<table>
<thead>
<tr>
<th>DRAWING No.</th>
<th>DRAWING TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD/001B</td>
<td>DRAWING LIST OF SEB TYPICAL DETAILS</td>
</tr>
<tr>
<td>SD/002</td>
<td>GENERAL NOTES</td>
</tr>
<tr>
<td>SD/003</td>
<td>CRANKING OF BARS, STANDARD HOOKS AND BENDS</td>
</tr>
<tr>
<td>SD/004</td>
<td>STEEL REINFORCEMENT ANCHORAGE AND LAP LENGTH REQUIREMENT</td>
</tr>
<tr>
<td>SD/005</td>
<td>TYPICAL DETAIL OF SPACER BARS AND STIRRUPS AT BEAMS</td>
</tr>
<tr>
<td>SD/006</td>
<td>TYPICAL DETAIL OF TORSION STIRRUPS AND COLUMN BINDERS</td>
</tr>
<tr>
<td>SD/007</td>
<td>TYPICAL WALL JUNCTION DETAILS</td>
</tr>
<tr>
<td>SD/008</td>
<td>TYPICAL DETAIL OF BRICK OR R.C. PARTITION WALL AND WALL BASE</td>
</tr>
<tr>
<td>SD/009</td>
<td>TYPICAL DETAIL OF R.C. STRUCTURAL WALL</td>
</tr>
<tr>
<td>SD/010</td>
<td>TYPICAL DETAIL OF TRIMMING BARS FOR WALL OPENING</td>
</tr>
<tr>
<td>SD/011</td>
<td>TYPICAL DETAIL OF TRIMMING BARS FOR PERMANENT SLAB OPENING</td>
</tr>
<tr>
<td>SD/012</td>
<td>TYPICAL DETAIL OF TRIMMING BARS FOR TEMPORARY SLAB OPENING</td>
</tr>
<tr>
<td>SD/013</td>
<td>TYPICAL DETAIL FOR TEMPORARY PIPE DUCT OPENING IN SLAB</td>
</tr>
<tr>
<td>SD/014</td>
<td>REQUIREMENT OF SPACER BLOCK, 'U' BARS AND STEEL CHAIRS FOR STRUCTURAL ELEMENTS</td>
</tr>
<tr>
<td>SD/015</td>
<td>CURTAILMENT OF LONGITUDINAL BARS IN BEAMS</td>
</tr>
<tr>
<td>SD/016</td>
<td>TYPICAL DETAIL OF BEAM AND BEAM 'L' JUNCTION</td>
</tr>
<tr>
<td>SD/017B</td>
<td>TYPICAL DETAIL OF COLUMNS</td>
</tr>
<tr>
<td>SD/018</td>
<td>TYPICAL DETAIL OF ROOF BEAM &amp; EXTERIOR COLUMN JUNCTION</td>
</tr>
<tr>
<td>SD/019A</td>
<td>TYPICAL DETAIL OF 100 THICK GROUND SLAB ON GRADE</td>
</tr>
<tr>
<td>SD/020A</td>
<td>TYPICAL DETAIL OF 150 THICK GROUND SLAB ON GRADE</td>
</tr>
<tr>
<td>SD/021A</td>
<td>TYPICAL DETAIL OF 200 THICK GROUND SLAB ON GRADE</td>
</tr>
<tr>
<td>SD/022</td>
<td>TYPICAL DETAIL OF EXTERNAL DRIVEWAY AND CARPARK GROUND SLAB ON GRADE (1 OF 5)</td>
</tr>
<tr>
<td>SD/023</td>
<td>TYPICAL DETAIL OF EXTERNAL DRIVEWAY AND CARPARK GROUND SLAB ON GRADE (2 OF 5)</td>
</tr>
<tr>
<td>SD/024</td>
<td>TYPICAL DETAIL OF EXTERNAL DRIVEWAY AND CARPARK GROUND SLAB ON GRADE (3 OF 5)</td>
</tr>
<tr>
<td>SD/025</td>
<td>TYPICAL DETAIL OF EXTERNAL DRIVEWAY AND CARPARK GROUND SLAB ON GRADE (4 OF 5)</td>
</tr>
<tr>
<td>SD/026</td>
<td>TYPICAL DETAIL OF EXTERNAL DRIVEWAY AND CARPARK GROUND SLAB ON GRADE (5 OF 5)</td>
</tr>
</tbody>
</table>
GENERAL NOTES:

