



NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS. DIMENSIONS ONLY NOT SCALING TO BE USED. WHERE A REFERENCE OF INFORMATION EXISTS OR IN ANY DOUBT - ASK.
- CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

DEPTH OF SUBBASE & CAPPING LAYER

THE DEPTH OF THE SUB-BASE AND CAPPING LAYERS WILL VARY WITH THE SUBGRADE STRENGTH AS INDICATED BY THE CBR TEST RESULTS.

THE THICKNESS OF THE SUB-BASE LAYER SHOULD BE 120cm FOR ALL FORMS OF ROADWAY CONSTRUCTION.

THE THICKNESS OF THE CAPPING LAYER WILL VARY WITH THE CBR VALUE AS INDICATED IN TABLE 3 BELOW. IF THE CBR VALUE OF THE SUBGRADE IS LESS THAN 1%, NO CAPPING LAYER IS REQUIRED (SEE FIGURE 4.1 IN PART 2, HD25-26 OF NPA DESIGN MANUAL FOR ROADS AND BRIDGES).

TABLE 3. CAPPING LAYER - MINIMUM CONSTRUCTION THICKNESS	
LOWEST SUBGRADE CBR	MINIMUM CAPPING LAYER THICKNESS
0-1	200-250
* LESS THAN 2	(SEE FOOTNOTES)
2-5	450-250
5-15	250-150
MORE THAN 15	NO CAPPING LAYER REQUIRED

* FOR SUBGRADES WITH A CBR OF LESS THAN 2%, A GEOTEXTILE SEPARATOR (e.g. TERRAM 1000) SHOULD BE USED AND SPECIALIST ADVICE SOUGHT REGARDING MINIMUM THICKNESS.

IF THE CONTRACTOR PROPOSES TO USE THE SUB-BASE FOR CONSTRUCTION TRAFFIC HE SHOULD SEEK APPROVAL FROM THE ENGINEER TO DO SO. SUCH APPROVAL WILL ONLY NORMALLY BE GIVEN ON CONDITION THAT THE SUB-BASE THICKNESS IS INCREASED.

TYPICALLY FOR CBR VALUES $\leq 4\%$ THE SUB-BASE THICKNESS WILL HAVE TO BE INCREASED BY 150mm. FOR CBR VALUES $\geq 4\%$ AN INCREASE OF 80mm WILL BE SUFFICIENT.

SUBGRADE STRENGTH SHOULD BE ESTABLISHED BY MEANS OF THE CALIFORNIA BEARING RATIO (CBR) TEST, IN ACCORDANCE WITH BS 1377-4:1990. SAMPLES SHOULD BE TAKEN AT THE RATE OF ONE PER 50m OF ROAD AND WHERE SIGNIFICANT VARIATIONS IN SOIL TYPE ARE ANTICIPATED, EXTRA SAMPLES MAY BE REQUIRED BY THE EMPLOYERS REPRESENTATIVE WHERE THE DIFFERENCE IN STRENGTH BETWEEN TWO ADJACENT SAMPLES INDICATES A SIGNIFICANT VARIATION IN SOIL TYPE. IN PREPARING THE TEST SPECIMEN, THE METHOD OF COMPACTION SHOULD BE THE STATIC COMPACTION METHOD 2, AS SPECIFIED IN PARAGRAPH 7.2.3.3 OF BS 1377-4:1990.

4. MATERIAL SPECIFICATION FOR SUB-BASE AND CAPPING LAYER:

(a) SUB-BASE

SUB-BASE MATERIAL SHOULD COMPRISE TYPE B GRANULAR MATERIAL, IN ACCORDANCE WITH CLAUSE 804 OF THE SPECIFICATIONS FOR ROADWORKS. THE MATERIAL SHOULD LIE WITHIN THE GRADING LIMITS SET OUT IN TABLE 4.1 BELOW.

