         | SP                       |            | 99        | 1 (Silt+Clay) |           |
| BH153        | SPT08            | 12.55      | Brownish grey silty sand                                                  |                 |                 |       |              |       |                              |                         |                   |                |               |         |         | SP                       |            | 99        | 1 (Silt+Clay) |           |
| BH153        | SPT13            | 20.00      | Brownish grey silty sand.                                                 |                 |                 |       |              |       |                              |                         |                   |                |               |         |         | SP                       |            | 99        | 1 (Silt+Clay) |           |
| BH153        | SPT17            | 26.00      | Brownish grey silty sand,                                                 |                 |                 |       |              |       |                              |                         |                   |                |               |         |         | SP                       |            | 99        | 1 (Silt+Clay) |           |
| BH153        | SPT18            | 27.55      | Brownish grey, clayey silt<br>with sand mixture.                          |                 |                 |       |              |       |                              |                         |                   |                |               |         |         | CI*                      |            | 40        | 50            | 10        |
| BH154        | UDS01            | 3.00       | Reddish brown, clayey silt<br>with traces of sand mixture.                | 1.97            | 1.76            |       | 14 S<br>12 T |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 0.833<br>0.820<br>0.807 | 0.82              | 0              |               |         |         | SM                       |            | 53        | 38            | 9         |
|              |                  |            |                                                                           |                 |                 |       |              |       | REMOULD<br>0.0<br>0.0<br>0.0 | 0.564<br>0.559<br>0.557 | 0.56              | 0              |               |         |         |                          |            |           |               |           |

| Bore Hole | Sample Number | Depth M | Sample Description                                      | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |               |      |
|-----------|---------------|---------|---------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------------------|------------|------|---------------|------|
|           |               |         |                                                         | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt          | Clay |
|           |               |         |                                                         | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %             | %    |
| BH154     | UDS02         | 6.00    | Reddish brown, clayey silt with traces of sand mixture. | 1.95   | 1.71   |       | 12 S  |       | TRSH-UU               |         | 0.85    | 0      |               |    |    | SM                |            | 57   | 37            | 6    |
|           |               |         |                                                         |        |        |       | 14 T  |       | 3.0                   | 0.863   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 2.0                   | 0.848   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 1.0                   | 0.839   |         |        |               |    |    |                   |            |      |               |      |
| BH154     | UDS03         | 9.00    | Reddish brown, clayey silt with traces of sand mixture. |        |        |       |       |       |                       |         |         |        | 43            | 21 | 15 | CI                |            | 40   | 42            | 18   |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH154     | SPT07         | 11.00   | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP                |            | 97   | 3 (Silt+Clay) |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH154     | SPT08         | 12.55   | Reddish brown silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP                |            | 99   | 1 (Silt+Clay) |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH154     | SPT13         | 20.00   | Brownish grey silty sand with traces of gravel pieces.  |        |        |       |       |       |                       |         |         |        |               |    |    | SP                | 5          | 94   | 1 (Silt+Clay) |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH154     | SPT17         | 26.00   | Brownish grey silty sand.                               |        |        |       |       |       |                       |         |         |        |               |    |    | SP                | 3          | 96   | 1 (Silt+Clay) |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH154     | SPT18         | 27.50   | Brownish grey clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 22   | 56            | 17   |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | UDS01         | 3.00    | Reddish brown clayey silt with sand mixture             |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 44   | 45            | 11   |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | UDS02         | 6.00    | Reddish brown clayey silt with sand mixture             | 1.98   | 1.75   |       | 14 S  |       | TRSH-UU               |         | 1.32    | 0      | 43            | 22 | 16 | CI                |            |      |               |      |
|           |               |         |                                                         |        |        |       | 13 T  |       | 3.0                   | 1.331   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 2.0                   | 1.329   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 1.0                   | 1.300   |         |        |               |    |    |                   |            |      |               |      |
| BH155     | UDS03         | 9.00    | Reddish brown clayey silt with sand mixture             | 1.95   | 1.68   |       | 15 S  |       | UNCONFD               |         | 1.88    | 0      |               |    |    | CI*               |            | 32   | 45            | 23   |
|           |               |         |                                                         |        |        |       | 16 T  |       | 0.0                   | 1.894   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 0.0                   | 1.887   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 0.0                   | 1.859   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | REMOULD               |         | 1.71    | 0      |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 0.0                   | 1.720   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 0.0                   | 1.716   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       | 0.0                   | 1.694   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |

| Bore Hole | Sample Number | Depth M | Sample Description                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |               |      |
|-----------|---------------|---------|----------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------------------|------------|------|---------------|------|
|           |               |         |                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt          | Clay |
|           |               |         |                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %             | %    |
| BH155     | SPT08         | 12.55   | Reddish brown clayey silt with sand mixture  |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 25   | 55            | 20   |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | SPT09         | 14.00   | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP                |            | 96   | 4 (Silt+Clay) |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | SPT13         | 20.00   | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP             |            | 92   | 8 (Silt+Clay) |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | SPT14         | 21.55   | Brownish grey silty clay with sand mixtre    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 26   | 57            | 17   |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | SPT17         | 26.00   | Brownish grey silty clay with sand mixtre    |        |        |       |       |       |                       |         |         |        | 42            | 22 |    | CI                |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH155     | SPT20         | 30.00   | Brownish grey silty clay with sand mixtre    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 32   | 48            | 20   |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH156     | UDS01         | 2.50    | Reddish brown clayey silt with sand mixture. | 1.97   | 1.68   | 2.64  | 14 S  | 0.548 | TRSH-UU               |         | 1.35    | 0      |               |    |    | CI*               |            | 29   | 50            | 21   |
|           |               |         |                                              |        |        |       | 17 T  |       | 3.0                   | 1.364   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       | 16 C  |       | 2.0                   | 1.349   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 1.0                   | 1.337   |         |        |               |    |    |                   |            |      |               |      |
| BH156     | SPT04         | 5.80    | Reddish brown clayey silt with sand mixture. |        |        |       |       |       |                       |         |         |        | 45            | 23 |    | CI                |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
| BH156     | UDS03         | 8.50    | Reddish brown clayey silt with sand mixture. | 1.99   | 1.73   |       | 13 S  |       | UNCONFD               |         | 1.38    | 0      |               |    |    | CI*               |            | 35   | 47            | 18   |
|           |               |         |                                              |        |        |       | 15 T  |       | 0.0                   | 1.402   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 0.0                   | 1.372   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 0.0                   | 1.366   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | REMOULD               |         | 1.16    | 0      |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 0.0                   | 1.172   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 0.0                   | 1.159   |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       | 0.0                   | 1.149   |         |        |               |    |    |                   |            |      |               |      |
| BH156     | SPT07         | 10.50   | Reddish brown clayey silt.                   |        |        |       |       |       |                       |         |         |        | 38            | 17 |    | CI                |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |
|           |               |         |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                          | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|-------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                             | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                             | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH156 | SPT08  | 12.05 | Brownish grey silty sand with clay binder                   |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 78   | 22 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH156 | SPT12  | 18.05 | Brownish grey silty sand,                                   |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH156 | SPT16  | 24.05 | Brownish grey silty sand                                    |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH156 | SPT17  | 25.50 | Reddish brown clayey silt with sand mixture.                |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 44   | 46             | 10   |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH156 | SPT20  | 30.00 | Yellowish brown clayey silt with traces of sand mixtures.   |        |        |       |              |       |                       |         |         |        | 35            | 14 |    | CI                       |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | UDS01  | 3.00  | Reddish brown clayey silt with sand mixture                 |        |        | 2.65  |              |       |                       |         |         |        |               |    |    | CI*                      |            | 39   | 50             | 11   |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | UDS02  | 6.00  | Reddish brown, clayey silt with traces of sand & rock dust. | 2.01   | 1.79   |       | 12 S<br>12 T |       | UNCONFD               |         | 1.42    | 0      | 46            | 23 |    | CI                       |            | 40   | 45             | 15   |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.438   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.416   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.406   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | REMOULD               |         | 1.33    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.344   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.337   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 0.0                   | 1.309   |         |        |               |    |    |                          |            |      |                |      |
| BH157 | UDS03  | 9.00  | Reddish brown, clayey silt with sand                        | 2.00   | 1.75   |       | 11 S<br>14 T |       | TRSH-UU               |         | 1.34    | 0      |               |    |    | CI*                      |            | 33   | 45             | 22   |
|       |        |       |                                                             |        |        |       |              |       | 3.0                   | 1.350   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 2.0                   | 1.337   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       | 1.0                   | 1.333   |         |        |               |    |    |                          |            |      |                |      |
| BH157 | SPT07  | 11.00 | Yellowish grey, silty sand with clay binder & kankar.       |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 64   | 31             | 5    |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | SPT08  | 12.55 | Brownish grey silty sand with clay binder                   |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 65   | 35 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                            | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                               | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                               | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH157 | SPT12  | 18.55 | Brownish grey silty sand                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | SPT16  | 24.55 | Brownish grey silty sand.                                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | SPT17  | 26.00 | Yellowish grey clayey silt.                                   |        |        |       |       |       |                       |         |         |        | 45            | 19 |    | CI                       |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH157 | SPT20  | 30.00 | Yellowish grey, clayey silt<br>with sand mixture &<br>kankar. |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 43   | 43             | 14   |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | UDS01  | 2.50  | Reddish brown clayey silt<br>with sand mixture.               | 2.04   | 1.77   |       | 14 S  |       | TRSH-UU               |         | 1.33    | 0      |               |    |    | CI*                      |            | 42   | 46             | 12   |
|       |        |       |                                                               |        |        |       | 15 T  |       | 3.0                   | 1.346   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 2.0                   | 1.337   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 1.0                   | 1.307   |         |        |               |    |    |                          |            |      |                |      |
| BH158 | UDS02  | 5.50  | Reddish brown clayey silt<br>with sand mixture.               |        |        |       |       |       |                       |         |         |        | 43            | 21 | 16 | CI                       |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | UDS03  | 8.50  | Reddish brown clayey silt<br>with sand mixture.               | 2.02   | 1.77   |       | 15 S  |       | UNCONFD               |         | 1.52    | 0      |               |    |    | CI*                      |            | 26   | 54             | 20   |
|       |        |       |                                                               |        |        |       | 14 T  |       | 0.0                   | 1.535   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.529   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.496   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | REMOULD               |         | 1.44    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.450   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.436   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.434   |         |        |               |    |    |                          |            |      |                |      |
| BH158 | SPT07  | 10.50 | Redish brown, clayey silt<br>with sand & traces of<br>kankar. |        |        | 2.65  |       |       |                       |         |         |        |               |    |    | SM                       |            | 58   | 33             | 9    |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | SPT08  | 12.00 | Brownish grey silty sand<br>with clay binder.                 |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 72   | 28 (Silt+Clay) |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | SPT13  | 19.50 | Brownish grey silty sand.                                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|-----------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                           | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                           | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH158 | SPT17  | 25.50 | Brownish grey silty sand                                  |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | SPT18  | 27.00 | Brownish grey clayey silt.<br>With sand mixture           |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 45   | 42             | 13   |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH158 | SPT20  | 30.00 | Yellowish grey clayey silt.                               |        |        |       |              |       |                       |         |         |        | 33            | 13 |    | CL                       |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH159 | UDS01  | 2.50  | Reddish brown clayey silt<br>with traces of sand mixture. |        |        |       |              |       | UNCONFD               |         | 1.37    | 0      |               |    |    | CI*                      |            | 45   | 40             | 15   |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.381   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.367   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.362   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | REMOULD               |         | 1.26    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.271   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.259   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.250   |         |        |               |    |    |                          |            |      |                |      |
| BH159 | UDS02  | 5.50  | Reddish brown clayey silt<br>with traces of sand mixture. | 2.07   | 1.78   |       | 14 S<br>16 T |       | TRSH-UU               |         | 1.62    | 0      |               |    |    | CI*                      |            | 48   | 40             | 12   |
|       |        |       |                                                           |        |        |       |              |       | 3.0                   | 1.630   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 2.0                   | 1.628   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 1.0                   | 1.602   |         |        |               |    |    |                          |            |      |                |      |
| BH159 | UDS03  | 8.50  | Reddish brown clayey silt<br>with traces of sand mixture. |        |        |       |              |       |                       |         |         |        | 40            | 16 | 14 | CI                       |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH159 | UDS04  | 11.55 | Reddish brown clayey silt<br>with traces of sand mixture. | 2.01   | 1.70   |       | 17 S<br>18 T |       | UNCONFD               |         | 1.26    | 0      |               |    |    | CI*                      |            | 38   | 45             | 17   |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.273   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.259   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.248   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | REMOULD               |         | 1.15    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.161   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.154   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       | 0.0                   | 1.135   |         |        |               |    |    |                          |            |      |                |      |
| BH159 | SPT08  | 12.00 | Brownish grey silty sand<br>with clay binder.             |        |        |       |              |       |                       |         |         |        |               |    |    | SM                       |            | 69   | 31 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH159 | SPT15  | 22.50 | Brownish grey silty sand.                                 |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                           |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                              | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS  | Grain Size |      |               |      |
|-------|--------|-------|-----------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-----|------------|------|---------------|------|
| Hole  | Number | M     |                                                                 | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |     | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                 | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |     | %          | %    | %             | %    |
| BH159 | SPT16  | 24.00 | Yellowish grey, clayey silt with sand mixture & kankar.         |        |        |       |       |       |                       |         |         |        |               |    |    | CI* |            | 30   | 56            | 14   |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH159 | UDS09  | 26.50 | Yellowish grey, clayey silt with sand mixture & kankar.         |        |        |       |       |       |                       |         |         |        | 44            | 19 |    | CI  |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH159 | SPT20  | 30.00 | Yellowish grey, clayey silt with traces of sand mixture & mica. |        |        |       |       |       |                       |         |         |        |               |    |    | CI* |            | 21   | 54            | 25   |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH160 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.                    | 1.98   | 1.75   |       | 12 S  |       | UNCONFD               |         | 1.22    | 0      |               |    |    | CI* |            |      |               |      |
|       |        |       |                                                                 |        |        |       | 13 T  |       | 0.0                   | 1.234   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 0.0                   | 1.228   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 0.0                   | 1.198   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | REMOULD               |         | 1.14    | 0      |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 0.0                   | 1.151   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 0.0                   | 1.138   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 0.0                   | 1.131   |         |        |               |    |    |     |            |      |               |      |
| BH160 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture.                    | 1.95   | 1.65   | 2.63  | 14 S  | 0.505 | TRSH-UU               |         | 1.28    | 0      |               |    |    | CI* |            | 43   | 32            | 25   |
|       |        |       |                                                                 |        |        |       | 16 T  |       | 3.0                   | 1.299   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       | 15 C  |       | 2.0                   | 1.277   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       | 1.0                   | 1.264   |         |        |               |    |    |     |            |      |               |      |
| BH160 | UDS03  | 8.50  | Reddish brown clayey silt.                                      |        |        |       |       |       |                       |         |         |        | 47            | 22 | 14 | CI  |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH160 | SPT07  | 10.50 | Brownish grey silty sand                                        |        |        |       |       |       |                       |         |         |        |               |    |    | SP  |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH160 | SPT13  | 19.50 | Brownish grey silty sand                                        |        |        |       |       |       |                       |         |         |        |               |    |    | SP  |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH160 | SPT17  | 25.50 | Brownish grey silty sand                                        |        |        |       |       |       |                       |         |         |        |               |    |    | SP  |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
| BH160 | SPT18  | 27.00 | Yellowish grey clayey silt with sand mixture                    |        |        |       |       |       |                       |         |         |        |               |    |    | CI* |            | 34   | 52            | 14   |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                 |        |        |       |       |       |                       |         |         |        |               |    |    |     |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                                     | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|------------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                        | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                        | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH161 | UDS01  | 3.00  | Reddish grey clayey silt<br>with sand mixture                          |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 47   | 25            | 28   |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH161 | UDS02  | 6.45  | Reddish brown clayey silt<br>with traces of sand mixture.              | 2.04   | 1.81   |       | 15 S<br>13 T |       | UNCONFD               | 1.40    | 0       | 39     | 19            |    |    | CI                       |            | 46   | 43            | 11   |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.412   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.405   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.383   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | REMOULD               | 1.25    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.266   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.243   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.241   |         |        |               |    |    |                          |            |      |               |      |
| BH161 | UDS03  | 9.00  | Reddish brown, clayey silt<br>with traces of sand &<br>decomposed rock | 1.98   | 1.71   |       | 13 S<br>16 T |       | TRSH-UU               | 1.57    | 0       |        |               |    |    | SM                       |            | 52   | 36            | 12   |
|       |        |       |                                                                        |        |        |       |              |       | 3.0                   | 1.582   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 2.0                   | 1.565   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 1.0                   | 1.563   |         |        |               |    |    |                          |            |      |               |      |
| BH161 | SPT07  | 11.00 | Reddish brown silty sand.                                              |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 96   | 4 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH161 | SPT12  | 18.55 | Reddish brown silty sand.                                              |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH161 | SPT17  | 26.55 | Brownish grey silty sand,                                              |        |        |       |              |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH161 | SPT18  | 28.00 | Yellowish grey clayey silt<br>with traces of sand<br>mixtures.         |        |        |       |              |       |                       |         |         |        | 34            | 13 |    | CL                       |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH162 | UDS01  | 2.50  | Reddish brown clayey silt<br>with traces of sand mixture.              | 2.01   | 1.76   |       | 14 S<br>14 T |       | UNCONFD               | 1.38    | 0       |        |               |    |    | CI*                      |            | 38   | 41            | 21   |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.399   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.373   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.368   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | REMOULD               | 1.27    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.280   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.265   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       | 0.0                   | 1.265   |         |        |               |    |    |                          |            |      |               |      |
| BH162 | UDS02  | 5.50  | Reddish brown clayey silt<br>with sand mixture                         |        |        |       |              |       |                       |         |         |        |               |    |    | CI*                      |            | 39   | 42            | 19   |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |              |       |                       |         |         |        |               |    |    |                          |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                             | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|----------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH162 | SPT05  | 7.55  | Reddish brown clayey silt with sand and kankars.               |        |        |       |       |       |                       |         |         |        | 39            | 16 |    | CI                       |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH162 | SPT06  | 9.00  | Brownish grey silty sand,                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 3          | 88   | 9 (Silt+Clay)  |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH162 | SPT14  | 21.10 | Brownish grey silty sand.                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH162 | DS09   | 22.00 | Yellowish grey, clayey silt with sand mixture & mica.          |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 28   | 58             | 14   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH163 | UDS01  | 3.00  | Reddish brown, clayey silt with sand & traces of sand mixture. |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 36   | 45             | 19   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH163 | UDS02  | 6.00  | Reddish brown, clayey silt with traces of sand mixture.        | 2.09   | 1.83   |       | 14 S  |       | TRSH-UU               |         | 1.66    | 0      |               |    |    | CI*                      |            |      |                |      |
|       |        |       |                                                                |        |        |       | 14 T  |       | 3.0                   | 1.670   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 2.0                   | 1.659   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 1.0                   | 1.651   |         |        |               |    |    |                          |            |      |                |      |
| BH163 | SPT05  | 8.00  | Reddish brown clayey silt with sand.                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 55   | 33             | 12   |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH163 | SPT06  | 9.60  | Brownish grey, silty sand with clay binder.                    |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 83   | 17 (Silt+Clay) |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH163 | SPT10  | 15.00 | Brownish grey, silty sand.                                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH164 | UDS01  | 3.00  | Reddish brown silty clay with sand mixture                     | 2.01   | 1.76   | 2.64  | 13 S  | 0.535 | TRSH-UU               |         | 0.73    | 0      | 38            | 20 | 15 | CI                       |            | 30   | 52             | 18   |
|       |        |       |                                                                |        |        |       | 14 T  |       | 3.0                   | 0.741   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       | 15 C  |       | 2.0                   | 0.739   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 1.0                   | 0.710   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | UNCONFD               |         | 0.58    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 0.595   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 0.579   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                |        |        |       |       |       | 0.0                   | 0.566   |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                            | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|-----------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                               | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                               | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
|       |        |       |                                               |        |        |       |       |       | REMOULD               | 0.42    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.430   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.422   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.408   |         |        |               |    |    |                          |            |      |               |      |
| BH164 | UDS02  | 6.00  | Brownish grey silty clay                      | 1.99   | 1.72   |       | 15 S  |       | UNCONFD               | 1.06    | 0       |        | 42            | 23 |    | CI                       |            | 40   | 39            | 21   |
|       |        |       |                                               |        |        |       | 16 T  |       | 0.0                   | 1.071   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 1.068   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 1.041   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | REMOULD               | 0.93    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.942   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.937   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.911   |         |        |               |    |    |                          |            |      |               |      |
| BH164 | SPT05  | 8.00  | Brownish grey silty sand                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 93   | 7 (Silt+Clay) |      |
|       |        |       |                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH164 | SPT09  | 14.00 | Brownish grey silty sand                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 95   | 5 (Silt+Clay) |      |
|       |        |       |                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH165 | UDS01  | 2.50  | Reddish brown silty clay<br>with sand mixture | 2.02   | 1.80   |       | 11 S  |       | TRSH-UU               | 1.10    | 0       |        | 37            | 16 | 12 | CI                       |            | 38   | 43            | 19   |
|       |        |       |                                               |        |        |       | 12 T  |       | 3.0                   | 1.112   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 2.0                   | 1.106   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 1.0                   | 1.082   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | UNCONFD               | 0.98    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.995   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.987   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.958   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | REMOULD               | 0.87    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.883   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.865   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.862   |         |        |               |    |    |                          |            |      |               |      |
| BH165 | UDS02  | 5.50  | Reddish brown silty clay<br>with sand mixture | 2.00   | 1.72   |       | 15 S  |       | TRSH-UU               | 1.25    | 0       |        | 40            | 18 |    | CI                       |            | 36   | 43            | 21   |
|       |        |       |                                               |        |        |       | 16 T  |       | 3.0                   | 1.261   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 2.0                   | 1.245   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 1.0                   | 1.244   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | UNCONFD               | 1.05    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 1.063   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 1.058   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 1.029   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | REMOULD               | 0.93    | 0       |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.944   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.935   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                               |        |        |       |       |       | 0.0                   | 0.911   |         |        |               |    |    |                          |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                          | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                             | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                             | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH165 | SPT05  | 7.50  | Yellowish brown silty sand                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 94   | 6 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH165 | SPT07  | 10.50 | Yellowish brown silty sand                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 92   | 8 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH165 | SPT10  | 15.50 | Yellowish brown silty sand                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 93   | 7 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH166 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture | 1.99   | 1.76   |       | 14 S  |       | UNCONFD               |         | 1.35    | 0      |               |    |    | CI*        |            | 33   | 50             | 17   |
|       |        |       |                                             |        |        |       | 13 T  |       | 0.0                   | 1.360   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.347   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.343   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | REMOULD               |         | 1.22    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.231   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.229   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.200   |         |        |               |    |    |            |            |      |                |      |
| BH166 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture |        |        |       |       |       |                       |         |         |        | 45            | 23 |    | CI         |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH166 | SPT05  | 7.50  | Brownish grey silty sand with clay binder.  |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 86   | 14 (Silt+Clay) |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH166 | SPT09  | 13.50 | Brownish grey silty sand.                   |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH167 | UDS01  | 2.50  | Reddish brown silty clay with sand mixture  | 2.02   | 1.73   | 2.64  | 13 S  | 0.477 | TRSH-UU               |         | 1.33    | 0      | 39            | 19 | 13 | CI         |            | 38   | 39             | 23   |
|       |        |       |                                             |        |        |       | 14 T  |       | 3.0                   | 1.345   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       | 13 C  |       | 2.0                   | 1.329   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 1.0                   | 1.316   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | UNCONFD               |         | 1.20    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.211   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.207   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.182   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | REMOULD               |         | 1.06    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.077   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.058   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 0.0                   | 1.045   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                         | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS    | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------|------------|------|----------------|------|
| Hole  | Number | M     |                                            | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |       | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                            | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |       | %          | %    | %              | %    |
| BH167 | UDS02  | 5.50  | Reddish brown silty clay with sand mixture | 1.99   | 1.70   |       | 15 S  |       | TRSH-UU               |         | 1.52    | 0      | 41            | 21 |    | CI    |            | 43   | 40             | 17   |
|       |        |       |                                            |        |        |       | 13 T  |       | 3.0                   | 1.531   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 2.0                   | 1.517   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 1.0                   | 1.512   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | UNCONFD               |         | 1.36    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.372   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.354   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.354   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | REMOULD               |         | 1.29    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.303   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.286   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.281   |         |        |               |    |    |       |            |      |                |      |
| BH167 | SPT05  | 7.50  | Yellowish brown silty sand                 |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP |            | 92   | 8 (Silt+Clay)  |      |
|       |        |       |                                            |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH167 | SPT09  | 13.50 | Yellowish brown silty sand with kankar     |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP | 5          | 85   | 10 (Silt+Clay) |      |
|       |        |       |                                            |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |                |      |
| BH168 | UDS01  | 2.50  | Reddish brown silty clay with sand mixture | 1.94   | 1.66   |       | 16 S  |       | TRSH-UU               |         | 0.66    | 0      | 38            | 18 |    | CI    |            | 36   | 41             | 23   |
|       |        |       |                                            |        |        |       | 17 T  |       | 3.0                   | 0.678   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 2.0                   | 0.659   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 1.0                   | 0.643   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | UNCONFD               |         | 0.49    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.505   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.487   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.478   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | REMOULD               |         | 0.37    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.382   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.366   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.362   |         |        |               |    |    |       |            |      |                |      |
| BH168 | UDS02  | 5.50  | Reddish brown silty clay with sand mixture | 1.92   | 1.60   |       | 19 S  |       | TRSH-UU               |         | 1.22    | 0      | 41            | 19 |    | CI    |            | 29   | 51             | 20   |
|       |        |       |                                            |        |        |       | 20 T  |       | 3.0                   | 1.240   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 2.0                   | 1.227   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 1.0                   | 1.193   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | UNCONFD               |         | 1.09    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.101   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.089   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 1.080   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | REMOULD               |         | 0.97    | 0      |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.980   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.965   |         |        |               |    |    |       |            |      |                |      |
|       |        |       |                                            |        |        |       |       |       | 0.0                   | 0.965   |         |        |               |    |    |       |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                              | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |      |      |
|-------|--------|-------|-------------------------------------------------|--------|--------|-------|----------------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|------|------|
| Hole  | Number | M     |                                                 | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt | Clay |
|       |        |       |                                                 | gms/cc | gms/cc |       | %                    |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %    | %    |
| BH168 | UDS03  | 8.55  | Reddish brown silty clay with sand mixture      | 1.90   | 1.54   | 2.67  | 21 S<br>23 T         |       | UNCONFD               | 1.48    | 0       |        | 40            | 20 |    | CI         |            | 43   | 40   | 17   |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.505   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.473   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.462   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | REMOULD               | 1.29    | 0       |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.308   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.287   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.275   |         |        |               |    |    |            |            |      |      |      |
| BH168 | SPT07  | 10.50 | Brownish grey silty clay with sand mixture      |        |        |       |                      |       |                       |         |         |        | 42            | 21 |    | CI         |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |      |      |
| BH168 | SPT10  | 15.00 | Brownish grey silty clay with sand mixture      |        |        |       |                      |       |                       |         |         |        |               |    |    | CI*        |            | 40   | 45   | 15   |
|       |        |       |                                                 |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |      |      |
| BH170 | SPT03  | 5.00  | Yellowish grey silty clay with sand mixture     |        |        |       |                      |       |                       |         |         |        | 37            | 16 |    | CI         |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |      |      |
| BH170 | UDS02  | 6.00  | Yellowish grey silty clay with sand mixture     | 1.99   | 1.76   | 2.63  | 13 S<br>13 T         |       | TRSH-UU               | 1.16    | 0       |        | 36            | 17 |    | CI         |            | 35   | 46   | 19   |
|       |        |       |                                                 |        |        |       |                      |       | 3.0                   | 1.177   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 2.0                   | 1.158   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 1.0                   | 1.145   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | UNCONFD               | 1.29    | 0       |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.311   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.286   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.273   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | REMOULD               | 1.12    | 0       |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.124   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.121   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 1.115   |         |        |               |    |    |            |            |      |      |      |
| BH170 | SPT05  | 8.00  | Yellowish grey silty clay with sand mixture     |        |        |       |                      |       |                       |         |         |        | 41            | 18 | 12 | CI         |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |      |      |
| BH171 | UDS01  | 2.50  | Yellowish brown, clayey silt with sand mixture. | 2.10   | 1.87   | 2.62  | 11 S<br>12 T<br>13 C | 0.347 | UNCONFD               | 0.64    | 0       |        |               |    |    | SM         |            | 53   | 40   | 7    |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.655   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.639   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.626   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | REMOULD               | 0.42    | 0       |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.434   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.427   |         |        |               |    |    |            |            |      |      |      |
|       |        |       |                                                 |        |        |       |                      |       | 0.0                   | 0.399   |         |        |               |    |    |            |            |      |      |      |

| Bore  | Sample | Depth | Sample Description                                                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |            | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | Classifica | %          | %    | %              | %    |
| BH171 | UDS02  | 5.50  | Brownish grey clayey silt with sand mixture & steel grey patches, decomposed |        |        |       |       |       | TRSH-UU               |         | 1.28    | 0      | 39            | 16 | 11 | CI         |            | 15   | 63             | 22   |
|       |        |       |                                                                              |        |        |       |       |       | 3.0                   | 1.296   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.275   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 1.269   |         |        |               |    |    |            |            |      |                |      |
| BH171 | UDS03  | 8.50  | Brownish grey, silty sand.                                                   | 1.82   | 1.67   |       | 9 S   |       | DRSH-CU               |         | 0.06    | 34     |               |    |    | SM-SP*     |            |      |                |      |
|       |        |       |                                                                              |        |        |       | 9DR   |       | 0.5                   | 0.397   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 1.0                   | 0.735   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 2.0                   | 1.409   |         |        |               |    |    |            |            |      |                |      |
| BH172 | SPT02  | 3.00  | Yellowish grey, silty clay with sand & kankar.                               |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 48   | 46             | 6    |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH172 | UDS02  | 5.50  | Yellowish brown, clayey silt with steel grey patches.                        | 1.96   | 1.54   |       | 27 S  |       | UNCONFD               |         | 0.75    | 0      | 45            | 19 | 11 | CI         |            | 24   | 56             | 20   |
|       |        |       |                                                                              |        |        |       | 27 T  |       | 0.0                   | 0.766   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.742   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.742   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 0.62    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.631   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.629   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.600   |         |        |               |    |    |            |            |      |                |      |
| BH172 | SPT05  | 7.50  | Light grey silty sand with clay binder & rock fragments.                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 72   | 28 (Silt+Clay) |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH173 | UDS02  | 5.50  | Yellowish grey, clayey silt with sand mixture                                | 1.95   | 1.64   |       | 17 S  |       | UNCONFD               |         | 0.65    | 0      |               |    |    | CI*        |            | 34   | 46             | 20   |
|       |        |       |                                                                              |        |        |       | 19 T  |       | 0.0                   | 0.661   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.646   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.643   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | REMOULD               |         | 0.52    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.530   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.516   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 0.514   |         |        |               |    |    |            |            |      |                |      |
| BH173 | SPT05  | 7.50  | Brownish grey silty sand with clay binder.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 66   | 34 (Silt+Clay) |      |
|       |        |       |                                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH174 | UDS01  | 2.50  | Reddish brown silty clay / clayey silt with sand mixture.                    | 2.02   | 1.76   |       | 12 S  |       | UNCONFD               |         | 1.37    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                              |        |        |       | 15 T  |       | 0.0                   | 1.381   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.375   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                              |        |        |       |       |       | 0.0                   | 1.354   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                   | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|----------------------------------------------------------------------|--------|--------|-------|----------------------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                      | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                      | gms/cc | gms/cc |       | %                    |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
|       |        |       |                                                                      |        |        |       |                      |       | REMOULD               |         | 1.22    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.230   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.216   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.214   |         |        |               |    |    |            |            |      |                |      |
| BH174 | UDS02  | 5.50  | Reddish brown silty clay / clayey silt with sand mixture.            |        |        |       |                      |       |                       |         |         |        |               |    |    | CI*        |            | 31   | 46             | 23   |
| BH174 | SPT05  | 7.50  | Reddish brown clayey silt with sand mixture & kankars.               |        |        |       |                      |       |                       |         |         |        | 47            | 18 |    | CI         |            |      |                |      |
| BH174 | SPT06  | 9.05  | Reddish brown silty sand.                                            |        |        |       |                      |       |                       |         |         |        |               |    |    | SP         |            | 96   | 4 (Silt+Clay)  |      |
| BH174 | SPT10  | 15.00 | Brownish grey silty sand                                             |        |        |       |                      |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
| BH175 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.              | 2.05   | 1.85   | 2.64  | 10 S<br>11 T<br>13 C | 0.363 | TRSH-UU               |         | 1.59    | 0      |               |    |    | CI*        |            | 47   | 37             | 16   |
|       |        |       |                                                                      |        |        |       |                      |       | 3.0                   | 1.606   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 2.0                   | 1.586   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 1.0                   | 1.578   |         |        |               |    |    |            |            |      |                |      |
| BH175 | UDS02  | 5.50  | Reddish brown, clayey silt with sand mixture & decomposed rock dust. | 2.02   | 1.77   |       | 12 S<br>14 T         |       | UNCONFD               |         | 1.81    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.827   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.805   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.798   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | REMOULD               |         | 1.70    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.711   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.706   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       | 0.0                   | 1.683   |         |        |               |    |    |            |            |      |                |      |
| BH175 | SPT05  | 7.50  | Reddish brown, clayey silt with sand & traces of kankar.             |        |        |       |                      |       |                       |         |         |        |               |    |    | SM         |            | 50   | 43             | 7    |
| BH175 | SPT06  | 9.05  | Brownish grey silty sand with clay binder                            |        |        |       |                      |       |                       |         |         |        |               |    |    | SM         |            | 80   | 20 (Silt+Clay) |      |
| BH175 | SPT12  | 18.05 | Brownish grey clayey silt with sand mixture                          |        |        |       |                      |       |                       |         |         |        |               |    |    | CI*        |            | 48   | 52 (Silt+Clay) |      |
|       |        |       |                                                                      |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                      |        |        |       |                      |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|-------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                   | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                   | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH175 | SPT13  | 19.20 | Brownish grey, clayey silt with sand mixture.                     |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 43   | 48            | 9    |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH176 | UDS01  | 2.50  | Reddish brown, silty clay with sand mixture.                      | 2.06   | 1.82   |       | 12 S  |       | UNCONFD               |         | 1.32    | 0      |               |    |    | CI*                      |            | 19   | 64            | 17   |
|       |        |       |                                                                   |        |        |       | 13 T  |       | 0.0                   | 1.334   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.329   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.297   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | REMOULD               |         | 1.18    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.193   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.175   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.172   |         |        |               |    |    |                          |            |      |               |      |
| BH176 | UDS02  | 5.50  | Reddish brown, silty clay with sand mixture.                      |        |        |       |       |       |                       |         |         |        | 45            | 22 | 18 | CI                       |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH176 | SPT05  | 7.50  | Reddish brown clayey silty sand                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 63   | 31            | 6    |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH176 | SPT06  | 9.10  | Yellowish grey silty sand with traces of kankars & gravel pieces. |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       | 6          | 90   | 4 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH176 | SPT12  | 18.10 | Reddish brown silty sand.                                         |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH177 | UDS01  | 2.50  | Reddish brown, silty clay with sand mixture.                      | 2.04   | 1.77   |       | 13 S  |       | UNCONFD               |         | 1.25    | 0      | 48            | 23 |    | CI                       |            |      |               |      |
|       |        |       |                                                                   |        |        |       | 15 T  |       | 0.0                   | 1.264   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.248   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.238   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | REMOULD               |         | 1.03    | 0      |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.045   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.033   |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 1.012   |         |        |               |    |    |                          |            |      |               |      |
| BH177 | SPT05  | 7.50  | Brownish grey, clayey silt with sand.                             |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 54   | 37            | 9    |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH177 | SPT06  | 9.05  | Brownish grey, silty sand.                                        |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                                   | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS    | Grain Size |      |               |      |
|-------|--------|-------|----------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                      | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |       | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                      | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |       | %          | %    | %             | %    |
| BH177 | SPT13  | 20.00 | Brownish grey, silty sand.                                           |        |        |       |       |       |                       |         |         |        |               |    |    | SP    |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH178 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.                         |        |        |       |       |       |                       |         |         |        |               |    |    | CI*   |            | 49   | 39            | 12   |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH178 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture                          | 2.01   | 1.81   |       | 11 S  |       | UNCONFD               |         | 0.86    | 0      |               |    | 14 | CI*   |            |      |               |      |
|       |        |       |                                                                      |        |        |       | 11 T  |       | 0.0                   | 0.877   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 0.0                   | 0.868   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 0.0                   | 0.835   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | REMOULD               |         | 0.63    | 0      |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 0.0                   | 0.640   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 0.0                   | 0.638   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 0.0                   | 0.612   |         |        |               |    |    |       |            |      |               |      |
| BH178 | UDS03  | 8.50  | Reddish brown clayey silt.                                           |        |        |       |       |       |                       |         |         |        | 48            | 21 |    | CI    |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH178 | SPT08  | 12.00 | Reddish brown, clayey silt with sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SM    |            | 56   | 36            | 8    |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH178 | SPT09  | 13.50 | Brownish grey, silty sand                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SP    |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH178 | SPT12  | 18.05 | Brownish grey, silty sand                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP |            | 95   | 5 (Silt+Clay) |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH179 | UDS01  | 2.50  | Reddish brown, clayey silt / silty clay with traces of sand mixture. | 2.01   | 1.79   |       | 11 S  |       | TRSH-UU               |         | 1.17    | 0      |               |    |    | CI*   |            | 45   | 40            | 15   |
|       |        |       |                                                                      |        |        |       | 12 T  |       | 3.0                   | 1.182   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 2.0                   | 1.176   |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       | 1.0                   | 1.152   |         |        |               |    |    |       |            |      |               |      |
| BH179 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture & kankars.               |        |        | 2.66  |       | 0.448 |                       |         |         |        |               |    |    | CI*   |            | 45   | 40            | 15   |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
| BH179 | SPT05  | 7.50  | Reddish brown clayey silt with traces of sand mixture                |        |        |       |       |       |                       |         |         |        | 45            | 17 |    | CI    |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |
|       |        |       |                                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |       |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                         | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS     | Grain Size |      |                |      |
|-------|--------|-------|------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------|------------|------|----------------|------|
| Hole  | Number | M     |                                                            | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |        | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                            | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |        | %          | %    | %              | %    |
| BH179 | SPT06  | 9.05  | Brownish grey, silty sand.                                 |        |        |       |              |       |                       |         |         |        |               |    |    | SP     |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH179 | SPT12  | 18.00 | Brownish grey, silty sand.                                 |        |        |       |              |       |                       |         |         |        |               |    |    | SP     |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH180 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.    |        |        |       |              |       | UNCONFD               |         | 1.39    | 0      |               |    |    | CI*    |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.404   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.396   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.370   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | REMOULD               |         | 1.25    | 0      |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.257   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.249   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.244   |         |        |               |    |    |        |            |      |                |      |
| BH180 | UDS02  | 5.50  | Reddish brown clayey silt.                                 |        |        |       |              |       |                       |         |         |        | 44            | 21 | 13 | CI     |            | 49   | 40             | 11   |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH180 | UDS03  | 8.50  | Reddish brown silty clayey sand with decomposed rock dust. | 1.72   | 1.62   |       | 7 S<br>6DR   |       | DRSH-CU               |         | 0.02    | 30     |               |    |    | SM-SP* |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.5                   | 0.309   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 1.0                   | 0.597   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 2.0                   | 1.175   |         |        |               |    |    |        |            |      |                |      |
| BH180 | SPT06  | 8.95  | Brownish grey, silty sand with clay binder.                |        |        |       |              |       |                       |         |         |        |               |    |    | SM     |            | 79   | 21 (Silt+Clay) |      |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH180 | SPT13  | 20.00 | Brownish grey, silty sand.                                 |        |        |       |              |       |                       |         |         |        |               |    |    | SP     |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH181 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixtures.              |        |        |       |              |       |                       |         |         |        |               |    |    | CI*    |            | 42   | 42             | 16   |
|       |        |       |                                                            |        |        |       |              |       |                       |         |         |        |               |    |    |        |            |      |                |      |
| BH181 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixtures.              | 2.01   | 1.73   |       | 14 S<br>16 T |       | UNCONFD               |         | 1.47    | 0      |               |    |    | CI*    |            | 26   | 42             | 32   |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.484   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.473   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.453   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | REMOULD               |         | 1.33    | 0      |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.343   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.338   |         |        |               |    |    |        |            |      |                |      |
|       |        |       |                                                            |        |        |       |              |       | 0.0                   | 1.309   |         |        |               |    |    |        |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                        | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |               |      |
|-------|--------|-------|-----------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                           | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                           | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |            | %          | %    | %             | %    |
| BH181 | UDS03  | 8.50  | Reddish brown clayey sand with decomposed rock fragments. | 1.73   | 1.65   |       | 4 S   |       | DRSH-CU               | 0.01    | 31      |        |               |    |    | SM-SP*     |            |      |               |      |
|       |        |       |                                                           |        |        |       | 5DR   |       | 0.5                   | 0.310   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 1.0                   | 0.611   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 2.0                   | 1.212   |         |        |               |    |    |            |            |      |               |      |
| BH181 | SPT11  | 16.50 | Reddish brown silty sand.                                 |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH182 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.   | 2.13   | 1.87   | 2.66  | 13 S  | 0.419 | UNCONFD               | 0.92    | 0       |        |               |    |    | SM         |            | 57   | 31            | 12   |
|       |        |       |                                                           |        |        |       | 15 T  |       | 0.0                   | 0.329   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       | 15 C  |       | 0.0                   | 0.370   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.370   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               | 0.84    | 0       |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.199   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.227   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.227   |         |        |               |    |    |            |            |      |               |      |
| BH182 | UDS02  | 5.50  | Reddish brown, silty clay with traces of sand mixture.    |        |        |       |       |       |                       |         |         |        |               |    | 12 | CI*        |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH182 | SPT05  | 7.50  | Reddish brown clayey silt with traces of sand mixture.    |        |        |       |       |       |                       |         |         |        | 45            | 17 |    | CI         |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH182 | SPT06  | 9.05  | Brownish grey, silty sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH182 | SPT12  | 18.05 | Brownish grey, silty sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                           |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH183 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture.              | 2.04   | 1.81   |       | 12 S  |       | UNCONFD               | 1.12    | 0       |        |               |    |    | SM         |            | 50   | 46            | 4    |
|       |        |       |                                                           |        |        |       | 13 T  |       | 0.0                   | 1.130   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.124   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 1.106   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | REMOULD               | 0.92    | 0       |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.934   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.919   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 0.0                   | 0.907   |         |        |               |    |    |            |            |      |               |      |
| BH183 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture. Obs. kankar  | 2.08   | 1.90   | 2.66  | 9 S   | 0.329 | TRSH-UU               | 1.06    | 0       |        | 29            | 13 | 12 | SC         |            | 52   | 44            | 4    |
|       |        |       |                                                           |        |        |       | 9 T   |       | 3.0                   | 1.077   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       | 9 C   |       | 2.0                   | 1.065   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                           |        |        |       |       |       | 1.0                   | 1.050   |         |        |               |    |    |            |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH183 | SPT06  | 9.10  | Brownish grey silty sand.                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH183 | SPT09  | 13.50 | Brownish grey silty sand.                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH183 | SPT13  | 20.00 | Brownish grey silty sand.                                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         | 4          | 92   | 4 (Silt+Clay)  |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH184 | UDS01  | 2.50  | Reddish brown, clayey silt with sand.                        |        |        |       |       |       | UNCONFD               |         | 1.03    | 0      |               |    |    | SM         |            | 52   | 42             | 6    |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.037   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.031   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.022   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | REMOULD               |         | 0.87    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 0.876   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 0.868   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 0.866   |         |        |               |    |    |            |            |      |                |      |
| BH184 | UDS02  | 5.50  | Reddish brown clayey silt.                                   |        |        |       |       |       |                       |         |         |        | 42            | 19 |    | CI         |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH184 | SPT04  | 5.95  | Reddish brown, silty sand with traces of clay binder.        |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 89   | 11 (Silt+Clay) |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH184 | SPT12  | 18.55 | Reddish brown, silty sand.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH184 | SPT13  | 20.00 | Light grey clayey silt with sand.                            |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 51   | 42             | 7    |
|       |        |       |                                                              |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH185 | UDS01  | 2.50  | Reddish brown, clayey silt with sand & decomposed rock dust. | 2.03   | 1.81   |       | 12 S  |       | UNCONFD               |         | 1.39    | 0      |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                              |        |        |       | 12 T  |       | 0.0                   | 1.404   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.386   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.380   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | REMOULD               |         | 1.26    | 0      |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.275   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.266   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                              |        |        |       |       |       | 0.0                   | 1.239   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                       | Bulk   | Dry    | Spec. | Nat.       | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|----------------------------------------------------------|--------|--------|-------|------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                          | Dens.  | Dens.  | Grav. | Mois.      | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                          | gms/cc | gms/cc |       | %          |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH185 | UDS02  | 5.50  | Reddish brown clayey silt with traces of sand mixture.   |        |        |       |            |       |                       |         |         |        | 47            | 17 | 14 | SC                       |            | 57   | 31             | 12   |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH185 | SPT05  | 7.50  | Reddish brown, clayey silt with sand mixture             |        |        |       |            |       |                       |         |         |        |               |    |    | CI*                      |            | 43   | 44             | 13   |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH185 | SPT06  | 9.00  | Brownish grey, silty sand with clay binder               |        |        |       |            |       |                       |         |         |        |               |    |    | SM                       |            | 85   | 15 (Silt+Clay) |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH185 | SPT15  | 22.50 | Brownish grey, silty sand                                |        |        |       |            |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH185 | SPT16  | 23.60 | Brownish grey clayey silt traces of kankars              |        |        |       |            |       |                       |         |         |        | 39            | 17 |    | CI                       |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH185 | SPT17  | 25.00 | Yellowish grey, clayey silt with traces of sand mixture. |        |        |       |            |       |                       |         |         |        |               |    |    | CI*                      |            | 20   | 67             | 13   |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH186 | UDS01  | 2.50  | Reddish brown clayey silt with sand. Obs. kankar.        |        |        |       |            |       |                       |         |         |        |               |    |    | SM                       |            | 53   | 32             | 15   |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH186 | UDS02  | 5.50  | Reddish brown clayey silt with sand mixture. Obs. kanakr | 2.09   | 1.91   |       | 8 S<br>9 T |       | UNCONFD               |         | 1.32    | 0      | 47            | 17 |    | SC                       |            | 55   | 34             | 11   |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.334   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.317   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.309   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | REMOULD               |         | 1.25    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.260   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.249   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       | 0.0                   | 1.241   |         |        |               |    |    |                          |            |      |                |      |
| BH186 | SPT06  | 9.05  | Reddish brown silty sand with kankars.                   |        |        |       |            |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH186 | SPT14  | 20.80 | Brownish grey silty sand.                                |        |        |       |            |       |                       |         |         |        |               |    |    | SP                       | 3          | 95   | 2 (Silt+Clay)  |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                          |        |        |       |            |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                 | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|--------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                    | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                    | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH186 | DS09   | 22.00 | Yellowish brown clayey silt with traces of sand mixture.           |        |        |       |       |       |                       |         |         |        | 36            | 17 |    | CI         |            |      |                |      |
| BH187 | UDS01  | 2.50  | Reddish brown clayey silt.                                         | 2.05   | 1.80   |       | 18 S  |       | UNCONFD               | 0.87    | 0       |        | 46            | 20 |    | SC         |            | 50   | 31             | 19   |
|       |        |       |                                                                    |        |        |       | 14 T  |       | 0.0                   | 0.884   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.876   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.850   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | REMOULD               | 0.69    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.703   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.684   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 0.683   |         |        |               |    |    |            |            |      |                |      |
| BH187 | UDS02  | 5.50  | Reddish brown silty clay / clayey silt with traces of sand mixture | 2.10   | 1.89   |       | 10 S  |       | TRSH-UU               | 1.20    | 0       |        |               |    |    | CI*        |            |      |                |      |
|       |        |       |                                                                    |        |        |       | 11 T  |       | 3.0                   | 1.216   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 2.0                   | 1.207   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 1.0                   | 1.177   |         |        |               |    |    |            |            |      |                |      |
| BH187 | SPT05  | 7.50  | Brownish grey, clayey silt with sand mixture.                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 52   | 40             | 8    |
| BH187 | SPT06  | 9.00  | Brownish grey, silty sand with clay binder                         |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 88   | 12 (Silt+Clay) |      |
| BH187 | SPT11  | 16.50 | Brownish grey, silty sand with gravel pieces.                      |        |        |       |       |       |                       |         |         |        |               |    |    | SP         | 6          | 93   | 1 (Silt+Clay)  |      |
| BH187 | SPT15  | 22.50 | Brownish grey, silty sand                                          |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay)  |      |
| BH187 | SPT16  | 24.00 | Yellowish grey, clayey silty sand with decomposed rock dust        |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 66   | 31             | 3    |
| BH187 | SPT17  | 25.00 | Brownish grey clayey silt traces of kankars                        |        |        |       |       |       |                       |         |         |        | 39            | 16 |    | CI         |            |      |                |      |
| BH188 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.            | 2.08   | 1.76   |       | 17 S  |       | UNCONFD               | 1.11    | 0       |        |               |    |    | SM         |            | 52   | 41             | 7    |
|       |        |       |                                                                    |        |        |       | 18 T  |       | 0.0                   | 1.121   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 1.106   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                                    |        |        |       |       |       | 0.0                   | 1.103   |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                     | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |               |      |
|-------|--------|-------|------------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                        | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |            | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                        | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | Classifica | %          | %    | %             | %    |
|       |        |       |                                                                        |        |        |       |       |       | REMOULD               |         | 1.00    | 0      |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.011   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.008   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 0.981   |         |        |               |    |    |            |            |      |               |      |
| BH188 | UDS02  | 5.50  | Reddish brown, clayey silt with traces of sand & decomposed rock dust. | 2.12   | 1.86   | 2.67  | 12 S  | 0.392 | TRSH-UU               |         | 1.16    | 0      |               |    | 14 | CI*        |            | 48   | 36            | 16   |
|       |        |       |                                                                        |        |        |       | 13 T  |       | 3.0                   | 1.172   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       | 13 C  |       | 2.0                   | 1.158   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 1.0                   | 1.150   |         |        |               |    |    |            |            |      |               |      |
| BH188 | SPT05  | 7.50  | Reddish brown clayey silt with traces of sand & rock pieces            |        |        |       |       |       |                       |         |         |        | 43            | 16 |    | CI         |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH188 | SPT06  | 9.05  | Brownish grey, silty sand                                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH188 | SPT10  | 15.10 | Brownish grey, silty sand                                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH188 | SPT15  | 22.50 | Brownish grey, silty sand                                              |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 96   | 4 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH188 | SPT16  | 24.00 | Yellowish grey, clayey silty sand.                                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 73   | 25            | 2    |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH189 | UDS01  | 2.50  | Reddish brownish grey, clayey silt with traces of sand mixture.        | 2.00   | 1.71   |       | 15 S  |       | UNCONFD               |         | 1.28    | 0      | 40            | 20 |    | CI         |            | 47   | 41            | 12   |
|       |        |       |                                                                        |        |        |       | 17 T  |       | 0.0                   | 1.299   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.274   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.267   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | REMOULD               |         | 1.03    | 0      |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.042   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.028   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       | 0.0                   | 1.020   |         |        |               |    |    |            |            |      |               |      |
| BH189 | SPT04  | 5.60  | Reddish brown silty sand with clay binders.                            |        |        |       |       |       |                       |         |         |        |               |    |    | SM         |            | 71   | 25            | 4    |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH189 | SPT05  | 7.50  | Reddish brown, silty sand.                                             |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 95   | 5 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                                        |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                                | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS  | Grain Size |      |               |      |
|-------|--------|-------|-------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-----|------------|------|---------------|------|
| Hole  | Number | M     |                                                                   | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |     | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                   | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |     | %          | %    | %             | %    |
| BH189 | SPT10  | 15.00 | Yellowish grey silty sand with traces of gravel pieces & mica.    |        |        |       |       |       |                       |         |         |        |               |    |    | SP  | 7          | 90   | 3 (Silt+Clay) |      |
| BH190 | UDS01  | 2.50  | Reddish brown, clayey silt with traces of sand mixture.           | 2.04   | 1.81   |       | 12 S  |       | TRSH-UU               |         | 1.28    | 0      | 47            | 22 | 14 | CI  |            | 48   | 38            | 14   |
|       |        |       |                                                                   |        |        |       | 13 T  |       | 3.0                   | 1.293   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 2.0                   | 1.275   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 1.0                   | 1.272   |         |        |               |    |    |     |            |      |               |      |
| BH190 | UDS02  | 5.50  | Reddish brown clayey sandy silt                                   | 2.06   | 1.75   |       | 14 S  |       | UNCONFD               |         | 0.87    | 0      |               |    |    | CI* |            |      |               |      |
|       |        |       |                                                                   |        |        |       | 18 T  |       | 0.0                   | 0.884   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 0.872   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 0.854   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | REMOULD               |         | 0.65    | 0      |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 0.662   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 0.648   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 0.0                   | 0.640   |         |        |               |    |    |     |            |      |               |      |
| BH190 | SPT05  | 7.50  | Reddish brown clayey silt with sand mixture,                      |        |        |       |       |       |                       |         |         |        |               |    |    | SM  |            | 50   | 36            | 14   |
| BH190 | SPT06  | 9.00  | Yellowish grey silty sand with traces of kankars & gravel pieces. |        |        |       |       |       |                       |         |         |        |               |    |    | SP  | 8          | 90   | 2 (Silt+Clay) |      |
| BH190 | SPT11  | 16.50 | Yellowish grey silty sand with traces of kankars & gravel pieces. |        |        |       |       |       |                       |         |         |        |               |    |    | SP  | 6          | 92   | 2 (Silt+Clay) |      |
| BH190 | SPT15  | 22.50 | Yellowish grey silty sand with traces of gravels pieces.          |        |        |       |       |       |                       |         |         |        |               |    |    | SP  |            | 98   | 2 (Silt+Clay) |      |
| BH190 | SPT16  | 24.00 | Yellowish grey clayey silt with sand mixture                      |        |        |       |       |       |                       |         |         |        | 30            | 12 |    | CL  |            |      |               |      |
| BH190 | SPT17  | 25.00 | Yellowish grey clayey silty sand.                                 |        |        |       |       |       |                       |         |         |        |               |    |    | SM  |            | 67   | 25            | 8    |
| BH191 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture & decomposed rock     | 2.30   | 2.09   |       | 10 S  |       | TRSH-UU               |         | 0.89    | 5      | 48            | 21 | 13 | SC  |            | 52   | 23            | 25   |
|       |        |       |                                                                   |        |        |       | 10 T  |       | 3.0                   | 1.258   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 2.0                   | 1.162   |         |        |               |    |    |     |            |      |               |      |
|       |        |       |                                                                   |        |        |       |       |       | 1.0                   | 1.067   |         |        |               |    |    |     |            |      |               |      |