1. DRAWINGS SD/001 TO SD/026 (FIG. 1 TO 16 INCLUSIVE) INDICATE THE REQUIREMENT AND DETAILS GENERALLY ADOPTED IN R.C. WORKS. IF DIFFERENT DETAILS ARE GIVEN IN R.C. DRAWINGS ISSUED IN THE CONTRACT, THE DETAILS IN THE LATTER SHALL TAKE PRECEDENCE.

2. ABBREVIATIONS:--
   a) GENERAL:
   DIA DIAMETER
   VERT VERTICAL
   HOR HORIZONTAL
   TYP TYPICAL
   
   b) RELATING TO REINFORCEMENT:
   AS AREA OF STEEL
   B1 BOTTOM LAYER OF BOTTOM REINFORCEMENT
   B2 SECOND LAYER OF BOTTOM REINFORCEMENT
   T1 TOP LAYER OF TOP REINFORCEMENT
   T2 SECOND LAYER OF TOP REINFORCEMENT
   EF BARS IN EACH FACE
   NF BARS IN NEAR FACE OF WALL
   FF BARS IN FAR FACE OF WALL
   BW BOTH WAYS
   LV LENGTH VARIES
   DS DOUBLE STIRRUPS
   TS TRIPLE STIRRUPS
   ALT PLACED ALTERNATELY
   STGD STAGGERED
   CAL COMPRESSIVE ANCHORAGE LENGTH
   CLL COMPRESSIVE LAP LENGTH
   TAL TENSION ANCHORAGE LENGTH
   TLL TENSION LAP LENGTH
   b BREADTH OF BEAM OR WALL OR COLUMN
   h DEPTH OF BEAM OR COLUMN OR WALL THICKNESS
   L SPAN OF BEAM OR SLAB
   d DIAMETER

3. TYPE OF BEAM STIRRUPS AND COLUMN BINDERS ARE SHOWN ON TYPICAL DETAIL DRAWING Nos. SD/005 AND SD/006 RESPECTIVELY.

   e.g.
   T10-101(A),102(B)-200 DS

4. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

5. i) MILD STEEL BARS DENOTED BY R
   ii) HIGH YIELD BARS DENOTED BY T
<table>
<thead>
<tr>
<th>BAR SIZE (mm)</th>
<th>INTERNAL RADIUS (r) OF BEND (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MILD STEEL / HIGH TENSILE BAR</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>32</td>
<td>128</td>
</tr>
<tr>
<td>40</td>
<td>160</td>
</tr>
</tbody>
</table>

**TABLE 1 STANDARD HOOKS AND BENDS REQUIREMENT**

( FOR BEAM STIRRUPS AND COLUMN BINDERS, SEE DRAWING Nos. SD/005 & SD/006)

---

**FIG. 1 CRANKING OF BARS**

---

**drawing title**
CRANKING OF BARS,
STANDARD HOOKS AND BENDS

**checked**
CSE/1 C.T. WONG

**approved**
AD(SE) W.W. LI

**date**
JULY, 2008

**drawing no.**
SD/003

**scale**
N.T.S.

---

**STRU. ENGG. BRANCH ARCH. SERVICES DEPT.**

---

**1:1 SCALE BAR**

---
### TABLE 2  ANCHORAGE & LAP LENGTH REQUIREMENT FOR

**HIGH YIELD & PLAIN ROUND (MILD) STEEL REINFORCEMENT**

<table>
<thead>
<tr>
<th>Size of Bar</th>
<th>Concrete Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Tension Anchorage Length (TAL) or Tension Lap Length (TLL)</td>
<td>30</td>
</tr>
<tr>
<td>Compression Anchorage Length (CAL)</td>
<td>30</td>
</tr>
</tbody>
</table>

**NOTES:**

1. FOR ANCHORAGE OR LAP BETWEEN BARS OF SAME BAR SIZE, USE $\phi =\text{SIZE OF BARS}$.
2. FOR ANCHORAGE OR LAP BETWEEN BARS OF DIFFERENT BAR SIZE, USE $\phi =\text{SIZE OF SMALLER BARS}$. 

