



NOTES Ctd.

- GRADED LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE OF 100mm, 150mm OR 200mm NOMINAL INTERNAL WIDTH AS SPECIFIED ON THE DRAWINGS. MANUFACTURED FROM HIGH STRENGTH POLYMER CONCRETE WITH CAST-IN GALVANIZED STEEL EDGE RAILS. THE CHANNELS SHALL BE INSTALLED WITH MANUFACTURERS' DUCTILE IRON OR STAINLESS STEEL GRATING APPROPRIATE TO THE SPECIFIED LOAD CLASS AND LOCKED SECURELY IN PLACE. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS.
- SLOTTED LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE CHOSEN ACCORDING TO THE LOAD CLASS REQUIRED AND MANUFACTURED FROM HIGH STRENGTH POLYMER CONCRETE INCORPORATING A 100mm WIDE CENTRALLY POSITIONED SLOT. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS.
- PRECAST KERBS SHALL BE LAID AND LEVELLED IN ACCORDANCE WITH BS 7533: PART 4. A RASSED LIP OF 25mm SHOULD BE USED FOR VEHICULAR ENTRANCES AND 0-6mm FOR PEDESTRIAN CROSSINGS.
- IN SITU KERBS SHALL COMPLY WITH THE REQUIREMENTS OF BS 5931. KERBS SHALL BE PROTECTED FROM THE EFFECTS OF ADVERSE WEATHER UNTIL CURED. A RASSED LIP OF 25mm SHOULD BE USED FOR VEHICULAR ENTRANCES AND 0-6mm FOR PEDESTRIAN CROSSINGS.

NOTE:
BEFORE PAVERS / PAVEMENT WORKS ARE COMMENCED THE CONTRACTOR IS TO ESTABLISH IF THESE WORKS ARE TO BE TAKEN IN CHARGE BY THE LOCAL AUTHORITY. IF THIS IS THE CASE THE CONTRACTOR IS TO GET APPROVAL FROM THE LOCAL AUTHORITY FOR THE DETAILS SHOWN ON THIS DRAWING AND ESTABLISH INSPECTION AND TESTING REQUIREMENTS BEFORE COMMENCING THE WORK.

NOTES Ctd.

- CLAY AND CALCIUM SILICATE PAVERS SHOULD COMPLY WITH IS EN 1344: TYPE FB WITH DIMENSIONS 200 x 100 x 65mm FOR TRAFFICED AREAS & 50mm THICK FOR PEDESTRIAN AREAS.
- CONCRETE BLOCK PAVERS SHOULD COMPLY WITH BS EN 1338: TYPE B & 200 x 100 x 65mm THICK FOR TRAFFICED AREAS & 40mm THICK FOR PEDESTRIAN AREAS.
- HORIZONTAL INTERLOCK SHOULD BE GIVEN TO THE PAVING EITHER BY THE USE OF SHAPED BLOCKS OR BY LAYING RECTANGULAR BLOCKS IN HERRINGBONE FASHION AT THE EDGE OF THE PAVEMENT. RESTRAINT SHOULD BE PROVIDED, IN ORDER TO PREVENT THE PAVERS AND THE LAYING COURSE FROM MIGRATING OUTWARDS AND LOSING INTERLOCK.
- CLAY, CALCIUM SILICATE & CONCRETE BLOCK PAVERS SHOULD BE LAID IN ACCORDANCE WITH BS 7533-3.
- LAYING COURSE SAND SHALL BE '0/85 0/4 (M6)' AS PER IS EN 12620. AS A GUIDE TO MOISTURE CONTENT AFTER THE MATERIAL IS COMPRESSED THE MATERIAL SHOULD BE BOUND TOGETHER WITHOUT SHOWING FREE MOISTURE ON ITS SURFACE. WHERE LAYING COURSE MATERIAL IS STORED ON SITE IT SHOULD BE COVERED TO REDUCE MOISTURE LOSS DUE TO EVAPORATION, OR SATURATION FROM RAINFALL.
- IF THE LAYING COURSE MATERIAL BECOMES SATURATED AFTER PLACEMENT THEN IT SHOULD BE REMOVED AND REPLACED WITH LAYING COURSE MATERIAL. A CONDITION SUITABLE FOR THE EARTH LAYING OPERATION. ALTERNATIVELY THE LAYING COURSE CAN BE LEFT IN PLACE UNTIL IT DRIES SUFFICIENTLY TO ALLOW BLOCK LAYING TO PROCEED.
- JOINTS BETWEEN PAVERS TO BE LAID 100% (20mm to 50mm WIDE) AND FILLED WITH FINE SAND '0/85 0/4 (M6)' AS PER IS EN 12620.
- LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE FULLY COMPLIANT WITH IS EN 1433:2002 AND CERTIFIED TO THE LOAD CASES SPECIFIED ON THE DRAWINGS AND AS DEFINED IN IS EN 1433:2002.