| Bore Hole | Sample Number | Depth M | Sample Description                                                | Bulk   | Dry    | Spec. | Nat.         | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |                |      |
|-----------|---------------|---------|-------------------------------------------------------------------|--------|--------|-------|--------------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------------------|------------|------|----------------|------|
|           |               |         |                                                                   | Dens.  | Dens.  | Grav. | Mois.        | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt           | Clay |
|           |               |         |                                                                   | gms/cc | gms/cc |       | %            |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %              | %    |
| BH191     | UDS02         | 5.50    | Reddish brown clayey sandy silt.                                  |        |        |       |              |       |                       |         |         |        |               |    |    | CI*               |            | 48   | 36             | 16   |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH191     | SPT05         | 7.50    | Brownish grey clayey silty sand.                                  |        |        |       |              |       |                       |         |         |        |               |    |    | SM                |            | 64   | 36 (Silt+Clay) |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH191     | SPT11         | 16.50   | Reddish brown silty sand with gravels.                            |        |        |       |              |       |                       |         |         |        |               |    |    | SP                | 4          | 94   | 2 (Silt+Clay)  |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH191     | SPT15         | 22.50   | Brownish grey sitly sand with traces of kankars & gravels pieces. |        |        |       |              |       |                       |         |         |        |               |    |    | SP                | 8          | 90   | 2 (Silt+Clay)  |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH191     | SPT16         | 24.10   | Yellowish brown clayey silt with traces of sand mixture.          |        |        |       |              |       |                       |         |         |        | 35            | 23 |    | CI                |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH191     | SPT17         | 25.00   | Yellowish grey clayey silt with sand & decomposed rock fragments. |        |        |       |              |       |                       |         |         |        |               |    |    | SM                |            | 51   | 41             | 8    |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH192     | UDS01         | 2.50    | Reddish brown clayey silt with sand mixture & kankar.             | 2.09   | 1.88   |       | 11 S<br>11 T |       | UNCONFD               |         | 1.37    | 0      |               |    |    | SM                |            | 57   | 29             | 14   |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.384   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.365   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.361   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | REMOULD               |         | 1.10    | 0      |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.121   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.105   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       | 0.0                   | 1.074   |         |        |               |    |    |                   |            |      |                |      |
| BH192     | UDS02         | 5.50    | Reddish brown clayey silt with sand mixture & kankar.             |        |        |       |              |       |                       |         |         |        | 44            | 21 |    | CI                |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH192     | SPT05         | 7.50    | Brownish grey silty sand.                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SP                |            | 96   | 4 (Silt+Clay)  |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH192     | SPT10         | 15.05   | Brownish grey silty sand.                                         |        |        |       |              |       |                       |         |         |        |               |    |    | SM-SP             |            | 95   | 5 (Silt+Clay)  |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                                   |        |        |       |              |       |                       |         |         |        |               |    |    |                   |            |      |                |      |

| Bore Hole | Sample Number | Depth M | Sample Description                                       | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS Classification | Grain Size |      |                |      |
|-----------|---------------|---------|----------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|-------------------|------------|------|----------------|------|
|           |               |         |                                                          | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                   | Gravl      | Sand | Silt           | Clay |
|           |               |         |                                                          | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                   | %          | %    | %              | %    |
| BH192     | SPT15         | 22.50   | Brownish grey silty sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP                |            | 97   | 3 (Silt+Clay)  |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH192     | SPT16         | 25.00   | Brownish grey silty sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP                |            | 96   | 4 (Silt+Clay)  |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH193     | UDS01         | 2.50    | Reddish brown clayey sandy silt.                         |        |        |       |       |       |                       |         |         |        |               |    |    | CI*               |            | 46   | 38             | 16   |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH193     | UDS02         | 5.50    | Reddish brown clayey silt with sand mixture. Obs. kankar | 2.06   | 1.87   | 2.68  | 9 S   | 0.346 | TRSH-UU               |         | 1.27    | 0      | 46            | 19 | 13 | SC                |            | 53   | 31             | 16   |
|           |               |         |                                                          |        |        |       | 10 T  |       | 3.0                   | 1.284   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       | 9 C   |       | 2.0                   | 1.271   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 1.0                   | 1.255   |         |        |               |    |    |                   |            |      |                |      |
| BH193     | UDS03         | 8.50    | Yellowish brown silty sand.                              |        |        |       |       |       | DRSH-CU               |         | 0.02    | 28     |               |    |    | SM-SP*            |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.5                   | 0.286   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 1.0                   | 0.552   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 2.0                   | 1.083   |         |        |               |    |    |                   |            |      |                |      |
| BH193     | SPT11         | 16.50   | Brownish grey silty sand.                                |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP             |            | 90   | 10 (Silt+Clay) |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH193     | SPT14         | 21.10   | Brownish grey silty sand with clay binder.               |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP             |            | 89   | 11 (Silt+Clay) |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH193     | SPT15         | 22.50   | Yellowish brown clayey silt.                             |        |        |       |       |       |                       |         |         |        | 36            | 17 |    | CI                |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH194     | UDS01         | 2.50    | Reddish brown clayey silt.                               |        |        |       |       |       |                       |         |         |        | 41            | 21 |    | CI                |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       |                       |         |         |        |               |    |    |                   |            |      |                |      |
| BH194     | UDS02         | 5.50    | Reddish brown clayey silt with sand mixture. Obs. kankar | 2.07   | 1.86   |       | 17 S  |       | UNCONFD               |         | 1.06    | 0      |               |    |    | SM                |            | 51   | 44             | 5    |
|           |               |         |                                                          |        |        |       | 11 T  |       | 0.0                   | 1.098   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.0                   | 1.098   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.0                   | 0.984   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | REMOULD               |         | 0.86    | 0      |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.0                   | 0.898   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.0                   | 0.898   |         |        |               |    |    |                   |            |      |                |      |
|           |               |         |                                                          |        |        |       |       |       | 0.0                   | 0.784   |         |        |               |    |    |                   |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                     | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|-------|--------|-------|------------------------------------------------------------------------|--------|--------|-------|----------------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                                        | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                                        | gms/cc | gms/cc |       | %                    |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BH194 | SPT05  | 7.50  | Brownish grey silty sand.                                              |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH194 | SPT10  | 35.00 | Brownish grey silty sand.                                              |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH195 | UDS01  | 2.50  | Reddish brown clayey silt<br>with sand mixtures.                       | 2.08   | 1.79   | 2.73  | 14 S<br>16 T<br>15 C | 0.525 | TRSH-UU               |         | 1.41    | 0      |               |    |    | CI*                      |            | 47   | 35            | 18   |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH195 | SPT03  | 4.50  | Reddish brown clayey silty<br>sand.                                    |        |        |       |                      |       |                       |         |         |        |               |    |    | SM                       |            | 62   | 29            | 9    |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH195 | UDS02  | 5.50  | Reddish brown clayey sand<br>with decomposed rock<br>fragments.        | 1.73   | 1.59   |       | 9 S<br>9DR           |       | DRSH-CU               |         | 0.01    | 29     |               |    |    | SM-SP*                   |            |      |               |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH195 | SPT09  | 13.50 | Reddish brown silty sand                                               |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH196 | UDS01  | 2.50  | Reddish brown clayey silt<br>with traces of kankars &<br>sand mixture. | 2.03   | 1.83   |       | 11 S<br>13 T         |       | UNCONFD               |         | 1.46    | 0      | 46            | 18 | 13 | CI                       |            | 49   | 38            | 13   |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH196 | SPT03  | 4.50  | Reddish brown clayey silt<br>with sand mixture.                        |        |        |       |                      |       |                       |         |         |        |               |    |    | CI*                      |            | 48   | 37            | 15   |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH196 | SPT04  | 6.05  | Brownish grey silty sand<br>with gravel pieces.                        |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       | 5          | 92   | 3 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BH196 | SPT07  | 10.50 | Brownish grey silty sand                                               |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|       |        |       |                                                                        |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                          | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|-------------------------------------------------------------|--------|--------|-------|----------------------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                             | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                             | gms/cc | gms/cc |       | %                    |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH196 | SPT10  | 15.05 | Brownish grey silty sand.                                   |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH197 | UDS01  | 2.50  | Reddish brown, clayey silt<br>with traces of sand mixture.  | 1.98   | 1.75   |       | 15 S<br>13 T         |       | UNCONFD               |         | 1.08    | 0      |               |    |    | CI*                      |            | 47   | 44             | 9    |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 1.085   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 1.078   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 1.077   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | REMOULD               |         | 0.96    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.973   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.954   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.953   |         |        |               |    |    |                          |            |      |                |      |
| BH197 | UDS02  | 5.50  | Brownish grey clayey silty<br>sand with steel grey patches. | 1.72   | 1.62   |       | 6 S<br>6 DR          |       | DRSH-CU               |         | 0.03    | 28     |               |    |    | SM-SP                    |            | 89   | 11 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.5                   | 0.296   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 1.0                   | 0.562   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 2.0                   | 1.093   |         |        |               |    |    |                          |            |      |                |      |
| BH197 | SPT06  | 9.05  | Brownish grey silty sand,                                   |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 96   | 4 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH197 | SPT09  | 13.50 | Brownish grey silty sand,                                   |        |        |       |                      |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH198 | UDS01  | 2.50  | Brownish grey silty clay<br>with sand mixture               | 1.99   | 1.72   | 2.64  | 15 S<br>16 T<br>17 C | 0.641 | TRSH-UU               |         | 0.64    | 0      | 37            | 14 |    | CI                       |            | 37   | 45             | 18   |
|       |        |       |                                                             |        |        |       |                      |       | 3.0                   | 0.656   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 2.0                   | 0.637   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 1.0                   | 0.627   |         |        |               |    |    |                          |            |      |                |      |
| BH198 | SPT03  | 4.50  | Yellowish brown silty sand<br>with clay binder.             |        |        |       |                      |       |                       |         |         |        |               |    |    | SM-SP                    |            | 88   | 12 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH198 | SPT06  | 9.05  | Yellowish brown silty sand<br>with kankar.                  |        |        |       |                      |       |                       |         |         |        |               |    |    | SM-SP                    | 9          | 86   | 5 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH198 | SPT10  | 15.00 | Yellowish brown silty sand<br>with clay binder.             |        |        |       |                      |       |                       |         |         |        |               |    |    | SM-SP                    |            | 90   | 10 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |                      |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH199 | UDS01  | 2.50  | Brownish grey silty clay                                    | 1.95   | 1.65   | 2.61  | 17 S<br>18 T         |       | UNCONFD               |         | 0.54    | 0      | 42            | 19 |    | CI                       |            | 36   | 39             | 25   |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.560   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.538   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                             |        |        |       |                      |       | 0.0                   | 0.522   |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                          | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|-------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                             | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                             | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
|       |        |       |                                                             |        |        |       |       |       | REMOULD               | 0.47    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.480   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.466   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.464   |         |        |               |    |    |            |            |      |                |      |
| BH199 | SPT02  | 2.95  | Yellowish grey silty sand                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 93   | 7 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH199 | SPT06  | 9.10  | Yellowish grey silty sand with kankar                       |        |        |       |       |       |                       |         |         |        |               |    |    | SP         | 4          | 92   | 4 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH199 | SPT08  | 12.00 | Yellowish brown silty sand                                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH200 | UDS01  | 2.50  | Reddish, clayey silt with sand & decomposed rock fragments. | 1.96   | 1.73   |       | 14 S  |       | TRSH-UU               | 1.08    | 0       |        |               |    |    | CI*        |            | 47   | 38             | 15   |
|       |        |       |                                                             |        |        |       | 13 T  |       | 3.0                   | 1.093   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 2.0                   | 1.078   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 1.0                   | 1.069   |         |        |               |    |    |            |            |      |                |      |
| BH200 | UDS02  | 5.50  | Reddish brown, silty sand with clay binder.                 | 1.72   | 1.58   |       | 9 S   |       | DRSH-CU               | 0.04    | 29      |        |               |    |    | SM         |            | 73   | 27 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       | 9DR   |       | 0.5                   | 0.317   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 1.0                   | 0.594   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 2.0                   | 1.149   |         |        |               |    |    |            |            |      |                |      |
| BH200 | SPT06  | 9.05  | Brownish grey silty sand.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM         | 3          | 77   | 20 (Silt+Clay) |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH200 | SPT10  | 15.05 | Brownish grey silty sand.                                   |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH201 | UDS01  | 2.50  | Reddish brown clayey silt with traces of sand mixture.      | 2.01   | 1.75   | 2.66  | 15 S  | 0.498 | UNCONFD               | 1.01    | 0       |        |               |    |    | CI*        |            | 45   | 39             | 16   |
|       |        |       |                                                             |        |        |       | 15 T  |       | 0.0                   | 1.011   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       | 15 C  |       | 0.0                   | 1.010   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 1.009   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | REMOULD               | 0.92    | 0       |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.930   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.919   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       | 0.0                   | 0.911   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                                  | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                                                     | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                                                     | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH201 | UDS02  | 5.50  | Yellowish grey, silty sand with clay binder.                        | 1.72   | 1.62   |       | 6 S   |       | DRSH-CU               |         | 0.13    | 29     |               |    |    | SM                       |            | 83   | 17 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       | 6DR   |       | 0.5                   | 0.407   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 0.684   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.239   |         |        |               |    |    |                          |            |      |                |      |
| BH201 | SPT08  | 12.05 | Brownish grey silty sand                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH202 | UDS01  | 2.45  | Reddish brown silty clay / clayey silt with traces of sand mixture. | 2.04   | 1.83   |       | 11 S  |       | TRSH-UU               |         | 1.49    | 0      | 45            | 18 | 14 | CI                       |            | 37   | 45             | 18   |
|       |        |       |                                                                     |        |        |       | 11 T  |       | 3.0                   | 1.505   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.484   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 1.481   |         |        |               |    |    |                          |            |      |                |      |
| BH202 | UDS02  | 5.50  | Reddish, brown, silty sand with steel grey patches & clay binder.   |        |        |       |       |       | DRSH-CU               |         | 0.16    | 30     |               |    |    | SM                       |            | 78   | 22 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.5                   | 0.449   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 0.737   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.315   |         |        |               |    |    |                          |            |      |                |      |
| BH202 | SPT09  | 13.50 | Brownish grey silty sand                                            |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH203 | UDS01  | 2.50  | Reddish brown clayey silt with traces of sand mixture.              | 2.08   | 1.90   |       | 10 S  |       | UNCONFD               |         | 1.35    | 0      |               |    |    | CI*                      |            | 45   | 40             | 15   |
|       |        |       |                                                                     |        |        |       | 10 T  |       | 0.0                   | 1.368   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.347   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.335   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | REMOULD               |         | 1.20    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.212   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.204   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 0.0                   | 1.184   |         |        |               |    |    |                          |            |      |                |      |
| BH203 | UDS02  | 5.50  | Reddish brown, silty sand with clay binder.                         | 1.73   | 1.59   |       | 10 S  |       | DRSH-CU               |         | 0.07    | 29     |               |    |    | SM-SP*                   |            |      |                |      |
|       |        |       |                                                                     |        |        |       | 9DR   |       | 0.5                   | 0.347   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 1.0                   | 0.624   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       | 2.0                   | 1.179   |         |        |               |    |    |                          |            |      |                |      |
| BH203 | SPT06  | 9.05  | Brownish grey silty sand with clay binder.                          |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 85   | 15 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH203 | SPT10  | 15.05 | Brownish grey silty sand with clay binder.                          |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 2          | 87   | 11 (Silt+Clay) |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                                                     |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                                            | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |               |      |
|-------|--------|-------|---------------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|---------------|------|
| Hole  | Number | M     |                                                               | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt          | Clay |
|       |        |       |                                                               | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %             | %    |
| BH204 | UDS01  | 2.50  | Reddish brown clayey silt with sand mixture & decomposed rock | 2.01   | 1.76   | 2.70  | 13 S  | 0.414 | UNCONFD               | 1.67    | 0       |        | 44            | 17 | 13 | SC         |            | 56   | 34            | 10   |
|       |        |       |                                                               |        |        |       | 14 T  |       | 0.0                   | 1.684   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       | 12 C  |       | 0.0                   | 1.677   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.649   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | REMOULD               | 1.34    | 0       |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.342   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.343   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 0.0                   | 1.335   |         |        |               |    |    |            |            |      |               |      |
| BH204 | UDS02  | 5.50  | Brownish grey, silty sand.                                    | 1.73   | 1.57   |       | 10 S  |       | DRSH-CU               | 0.18    | 30      |        |               |    |    | SM-SP*     |            |      |               |      |
|       |        |       |                                                               |        |        |       | 10DR  |       | 0.5                   | 0.469   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 1.0                   | 0.757   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 2.0                   | 1.335   |         |        |               |    |    |            |            |      |               |      |
| BH204 | SPT07  | 10.50 | Brownish grey silty sand.                                     |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 98   | 2 (Silt+Clay) |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH204 | SPT10  | 15.00 | Brownish grey silty sand                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 99   | 1 (Silt+Clay) |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH205 | SPT01  | 1.50  | Reddish brown, clayey silt with sand mixture                  |        |        |       |       |       |                       |         |         |        | 39            | 20 | 14 | CI         |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
| BH205 | UDS01  | 3.00  | Reddish brown, clayey silty sand with white spots.            | 1.72   | 1.55   |       | 10 S  |       | DRSH-CU               | 0.07    | 28      |        |               |    |    | SM         |            | 75   | 21            | 4    |
|       |        |       |                                                               |        |        |       | 11 DR |       | 0.5                   | 0.336   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 1.0                   | 0.602   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 2.0                   | 1.133   |         |        |               |    |    |            |            |      |               |      |
| BH205 | UDS02  | 6.00  | Yellowish brown, silty sand.                                  |        |        |       |       |       | DRSH-CU               | 0.16    | 29      |        |               |    |    | SM-SP*     |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 0.5                   | 0.437   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 1.0                   | 0.714   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 2.0                   | 1.269   |         |        |               |    |    |            |            |      |               |      |
| BH205 | UDS03  | 9.00  | Yellowish brown, silty sand.                                  | 1.74   | 1.57   |       | 9 S   |       | DRSH-CU               | 0.02    | 31      |        |               |    |    | SM-SP*     |            |      |               |      |
|       |        |       |                                                               |        |        |       | 8DR   |       | 0.5                   | 0.320   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 1.0                   | 0.621   |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       | 2.0                   | 1.222   |         |        |               |    |    |            |            |      |               |      |
| BH205 | SPT07  | 11.00 | Reddish brown silty sand                                      |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 97   | 3 (Silt+Clay) |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |
|       |        |       |                                                               |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |               |      |

| Bore  | Sample | Depth | Sample Description                                      | Bulk   | Dry    | Spec. | Nat.                 | Void  | Strength Test Results        |                         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |               |      |      |
|-------|--------|-------|---------------------------------------------------------|--------|--------|-------|----------------------|-------|------------------------------|-------------------------|---------|--------|---------------|----|----|--------------------------|------------|---------------|------|------|
| Hole  | Number | M     |                                                         | Dens.  | Dens.  | Grav. | Mois.                | Ratio | Pc/Pn                        | Shear                   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand          | Silt | Clay |
|       |        |       |                                                         | gms/cc | gms/cc |       | %                    |       | kg/sqcm                      | kg/sqcm                 | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %             | %    | %    |
| BH206 | SPT01  | 1.50  | Reddish brown clayey silt with traces of sand mixtures. |        |        |       |                      |       |                              |                         |         |        | 44            | 17 |    | CI                       |            |               |      |      |
| BH206 | UDS01  | 2.50  | Brownish grey, clayey silt with sand, red spots.        | 2.06   | 1.71   |       | 19 S<br>20 T         |       | TRSH-UU<br>3.0<br>2.0<br>1.0 | 0.485<br>0.459<br>0.440 | 0.46    | 0      |               |    |    | CI*                      |            |               |      |      |
| BH206 | SPT04  | 6.00  | Brownish grey silty sand                                |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 99         | 1 (Silt+Clay) |      |      |
| BH206 | SPT08  | 12.00 | Brownish grey silty sand.                               |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 96         | 4 (Silt+Clay) |      |      |
| BH206 | SPT10  | 15.00 | Brownish grey silty sand.                               |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 97         | 3 (Silt+Clay) |      |      |
| BH207 | UDS01  | 2.50  | Blackish grey silty clay with sand mixture              | 1.92   | 1.60   | 2.65  | 18 S<br>20 T<br>19 C | 0.592 | TRSH-UU<br>3.0<br>2.0<br>1.0 | 0.485<br>0.459<br>0.440 | 0.46    | 0      | 38            | 16 | 12 | CI                       |            | 28            | 49   | 23   |
|       |        |       |                                                         |        |        |       |                      |       | UNCONFD<br>0.0<br>0.0<br>0.0 | 0.331<br>0.317<br>0.312 | 0.32    | 0      |               |    |    |                          |            |               |      |      |
|       |        |       |                                                         |        |        |       |                      |       | REMOULD<br>0.0<br>0.0<br>0.0 | 0.284<br>0.266<br>0.260 | 0.27    | 0      |               |    |    |                          |            |               |      |      |
| BH207 | SPT03  | 4.50  | Brownish grey silty sand.                               |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 96         | 4 (Silt+Clay) |      |      |
| BH207 | SPT06  | 9.05  | Brownish grey silty sand.                               |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 96         | 4 (Silt+Clay) |      |      |
| BH207 | SPT09  | 13.50 | Brownish grey silty sand                                |        |        |       |                      |       |                              |                         |         |        |               |    |    | SP                       | 98         | 2 (Silt+Clay) |      |      |

| Bore  | Sample | Depth | Sample Description                          | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS         | Grain Size |      |                |      |
|-------|--------|-------|---------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|------------|------------|------|----------------|------|
| Hole  | Number | M     |                                             | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL | Classifica | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                             | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  | tion       | %          | %    | %              | %    |
| BH208 | UDS01  | 2.50  | Blackish grey silty clay.                   | 1.96   | 1.63   | 2.64  | 18 S  | 0.580 | TRSH-UU               | 0.38    | 0       |        | 37            | 19 | 13 | CI         |            | 36   | 43             | 21   |
|       |        |       |                                             |        |        |       | 20 T  |       | 3.0                   | 0.392   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       | 18 C  |       | 2.0                   | 0.375   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 1.0                   | 0.373   |         |        |               |    |    |            |            |      |                |      |
| BH208 | SPT03  | 4.50  | Brownish grey silty sand.                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH208 | SPT06  | 9.05  | Yellowish grey silty sand.                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 94   | 6 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH208 | SPT09  | 13.50 | Brownish grey silty sand.                   |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 95   | 5 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH209 | UDS01  | 2.50  | Yellowish brown silty sand with clay binder | 1.70   | 1.59   |       | 7 S   |       | DRSH-CU               | 0.11    | 29      |        |               |    |    | SM         |            | 78   | 22 (Silt+Clay) |      |
|       |        |       |                                             |        |        |       | 7DR   |       | 0.5                   | 0.387   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 1.0                   | 0.664   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 2.0                   | 1.219   |         |        |               |    |    |            |            |      |                |      |
| BH209 | SPT03  | 4.50  | Brownish grey silty clay with sand mixture  |        |        |       |       |       |                       |         |         |        | 38            | 18 | 11 | CI         |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH209 | SPT04  | 6.05  | Brownish grey silty sand with kankar        |        |        |       |       |       |                       |         |         |        |               |    |    | SM         | 7          | 80   | 13 (Silt+Clay) |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH209 | SPT07  | 10.50 | Brownish grey silty sand                    |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP      |            | 91   | 9 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH209 | SPT10  | 15.00 | Brownish grey silty sand                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP         |            | 96   | 4 (Silt+Clay)  |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
| BH210 | UDS01  | 2.50  | Reddishh brown silty sand                   | 1.70   | 1.62   |       | 5 S   |       | DRSH-CU               | 0.05    | 28      |        |               |    |    | SM-SP      |            | 90   | 10 (Silt+Clay) |      |
|       |        |       |                                             |        |        |       | 5 DR  |       | 0.5                   | 0.316   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 1.0                   | 0.582   |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       | 2.0                   | 1.113   |         |        |               |    |    |            |            |      |                |      |
| BH210 | DS03   | 4.00  | Brownish grey silty clay                    |        |        |       |       |       |                       |         |         |        |               |    |    | CI*        |            | 36   | 46             | 18   |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |
|       |        |       |                                             |        |        |       |       |       |                       |         |         |        |               |    |    |            |            |      |                |      |

| Bore  | Sample | Depth | Sample Description                           | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|-------|--------|-------|----------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
| Hole  | Number | M     |                                              | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|       |        |       |                                              | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH210 | SPT03  | 4.50  | Brownish grey silty sand with clay binder    |        |        |       |       |       |                       |         |         |        |               |    |    | SM                       |            | 85   | 15 (Silt+Clay) |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH210 | SPT06  | 9.05  | Brownish grey silty sand                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 92   | 8 (Silt+Clay)  |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH210 | SPT09  | 13.50 | Brownish grey silty sand with kankar         |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 4          | 88   | 8 (Silt+Clay)  |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH211 | UDS01  | 2.50  | Yellowish grey silty clay with sand mixture. | 1.92   | 1.60   | 2.66  | 18 S  | 0.702 | UNCONFD               |         | 0.67    | 0      | 39            | 21 | 16 | CI                       |            | 38   | 40             | 22   |
|       |        |       |                                              |        |        |       | 20 T  |       | 0.0                   | 0.684   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       | 19 C  |       | 0.0                   | 0.663   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 0.663   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | REMOULD               |         | 0.52    | 0      |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 0.531   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 0.518   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 0.0                   | 0.511   |         |        |               |    |    |                          |            |      |                |      |
| BH211 | SPT03  | 4.50  | Brownish grey silty clay with sand mixture   |        |        |       |       |       |                       |         |         |        | 42            | 17 |    | CI                       |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH211 | SPT05  | 7.50  | Brownish grey silty clay with sand mixture   |        |        |       |       |       |                       |         |         |        |               |    |    | CI8                      |            | 36   | 46             | 18   |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH211 | SPT06  | 9.05  | Yellowish grey silty sand                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH211 | SPT10  | 15.00 | Yellowish grey silty sand                    |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 98   | 2 (Silt+Clay)  |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH212 | UDS01  | 2.50  | Reddish brown, silty sand.                   | 1.71   | 1.60   |       | 7 S   |       | DRSH-CU               |         | 0.05    | 28     |               |    |    | SM-SP*                   |            |      |                |      |
|       |        |       |                                              |        |        |       | 6DR   |       | 0.5                   | 0.316   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 1.0                   | 0.582   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 2.0                   | 1.113   |         |        |               |    |    |                          |            |      |                |      |
| BH212 | UDS02  | 5.50  | Light grey, silty sand traces of mica.       | 1.71   | 1.55   |       | 11 S  |       | DRSH-CU               |         | 0.03    | 30     |               |    |    | SM-SP*                   |            |      |                |      |
|       |        |       |                                              |        |        |       | 10DR  |       | 0.5                   | 0.319   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 1.0                   | 0.607   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       | 2.0                   | 1.185   |         |        |               |    |    |                          |            |      |                |      |
|       |        |       |                                              |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore<br>Hole | Sample<br>Number | Depth<br>M | Sample Description                                   | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |                |      |
|--------------|------------------|------------|------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|----------------|------|
|              |                  |            |                                                      | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt           | Clay |
|              |                  |            |                                                      | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %              | %    |
| BH212        | SPT08            | 12.00      | Brownish grey silty sand.                            |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 94   | 6 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH213        | UDS01            | 2.50       | Brownish grey, silty sand.                           | 1.71   | 1.56   |       | 9 S   |       | DRSH-CU               |         | 0.06    | 30     |               |    |    | SM-SP*                   |            |      |                |      |
|              |                  |            |                                                      |        |        |       | 9DR   |       | 0.5                   | 0.349   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                      |        |        |       |       |       | 1.0                   | 0.637   |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                      |        |        |       |       |       | 2.0                   | 1.215   |         |        |               |    |    |                          |            |      |                |      |
| BH213        | SPT04            | 6.05       | Light grey silty sand                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 99   | 1 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH213        | SPT05            | 7.50       | Light grey clayey silt with sand mixtures.           |        |        |       |       |       |                       |         |         |        | 29            | 15 | 11 | CL                       |            |      |                |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH213        | SPT06            | 9.05       | Brownish grey silty sand,                            |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       | 10         | 89   | 1 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BH213        | SPT08            | 12.05      | Brownish grey silty sand .                           |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    |            | 92   | 8 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BHAD01       | SPT01            | 1.50       | Yellowish brown silty clay with sand mixture.        |        |        |       |       |       |                       |         |         |        |               |    |    | CI*                      |            | 37   | 40             | 23   |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BHAD01       | SPT02            | 3.05       | Light grey silty sand                                |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       |            | 97   | 3 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BHAD01       | SPT05            | 7.50       | Light grey silty sand with kankar                    |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 6          | 87   | 7 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BHAD02       | SPT01            | 1.50       | Light grey silty sand with decomposed rock fragments |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 10         | 85   | 5 (Silt+Clay)  |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
| BHAD03       | SPT01            | 1.50       | Whitish grey silty sand with kankar                  |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 2          | 86   | 12 (Silt+Clay) |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |
|              |                  |            |                                                      |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |                |      |

| Bore                                                                 | Sample | Depth | Sample Description                                      | Bulk   | Dry    | Spec. | Nat.  | Void  | Strength Test Results |         |         |        | Atter. Limits |    |    | IS<br>Classifica<br>tion | Grain Size |      |               |      |
|----------------------------------------------------------------------|--------|-------|---------------------------------------------------------|--------|--------|-------|-------|-------|-----------------------|---------|---------|--------|---------------|----|----|--------------------------|------------|------|---------------|------|
| Hole                                                                 | Number | M     |                                                         | Dens.  | Dens.  | Grav. | Mois. | Ratio | Pc/Pn                 | Shear   | Cohesn  | Frictn | LL            | PL | SL |                          | Gravl      | Sand | Silt          | Clay |
|                                                                      |        |       |                                                         | gms/cc | gms/cc |       | %     |       | kg/sqcm               | kg/sqcm | kg/sqcm | Deg.   | %             | %  | %  |                          | %          | %    | %             | %    |
| BHAD03                                                               | SPT04  | 6.00  | Whitish grey silty sand with kankar                     |        |        |       |       |       |                       |         |         |        |               |    |    | SM-SP                    | 4          | 90   | 6 (Silt+Clay) |      |
|                                                                      |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BHAD03                                                               | SPT07  | 10.50 | Reddish brown silty sand with decomposed rock fragments |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       | 8          | 91   | 1 (Silt+Clay) |      |
|                                                                      |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| BHAD03                                                               | SPT10  | 15.05 | Reddish brown silty sand with decomposed rock fragments |        |        |       |       |       |                       |         |         |        |               |    |    | SP                       | 13         | 84   | 3 (Silt+Clay) |      |
|                                                                      |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
| * - Classification in this case is based on average layer properties |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |
|                                                                      |        |       |                                                         |        |        |       |       |       |                       |         |         |        |               |    |    |                          |            |      |               |      |

**SWELLING TEST RESULTS**

| Sl No. | Bore Hole No. | Sample No. | Depth (M)   | Description                                                       | Free Swell Index (%) | Swelling Pressure, (kg/sqcm) |
|--------|---------------|------------|-------------|-------------------------------------------------------------------|----------------------|------------------------------|
| 1      | 1             | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                     | 20.00                | 0.48                         |
| 2      | 3             | UDS02      | 5.50 - 5.95 | Reddish brown, clayey silt with sand mixture.                     | 15.00                | 0.23                         |
| 3      | 4             | UDS02      | 6.00 - 6.40 | Reddish brown clayey silt with sand mixture.                      | 12.20                | 0.23                         |
| 4      | 8             | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                     | 13.33                | 0.21                         |
| 5      | 10            | UDS01      | 2.50 - 2.90 | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.22                         |
| 6      | 14            | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                     | 16.67                | 0.31                         |
| 7      | 15            | UDS03      | 8.50 - 8.95 | Reddish brown clayey silt with sand mixture.                      | 9.09                 | 0.39                         |
| 8      | 19            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                      | 21.43                | 0.50                         |
| 9      | 20            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 11.63                | 0.32                         |
| 10     | 22            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.19                         |
| 11     | 25            | UDS03      | 9.10 - 9.55 | Reddish brown clayey silt with sand mixture.                      | 17.50                | 0.36                         |
| 12     | 27            | UDS03      | 8.50 - 8.95 | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.29                         |
| 13     | 31            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 7.14                 | 0.30                         |
| 14     | 33            | UDS02      | 5.50 - 5.95 | Reddish brown, clayey silt with sand mixture.                     | 19.05                | 0.34                         |
| 15     | 34            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                      | 25.00                | 0.28                         |
| 16     | 36            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 15.00                | 0.50                         |
| 17     | 40            | UDS01      | 2.50-2.95   | Reddish brown clayey silt with sand mixture.                      | 11.63                | 0.42                         |
| 18     | 42            | UDS01      | 1.50 - 1.95 | Reddish brown, clayey silt with sand & decomposed rock fragments. | 9.30                 | 0.24                         |
| 19     | 48            | UDS03      | 8.50-8.95   | Reddish brown clayey silt with sand mixture.                      | 20.00                | 0.02                         |
| 20     | 49            | UDS03      | 9.00 - 9.45 | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.48                         |
| 21     | 51            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                      | 12.50                | 0.37                         |
| 22     | 52            | UDS01      | 3.10 - 3.55 | Reddish brown clayey silt with sand mixture.                      | 17.07                | 0.11                         |
| 23     | 53            | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                     | 20.00                | 0.46                         |
| 24     | 55            | UDS02      | 5.40 - 5.85 | Reddish brown clayey silt with sand mixture.                      | 10.00                | 0.19                         |
| 25     | 57            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                      | 11.90                | 0.35                         |
| 26     | 58            | UDS03      | 8.50 - 8.95 | Reddish brown clayey silt with sand mixture.                      | 16.67                | 0.49                         |
| 27     | 64            | UDS01      | 2.50-2.95   | Reddish brown clayey silt with sand mixture.                      | 15.00                | 0.48                         |

**SWELLING TEST RESULTS**

| Sl No. | Bore Hole No. | Sample No. | Depth (M)   | Description                                                       | Free Swell Index (%) | Swelling Pressure, (kg/sqcm) |
|--------|---------------|------------|-------------|-------------------------------------------------------------------|----------------------|------------------------------|
| 28     | 66            | UDS03      | 7.50 - 7.80 | Reddish brown clayey silt with sand mixture.                      | 12.20                | 0.49                         |
| 29     | 69            | UDS03      | 9.00-9.45   | Reddish brown clayey silt with sand mixture.                      | 12.20                | 0.25                         |
| 30     | 70            | UDS02      | 6.00-6.30   | Reddish brown clayey silt with sand mixture.                      | 11.90                | 0.41                         |
| 31     | 71            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand & decomposed rock dust        | 14.29                | 0.24                         |
| 32     | 76            | UDS02      | 5.50-5.95   | Reddish brown clayey silt with sand mixture.                      | 12.20                | 0.40                         |
| 33     | 77            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 15.00                | 0.04                         |
| 34     | 82            | UDS01      | 3.00 - 3.45 | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.48                         |
| 35     | 84            | UDS01      | 2.45-2.90   | Reddish brown clayey silt with sand mixture.                      | 14.29                | 0.45                         |
| 36     | 85            | UDS02      | 4.50 - 4.95 | Reddish brown clayey silt with sand mixture.                      | 17.07                | 0.28                         |
| 37     | 87            | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt.                                        | 9.09                 | 0.18                         |
| 38     | 91            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 13.64                | 0.48                         |
| 39     | 93            | UDS01      | 1.00 - 1.45 | Reddish brown silty clay / clayey silt with sand mixture          | 14.29                | 0.41                         |
| 40     | 96            | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 11.90                | 0.03                         |
| 41     | 97            | UDS01      | 1.50 - 1.95 | Reddish brown silty clay / clayey silt with sand mixture          | 9.52                 | 0.48                         |
| 42     | 99            | UDS03      | 8.50 - 8.95 | Reddish brown silty clay with sand mixture                        | 11.63                | 0.28                         |
| 43     | 105           | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                      | 20.00                | 0.29                         |
| 44     | 107           | UDS02      | 5.50 - 5.95 | Reddish brown silty clay with sand mixture.                       | 14.29                | 0.36                         |
| 45     | 110           | UDS02      | 5.60 - 6.05 | Reddish brown silty clay with sand mixture & decomposed rock dust | 15.00                | 0.23                         |
| 46     | 112           | UDS03      | 7.50 - 7.95 | Reddish brown clayey silt with sand mixture.                      | 15.00                | 0.03                         |
| 47     | 119           | UDS01      | 2.50-2.95   | Reddish brown clayey silt with sand mixture.                      | 10.00                | 0.47                         |
| 48     | 120           | UDS03      | 8.50-8.95   | Reddish brown clayey silt with sand mixture.                      | 9.09                 | 0.46                         |
| 49     | 121           | UDS03      | 8.50 - 8.95 | Reddish brown silty clay / clayey silt with sand mixture          | 25.00                | 0.20                         |
| 50     | 123           | UDS01      | 2.50 - 2.95 | Reddish brown silty clay with sand mixture.                       | 14.29                | 0.47                         |
| 51     | 128           | UDS02      | 4.60 - 5.05 | Reddish brown clayey silt with sand mixture.                      | 9.30                 | 0.47                         |
| 52     | 130           | UDS02      | 5.50 - 5.80 | Reddish brown silty clay with sand mixture.                       | 12.20                | 0.16                         |
| 53     | 135           | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                      | 27.50                | 0.24                         |
| 54     | 137           | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt.                                        | 18.60                | 0.49                         |