**SIZE AND LENGTH ALL IN MILLIMETRES**
SPACER BAR

\[ \phi = 1500 \text{ c/c} \]

\[ \phi = \text{MAIN BAR SIZE BUT T25 MIN.} \]

MAIN REINFORCEMENT

SPACER BARS

TYPE A

TYPE B

TYPE C

TYPE D

TYPE E

TYPE F

TYPE G

FIG. 1a BEAM STIRRUPS

(\text{r}) \text{ REFER TO TABLE 1 (SD/003)}

Beam stirrups Type M and Type N shall not be used unless specified on the beam detail drawings.

FIG. 1b

(\text{r}) \text{ REFER TO TABLE 1 (SD/003)}

Typical Detail of Spacer Bars and Stirrups at Beams

Checked: C.S.E./1 C.T. Wong

Approved: AD(Sr) W.W. Li

Date: JULY, 2008

Drawing No.: SD/005

Scale: A4 210 x 297

STRU. ENGG. BRANCH
ARCH. SERVICES DEPT.
FIG. 2a TORSION STIRRUPS

FIG. 2b TYPICAL DETAIL OF COLUMN BINDERS

FOR COLUMN BINDERS: (r) REFER TO TABLE 1 (SD/003)
**Fig. 3 Typical Wall Junction Details (Plan)**

**Wall End**

![Wall End Diagram]

S = Spacing of bars

**Tee Junction**

![Tee Junction Diagram]

Two bars should be placed within loop for wall thickness ≤ 200mm. Four bars should be included as shown for wall thickness over 200mm.

S = Spacing of bars

**L Junction**

![L Junction Diagram]
<table>
<thead>
<tr>
<th>WALL THICKNESS, ( h ) (mm)</th>
<th>VERT. REINF'T</th>
<th>HORIZ. REINF'T</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO FRP REQUIREMENT</td>
<td>COMPARTMENT WALL WITH FIRE RESISTING PERIOD (FRP) REQUIREMENTS</td>
<td>ALL CASES</td>
</tr>
<tr>
<td>( 100 \leq h &lt; 120 )</td>
<td>T10–250</td>
<td>T12–150</td>
</tr>
<tr>
<td>( 120 \leq h &lt; 160 )</td>
<td>T10–300 EF</td>
<td>T10–300 EF</td>
</tr>
<tr>
<td>( 160 \leq h &lt; 180 )</td>
<td>T10–300 EF</td>
<td>T10–300 EF</td>
</tr>
<tr>
<td>( 180 \leq h &lt; 200 )</td>
<td>T10–250 EF</td>
<td>T10–250 EF</td>
</tr>
<tr>
<td>( 200 \leq h &lt; 240 )</td>
<td>T10–200 EF</td>
<td>T10–200 EF</td>
</tr>
<tr>
<td>( 240 \leq h \leq 250 )</td>
<td>T10–200 EF</td>
<td>T10–200 EF</td>
</tr>
</tbody>
</table>

**INDICATES THAT WALL THICKNESS IS NOT PREFERRED AS 1% REINFORCEMENT OF THE MIN. WALL THICKNESS IS NEEDED FOR THE FRP REQUIREMENT. WALL THICKNESS SHOULD BE INCREASED IN THIS CASE IF POSSIBLE SO THAT NORMAL REINFORCEMENT RATIO COULD BE USED.**

**TABLE 3 BAR SIZES AND SPACING FOR NON-LOADBEARING PARTITION WALL**

**NOTES:**

1. PARTITION WALLS WITH NOMINAL REINFORCEMENT ARE NOT CONSIDERED AS LOADBEARING STRUCTURAL MEMBERS AND HENCE REINFORCEMENT WILL NOT BE MEASURED SEPARATELY, BUT DEEMED INCLUDED IN THE RATES AS FOR OTHER ARCHITECTURAL FEATURES.