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECTS DRAWINGS FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT, ASK.
- CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

NOTES

- ALTERNATIVE BASE COURSE MATERIAL:**
AS AN ALTERNATIVE TO ASPHALTIC CONCRETE BASE COURSE THE CONTRACTOR CAN USE AN STANDARD CONCRETE MIX 'S12' LEAN MIX' CONFORMING TO BS 5329: PART 1. THE STANDARD CONCRETE MIX 'S12' SHALL CONFORM TO IS 456: BS 8000-1, BS 8000-2 & IS EN 12620-1. LAYING COURSE OF LEAN-MIX ROAD BASE SHALL BE BY BUTYROMOUS SPRAYING TO CLAUSE 802 WITH SPECIFICATION FOR ROAD WORKS.
- USE OF BASE COURSE FOR CONSTRUCTION TRAFFIC:**
THE BASE COURSE MAY BE USED FOR CONSTRUCTION TRAFFIC PROVIDED IT IS INCREASED IN THICKNESS BY 20mm AND SURFACE DRESSED. SURFACE DRESSING SHOULD BE CARRIED OUT IN ACCORDANCE WITH CLAUSE 819 AND 922 OF THE NBS SPECIFICATION FOR ROADWORKS. THE BINDER SHOULD BE CUTBACK BITUMEN OR CATIONIC BITUMEN EMULSION, COMPLYING WITH THE SPECIFICATION. OTHER BINDERS MAY BE USED, SUBJECT TO APPROVAL.
CUTBACK BITUMEN SHOULD BE OF THE APPROPRIATE GRADE SPECIFIED. CATIONIC BITUMEN EMULSION SHOULD HAVE A NOMINAL BITUMEN CONTENT OF 70%. THE BINDER SHOULD BE SPREAD AT THE APPROPRIATE RATE SPECIFIED. CHIPPINGS SHOULD BE OF A SINGLE SIZE (AS APPROVED BY THE LOCAL AUTHORITY), CUBICAL IN SHAPE AND SHOULD COMPLY WITH THE REQUIREMENTS OF TABLE 2.4 OF CLAUSE 819 OF THE NBS SPECIFICATION FOR ROAD WORKS.
DEPTH OF SUB-BASE & 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 150mm FOR ALL FORMS OF ROADWAY CONSTRUCTION.
THE THICKNESS OF THE CAPPING LAYER WILL VARY WITH THE CBR VALUE AS INDICATED IN TABLE 3.1 BELOW. IF THE CBR VALUE OF THE SUBGRADE EXCEEDS 12%, NO CAPPING LAYER IS REQUIRED. SEE FIGURE 4.1 IN PART 2A, HD25-26 OF NBS DESIGN MANUAL FOR ROADS AND BRIDGES.