**SWELLING TEST RESULTS**

| Sl No. | Bore Hole No. | Sample No. | Depth (M)   | Description                                                          | Free Swell Index (%) | Swelling Pressure, (kg/sqcm) |
|--------|---------------|------------|-------------|----------------------------------------------------------------------|----------------------|------------------------------|
| 55     | 138           | UDS02      | 6.00 - 6.30 | Reddish brown clayey silt with sand mixture.                         | 15.00                | 0.47                         |
| 56     | 141           | UDS03      | 9.00 - 9.45 | Reddish brown, clayey silt with sand mixture                         | 18.66                | 0.39                         |
| 57     | 144           | UDS02      | 6.00 - 6.45 | Reddish brown, clayey silt with traces of sand mixture.              | 13.45                | 0.22                         |
| 58     | 146           | UDS03      | 8.50 - 8.95 | Reddish brown, silty clay / clayey silt with traces of sand mixture. | 15.22                | 0.27                         |
| 59     | 148           | UDS01      | 3.00 - 3.45 | Reddish brown, clayey silt with traces of sand mixture.              | 12.20                | 0.20                         |
| 60     | 150           | UDS02      | 6.00 - 6.45 | Reddish brown silty clay / clayey silt with traces of sand mixture.  | 0.00                 | 0.15                         |
| 61     | 152           | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                        | 14.63                | 0.30                         |
| 62     | 156           | UDS01      | 2.50 - 2.95 | Reddish brown clayey silt with sand mixture.                         | 11.67                | 0.28                         |
| 63     | 157           | UDS01      | 3.00 - 3.45 | Reddish brown clayey silt with sand mixture                          | 9.09                 | 0.16                         |
| 64     | 160           | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                         | 10.39                | 0.20                         |
| 65     | 164           | UDS01      | 3.00 - 3.45 | Reddish brown silty clay with sand mixture                           | 4.00                 | 0.12                         |
| 66     | 167           | UDS01      | 2.50 - 2.95 | Reddish brown silty clay with sand mixture                           | 16.22                | 0.22                         |
| 67     | 171           | UDS01      | 2.50 - 2.95 | Yellowish grey, clayey silt with sand mixture.                       | 21.43                | 0.01                         |
| 68     | 175           | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                        | 11.63                | 0.48                         |
| 69     | 179           | UDS02      | 5.50-5.85   | Reddish brown clayey silt with sand mixture.                         | 9.52                 | 0.27                         |
| 70     | 182           | UDS01      | 2.50-2.95   | Reddish brown clayey silt with sand mixture.                         | 10.00                | 0.02                         |
| 71     | 183           | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                         | 5.00                 | 0.02                         |
| 72     | 188           | UDS02      | 5.50-5.95   | Reddish brown clayey silt with sand mixture.                         | 19.05                | 0.32                         |
| 73     | 193           | UDS02      | 5.50 - 5.95 | Reddish brown clayey silt with sand mixture.                         | 15.00                | 0.49                         |
| 74     | 195           | UDS01      | 2.50-2.95   | Reddish brown clayey silt with sand mixture.                         | 12.20                | 0.30                         |
| 75     | 198           | UDS01      | 2.50 - 2.95 | Brownish grey silty clay with sand mixture                           | 11.11                | 0.18                         |
| 76     | 201           | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                        | 14.29                | 0.25                         |
| 77     | 204           | UDS01      | 2.50 - 2.95 | Reddish brown, clayey silt with sand mixture.                        | 9.09                 | 0.25                         |
| 78     | 207           | UDS01      | 2.50 - 2.95 | Blackish grey silty clay with sand mixture                           | 12.67                | 0.12                         |
| 79     | 208           | UDS01      | 2.50 - 2.95 | Blackish grey silty clay.                                            | 14.33                | 0.08                         |
| 80     | 211           | UDS01      | 2.50 - 2.95 | Yellowish grey silty clay with sand mixture.                         | 22.73                | 0.21                         |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 1      | 2       | 16.00 - 16.75 | 2.339           | 2.267 | 3.179           | 21.933     | 2.674            | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 1      | 3       | 16.75 - 17.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 4.68                       | --                    | --            | --               | --                         | --        |
| 1      | 5       | 18.25 - 19.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 4      | 1       | 20.80 - 21.50 | 2.064           | 2.026 | 1.806           | 6.154      | --               | --                                        | --        | --                       | 1.12                                | --                         | --                    | --            | --               | --                         | --        |
| 4      | 3       | 22.25 - 23.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 6.32                       | 3.5-4.0               | --            | --               | --                         | --        |
| 4      | 4       | 23.00 - 23.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.17                                | --                         | --                    | --            | --               | --                         | --        |
| 4      | 5       | 23.75 - 24.50 | --              | --    | --              | --         | 2.614            | --                                        | --        | --                       | --                                  | --                         | --                    | 10.12         | --               | --                         | --        |
| 5      | 1       | 22.20 - 23.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.07                                | --                         | --                    | --            | --               | --                         | --        |
| 5      | 3       | 23.75 - 24.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.31                                | --                         | --                    | --            | --               | --                         | --        |
| 6      | 2       | 21.50 - 22.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.25                                | --                         | --                    | --            | --               | --                         | --        |
| 6      | 4       | 23.00 - 23.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 47.69            | --                         | --        |
| 6      | 5       | 23.75 - 24.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 11.86         | --               | --                         | --        |
| 12     | 1       | 23.00 - 23.75 | 2.462           | 2.452 | 0.405           | 4.321      | --               | --                                        | --        | --                       | 4.32                                | --                         | --                    | --            | --               | --                         | --        |
| 12     | 2       | 23.75 - 24.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 4.28                       | --                    | --            | --               | --                         | --        |
| 12     | 3       | 24.50 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | --        |
| 13     | 1       | 24.00 - 24.50 | --              | --    | --              | --         | 2.582            | --                                        | --        | --                       | 1.42                                | --                         | --                    | --            | --               | --                         | --        |
| 13     | 2       | 24.50 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 8.36          | --               | --                         | --        |
| 25     | 2       | 26.75 - 27.50 | 2.342           | 2.247 | 4.216           | 7.950      | --               | --                                        | --        | --                       | 1.36                                | --                         | --                    | --            | --               | --                         | --        |
| 25     | 3       | 27.50 - 28.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 40.63            | --                         | --        |
| 25     | 4       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | 35        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 30     | 1       | 19.50 - 20.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 30     | 5       | 22.50 - 23.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.03                                | --                         | --                    | --            | --               | --                         | --        |
| 34     | 2       | 25.00 - 25.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.52                                | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 34     | 5       | 27.25 - 28.00 | --              | --    | --              | --         | 2.612            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 34     | 8       | 29.50 - 30.00 | --              | --    | --              | --         | --               | 205                                       | 160       | 0.78                     | --                                  | --                         | --                    | --            | --               | 12221                      | 9342      |
| 35     | 2       | 25.25 - 26.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 3.21                                | --                         | --                    | --            | --               | --                         | --        |
| 35     | 5       | 27.50 - 28.25 | --              | --    | --              | --         | --               | --                                        | 39        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 35     | 10      | 31.25 - 32.00 | 2.588           | 2.421 | 6.888           | 7.782      | --               | --                                        | --        | --                       | 7.25                                | --                         | --                    | --            | --               | --                         | --        |
| 35     | 14      | 34.25 - 35.00 | --              | --    | --              | --         | --               | 212                                       | 172       | 0.81                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 36     | 2       | 26.75 - 27.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.18                                | --                         | --                    | --            | --               | --                         | --        |
| 36     | 4       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | 41        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 36     | 10      | 32.00 - 32.75 | --              | --    | --              | --         | --               | 68                                        | 52        | 0.76                     | --                                  | 7.85                       | --                    | --            | --               | --                         | --        |
| 36     | 11      | 33.50 - 34.25 | --              | --    | --              | --         | --               | 198                                       | 168       | 0.84                     | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | --        |
| 36     | 12      | 34.25 - 35.00 | --              | --    | --              | --         | 2.742            | 224                                       | 184       | 0.82                     | --                                  | --                         | --                    | --            | --               | 13216                      | 10672     |
| 37     | 3       | 25.50 - 26.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.82                                | --                         | --                    | --            | --               | --                         | --        |
| 37     | 6       | 27.75 - 28.50 | --              | --    | --              | --         | --               | 59                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 37     | 9       | 30.00 - 30.75 | 2.647           | 2.566 | 3.166           | 8.313      | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 45.12            | --                         | --        |
| 37     | 14      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 192                                       | 158       | 0.82                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 38     | 2       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.31                                | --                         | --                    | --            | --               | --                         | --        |
| 38     | 6       | 27.75 - 28.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.52                                | --                         | --                    | 7.45          | --               | --                         | --        |
| 38     | 12      | 32.25 - 33.00 | --              | --    | --              | --         | 2.684            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 38     | 15      | 34.50 - 35.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 2.64                                | 5.25                       | --                    | --            | --               | --                         | --        |
| 39     | 2       | 23.25 - 24.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.02                                | --                         | --                    | --            | --               | --                         | --        |
| 39     | 8       | 27.75 - 28.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4.0               | --            | --               | --                         | --        |
| 39     | 14      | 32.25 - 33.00 | 2.488           | 2.431 | 2.334           | 7.382      | 2.649            | 82                                        | 64        | 0.78                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 39     | 15      | 33.00 - 33.75 | --              | --    | --              | --         | --               | 104                                       | 78        | 0.75                     | --                                  | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 39     | 16      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 111                                       | 85        | 0.76                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 40     | 4       | 24.25 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.12                                | --                         | --                    | --            | --               | --                         | --        |
| 40     | 11      | 29.50 - 30.25 | 2.627           | 2.542 | 3.353           | 8.313      | 2.688            | 62                                        | 41        | --                       | --                                  | --                         | --                    | --            | --               | 5410                       | 3345      |
| 40     | 12      | 30.25 - 31.00 | --              | --    | --              | --         | --               | 78                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 40     | 14      | 31.95 - 32.50 | --              | --    | --              | --         | --               | --                                        | 61        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 40     | 15      | 32.50 - 33.25 | --              | --    | --              | --         | --               | 124                                       | 92        | 0.74                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 41     | 6       | 26.50 - 27.25 | --              | --    | --              | --         | 2.716            | --                                        | 59        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 41     | 8       | 28.00 - 28.75 | --              | --    | --              | --         | --               | 77                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 41     | 9       | 28.75 - 29.50 | --              | --    | --              | --         | --               | --                                        | 49        | --                       | --                                  | 6.5-7                      | --                    | --            | --               | --                         | --        |
| 41     | 11      | 30.25 - 31.00 | --              | --    | --              | --         | --               | 37                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 41     | 13      | 31.75 - 32.50 | --              | --    | --              | --         | --               | --                                        | 5         | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 41     | 14      | 32.50 - 33.25 | --              | --    | --              | --         | --               | 74                                        | --        | --                       | --                                  | --                         | 10.59                 | --            | --               | --                         | --        |
| 41     | 16      | 34.00 - 35.00 | 2.225           | 2.144 | 3.784           | 21.809     | --               | 69                                        | 60        | 0.87                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 42     | 2       | 18.00 - 18.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 42.61                      | --                    | --            | --               | --                         | --        |
| 42     | 5       | 20.25 - 21.00 | --              | --    | --              | --         | --               | 89                                        | 69        | 0.78                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 42     | 8       | 22.50 - 23.25 | --              | --    | --              | --         | --               | 113                                       | 98        | 0.87                     | --                                  | --                         | --                    | --            | --               | 7735                       | 5557      |
| 42     | 9       | 23.25 - 24.00 | --              | --    | --              | --         | --               | 138                                       | 123       | 0.89                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 43     | 4       | 21.25 - 22.00 | 2.317           | 2.224 | 4.173           | 20.215     | --               | --                                        | 81        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 43     | 6       | 22.75 - 23.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | 11.30         | --               | --                         | --        |
| 43     | 7       | 23.50 - 24.25 | --              | --    | --              | --         | --               | 31                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 43     | 8       | 24.25 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 3.5-4                      | --                    | --            | --               | --                         | --        |
| 44     | 2       | 22.00 - 22.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 12.24                               | 23.82                      | --                    | --            | --               | --                         | --        |
| 44     | 7       | 25.75 - 26.50 | --              | --    | --              | --         | --               | 62                                        | 47        | 0.75                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 44     | 9       | 27.25 - 28.00 | --              | --    | --              | --         | --               | --                                        | 52        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 44     | 14      | 31.00 - 31.75 | --              | --    | --              | --         | --               | 71                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 44     | 15      | 31.75 - 32.50 | --              | --    | --              | --         | --               | 91                                        | 68        | 0.74                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 44     | 17      | 33.25 - 34.00 | --              | --    | --              | --         | --               | 128                                       | 99        | 0.77                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 45     | 3       | 23.50 - 24.25 | 2.369           | 2.216 | 2.530           | 8.018      | --               | --                                        | --        | --                       | 1.3                                 | --                         | --                    | --            | --               | --                         | --        |
| 45     | 7       | 26.50 - 27.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 8.56          | --               | --                         | --        |
| 45     | 9       | 28.00 - 28.75 | --              | --    | --              | --         | --               | 71                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 45     | 11      | 29.50 - 30.25 | --              | --    | --              | --         | --               | 85                                        | 60        | 0.7                      | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 45     | 16      | 33.25 - 34.00 | --              | --    | --              | --         | 2.682            | 102                                       | 79        | 0.77                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 46     | 2       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.16                                | --                         | --                    | --            | --               | --                         | --        |
| 46     | 9       | 30.00 - 30.75 | 2.328           | 2.268 | 2.643           | 7.232      | --               | 64                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 46     | 12      | 32.25 - 33.00 | --              | --    | --              | --         | --               | --                                        | 58        | --                       | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | 3422      |
| 47     | 2       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 6.35                       | --                    | --            | --               | --                         | --        |
| 47     | 6       | 27.75 - 28.50 | --              | --    | --              | --         | --               | 58                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 47     | 14      | 33.75 - 34.50 | --              | --    | --              | --         | --               | --                                        | 48        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 48     | 2       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 46.37            | --                         | --        |
| 48     | 5       | 27.00 - 27.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.14                                | --                         | --                    | --            | --               | --                         | --        |
| 48     | 12      | 32.25 - 33.00 | --              | --    | --              | --         | --               | 87                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 48     | 13      | 33.00 - 33.75 | 2.369           | 2.216 | 2.630           | 9.018      | --               | 114                                       | 85        | 0.74                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 49     | 2       | 25.75 - 26.50 | 2.063           | 2.028 | 1.707           | 6.004      | 2.619            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 49     | 4       | 27.25 - 28.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.06                                | --                         | --                    | --            | --               | --                         | --        |
| 49     | 7       | 29.50 - 30.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 8.64                       | 3.5-4                 | --            | --               | --                         | --        |
| 50     | 3       | 27.75 - 28.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.13                                | --                         | --                    | --            | --               | --                         | --        |
| 50     | 5       | 29.25 - 30.00 | --              | --    | --              | --         | --               | 79                                        | 65        | 0.82                     | --                                  | --                         | --                    | --            | --               | 9231                       | 7264      |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 50     | 7       | 30.75 - 31.50 | 2.270           | 2.170 | 4.569           | 12.027     | --               | 68                                        | 52        | 0.76                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 50     | 10      | 33.00 - 33.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 5.642         | --               | --                         | --        |
| 50     | 12      | 34.50 - 35.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 30.68            | --                         | --        |
| 51     | 3       | 28.00 - 28.75 | 2.322           | 2.257 | 2.868           | 7.950      | --               | --                                        | --        | --                       | 2.46                                | --                         | --                    | --            | --               | --                         | --        |
| 51     | 5       | 29.50 - 30.25 | --              | --    | --              | --         | 2.634            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 51     | 8       | 31.75 - 32.50 | --              | --    | --              | --         | --               | 80                                        | 76        | 0.95                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 51     | 11      | 34.00 - 35.00 | --              | --    | --              | --         | --               | 138                                       | 100       | 0.72                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 52     | 1       | 25.00 - 25.75 | 2.230           | 2.157 | 3.378           | 10.528     | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 52     | 5       | 28.00 - 28.75 | --              | --    | --              | --         | --               | 85                                        | 68        | 0.80                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 52     | 11      | 32.50 - 33.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | 6-7                   | --            | --               | --                         | --        |
| 52     | 13      | 34.00 - 35.00 | --              | --    | --              | --         | --               | 114                                       | 109       | 0.96                     | --                                  | --                         | --                    | 4.257         | --               | --                         | --        |
| 54     | 3       | 27.75 - 28.50 | --              | --    | --              | --         | 2.724            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 54     | 5       | 29.25 - 30.00 | --              | --    | --              | --         | --               | 56                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 3312                       | --        |
| 55     | 2       | 25.00 - 25.75 | --              | --    | --              | --         | 2.610            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 55     | 6       | 28.00 - 28.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 4.21                       | --                    | --            | --               | --                         | --        |
| 55     | 9       | 30.25 - 31.00 | 2.362           | 2.233 | 5.772           | 14.985     | 2.616            | --                                        | --        | --                       | 0.89                                | --                         | --                    | --            | --               | --                         | --        |
| 55     | 12      | 32.50 - 33.25 | --              | --    | --              | --         | --               | --                                        | 52        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 55     | 14      | 34.00 - 35.00 | --              | --    | --              | --         | --               | 137                                       | 86        | 0.63                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 56     | 3       | 26.75 - 27.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | --               | --                         | --        |
| 56     | 6       | 29.00 - 29.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 56     | 9       | 31.25 - 32.00 | --              | --    | --              | --         | --               | 45                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 56     | 10      | 32.00 - 32.75 | --              | --    | --              | --         | --               | --                                        | 72        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 56     | 13      | 34.25 - 35.00 | --              | --    | --              | --         | --               | 61                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

### LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 57     | 2       | 24.75 - 25.50 | 2.168           | 2.117 | 2.394           | 7.339      | --               | --                                        | --        | --                       | --                                  | 4.76                       | --                    | --            | --               | --                         | --        |
| 57     | 3       | 25.50 - 26.25 | --              | --    | --              | --         | 2.602            | --                                        | --        | --                       | --                                  | --                         | --                    | 11.263        | --               | --                         | --        |
| 57     | 8       | 29.25 - 30.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 58     | 2       | 21.75 - 22.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 33.06            | --                         | --        |
| 58     | 10      | 27.75 - 28.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.87                                | --                         | --                    | --            | --               | --                         | --        |
| 58     | 14      | 30.75 - 31.50 | --              | --    | --              | --         | --               | 45                                        | 31        | 0.69                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 58     | 15      | 31.50 - 32.25 | --              | --    | --              | --         | --               | 56                                        | 39        | 0.70                     | --                                  | --                         | --                    | --            | --               | 7511                       | 4246      |
| 59     | 2       | 21.75 - 22.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 3.94                       | --                    | --            | --               | --                         | --        |
| 59     | 5       | 24.00 - 24.75 | 2.286           | 2.192 | 4.273           | 10.958     | 2.613            | 49                                        | 34        | 0.69                     | --                                  | --                         | 6-7                   | --            | --               | 5887                       | 4562      |
| 59     | 16      | 32.25 - 33.00 | --              | --    | --              | --         | --               | 34                                        | 22        | 0.65                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 59     | 18      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 31                                        | 20        | 0.63                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 59     | 19      | 34.50 - 35.00 | --              | --    | --              | --         | --               | 37                                        | 21        | 0.57                     | --                                  | --                         | --                    | 5.624         | --               | --                         | --        |
| 60     | 4       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | --               | --                         | --        |
| 60     | 9       | 28.50 - 29.25 | 2.363           | 2.312 | 2.192           | 6.964      | 2.614            | --                                        | 35        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 60     | 12      | 30.75 - 31.50 | --              | --    | --              | --         | --               | 72                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 60     | 16      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 68                                        | 38        | 0.56                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 61     | 3       | 23.00 - 23.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.21                                | --                         | --                    | --            | --               | --                         | --        |
| 61     | 12      | 29.75 - 30.50 | --              | --    | --              | --         | --               | 64                                        | 48        | 0.75                     | --                                  | --                         | --                    | --            | --               | 5214                       | 3954      |
| 61     | 15      | 32.00 - 32.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | --        |
| 62     | 3       | 24.00 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 9.35          | --               | --                         | --        |
| 63     | 3       | 22.50 - 23.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 4.26                       | --                    | --            | --               | --                         | --        |
| 63     | 5       | 24.00 - 24.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 63     | 10      | 27.75 - 28.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 63     | 15      | 31.50 - 32.25 | --              | --    | --              | --         | --               | 61                                        | 38        | 0.62                     | --                                  | --                         | --                    | --            | --               | 5402                       | 3177      |
| 63     | 18      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 157                                       | 144       | 0.92                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 64     | 3       | 22.75 - 23.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.56                                | --                         | --                    | --            | --               | --                         | --        |
| 64     | 13      | 30.25 - 31.00 | --              | --    | --              | --         | 2.628            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 64     | 18      | 34.00 - 35.00 | 2.740           | 2.639 | 3.860           | 7.763      | --               | 142                                       | 112       | 0.78                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 65     | 2       | 25.00 - 25.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 9.36                       | --                    | --            | --               | --                         | --        |
| 65     | 9       | 30.25 - 31.00 | --              | --    | --              | --         | --               | --                                        | 56        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 65     | 13      | 33.25 - 34.00 | --              | --    | --              | --         | --               | 92                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 66     | 2       | 23.50 - 24.25 | 2.257           | 2.197 | 2.733           | 8.818      | 2.571            | --                                        | --        | --                       | 1.06                                | --                         | --                    | --            | --               | --                         | --        |
| 66     | 5       | 25.75 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 5.692                 | --            | --               | --                         | --        |
| 66     | 10      | 29.50 - 30.25 | --              | --    | --              | --         | --               | 55                                        | 33        | 0.60                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 67     | 2       | 25.75 - 26.50 | 2.646           | 2.497 | 5.944           | 7.244      | 2.712            | --                                        | --        | --                       | --                                  | --                         | --                    | 8.45          | --               | --                         | --        |
| 67     | 3       | 26.50 - 27.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4.0               | --            | --               | --                         | --        |
| 67     | 4       | 27.25 - 28.00 | --              | --    | --              | --         | --               | --                                        | 52        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 67     | 9       | 31.00 - 31.75 | --              | --    | --              | --         | --               | 72                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 67     | 12      | 33.25 - 34.00 | --              | --    | --              | --         | --               | --                                        | 68        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 67     | 13      | 34.00 - 35.00 | --              | --    | --              | --         | 2.698            | 104                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 68     | 2       | 25.75 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 47.61            | --                         | --        |
| 68     | 5       | 28.00 - 28.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 3.24                       | --                    | --            | --               | --                         | --        |
| 68     | 8       | 30.25 - 31.00 | --              | --    | --              | --         | --               | 63                                        | 42        | 0.67                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 69     | 1       | 24.30 - 25.00 | --              | --    | --              | --         | --               | --                                        | 42        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 69     | 6       | 28.00 - 28.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 46.27            | --                         | --        |
| 69     | 11      | 31.75 - 32.50 | --              | --    | --              | --         | --               | 65                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 69     | 14      | 34.00 - 35.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | --        |
| 70     | 2       | 23.75 - 24.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 8.27          | --               | --                         | --        |
| 70     | 7       | 27.50 - 28.25 | 2.710           | 2.608 | 3.910           | 6.962      | 2.644            | --                                        | 54        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 70     | 14      | 32.75 - 33.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 7.36                       | --                    | --            | --               | --                         | --        |
| 70     | 16      | 34.25 - 35.50 | --              | --    | --              | --         | --               | 98                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 71     | 2       | 21.75 - 22.50 | --              | --    | --              | --         | 2.618            | --                                        | --        | --                       | 1.10                                | --                         | --                    | --            | --               | --                         | --        |
| 71     | 6       | 24.75 - 25.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 71     | 11      | 28.50 - 29.25 | 2.118           | 2.093 | 1.169           | 3.921      | --               | --                                        | 21        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 71     | 17      | 33.00 - 33.75 | --              | --    | --              | --         | --               | 39                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 71     | 18      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 44                                        | 29        | 0.66                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 72     | 4       | 22.75 - 23.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | 10.964        | --               | --                         | --        |
| 72     | 10      | 27.25 - 28.00 | --              | --    | --              | --         | 2.631            | 78                                        | 45        | 0.58                     | --                                  | 4.72                       | --                    | --            | --               | --                         | --        |
| 72     | 15      | 31.00 - 31.75 | --              | --    | --              | --         | --               | 449                                       | 229       | 0.51                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 73     | 1       | 21.00 - 21.75 | 2.516           | 2.515 | 0.035           | 0.341      | --               | --                                        | --        | --                       | 91.4                                | --                         | --                    | --            | --               | --                         | --        |
| 74     | 2       | 21.75 - 22.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.06                                | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 74     | 4       | 23.25 - 24.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | --               | --                         | --        |
| 74     | 13      | 30.00 - 30.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 74     | 19      | 34.50 - 35.00 | 2.288           | 2.242 | 2.059           | 6.648      | 2.618            | 70                                        | 65        | 0.93                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 77     | 2       | 23.00 - 23.75 | 2.620           | 2.618 | 0.076           | 0.962      | 2.644            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 77     | 7       | 26.75 - 27.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | --               | --                         | --        |
| 77     | 9       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 9.740                      | --                    | --            | --               | --                         | --        |
| 78     | 3       | 22.00 - 22.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.93                                | --                         | --                    | --            | --               | --                         | --        |
| 78     | 12      | 28.75 - 29.50 | --              | --    | --              | --         | --               | 68                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 78     | 14      | 30.25 - 31.00 | --              | --    | --              | --         | --               | 120                                       | 111       | 0.92                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 78     | 17      | 32.50 - 33.25 | --              | --    | --              | --         | --               | --                                        | 22        | --                       | --                                  | --                         | --                    | --            | --               | --                         | 2249      |
| 79     | 3       | 25.75 - 26.50 | 2.616           | 2.515 | 4.011           | 7.341      | 2.663            | --                                        | --        | --                       | 1.34                                | --                         | --                    | --            | --               | --                         | --        |
| 79     | 7       | 28.75 - 29.50 | --              | --    | --              | --         | --               | --                                        | 54        | --                       | --                                  | --                         | --                    | --            | --               | --                         | 3186      |
| 79     | 10      | 31.00 - 31.75 | --              | --    | --              | --         | --               | 74                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 4365                       | --        |
| 79     | 13      | 33.25 - 34.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 5.0-6.0               | --            | --               | --                         | --        |
| 80     | 3       | 28.50 - 29.25 | --              | --    | --              | --         | --               | --                                        | 85        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 80     | 5       | 30.00 - 30.75 | --              | --    | --              | --         | --               | 118                                       | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 80     | 6       | 30.75 - 31.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 9418                       | 4072      |
| 80     | 8       | 32.25 - 33.00 | --              | --    | --              | --         | --               | 172                                       | 102       | 0.594                    | --                                  | --                         | --                    | 6.038         | --               | --                         | --        |
| 80     | 11      | 34.50 - 35.00 | --              | --    | --              | --         | --               | 126                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 81     | 2       | 26.75 - 27.50 | 2.181           | 2.107 | 3.537           | 10.111     | 2.344            | --                                        | 34        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 81     | 4       | 28.25 - 29.00 | --              | --    | --              | --         | --               | 45                                        | 21        | 0.460                    | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 81     | 5       | 29.00 - 30.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 34.57            | --                         | 7303      |
| 82     | 4       | 27.25 - 28.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 6.371         | --               | --                         | --        |
| 82     | 7       | 29.50 - 30.25 | 2.328           | 2.280 | 2.065           | 7.007      | 2.614            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 82     | 11      | 32.50 - 33.25 | --              | --    | --              | --         | --               | 75                                        | 56        | 0.75                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 83     | 2       | 26.75 - 27.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.97                                | 4.261                      | --                    | --            | --               | --                         | --        |
| 83     | 5       | 29.00 - 29.75 | 2.163           | 2.073 | 4.345           | 11.396     | 2.340            | --                                        | --        | --                       | 1.06                                | --                         | --                    | --            | --               | --                         | --        |
| 83     | 11      | 33.50 - 34.25 | --              | --    | --              | --         | --               | --                                        | 121       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 83     | 12      | 34.25 - 35.00 | --              | --    | --              | --         | --               | 97                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 84     | 1       | 28.30 - 29.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 9.32          | --               | --                         | --        |
| 84     | 2       | 29.00 - 30.00 | --              | --    | --              | --         | --               | --                                        | 59        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

### LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 85     | 3       | 25.25 - 26.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.88                                | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 85     | 4       | 26.00 - 26.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | --               | --                         | --        |
| 85     | 6       | 27.50 - 28.25 | 2.413           | 2.333 | 3.438           | 9.603      | 2.581            | --                                        | 65        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 85     | 12      | 32.00 - 32.75 | --              | --    | --              | --         | --               | 74                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 85     | 14      | 33.50 - 34.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 8.213                 | --            | --               | 10851                      | 6518      |
| 85     | 15      | 34.25 - 35.00 | --              | --    | --              | --         | --               | 87                                        | 73        | 0.836                    | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 86     | 1       | 25.80 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | --               | --                         | --        |
| 86     | 3       | 27.25 - 28.00 | 2.222           | 2.149 | 3.364           | 9.390      | 2.372            | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | --               | --                         | --        |
| 86     | 8       | 31.00 - 31.75 | --              | --    | --              | --         | --               | --                                        | 20        | --                       | --                                  | --                         | --                    | --            | 42.36            | --                         | --        |
| 86     | 9       | 31.75 - 32.50 | --              | --    | --              | --         | --               | 61                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 86     | 12      | 34.00 - 35.00 | --              | --    | --              | --         | --               | 72                                        | 57        | 0.797                    | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 87     | 4       | 29.25 - 30.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.00                                | --                         | --                    | --            | --               | --                         | --        |
| 87     | 5       | 30.00 - 30.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 2947                       | --        |
| 87     | 6       | 30.75 - 31.50 | --              | --    | --              | --         | --               | 69                                        | --        | --                       | --                                  | --                         | 7.425                 | --            | --               | --                         | --        |
| 87     | 8       | 32.25 - 33.00 | 2.562           | 2.546 | 0.629           | 2.952      | 2.624            | 147                                       | 127       | 0.862                    | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 87     | 10      | 33.75 - 34.50 | --              | --    | --              | --         | --               | 54                                        | 28        | 0.515                    | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 87     | 11      | 34.50 - 35.00 | --              | --    | --              | --         | --               | 116                                       | 111       | 0.956                    | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 88     | 1       | 24.50 - 25.25 | --              | --    | --              | --         | --               | --                                        | 699       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 88     | 6       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 4.27                                | --                         | --                    | --            | --               | --                         | --        |
| 89     | 2       | 24.00 - 24.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.92                                | 3.72                       | --                    | --            | --               | --                         | --        |
| 89     | 8       | 28.50 - 29.25 | --              | --    | --              | --         | 2.618            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 90     | 2       | 21.25 - 22.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 90     | 8       | 25.75 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.89                                | --                         | --                    | --            | --               | --                         | --        |

Job No. : 4732

Sheet No.

Project: Geotech. Inv. Work for setting up 2x600MW SCTPP at HTPS Korba West.

**CETEST**

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 90     | 14      | 30.25 - 31.00 | 2.840           | 2.789 | 1.859           | 7.763      | --               | --                                        | 65        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 90     | 17      | 32.50 - 33.25 | --              | --    | --              | --         | --               | 228                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | 10348                      | --        |
| 90     | 19      | 34.00 - 35.00 | --              | --    | --              | --         | --               | 211                                       | 172       | 0.82                     | --                                  | --                         | --                    | --            | --               | 13441                      | 9788      |
| 91     | 1       | 28.60 - 29.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 48.60            | --                         | --        |
| 91     | 2       | 29.25 - 30.00 | --              | --    | --              | --         | 2.667            | --                                        | --        | --                       | --                                  | --                         | --                    | 11.374        | --               | --                         | --        |
| 92     | 4       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.99                                | --                         | --                    | --            | --               | --                         | --        |
| 92     | 6       | 29.75 - 30.50 | --              | --    | --              | --         | --               | --                                        | 55        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 92     | 10      | 32.75 - 33.50 | --              | --    | --              | --         | --               | 124                                       | --        | --                       | --                                  | 5.645                      | --                    | --            | --               | --                         | --        |
| 93     | 2       | 23.75 - 24.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 41.28            | --                         | --        |
| 93     | 7       | 27.50 - 28.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.95                                | 51.34                      | 3.5-4.00              | --            | --               | --                         | --        |
| 93     | 14      | 32.75 - 33.50 | 2.307           | 2.244 | 2.836           | 19.757     | --               | --                                        | 34        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 93     | 16      | 34.25 - 35.00 | --              | --    | --              | --         | 2.584            | --                                        | --        | --                       | --                                  | --                         | --                    | 6.452         | --               | 22596                      | 12670     |
| 94     | 4       | 26.25 - 27.00 | --              | --    | --              | --         | --               | 85                                        | --        | --                       | --                                  | --                         | --                    | 4.075         | --               | --                         | --        |
| 94     | 6       | 27.75 - 28.50 | 2.446           | 2.387 | 2.448           | 7.004      | --               | --                                        | 102       | --                       | --                                  | --                         | --                    | --            | 38.67            | --                         | --        |
| 94     | 13      | 33.00 - 34.00 | --              | --    | --              | --         | --               | 96                                        | --        | --                       | 0.89                                | --                         | --                    | --            | --               | --                         | --        |
| 95     | 4       | 26.50 - 27.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.06                                | --                         | --                    | --            | --               | --                         | --        |
| 95     | 9       | 30.25 - 31.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 11.236        | --               | --                         | --        |
| 96     | 7       | 26.00 - 26.75 | --              | --    | --              | --         | --               | 44                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 96     | 10      | 28.25 - 29.00 | 2.130           | 2.056 | 3.576           | 9.907      | 2.368            | --                                        | --        | --                       | 0.94                                | --                         | --                    | --            | --               | --                         | --        |
| 97     | 3       | 24.00 - 24.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.03                                | 19.01                      | --                    | --            | --               | --                         | --        |
| 97     | 6       | 26.25 - 27.00 | --              | --    | --              | --         | --               | 58                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 97     | 10      | 29.25 - 30.00 | 2.850           | 2.747 | 3.740           | 11.933     | 2.678            | --                                        | 85        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 97     | 17      | 34.50 - 35.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 30.26                               | --                         | --                    | --            | --               | 34856                      | --        |

### LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 98     | 3       | 25.00 - 25.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.97                                | --                         | --                    | 10.239        | --               | --                         | --        |
| 98     | 5       | 26.50 - 27.25 | --              | --    | --              | --         | --               | 62                                        | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 98     | 9       | 29.50 - 30.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.97                                | --                         | --                    | --            | --               | --                         | --        |
| 99     | 1       | 21.50 - 22.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 100.35                              | --                         | 6-7                   | --            | --               | --                         | --        |
| 99     | 10      | 28.25 - 29.00 | 2.747           | 2.666 | 3.047           | 9.313      | --               | --                                        | 101       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 99     | 18      | 34.25 - 35.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 24.92                      | --                    | --            | --               | 4115                       | 2380      |
| 100    | 2       | 23.25 - 24.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 17.940                     | --                    | --            | --               | --                         | --        |
| 100    | 6       | 26.25 - 27.00 | --              | --    | --              | --         | --               | --                                        | 57        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 100    | 8       | 27.75 - 28.50 | --              | --    | --              | --         | --               | 62                                        | --        | --                       | --                                  | --                         | --                    | --            | 36.29            | --                         | --        |
| 100    | 10      | 29.25 - 30.00 | --              | --    | --              | --         | --               | --                                        | 62        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 101    | 1       | 24.20 - 25.00 | --              | --    | --              | --         | 2.5780           | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 101    | 3       | 25.75 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 12.31                      | --                    | --            | --               | --                         | --        |
| 101    | 7       | 28.75 - 29.50 | --              | --    | --              | --         | --               | 102                                       | 85        | 0.83                     | --                                  | --                         | --                    | --            | --               | 6151                       | 5820      |
| 107    | 2       | 23.50 - 24.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.89                                | --                         | --                    | 11.706        | --               | --                         | --        |
| 107    | 3       | 24.25 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | 46.51            | --                         | --        |
| 108    | 2       | 23.75 - 24.50 | --              | --    | --              | --         | 2.597            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 111    | 1       | 22.30 - 23.00 | 2.540           | 2.533 | 0.268           | 3.651      | --               | --                                        | --        | --                       | 25.66                               | --                         | --                    | --            | --               | --                         | --        |
| 111    | 9       | 28.25 - 29.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 0.93                                | 15.78                      | --                    | --            | --               | --                         | --        |
| 111    | 13      | 31.25 - 32.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 5759                       | --        |
| 111    | 14      | 32.00 - 32.75 | --              | --    | --              | --         | --               | 89                                        | 55        | 0.62                     | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 112    | 12      | 30.65 - 31.40 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 48.09            | --                         | --        |
| 112    | 16      | 33.65 - 34.40 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 6.93                                | --                         | --                    | 6.029         | --               | --                         | --        |
| 112    | 17      | 34.40 - 35.00 | 2.488           | 2.431 | 2.334           | 7.782      | 2.649            | 120                                       | 102       | 0.85                     | --                                  | 7.28                       | --                    | --            | --               | --                         | --        |

LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |        | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|--------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry    |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 113    | 4       | 26.95 - 27.40 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | 41.20            | --                         | --        |
| 113    | 6       | 28.15 - 28.90 | --              | --     | --              | --         | --               | 153                                       | 128       | 0.84                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 113    | 8       | 29.65 - 30.40 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | 3850      |
| 113    | 10      | 31.90 - 33.40 | 2.2918          | 2.1479 | 6.701           | 15.78621   | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | --               | --                         | --        |
| 113    | 11      | 33.40 - 35.00 | --              | --     | --              | --         | --               | 139                                       | 124       | 0.89                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 114    | 1       | 21.00 - 21.75 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 57.02                               | --                         | --                    | --            | --               | --                         | --        |
| 114    | 12      | 29.25 - 30.00 | --              | --     | --              | --         | 2.547            | 93                                        | 72        | 0.77                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 114    | 14      | 30.75 - 31.50 | --              | --     | --              | --         | --               | 86                                        | 66        | 0.77                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 114    | 17      | 33.00 - 34.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | 3.5-4.0               | --            | --               | --                         | --        |
| 115    | 4       | 26.25 - 27.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.89                                | --                         | --                    | 10.496        | --               | --                         | --        |
| 115    | 12      | 32.25 - 33.00 | --              | --     | --              | --         | --               | 88                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 115    | 15      | 34.50 - 35.00 | --              | --     | --              | --         | --               | --                                        | 444       | --                       | --                                  | --                         | 6-7                   | --            | --               | --                         | --        |
| 116    | 2       | 28.00 - 28.75 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 1.13                                | --                         | --                    | --            | --               | --                         | --        |
| 116    | 3       | 28.75 - 29.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 42.58            | --                         | --        |
| 117    | 2       | 27.25 - 28.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | 2.47                       | --                    | --            | --               | --                         | --        |
| 117    | 3       | 28.00 - 28.75 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.92                                | --                         | --                    | --            | --               | --                         | --        |
| 117    | 4       | 28.75 - 29.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 10.968        | --               | --                         | --        |
| 118    | 2       | 27.75 - 28.50 | 2.422           | 2.347  | 3.184           | 9.950      | 2.658            | --                                        | --        | --                       | 1.12                                | --                         | --                    | --            | --               | --                         | --        |
| 118    | 3       | 28.50 - 29.25 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | 10.25                      | 3.5-4.0               | --            | --               | --                         | --        |
| 118    | 4       | 29.25 - 30.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 10.25         | --               | --                         | --        |
| 121    | 1       | 27.50 - 28.25 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.90                                | --                         | --                    | --            | --               | --                         | --        |
| 121    | 3       | 29.00 - 30.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.89                                | --                         | --                    | --            | --               | --                         | --        |
| 122    | 4       | 28.00 - 28.75 | --              | --     | --              | --         | --               | 75                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |        | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|--------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry    |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 122    | 5       | 28.75 - 29.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | 10.65                      | --                    | --            | --               | --                         | 4257      |
| 122    | 8       | 31.00 - 31.75 | 2.173           | 2.096  | 3.672           | 8.949      | --               | 104                                       | 91        | 0.87                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 122    | 11      | 33.25 - 34.00 | --              | --     | --              | --         | --               | --                                        | 112       | --                       | --                                  | --                         | --                    | 5.639         | --               | --                         | --        |
| 122    | 12      | 34.00 - 35.00 | --              | --     | --              | --         | --               | 96                                        | 40        | 0.42                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 123    | 2       | 25.00 - 25.75 | 2.1979          | 2.0543 | 6.986           | 15.470     | --               | 94                                        | 55        | 0.58                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 123    | 3       | 25.75 - 26.50 | --              | --     | --              | --         | --               | 82                                        | --        | --                       | --                                  | --                         | --                    | --            | 37.59            | --                         | --        |
| 123    | 5       | 27.25 - 28.00 | --              | --     | --              | --         | --               | --                                        | 85        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 123    | 7       | 28.75 - 29.50 | --              | --     | --              | --         | --               | 187                                       | 148       | 0.79                     | --                                  | 70.91                      | --                    | --            | --               | --                         | --        |
| 123    | 9       | 30.25 - 31.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 2174                       | 2057      |
| 123    | 11      | 31.75 - 32.50 | --              | --     | --              | --         | --               | 358                                       | 323       | 0.90                     | --                                  | --                         | --                    | 4.284         | --               | --                         | --        |
| 123    | 13      | 33.25 - 34.00 | --              | --     | --              | --         | --               | 161                                       | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | 10996                      | --        |
| 123    | 14      | 34.00 - 35.00 | --              | --     | --              | --         | 2.656            | 301                                       | 248       | 0.82                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 124    | 2       | 24.75 - 25.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 28.51                               | --                         | --                    | --            | --               | --                         | --        |
| 124    | 8       | 29.25 - 30.00 | --              | --     | --              | --         | --               | --                                        | 78        | --                       | --                                  | --                         | --                    | --            | 34.12            | --                         | --        |
| 124    | 10      | 30.75 - 31.50 | 2.136           | 2.072  | 3.115           | 7.676      | 2.576            | 113                                       | 97        | 0.86                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 124    | 14      | 33.75 - 34.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6-7                   | --            | --               | 14315                      | 14708     |
| 125    | 4       | 23.75 - 24.50 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 0.93                                | --                         | --                    | --            | --               | --                         | --        |
| 125    | 5       | 24.50 - 25.25 | --              | --     | --              | --         | --               | 83                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 125    | 11      | 29.00 - 30.00 | --              | --     | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 11168                      | 9587      |
| 126    | 3       | 22.50 - 23.25 | 2.193           | 2.119  | 3.455           | 8.758      | 2.593            | --                                        | 159       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 126    | 5       | 24.00 - 24.75 | --              | --     | --              | --         | --               | --                                        | --        | --                       | 1.09                                | --                         | --                    | --            | --               | --                         | --        |
| 126    | 9       | 27.00 - 27.75 | --              | --     | --              | --         | --               | 138                                       | 124       | 0.90                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 126    | 11      | 28.25 - 29.00 | --              | --     | --              | --         | --               | 132                                       | 127       | 0.96                     | --                                  | --                         | --                    | --            | --               | --                         | --        |

|                                                                               |           |
|-------------------------------------------------------------------------------|-----------|
| Project: Geotech. Inv. Work for setting up 2x660MW SCTPP at HTTPS Korba West. |           |
| Job No. : 4732                                                                | Sheet No. |

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## LABORATORY ROCK TEST RESULTS

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| 172    | 21      | 24.25 - 25.00 | --              | --    | --              | --         | 2.896            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 172    | 27      | 28.75 - 29.50 | 2.719           | 2.717 | 0.070           | 0.190      | --               | 907                                       | 859       | 0.95                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 173    | 6       | 13.00 - 13.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 28.61                               | --                         | --                    | --            | --               | --                         | --        |
| 173    | 10      | 16.00 - 16.75 | --              | --    | --              | --         | 2.783            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 173    | 11      | 16.75 - 17.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6.5-7                 | --            | --               | --                         | --        |
| 173    | 14      | 19.00 - 19.75 | --              | --    | --              | --         | --               | 918                                       | 837       | 0.91                     | --                                  | --                         | --                    | --            | --               | 53037                      | 58893     |
| 173    | 22      | 25.00 - 25.75 | --              | --    | --              | --         | --               | 643                                       | 441       | 0.69                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 184    | 1       | 21.00 - 21.75 | 2.396           | 2.272 | 5.443           | 10.958     | 2.643            | --                                        | --        | --                       | 1.31                                | --                         | --                    | 8.34          | --               | --                         | --        |
| 184    | 2       | 21.75 - 22.50 | --              | --    | --              | --         | --               | --                                        | 42        | --                       | --                                  | 9.99                       | --                    | --            | --               | --                         | 2178      |
| 184    | 4       | 23.25 - 24.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.21                                | --                         | --                    | --            | 45.76            | --                         | --        |
| 184    | 5       | 24.00 - 25.00 | --              | --    | --              | --         | --               | 53                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 2827                       | --        |
| 186    | 1       | 23.00 - 23.75 | 2.461           | 2.451 | 0.404           | 4.200      | --               | --                                        | --        | --                       | 0.89                                | --                         | --                    | --            | --               | --                         | --        |
| 186    | 3       | 24.50 - 25.00 | --              | --    | --              | --         | 2.559            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 193    | 1       | 23.50 - 24.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 3.5-4                 | --            | --               | --                         | --        |
| 193    | 2       | 24.25 - 25.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 1.10                                | --                         | --                    | --            | --               | --                         | --        |
| 212    | 3       | 14.75 - 15.50 | 2.512           | 2.507 | 0.183           | 2.442      | --               | --                                        | --        | --                       | 16.49                               | --                         | --                    | --            | --               | --                         | --        |
| 212    | 5       | 16.25 - 17.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | 73.69                      | --                    | --            | --               | --                         | --        |
| 212    | 8       | 18.50 - 19.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | 3.98          | --               | --                         | --        |
| 212    | 13      | 22.25 - 23.00 | --              | --    | --              | --         | 2.841            | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 213    | 2       | 13.75 - 14.50 | 2.686           | 2.682 | 0.137           | 0.682      | --               | --                                        | --        | --                       | 23.69                               | --                         | --                    | --            | --               | --                         | --        |
| 213    | 4       | 15.25 - 16.00 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 76.51                 | --            | --               | --                         | --        |
| 213    | 8       | 18.25 - 19.00 | --              | --    | --              | --         | --               | --                                        | 535       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 213    | 11      | 20.50 - 21.25 | --              | --    | --              | --         | --               | 341                                       | 381       | 1.12                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| 213    | 13      | 22.00 - 22.75 | --              | --    | --              | --         | --               | 964                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |

**LABORATORY ROCK TEST RESULTS**

| BH No. | Run No. | Depth (M)     | Density (gm/cc) |       | Water Content % | Porosity % | Specific Gravity | Unconfined Compressive Strength (kg/sqcm) |           | Coefficient of softening | Point Load Strength Index (kg/sqcm) | Slake Durability Index (%) | Hardness (Mohs Scale) | Soundness (%) | Impact value (%) | Deformability, E (kg/sqcm) |           |
|--------|---------|---------------|-----------------|-------|-----------------|------------|------------------|-------------------------------------------|-----------|--------------------------|-------------------------------------|----------------------------|-----------------------|---------------|------------------|----------------------------|-----------|
|        |         |               | Bulk            | Dry   |                 |            |                  | In-Situ                                   | Saturated |                          |                                     |                            |                       |               |                  | In-Situ                    | Saturated |
| AD01   | 2       | 9.75 - 10.50  | --              | --    | --              | --         | --               | --                                        | --        | --                       | 38.09                               | --                         | --                    | --            | --               | --                         | --        |
| AD01   | 5       | 12.00 - 12.75 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | 12.06            | --                         | --        |
| AD01   | 11      | 16.50 - 17.25 | --              | --    | --              | --         | --               | --                                        | 879       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD01   | 19      | 22.50 - 23.25 | --              | --    | --              | --         | --               | 945                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD01   | 22      | 22.50 - 23.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | 6.5-7                 | --            | --               | --                         | --        |
| AD02   | 4       | 5.00 - 5.75   | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | 45589     |
| AD02   | 9       | 8.75 - 9.50   | 2.717           | 2.715 | 0.077           | 0.208      | --               | --                                        | 867       | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD02   | 13      | 11.75 - 12.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | 40.21                               | --                         | --                    | --            | --               | --                         | --        |
| AD02   | 34      | 27.50 - 28.25 | --              | --    | --              | --         | --               | 932                                       | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD03   | 5       | 19.00 - 19.75 | --              | --    | --              | --         | 2.674            | --                                        | --        | --                       | 2.16                                | --                         | --                    | --            | --               | --                         | --        |
| AD03   | 6       | 26.50 - 27.25 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD03   | 8       | 21.75 - 22.00 | --              | --    | --              | --         | --               | 216                                       | 167       | 0.77                     | --                                  | --                         | --                    | --            | --               | --                         | --        |
| AD03   | 14      | 25.75 - 26.50 | --              | --    | --              | --         | --               | --                                        | --        | --                       | --                                  | --                         | --                    | --            | --               | 14674                      | --        |
| AD03   | 17      | 28.00 - 28.75 | --              | --    | --              | --         | --               | 227                                       | --        | --                       | --                                  | 36.26                      | --                    | --            | --               | --                         | --        |

## REPORT ON ELECTRICAL RESISTIVITY TEST FOR SETTING UP 2X660 MW SUPER CRITICAL THERMAL POWER PROJECT AT HTPS, KORBA WEST

### INTRODUCTION:

Electrical Resistivity Test was carried out for the proposed construction of 2x660 MW Super Critical Thermal Power Project at HTPS, Korba West from 10/05/2024 to 24/05/2024 at eighty (80) locations as per IS 3043 : 1987.