2. SLAB THICKNESS & REINFORCEMENT APPLICABLE TO BRICK PARTITION WALL BASES.

**FIG. 4 TYPICAL DETAIL OF BRICK OR R.C. PARTITION WALL & WALL BASE**
VERT. REINF‘ T

<table>
<thead>
<tr>
<th>WALL THICKNESS, h (mm)</th>
<th>NO FRP REQUIREMENT</th>
<th>FIRE RESISTING PERIOD (FRP) REQUIREMENTS</th>
<th>HORIZ. REINF‘ T</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 ≤ h &lt; 160</td>
<td>T10-200 EF</td>
<td>T10-200 EF</td>
<td>T10-300 EF</td>
</tr>
<tr>
<td>160 ≤ h &lt; 180</td>
<td>T10-200 EF</td>
<td>T10-200 EF</td>
<td>T10-250 EF</td>
</tr>
<tr>
<td>180 ≤ h &lt; 200</td>
<td>T12-200 EF</td>
<td>T10-200 EF</td>
<td>T10-250 EF</td>
</tr>
<tr>
<td>200 ≤ h &lt; 240</td>
<td>T12-200 EF</td>
<td>T12-250 EF</td>
<td>T16-200 EF</td>
</tr>
<tr>
<td>240 ≤ h ≤ 250</td>
<td>T12-170 EF</td>
<td>T12-250 EF</td>
<td>T16-250 EF</td>
</tr>
</tbody>
</table>

INDICATES THAT WALL THICKNESS IS NOT PREFERRED AS 1% REINFORCEMENT OF THE WALL THICKNESS IS NEEDED FOR THE FRP REQUIREMENT. WALL THICKNESS SHOULD BE INCREASED IN THIS CASE IF POSSIBLE SO THAT NORMAL REINFORCEMENT RATIO COULD BE USED.

TABLE 4 BAR SIZES AND SPACING FOR R.C. STRUCTURAL WALL
(SEE ALSO DETAIL DRAWINGS WHICH SHALL TAKE PRECEDENCE OVER THIS TABLE.)

FIG. 5 TYPICAL DETAIL OF R.C. STRUCTURAL WALL
1. TABLE 5 AND FIG. 6 ARE APPLICABLE FOR NON-LOADBEARING WALLS WHERE OPENING WIDTH (L1) ≤ 2m.

<table>
<thead>
<tr>
<th>WALL THICKNESS, h (mm)</th>
<th>TRIMMING BARS TO OPENING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1 &lt; 1m</td>
</tr>
<tr>
<td>h &lt; 120</td>
<td>1T12 (SINGLE LAYER)</td>
</tr>
<tr>
<td>120 ≤ h &lt; 200</td>
<td>1T12 EF</td>
</tr>
<tr>
<td>200 ≤ h ≤ 250</td>
<td>1T16 EF</td>
</tr>
</tbody>
</table>

TABLE 5 TRIMMING BARS FOR WALL OPENING AT NON-LOADBEARING WALLS

2. FOR NON-LOADBEARING WALLS WHERE OPENING WIDTH (L1) > 2m, OR FOR ALL SIZE OF OPENING IN STRUCTURAL WALLS, THE LOCATION AND SIZE OF THE OPENING SHALL BE APPROVED BY THE PROJECT STRUCTURAL ENGINEER. DETAILS AND AMOUNT OF TRIMMING BARS SHALL BE SPECIFIED BY THE PROJECT STRUCTURAL ENGINEER. REFER ALSO TO WALL DETAIL DRAWINGS.

3. UNDER NORMAL SITUATION, IF OPENING WIDTH (L1) < BAR SPACING, NO TRIMMING BAR IS REQUIRED.

FIG. 6 TYPICAL DETAIL OF TRIMMING BARS FOR WALL OPENING
NOTES:

1. FIG. 7 IS APPLICABLE FOR OPENINGS THAT:
   a. WITH SLAB THICKNESS ≤ 200mm
   b. HAVE OPENING SIZE NOT MORE THAN 600mm OR 0.25 x SPAN LENGTH OF SLAB
   c. DETAIL NOT APPLICABLE TO OPENINGS IN CANTILEVER SLABS

2. IF SIZE OF OPENING < 200mm, DISPLACE BARS TO SIDES OF OPENING, NO EXTRA TRIMMING BARS REQUIRED.

3. FOR SIZE OF OPENING BETWEEN 200mm & 600mm, ADD TRIMMING BARS AS STATED IN THE FIGURE, OR THE AREA OF TRIMMING BAR ON ONE SIDE EQUAL TO HALF THE AREA OF THE AFFECTED BARS IN THE CORRESPONDING DIRECTION CUT BY THE OPENING, WHICHER IS THE GREATER.