ISO SIEVE SIZE (mm)	OVERALL GRADING	SUPP. DECLARED VALUE GRADING	TOLERANCE
63	100	NR	NR
31.5	80-99	NR	NR
16	55-85	63-77	+/-8
8	35-65	43-57	+/-8
4	22-50	30-42	+/-8
2	15-40	22-33	+/-7
1	10-35	15-30	+/-5
0.5	0-20	5-15	+/-5
0.063	0-7	NR	NR

PARTICLE SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND SIEVING METHOD OF IS EN 933-1. ALL MATERIAL USED SHOULD BE FROST RESISTANT.

THE MATERIAL SHOULD HAVE A TEN PERCENT FINES VALUE OF 100kN, OR MORE, WHEN TESTED IN ACCORDANCE WITH IS EN 933-1.

THE SUB-BASE SHOULD BE LAID AND COMPACTED TO THE REQUIREMENTS OF CLAUSE 802 OF THE NRA SPECIFICATION FOR ROADWORKS, WITHOUT DRYING OUT, OR SEGREGATION.

(b) CAPPING LAYER

THE CAPPING LAYER SHALL BE CONSTRUCTED WITH CLASS 6F1 OR 6F2 MATERIAL AS PER SERIES 600 OF THE NRA SPECIFICATION FOR ROAD

GRAVEL, CRUSHED GRAVEL OR CRUSHED CONCRETE. THE MATERIAL SHOULD HAVE A MAXIMUM SIZE OF 100mm, AND THE MAXIMUM ALLOWABLE PASSING THE 63 MICRON SHOULD BE 10%. THE MATERIAL SHOULD BE WELL GRADED THROUGHOUT ALL SIZES.

SELECTED DEMOLITION MATERIALS, WHICH MEET THE ABOVE REQUIREMENTS MAY ALSO BE USED, SUBJECT TO APPROVAL.

5. SELECTED FILL MATERIAL BELOW CAPPING LAYER:
DETAILS SHOWN DESCRIBE MINIMUM CAPPING LAYER DEPTHS TO TOP

WHERE FILL MATERIAL IS REQUIRED TO MAKE UP LEVELS, SELECTED GRANULAR FILL TO CLASS 6B OF TABLE 3/1 OF THE NRA SPECIFICATION FOR ROADWORKS MAY BE USED IN LIEU OF ADDITIONAL CAPPING. IN THIS CASE, THE CONTRACTOR SHALL ALLOW FOR TESTING OF BOTH TOP OF SUBGRADE AND TOP OF SELECTED FILL LEVEL.

6. CBR TESTING OF CAPPING LAYER:

PRIOR TO PLACEMENT OF SUBBASE MATERIAL, THE CAPPING LAYER STRENGTH SHOULD BE ESTABLISHED BY MEANS OF THE CALIFORNIA BEARING RATIO (CBR) TEST, IN ACCORDANCE WITH BS 1377-4:1990. SAMPLES SHOULD BE TAKEN AT THE RATE OF ONE PER 50m OF ROAD. EXTRA SAMPLES MAY BE REQUIRED BY THE EMPLOYERS

REPRESENTATIVE WHERE THE DIFFERENCE IN STRENGTH BETWEEN TWO ADJACENT SAMPLES INDICATES A SIGNIFICANT VARIATION IN CAPPING LAYER COMPACTION. IN PREPARING THE TEST SPECIMEN, THE METHOD OF COMPACTION SHOULD BE THE STATIC COMPACTION METHOD 2, AS SPECIFIED IN PARAGRAPH 7.2.3.3 OF BS 1377-4:1990.

THE CONTRACTOR SHALL ALLOW FOR TESTING TO TOP OF CAPPING LAYER AND SHALL DEMONSTRATE THAT A MINIMUM IN-SITU CBR OF 15% HAS BEEN ACHIEVED PRIOR TO PLACEMENT OF THE SUBBASE MATERIAL.

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