### METHODOLOGY:

The Soil Resistivity Survey is a method to find out the Electrical Resistivity (Specific Resistance) of a medium. It is the resistance offered by a unit cube of a particular medium (so called strata below the ground level) when a unit current passes perpendicular to the surface of a cross-sectional area A. The relation is given by Ohm's Law is –

$$\rho = R \frac{A}{l} \quad \text{ohm} \cdot \text{m} \quad \text{where}$$

$\rho$  = Resistivity, R = resistance offered by the medium of length L and Cross-sectional area A.

In electrical resistivity survey a known current I (direct current or low frequency alternating current) is sent into the ground through a pair of current electrodes A & B and the potential difference ( $\Delta V$ ) created in the medium is measured between another pair of electrodes M & N. The resistivity of the formation is then given

$$\Delta V$$

by  $\rho = K \frac{\Delta V}{I}$  where  $\rho$  is the apparent resistivity, K is the geometric factor.

$$I$$

In the Earth Resistivity Test, the Wenner configuration was followed. In this configuration two potential electrodes M & N are placed in a line with the current electrodes A & B, all four being situated equidistance from one to another and disposed symmetrically with respect to a central point such that  $AM=MN=NB=s$ . The outer two electrodes A & B were used for sending current (I) and inner two M & N were used for measuring the potential differences

( $\Delta V$ ). The distance between each consecutive electrode (s) was kept constant and was progressively increased to reach the depth at which resistivity information are wanted. Suitable electrode spacing determines the conductivity of the top soil as well as the various subsurface layers occurring in the area under study. At each location, 4 sets of observations were taken for each of the electrode spacing (s) in ten directions (N-S, E-W, NE-SW & NW-SE) and in seven different electrode spacing viz.: s = 0.50m, 1.0m, 2.0m, 3.0m, 4.0m, 5.0m, 6.0m, 7.0m, 8.0m and 10.0m were used to know the nature of change of resistivity.

The apparent resistivity was determined by the formula –

$$\rho = 6.28 s \frac{\Delta V}{I} \text{ where 's' is the distance between the two consecutive}$$

Electrodes and  $\frac{\Delta V}{I}$  is R which is the observed resistance for measuring resistivity.

A Resistivity Meter model DDR-3 of GEOSENSOR make was used during the operation. The mean value of the resistivity estimated was taken as the representative one.

The depth of investigation in an isotropic and homogeneous formation can be approximated to the distance between the consecutive two electrodes (s).

## TEST RESULTS:

The overall mean resistivity values at each ERT locations are presented below.

### APPARENT RESISTIVITY VALUES

| Sl. No. | ERT Location | Co-ordinate (M) |             |         | Overall Mean Resistivity (Ohm-m) |
|---------|--------------|-----------------|-------------|---------|----------------------------------|
|         |              | Easting         | Northing    | R.L.    |                                  |
| 1.      | ERT-01       | 672324.722      | 2479903.425 | 301.735 | 213.44                           |
| 2.      | ERT-02       | 672076.881      | 2479924.902 | 307.631 | 132.36                           |
| 3.      | ERT-03       | 671970.701      | 2479893.876 | 307.554 | 116.93                           |
| 4.      | ERT-04       | 671783.179      | 2479867.815 | 314.758 | 148.13                           |
| 5.      | ERT-05       | 672175.609      | 2479831.825 | 307.343 | 249.58                           |
| 6.      | ERT-06       | 672440.092      | 2479839.445 | 301.582 | 267.00                           |
| 7.      | ERT-07       | 672687.012      | 2479859.116 | 300.227 | 201.85                           |
| 8.      | ERT-08       | 672739.729      | 2479916.690 | 300.121 | 248.85                           |
| 9.      | ERT-09       | 672785.502      | 2479862.673 | 299.418 | 279.49                           |
| 10.     | ERT-10       | 672805.671      | 2479908.561 | 298.589 | 255.52                           |
| 11.     | ERT-11       | 672921.149      | 2479924.087 | 297.281 | 195.85                           |
| 12.     | ERT-12       | 672983.092      | 2479984.914 | 294.552 | 261.29                           |
| 13.     | ERT-13       | 673959.399      | 2479847.254 | 292.757 | 33.19                            |
| 14.     | ERT-14       | 673996.793      | 2479885.078 | 292.695 | 261.33                           |
| 15.     | ERT-15       | 672665.881      | 2479793.161 | 300.385 | 249.66                           |

| Sl. No. | ERT Location | Co-ordinate (M) |             |         | Overall Mean Resistivity (Ohm-m) |
|---------|--------------|-----------------|-------------|---------|----------------------------------|
|         |              | Easting         | Northing    | R.L.    |                                  |
| 16.     | ERT-16       | 672607.072      | 2479749.033 | 303.215 | 221.59                           |
| 17.     | ERT-17       | 672577.013      | 2479809.071 | 300.592 | 213.90                           |
| 18.     | ERT-19       | 672015.808      | 2479704.775 | 308.694 | 203.91                           |
| 19.     | ERT-20       | 672141.376      | 2479664.620 | 306.981 | 201.01                           |
| 20.     | ERT-21       | 672322.633      | 2479703.028 | 304.525 | 277.91                           |
| 21.     | ERT-22       | 672424.982      | 2479667.755 | 303.891 | 232.99                           |
| 22.     | ERT-23       | 672482.535      | 2479689.513 | 302.625 | 172.69                           |
| 23.     | ERT-24       | 672505.895      | 2479666.010 | 303.170 | 242.01                           |
| 24.     | ERT-25       | 672473.481      | 2479622.318 | 303.680 | 262.19                           |
| 25.     | ERT-26       | 672516.562      | 2479630.253 | 303.620 | 342.08                           |
| 26.     | ERT-27       | 672554.174      | 2479651.932 | 303.215 | 246.54                           |
| 27.     | ERT-28       | 672619.309      | 2479649.894 | 302.412 | 315.62                           |
| 28.     | ERT-29       | 672677.953      | 2479623.798 | 302.238 | 413.71                           |
| 29.     | ERT-30       | 672720.729      | 2479602.179 | 302.120 | 265.95                           |
| 30.     | ERT-31       | 672828.030      | 2479593.264 | 299.005 | 222.36                           |
| 31.     | ERT-32       | 672669.141      | 2479557.393 | 302.121 | 260.84                           |
| 32.     | ERT-33       | 672642.668      | 2479603.414 | 302.318 | 240.00                           |
| 33.     | ERT-34       | 672607.489      | 2479591.859 | 302.820 | 216.06                           |
| 34.     | ERT-35       | 672594.036      | 2479539.579 | 303.262 | 497.13                           |
| 35.     | ERT-36       | 672550.691      | 2479591.223 | 304.180 | 140.35                           |
| 36.     | ERT-37       | 672529.362      | 2479550.111 | 303.610 | 239.72                           |
| 37.     | ERT-38       | 672449.404      | 2479525.142 | 304.435 | 194.51                           |
| 38.     | ERT-39       | 672395.971      | 2479566.630 | 304.518 | 191.47                           |
| 39.     | ERT-40       | 672302.345      | 2479600.290 | 305.934 | 147.90                           |
| 40.     | ERT-41       | 672227.085      | 2479551.326 | 306.113 | 248.64                           |
| 41.     | ERT-42       | 672133.927      | 2479415.777 | 308.335 | 188.94                           |
| 42.     | ERT-43       | 672188.508      | 2479391.502 | 308.388 | 211.07                           |
| 43.     | ERT-44       | 672238.810      | 2479380.796 | 308.120 | 265.11                           |
| 44.     | ERT-45       | 672314.613      | 2479456.836 | 305.583 | 218.28                           |
| 45.     | ERT-46       | 672311.620      | 2479368.584 | 308.822 | 160.69                           |
| 46.     | ERT-47       | 672344.926      | 2479384.586 | 304.215 | 151.92                           |
| 47.     | ERT-48       | 672310.880      | 2479326.832 | 310.100 | 154.34                           |
| 48.     | ERT-49       | 672340.164      | 2479307.538 | 308.123 | 163.07                           |
| 49.     | ERT-50       | 672383.285      | 2479321.366 | 307.695 | 232.32                           |
| 50.     | ERT-51       | 672414.149      | 2479413.233 | 304.590 | 178.44                           |
| 51.     | ERT-52       | 672511.748      | 2479446.424 | 303.792 | 283.20                           |
| 52.     | ERT-53       | 672623.392      | 2479489.012 | 302.803 | 119.18                           |
| 53.     | ERT-54       | 672640.858      | 2479476.362 | 303.185 | 225.29                           |
| 54.     | ERT-55       | 672637.037      | 2479430.321 | 303.370 | 197.42                           |
| 55.     | ERT-56       | 672702.130      | 2479434.257 | 302.795 | 131.99                           |
| 56.     | ERT-57       | 672695.468      | 2479373.950 | 303.631 | 249.69                           |
| 57.     | ERT-58       | 672558.759      | 2479368.296 | 303.801 | 127.04                           |
| 58.     | ERT-59       | 672475.910      | 2479343.941 | 304.775 | 156.53                           |
| 59.     | ERT-60       | 672558.215      | 2479336.900 | 304.143 | 129.97                           |
| 60.     | ERT-61       | 672482.186      | 2479291.156 | 305.097 | 169.41                           |
| 61.     | ERT-62       | 672439.600      | 2479277.309 | 306.325 | 249.10                           |
| 62.     | ERT-63       | 672551.383      | 2479246.887 | 304.528 | 175.73                           |

| Sl. No. | ERT Location | Co-ordinate (M) |             |         | Overall Mean Resistivity (Ohm-m) |
|---------|--------------|-----------------|-------------|---------|----------------------------------|
|         |              | Easting         | Northing    | R.L.    |                                  |
| 63.     | ERT-64       | 672636.905      | 2479297.539 | 303.888 | 107.39                           |
| 64.     | ERT-65       | 672777.153      | 2479309.608 | 303.102 | 294.75                           |
| 65.     | ERT-66       | 672772.557      | 2479281.377 | 302.475 | 175.21                           |
| 66.     | ERT-67       | 672719.777      | 2479179.564 | 303.850 | 202.12                           |
| 67.     | ERT-68       | 672060.147      | 2479219.674 | 307.895 | 196.60                           |
| 68.     | ERT-69       | 671948.041      | 2479164.306 | 306.577 | 325.63                           |
| 69.     | ERT-70       | 671983.674      | 2479061.038 | 306.820 | 213.22                           |
| 70.     | ERT-71       | 671968.676      | 2478918.279 | 307.692 | 239.91                           |
| 71.     | ERT-72       | 672201.564      | 2479089.032 | 307.895 | 295.07                           |
| 72.     | ERT-73       | 672382.308      | 2479033.049 | 307.891 | 104.66                           |
| 73.     | ERT-74       | 672522.898      | 2479085.985 | 307.288 | 242.18                           |
| 74.     | ERT-75       | 675496.103      | 2478941.544 | 307.233 | 191.54                           |
| 75.     | ERT-76       | 672460.571      | 2478841.483 | 307.080 | 205.05                           |
| 76.     | ERT-77       | 673492.383      | 2479130.831 | 393.666 | 199.07                           |
| 77.     | ERT-78       | 673601.902      | 2479043.102 | 294.539 | 74.86                            |
| 78.     | ERT-79       | 673790.477      | 2479021.750 | 293.610 | 60.21                            |
| 79.     | ERT-80       | 672214.613      | 2479456.876 | 305.630 | 305.02                           |
| 80.     | ERT-81       | 672531.855      | 2479892.672 | 299.838 | 288.49                           |

**ERT No. 01**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 197.883                                 | 198.825   | 197.726     | 198.197     | 198.16 |
| 2      | 1.0     | 220.219                                 | 220.219   | 219.905     | 218.963     | 219.83 |
| 3      | 2.0     | 232.471                                 | 231.214   | 229.33      | 229.095     | 230.53 |
| 4      | 3.0     | 247.864                                 | 249.749   | 246.922     | 244.095     | 247.16 |
| 5      | 4.0     | 277.709                                 | 272.682   | 276.452     | 280.222     | 276.77 |
| 6      | 5.0     | 257.603                                 | 251.320   | 259.174     | 251.320     | 254.85 |
| 7      | 6.0     | 243.159                                 | 239.389   | 231.849     | 229.964     | 236.09 |
| 8      | 7.0     | 213.313                                 | 215.512   | 208.915     | 213.313     | 212.76 |
| 9      | 8.0     | 150.795                                 | 140.742   | 145.769     | 143.255     | 145.14 |
| 10     | 10.0    | 113.096                                 | 113.096   | 116.237     | 109.954     | 113.10 |

**Mean Resistivity at ERT-01 is 213.44 Ohm - m.**

**ERT No. 02**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 120.771                                 | 120.929   | 120.929     | 121.400     | 121.01 |
| 2      | 1.0     | 125.974                                 | 124.089   | 124.089     | 124.403     | 124.64 |
| 3      | 2.0     | 180.322                                 | 180.950   | 182.835     | 187.233     | 182.84 |
| 4      | 3.0     | 154.562                                 | 159.274   | 149.850     | 153.619     | 154.33 |
| 5      | 4.0     | 144.509                                 | 147.022   | 144.509     | 149.535     | 146.39 |
| 6      | 5.0     | 128.802                                 | 131.943   | 131.943     | 139.797     | 133.12 |
| 7      | 6.0     | 126.292                                 | 137.601   | 130.062     | 133.831     | 131.95 |
| 8      | 7.0     | 109.955                                 | 120.951   | 116.552     | 125.349     | 118.20 |
| 9      | 8.0     | 105.557                                 | 128.176   | 105.557     | 115.610     | 113.73 |
| 10     | 10.0    | 97.388                                  | 103.671   | 94.246      | 94.240      | 97.39  |

**Mean Resistivity at ERT-02 is 132.36 Ohm - m.**

**ERT No. 03**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 103.653                                 | 103.653   | 103.339     | 103.653     | 103.57 |
| 2      | 1.0     | 108.696                                 | 109.953   | 109.324     | 108.696     | 109.17 |
| 3      | 2.0     | 150.792                                 | 147.651   | 147.022     | 149.535     | 148.75 |
| 4      | 3.0     | 133.828                                 | 136.655   | 136.655     | 135.713     | 135.71 |
| 5      | 4.0     | 121.890                                 | 123.147   | 125.660     | 124.403     | 123.78 |
| 6      | 5.0     | 119.377                                 | 124.089   | 125.660     | 119.377     | 122.13 |
| 7      | 6.0     | 114.982                                 | 122.522   | 114.982     | 130.062     | 120.64 |
| 8      | 7.0     | 98.959                                  | 107.756   | 107.756     | 116.552     | 107.76 |
| 9      | 8.0     | 92.990                                  | 95.503    | 103.043     | 100.530     | 98.02  |
| 10     | 10.0    | 97.388                                  | 97.388    | 100.530     | 103.671     | 99.74  |

**Mean Resistivity at ERT-03 is 116.93 Ohm - m.**

**ERT No. 04**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 126.592                                 | 126.268   | 125.797     | 126.582     | 126.31 |
| 2      | 1.0     | 128.802                                 | 128.802   | 128.802     | 129.116     | 128.88 |
| 3      | 2.0     | 141.368                                 | 139.483   | 139.483     | 139.483     | 139.95 |
| 4      | 3.0     | 150.792                                 | 151.734   | 152.677     | 159.274     | 153.62 |
| 5      | 4.0     | 150.792                                 | 147.022   | 150.792     | 144.509     | 148.28 |
| 6      | 5.0     | 171.212                                 | 171.212   | 164.929     | 160.217     | 166.89 |
| 7      | 6.0     | 162.106                                 | 163.991   | 162.106     | 162.106     | 162.58 |
| 8      | 7.0     | 153.937                                 | 156.136   | 147.340     | 160.534     | 154.49 |
| 9      | 8.0     | 148.282                                 | 148.282   | 140.742     | 148.282     | 146.40 |
| 10     | 10.0    | 160.219                                 | 160.219   | 144.511     | 150.794     | 153.94 |

**Mean Resistivity at ERT-04 is 148.13 Ohm - m.**

**ERT No. 05**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 199.139                                 | 199.768   | 198.825     | 198.825     | 199.14 |
| 2      | 1.0     | 222.418                                 | 222.418   | 220.533     | 220.847     | 221.55 |
| 3      | 2.0     | 251.320                                 | 250.692   | 250.692     | 251.948     | 251.16 |
| 4      | 3.0     | 265.771                                 | 264.828   | 262.944     | 267.656     | 265.30 |
| 5      | 4.0     | 297.814                                 | 296.558   | 291.531     | 302.841     | 297.19 |
| 6      | 5.0     | 311.009                                 | 309.438   | 311.009     | 317.292     | 312.19 |
| 7      | 6.0     | 280.858                                 | 284.627   | 275.203     | 284.627     | 281.33 |
| 8      | 7.0     | 257.295                                 | 261.693   | 250.697     | 257.295     | 256.75 |
| 9      | 8.0     | 211.113                                 | 203.573   | 198.547     | 208.600     | 205.46 |
| 10     | 10.0    | 197.918                                 | 204.201   | 210.484     | 210.484     | 205.77 |

**Mean Resistivity at ERT-05 is 249.58 Ohm - m.**

**ERT No. 06**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 262.274                                 | 263.844   | 262.902     | 263.844     | 263.22 |
| 2      | 1.0     | 251.320                                 | 253.519   | 252.262     | 251.634     | 252.18 |
| 3      | 2.0     | 340.539                                 | 340.539   | 341.167     | 341.795     | 341.01 |
| 4      | 3.0     | 316.663                                 | 318.548   | 316.663     | 315.721     | 316.90 |
| 5      | 4.0     | 307.867                                 | 310.380   | 301.584     | 307.867     | 306.92 |
| 6      | 5.0     | 295.301                                 | 296.872   | 292.160     | 292.160     | 294.12 |
| 7      | 6.0     | 286.512                                 | 286.512   | 280.858     | 280.858     | 283.69 |
| 8      | 7.0     | 248.498                                 | 257.295   | 241.901     | 259.494     | 251.80 |
| 9      | 8.0     | 213.626                                 | 218.653   | 208.600     | 206.087     | 211.74 |
| 10     | 10.0    | 141.370                                 | 153.936   | 147.653     | 150.794     | 148.44 |

**Mean Resistivity at ERT-06 is 267.00 Ohm - m.**

**ERT No. 07**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.293   | 229.136     | 229.764     | 229.37 |
| 2      | 1.0     | 214.564                                 | 214.25    | 213.622     | 214.250     | 214.17 |
| 3      | 2.0     | 228.701                                 | 228.701   | 228.073     | 228.701     | 228.54 |
| 4      | 3.0     | 231.843                                 | 233.728   | 226.188     | 228.073     | 229.96 |
| 5      | 4.0     | 209.852                                 | 212.365   | 207.339     | 208.596     | 209.54 |
| 6      | 5.0     | 201.056                                 | 202.627   | 201.056     | 202.627     | 201.84 |
| 7      | 6.0     | 192.265                                 | 192.265   | 188.495     | 194.150     | 191.79 |
| 8      | 7.0     | 189.123                                 | 202.317   | 189.123     | 191.322     | 192.97 |
| 9      | 8.0     | 158.335                                 | 160.848   | 155.822     | 155.822     | 157.71 |
| 10     | 10.0    | 166.502                                 | 166.502   | 157.078     | 160.219     | 162.58 |

**Mean Resistivity at ERT-07 is 201.85 Ohm - m.**

**ERT No. 08**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 184.063                                 | 183.434   | 184.063     | 183.277     | 183.71 |
| 2      | 1.0     | 201.056                                 | 201.684   | 201.370     | 201.684     | 201.45 |
| 3      | 2.0     | 206.082                                 | 209.224   | 203.569     | 211.737     | 207.65 |
| 4      | 3.0     | 229.958                                 | 231.843   | 232.785     | 234.670     | 232.31 |
| 5      | 4.0     | 272.682                                 | 273.939   | 273.939     | 277.709     | 274.57 |
| 6      | 5.0     | 282.735                                 | 285.877   | 289.018     | 290.589     | 287.05 |
| 7      | 6.0     | 271.433                                 | 280.858   | 271.433     | 286.512     | 277.56 |
| 8      | 7.0     | 279.286                                 | 279.286   | 285.883     | 285.883     | 282.58 |
| 9      | 8.0     | 283.997                                 | 271.431   | 294.050     | 273.944     | 280.86 |
| 10     | 10.0    | 260.749                                 | 257.607   | 267.032     | 257.607     | 260.75 |

**Mean Resistivity at ERT-08 is 248.85 Ohm - m.**

**ERT No. 09**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.136                                 | 229.450   | 228.979     | 228.822     | 229.10 |
| 2      | 1.0     | 242.524                                 | 244.095   | 245.351     | 245.037     | 244.25 |
| 3      | 2.0     | 245.665                                 | 247.550   | 248.807     | 248.807     | 247.71 |
| 4      | 3.0     | 264.828                                 | 265.771   | 269.541     | 269.541     | 267.42 |
| 5      | 4.0     | 295.301                                 | 302.841   | 297.814     | 306.610     | 300.64 |
| 6      | 5.0     | 307.867                                 | 317.292   | 314.150     | 307.867     | 311.79 |
| 7      | 6.0     | 301.592                                 | 301.592   | 295.937     | 299.707     | 299.71 |
| 8      | 7.0     | 301.277                                 | 307.874   | 301.277     | 301.277     | 302.93 |
| 9      | 8.0     | 309.130                                 | 319.183   | 306.617     | 321.696     | 314.16 |
| 10     | 10.0    | 276.456                                 | 279.598   | 282.740     | 270.173     | 277.24 |

**Mean Resistivity at ERT-09 is 279.49 Ohm - m.**

**ERT No. 10**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 376.920                                 | 376.606   | 377.234     | 376.606     | 376.84 |
| 2      | 1.0     | 332.999                                 | 332.999   | 331.742     | 332.999     | 332.68 |
| 3      | 2.0     | 298.443                                 | 297.186   | 291.531     | 294.673     | 295.46 |
| 4      | 3.0     | 279.908                                 | 280.850   | 271.426     | 273.311     | 276.37 |
| 5      | 4.0     | 248.807                                 | 248.807   | 240.011     | 242.524     | 245.04 |
| 6      | 5.0     | 224.617                                 | 230.900   | 226.188     | 223.047     | 226.19 |
| 7      | 6.0     | 205.460                                 | 207.345   | 201.690     | 201.690     | 204.05 |
| 8      | 7.0     | 206.715                                 | 193.521   | 204.516     | 197.919     | 200.67 |
| 9      | 8.0     | 203.573                                 | 201.060   | 198.547     | 193.520     | 199.18 |
| 10     | 10.0    | 201.059                                 | 197.918   | 197.918     | 197.918     | 198.70 |

**Mean Resistivity at ERT-10 is 255.52 Ohm - m.**

**ERT No. 11**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.764                                 | 229.764   | 229.293     | 229.293     | 229.53 |
| 2      | 1.0     | 200.114                                 | 199.171   | 201.056     | 201.370     | 200.43 |
| 3      | 2.0     | 188.490                                 | 189.747   | 189.118     | 188.490     | 188.96 |
| 4      | 3.0     | 208.684                                 | 208.281   | 198.857     | 199.799     | 203.91 |
| 5      | 4.0     | 208.596                                 | 214.879   | 207.339     | 217.392     | 212.05 |
| 6      | 5.0     | 229.330                                 | 237.183   | 221.476     | 230.900     | 229.72 |
| 7      | 6.0     | 197.920                                 | 196.035   | 194.150     | 192.265     | 195.09 |
| 8      | 7.0     | 173.729                                 | 182.525   | 182.525     | 175.928     | 178.68 |
| 9      | 8.0     | 168.388                                 | 178.441   | 158.335     | 153.308     | 164.62 |
| 10     | 10.0    | 157.078                                 | 160.219   | 153.936     | 150.794     | 155.51 |

**Mean Resistivity at ERT-11 is 195.85 Ohm - m.**

**ERT No. 12**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 277.979                                 | 276.722   | 276.879     | 277.979     | 277.39 |
| 2      | 1.0     | 277.394                                 | 274.253   | 276.138     | 277.080     | 276.22 |
| 3      | 2.0     | 242.524                                 | 238.754   | 234.984     | 239.382     | 238.91 |
| 4      | 3.0     | 251.634                                 | 243.152   | 249.749     | 255.404     | 249.98 |
| 5      | 4.0     | 255.090                                 | 242.524   | 252.577     | 246.294     | 249.12 |
| 6      | 5.0     | 260.745                                 | 274.881   | 282.735     | 292.160     | 277.63 |
| 7      | 6.0     | 275.203                                 | 263.893   | 282.743     | 265.778     | 271.90 |
| 8      | 7.0     | 266.091                                 | 281.485   | 268.290     | 266.091     | 270.49 |
| 9      | 8.0     | 256.352                                 | 253.838   | 268.918     | 248.812     | 256.98 |
| 10     | 10.0    | 238.758                                 | 245.041   | 260.749     | 232.475     | 244.26 |

**Mean Resistivity at ERT-12 is 261.29 Ohm - m.**

**ERT No. 13**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean  |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|-------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |       |
| 1      | 0.50    | 38.006                                  | 39.105    | 39.733      | 40.676      | 39.38 |
| 2      | 1.0     | 45.551                                  | 44.923    | 46.808      | 47.122      | 46.10 |
| 3      | 2.0     | 34.556                                  | 36.441    | 38.954      | 35.813      | 36.44 |
| 4      | 3.0     | 30.158                                  | 34.870    | 35.813      | 35.184      | 34.01 |
| 5      | 4.0     | 26.388                                  | 30.158    | 32.671      | 37.698      | 31.73 |
| 6      | 5.0     | 25.132                                  | 32.985    | 29.844      | 36.127      | 31.02 |
| 7      | 6.0     | 24.504                                  | 35.814    | 28.274      | 32.044      | 30.16 |
| 8      | 7.0     | 21.991                                  | 37.384    | 28.588      | 28.588      | 29.14 |
| 9      | 8.0     | 22.116                                  | 36.190    | 23.624      | 23.121      | 26.26 |
| 10     | 10.0    | 23.247                                  | 36.442    | 25.760      | 25.132      | 27.65 |

**Mean Resistivity at ERT-13 is 33.19 Ohm - m.**

**ERT No. 14**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 279.392                                 | 280.177   | 279.549     | 278.293     | 279.35 |
| 2      | 1.0     | 383.577                                 | 384.520   | 387.033     | 401.170     | 389.08 |
| 3      | 2.0     | 353.733                                 | 356.874   | 356.874     | 349.335     | 354.20 |
| 4      | 3.0     | 377.922                                 | 375.095   | 367.556     | 374.153     | 373.68 |
| 5      | 4.0     | 346.822                                 | 353.105   | 354.361     | 354.361     | 352.16 |
| 6      | 5.0     | 227.759                                 | 226.188   | 238.754     | 230.900     | 230.90 |
| 7      | 6.0     | 175.300                                 | 184.725   | 241.274     | 226.194     | 206.87 |
| 8      | 7.0     | 136.344                                 | 134.145   | 158.335     | 169.331     | 149.54 |
| 9      | 8.0     | 128.176                                 | 143.255   | 150.795     | 138.229     | 140.11 |
| 10     | 10.0    | 131.945                                 | 157.078   | 138.228     | 122.520     | 137.44 |

**Mean Resistivity at ERT-14 is 261.33 Ohm - m.**

**ERT No. 15**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.293   | 228.979     | 229.764     | 229.33 |
| 2      | 1.0     | 251.320                                 | 250.378   | 252.262     | 251.948     | 251.48 |
| 3      | 2.0     | 272.054                                 | 272.682   | 272.054     | 277.080     | 273.47 |
| 4      | 3.0     | 265.771                                 | 263.886   | 265.771     | 266.713     | 265.54 |
| 5      | 4.0     | 276.452                                 | 278.965   | 282.735     | 283.992     | 280.54 |
| 6      | 5.0     | 256.603                                 | 260.745   | 259.174     | 262.315     | 259.71 |
| 7      | 6.0     | 231.849                                 | 233.734   | 239.389     | 239.389     | 236.09 |
| 8      | 7.0     | 233.105                                 | 239.702   | 237.503     | 241.901     | 238.05 |
| 9      | 8.0     | 221.166                                 | 231.219   | 221.166     | 221.166     | 223.68 |
| 10     | 10.0    | 229.333                                 | 235.616   | 248.182     | 241.899     | 238.76 |

**Mean Resistivity at ERT-15 is 249.66 Ohm - m.**

**ERT No. 16**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 292.270                                 | 292.427   | 292.741     | 293.055     | 292.62 |
| 2      | 1.0     | 251.948                                 | 252.262   | 252.577     | 249.749     | 251.63 |
| 3      | 2.0     | 265.143                                 | 265.771   | 265.143     | 266.392     | 265.61 |
| 4      | 3.0     | 226.188                                 | 230.900   | 231.843     | 232.785     | 230.43 |
| 5      | 4.0     | 234.984                                 | 237.497   | 237.497     | 242.524     | 238.13 |
| 6      | 5.0     | 229.330                                 | 223.047   | 234.042     | 223.047     | 227.37 |
| 7      | 6.0     | 211.114                                 | 211.114   | 212.999     | 220.539     | 213.94 |
| 8      | 7.0     | 175.928                                 | 173.729   | 175.928     | 186.924     | 178.13 |
| 9      | 8.0     | 163.361                                 | 163.361   | 168.338     | 183.467     | 169.63 |
| 10     | 10.0    | 147.653                                 | 144.511   | 144.511     | 157.078     | 148.44 |

Mean Resistivity at ERT-16 is 221.59 Ohm - m.

**ERT No. 17**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 260.389                                 | 260.860   | 260.703     | 260.860     | 260.70 |
| 2      | 1.0     | 253.205                                 | 252.577   | 253.519     | 251.320     | 252.66 |
| 3      | 2.0     | 285.877                                 | 285.877   | 286.505     | 289.646     | 286.98 |
| 4      | 3.0     | 266.713                                 | 264.828   | 263.886     | 263.886     | 264.83 |
| 5      | 4.0     | 260.116                                 | 261.373   | 257.603     | 256.346     | 258.86 |
| 6      | 5.0     | 227.759                                 | 223.047   | 224.617     | 227.759     | 225.80 |
| 7      | 6.0     | 186.610                                 | 179.070   | 175.300     | 173.415     | 178.60 |
| 8      | 7.0     | 153.937                                 | 156.136   | 158.335     | 164.933     | 158.34 |
| 9      | 8.0     | 138.229                                 | 130.689   | 130.689     | 125.663     | 131.32 |
| 10     | 10.0    | 125.662                                 | 125.662   | 113.096     | 119.379     | 120.95 |

Mean Resistivity at ERT-17 is 213.90 Ohm - m.

**ERT No. 19**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 225.838                                 | 225.995   | 226.152     | 226.152     | 226.03 |
| 2      | 1.0     | 251.320                                 | 251.320   | 250.378     | 251.320     | 251.08 |
| 3      | 2.0     | 253.205                                 | 248.807   | 251.320     | 251.948     | 251.32 |
| 4      | 3.0     | 245.037                                 | 247.864   | 246.922     | 244.095     | 245.98 |
| 5      | 4.0     | 208.596                                 | 213.622   | 207.339     | 211.109     | 210.17 |
| 6      | 5.0     | 196.344                                 | 190.061   | 194.773     | 196.344     | 194.38 |
| 7      | 6.0     | 186.610                                 | 192.265   | 184.725     | 186.610     | 187.55 |
| 8      | 7.0     | 182.525                                 | 193.521   | 184.724     | 189.123     | 187.47 |
| 9      | 8.0     | 143.255                                 | 160.848   | 140.742     | 145.769     | 147.65 |
| 10     | 10.0    | 128.804                                 | 153.936   | 131.945     | 135.087     | 137.44 |

Mean Resistivity at ERT-19 is 203.91 Ohm - m.

**ERT No. 20**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 194.742                                 | 194.742   | 195.213     | 195.841     | 195.13 |
| 2      | 1.0     | 189.118                                 | 189.432   | 189.432     | 187.548     | 188.88 |
| 3      | 2.0     | 217.393                                 | 219.277   | 216.135     | 214.879     | 216.92 |
| 4      | 3.0     | 228.073                                 | 229.958   | 229.015     | 234.670     | 230.43 |
| 5      | 4.0     | 211.109                                 | 213.622   | 216.135     | 214.879     | 213.94 |
| 6      | 5.0     | 205.768                                 | 212.051   | 212.051     | 210.481     | 210.09 |
| 7      | 6.0     | 197.920                                 | 192.265   | 192.265     | 194.805     | 194.31 |
| 8      | 7.0     | 173.729                                 | 217.711   | 175.928     | 173.729     | 185.27 |
| 9      | 8.0     | 173.414                                 | 183.467   | 183.467     | 168.388     | 177.18 |
| 10     | 10.0    | 191.635                                 | 207.342   | 204.201     | 188.493     | 197.92 |

**Mean Resistivity at ERT-20 is 201.01 Ohm - m.**

**ERT No. 21**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 347.238                                 | 347.238   | 347.238     | 347.395     | 347.28 |
| 2      | 1.0     | 358.131                                 | 358.759   | 359.388     | 357.503     | 358.45 |
| 3      | 2.0     | 363.157                                 | 361.273   | 366.299     | 364.414     | 363.79 |
| 4      | 3.0     | 401.484                                 | 399.599   | 404.311     | 398.656     | 401.01 |
| 5      | 4.0     | 319.176                                 | 312.893   | 314.150     | 317.920     | 316.03 |
| 6      | 5.0     | 251.320                                 | 259.174   | 252.891     | 259.174     | 255.64 |
| 7      | 6.0     | 235.619                                 | 243.159   | 235.619     | 239.389     | 238.45 |
| 8      | 7.0     | 189.123                                 | 193.521   | 186.924     | 193.521     | 190.77 |
| 9      | 8.0     | 150.795                                 | 148.282   | 150.795     | 143.255     | 148.28 |
| 10     | 10.0    | 160.219                                 | 166.502   | 150.794     | 160.219     | 159.43 |

**Mean Resistivity at ERT-21 is 277.91 Ohm - m.**

**ERT No. 22**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.764                                 | 229.607   | 229.293     | 229.293     | 229.49 |
| 2      | 1.0     | 229.330                                 | 230.272   | 228.701     | 228.701     | 229.25 |
| 3      | 2.0     | 213.622                                 | 212.365   | 214.250     | 216.135     | 214.09 |
| 4      | 3.0     | 246.922                                 | 240.325   | 247.864     | 250.692     | 246.45 |
| 5      | 4.0     | 256.346                                 | 253.833   | 256.346     | 265.143     | 257.92 |
| 6      | 5.0     | 251.320                                 | 251.320   | 254.462     | 254.462     | 252.89 |
| 7      | 6.0     | 243.159                                 | 250.698   | 241.274     | 243.159     | 244.57 |
| 8      | 7.0     | 222.109                                 | 222.109   | 219.910     | 217.711     | 220.46 |
| 9      | 8.0     | 221.166                                 | 231.219   | 216.140     | 216.140     | 221.17 |
| 10     | 10.0    | 213.625                                 | 216.767   | 210.484     | 213.625     | 213.63 |

**Mean Resistivity at ERT-22 is 232.99 Ohm - m.**

**ERT No. 23**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.293   | 229.293     | 229.136     | 229.25 |
| 2      | 1.0     | 213.622                                 | 214.564   | 215.193     | 214.879     | 214.56 |
| 3      | 2.0     | 177.181                                 | 179.066   | 177.181     | 177.809     | 177.81 |
| 4      | 3.0     | 186.605                                 | 189.432   | 191.317     | 186.605     | 188.49 |
| 5      | 4.0     | 172.154                                 | 174.667   | 172.154     | 174.667     | 173.41 |
| 6      | 5.0     | 160.217                                 | 160.217   | 168.070     | 164.929     | 163.36 |
| 7      | 6.0     | 154.566                                 | 158.336   | 152.681     | 163.991     | 157.39 |
| 8      | 7.0     | 142.942                                 | 147.340   | 147.340     | 145.141     | 145.69 |
| 9      | 8.0     | 138.229                                 | 148.282   | 143.255     | 153.308     | 145.77 |
| 10     | 10.0    | 135.087                                 | 141.370   | 125.662     | 122.520     | 131.16 |

Mean Resistivity at ERT-23 is 172.69 Ohm - m.

**ERT No. 24**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 379.904                                 | 380.061   | 381.003     | 379.904     | 380.22 |
| 2      | 1.0     | 327.973                                 | 328.287   | 327.973     | 329.543     | 328.44 |
| 3      | 2.0     | 254.462                                 | 255.090   | 254.462     | 256.975     | 255.25 |
| 4      | 3.0     | 229.958                                 | 233.728   | 233.728     | 234.670     | 233.02 |
| 5      | 4.0     | 218.648                                 | 221.162   | 219.905     | 223.675     | 220.85 |
| 6      | 5.0     | 204.198                                 | 202.627   | 202.627     | 201.056     | 202.63 |
| 7      | 6.0     | 199.805                                 | 196.035   | 199.805     | 201.069     | 199.18 |
| 8      | 7.0     | 200.118                                 | 189.123   | 206.715     | 186.924     | 195.72 |
| 9      | 8.0     | 198.547                                 | 193.520   | 208.600     | 198.547     | 199.80 |
| 10     | 10.0    | 207.342                                 | 207.342   | 210.484     | 194.776     | 204.99 |

Mean Resistivity at ERT-24 is 242.01 Ohm - m.

**ERT No. 25**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 355.718                                 | 354.776   | 354.776     | 354.933     | 355.05 |
| 2      | 1.0     | 359.388                                 | 359.702   | 358.759     | 359.078     | 359.23 |
| 3      | 2.0     | 280.850                                 | 275.824   | 277.709     | 278.965     | 278.34 |
| 4      | 3.0     | 285.562                                 | 287.447   | 290.275     | 293.102     | 289.10 |
| 5      | 4.0     | 285.248                                 | 291.531   | 280.222     | 287.761     | 286.19 |
| 6      | 5.0     | 249.749                                 | 252.891   | 245.037     | 248.179     | 248.96 |
| 7      | 6.0     | 239.389                                 | 237.504   | 228.079     | 235.619     | 235.15 |
| 8      | 7.0     | 202.317                                 | 193.521   | 193.521     | 193.521     | 195.72 |
| 9      | 8.0     | 188.494                                 | 178.441   | 188.494     | 180.954     | 184.10 |
| 10     | 10.0    | 188.493                                 | 197.918   | 188.493     | 185.351     | 190.06 |

Mean Resistivity at ERT-25 is 262.19 Ohm - m.

**ERT No. 26**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 314.571                                 | 314.728   | 314.414     | 314.571     | 314.57 |
| 2      | 1.0     | 333.313                                 | 333.941   | 332.999     | 333.313     | 333.39 |
| 3      | 2.0     | 378.237                                 | 378.237   | 378.237     | 375.723     | 377.61 |
| 4      | 3.0     | 429.757                                 | 426.930   | 422.218     | 425.987     | 426.22 |
| 5      | 4.0     | 407.138                                 | 413.421   | 403.369     | 404.625     | 407.14 |
| 6      | 5.0     | 389.546                                 | 405.254   | 387.975     | 397.400     | 395.04 |
| 7      | 6.0     | 367.565                                 | 369.450   | 354.371     | 363.795     | 363.80 |
| 8      | 7.0     | 327.666                                 | 321.069   | 316.670     | 323.268     | 322.17 |
| 9      | 8.0     | 251.325                                 | 256.352   | 236.246     | 246.299     | 247.56 |
| 10     | 10.0    | 232.475                                 | 248.182   | 226.192     | 226.192     | 233.26 |

**Mean Resistivity at ERT-26 is 342.08 Ohm - m.**

**ERT No. 27**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 251.280                                 | 251.594   | 251.280     | 251.280     | 251.36 |
| 2      | 1.0     | 267.028                                 | 267.970   | 266.399     | 267.342     | 267.18 |
| 3      | 2.0     | 278.965                                 | 280.850   | 277.080     | 281.478     | 279.59 |
| 4      | 3.0     | 281.793                                 | 281.793   | 279.908     | 278.965     | 280.61 |
| 5      | 4.0     | 268.912                                 | 267.656   | 262.629     | 267.656     | 266.71 |
| 6      | 5.0     | 257.603                                 | 256.032   | 249.749     | 254.462     | 254.46 |
| 7      | 6.0     | 252.583                                 | 243.159   | 241.274     | 241.274     | 244.57 |
| 8      | 7.0     | 246.299                                 | 239.702   | 248.498     | 239.702     | 243.55 |
| 9      | 8.0     | 211.113                                 | 206.087   | 208.600     | 211.113     | 209.23 |
| 10     | 10.0    | 179.068                                 | 169.644   | 160.219     | 163.361     | 168.07 |

**Mean Resistivity at ERT-27 is 246.54 Ohm - m.**

**ERT No. 28**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 289.286                                 | 289.443   | 288.658     | 290.071     | 289.36 |
| 2      | 1.0     | 314.778                                 | 314.150   | 313.208     | 312.579     | 313.68 |
| 3      | 2.0     | 351.848                                 | 353.105   | 353.105     | 353.105     | 352.79 |
| 4      | 3.0     | 374.153                                 | 372.268   | 371.325     | 375.095     | 373.21 |
| 5      | 4.0     | 351.848                                 | 354.361   | 346.822     | 356.874     | 352.48 |
| 6      | 5.0     | 331.428                                 | 336.141   | 329.858     | 331.428     | 332.21 |
| 7      | 6.0     | 322.326                                 | 316.672   | 318.557     | 318.557     | 319.03 |
| 8      | 7.0     | 301.277                                 | 299.078   | 301.277     | 303.476     | 301.28 |
| 9      | 8.0     | 301.590                                 | 294.050   | 301.590     | 299.077     | 299.08 |
| 10     | 10.0    | 229.333                                 | 226.192   | 219.909     | 216.767     | 223.05 |

**Mean Resistivity at ERT-28 is 315.62 Ohm - m.**

**ERT No. 29**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 376.763                                 | 377.077   | 377.548     | 376.920     | 377.08 |
| 2      | 1.0     | 515.206                                 | 514.892   | 517.091     | 515.206     | 515.60 |
| 3      | 2.0     | 627.043                                 | 627.043   | 628.928     | 624.530     | 626.89 |
| 4      | 3.0     | 517.405                                 | 511.750   | 517.405     | 510.808     | 514.34 |
| 5      | 4.0     | 515.206                                 | 510.180   | 515.206     | 507.666     | 512.06 |
| 6      | 5.0     | 464.942                                 | 468.084   | 466.513     | 464.942     | 466.12 |
| 7      | 6.0     | 418.459                                 | 399.609   | 414.689     | 407.149     | 409.98 |
| 8      | 7.0     | 321.069                                 | 327.666   | 318.870     | 316.670     | 321.07 |
| 9      | 8.0     | 218.653                                 | 218.653   | 218.653     | 216.140     | 218.02 |
| 10     | 10.0    | 185.351                                 | 172.785   | 175.927     | 169.644     | 175.93 |

**Mean Resistivity at ERT-29 is 413.71 Ohm - m.**

**ERT No. 30**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 417.753                                 | 417.753   | 418.852     | 417.910     | 418.07 |
| 2      | 1.0     | 374.153                                 | 378.237   | 378.237     | 378.237     | 377.22 |
| 3      | 2.0     | 402.112                                 | 402.112   | 401.484     | 402.740     | 402.11 |
| 4      | 3.0     | 224.303                                 | 222.418   | 219.591     | 224.303     | 222.65 |
| 5      | 4.0     | 209.852                                 | 214.879   | 201.056     | 209.852     | 208.91 |
| 6      | 5.0     | 204.198                                 | 212.051   | 205.768     | 207.339     | 207.34 |
| 7      | 6.0     | 194.150                                 | 192.265   | 199.805     | 192.265     | 194.62 |
| 8      | 7.0     | 208.915                                 | 204.516   | 204.516     | 202.318     | 205.07 |
| 9      | 8.0     | 218.653                                 | 203.573   | 211.113     | 206.087     | 209.86 |
| 10     | 10.0    | 210.484                                 | 204.201   | 219.909     | 219.909     | 213.63 |

**Mean Resistivity at ERT-30 is 265.95 Ohm - m.**

**ERT No. 31**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.136   | 229.764     | 229.764     | 229.49 |
| 2      | 1.0     | 254.147                                 | 255.090   | 251.948     | 250.692     | 252.97 |
| 3      | 2.0     | 270.797                                 | 272.054   | 270.169     | 270.169     | 270.80 |
| 4      | 3.0     | 253.519                                 | 260.116   | 245.037     | 260.116     | 254.70 |
| 5      | 4.0     | 272.682                                 | 278.965   | 272.682     | 278.965     | 275.82 |
| 6      | 5.0     | 232.471                                 | 237.183   | 243.466     | 238.754     | 237.97 |
| 7      | 6.0     | 224.309                                 | 224.309   | 229.964     | 226.194     | 226.19 |
| 8      | 7.0     | 189.123                                 | 169.123   | 182.525     | 178.127     | 179.72 |
| 9      | 8.0     | 155.822                                 | 155.822   | 148.282     | 133.202     | 148.28 |
| 10     | 10.0    | 147.653                                 | 153.936   | 144.511     | 144.511     | 147.65 |

**Mean Resistivity at ERT-31 is 222.36 Ohm - m.**

**ERT No. 32**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 293.998                                 | 294.469   | 293.684     | 294.155     | 294.08 |
| 2      | 1.0     | 295.615                                 | 295.301   | 297.5       | 296.243     | 296.16 |
| 3      | 2.0     | 310.380                                 | 317.292   | 315.407     | 314.778     | 314.46 |
| 4      | 3.0     | 308.181                                 | 313.836   | 311.009     | 312.893     | 311.48 |
| 5      | 4.0     | 277.709                                 | 278.965   | 278.965     | 278.965     | 278.65 |
| 6      | 5.0     | 265.457                                 | 270.169   | 263.886     | 268.598     | 267.03 |
| 7      | 6.0     | 216.769                                 | 237.504   | 226.194     | 235.619     | 229.02 |
| 8      | 7.0     | 202.317                                 | 202.315   | 204.516     | 208.915     | 204.52 |
| 9      | 8.0     | 203.573                                 | 206.087   | 196.034     | 201.060     | 201.69 |
| 10     | 10.0    | 213.625                                 | 197.918   | 216.767     | 216.767     | 211.27 |

**Mean Resistivity at ERT-32 is 260.84 Ohm - m.**

**ERT No. 33**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 377.548                                 | 377.548   | 376.292     | 377.077     | 377.12 |
| 2      | 1.0     | 319.176                                 | 320.433   | 320.433     | 320.747     | 320.20 |
| 3      | 2.0     | 252.577                                 | 251.948   | 254.462     | 250.063     | 252.26 |
| 4      | 3.0     | 244.095                                 | 247.864   | 246.922     | 251.634     | 247.63 |
| 5      | 4.0     | 222.418                                 | 217.392   | 217.392     | 217.392     | 218.65 |
| 6      | 5.0     | 251.193                                 | 204.198   | 215.193     | 194.773     | 216.34 |
| 7      | 6.0     | 188.495                                 | 184.725   | 186.610     | 179.070     | 184.73 |
| 8      | 7.0     | 180.326                                 | 180.326   | 184.724     | 175.928     | 180.33 |
| 9      | 8.0     | 196.034                                 | 188.494   | 193.520     | 191.007     | 192.26 |
| 10     | 10.0    | 213.625                                 | 213.625   | 213.625     | 201.059     | 210.48 |

**Mean Resistivity at ERT-33 is 240.00 Ohm - m.**

**ERT No. 34**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 471.307                                 | 470.679   | 471.150     | 471.150     | 471.07 |
| 2      | 1.0     | 301.898                                 | 305.040   | 303.469     | 302.526     | 303.23 |
| 3      | 2.0     | 195.401                                 | 199.799   | 194.773     | 196.030     | 196.50 |
| 4      | 3.0     | 169.641                                 | 174.353   | 167.756     | 172.468     | 171.05 |
| 5      | 4.0     | 163.358                                 | 160.845   | 157.075     | 157.075     | 159.59 |
| 6      | 5.0     | 160.217                                 | 161.787   | 157.075     | 162.217     | 160.32 |
| 7      | 6.0     | 167.761                                 | 177.185   | 162.106     | 173.415     | 170.12 |
| 8      | 7.0     | 160.534                                 | 175.928   | 162.733     | 173.729     | 168.23 |
| 9      | 8.0     | 163.361                                 | 178.441   | 170.901     | 178.441     | 172.79 |
| 10     | 10.0    | 188.493                                 | 191.635   | 185.351     | 185.351     | 187.71 |

**Mean Resistivity at ERT-34 is 216.06 Ohm - m.**

**ERT No. 35**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean    |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|---------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |         |
| 1      | 0.50    | 471.621                                 | 473.977   | 473.035     | 473.820     | 473.11  |
| 2      | 1.0     | 871.452                                 | 837.337   | 872.709     | 873.651     | 863.79  |
| 3      | 2.0     | 1068.740                                | 1067.480  | 1068.110    | 1069.990    | 1068.58 |
| 4      | 3.0     | 640.866                                 | 648.406   | 649.348     | 649.348     | 646.99  |
| 5      | 4.0     | 449.863                                 | 431.014   | 442.323     | 436.040     | 439.81  |
| 6      | 5.0     | 435.098                                 | 435.098   | 424.103     | 424.103     | 429.60  |
| 7      | 6.0     | 329.866                                 | 326.096   | 327.981     | 326.096     | 327.51  |
| 8      | 7.0     | 299.078                                 | 314.471   | 305.675     | 307.874     | 306.77  |
| 9      | 8.0     | 206.087                                 | 203.573   | 218.653     | 218.653     | 211.74  |
| 10     | 10.0    | 207.342                                 | 201.059   | 213.625     | 191.633     | 203.41  |

**Mean Resistivity at ERT-35 is 497.13 Ohm - m.**

**ERT No. 36**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 166.473                                 | 167.258   | 166.159     | 166.630     | 166.63 |
| 2      | 1.0     | 168.699                                 | 169.955   | 168.384     | 168.070     | 168.78 |
| 3      | 2.0     | 138.854                                 | 140.739   | 138.226     | 138.854     | 139.17 |
| 4      | 3.0     | 150.792                                 | 157.389   | 150.792     | 154.562     | 153.38 |
| 5      | 4.0     | 167.128                                 | 169.641   | 164.615     | 167.128     | 167.13 |
| 6      | 5.0     | 152.363                                 | 155.504   | 157.075     | 157.075     | 155.50 |
| 7      | 6.0     | 139.486                                 | 150.796   | 139.486     | 148.911     | 144.67 |
| 8      | 7.0     | 116.552                                 | 116.552   | 112.154     | 114.353     | 114.90 |
| 9      | 8.0     | 103.043                                 | 100.530   | 95.503      | 100.530     | 99.90  |
| 10     | 10.0    | 91.105                                  | 94.246    | 87.963      | 100.530     | 93.46  |

**Mean Resistivity at ERT-36 is 140.35 Ohm - m.**

**ERT No. 37**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 166.787                                 | 166.944   | 166.159     | 166.159     | 166.51 |
| 2      | 1.0     | 172.468                                 | 176.238   | 172.783     | 174.353     | 173.96 |
| 3      | 2.0     | 214.250                                 | 214.879   | 214.879     | 214.897     | 214.73 |
| 4      | 3.0     | 245.979                                 | 250.692   | 245.979     | 245.979     | 247.16 |
| 5      | 4.0     | 261.373                                 | 265.143   | 260.116     | 261.373     | 262.00 |
| 6      | 5.0     | 303.155                                 | 311.009   | 296.872     | 303.155     | 303.55 |
| 7      | 6.0     | 284.627                                 | 280.858   | 278.973     | 278.973     | 280.86 |
| 8      | 7.0     | 263.892                                 | 277.087   | 263.892     | 270.489     | 268.84 |
| 9      | 8.0     | 233.732                                 | 238.759   | 231.219     | 231.219     | 233.73 |
| 10     | 10.0    | 245.041                                 | 254.466   | 235.616     | 248.182     | 245.83 |

**Mean Resistivity at ERT-37 is 239.72 Ohm - m.**

**ERT No. 38**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.136   | 228.665     | 229.764     | 229.21 |
| 2      | 1.0     | 225.246                                 | 224.931   | 224.303     | 224.617     | 224.77 |
| 3      | 2.0     | 213.622                                 | 213.622   | 215.507     | 215.507     | 214.56 |
| 4      | 3.0     | 210.166                                 | 208.281   | 205.454     | 209.224     | 208.28 |
| 5      | 4.0     | 191.003                                 | 188.49    | 187.233     | 188.49      | 188.80 |
| 6      | 5.0     | 190.061                                 | 190.061   | 183.778     | 188.49      | 188.10 |
| 7      | 6.0     | 190.38                                  | 192.265   | 186.61      | 194.15      | 190.85 |
| 8      | 7.0     | 178.127                                 | 180.326   | 167.132     | 175.928     | 175.38 |
| 9      | 8.0     | 165.875                                 | 168.388   | 155.822     | 163.361     | 163.36 |
| 10     | 10.0    | 163.361                                 | 169.644   | 157.078     | 157.078     | 161.79 |

Mean Resistivity at ERT-38 is 194.51 Ohm - m.