4. FOR LARGER SIZE OF SLAB OPENING, DETAILS OF STEEL ARRANGEMENT SHALL BE SPECIFIED BY THE PROJECT STRUCTURAL ENGINEER. REFER ALSO TO SLAB DETAIL DRAWINGS.

FIG. 7 TYPICAL DETAIL OF TRIMMING BARS FOR PERMANENT SLAB OPENING
TRIMMING BARS TO BE SPECIFIED BY THE PROJECT STRUCTURAL ENGINEER IF NEEDED

FORMWORK TO BE SLOTTED FOR PASSAGE OF BARS

SLAB REINFORCEMENT

NOTES:
The figure is applicable to temporary slab opening the size and location of which shall be approved by the project structural engineer before construction.

FIG. 8 TYPICAL DETAIL OF TRIMMING BARS FOR TEMPORARY SLAB OPENING
PIPE DUCT OPENINGS TO BE CONCRETED AFTER INSTALLATION OF PIPE

SLAB REINF.

DIA. & SPACING SAME AS SLAB REINF.

TLL

DIA. & SPACING SAME AS SLAB REINF.

WALL

WIDTH OF OPENING < 1500mm

PLAN

SLAB REINF.

TRIMMING BARS TO BE SPECIFIED BY THE PROJECT STRUCTURAL ENGINEER IF NEEDED.

WIDTH OF OPENING < 1500mm

SEC. A - A

FORMWORK TO BE SLOTTED FOR PASSAGE OF BARS

NOTES:

THE FIGURE IS APPLICABLE TO TEMPORARY SLAB OPENING THE SIZE AND LOCATION OF WHICH SHALL BE APPROVED BY THE PROJECT STRUCTURAL ENGINEER BEFORE CONSTRUCTION.

FIG. 9 TYPICAL DETAIL FOR LARGER TEMPORARY PIPE DUCT OPENINGS

<table>
<thead>
<tr>
<th>drawing title</th>
<th>checked</th>
<th>date</th>
<th>drawing no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPICAL DETAIL FOR TEMPORARY PIPE DUCT OPENING IN SLAB</td>
<td>CSE/1 C.T. WONG</td>
<td>JULY, 2008</td>
<td>SD/013</td>
</tr>
<tr>
<td>approved</td>
<td>AD(SE) W.W. LI</td>
<td>JULY, 2008</td>
<td></td>
</tr>
<tr>
<td>scale</td>
<td>N.T.S.</td>
<td></td>
<td>A4 210 x 297</td>
</tr>
</tbody>
</table>
T12 STEEL CHAIR @1500 c/c MAX.

SECTION OF SLAB

COVER SPACERS Ø600 c/c MAX.

FORMWORK

REINFORCEMENT OF SLAB SIZE OF BAR = Ø

SECTION OF BEAM

WALL PLAN

T12 "U" BAR @1500 c/c MAX.

WALL REINFORCEMENT

MAX. SPACING : 1500 c/c B.W.

NOTES:
The diameter and spacing of chairs are given as minimum requirement, the contractor has to put in additional chairs where necessary to support the reinforcement from sagging or displacement.