**ERT No. 39**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 103.81                                  | 103.653   | 103.653     | 103.653     | 103.69 |
| 2      | 1.0     | 109.324                                 | 109.638   | 109.638     | 110.895     | 109.87 |
| 3      | 2.0     | 150.792                                 | 150.792   | 152.049     | 152.049     | 151.42 |
| 4      | 3.0     | 188.49                                  | 185.663   | 192.260     | 195.087     | 190.38 |
| 5      | 4.0     | 216.135                                 | 212.365   | 217.392     | 219.905     | 216.45 |
| 6      | 5.0     | 229.33                                  | 230.900   | 226.188     | 235.613     | 230.51 |
| 7      | 6.0     | 220.539                                 | 222.424   | 231.849     | 229.964     | 226.19 |
| 8      | 7.0     | 291.91                                  | 213.313   | 224.308     | 226.507     | 239.01 |
| 9      | 8.0     | 208.6                                   | 216.140   | 218.653     | 218.653     | 215.51 |
| 10     | 10.0    | 223.05                                  | 226.192   | 235.616     | 241.899     | 231.69 |

Mean Resistivity at ERT-39 is 191.47 Ohm - m.

**ERT No. 40**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 166.316                                 | 165.688   | 166.473     | 166.473     | 166.24 |
| 2      | 1.0     | 172.154                                 | 174.039   | 173.097     | 172.468     | 172.94 |
| 3      | 2.0     | 185.349                                 | 187.233   | 188.490     | 186.605     | 186.92 |
| 4      | 3.0     | 173.411                                 | 166.814   | 171.526     | 172.468     | 171.05 |
| 5      | 4.0     | 183.464                                 | 185.977   | 182.207     | 183.464     | 183.78 |
| 6      | 5.0     | 161.787                                 | 144.509   | 160.217     | 152.363     | 154.72 |
| 7      | 6.0     | 141.371                                 | 133.831   | 139.486     | 135.716     | 137.60 |
| 8      | 7.0     | 116.552                                 | 138.543   | 118.751     | 129.747     | 125.90 |
| 9      | 8.0     | 95.503                                  | 87.963    | 95.503      | 85.450      | 91.10  |
| 10     | 10.0    | 87.963                                  | 91.105    | 87.963      | 87.963      | 88.75  |

Mean Resistivity at ERT-40 is 147.90 Ohm - m.

**ERT No. 41**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 251.908                                 | 252.065   | 251.908     | 252.536     | 252.10 |
| 2      | 1.0     | 368.498                                 | 369.755   | 370.697     | 371.639     | 370.15 |
| 3      | 2.0     | 327.973                                 | 326.716   | 305.982     | 324.831     | 321.38 |
| 4      | 3.0     | 356.246                                 | 359.078   | 360.958     | 359.073     | 358.84 |
| 5      | 4.0     | 314.150                                 | 315.407   | 314.150     | 312.893     | 314.15 |
| 6      | 5.0     | 202.627                                 | 204.198   | 210.481     | 199.485     | 204.20 |
| 7      | 6.0     | 190.380                                 | 190.380   | 190.380     | 188.495     | 189.91 |
| 8      | 7.0     | 160.534                                 | 156.136   | 156.136     | 160.534     | 158.34 |
| 9      | 8.0     | 153.308                                 | 165.875   | 163.361     | 158.335     | 160.22 |
| 10     | 10.0    | 153.936                                 | 157.078   | 157.078     | 160.219     | 157.08 |

**Mean Resistivity at ERT-41 is 248.64 Ohm - m.**

**ERT No. 42**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 236.674                                 | 236.831   | 237.146     | 236.831     | 236.87 |
| 2      | 1.0     | 207.653                                 | 206.397   | 208.281     | 207.967     | 207.57 |
| 3      | 2.0     | 315.407                                 | 315.407   | 316.035     | 318.548     | 316.35 |
| 4      | 3.0     | 160.217                                 | 162.101   | 163.986     | 162.101     | 162.10 |
| 5      | 4.0     | 169.641                                 | 162.101   | 168.384     | 165.871     | 166.50 |
| 6      | 5.0     | 161.787                                 | 160.217   | 161.787     | 160.876     | 161.17 |
| 7      | 6.0     | 160.221                                 | 162.106   | 160.221     | 165.876     | 162.11 |
| 8      | 7.0     | 167.132                                 | 175.928   | 167.132     | 175.928     | 171.53 |
| 9      | 8.0     | 145.769                                 | 150.795   | 148.282     | 150.795     | 148.91 |
| 10     | 10.0    | 153.936                                 | 157.078   | 157.078     | 157.078     | 156.29 |

**Mean Resistivity at ERT-42 is 188.94 Ohm - m.**

**ERT No. 43**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 402.362                                 | 402.519   | 402.048     | 401.891     | 402.21 |
| 2      | 1.0     | 384.392                                 | 350.906   | 348.392     | 352.162     | 358.96 |
| 3      | 2.0     | 239.382                                 | 238.759   | 239.382     | 241.896     | 239.85 |
| 4      | 3.0     | 178.123                                 | 176.238   | 180.950     | 176.238     | 177.89 |
| 5      | 4.0     | 158.332                                 | 164.615   | 163.358     | 164.615     | 162.73 |
| 6      | 5.0     | 163.358                                 | 171.212   | 160.217     | 171.212     | 166.50 |
| 7      | 6.0     | 148.911                                 | 156.451   | 158.336     | 156.451     | 155.04 |
| 8      | 7.0     | 147.340                                 | 140.742   | 156.136     | 131.946     | 144.04 |
| 9      | 8.0     | 150.795                                 | 138.229   | 153.308     | 143.225     | 146.39 |
| 10     | 10.0    | 150.795                                 | 147.653   | 163.361     | 166.502     | 157.08 |

**Mean Resistivity at ERT-43 is 211.07 Ohm - m.**

**ERT No. 44**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 291.956                                 | 291.956   | 292.113     | 292.13      | 292.04 |
| 2      | 1.0     | 313.522                                 | 314.778   | 314.464     | 312.893     | 313.91 |
| 3      | 2.0     | 358.759                                 | 358.759   | 358.759     | 1358.131    | 608.60 |
| 4      | 3.0     | 321.375                                 | 319.491   | 317.606     | 314.778     | 318.31 |
| 5      | 4.0     | 330.486                                 | 334.256   | 329.229     | 329.229     | 330.80 |
| 6      | 5.0     | 180.636                                 | 186.919   | 182.207     | 186.919     | 184.17 |
| 7      | 6.0     | 167.761                                 | 163.991   | 162.106     | 163.991     | 164.46 |
| 8      | 7.0     | 169.331                                 | 162.733   | 173.729     | 192.733     | 174.63 |
| 9      | 8.0     | 130.689                                 | 143.255   | 138.229     | 135.716     | 136.97 |
| 10     | 10.0    | 125.662                                 | 131.945   | 125.662     | 125.662     | 127.23 |

Mean Resistivity at ERT-44 is 265.11 Ohm - m.

**ERT No. 45**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 197.726                                 | 198.354   | 197.726     | 198.354     | 198.04 |
| 2      | 1.0     | 218.334                                 | 219.905   | 218.963     | 219.277     | 219.12 |
| 3      | 2.0     | 200.428                                 | 197.915   | 201.056     | 197.915     | 199.33 |
| 4      | 3.0     | 228.073                                 | 229.015   | 223.361     | 228.073     | 227.13 |
| 5      | 4.0     | 206.082                                 | 202.313   | 201.056     | 202.313     | 202.94 |
| 6      | 5.0     | 216.764                                 | 221.476   | 224.617     | 226.188     | 222.26 |
| 7      | 6.0     | 233.734                                 | 233.734   | 228.079     | 233.734     | 232.32 |
| 8      | 7.0     | 224.308                                 | 215.512   | 224.308     | 217.711     | 220.46 |
| 9      | 8.0     | 251.325                                 | 258.865   | 251.325     | 253.838     | 253.84 |
| 10     | 10.0    | 207.342                                 | 216.767   | 197.918     | 207.342     | 207.34 |

Mean Resistivity at ERT-45 is 218.28 Ohm - m.

**ERT No. 46**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 225.524                                 | 225.838   | 225.367     | 225.367     | 225.52 |
| 2      | 1.0     | 234.356                                 | 235.298   | 235.613     | 235.298     | 235.14 |
| 3      | 2.0     | 146.394                                 | 146.394   | 143.881     | 143.252     | 144.98 |
| 4      | 3.0     | 133.828                                 | 140.425   | 136.655     | 136.655     | 136.89 |
| 5      | 4.0     | 141.996                                 | 133.200   | 140.739     | 133.200     | 137.28 |
| 6      | 5.0     | 155.504                                 | 157.075   | 149.221     | 150.792     | 153.15 |
| 7      | 6.0     | 133.831                                 | 145.141   | 139.486     | 137.601     | 139.01 |
| 8      | 7.0     | 140.742                                 | 134.145   | 134.145     | 140.742     | 137.44 |
| 9      | 8.0     | 148.282                                 | 143.255   | 140.742     | 148.282     | 145.14 |
| 10     | 10.0    | 157.078                                 | 153.936   | 147.653     | 150.794     | 152.37 |

Mean Resistivity at ERT-46 is 160.69 Ohm - m.

**ERT No. 47**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 91.403                                  | 91.560    | 91.246      | 91.089      | 91.32  |
| 2      | 1.0     | 125.974                                 | 125.660   | 127.231     | 127.231     | 126.52 |
| 3      | 2.0     | 189.118                                 | 194.145   | 191.003     | 192.260     | 191.63 |
| 4      | 3.0     | 192.260                                 | 200.742   | 195.087     | 197.915     | 196.50 |
| 5      | 4.0     | 179.694                                 | 187.233   | 173.411     | 184.720     | 181.26 |
| 6      | 5.0     | 146.080                                 | 141.368   | 144.509     | 139.797     | 142.94 |
| 7      | 6.0     | 156.451                                 | 156.451   | 148.911     | 150.796     | 153.15 |
| 8      | 7.0     | 151.738                                 | 142.942   | 145.141     | 131.946     | 142.94 |
| 9      | 8.0     | 153.308                                 | 153.308   | 140.742     | 143.255     | 147.65 |
| 10     | 10.0    | 150.794                                 | 153.936   | 138.228     | 138.228     | 145.30 |

**Mean Resistivity at ERT-47 is 151.92 Ohm - m.**

**ERT No. 48**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 145.585                                 | 145.899   | 146.371     | 145.899     | 145.94 |
| 2      | 1.0     | 202.313                                 | 201.998   | 201.056     | 201.370     | 201.68 |
| 3      | 2.0     | 226.188                                 | 226.188   | 228.073     | 226.188     | 226.66 |
| 4      | 3.0     | 179.066                                 | 179.066   | 182.835     | 178.123     | 179.77 |
| 5      | 4.0     | 125.660                                 | 126.917   | 129.430     | 131.943     | 128.49 |
| 6      | 5.0     | 116.236                                 | 124.089   | 130.372     | 130.372     | 125.27 |
| 7      | 6.0     | 135.716                                 | 133.831   | 133.831     | 133.831     | 134.30 |
| 8      | 7.0     | 120.951                                 | 125.349   | 129.747     | 129.747     | 126.45 |
| 9      | 8.0     | 130.689                                 | 138.229   | 150.795     | 145.769     | 141.37 |
| 10     | 10.0    | 131.945                                 | 135.087   | 135.087     | 131.945     | 133.52 |

**Mean Resistivity at ERT-48 is 154.34 Ohm - m.**

**ERT No. 49**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 273.424                                 | 273.895   | 273.581     | 273.424     | 273.58 |
| 2      | 1.0     | 162.416                                 | 163.358   | 162.730     | 163.672     | 163.04 |
| 3      | 2.0     | 152.049                                 | 151.420   | 153.305     | 153.305     | 152.52 |
| 4      | 3.0     | 140.425                                 | 144.195   | 141.368     | 143.252     | 142.31 |
| 5      | 4.0     | 150.792                                 | 115.607   | 149.535     | 118.120     | 133.51 |
| 6      | 5.0     | 144.509                                 | 144.509   | 149.221     | 147.911     | 146.54 |
| 7      | 6.0     | 139.486                                 | 145.141   | 145.141     | 148.911     | 144.67 |
| 8      | 7.0     | 156.136                                 | 158.335   | 156.136     | 158.335     | 157.24 |
| 9      | 8.0     | 155.822                                 | 155.822   | 165.875     | 150.795     | 157.08 |
| 10     | 10.0    | 160.219                                 | 157.078   | 160.219     | 163.361     | 160.22 |

**Mean Resistivity at ERT-49 is 163.07 Ohm - m.**

**ERT No. 50**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 298.709                                 | 298.709   | 297.924     | 298.238     | 298.40 |
| 2      | 1.0     | 294.044                                 | 294.359   | 295.301     | 294.044     | 294.44 |
| 3      | 2.0     | 266.399                                 | 266.399   | 265.143     | 268.284     | 266.56 |
| 4      | 3.0     | 257.289                                 | 259.174   | 260.116     | 258.231     | 258.70 |
| 5      | 4.0     | 234.984                                 | 237.497   | 237.497     | 238.754     | 237.18 |
| 6      | 5.0     | 158.646                                 | 158.646   | 157.075     | 158.646     | 158.25 |
| 7      | 6.0     | 184.725                                 | 184.725   | 179.070     | 180.955     | 182.37 |
| 8      | 7.0     | 193.521                                 | 200.118   | 193.521     | 202.317     | 197.37 |
| 9      | 8.0     | 198.547                                 | 201.060   | 198.547     | 201.060     | 199.80 |
| 10     | 10.0    | 223.050                                 | 235.616   | 229.333     | 232.475     | 230.12 |

**Mean Resistivity at ERT-50 is 232.32 Ohm - m.**

**ERT No. 51**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 179.351                                 | 178.880   | 179.508     | 179.037     | 179.19 |
| 2      | 1.0     | 245.979                                 | 246.294   | 242.037     | 245.979     | 245.07 |
| 3      | 2.0     | 182.207                                 | 182.835   | 182.835     | 180.950     | 182.21 |
| 4      | 3.0     | 188.490                                 | 190.375   | 185.663     | 185.663     | 187.55 |
| 5      | 4.0     | 174.667                                 | 178.437   | 175.924     | 175.924     | 176.24 |
| 6      | 5.0     | 168.070                                 | 168.070   | 158.646     | 166.500     | 165.32 |
| 7      | 6.0     | 148.911                                 | 154.566   | 156.451     | 156.451     | 154.09 |
| 8      | 7.0     | 160.534                                 | 173.729   | 158.335     | 160.534     | 163.28 |
| 9      | 8.0     | 158.335                                 | 170.901   | 158.335     | 165.875     | 163.36 |
| 10     | 10.0    | 172.785                                 | 166.502   | 169.644     | 163.361     | 168.07 |

**Mean Resistivity at ERT-51 is 178.44 Ohm - m.**

**ERT No. 52**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 280.491                                 | 281.905   | 280.648     | 281.120     | 281.04 |
| 2      | 1.0     | 317.292                                 | 318.234   | 317.292     | 317.920     | 317.68 |
| 3      | 2.0     | 373.839                                 | 376.980   | 376.980     | 376.352     | 376.04 |
| 4      | 3.0     | 343.994                                 | 349.649   | 343.052     | 344.937     | 345.41 |
| 5      | 4.0     | 315.407                                 | 301.584   | 311.637     | 304.097     | 308.18 |
| 6      | 5.0     | 317.292                                 | 328.287   | 317.292     | 322.004     | 321.22 |
| 7      | 6.0     | 271.433                                 | 284.627   | 271.433     | 277.088     | 276.15 |
| 8      | 7.0     | 244.100                                 | 246.299   | 239.702     | 246.299     | 244.10 |
| 9      | 8.0     | 201.060                                 | 198.547   | 201.060     | 201.060     | 200.43 |
| 10     | 10.0    | 166.502                                 | 160.219   | 160.219     | 160.219     | 161.79 |

**Mean Resistivity at ERT-52 is 283.20 Ohm - m.**

**ERT No. 53**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 157.364                                 | 157.835   | 157.364     | 157.521     | 157.52 |
| 2      | 1.0     | 162.730                                 | 163.672   | 164.615     | 163.986     | 163.75 |
| 3      | 2.0     | 150.793                                 | 149.535   | 152.049     | 152.049     | 151.11 |
| 4      | 3.0     | 140.425                                 | 140.425   | 135.713     | 138.540     | 138.78 |
| 5      | 4.0     | 111.837                                 | 110.581   | 110.581     | 109.324     | 110.58 |
| 6      | 5.0     | 102.099                                 | 95.815    | 98.957      | 102.099     | 99.74  |
| 7      | 6.0     | 94.247                                  | 96.132    | 96.132      | 98.017      | 96.13  |
| 8      | 7.0     | 90.163                                  | 90.163    | 87.964      | 94.561      | 90.71  |
| 9      | 8.0     | 90.477                                  | 85.450    | 82.937      | 85.450      | 86.08  |
| 10     | 10.0    | 100.530                                 | 100.530   | 91.105      | 97.388      | 97.39  |

**Mean Resistivity at ERT-53 is 119.18 Ohm - m.**

**ERT No. 54**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 291.485                                 | 291.799   | 291.171     | 291.956     | 291.60 |
| 2      | 1.0     | 270.169                                 | 268.598   | 269.855     | 270.169     | 269.70 |
| 3      | 2.0     | 248.179                                 | 250.063   | 251.320     | 253.205     | 250.69 |
| 4      | 3.0     | 277.080                                 | 270.483   | 274.253     | 268.598     | 272.60 |
| 5      | 4.0     | 236.241                                 | 243.780   | 236.241     | 238.754     | 238.75 |
| 6      | 5.0     | 226.188                                 | 216.764   | 226.188     | 226.188     | 223.83 |
| 7      | 6.0     | 220.539                                 | 224.309   | 226.194     | 220.539     | 222.90 |
| 8      | 7.0     | 193.521                                 | 184.724   | 191.322     | 186.924     | 189.12 |
| 9      | 8.0     | 158.335                                 | 163.361   | 165.875     | 165.875     | 163.36 |
| 10     | 10.0    | 135.087                                 | 131.945   | 125.662     | 128.804     | 130.37 |

**Mean Resistivity at ERT-54 is 225.29 Ohm - m.**

**ERT No. 55**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 103.656                                 | 104.124   | 103.653     | 103.810     | 103.81 |
| 2      | 1.0     | 105.240                                 | 107.125   | 106.811     | 170.753     | 122.48 |
| 3      | 2.0     | 150.792                                 | 152.677   | 150.164     | 150.792     | 151.11 |
| 4      | 3.0     | 179.066                                 | 181.893   | 178.123     | 180.950     | 180.01 |
| 5      | 4.0     | 197.286                                 | 202.313   | 201.056     | 204.826     | 201.37 |
| 6      | 5.0     | 234.042                                 | 237.183   | 224.617     | 230.900     | 231.69 |
| 7      | 6.0     | 226.194                                 | 224.309   | 226.194     | 224.309     | 225.25 |
| 8      | 7.0     | 244.100                                 | 259.494   | 244.100     | 237.503     | 246.30 |
| 9      | 8.0     | 248.812                                 | 246.299   | 256.352     | 251.325     | 250.70 |
| 10     | 10.0    | 257.607                                 | 260.749   | 270.173     | 257.607     | 261.53 |

**Mean Resistivity at ERT-55 is 197.42 Ohm - m.**

**ERT No. 56**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 161.919                                 | 162.547   | 161.919     | 161.762     | 162.04 |
| 2      | 1.0     | 194.773                                 | 197.600   | 195.715     | 197.286     | 196.34 |
| 3      | 2.0     | 128.173                                 | 128.173   | 129.430     | 126.917     | 128.17 |
| 4      | 3.0     | 121.576                                 | 117.806   | 116.864     | 115.921     | 118.04 |
| 5      | 4.0     | 106.811                                 | 115.607   | 110.581     | 115.607     | 112.15 |
| 6      | 5.0     | 122.519                                 | 111.523   | 116.236     | 116.236     | 116.63 |
| 7      | 6.0     | 130.062                                 | 118.752   | 116.867     | 113.097     | 119.69 |
| 8      | 7.0     | 120.951                                 | 116.552   | 114.353     | 107.756     | 114.90 |
| 9      | 8.0     | 125.663                                 | 120.636   | 120.636     | 113.096     | 120.01 |
| 10     | 10.0    | 131.945                                 | 135.087   | 135.087     | 125.662     | 131.95 |

**Mean Resistivity at ERT-56 is 131.99 Ohm - m.**

**ERT No. 57**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 310.645                                 | 311.116   | 310.488     | 310.802     | 310.76 |
| 2      | 1.0     | 374.467                                 | 377.608   | 372.896     | 374.781     | 374.94 |
| 3      | 2.0     | 305.982                                 | 305.354   | 306.610     | 308.495     | 306.61 |
| 4      | 3.0     | 245.037                                 | 245.037   | 242.210     | 245.037     | 244.33 |
| 5      | 4.0     | 222.418                                 | 227.445   | 211.109     | 217.392     | 219.59 |
| 6      | 5.0     | 224.617                                 | 219.905   | 221.476     | 224.617     | 222.65 |
| 7      | 6.0     | 220.539                                 | 226.194   | 209.229     | 205.460     | 215.36 |
| 8      | 7.0     | 202.317                                 | 211.114   | 200.118     | 215.512     | 207.27 |
| 9      | 8.0     | 198.547                                 | 196.034   | 191.007     | 175.928     | 190.38 |
| 10     | 10.0    | 197.918                                 | 194.776   | 210.484     | 216.767     | 204.99 |

**Mean Resistivity at ERT-57 is 249.69 Ohm - m.**

**ERT No. 58**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 124.227                                 | 125.012   | 125.169     | 124.855     | 124.82 |
| 2      | 1.0     | 109.953                                 | 107.125   | 108.068     | 107.125     | 108.07 |
| 3      | 2.0     | 113.722                                 | 113.094   | 112.466     | 113.722     | 113.25 |
| 4      | 3.0     | 131.943                                 | 133.828   | 132.885     | 131.943     | 132.65 |
| 5      | 4.0     | 149.535                                 | 145.766   | 150.792     | 155.818     | 150.48 |
| 6      | 5.0     | 157.075                                 | 158.646   | 155.504     | 157.075     | 157.08 |
| 7      | 6.0     | 137.601                                 | 135.716   | 139.486     | 148.911     | 140.43 |
| 8      | 7.0     | 114.353                                 | 109.955   | 109.955     | 112.154     | 111.60 |
| 9      | 8.0     | 115.610                                 | 108.070   | 105.557     | 105.557     | 108.70 |
| 10     | 10.0    | 128.804                                 | 122.520   | 125.662     | 116.237     | 123.31 |

**Mean Resistivity at ERT-58 is 127.04 Ohm - m.**

**ERT No. 59**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 248.139                                 | 248.139   | 247.982     | 248.453     | 248.18 |
| 2      | 1.0     | 224.931                                 | 225.560   | 226.188     | 225.560     | 225.56 |
| 3      | 2.0     | 142.624                                 | 140.739   | 141.996     | 140.111     | 141.37 |
| 4      | 3.0     | 148.907                                 | 151.734   | 151.734     | 151.734     | 151.03 |
| 5      | 4.0     | 129.430                                 | 128.173   | 125.660     | 129.430     | 128.17 |
| 6      | 5.0     | 116.236                                 | 114.665   | 114.665     | 114.665     | 115.06 |
| 7      | 6.0     | 130.062                                 | 126.292   | 130.062     | 130.062     | 129.12 |
| 8      | 7.0     | 131.946                                 | 134.145   | 138.543     | 131.946     | 134.15 |
| 9      | 8.0     | 138.229                                 | 135.716   | 140.742     | 130.689     | 136.34 |
| 10     | 10.0    | 160.219                                 | 157.078   | 157.078     | 150.794     | 156.29 |

**Mean Resistivity at ERT-59 is 156.53 Ohm - m.**

**ERT No. 60**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 169.928                                 | 170.085   | 170.556     | 169.928     | 170.12 |
| 2      | 1.0     | 150.164                                 | 150.478   | 149.221     | 149.535     | 149.85 |
| 3      | 2.0     | 150.792                                 | 148.907   | 152.049     | 149.535     | 150.32 |
| 4      | 3.0     | 132.885                                 | 130.058   | 131.001     | 130.058     | 131.00 |
| 5      | 4.0     | 115.607                                 | 124.403   | 115.607     | 118.120     | 118.43 |
| 6      | 5.0     | 114.665                                 | 113.094   | 111.523     | 111.523     | 112.70 |
| 7      | 6.0     | 109.327                                 | 114.982   | 107.442     | 111.212     | 110.74 |
| 8      | 7.0     | 112.154                                 | 123.150   | 114.353     | 120.951     | 117.65 |
| 9      | 8.0     | 105.557                                 | 118.123   | 115.610     | 110.583     | 112.47 |
| 10     | 10.0    | 125.662                                 | 131.945   | 122.520     | 125.662     | 126.45 |

**Mean Resistivity at ERT-60 is 129.97 Ohm - m.**

**ERT No. 61**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 188.931                                 | 188.460   | 187.989     | 187.989     | 188.34 |
| 2      | 1.0     | 318.862                                 | 319.805   | 314.778     | 321.375     | 318.71 |
| 3      | 2.0     | 152.049                                 | 153.934   | 153.305     | 156.447     | 153.93 |
| 4      | 3.0     | 121.576                                 | 119.691   | 114.036     | 123.461     | 119.69 |
| 5      | 4.0     | 143.252                                 | 147.022   | 155.818     | 147.022     | 148.28 |
| 6      | 5.0     | 179.066                                 | 180.636   | 177.495     | 161.787     | 174.75 |
| 7      | 6.0     | 150.796                                 | 148.911   | 150.796     | 156.451     | 151.74 |
| 8      | 7.0     | 140.742                                 | 131.946   | 142.942     | 131.946     | 136.89 |
| 9      | 8.0     | 143.255                                 | 153.308   | 148.282     | 143.255     | 147.03 |
| 10     | 10.0    | 153.936                                 | 150.794   | 169.644     | 144.511     | 154.72 |

**Mean Resistivity at ERT-61 is 169.41 Ohm - m.**

**ERT No. 62**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.136                                 | 228.979   | 229.136     | 229.607     | 229.21 |
| 2      | 1.0     | 233.099                                 | 232.471   | 233.099     | 232.785     | 232.86 |
| 3      | 2.0     | 240.011                                 | 236.869   | 237.497     | 236.869     | 237.81 |
| 4      | 3.0     | 234.670                                 | 236.555   | 231.843     | 229.015     | 233.02 |
| 5      | 4.0     | 278.965                                 | 273.939   | 278.965     | 278.965     | 277.71 |
| 6      | 5.0     | 278.023                                 | 274.881   | 273.311     | 278.023     | 276.06 |
| 7      | 6.0     | 269.548                                 | 280.858   | 269.548     | 265.778     | 271.43 |
| 8      | 7.0     | 261.693                                 | 270.489   | 263.892     | 261.693     | 264.44 |
| 9      | 8.0     | 238.759                                 | 248.812   | 243.785     | 243.785     | 243.79 |
| 10     | 10.0    | 223.050                                 | 223.050   | 223.050     | 229.333     | 224.62 |

**Mean Resistivity at ERT-62 is 249.10 Ohm - m.**

**ERT No. 63**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 152.339                                 | 152.181   | 151.867     | 152.024     | 152.10 |
| 2      | 1.0     | 144.823                                 | 146.394   | 145.451     | 146.708     | 145.84 |
| 3      | 2.0     | 189.118                                 | 188.490   | 203.569     | 187.862     | 192.26 |
| 4      | 3.0     | 166.814                                 | 161.159   | 159.274     | 160.217     | 161.87 |
| 5      | 4.0     | 175.924                                 | 175.924   | 185.977     | 179.694     | 179.38 |
| 6      | 5.0     | 204.198                                 | 204.198   | 199.485     | 199.485     | 201.84 |
| 7      | 6.0     | 180.955                                 | 186.610   | 196.035     | 192.265     | 188.97 |
| 8      | 7.0     | 173.729                                 | 173.729   | 189.123     | 180.326     | 179.23 |
| 9      | 8.0     | 173.414                                 | 180.954   | 170.901     | 178.441     | 175.93 |
| 10     | 10.0    | 185.351                                 | 185.351   | 172.785     | 175.927     | 179.85 |

**Mean Resistivity at ERT-63 is 175.73 Ohm - m.**

**ERT No. 64**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 110.877                                 | 111.506   | 111.034     | 110.720     | 111.03 |
| 2      | 1.0     | 115.921                                 | 113.408   | 113.722     | 114.351     | 114.35 |
| 3      | 2.0     | 101.156                                 | 100.528   | 100.528     | 99.271      | 100.37 |
| 4      | 3.0     | 98.014                                  | 100.842   | 100.842     | 100.842     | 100.14 |
| 5      | 4.0     | 101.785                                 | 101.785   | 103.041     | 100.528     | 101.78 |
| 6      | 5.0     | 100.528                                 | 98.957    | 103.670     | 92.674      | 98.96  |
| 7      | 6.0     | 103.672                                 | 111.212   | 103.672     | 109.327     | 106.97 |
| 8      | 7.0     | 107.756                                 | 116.552   | 114.353     | 120.951     | 114.90 |
| 9      | 8.0     | 105.557                                 | 103.043   | 98.016      | 108.070     | 103.67 |
| 10     | 10.0    | 116.237                                 | 122.520   | 122.520     | 125.662     | 121.73 |

**Mean Resistivity at ERT-64 is 107.39 Ohm - m.**

**ERT No. 65**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 408.644                                 | 408.330   | 408.801     | 409.272     | 408.76 |
| 2      | 1.0     | 448.292                                 | 446.407   | 448.606     | 449.549     | 448.21 |
| 3      | 2.0     | 429.757                                 | 427.872   | 429.192     | 429.757     | 429.14 |
| 4      | 3.0     | 348.707                                 | 358.131   | 354.361     | 360.016     | 355.30 |
| 5      | 4.0     | 291.531                                 | 290.275   | 289.018     | 287.761     | 289.65 |
| 6      | 5.0     | 245.037                                 | 243.466   | 240.325     | 241.896     | 242.68 |
| 7      | 6.0     | 212.999                                 | 214.884   | 209.229     | 212.999     | 212.53 |
| 8      | 7.0     | 189.123                                 | 186.924   | 189.123     | 191.322     | 189.12 |
| 9      | 8.0     | 180.954                                 | 188.494   | 180.954     | 180.954     | 182.84 |
| 10     | 10.0    | 197.918                                 | 191.635   | 188.493     | 179.068     | 189.28 |

**Mean Resistivity at ERT-65 is 294.75 Ohm - m.**

**ERT No. 66**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 420.737                                 | 421.208   | 420.894     | 420.737     | 420.89 |
| 2      | 1.0     | 290.275                                 | 288.076   | 290.275     | 289.646     | 289.57 |
| 3      | 2.0     | 187.862                                 | 192.260   | 185.977     | 187.747     | 188.46 |
| 4      | 3.0     | 140.425                                 | 143.252   | 141.368     | 140.425     | 141.37 |
| 5      | 4.0     | 129.430                                 | 134.456   | 124.403     | 123.147     | 127.86 |
| 6      | 5.0     | 113.094                                 | 113.094   | 109.953     | 113.094     | 112.31 |
| 7      | 6.0     | 118.752                                 | 114.982   | 111.212     | 99.902      | 111.21 |
| 8      | 7.0     | 118.751                                 | 125.349   | 114.353     | 101.159     | 114.90 |
| 9      | 8.0     | 123.149                                 | 133.202   | 110.583     | 115.610     | 120.64 |
| 10     | 10.0    | 125.662                                 | 128.804   | 122.520     | 122.520     | 124.88 |

**Mean Resistivity at ERT-66 is 175.21 Ohm - m.**

**ERT No. 67**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 157.835                                 | 157.364   | 157.050     | 156.736     | 157.25 |
| 2      | 1.0     | 151.420                                 | 151.106   | 151.420     | 151.106     | 151.26 |
| 3      | 2.0     | 204.826                                 | 202.941   | 203.569     | 204.826     | 204.04 |
| 4      | 3.0     | 228.073                                 | 228.073   | 228.073     | 228.073     | 228.07 |
| 5      | 4.0     | 247.550                                 | 250.063   | 251.320     | 247.550     | 249.12 |
| 6      | 5.0     | 256.032                                 | 259.174   | 249.749     | 254.462     | 254.85 |
| 7      | 6.0     | 228.079                                 | 246.928   | 229.964     | 237.504     | 235.62 |
| 8      | 7.0     | 204.516                                 | 213.313   | 197.919     | 204.516     | 205.07 |
| 9      | 8.0     | 198.547                                 | 188.494   | 185.981     | 183.467     | 189.12 |
| 10     | 10.0    | 147.653                                 | 150.794   | 141.370     | 147.370     | 146.80 |

**Mean Resistivity at ERT-67 is 202.12 Ohm - m.**

**ERT No. 68**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 322.267                                 | 322.424   | 322.738     | 322.581     | 322.50 |
| 2      | 1.0     | 319.805                                 | 319.805   | 320.119     | 320.747     | 320.12 |
| 3      | 2.0     | 220.533                                 | 223.047   | 218.02      | 224.931     | 221.63 |
| 4      | 3.0     | 180.008                                 | 185.663   | 186.605     | 190.375     | 185.66 |
| 5      | 4.0     | 166.845                                 | 164.615   | 170.898     | 169.641     | 168.00 |
| 6      | 5.0     | 147.651                                 | 149.221   | 158.646     | 153.934     | 152.36 |
| 7      | 6.0     | 143.256                                 | 148.911   | 156.451     | 150.795     | 149.85 |
| 8      | 7.0     | 138.543                                 | 142.942   | 149.539     | 151.738     | 145.69 |
| 9      | 8.0     | 133.202                                 | 143.255   | 148.282     | 150.795     | 143.88 |
| 10     | 10.0    | 150.794                                 | 150.794   | 157.078     | 166.502     | 156.29 |

**Mean Resistivity at ERT-68 is 196.60 Ohm - m.**

**ERT No. 69**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 346.138                                 | 347.395   | 246.923     | 347.081     | 321.88 |
| 2      | 1.0     | 368.498                                 | 369.440   | 368.498     | 367.241     | 368.42 |
| 3      | 2.0     | 378.237                                 | 376.980   | 376.980     | 376.980     | 377.29 |
| 4      | 3.0     | 376.98                                  | 372.268   | 382.635     | 376.038     | 376.98 |
| 5      | 4.0     | 354.361                                 | 354.361   | 354.361     | 354.361     | 354.36 |
| 6      | 5.0     | 340.853                                 | 342.424   | 339.282     | 343.994     | 341.64 |
| 7      | 6.0     | 331.751                                 | 331.751   | 352.486     | 335.636     | 337.91 |
| 8      | 7.0     | 312.272                                 | 314.471   | 325.467     | 310.073     | 315.57 |
| 9      | 8.0     | 256.352                                 | 256.352   | 263.891     | 258.865     | 258.87 |
| 10     | 10.0    | 197.918                                 | 216.767   | 185.351     | 213.625     | 203.42 |

**Mean Resistivity at ERT-69 is 325.63 Ohm - m.**

**ERT No. 70**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 430.631                                 | 430.631   | 430.631     | 431.259     | 430.79 |
| 2      | 1.0     | 382.006                                 | 383.263   | 382.321     | 383.263     | 382.71 |
| 3      | 2.0     | 227.445                                 | 229.958   | 229.958     | 231.843     | 229.80 |
| 4      | 3.0     | 156.447                                 | 159.274   | 158.332     | 163.044     | 159.27 |
| 5      | 4.0     | 149.353                                 | 154.562   | 154.562     | 159.588     | 154.52 |
| 6      | 5.0     | 141.368                                 | 141.368   | 147.651     | 144.509     | 143.72 |
| 7      | 6.0     | 137.601                                 | 130.062   | 131.947     | 135.716     | 133.83 |
| 8      | 7.0     | 149.539                                 | 142.942   | 153.937     | 149.539     | 148.99 |
| 9      | 8.0     | 153.308                                 | 155.822   | 160.848     | 160.848     | 157.71 |
| 10     | 10.0    | 185.351                                 | 188.493   | 191.635     | 197.918     | 190.85 |

**Mean Resistivity at ERT-70 is 213.22 Ohm - m.**

**ERT No. 71**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 225.681                                 | 226.152   | 225.210     | 226.309     | 225.84 |
| 2      | 1.0     | 288.701                                 | 229.015   | 229.644     | 229.644     | 244.25 |
| 3      | 2.0     | 215.507                                 | 214.879   | 214.879     | 214.879     | 215.04 |
| 4      | 3.0     | 226.188                                 | 229.015   | 228.073     | 225.246     | 227.13 |
| 5      | 4.0     | 247.550                                 | 242.524   | 253.833     | 250.063     | 248.49 |
| 6      | 5.0     | 274.881                                 | 279.594   | 267.028     | 274.881     | 274.10 |
| 7      | 6.0     | 269.548                                 | 265.778   | 263.893     | 275.203     | 268.61 |
| 8      | 7.0     | 270.489                                 | 268.290   | 268.290     | 270.489     | 269.39 |
| 9      | 8.0     | 228.706                                 | 226.193   | 231.215     | 233.732     | 229.96 |
| 10     | 10.0    | 197.918                                 | 197.918   | 191.635     | 197.918     | 196.35 |

Mean Resistivity at ERT-71 is 239.91 Ohm - m.

**ERT No. 72**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 291.956                                 | 292.584   | 291.642     | 292.270     | 292.11 |
| 2      | 1.0     | 283.677                                 | 283.677   | 283.049     | 282.735     | 283.28 |
| 3      | 2.0     | 277.800                                 | 277.080   | 277.080     | 275.195     | 276.79 |
| 4      | 3.0     | 281.793                                 | 279.908   | 283.677     | 284.620     | 282.50 |
| 5      | 4.0     | 315.407                                 | 320.433   | 301.584     | 306.610     | 311.01 |
| 6      | 5.0     | 306.296                                 | 314.150   | 314.150     | 306.296     | 310.22 |
| 7      | 6.0     | 305.362                                 | 305.362   | 303.477     | 318.557     | 308.19 |
| 8      | 7.0     | 321.069                                 | 332.064   | 312.272     | 312.272     | 319.42 |
| 9      | 8.0     | 321.696                                 | 321.696   | 319.183     | 304.103     | 316.67 |
| 10     | 10.0    | 251.324                                 | 248.182   | 254.466     | 248.182     | 250.54 |

Mean Resistivity at ERT-72 is 295.07 Ohm - m.

**ERT No. 73**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.293   | 228.979     | 229.450     | 229.25 |
| 2      | 1.0     | 188.490                                 | 187.548   | 188.176     | 190.061     | 188.57 |
| 3      | 2.0     | 157.075                                 | 157.075   | 158.960     | 160.217     | 158.33 |
| 4      | 3.0     | 112.152                                 | 114.036   | 113.094     | 119.691     | 114.74 |
| 5      | 4.0     | 85.448                                  | 87.962    | 86.705      | 67.854      | 81.99  |
| 6      | 5.0     | 75.396                                  | 80.108    | 84.820      | 50.264      | 72.65  |
| 7      | 6.0     | 62.203                                  | 54.663    | 65.973      | 54.663      | 59.38  |
| 8      | 7.0     | 48.380                                  | 50.579    | 57.176      | 46.181      | 50.58  |
| 9      | 8.0     | 42.725                                  | 45.238    | 50.265      | 50.265      | 47.12  |
| 10     | 10.0    | 47.123                                  | 47.123    | 53.406      | 28.274      | 43.98  |

Mean Resistivity at ERT-73 is 104.66 Ohm - m.

**ERT No. 74**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.764                                 | 228.665   | 229.293     | 229.293     | 229.25 |
| 2      | 1.0     | 250.378                                 | 252.577   | 251.32      | 250.692     | 251.24 |
| 3      | 2.0     | 263.886                                 | 263.886   | 263.886     | 264.514     | 264.04 |
| 4      | 3.0     | 245.979                                 | 245.037   | 245.037     | 244.095     | 245.04 |
| 5      | 4.0     | 265.143                                 | 266.399   | 261.373     | 251.320     | 261.06 |
| 6      | 5.0     | 256.032                                 | 262.315   | 257.603     | 267.028     | 260.74 |
| 7      | 6.0     | 243.159                                 | 250.698   | 239.389     | 239.389     | 243.16 |
| 8      | 7.0     | 226.507                                 | 222.109   | 219.910     | 224.308     | 223.21 |
| 9      | 8.0     | 218.653                                 | 223.679   | 216.140     | 216.140     | 218.65 |
| 10     | 10.0    | 229.333                                 | 223.050   | 226.192     | 223.050     | 225.41 |

**Mean Resistivity at ERT-74 is 242.18 Ohm - m.**

**ERT No. 75**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 229.293                                 | 229.293   | 229.293     | 229.293     | 229.29 |
| 2      | 1.0     | 223.989                                 | 223.989   | 226.188     | 224.931     | 224.77 |
| 3      | 2.0     | 211.737                                 | 212.994   | 215.507     | 215.507     | 213.94 |
| 4      | 3.0     | 204.512                                 | 209.224   | 203.569     | 208.281     | 206.40 |
| 5      | 4.0     | 183.464                                 | 179.694   | 184.720     | 182.207     | 182.52 |
| 6      | 5.0     | 188.490                                 | 183.778   | 193.202     | 193.202     | 189.67 |
| 7      | 6.0     | 184.725                                 | 182.840   | 186.610     | 180.955     | 183.78 |
| 8      | 7.0     | 169.331                                 | 167.132   | 175.928     | 167.132     | 169.88 |
| 9      | 8.0     | 155.822                                 | 153.308   | 158.335     | 158.335     | 156.45 |
| 10     | 10.0    | 160.219                                 | 157.078   | 160.219     | 157.078     | 158.65 |

**Mean Resistivity at ERT-75 is 191.54 Ohm - m.**

**ERT No. 76**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 166.630                                 | 166.473   | 167.258     | 166.473     | 166.71 |
| 2      | 1.0     | 170.583                                 | 169.013   | 172.468     | 173.097     | 171.29 |
| 3      | 2.0     | 240.011                                 | 240.639   | 241.267     | 239.382     | 240.32 |
| 4      | 3.0     | 236.555                                 | 236.555   | 233.728     | 236.555     | 235.85 |
| 5      | 4.0     | 216.135                                 | 221.162   | 217.392     | 227.445     | 220.53 |
| 6      | 5.0     | 227.759                                 | 237.183   | 238.754     | 241.896     | 236.40 |
| 7      | 6.0     | 207.345                                 | 216.769   | 216.769     | 222.424     | 215.83 |
| 8      | 7.0     | 191.322                                 | 200.118   | 200.118     | 204.516     | 199.02 |
| 9      | 8.0     | 178.441                                 | 180.954   | 168.388     | 160.848     | 172.16 |
| 10     | 10.0    | 188.493                                 | 188.493   | 191.635     | 201.059     | 192.42 |

**Mean Resistivity at ERT-76 is 205.05 Ohm - m.**

**ERT No. 77**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 194.114                                 | 194.114   | 194.585     | 194.428     | 194.31 |
| 2      | 1.0     | 138.540                                 | 138.226   | 138.540     | 137.912     | 138.30 |
| 3      | 2.0     | 212.994                                 | 217.392   | 213.622     | 213.622     | 214.41 |
| 4      | 3.0     | 250.692                                 | 245.979   | 250.692     | 246.922     | 248.57 |
| 5      | 4.0     | 228.701                                 | 229.958   | 226.188     | 223.675     | 227.13 |
| 6      | 5.0     | 224.617                                 | 234.042   | 223.047     | 223.047     | 226.19 |
| 7      | 6.0     | 194.150                                 | 196.035   | 192.265     | 192.265     | 193.68 |
| 8      | 7.0     | 186.924                                 | 195.720   | 178.127     | 184.724     | 186.37 |
| 9      | 8.0     | 208.600                                 | 203.573   | 198.547     | 198.547     | 202.32 |
| 10     | 10.0    | 160.219                                 | 166.502   | 153.936     | 157.078     | 159.43 |

**Mean Resistivity at ERT-77 is 199.07 Ohm - m.**

**ERT No. 78**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 179.979                                 | 179.822   | 180.293     | 180.450     | 180.14 |
| 2      | 1.0     | 133.828                                 | 134.142   | 133.514     | 133.200     | 133.67 |
| 3      | 2.0     | 118.749                                 | 121.262   | 116.864     | 118.749     | 118.91 |
| 4      | 3.0     | 84.820                                  | 84.820    | 82.935      | 84.820      | 84.35  |
| 5      | 4.0     | 56.547                                  | 56.547    | 52.777      | 54.033      | 54.98  |
| 6      | 5.0     | 45.551                                  | 48.693    | 42.410      | 43.981      | 45.16  |
| 7      | 6.0     | 39.584                                  | 35.814    | 35.814      | 37.699      | 37.23  |
| 8      | 7.0     | 30.787                                  | 35.185    | 30.787      | 32.986      | 32.44  |
| 9      | 8.0     | 27.645                                  | 32.672    | 30.159      | 27.645      | 29.53  |
| 10     | 10.0    | 34.557                                  | 34.557    | 31.415      | 28.274      | 32.20  |

**Mean Resistivity at ERT-78 is 74.86 Ohm - m.**

**ERT No. 79**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 181.393                                 | 181.079   | 181.236     | 181.707     | 181.35 |
| 2      | 1.0     | 103.355                                 | 103.670   | 103.984     | 103.670     | 103.67 |
| 3      | 2.0     | 62.830                                  | 64.714    | 64.714      | 63.458      | 63.93  |
| 4      | 3.0     | 45.237                                  | 45.237    | 46.180      | 48.065      | 46.18  |
| 5      | 4.0     | 42.724                                  | 46.494    | 47.750      | 50.264      | 46.81  |
| 6      | 5.0     | 39.268                                  | 43.981    | 47.122      | 47.122      | 44.37  |
| 7      | 6.0     | 28.274                                  | 35.814    | 39.584      | 37.699      | 35.34  |
| 8      | 7.0     | 24.190                                  | 26.389    | 26.389      | 28.588      | 26.39  |
| 9      | 8.0     | 22.619                                  | 25.132    | 27.645      | 27.645      | 25.76  |
| 10     | 10.0    | 21.990                                  | 28.274    | 31.415      | 31.415      | 28.27  |

**Mean Resistivity at ERT-79 is 60.21 Ohm - m.**

**ERT No. 80**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 292.584                                 | 292.270   | 291.799     | 292.427     | 292.27 |
| 2      | 1.0     | 299.071                                 | 298.757   | 299.385     | 297.814     | 298.76 |
| 3      | 2.0     | 331.114                                 | 327.973   | 331.742     | 327.973     | 329.70 |
| 4      | 3.0     | 339.282                                 | 339.282   | 339.282     | 336.455     | 338.58 |
| 5      | 4.0     | 343.052                                 | 348.078   | 335.512     | 343.052     | 342.42 |
| 6      | 5.0     | 345.565                                 | 350.277   | 343.994     | 345.565     | 346.35 |
| 7      | 6.0     | 301.592                                 | 292.167   | 297.822     | 288.397     | 294.99 |
| 8      | 7.0     | 314.471                                 | 290.281   | 303.476     | 290.281     | 299.63 |
| 9      | 8.0     | 273.944                                 | 263.891   | 276.458     | 263.891     | 269.55 |
| 10     | 10.0    | 229.333                                 | 245.041   | 238.758     | 238.758     | 237.97 |

**Mean Resistivity at ERT-80 is 305.02 Ohm - m.**

**ERT No. 81**

| SI No. | S ( M ) | Apparent Electrical Resistivity (Ohm-m) |           |             |             | Mean   |
|--------|---------|-----------------------------------------|-----------|-------------|-------------|--------|
|        |         | ( N - S )                               | ( E - W ) | ( NE - SW ) | ( NW - SE ) |        |
| 1      | 0.50    | 295.411                                 | 295.728   | 295.254     | 295.097     | 295.37 |
| 2      | 1.0     | 315.721                                 | 314.150   | 316.663     | 314.778     | 315.33 |
| 3      | 2.0     | 361.901                                 | 362.529   | 357.503     | 359.388     | 360.33 |
| 4      | 3.0     | 347.764                                 | 349.649   | 345.879     | 345.879     | 347.29 |
| 5      | 4.0     | 348.822                                 | 355.618   | 340.539     | 349.335     | 348.58 |
| 6      | 5.0     | 309.438                                 | 309.438   | 317.292     | 314.150     | 312.58 |
| 7      | 6.0     | 277.088                                 | 273.318   | 275.203     | 271.433     | 274.26 |
| 8      | 7.0     | 263.892                                 | 261.693   | 252.897     | 255.096     | 258.39 |
| 9      | 8.0     | 185.981                                 | 191.007   | 201.060     | 206.087     | 196.03 |
| 10     | 10.0    | 169.644                                 | 185.351   | 175.927     | 175.927     | 176.71 |

**Mean Resistivity at ERT-81 is 288.49 Ohm - m.**

## 9. CROSS HOLE SHEAR WAVE TEST

REPORT ON

CROSS HOLE SHEAR WAVE TEST FOR

THE PROPOSED 2X660 MW SUPER CRITICAL THERMAL POWER

PROJECT AT HTPS, KORBA WEST,

CHATTISGARH

### 1. INTRODUCTION

M/s. C E Testing Company (P) Limited carried out the work of Geotechnical Investigation Work for the proposed 2x660 MW SCTPP at HTPS, Korba West, Chattisgarh. As a part of the investigation, cross hole shear wave tests were carried out to determine the dynamic properties of the subsoil at the proposed area. Present report deals with the findings of Cross Hole Shear Wave Tests.

### 2. SCOPE OF WORK

The Cross Hole Shear Wave Tests were conducted at nine (09) locations down to a depth of 20 meters. One source hole and two Receiver holes at a distance of 3 meter were used.

### 3. PURPOSE OF INVESTIGATIONS

The aim of the investigation was to determine the soil parameters. The Cross Hole Shear Wave Tests were conducted to determine dynamic soil properties.

### 4. GENERAL SITE DESCRIPTION

The subsoil is characterised by stiff / very stiff to hard silty clay followed by medium dense / dense silty sand. Thereafter, again hard clay layer appears and continued up to the borehole termination depth.

### 5. CROSS HOLE SHEAR WAVE TEST

#### 5.1. LOCATION

Nine nos. cross hole seismic tests were conducted. The test locations are given below.

| CHST No. | Co-ordinates (M) |             | E.G.L. (M) |
|----------|------------------|-------------|------------|
|          | Easting          | Northing    |            |
| CHST-01  | 672453.824       | 2479647.090 | 303.566    |
| CHST-02  | 672580.033       | 2479609.033 | 303.591    |

| CHST No. | Co-ordinates (M) |             | E.G.L. (M) |
|----------|------------------|-------------|------------|
|          | Easting          | Northing    |            |
| CHST-03  | 672393.354       | 2479583.644 | 304.606    |
| CHST-04  | 672515.822       | 2479543.313 | 303.610    |
| CHST-05  | 672586.420       | 2479527.461 | 303.246    |
| CHST-06  | 672168.756       | 2479400.676 | 308.305    |
| CHST-07  | 672366.777       | 2479388.617 | 304.421    |
| CHST-08  | 672494.247       | 2479349.039 | 304.774    |
| CHST-09  | 672013.307       | 2479134.025 | 307.274    |

## 5.2. EQUIPMENT AND ACCESSORIES

Following equipment and accessories were used:

1. Seismograph : PASI model GEA-24  
Signal enhancement type fully digital 24 channel seismograph,
2. Geophones : Moving-coil type digital grade vertical & Horizontal geophones, natural frequency 10 Hertz.
3. Cable : Geophone spread cables, water proof joints, made in Italy

### 5.2.1. Energy Source:

Shear Wave Hammer was used for generating waves in the Source borehole. The hammer generates waves in both the directions i.e. Up and Down, resulting in polarized energy.



### 5.2.2. Down Hole Sensors:

Orthogonal down hole sensors were used to receive the waves in two Receiver holes. The sensors have two Horizontal components and one Vertical component Geophones, encased

in a steel tube and having water tight arrangement. The sensors were lowered at the same depth as the Hammer in the Source hole, and tube attached to them was inflated so as to make them fixed with the borehole wall.

### **5.2.3. Seismograph:**

PASI GEA-24 Seismograph was used to record field data. The seismograph has the signal enhancement or stacking capability. The seismograph records the arrival of seismic waves through 24 channels. The seismic waves detected by each geophone are displayed simultaneously on the screen.



## **5.3 SEISMIC CROSS HOLE TEST**

The Seismic Cross Hole Test consists of generation of horizontally traveling P and S waves at a particular level in one borehole (Source hole) and recording their arrivals at same level in one or two nearby boreholes (Receiver holes).

## **5.4 CROSS HOLE SEISMIC SURVEY DATA INTERPRETATION**

### **5.4.1. DATA PROCESSING**

The data is stored in the hard disk of the Seismograph at the time of data acquisition. The data was transferred to the computer for further processing.

The processing involves picking the first arrivals. In case of noisy data there are intermediate steps of data processing using filtering, amplitude corrections etc.

#### 5.4.2. PICKING OF FIRST ARRIVALS

The picking was done manually to see arrival of P and S waves on the respective Geophones. The time of travel from Source to Receiver hole is used to determine the velocities of P & Shear waves, as distance between the boreholes is known.

#### 5.4.3. VELOCITY CALCULATION

Velocity calculation was done using the time derives as above and the distance between the two Receiver holes from the Source hole.

#### 5.5. CALCULATION OF SOIL PARAMETERS:

The dynamic soil parameters are calculated from seismic wave and the bulk density of the corresponding of the subsurface strata. The calculations are based on IS Code 13372 (Part-2).

The Poisson's Ratio is determined directly from the compressional (P) wave and shear (S) wave data. It is expressed by the ratio of transverse strain to longitudinal strain. Its dynamic determination is expressed as:

$$\sigma = (m^2 - 2) / [2 * (m^2 - 1)] \text{ where } m = V_p / V_s$$

Young's Modulus E is the uni-axial stress-strain ratio. Its dynamic value is expressed by the following equation:

$$E = \rho V_p^2 (1 + \sigma) (1 - 2\sigma) / (1 - \sigma)$$

The shear Modulus G is the stress-strain ratio for simple shear. Its dynamic value is obtained by the following:

$$G = E / 2 (1 + \sigma) = \rho V_s^2$$

Where  $\rho$  is mass density in  $\text{kN.s}^2/\text{m}^4$ ,  $\sigma$  is Poisson's ratio and  $V_p$  is P-wave velocity in  $\text{m/sec}$ , E & G are in  $\text{kN/m}^2$ .

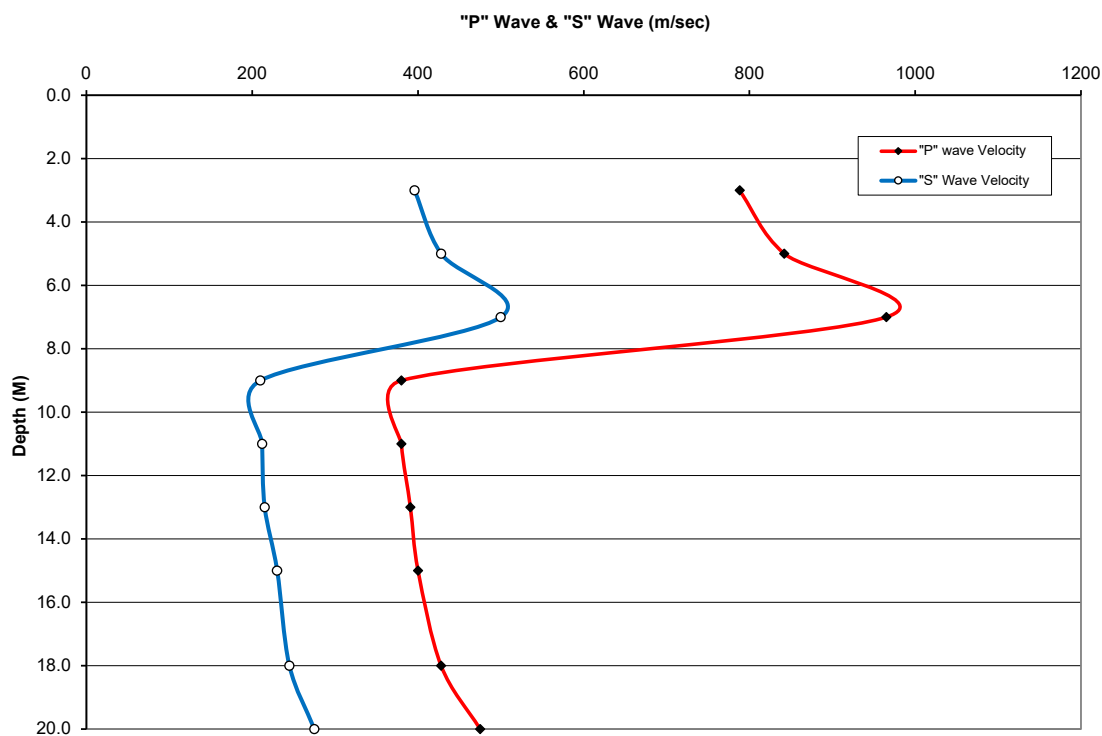
The test results are presented afterwards in a tabular form.

## TEST RESULTS

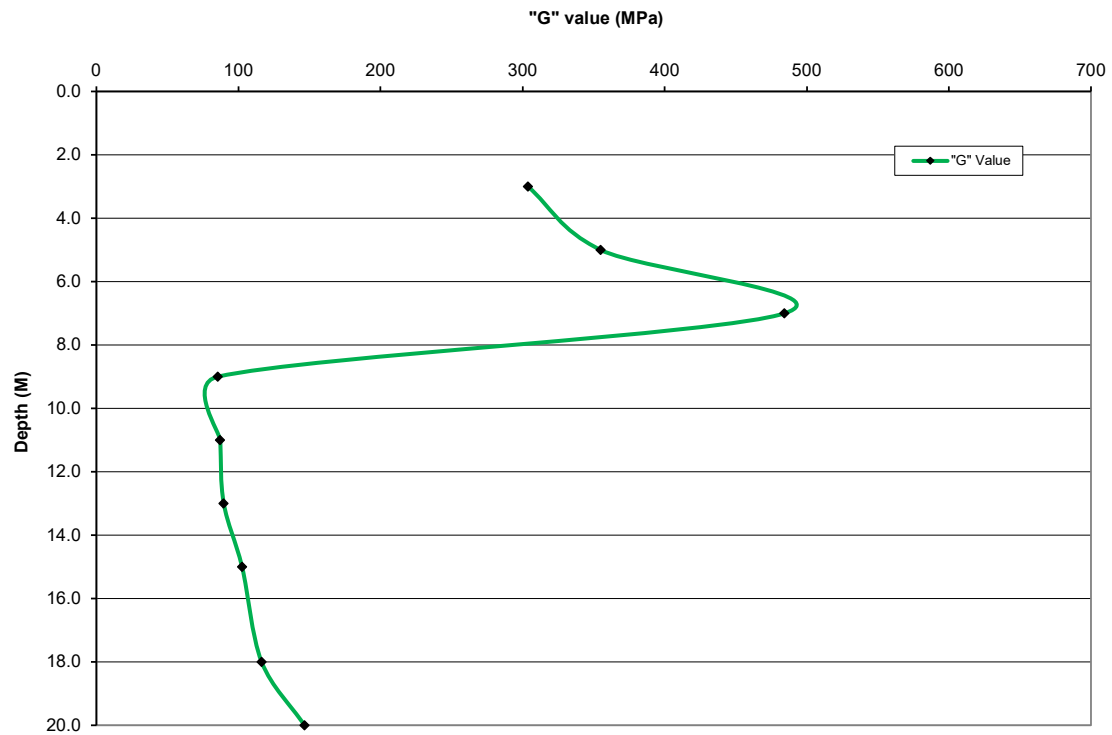
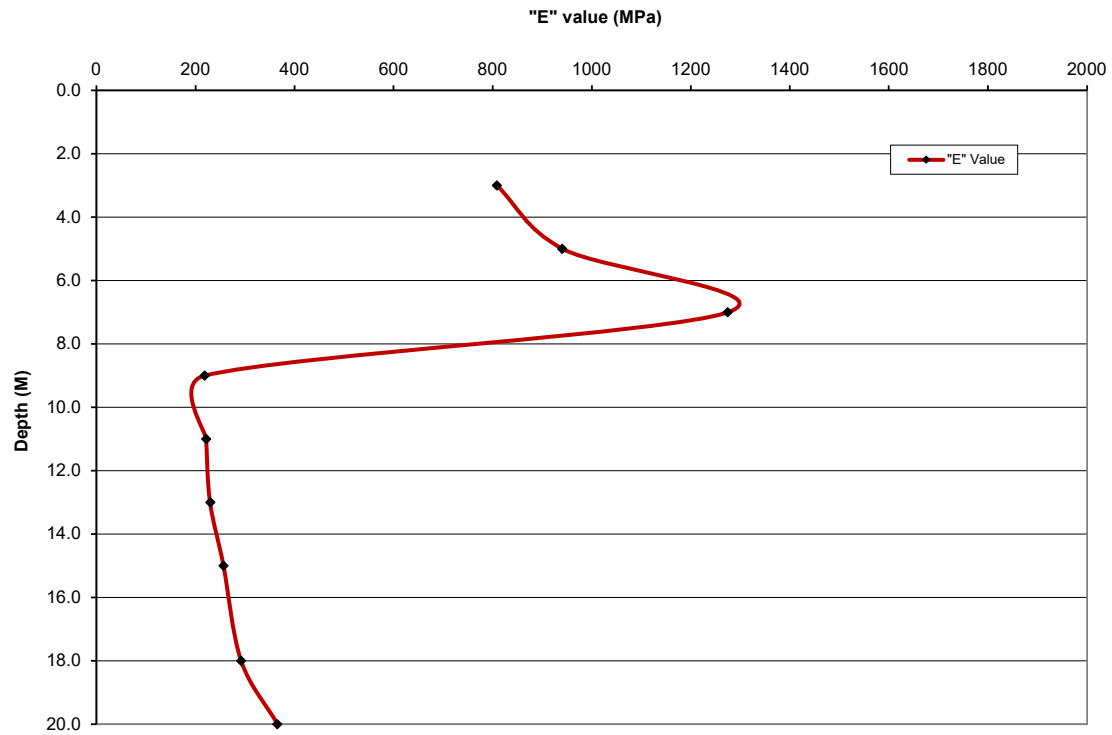
## Cross Hole Test: CHST-1

## Calculated Values of Dynamic Parameters

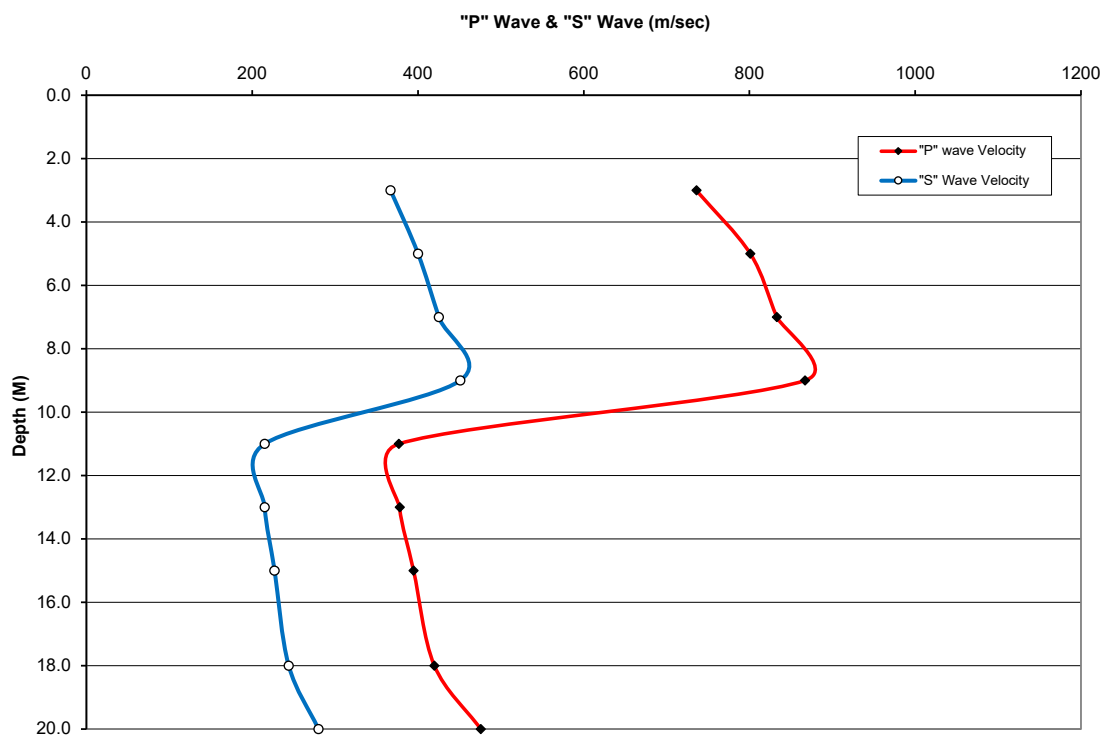
| Depth<br>(M)<br>BGL | $V_p$<br>(m/s) | $V_s$<br>(m/s) | Mass<br>Density<br>( $\text{kN.s}^2/\text{m}^4$ ) | $m$<br>$= V_p/V_s$ | Poisson<br>Ratio,<br>$\sigma$ | Young's<br>Modulus<br>( $\text{kN/m}^2$ ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>( $\text{kN/m}^2$ ) | Shear<br>Modulus<br>(MPa) |
|---------------------|----------------|----------------|---------------------------------------------------|--------------------|-------------------------------|-------------------------------------------|-----------------------------|--------------------------------------|---------------------------|
| 3.0                 | 788            | 396            | 1.94                                              | 1.9899             | 0.331                         | 808544                                    | 808.5                       | 303721                               | 303.7                     |
| 5.0                 | 842            | 428            | 1.94                                              | 1.9673             | 0.326                         | 940761                                    | 940.8                       | 354791                               | 354.8                     |
| 7.0                 | 965            | 500            | 1.94                                              | 1.9300             | 0.317                         | 1274905                                   | 1274.9                      | 484200                               | 484.2                     |
| 9.0                 | 380            | 210            | 1.94                                              | 1.8095             | 0.280                         | 218684                                    | 218.7                       | 85413                                | 85.4                      |
| 11.0                | 380            | 212            | 1.94                                              | 1.7925             | 0.274                         | 221806                                    | 221.8                       | 87048                                | 87.0                      |
| 13.0                | 391            | 215            | 1.94                                              | 1.8186             | 0.283                         | 229784                                    | 229.8                       | 89529                                | 89.5                      |
| 15.0                | 400            | 230            | 1.94                                              | 1.7391             | 0.253                         | 256764                                    | 256.8                       | 102457                               | 102.5                     |
| 18.0                | 428            | 245            | 1.94                                              | 1.7469             | 0.256                         | 292108                                    | 292.1                       | 116256                               | 116.3                     |
| 20.0                | 475            | 275            | 1.94                                              | 1.7273             | 0.248                         | 365566                                    | 365.6                       | 146470                               | 146.5                     |



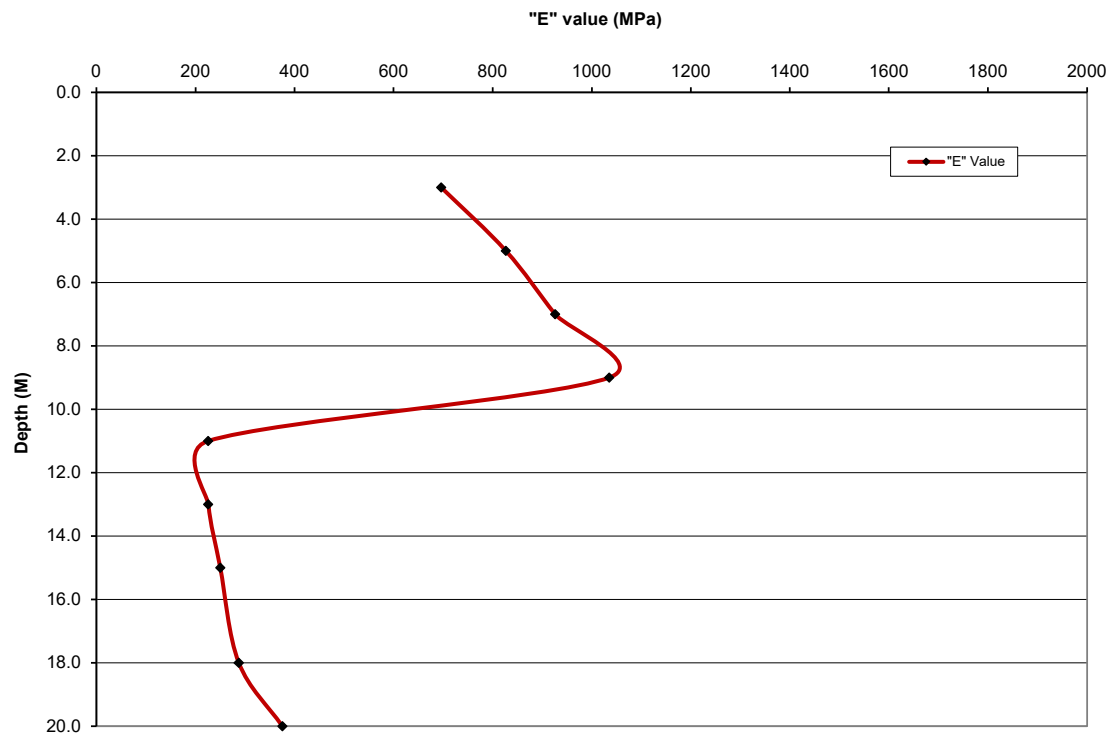
Variation of "P" &amp; "S" wave Velocity with Depth



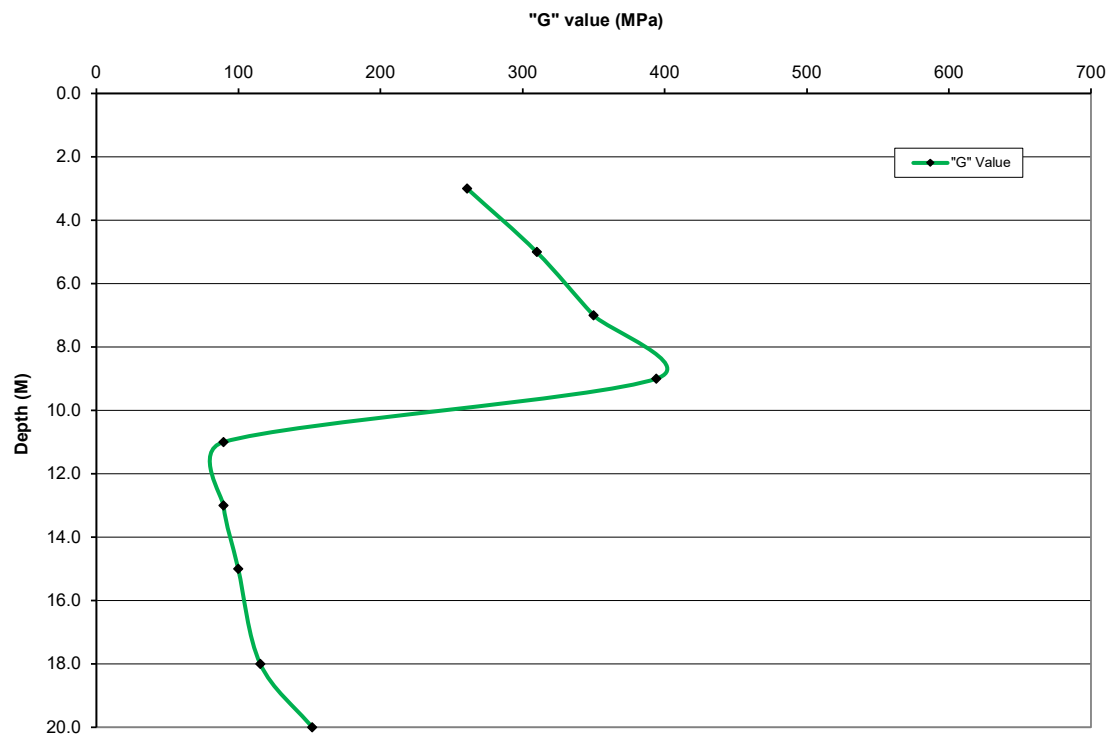
| Cross Hole Test: CHST-2                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 736                     | 367                     | 1.94                                                    | 2.0054                                | 0.335                  | 696270                                     | 696.3                       | 260866                                | 260.9                     |
| 5.0                                     | 801                     | 400                     | 1.94                                                    | 2.0025                                | 0.334                  | 826711                                     | 826.7                       | 309888                                | 309.9                     |
| 7.0                                     | 833                     | 425                     | 1.94                                                    | 1.9600                                | 0.324                  | 926391                                     | 926.4                       | 349834                                | 349.8                     |
| 9.0                                     | 867                     | 451                     | 1.94                                                    | 1.9224                                | 0.315                  | 1035696                                    | 1035.7                      | 393947                                | 393.9                     |
| 11.0                                    | 377                     | 215                     | 1.94                                                    | 1.7535                                | 0.259                  | 225434                                     | 225.4                       | 89529                                 | 89.5                      |
| 13.0                                    | 378                     | 215                     | 1.94                                                    | 1.7581                                | 0.261                  | 225771                                     | 225.8                       | 89529                                 | 89.5                      |
| 15.0                                    | 395                     | 227                     | 1.94                                                    | 1.7401                                | 0.253                  | 250190                                     | 250.2                       | 99801                                 | 99.8                      |
| 18.0                                    | 420                     | 244                     | 1.94                                                    | 1.7213                                | 0.245                  | 287184                                     | 287.2                       | 115309                                | 115.3                     |
| 20.0                                    | 476                     | 280                     | 1.94                                                    | 1.7000                                | 0.235                  | 375194                                     | 375.2                       | 151845                                | 151.8                     |



Variation of "P" & "S" wave Velocity with Depth



Variation of "E" with Depth

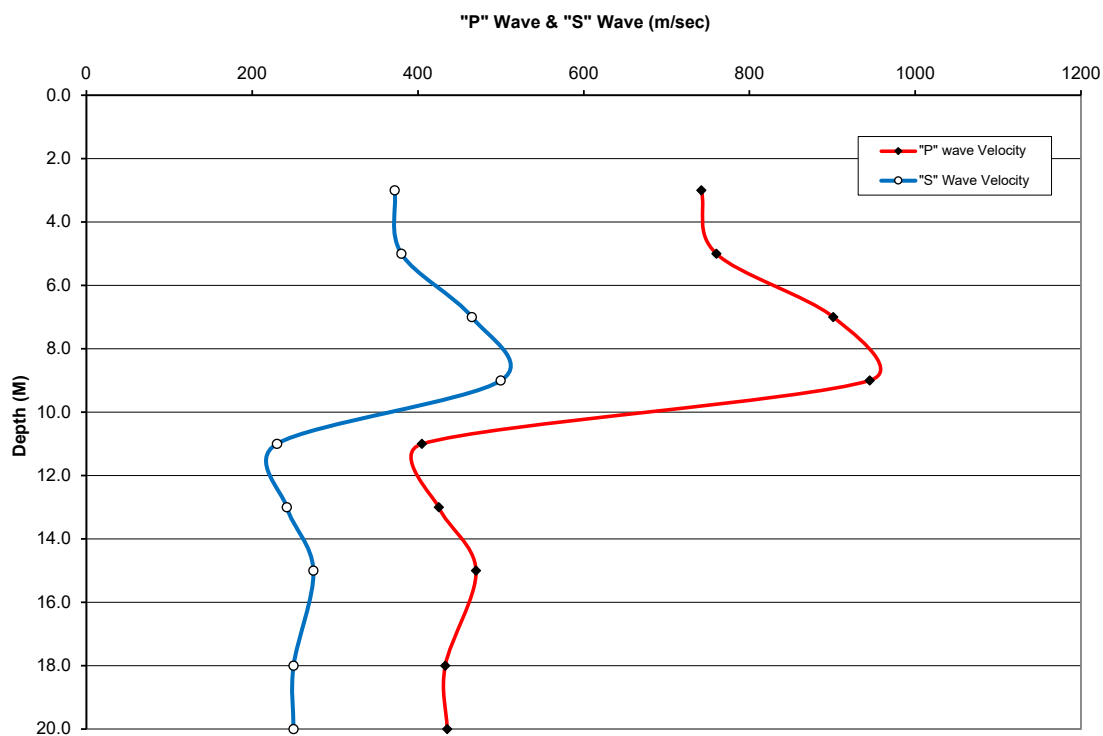


Variation of "G" with Depth

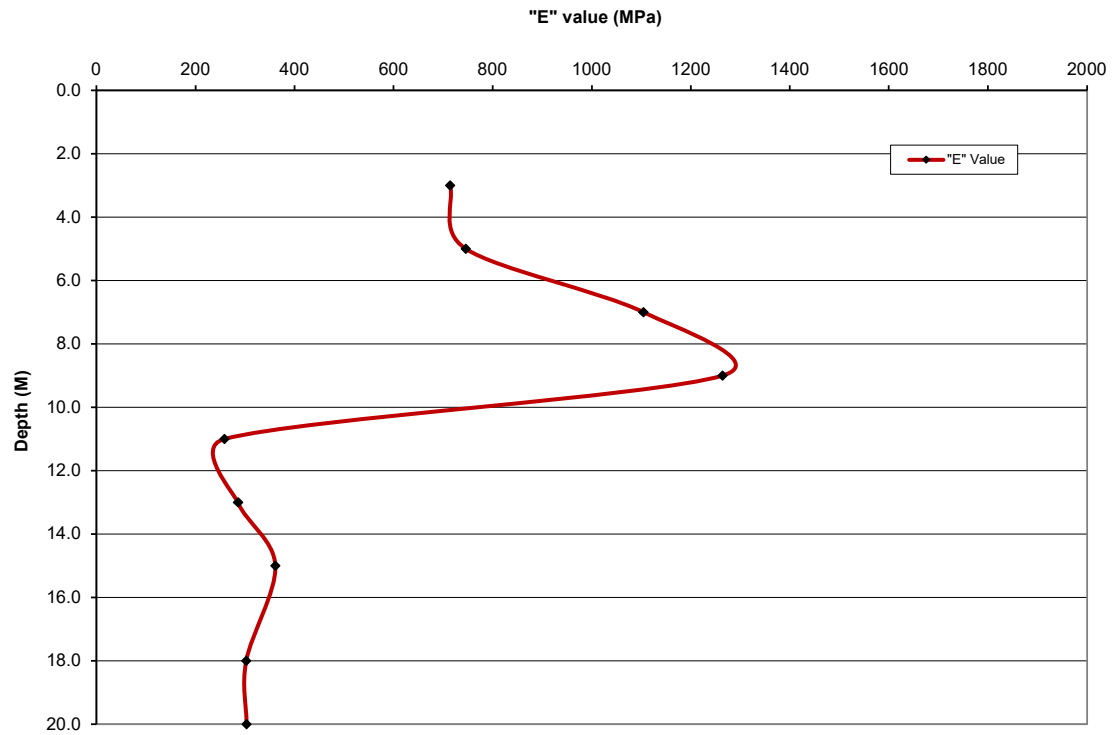
## Cross Hole Test: CHST-3

## Calculated Values of Dynamic Parameters

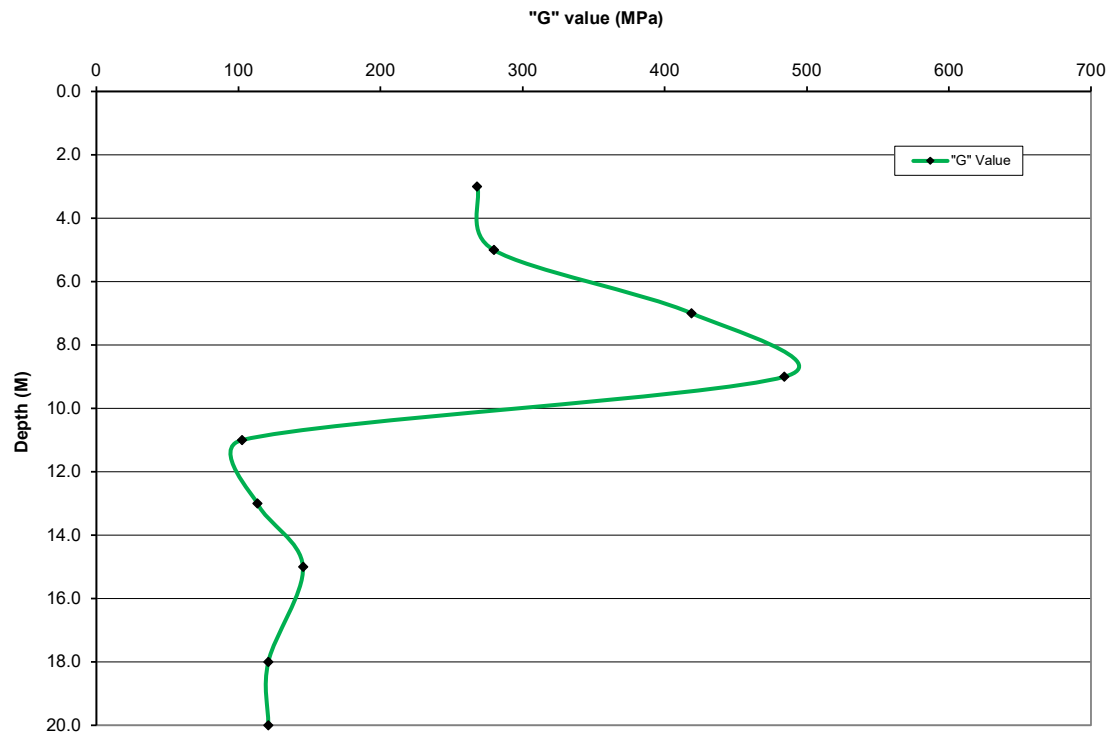
| Depth<br>(M)<br>BGL | $V_p$<br>(m/s) | $V_s$<br>(m/s) | Mass<br>Density<br>( $\text{kN.s}^2/\text{m}^4$ ) | $m$<br>$= V_p/V_s$ | Poisson<br>Ratio,<br>$\sigma$ | Young's<br>Modulus<br>( $\text{kN/m}^2$ ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>( $\text{kN/m}^2$ ) | Shear<br>Modulus<br>(MPa) |
|---------------------|----------------|----------------|---------------------------------------------------|--------------------|-------------------------------|-------------------------------------------|-----------------------------|--------------------------------------|---------------------------|
| 3.0                 | 742            | 372            | 1.94                                              | 1.9946             | 0.332                         | 714081                                    | 714.1                       | 268022                               | 268.0                     |
| 5.0                 | 760            | 380            | 1.94                                              | 2.0000             | 0.333                         | 745797                                    | 745.8                       | 279674                               | 279.7                     |
| 7.0                 | 901            | 465            | 1.94                                              | 1.9376             | 0.318                         | 1104313                                   | 1104.3                      | 418784                               | 418.8                     |
| 9.0                 | 945            | 500            | 1.94                                              | 1.8900             | 0.306                         | 1264349                                   | 1264.3                      | 484200                               | 484.2                     |
| 11.0                | 405            | 230            | 1.94                                              | 1.7609             | 0.262                         | 258597                                    | 258.6                       | 102457                               | 102.5                     |
| 13.0                | 425            | 242            | 1.94                                              | 1.7562             | 0.260                         | 285859                                    | 285.9                       | 113427                               | 113.4                     |
| 15.0                | 470            | 274            | 1.94                                              | 1.7153             | 0.243                         | 361360                                    | 361.4                       | 145407                               | 145.4                     |
| 18.0                | 433            | 250            | 1.94                                              | 1.7320             | 0.250                         | 302620                                    | 302.6                       | 121050                               | 121.0                     |
| 20.0                | 435            | 250            | 1.94                                              | 1.7400             | 0.253                         | 303449                                    | 303.4                       | 121050                               | 121.0                     |