FIG. 10 REQUIREMENT OF SPACER BLOCK, "U" BARS AND STEEL CHAIRS FOR STRUCTURAL ELEMENTS
FIG. 11 CURTAILMENT OF LONGITUDINAL BARS IN BEAM

NOTE: L = THE GREATER OF L1 AND L2

1. FOR ARRANGEMENT OF REINFORCEMENT IN EXTERIOR COLUMN AND BEAM JUNCTION AT ROOF LEVEL REFER TO ORG NO. SD/018.

NOTES:

1. FOR ARRANGEMENT OF REINFORCEMENT IN EXTERIOR COLUMN AND BEAM JUNCTION AT ROOF LEVEL REFER TO ORG NO. SD/018.

NOTE: L = THE GREATER OF L1 AND L2
NOTES:
1. FOR ANTI-Crack BARS AT THE CORNER OF L JUNCTION USE T12 - 250 c/c (MIN.) OR IF BEAM DEPTH GREATER THAN 750mm, USE ANTI-Crack BARS AS SPECIFIED ON BEAM DETAIL DRAWING.

FIG. 12 TYPICAL DETAIL OF BEAM AND BEAM 'L' JUNCTION
Notes:
1. For arrangement of beam reinforcement in exterior column and beam junction at roof level refer to drawing No. SD/018.
3. In lieu of the binders, the contractor may submit for SO's approval an alternative method of fixing column starter bars in position.

**Fig. 13 Typical Detail of Columns**

<table>
<thead>
<tr>
<th>Column - Beam Condition</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>( \geq \frac{H}{4} - \text{Lap Length}/2 )</td>
</tr>
<tr>
<td>&quot;Strong Column - Weak Beam&quot;</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Base</th>
<th>Y</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>0</td>
<td>TAL</td>
</tr>
<tr>
<td>Fixed</td>
<td>( \geq \frac{H1}{4} - \text{Lap Length}/2 )</td>
<td>( \leq \text{Lesser of} ) ( \frac{TAL+2}{2} ) and ( \frac{TAL+8}{2} )</td>
</tr>
</tbody>
</table>

**Table:**

<table>
<thead>
<tr>
<th>Bar Dia (mm)</th>
<th>Min. Binder for Each Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>T10 - 150</td>
</tr>
<tr>
<td>25</td>
<td>T10 - 135</td>
</tr>
<tr>
<td>32</td>
<td>T12 - 150</td>
</tr>
<tr>
<td>40</td>
<td>T12 - 135</td>
</tr>
</tbody>
</table>

50 Blinding Layer Transfer Beam or Foundation Beam or Pile Cap or Footing

---

**Drawing Details**

- **Drawn by:** CSE/1 C.T. Wong
- **Checked by:**
- **Approved by:** AD(SE) W.W. Li
- **Date:** Mar., 2012

**Scale:** N.T.S.
FIG. 14.1 ROOF BEAM & EXTERIOR COLUMN JUNCTION — TYPICAL DETAIL (I)

FIG. 14.2 ROOF BEAM & EXTERIOR COLUMN JUNCTION — TYPICAL DETAIL (II)
STEEL FABRIC REINFORCEMENT AT TOP
WITH 300mm LAP MIN.

TWO COATS OF BITUMINOUS PAINT

20 x 12 APPROVED POLYURETHANE / POLYISOPHRANE JOINT SEALANT

ONE LAYER OF 65-80 μm POLYETHYLENE SHEET WITH 150mm LAP MIN.

NOTES:
1. THE INSITU FIELD DENSITY OF THE SOIL BENEATH HARDCORE SHALL NOT BE LESS THAN 90% OF THE MAXIMUM DRY DENSITY.

2. GROUND SLABS TO BE CAST IN ALTERNATE PANELS NOT GREATER THAN 6m x 6m, EVERY THIRD JOINT SHALL BE AN EXPANSION JOINT, THE REMAINDER BEING CONTRACTION JOINTS. (CONTRACTOR IS REQUIRED TO SUBMIT LAYOUT OF JOINTS FOR PSE'S APPROVAL PRIOR TO CONSTRUCTION OF THE GROUND SLABS ON GRADE)

3. HARDCORE SHALL BE OF SUITABLE MATERIAL COMPLYING WITH CLAUSE 3.01(vi) OF THE GENERAL SPECIFICATION OR GRADE 200 RECYCLED ROCKFILL AS SPECIFIED.

200mm MIN.
150mm MIN.

300mm MIN.

FIG. 15.1 TYPICAL DETAIL OF 100 THICK GROUND SLAB ON GRADE
STEEL FABRIC REINFORCEMENT AT TOP
(25 g/m²) 150mm MIN.

NOTE:
1. THE INSITU FIELD DENSITY OF THE SOIL BENEATH HARDCORE SHALL NOT BE LESS THAN 90% OF THE MAXIMUM DRY DENSITY.
2. GROUND SLABS TO BE CAST IN ALTERNATE PANELS NOT GREATER THAN 6m x 6m. EVERY THIRD JOINT SHALL BE AN EXPANSION JOINT. THE REMAINDER BEING CONTRACTION JOINTS.
3. HARDCORE SHALL BE OF SUITABLE MATERIAL COMPLYING WITH CLAUSE 3.01(v) OF THE GENERAL SPECIFICATION OR GRADE 200 RECYCLED ROCKFILL AS SPECIFIED.

FIG. 15.2 TYPICAL DETAIL OF 150THICK GROUND SLAB ON GRADE
STEEL FABRIC REINFORCEMENT (BS4483 A193 3.02 kg/sq. m) WITH 300mm LAP MIN. WHERE REQUIRED.

FOR DOWEL BARS REFER SEPARATE DRAWINGS (INTERNAL R.C. WALL OR BRICKWALL)

ONE LAYER OF 65-80 µm POLYTHENE SHEET WITH 150mm LAP MIN.

200mm MIN. GRADE 200 RECYCLED ROCKFILL AS SPECIFIED

TWO COATS OF BITUMINOUS PAINT

600 (MIN.)

CONTRACTION JOINT

EXPANSION JOINT

NOTES:

1. THE INSITU FIELD DENSITY OF THE SOIL BENEATH HARDCORE SHALL NOT BE LESS THAN 90% OF THE MAXIMUM DRY DENSITY.

2. GROUND SLABS TO BE CAST IN ALTERNATE PANELS NOT GREATER THAN 6m x 6m. EVERY THIRD JOINT SHALL BE AN EXPANSION JOINT, THE REMAINDER BEING CONTRACTION JOINTS. (CONTRACTOR IS REQUIRED TO SUBMIT LAYOUT OF JOINTS FOR PSE'S APPROVAL PRIOR TO CONSTRUCTION OF THE GROUND SLABS ON GRADE)

3. HARDCORE SHALL BE OF SUITABLE MATERIAL COMPLYING WITH CLAUSE 3.01(vi) OF THE GENERAL SPECIFICATION OR GRADE 200 RECYCLED ROCKFILL AS SPECIFIED.

FIG. 15.3 TYPICAL DETAIL OF 200 THICK GROUND SLAB ON GRADE
FIG. 16.1 TYPICAL PART PLAN OF REINFORCED CONCRETE EXTERNAL DRIVEWAY AND CAR PARKING AREAS

NOTES:
1. DRAWINGS No. SD/022 TO SD/026 ARE NOT APPLICABLE TO WORKS THAT WILL BE HANDED OVER TO HIGHWAYS DEPARTMENT.
2. CONCRETE TO BE GRADE 30/20.
3. LONGITUDINAL JOINTS SHOULD BE PROVIDED SO THAT SLABS ARE NOT WIDER THAN THE MAX. WIDTH IN TABLE 7.
4. EVERY THIRD JOINT IN THE TRANSVERSE DIRECTION SHOULD BE AN EXPANSION JOINT, THE REMAINDER BEING CONTRACTION JOINTS.
5. CONTRACTOR IS REQUIRED TO SUBMIT LAYOUT OF JOINTS FOR PSE'S APPROVAL PRIOR TO CONSTRUCTION OF THE EXTERNAL SLABS ON GRADE.
6. GRANULAR SUB-BASE MATERIAL REFER TO TABLE 8 ON DRG No. SD/026.
7. THE IN-SITU FIELD DENSITIES OF COMPACTED MATERIALS BENEATH THE SUB-BASE SHALL BE AS INDICATED ON SECTIONS ON DRAWINGS No. SD/023 TO SD/025.