Variation of "P" &amp; "S" wave Velocity with Depth

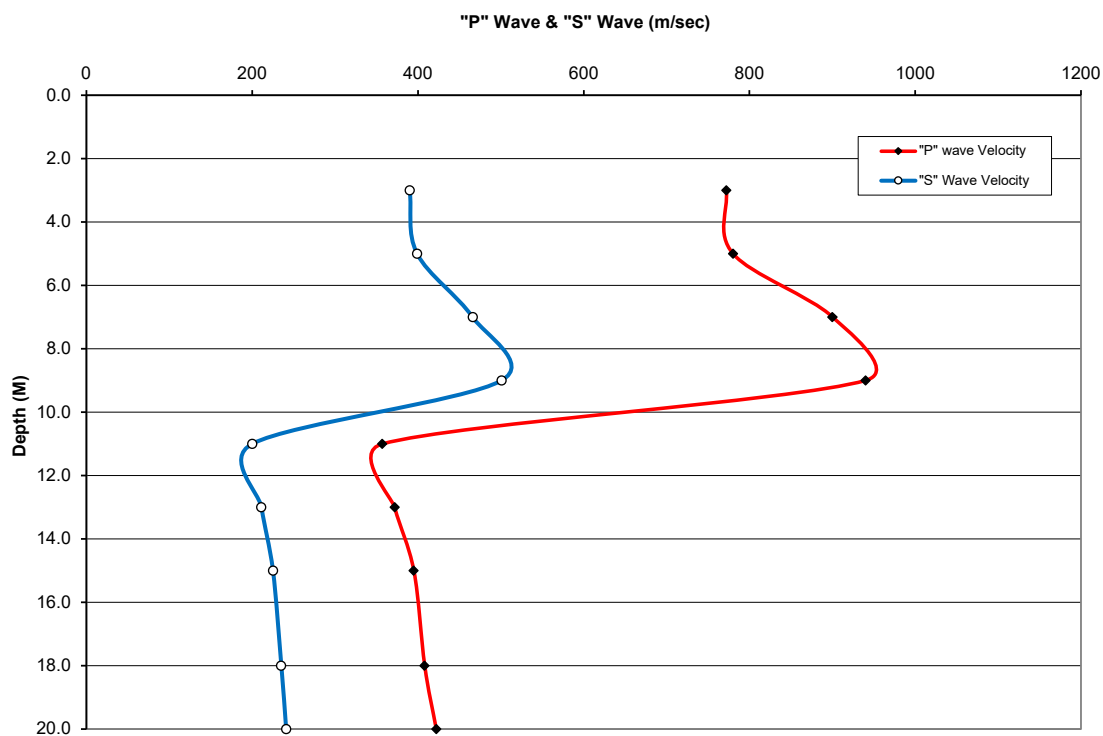


Variation of "E" with Depth

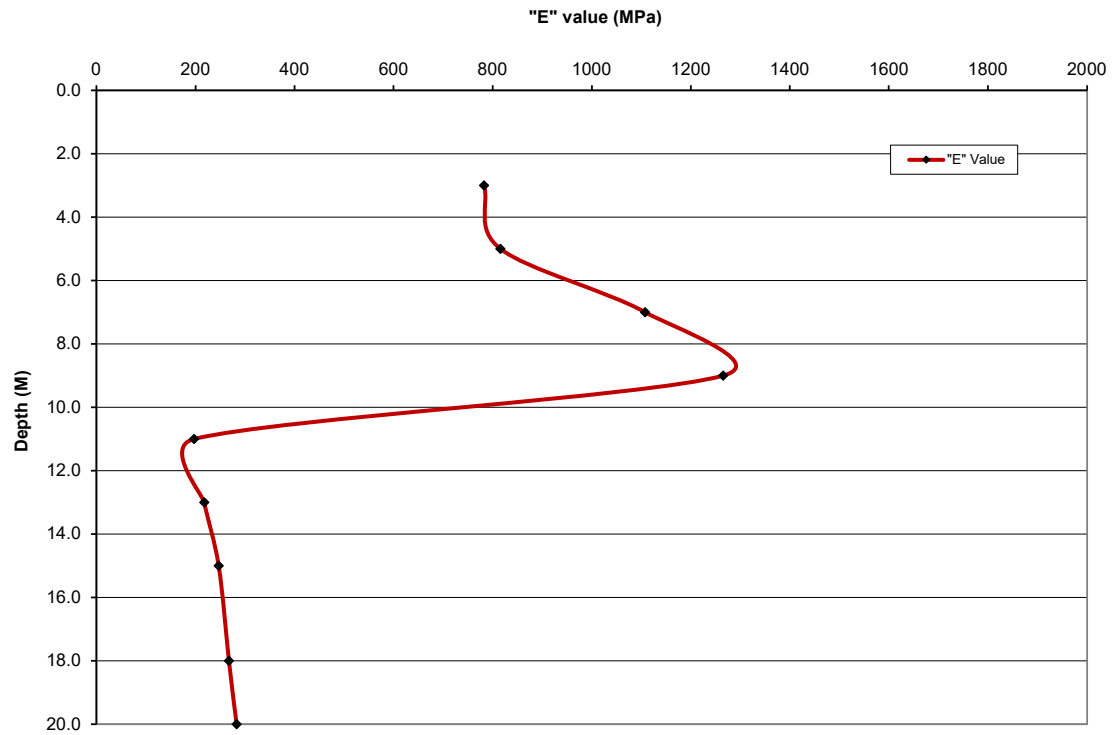


Variation of "G" with Depth

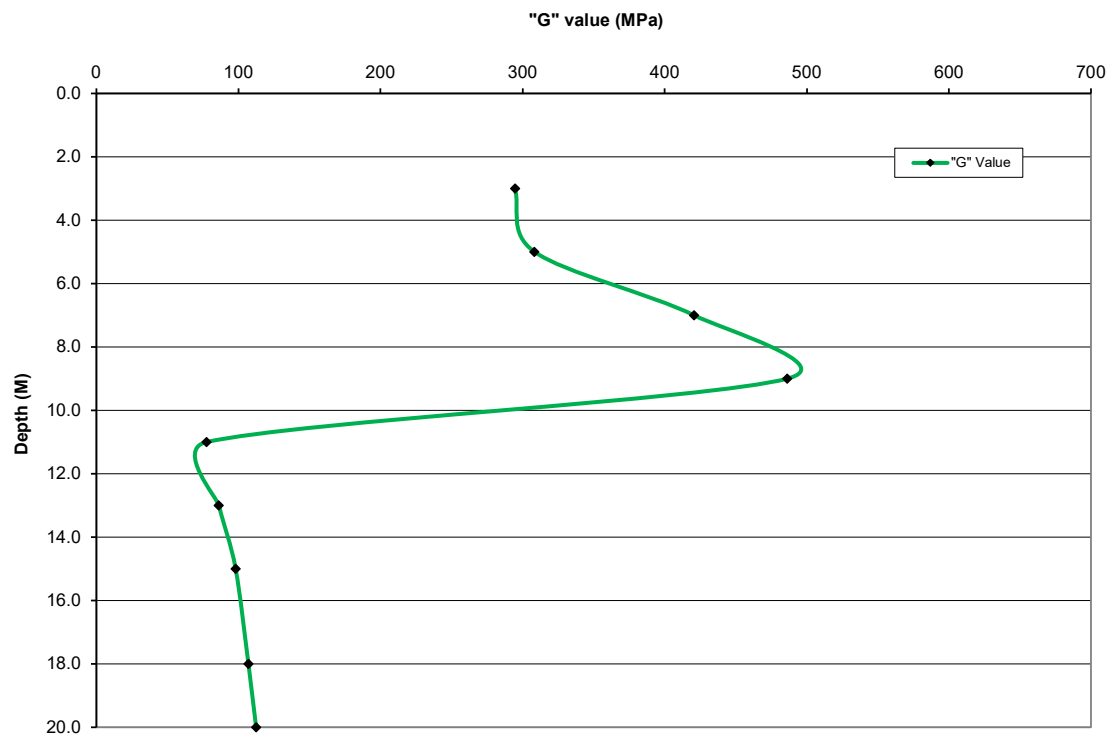
| Cross Hole Test: CHST-4                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 772                     | 390                     | 1.94                                                    | 1.9795                                | 0.329                  | 782819                                     | 782.8                       | 294587                                | 294.6                     |
| 5.0                                     | 780                     | 399                     | 1.94                                                    | 1.9549                                | 0.323                  | 815742                                     | 815.7                       | 308340                                | 308.3                     |
| 7.0                                     | 900                     | 466                     | 1.94                                                    | 1.9313                                | 0.317                  | 1107703                                    | 1107.7                      | 420588                                | 420.6                     |
| 9.0                                     | 940                     | 501                     | 1.94                                                    | 1.8762                                | 0.302                  | 1265527                                    | 1265.5                      | 486139                                | 486.1                     |
| 11.0                                    | 357                     | 200                     | 1.94                                                    | 1.7850                                | 0.271                  | 196979                                     | 197.0                       | 77472                                 | 77.5                      |
| 13.0                                    | 372                     | 211                     | 1.94                                                    | 1.7630                                | 0.263                  | 217785                                     | 217.8                       | 86228                                 | 86.2                      |
| 15.0                                    | 395                     | 225                     | 1.94                                                    | 1.7556                                | 0.260                  | 247056                                     | 247.1                       | 98050                                 | 98.1                      |
| 18.0                                    | 408                     | 235                     | 1.94                                                    | 1.7362                                | 0.252                  | 267779                                     | 267.8                       | 106960                                | 107.0                     |
| 20.0                                    | 422                     | 241                     | 1.94                                                    | 1.7510                                | 0.258                  | 283028                                     | 283.0                       | 112491                                | 112.5                     |



Variation of "P" & "S" wave Velocity with Depth

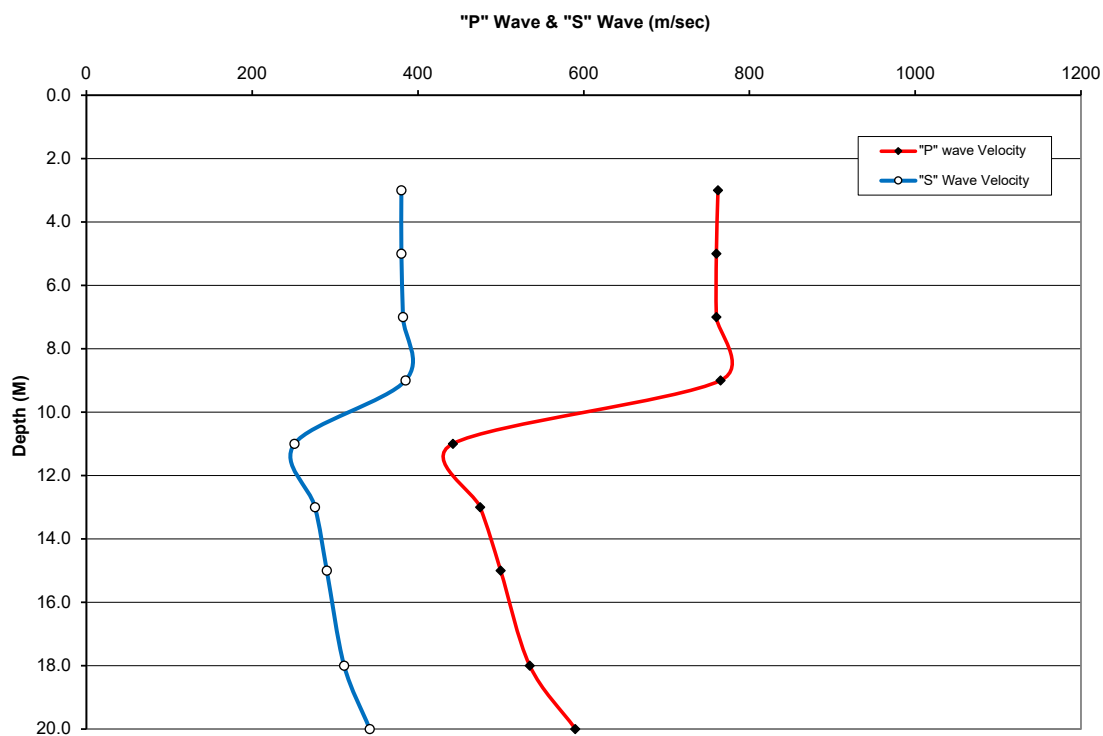


Variation of "E" with Depth

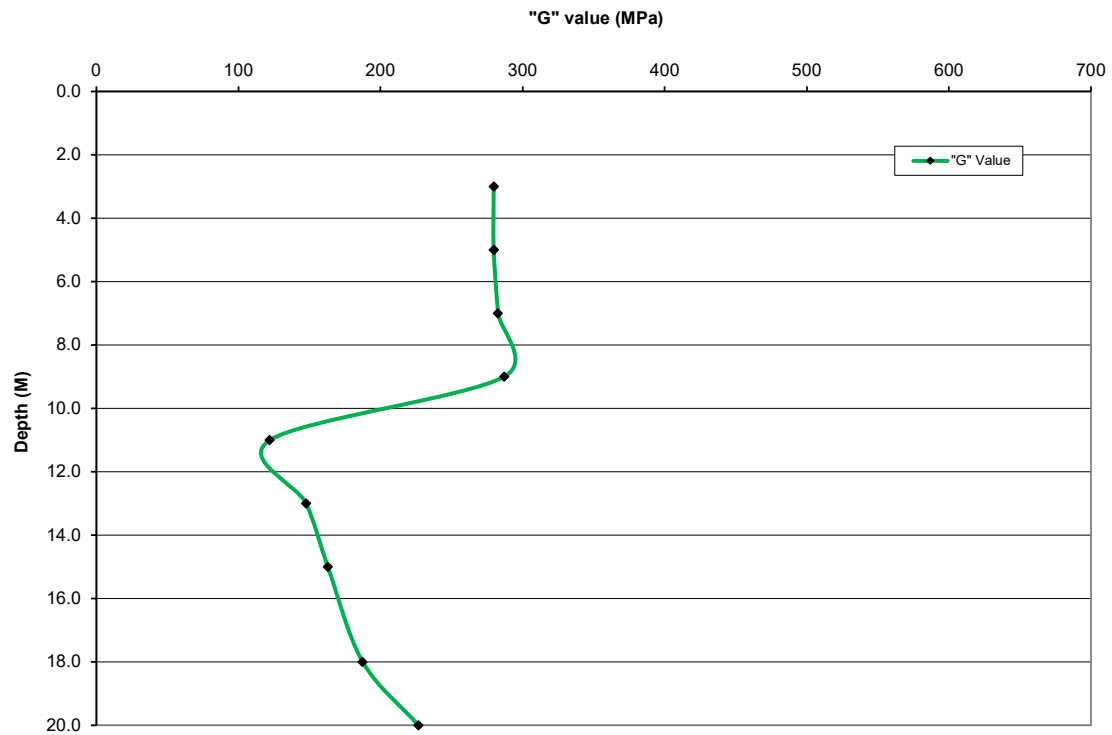
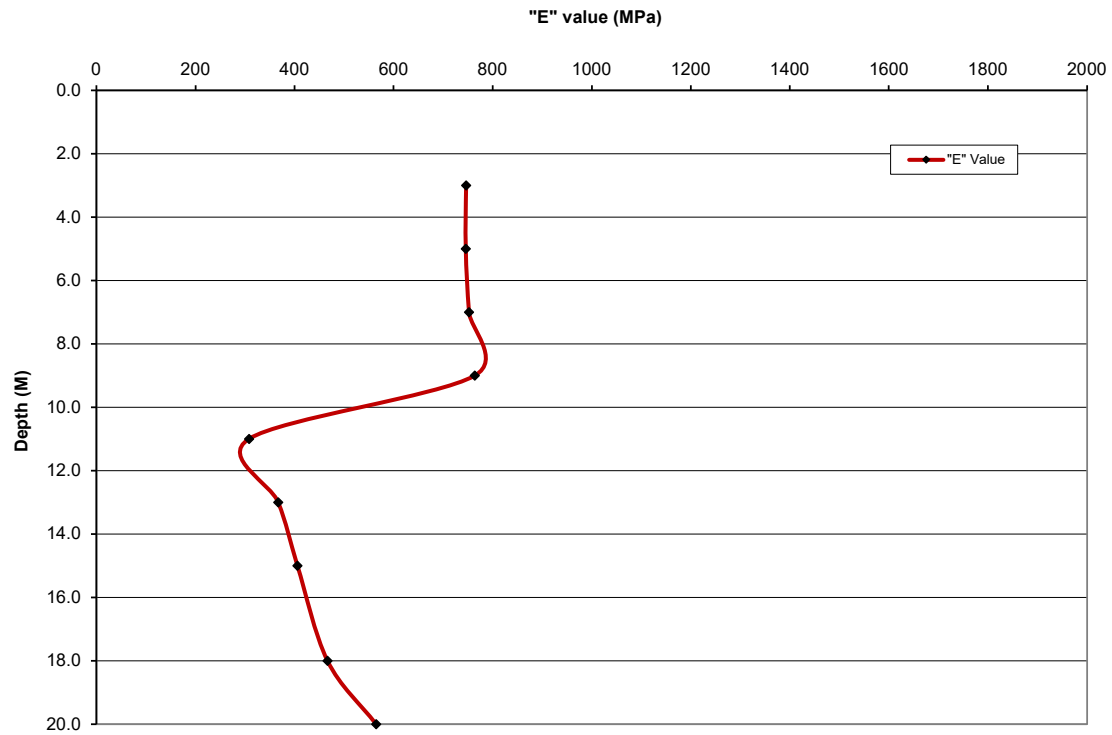


Variation of "G" with Depth

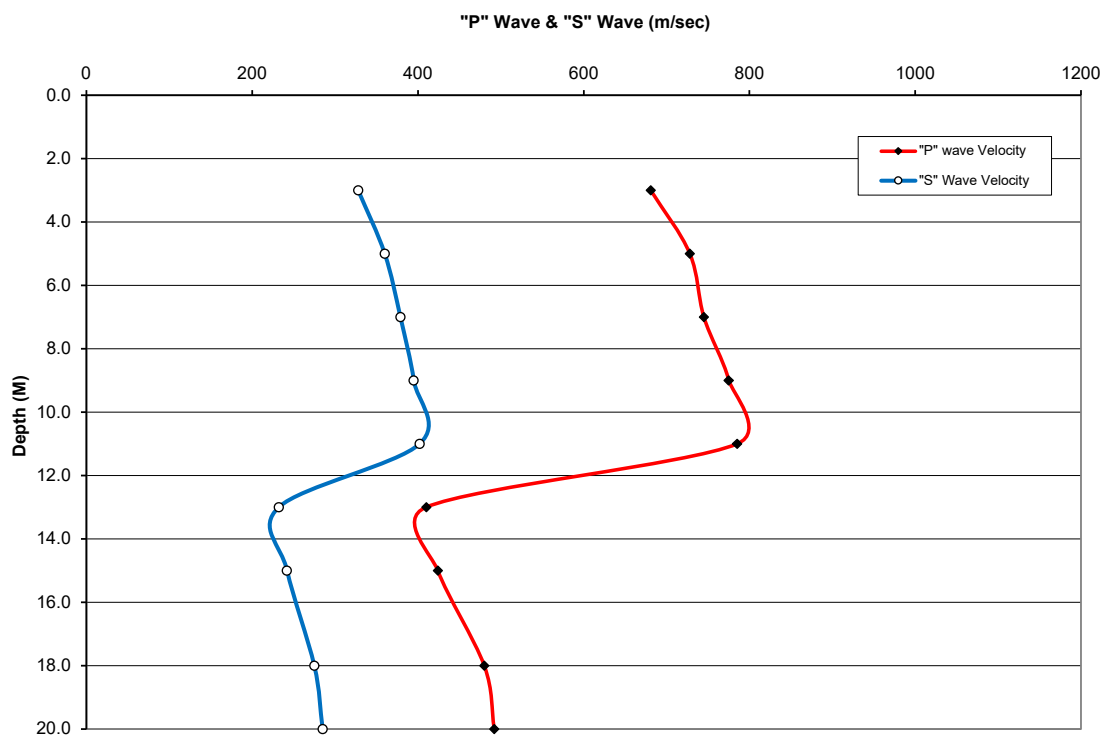
| Cross Hole Test: CHST-5                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 762                     | 380                     | 1.94                                                    | 2.0053                                | 0.334                  | 746447                                     | 746.4                       | 279674                                | 279.7                     |
| 5.0                                     | 760                     | 380                     | 1.94                                                    | 2.0000                                | 0.333                  | 745797                                     | 745.8                       | 279674                                | 279.7                     |
| 7.0                                     | 760                     | 382                     | 1.94                                                    | 1.9895                                | 0.331                  | 752338                                     | 752.3                       | 282625                                | 282.6                     |
| 9.0                                     | 765                     | 385                     | 1.94                                                    | 1.9870                                | 0.330                  | 763871                                     | 763.9                       | 287082                                | 287.1                     |
| 11.0                                    | 442                     | 251                     | 1.94                                                    | 1.7610                                | 0.262                  | 307983                                     | 308.0                       | 122020                                | 122.0                     |
| 13.0                                    | 475                     | 276                     | 1.94                                                    | 1.7210                                | 0.245                  | 367411                                     | 367.4                       | 147538                                | 147.5                     |
| 15.0                                    | 500                     | 290                     | 1.94                                                    | 1.7241                                | 0.247                  | 406083                                     | 406.1                       | 162885                                | 162.9                     |
| 18.0                                    | 535                     | 311                     | 1.94                                                    | 1.7203                                | 0.245                  | 466376                                     | 466.4                       | 187329                                | 187.3                     |
| 20.0                                    | 590                     | 342                     | 1.94                                                    | 1.7251                                | 0.247                  | 564971                                     | 565.0                       | 226536                                | 226.5                     |



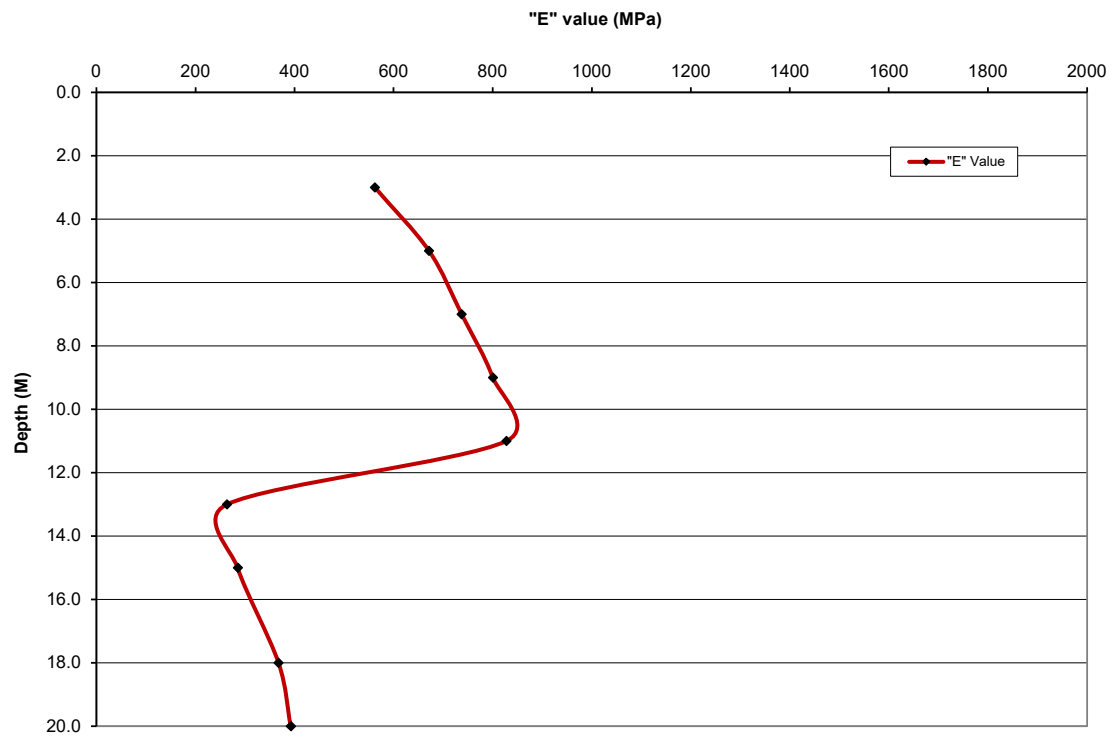
Variation of "P" & "S" wave Velocity with Depth



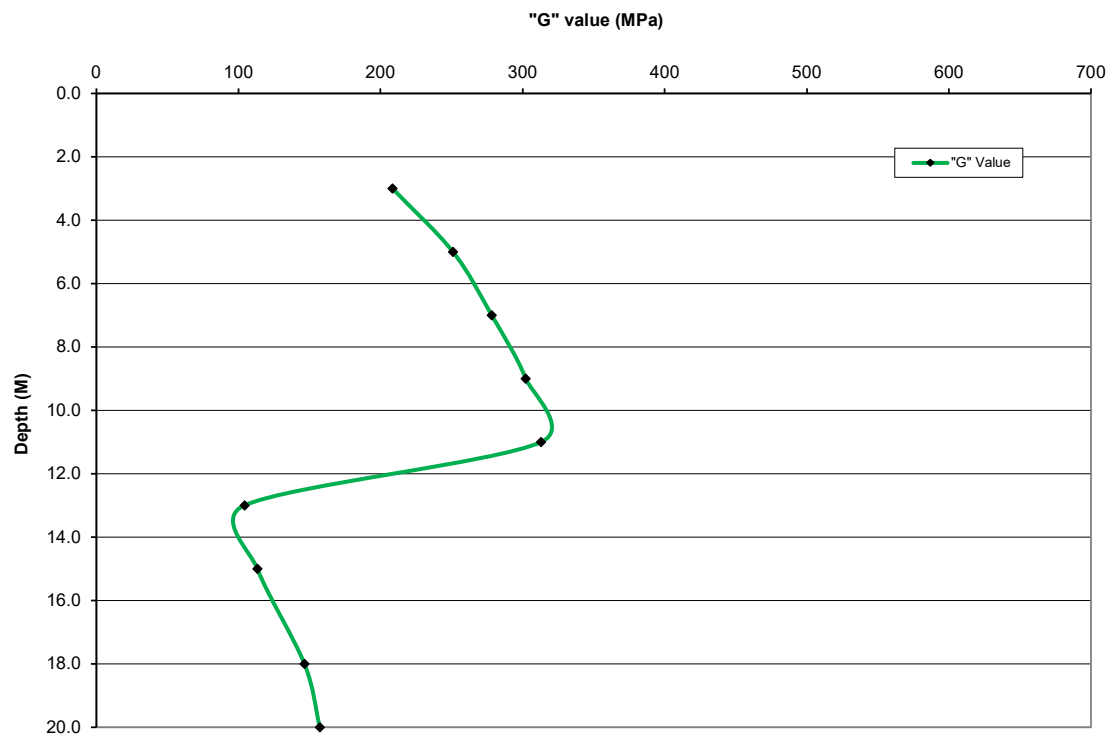
| Cross Hole Test: CHST-6                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 681                     | 328                     | 1.94                                                    | 2.0762                                | 0.349                  | 562168                                     | 562.2                       | 208369                                | 208.4                     |
| 5.0                                     | 728                     | 360                     | 1.94                                                    | 2.0222                                | 0.338                  | 671779                                     | 671.8                       | 251009                                | 251.0                     |
| 7.0                                     | 745                     | 379                     | 1.94                                                    | 1.9657                                | 0.325                  | 737472                                     | 737.5                       | 278204                                | 278.2                     |
| 9.0                                     | 775                     | 395                     | 1.94                                                    | 1.9620                                | 0.325                  | 800519                                     | 800.5                       | 302189                                | 302.2                     |
| 11.0                                    | 785                     | 402                     | 1.94                                                    | 1.9527                                | 0.322                  | 827723                                     | 827.7                       | 312994                                | 313.0                     |
| 13.0                                    | 410                     | 232                     | 1.94                                                    | 1.7672                                | 0.264                  | 263639                                     | 263.6                       | 104246                                | 104.2                     |
| 15.0                                    | 424                     | 242                     | 1.94                                                    | 1.7521                                | 0.258                  | 285478                                     | 285.5                       | 113427                                | 113.4                     |
| 18.0                                    | 480                     | 275                     | 1.94                                                    | 1.7455                                | 0.256                  | 367844                                     | 367.8                       | 146470                                | 146.5                     |
| 20.0                                    | 492                     | 285                     | 1.94                                                    | 1.7263                                | 0.247                  | 392503                                     | 392.5                       | 157317                                | 157.3                     |



Variation of "P" & "S" wave Velocity with Depth

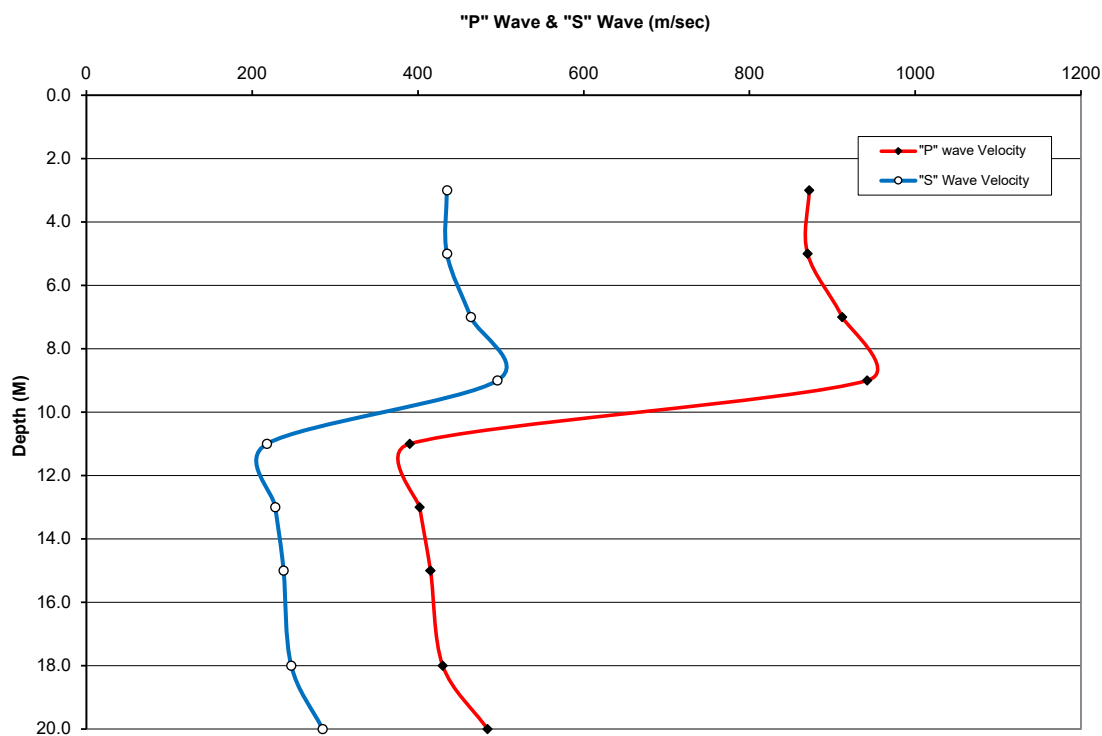


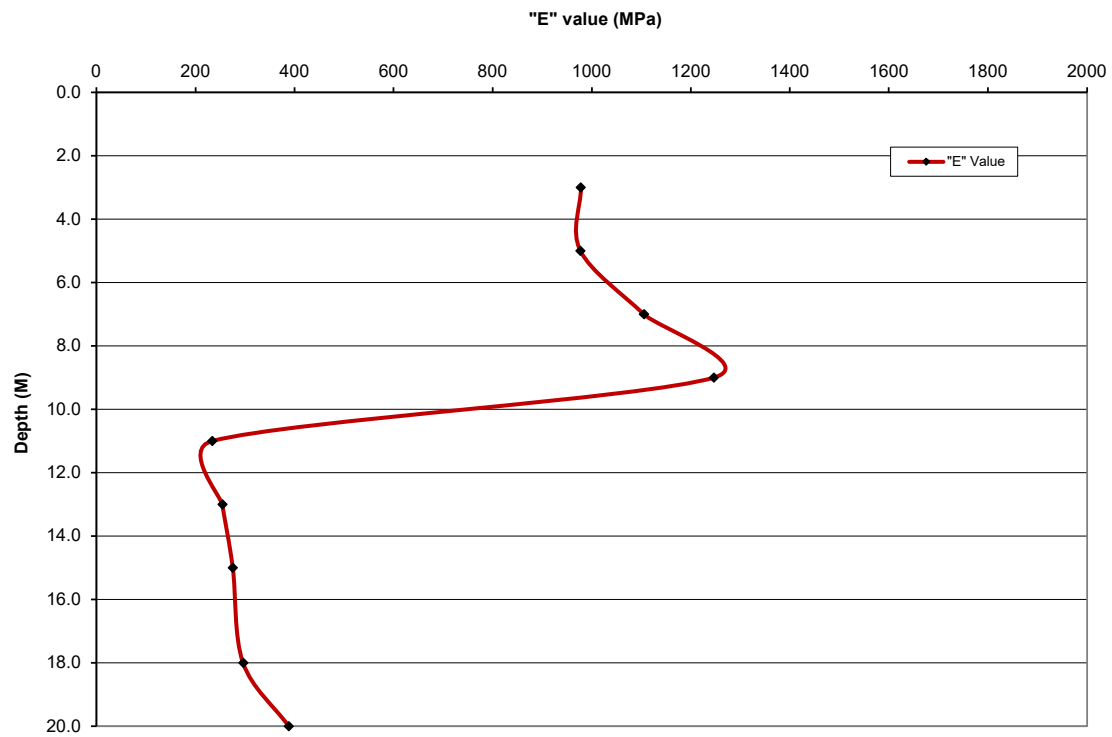
Variation of "E" with Depth



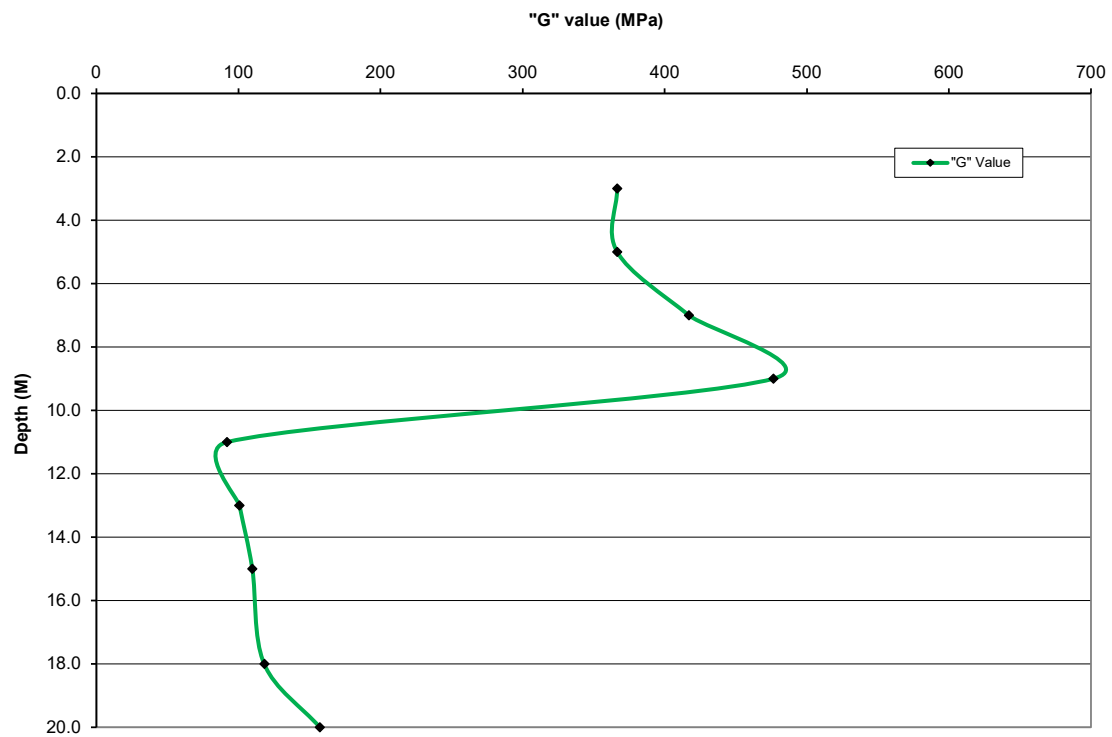
Variation of "G" with Depth

| Cross Hole Test: CHST-7                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 872                     | 435                     | 1.94                                                    | 2.0046                                | 0.334                  | 978054                                     | 978.1                       | 366491                                | 366.5                     |
| 5.0                                     | 870                     | 435                     | 1.94                                                    | 2.0000                                | 0.333                  | 977309                                     | 977.3                       | 366491                                | 366.5                     |
| 7.0                                     | 912                     | 464                     | 1.94                                                    | 1.9655                                | 0.325                  | 1105322                                    | 1105.3                      | 416985                                | 417.0                     |
| 9.0                                     | 942                     | 496                     | 1.94                                                    | 1.8992                                | 0.308                  | 1246675                                    | 1246.7                      | 476484                                | 476.5                     |
| 11.0                                    | 390                     | 218                     | 1.94                                                    | 1.7890                                | 0.273                  | 234304                                     | 234.3                       | 92044                                 | 92.0                      |
| 13.0                                    | 402                     | 228                     | 1.94                                                    | 1.7632                                | 0.263                  | 254302                                     | 254.3                       | 100683                                | 100.7                     |
| 15.0                                    | 415                     | 238                     | 1.94                                                    | 1.7437                                | 0.255                  | 275358                                     | 275.4                       | 109708                                | 109.7                     |
| 18.0                                    | 430                     | 247                     | 1.94                                                    | 1.7409                                | 0.254                  | 296299                                     | 296.3                       | 118162                                | 118.2                     |
| 20.0                                    | 484                     | 285                     | 1.94                                                    | 1.6982                                | 0.235                  | 388450                                     | 388.4                       | 157317                                | 157.3                     |



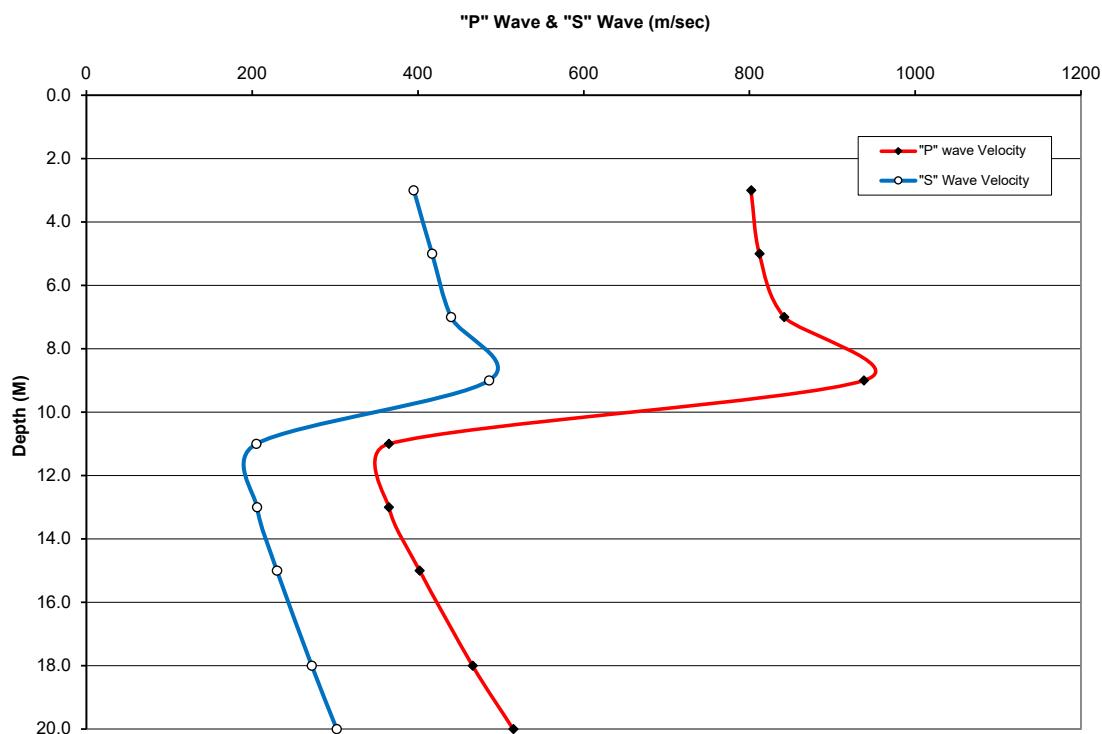


Variation of "E" with Depth

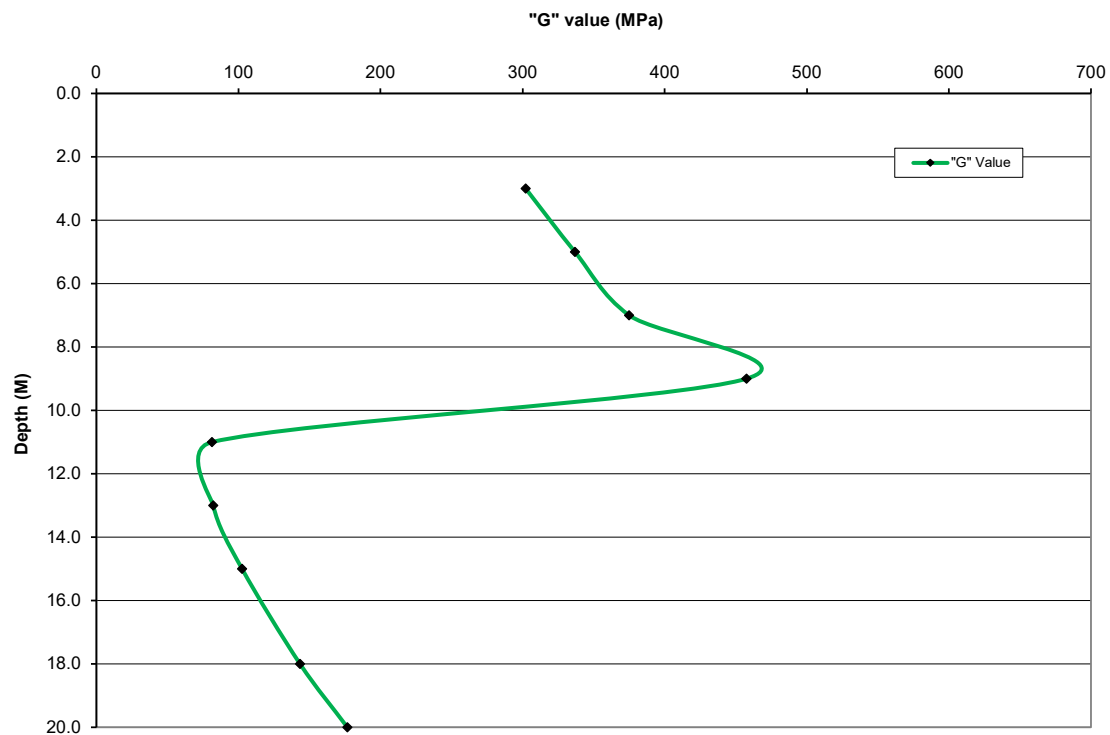
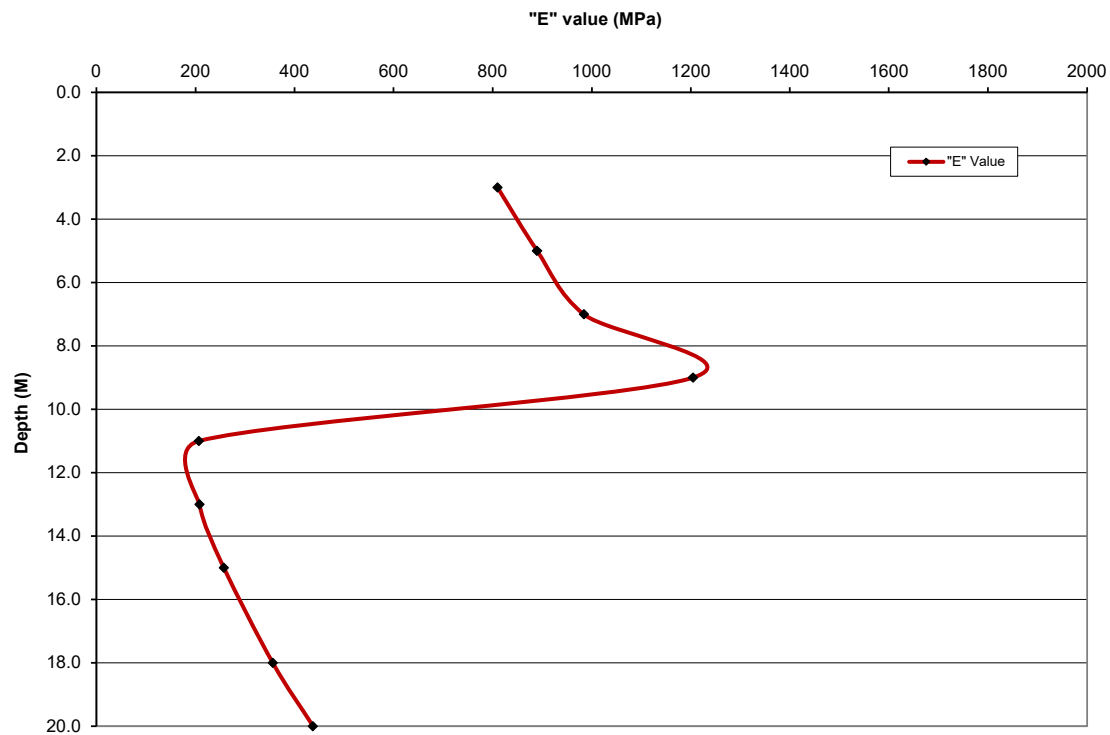


Variation of "G" with Depth

| Cross Hole Test: CHST-8                 |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
|-----------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|---------------------------------------|------------------------|--------------------------------------------|-----------------------------|---------------------------------------|---------------------------|
| Calculated Values of Dynamic Parameters |                         |                         |                                                         |                                       |                        |                                            |                             |                                       |                           |
| Depth<br>(M)<br>BGL                     | V <sub>p</sub><br>(m/s) | V <sub>s</sub><br>(m/s) | Mass<br>Density<br>(kN.s <sup>2</sup> /m <sup>4</sup> ) | m<br>= V <sub>p</sub> /V <sub>s</sub> | Poisson<br>Ratio,<br>σ | Young's<br>Modulus<br>(kN/m <sup>2</sup> ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>(kN/m <sup>2</sup> ) | Shear<br>Modulus<br>(MPa) |
| 3.0                                     | 802                     | 395                     | 1.94                                                    | 2.0304                                | 0.340                  | 809788                                     | 809.8                       | 302189                                | 302.2                     |
| 5.0                                     | 812                     | 417                     | 1.94                                                    | 1.9472                                | 0.321                  | 889727                                     | 889.7                       | 336788                                | 336.8                     |
| 7.0                                     | 842                     | 440                     | 1.94                                                    | 1.9136                                | 0.312                  | 984035                                     | 984.0                       | 374964                                | 375.0                     |
| 9.0                                     | 938                     | 486                     | 1.94                                                    | 1.9300                                | 0.317                  | 1204520                                    | 1204.5                      | 457464                                | 457.5                     |
| 11.0                                    | 365                     | 205                     | 1.94                                                    | 1.7805                                | 0.270                  | 206676                                     | 206.7                       | 81394                                 | 81.4                      |
| 13.0                                    | 365                     | 206                     | 1.94                                                    | 1.7718                                | 0.266                  | 208153                                     | 208.2                       | 82190                                 | 82.2                      |
| 15.0                                    | 402                     | 230                     | 1.94                                                    | 1.7478                                | 0.257                  | 257510                                     | 257.5                       | 102457                                | 102.5                     |
| 18.0                                    | 466                     | 272                     | 1.94                                                    | 1.7132                                | 0.242                  | 355830                                     | 355.8                       | 143292                                | 143.3                     |
| 20.0                                    | 515                     | 302                     | 1.94                                                    | 1.7053                                | 0.238                  | 437353                                     | 437.4                       | 176644                                | 176.6                     |