<table>
<thead>
<tr>
<th>MAX. SLAB WIDTH BETWEEN LONGITUDINAL JOINTS, &quot;B&quot;</th>
<th>STEEL MESH TO BS 4483</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 m</td>
<td>C503 (4.34 kg/sq. m)</td>
</tr>
<tr>
<td>6.0 m</td>
<td>B503 (5.93 kg/sq. m)</td>
</tr>
</tbody>
</table>

TABLE 7
TYPICAL DETAIL OF EXTERNAL DRIVeway AND CARPARK GROUND SLAB ON GRADE (2 of 5)

ONE LAYER OF 125 µm POLYTHENE SHEET WITH 150mm LAP MIN. WHERE REQUIRED.

STEEL FABRIC REINFORCEMENT (SEE DRG No. SD/022)

25 x 15 SEALING GROOVE SAWN OR WET FORMED AT A POSITION VERTICALLY ABOVE THE CRACK-INDEUCER TO WITHIN A TOLERANCE OF ±10mm

APPROVED POLYDURPHIDE / POLYURETHANE JOINT SEALANT

BOND BREAKER

25mm DIA 650mm LONG MILD STEEL DOWEL BARS AT MID-DEPTH AND AT 300mm CENTRES

PREFORMED PVC TIGHT FITTING DOWEL SLEEVE

SUB-BASE

BOTTOM CRACK-INDEUCER (OF TIMBER, STEEL OR SYNTHETIC MATERIAL) SECURELY FIXED TO THE BASE. THE COMBINED DEPTH OF DISCONTINUITY PROVIDED BY THE CRACK-INDEUCER AND THE SEALING GROOVE AT THE TOP OF THE SLAB SHOULD BE AT LEAST 1/4 OF THE THICKNESS OF THE SLAB

RELATIVE COMPACTION ≥ 98%
SEE GS CLAUSE 3.19 (iv) & (v)

FIG. 16.2 SEC. A-A DETAIL OF CONTRACTION JOINT IN EXTERNAL DRIVeway AND CAR PARKING AREAS
ONE LAYER OF 125 µm POLYPHTHENE SHEET WITH 150mm LAP MIN. WHERE REQUIRED.

STEEL FABRIC REINFORCEMENT (SEE DRG NO. SD/022)

APPROVED SEALING STRIP GLUED TO EDGE OF FIRST SLAB CAST PRIOR TO POURING THE SECOND SLAB

12mm DIA. MILD STEEL DOWEL BARS, 1.1m IN LENGTH AND SPACED AT 600mm CENTRES AT MID-DEPTH

150mm LONG PREFORMED PVC TIGHT FITTING SLEEVE

SUB-BASE

RELATIVE COMPACITION ≥ 98%
SEE GS CLAUSE 3.19 (iv) & (v)

FIG. 16.3 SEC. B-B DETAIL OF LONGITUDINAL JOINT IN EXTERNAL DRIVEWAY AND CAR PARKING AREAS
FIG. 16.4  SEC. C-C DETAIL OF EXPANSION JOINT IN EXTERNAL DRIVEWAY AND CAR PARKING AREAS
## RANGE OF GRADING

<table>
<thead>
<tr>
<th>B. S. SIEVE SIZE</th>
<th>PERCENTAGE BY WEIGHT PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 mm</td>
<td>100</td>
</tr>
<tr>
<td>37.5 mm</td>
<td>85 ~ 100</td>
</tr>
<tr>
<td>20 mm</td>
<td>60 ~ 85</td>
</tr>
<tr>
<td>10 mm</td>
<td>40 ~ 70</td>
</tr>
<tr>
<td>5 mm</td>
<td>25 ~ 45</td>
</tr>
<tr>
<td>600 μm</td>
<td>8 ~ 22</td>
</tr>
<tr>
<td>75 μm</td>
<td>0 ~ 10</td>
</tr>
</tbody>
</table>


b. THE MATERIAL PASSING THE B.S. SIEVE 425 μm WHEN TESTED IN ACCORDANCE WITH BS 1377 SHALL BE NON-PLASTIC.

c. THE MATERIAL SHALL BE LAID AND COMPACTED TO THE REQUIREMENTS OF PARTICULAR SPECIFICATIONS FOR ROADWORKS.

### TABLE 8 GRANULAR SUB-BASE MATERIAL