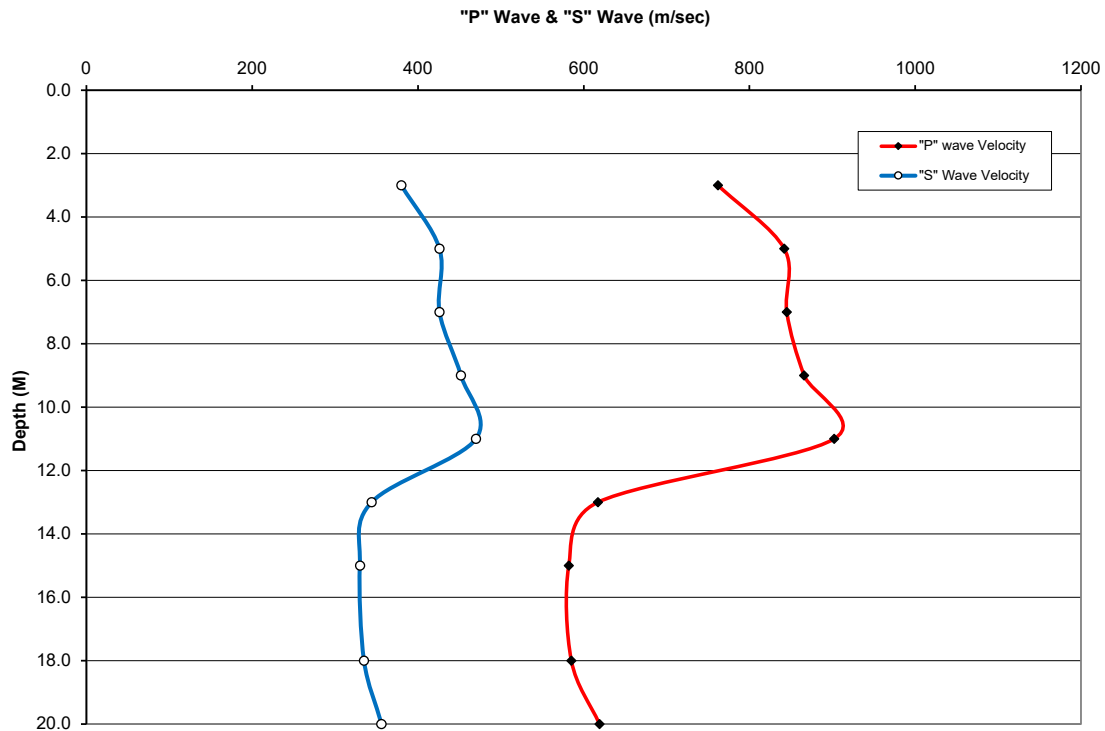


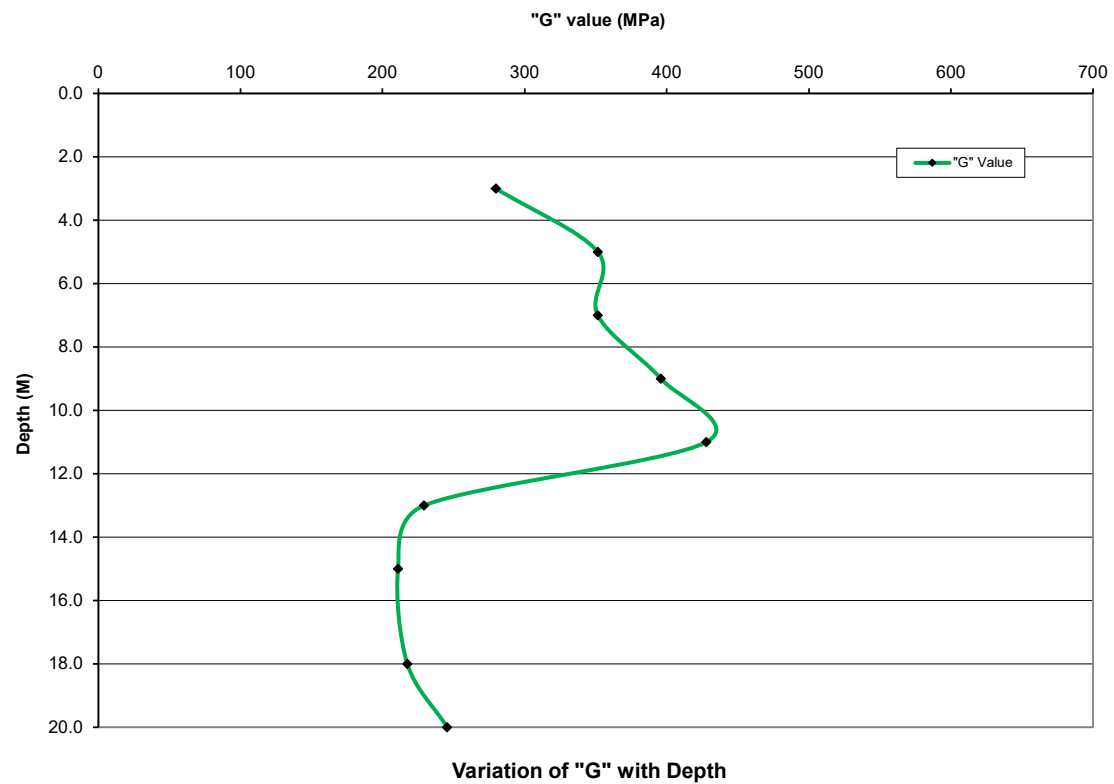
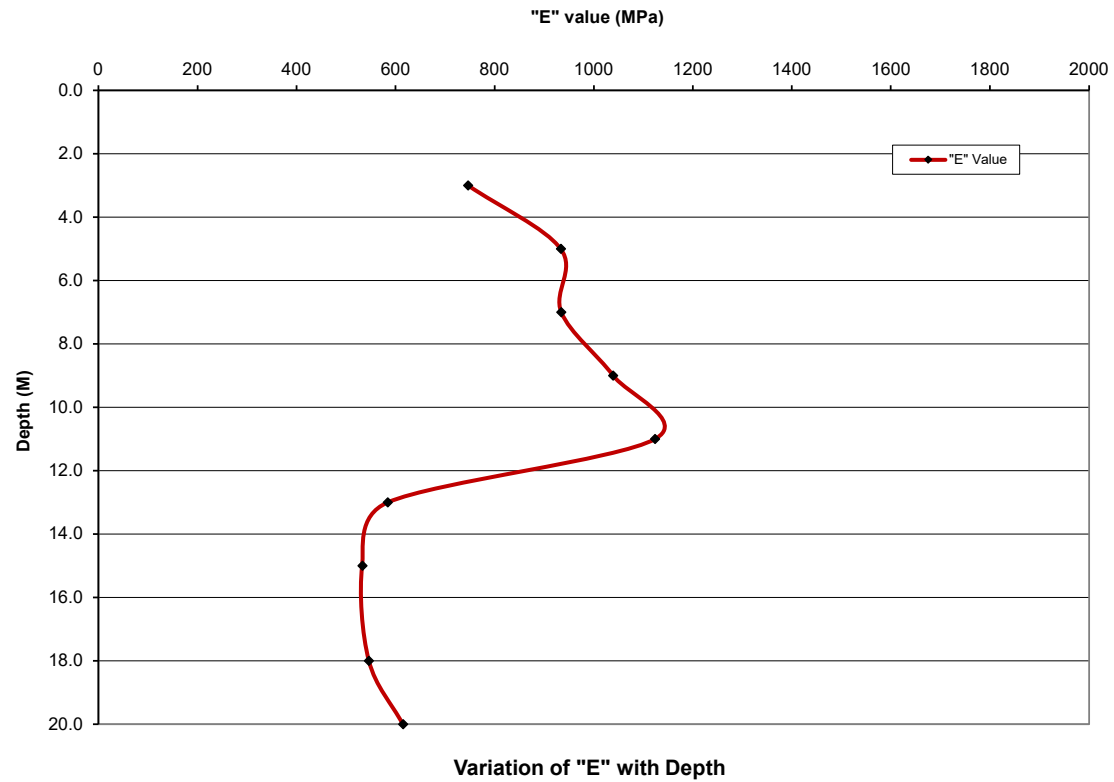
Variation of "P" & "S" wave Velocity with Depth



**Cross Hole Test: CHST-9****Calculated Values of Dynamic Parameters**

| Depth<br>(M)<br>BGL | $V_p$<br>(m/s) | $V_s$<br>(m/s) | Mass<br>Density<br>( $\text{kN.s}^2/\text{m}^4$ ) | $m$<br>$= V_p/V_s$ | Poisson<br>Ratio,<br>$\sigma$ | Young's<br>Modulus<br>( $\text{kN/m}^2$ ) | Young's<br>Modulus<br>(MPa) | Shear Modulus<br>( $\text{kN/m}^2$ ) | Shear<br>Modulus<br>(MPa) |
|---------------------|----------------|----------------|---------------------------------------------------|--------------------|-------------------------------|-------------------------------------------|-----------------------------|--------------------------------------|---------------------------|
| 3.0                 | 762            | 380            | 1.94                                              | 2.0053             | 0.334                         | 746447                                    | 746.4                       | 279674                               | 279.7                     |
| 5.0                 | 842            | 426            | 1.94                                              | 1.9765             | 0.328                         | 933524                                    | 933.5                       | 351483                               | 351.5                     |
| 7.0                 | 845            | 426            | 1.94                                              | 1.9836             | 0.330                         | 934673                                    | 934.7                       | 351483                               | 351.5                     |
| 9.0                 | 866            | 452            | 1.94                                              | 1.9159             | 0.313                         | 1038930                                   | 1038.9                      | 395696                               | 395.7                     |
| 11.0                | 902            | 470            | 1.94                                              | 1.9191             | 0.314                         | 1124062                                   | 1124.1                      | 427839                               | 427.8                     |
| 13.0                | 617            | 344            | 1.94                                              | 1.7936             | 0.274                         | 584200                                    | 584.2                       | 229193                               | 229.2                     |
| 15.0                | 582            | 330            | 1.94                                              | 1.7636             | 0.263                         | 532811                                    | 532.8                       | 210917                               | 210.9                     |
| 18.0                | 585            | 335            | 1.94                                              | 1.7463             | 0.256                         | 546016                                    | 546.0                       | 217357                               | 217.4                     |
| 20.0                | 619            | 356            | 1.94                                              | 1.7388             | 0.253                         | 615069                                    | 615.1                       | 245462                               | 245.5                     |





| CLAUSE NO.                                                                        | TECHNICAL REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                        |                                                                    | सी एस पी जी सी एस<br>C/PGCL |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |
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| D-1-12(E)                                                                         | <div>Annexure-(E)</div> <div>CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES AND EQUIPMENT</div> <p>All structures and equipment shall be designed for seismic forces adopting the site specific seismic information provided in this document and using the other provisions in accordance with IS:1893 (Part 1 to Part 4). Pending finalization of Parts 5 of IS:1893, provisions of part 1 shall be read along with the relevant clauses of IS:1893:1984, for embankments.</p> <p>A site specific seismic study has been conducted for the project site. The peak ground horizontal acceleration for the project site, the site specific acceleration spectral coefficients (in units of gravity acceleration 'g') in the horizontal direction for the various damping values and the multiplying factor (to be used over the spectral coefficients) for evaluating the design acceleration spectra are as given at Annexure-I.</p> <p>Vertical acceleration spectral values shall be taken as 2/3rd of the corresponding horizontal values.</p> <p>The site specific design acceleration spectra specified shall be used in place of the response acceleration spectra, given at figure-2 in IS:1893 (Part 1) and Annex B of IS:1893 (Part 4). The site specific acceleration spectra along with multiplying factors specified in Annexure-I includes the effect of the seismic environment of the site, the importance factor related to the structures and the response reduction factor. Hence, the design spectra do not require any further consideration of the zone factor (Z), the importance factor (I) and response reduction factor (R) as used in the IS:1893 (Part 1 and Part 4).</p> <div>Damping in Structures</div> <p>The damping factor (as a percentage of critical damping) to be adopted shall not be more than as indicated below for:</p> <table><tr><td>a)</td><td>Steel structures</td><td>:</td><td>2%</td></tr><tr><td>b)</td><td>Reinforced Concrete structures</td><td>:</td><td>5%</td></tr><tr><td>c)</td><td>Reinforced Concrete Stacks</td><td>:</td><td>3%</td></tr><tr><td>d)</td><td>Steel stacks</td><td>:</td><td>2%</td></tr></table> |                                                                                        |                                                                    | a)                          | Steel structures | : | 2% | b) | Reinforced Concrete structures | : | 5% | c) | Reinforced Concrete Stacks | : | 3% | d) | Steel stacks | : | 2% |  |  |
| a)                                                                                | Steel structures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | :                                                                                      | 2%                                                                 |                             |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |
| b)                                                                                | Reinforced Concrete structures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | :                                                                                      | 5%                                                                 |                             |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |
| c)                                                                                | Reinforced Concrete Stacks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | :                                                                                      | 3%                                                                 |                             |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |
| d)                                                                                | Steel stacks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | :                                                                                      | 2%                                                                 |                             |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |
| EPC PACKAGE FOR 2 X 660 MW SUPER CRITICAL THERMAL POWER PROJECT, HTPS, KORBA WEST |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TECHNICAL SPECIFICATION<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-13/2023 | SUB-SECTION-D-1-12 ( E )<br>CIVIL WORKS<br>SEISMIC DESIGN CRITERIA | PAGE<br>1 OF 10             |                  |   |    |    |                                |   |    |    |                            |   |    |    |              |   |    |  |  |



| CLAUSE NO.                                                                        | TECHNICAL REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | सी एस पी वी सी एस<br>CSPGCL                                        |
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|                                                                                   | <div>ANNEXURE – I</div> <div><b><u>SITE SPECIFIC SEISMIC PARAMETERS FOR DESIGN OF STRUCTURES AND EQUIPMENT</u></b></div> <div>The various site specific seismic parameters for the project site shall be as follows:</div> <div><div><div>1) Peak ground horizontal acceleration (MCE)</div><div>: 0.204g</div></div><div><div>2) Multiplying factor to be applied to the site specific horizontal acceleration spectral coefficients (in units of gravity acceleration 'g') to obtain the design acceleration spectra</div><div><div>a) for special moment resisting steel building frames designed and detailed as per IS:800</div><div>: 0.051</div><div>b) for special concentrically braced steel building frames designed and detailed as per IS:800</div><div>: 0.038</div><div>c) For special moment resisting RC building frames designed and detailed as per IS:456 and IS:13920</div><div>: 0.031</div><div>d) for RCC chimney, RCC Natural Draft Cooling Tower</div><div>: 0.102</div><div>e) for Anchored base liquid retaining steel tanks (ground supported)</div><div>: 0.061</div><div>f) for Unanchored base liquid retaining steel tanks (ground supported)</div><div>: 0.102</div><div>g) for steel chimney, Absorber tower, Vessels</div><div>: 0.077</div></div></div><div><div>3) Multiplying factor to be applied to the site specific horizontal acceleration spectral coefficients (in units of gravity acceleration 'g') for design of equipment and structures where inelastic action is not relevant or not permitted</div><div>: 0.102</div></div></div> <div>Note: g = Acceleration due to gravity</div> |                                                                    |
| EPC PACKAGE FOR 2 X 660 MW SUPER CRITICAL THERMAL POWER PROJECT, HTPS, KORBA WEST | TECHNICAL SPECIFICATION<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-13/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SUB-SECTION-D-1-12 ( E )<br>CIVIL WORKS<br>SEISMIC DESIGN CRITERIA |
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PAGE<br>3 OF 10                                                    |



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Annexure – I

**HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS**

**(In units of 'g')**

| Time Period<br>(Sec) | Damping Factor (as a percentage of critical damping) |       |       |
|----------------------|------------------------------------------------------|-------|-------|
|                      | 5 %                                                  | 3 %   | 2 %   |
| 0.320                | 2.550                                                | 3.210 | 4.150 |
| 0.340                | 2.550                                                | 3.210 | 4.150 |
| 0.360                | 2.550                                                | 3.210 | 4.150 |
| 0.380                | 2.550                                                | 3.210 | 4.150 |
| 0.400                | 2.550                                                | 3.210 | 4.150 |
| 0.420                | 2.550                                                | 3.210 | 4.150 |
| 0.440                | 2.550                                                | 3.210 | 4.150 |
| 0.460                | 2.550                                                | 3.210 | 4.150 |
| 0.480                | 2.550                                                | 3.210 | 4.150 |
| 0.500                | 2.550                                                | 3.210 | 4.150 |
| 0.520                | 2.550                                                | 3.210 | 4.150 |
| 0.540                | 2.550                                                | 3.210 | 4.150 |
| 0.550                | 2.550                                                | 3.210 | 4.150 |
| 0.560                | 2.550                                                | 3.210 | 4.150 |
| 0.580                | 2.550                                                | 3.210 | 4.150 |
| 0.600                | 2.550                                                | 3.210 | 4.150 |
| 0.620                | 2.550                                                | 3.210 | 4.150 |
| 0.640                | 2.550                                                | 3.210 | 4.150 |
| 0.660                | 2.550                                                | 3.210 | 4.150 |
| 0.670                | 2.550                                                | 3.210 | 4.150 |
| 0.680                | 2.550                                                | 3.210 | 4.118 |
| 0.700                | 2.550                                                | 3.210 | 4.000 |
| 0.720                | 2.550                                                | 3.210 | 3.889 |
| 0.740                | 2.550                                                | 3.210 | 3.784 |
| 0.760                | 2.550                                                | 3.210 | 3.684 |
| 0.780                | 2.550                                                | 3.210 | 3.590 |

EPC PACKAGE FOR 2 X 660 MW SUPER  
CRITICAL THERMAL POWER PROJECT,  
HTPS, KORBA WEST

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Annexure – I

**HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS**

**(In units of 'g')**

| Time Period | Damping Factor (as a percentage of critical damping) |       |       |
|-------------|------------------------------------------------------|-------|-------|
| (Sec)       | 5 %                                                  | 3 %   | 2 %   |
| 0.800       | 2.500                                                | 3.125 | 3.500 |
| 0.820       | 2.439                                                | 3.049 | 3.415 |
| 0.840       | 2.381                                                | 2.976 | 3.333 |
| 0.860       | 2.326                                                | 2.907 | 3.256 |
| 0.880       | 2.273                                                | 2.841 | 3.182 |
| 0.900       | 2.222                                                | 2.778 | 3.111 |
| 0.920       | 2.174                                                | 2.717 | 3.043 |
| 0.940       | 2.128                                                | 2.660 | 2.979 |
| 0.960       | 2.083                                                | 2.604 | 2.917 |
| 0.980       | 2.041                                                | 2.551 | 2.857 |
| 1.000       | 2.000                                                | 2.500 | 2.800 |
| 1.020       | 1.961                                                | 2.451 | 2.745 |
| 1.040       | 1.923                                                | 2.404 | 2.692 |
| 1.060       | 1.887                                                | 2.358 | 2.642 |
| 1.080       | 1.852                                                | 2.315 | 2.593 |
| 1.100       | 1.818                                                | 2.273 | 2.545 |
| 1.120       | 1.786                                                | 2.232 | 2.500 |
| 1.140       | 1.754                                                | 2.193 | 2.456 |
| 1.160       | 1.724                                                | 2.155 | 2.414 |
| 1.180       | 1.695                                                | 2.119 | 2.373 |
| 1.200       | 1.667                                                | 2.083 | 2.333 |
| 1.220       | 1.639                                                | 2.049 | 2.295 |
| 1.240       | 1.613                                                | 2.016 | 2.258 |
| 1.260       | 1.587                                                | 1.984 | 2.222 |
| 1.280       | 1.563                                                | 1.953 | 2.188 |
| 1.300       | 1.538                                                | 1.923 | 2.154 |

EPC PACKAGE FOR 2 X 660 MW SUPER  
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TECHNICAL SPECIFICATION  
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Annexure – I

**HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS**  
**(In units of 'g')**

| Time Period | Damping Factor (as a percentage of critical damping) |       |       |
|-------------|------------------------------------------------------|-------|-------|
| (Sec)       | 5 %                                                  | 3 %   | 2 %   |
| 1.320       | 1.515                                                | 1.894 | 2.121 |
| 1.340       | 1.493                                                | 1.866 | 2.090 |
| 1.360       | 1.471                                                | 1.838 | 2.059 |
| 1.380       | 1.449                                                | 1.812 | 2.029 |
| 1.400       | 1.429                                                | 1.786 | 2.000 |
| 1.420       | 1.408                                                | 1.761 | 1.972 |
| 1.440       | 1.389                                                | 1.736 | 1.944 |
| 1.460       | 1.370                                                | 1.712 | 1.918 |
| 1.480       | 1.351                                                | 1.689 | 1.892 |
| 1.500       | 1.333                                                | 1.667 | 1.867 |
| 1.520       | 1.316                                                | 1.645 | 1.842 |
| 1.540       | 1.299                                                | 1.623 | 1.818 |
| 1.560       | 1.282                                                | 1.603 | 1.795 |
| 1.580       | 1.266                                                | 1.582 | 1.772 |
| 1.600       | 1.250                                                | 1.563 | 1.750 |
| 1.620       | 1.235                                                | 1.543 | 1.728 |
| 1.640       | 1.220                                                | 1.524 | 1.707 |
| 1.660       | 1.205                                                | 1.506 | 1.687 |
| 1.680       | 1.190                                                | 1.488 | 1.667 |
| 1.700       | 1.176                                                | 1.471 | 1.647 |
| 1.720       | 1.163                                                | 1.453 | 1.628 |
| 1.740       | 1.149                                                | 1.437 | 1.609 |
| 1.760       | 1.136                                                | 1.420 | 1.591 |
| 1.780       | 1.124                                                | 1.404 | 1.573 |
| 1.800       | 1.111                                                | 1.389 | 1.556 |
| 1.820       | 1.099                                                | 1.374 | 1.538 |

EPC PACKAGE FOR 2 X 660 MW SUPER  
CRITICAL THERMAL POWER PROJECT,  
HTPS, KORBA WEST

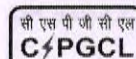
TECHNICAL SPECIFICATION  
SECTION-VI, PART-B  
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Annexure – I

**HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS**

(In units of 'g')

| Time Period<br>(Sec) | Damping Factor (as a percentage of critical damping) |       |       |
|----------------------|------------------------------------------------------|-------|-------|
|                      | 5 %                                                  | 3 %   | 2 %   |
| 1.840                | 1.087                                                | 1.359 | 1.522 |
| 1.860                | 1.075                                                | 1.344 | 1.505 |
| 1.880                | 1.064                                                | 1.330 | 1.489 |
| 1.900                | 1.053                                                | 1.316 | 1.474 |
| 1.920                | 1.042                                                | 1.302 | 1.458 |
| 1.940                | 1.031                                                | 1.289 | 1.443 |
| 1.960                | 1.020                                                | 1.276 | 1.429 |
| 1.980                | 1.010                                                | 1.263 | 1.414 |
| 2.000                | 1.000                                                | 1.250 | 1.400 |
| 2.020                | 0.990                                                | 1.238 | 1.386 |
| 2.040                | 0.980                                                | 1.225 | 1.373 |
| 2.060                | 0.971                                                | 1.214 | 1.359 |
| 2.080                | 0.962                                                | 1.202 | 1.346 |
| 2.100                | 0.952                                                | 1.190 | 1.333 |
| 2.150                | 0.930                                                | 1.163 | 1.302 |
| 2.200                | 0.909                                                | 1.136 | 1.273 |
| 2.250                | 0.889                                                | 1.111 | 1.244 |
| 2.300                | 0.870                                                | 1.087 | 1.217 |
| 2.350                | 0.851                                                | 1.064 | 1.191 |
| 2.400                | 0.833                                                | 1.042 | 1.167 |
| 2.450                | 0.816                                                | 1.020 | 1.143 |
| 2.500                | 0.800                                                | 1.000 | 1.120 |
| 2.550                | 0.784                                                | 0.980 | 1.098 |
| 2.600                | 0.769                                                | 0.962 | 1.077 |
| 2.650                | 0.755                                                | 0.943 | 1.057 |
| 2.700                | 0.741                                                | 0.926 | 1.037 |

EPC PACKAGE FOR 2 X 660 MW SUPER  
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Annexure – I

**HORIZONTAL SEISMIC ACCELERATION SPECTRAL COEFFICIENTS**

(In units of 'g')

| Time Period<br>(Sec) | Damping Factor (as a percentage of critical damping) |       |       |
|----------------------|------------------------------------------------------|-------|-------|
|                      | 5 %                                                  | 3 %   | 2 %   |
| 2.750                | 0.727                                                | 0.909 | 1.018 |
| 2.800                | 0.714                                                | 0.893 | 1.000 |
| 2.850                | 0.702                                                | 0.877 | 0.982 |
| 2.900                | 0.690                                                | 0.862 | 0.966 |
| 2.950                | 0.678                                                | 0.847 | 0.949 |
| 3.000                | 0.667                                                | 0.833 | 0.933 |
| 3.050                | 0.656                                                | 0.820 | 0.918 |
| 3.100                | 0.645                                                | 0.806 | 0.903 |
| 3.150                | 0.635                                                | 0.794 | 0.889 |
| 3.200                | 0.625                                                | 0.781 | 0.875 |
| 3.250                | 0.615                                                | 0.769 | 0.862 |
| 3.300                | 0.606                                                | 0.758 | 0.848 |
| 3.350                | 0.597                                                | 0.746 | 0.836 |
| 3.400                | 0.588                                                | 0.735 | 0.824 |
| 3.450                | 0.580                                                | 0.725 | 0.812 |
| 3.500                | 0.571                                                | 0.714 | 0.800 |
| 3.550                | 0.563                                                | 0.704 | 0.789 |
| 3.600                | 0.556                                                | 0.694 | 0.778 |
| 3.650                | 0.548                                                | 0.685 | 0.767 |
| 3.700                | 0.541                                                | 0.676 | 0.757 |
| 3.750                | 0.533                                                | 0.667 | 0.747 |
| 3.800                | 0.526                                                | 0.658 | 0.737 |
| 3.850                | 0.519                                                | 0.649 | 0.727 |
| 3.900                | 0.513                                                | 0.641 | 0.718 |
| 3.950                | 0.506                                                | 0.633 | 0.709 |
| 4.000                | 0.500                                                | 0.625 | 0.700 |

EPC PACKAGE FOR 2 X 660 MW SUPER  
CRITICAL THERMAL POWER PROJECT,  
HTPS, KORBA WEST

TECHNICAL SPECIFICATION  
SECTION-VI, PART-B  
BID DOC NO.: 03-05/2X660 MW/T-  
13/2023

SUB-SECTION-D-1-12 ( E )  
CIVIL WORKS  
SEISMIC DESIGN CRITERIA

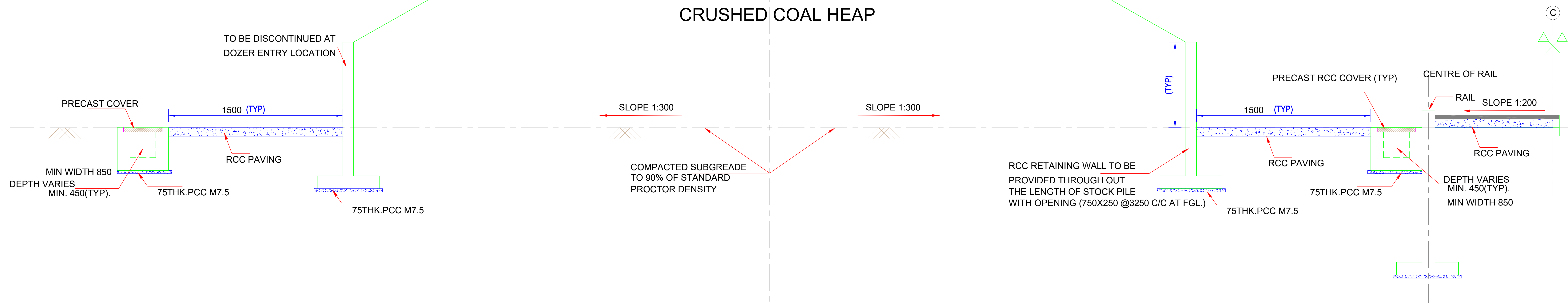
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9 OF 10

| CLAUSE NO.                                                                        | TECHNICAL REQUIREMENTS                                                                 |                                                                    |                  | सी एस पी जी सी एस<br>C/PGCL |
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|                                                                                   |                                                                                        |                                                                    |                  |                             |
| EPC PACKAGE FOR 2 X 660 MW SUPER CRITICAL THERMAL POWER PROJECT, HTPS, KORBA WEST | TECHNICAL SPECIFICATION<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-13/2023 | SUB-SECTION-D-1-12 ( E )<br>CIVIL WORKS<br>SEISMIC DESIGN CRITERIA | PAGE<br>10 OF 10 |                             |

| CLAUSE NO.                                                                        | <b>TECHNICAL REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                     |                                                                             |                              |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------|
| D-1-12(F)                                                                         | <div data-bbox="1252 237 1437 275" data-label="Text"><b>Annexure-(F)</b></div> <div data-bbox="802 288 1074 327" data-label="Section-Header"><b>QA REQUIREMENT</b></div> <div data-bbox="384 421 1493 524" data-label="Text"> <p>All Civil, Structural and Architectural construction work at the project shall be executed strictly in accordance with the Quality Assurance guidelines specified in separate part of the Specification.</p> </div> |                                                                             |                              |
| EPC PACKAGE FOR 2 X 660 MW SUPER CRITICAL THERMAL POWER PROJECT, HTPS, KORBA WEST | <b>TECHNICAL SPECIFICATIONS</b><br><b>SECTION-VI, PART-B</b><br><b>BID DOC NO.: 03-05/2X660 MW/T-</b><br><b>13/2023</b>                                                                                                                                                                                                                                                                                                                              | <b>SUB-SECTION-D-1-12(F)</b><br><b>CIVIL WORKS</b><br><b>QA REQUIREMENT</b> | <b>PAGE</b><br><b>1 OF 1</b> |

| CLAUSE NO.                       | TECHNICAL REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                               |  |  |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------|---------------|-----|--------------------------------|------------|----------------------------------|----------------------|----------|-------------------|-----------|---------|-----------|----------|
| D-1-12(G)                        | ANNEXURE –G                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | Specification For High Performance Moisture Compatible Corrosion Resistant Coating System                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | a) Providing & applying <b>High Performance Moisture Compatible Corrosion Resistant Coating System</b> manufactured as per technical specifications of Central Electrochemical Research Institute, Karaikudi, (C.S.I.R. affiliate Institute), Tamil Nadu, Pin - 630 006.                                                                                                                                                                                                            |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | b) The coating system shall be water compatible, compatible for applying in wet conditions also and shall be tolerant to under-prepared surfaces and existing residual tar / paint. The system shall also be quick curing so as to be suitable for application during shutdowns.                                                                                                                                                                                                    |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | The coating material shall be stored in the manner as per recommendations of the manufacturer until ready for use. The coating material shall be used within the manufacturer’s written recommended shelf life.                                                                                                                                                                                                                                                                     |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | c) The coating system shall conform to the following :                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | PROPERTIES OF PAINT                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | <table><tr><td>Base</td><td>High Performance Moisture Compatible Corrosion Resistant Coating System CECRI know-how system</td></tr><tr><td>Volume Solids</td><td>70%</td></tr><tr><td>Specific Gravity (ASTM-D-1475)</td><td>1.25 ± 0.1</td></tr><tr><td>Dry Film Thickness (ASTM-D-1186)</td><td>160 ± 10 µm per coat</td></tr><tr><td>Coverage</td><td>4 - 4.5 sq.m/ ltr</td></tr><tr><td>Touch Dry</td><td>2 Hours</td></tr><tr><td>Recoating</td><td>24 Hours</td></tr></table> |                                                                                               |  |                                                                                     | Base | High Performance Moisture Compatible Corrosion Resistant Coating System CECRI know-how system | Volume Solids | 70% | Specific Gravity (ASTM-D-1475) | 1.25 ± 0.1 | Dry Film Thickness (ASTM-D-1186) | 160 ± 10 µm per coat | Coverage | 4 - 4.5 sq.m/ ltr | Touch Dry | 2 Hours | Recoating | 24 Hours |
|                                  | Base                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | High Performance Moisture Compatible Corrosion Resistant Coating System CECRI know-how system |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
|                                  | Volume Solids                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 70%                                                                                           |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
| Specific Gravity (ASTM-D-1475)   | 1.25 ± 0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
| Dry Film Thickness (ASTM-D-1186) | 160 ± 10 µm per coat                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
| Coverage                         | 4 - 4.5 sq.m/ ltr                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
| Touch Dry                        | 2 Hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
| Recoating                        | 24 Hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |  |                                                                                     |      |                                                                                               |               |     |                                |            |                                  |                      |          |                   |           |         |           |          |
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| CLAUSE NO.                                                                                                                                                                                                                                                                                                                                 | TECHNICAL REQUIREMENTS                                                                 |                                                                                                  |                | <div>सी एस पी जी सी एल</div> <div>CPGCL</div> |
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|                                                                                                                                                                                                                                                                                                                                            | PROPERTIES OF COATING                                                                  |                                                                                                  |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Salt Spray (ASTM-B 117)                                                                | 2000 Hours                                                                                       |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Resistance to sea water<br>(Carried out upto 6 months)                                 | Passes                                                                                           |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Coating Resistance<br>(Carried out upto 6 months)                                      | 10 <sup>9</sup> Ω. cm <sup>2</sup>                                                               |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Adhesion (ASTM-D 4541)                                                                 | 4.5 N/mm Sq                                                                                      |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Flexibility (ASTM-D-522)                                                               | 1/8" passes                                                                                      |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Elongation                                                                             | 33%                                                                                              |                |                                               |
|                                                                                                                                                                                                                                                                                                                                            | Impact (ASTM G 14-04)                                                                  | 45 cm passes                                                                                     |                |                                               |
| <p>Paint material &amp; its application method shall be obtained from any manufacturer who has been granted License by CECRI, Karaikudi for technical know how for <b>High Performance Moisture Compatible Corrosion Resistant Coating System</b>. The application method of coating shall be got duly approved from CECRI, Karaikudi.</p> |                                                                                        |                                                                                                  |                |                                               |
| EPC PACKAGE FOR 2 X 660 MW SUPER CRITICAL THERMAL POWER PROJECT, HTPS, KORBA WEST                                                                                                                                                                                                                                                          | TECHNICAL SPECIFICATION<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-13/2023 | SUB SECTION D-1-12(G)<br>High Performance Moisture Compatible Corrosion Resistant Coating System | PAGE<br>2 OF 2 |                                               |



INDICATIVE ARRANDEMENT OF COAL STOCK PILE  
ALL DIMENSIONS ARE IN MM

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## ANNEXURE – I

### **SPECIFICATIONS FOR 100% SOLIDS, HIGH BUILD, ELASTOMERIC POLYURETHANE COATING FOR CONCRETE**

- 1.00.00 The PU coating shall meet minimum requirements for materials, equipment, application, inspection, repair and handling aspects associated with the coating of Concrete using 100% Solids (Solventless) Two Component, Fast Curing Elastomeric Polyurethane Coating classified under ASTM D -16, Type V.
- 1.01.00 The polyurethane on the surface of concrete shall provide a hard yet flexible, impermeable barrier with outstanding adhesion impact and abrasion resistance as well as crack spanning capability to protect the concrete from corrosion and abrasion. It shall cover all variations associated with operating conditions of cooling tower.
- 1.02.00 Supplier or his licensed applicator shall obtain prior written approval from the Owner for any deviations from the requirements of this specification and / or the standard referred herein.
- 1.03.00 The work shall conform to following documents (latest revision or as specified) and as referred in this specification.
- a) SSPC-PS Guide 17.00, 1 Aug, 1991 Guide for Selecting Urethane Painting System
  - b) RP 0892-92 NACE International  
Linings Over Concrete for Immersion Service
  - c) RP 0187-96 NACE International  
Design Considerations for Corrosion Control of Reinforcing Steel In Concrete.
  - d) ASTM D 4541 Method for Pull Off Strength of Coatings Using Portable Adhesion Testers
- 2.00.00 **GENERAL REQUIREMENT**
- 2.01.00 The bidder shall perform all work in accordance with this specification and other requirements noted herein.
- Bidder shall submit a detailed written description in the form of a manual covering coating equipment, procedure, materials, inspection, tests and repair etc, for Owner's approval.
- 2.02.00 The bidder shall also supply copies of test reports conducted by in internationally reputed test agencies evidencing that materials conform to minimum performance

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| EPC PACKAGE FOR 2 X 660<br>MW SUPER CRITICAL THERMAL<br>POWER PROJECT, HTPS, KORBA<br>WEST | TECHNICAL SPECIFICATIONS<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-<br>13/2023 | SUB SECTION D-1-12 (I)<br>PU COATING | Page 1 of 8 |
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requirements. The bidder shall also supply certificates from coating manufacturer as under.

- That the materials (with batch numbers, dates of manufacture and shelf life) are free from all manufacturing defects.
- That the materials will meet performance criteria as given below when applied.
- That the bidder or his applicator possesses the necessary technical skills and equipment to apply these materials and is authorized by the manufacturer for this purpose.

100% Solids, Two Component Polyurethane are specialized coatings. The coating shall be applied either by the coating material manufacturer himself or by his authorized applicator. The authorized applicator should have been trained and certified by the coating manufacturer and shall possess the necessary specialized equipment, trained crew and experience in spraying fast setting plural component polyurethane coatings. Contractor shall provide, for the owner's approval, details of coating manufacturer's authorized applicator including details of equipment, experience in spraying fast setting 100% Solids Polyurethane Coatings and client references for verification. In no case shall coating application be undertaken by coating contractors without prior track record of applying these materials. In addition, contractor shall provide certificate from coating materials manufacturers that the applicator possesses the necessary technical skills and equipment to apply these materials and is authorized by the manufacturer for this purpose.

2.03.00 Applied coating will be tested for dry film thickness and adhesion and hardness.

All coating operations shall be performed under the supervision of, and performed by, personnel skilled in the application of the coating system.

2.04.00 The bidder shall provide access, during all phases of work, to the Owner and their representatives.

2.05.00 All cleaning, priming and coating machines shall be equipped with rubber or wheels overlaid with hard fiber to prevent damaging the concrete surface.

2.06.00 The materials shall be applied by Airless Spray System, as per the standards specified by the material manufacturer.

2.07.00 100% Solids Polyurethane systems are solvent free eliminating solvent health hazards and flammability concerns All safety precautions warranted by good industrial hygiene practices and regulated by local, state or central laws must be taken into consideration while applying these coatings.

3.00.00 MATERIAL SPECIFICATIONS

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| EPC PACKAGE FOR 2 X 660<br>MW SUPER CRITICAL THERMAL<br>POWER PROJECT, HTPS, KORBA<br>WEST | TECHNICAL SPECIFICATIONS<br>SECTION-VI, PART-B<br>BID DOC NO.: 03-05/2X660 MW/T-<br>13/2023 | SUB SECTION D-1-12 (I)<br>PU COATING | Page 2 of 8 |
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### 3.01.00 ELASTOMERIC POLYURETHANE COATING :

Spray applied, Impermeable, 100% Solids, Elastomeric Aromatic Polyurethane Coating (Non Tar Extended), as per ASTM D-16, Type V (Two Component, Chemical Cure). Shall meet following criteria. All tests at ambient ( 25 C ) unless otherwise specified.

- NOMINAL THICKNESS 2,000 Microns
- TENSILE STRENGTH ASTM D-638 17 N / mm<sup>2</sup>
- ADHESION ASTM D-4541 (Elcometer Pull Off) 2 N / mm<sup>2</sup>
- RECOVERABLE ELONGATION ASTM D-638 50% Min.
- SURFACE HARDNESS ASTM D 2240 (Cured Film - Shore D) 50 Min.
- WATER VAPOUR PERMEABILITY ASTM E - 96 / F-1249-90 0.3 gms. / 24 Hour / M2 Max.
- RESISTANCE TEMPERATURES 0° C to 60°C
- FLEXIBILITY 180° Bend -1.0 mm thick  
ASTM D 1737 Pass over 12 mm Mandrel
- ACCELERATED WEATHERING ASTM G – 154 53 / BS 3800 2,000 Hours  
Excellent. Some Discoloration.
- ABRASION RESISTANCE ASTM D 4060 /FTMS 141 Taber Abraser H - 10 Wheel 1,000 gms., 1,000 cycles  
Weight Loss 0.05 gms. Max
- CHEMICAL RESISTANCE  
Immersion of 30 days in sea water followed by
  - (%) Weight Change < 1.0 %
  - (%) Hardness (Shore D) Change < 5.0 %
  - (%) Tensile Strength Change < 5.0 %

### 3.02.00 PRIMER

Primer shall be used on new concrete surfaces before application of PU coating.

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Damp tolerant, penetrating, sealing primer shall be applied at 100-125 Microns Wet Film Thickness in accordance with the recommendation of the Polyurethane Coating manufacturer.

#### 4.00.00 **SURFACE PREPARATION**

4.01.00 The bidder shall be responsible for the structural integrity of the concrete.

The use of form release agents shall be compatible to the coating. Contractor shall take measures in concrete casting to provide a suitable surface finish that shall be compatible with subsequent application of coating. The measures shall include providing well compacted, dense concrete with minimal air entrainment and a relatively smooth surface finish. Pond floor shall be vacuum dewatered.

Remove any fins or protrusions using power grinding. These may also be required to be removed for applications requiring an even finish.

Residual bug – holes beneath the surface of the coating shall be opened by sweep blasting and flooded with Polyurethane coating during spray application. Any larger voids shall be filled with Elastomeric Polyurethane hand mix material or compatible grout. Active cracks shall be bridged by using Elastomeric Polyurethane over Industrial Nylon / Polyester Fabric. Any exposed steel surfaces shall be wire brush cleaned and primed before coating application.

4.02.00 Exterior waterproofing shall be applied to the structure below the finished ground level and upto atleast 300 mm above it. The structure shall be sealed from the exterior (soil side) to block capillary action of moisture through the concrete. Leaks from groundwater can permeate the entire concrete thickness. The exterior waterproofing system must be suitable for the expected exposure condition.

4.03.00 Before general surface preparation, surface contaminants (if any) shall be removed. Oil and Grease shall be removed by multiple detergent wash, preferably using steam. (Solvents shall not be used as they will cause the petroleum products to penetrate the concrete surface). Chemically contaminated concrete shall be neutralized prior to complete surface preparation. Acidic surfaces shall be neutralized using an alkaline cleaner and rinsed with fresh water and then cleaned with steam and detergent. After chemical cleaning, surface will be tested for residual chemicals. pH shall be tested using ASTM D - 4262 using pH test paper on rinse water . Concrete shall be dried thoroughly thereafter.

4.04.00 Sweep blast the concrete surface using expendable abrasive. The blast nozzle should be kept at sufficient distance to avoid over blast and exposing of aggregate. Following blasting remove dust using air jet (with the abrasive turned off).

4.05.00 Any of the following methods of surface preparation may be used to achieve a near white blast cleaned surface:

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- a) Dry abrasive blasting using compressed air, blast nozzles and abrasive.
- b) Dry abrasive blasting using a dosed cycle, re-circulating abrasive system, with compressed air, blast nozzle, and abrasive, with or without vacuum for dust and abrasive recovery.
- c) Dry abrasive blasting using a dosed cycle, re-circulating abrasive system with centrifugal, wheels and abrasive (such as Wheelabrator).

- 4.06.00 Compressed air used for blast cleaning shall be dean, dry and free of moisture and oil. Moisture separators, oil separators, traps or other equipment may be necessary to achieve dean, dry air.
- 4.07.00 Blast cleaning operations shall be done in such a manner that no damage is done to partially or entirely completed portions of the work.
- 4.08.00 Dry blast cleaning shall not be concluded during times when the surface will become wet after blast cleaning.
- 4.09.00 Non-metallic disposable mineral abrasive such as silica sand shall be the chosen abrasive for open blasting operations Steel grit and shot are approved abrasive media for blast cleaning in closed cycle, recirculating abrasive systems (compressed air, vacuum and centrifugal wheel). No other abrasive media shall be used without prior approval.
- 4.10.00 The cleanliness and size of recycled abrasive shall be maintained to ensure compliance with this standard.
- 4.11.00 The blast cleaning abrasive shall be dry and free of oil, grease and other contaminants. Applicator shall use abrasive media of size that will ensure the necessary roughness desired.
- 4.12.00 Dust and residues shall be removed from prepared surface by brushing, blowing off with dean, dry air or vacuum cleaning. Moisture separators, oil separators, traps or other equipment may be necessary to achieve clean, dry air.
- 4.13.00 Prior to the application of Elastomeric Urethane on new concrete surface, sufficient time must pass to allow the excess moisture to evaporate. This time will vary on conditions and is normally 14-28 days. After the curing period has elapsed, concrete must be checked for the presence of excess moisture on and beneath the surface using a Delmhorst BD-8 Moisture Detector. A reading of 2% and under indicates that the concrete is ready to be coated. The moisture content must not only be checked on the surface but beneath it by driving nails 6-12 mm into the concrete and placing the probes on the nail - heads. Alternatively the moisture may be tested by the Plastic Sheet Test ASTM D-4263. The test involves taping a 450 mm X 450 mm , 0.1 mm thick dear plastic sheet to the surface of the concrete for a duration of 16 hours. Absence of any droplets of moisture underneath the plastic sheet indicates that the concrete is ready for coating.

In cases of continued ingress of moisture from localised areas of concrete, apply

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propane blow torch to ensure that the moisture content as specified above is achieved.

#### 5.00.00 PRIMING

- 5.01.00 Before beginning priming and coating, measure the humidity using a sling psychrometer and calculate the dew point. The relative humidity must be lower than 85%. Temperature of concrete surface must be at least 3°C higher than the dew point. Under controlled conditions, it is possible to heat the concrete surface to eliminate condensation problems.
- 5.02.00 The type of primer used shall be as described in the coating specification 3.02.00.
- 5.03.00 Primer shall be sprayed onto the cleaned surface with a wet film thickness of 75-125 Microns. Since the primer penetrates into the concrete surface, no DFT measurements will be taken and estimation shall be on volumetric basis. The primer on application shall be free from runs or drips or areas of excessive thickness.
- 5.04.00 The primed surface shall be protected so that it will not come into contact with rain, dust or other substances until completely hardened and coated with the Elastomeric Polyurethane Top Coat.
- 5.05.00 Primed surface should be over coated within the time recommended for the approved type of primer. In the event that the re-coat interval of primed surface is exceeded without top-coating with the Elastomeric Polyurethane, the surface must be re-primed.

#### 6.00.00 COATING

- 6.01.00 Nominal thickness of the Elastomeric Polyurethane shall be 2,000 Microns, measured in accordance with 7.02.02. Being a thixotropic, high build, non-levelling coating, the Elastomeric Polyurethane coating shall take the contour / profile of the substrate.
- Coating shall be done only at times when the substrates temperature is at least 3°C over the dew point. Hourly measurements of dew point and surface temperatures shall be made prior to and when coating is under progress. Surface temperature should be minimum 5°C and should not exceed 70°C.
- 6.02.00 Equipment for the spray application shall be in conformity with system specification, meeting minimum specified by the coating manufacturer. Equipment shall consist of Material Feed Pumps, Purge Pump, Proportioning Pump, Mix Manifold, Static Mixer, Interconnecting Hoses etc.
- 6.03.00 Partially used and unused material drums must be tightly sealed and contain a blanket of nitrogen to prevent moisture contamination when not in use.
- 6.04.00 Before application on the substrate apply a test patch for runs or drips and gel time as well as tack free time.

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6.05.00 The proportioning pump shall be fitted with a numeric counter to keep track of the volume while spraying.

6.06.00 Entire thickness shall be built up in a single application (with a number of passes). If the surface is large enough to require more than one day for the coating, the edges of the coated areas shall be feathered and roughened with a grinding too) prior to beginning priming and coating.

6.07.00 Areas not to be coated shall be masked with disposable plastic sheets, cardboard etc.

6.08.00 Visual inspection shall be made for film discontinuities such as air bubbles, blowholes, skips, shadows. Such defects will be marked and repaired with Elastomeric Polyurethane hand mix kit with slower pot life after roughening the edges.

## 7.00.00 INSPECTION

7.01.00 All work under this specification shall be subject to inspection by the owner or his representative. All parts of work shall be accessible. The applicator shall correct such work as is found defective and not as per the specifications.

7.02.00 The following tests shall be made :

During coating application the wet film thickness will be measured using Nordson wet Film Gauge as per ASTM D 4414.

### 7.02.01 Adhesion

Pull Off adhesion to Concrete measured using an portable adhesion tester such as Positest AT-CM Elcometer or equivalent as per ASTM D4541 on fully cured (7 days) concrete. Frequency shall be 3 readings per 1,000 Sq.M of coated area. The average of readings from three randomly selected areas shall constitute the adhesion and shall be minimum 2 N/mm<sup>2</sup> (see below). Test area to be flat (without curvature). The following method will be used to determine whether coating meets adhesion requirements

| Elcometer Reading       | Type of Failure |                                                      | Result / Conclusion                                                    |
|-------------------------|-----------------|------------------------------------------------------|------------------------------------------------------------------------|
| > 2 N / mm <sup>2</sup> | T1              | 90% or more of break at coating - concrete interface | Coating meets adhesion criteria. Take actual reading of bond strength. |
|                         | T2              | 90% of more of break within the concrete             | Concrete Failure. Coating adhesion exceeds 2N/mm <sup>2</sup>          |

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| < 2 N / mm <sup>2</sup> | T1 | 90% or more of break at coating - concrete interface | Coating does not meet adhesion criteria. Take actual reading of bond strength achieved.             |
|                         | T2 | 90% of more of break within the concrete             | Concrete lacks sufficient strength to provide necessary adhesion figure. Coating adhesion accepted. |

#### 7.02.02 Film Thickness ( DFT )

The film thickness shall be determined from the thickness of the coating detached along with the Elcometer dollies of the adhesion test and the readings shall be recorded. Frequency shall be identical to adhesion test. Average of 3 reading shall constitute the film thickness and shall be at least 2,000 Microns. Minimum spot reading shall be 1,800 Microns. Recommended spread rate by the manufacturer for the specified thickness of the PU coating shall be ascertained and adhered to during the coating process.

#### 7.02.03 Hardness ( Durometer )

Cured films (7 days) shall be tested for hardness using Durometer (Shore D) as per ASTM D 2240.

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