LOWEST SUBGRADE CBR (%)	MINIMUM CAPPING LAYER THICKNESS (mm)
2-3	450-2250
3-5	250-150
5-10	250-150
MORE THAN 12	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 THYRICALLY FOR CBR VALUES + 4% THE SUB-BASE THICKNESS WILL HAVE TO BE INCREASED BY 150mm. FOR CBR VALUES + 4% AN INCREASE OF 80mm WILL BE SUFFICIENT.

SUBGRADE STRENGTH SHOULD BE ESTABLISHED BY MEANS OF THE CALIFORNIA BEARING TEST (CBR) TEST IN ACCORDANCE WITH BS 1377-1:1990. SAMPLES SHOULD BE TAKEN AT THE RATE OF ONE PER 100m² OF ROADWAY CONSTRUCTION. SAMPLES SHOULD BE TAKEN AT THE ANTICIPATED, EXTRA SAMPLES MAY BE REQUIRED BY THE LOCAL AUTHORITY. THE TEST METHOD SHOULD BE THE METHOD OF COMPACTION SHOWN IN 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 1377-1:1990.

- MATERIAL SPECIFICATION FOR SUB-BASE AND CAPPING LAYER:**
 - SUB-BASE:**
SUB-BASE MATERIAL SHOULD COMPOSE TYPE B GRANULAR MATERIAL, IN ACCORDANCE WITH CLAUSE 804 OF THE SPECIFICATIONS FOR ROADWORKS. THE MATERIAL SHOULD BE WITHIN THE GRADING LIMITS SET OUT IN TABLE 4.1 BELOW.

SDS SIZE (mm)	OVERALL GRADING RANGE (%)	DECLARED VALUE GRADING RANGE (%)	TOLERANCE (%)
63	100	NR	NR
75	100	NR	NR
150	100	NR	NR
315	80-99	NR	NR
16	55-85	63-77	+/- 8
8	35-65	43-67	+/- 4.8
4	22-50	30-42	+/- 8
2	15-40	22-33	+/- 7
1	10-35	15-30	+/- 5.1
0.5	0-20	0-19	+/- 5
0.075	0-7	NR	NR

PARTICLE SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND BRINE METHOD OF IS EN 924-1. ALL MATERIAL USED SHOULD BE FREE FROM PLASTIC.

MATERIAL PASSING THE 0.425mm SIEVE, WHEN TESTED IN ACCORDANCE WITH BS 1377-2, SHOULD BE NON-PLASTIC.

THE MATERIAL SHOULD HAVE A TEN PERCENT FINES VALUE OF 100%, OR EQUIVALENT, IN ACCORDANCE WITH BS EN 924-1.

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

- CAPPING LAYER:**
THE CAPPING LAYER SHALL BE CONSTRUCTED WITH CLASS 6/1 OR 6/2 MATERIAL AS PER SERIES 600 OF THE NBS SPECIFICATION FOR ROAD WORKS AND COMPOSING OF EITHER GRADED ROCK, NATURAL GRAVEL, CRUSHED GRAVEL OR CRUSHED CONCRETE. THE MATERIAL SHOULD HAVE A MAXIMUM SIZE OF 100mm AND THE MAXIMUM ALLOWABLE PASSING 4% 63mm 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.

- CONCRETE FOR ROAD PAVEMENTS:**

MINIMUM CEMENT CONTENT	340kg/m ³
MAXIMUM FREE WATER/CEMENT RATIO	0.45
MAXIMUM AGGREGATE SIZE	20mm
MINIMUM STRENGTH CLASS	C32/40
AIR CONTENT	4.5 %
SUMP CLASS	S3

REINFORCEMENT FOR CONCRETE SLABS SHOULD BE LONG MESH STEEL FABRIC, COMPLYING WITH BS 4483 AND SHOULD BE FREE FROM LOOSE MILLS, SCALE, RUST, OIL, PAINT OR GREASE. THE MINIMUM WEIGHT OF REINFORCEMENT SHOULD BE 2.0kg/m². THE REINFORCEMENT SHOULD HAVE 20mm MINIMUM COVER FROM THE SURFACE AND SHOULD TERMINATE BETWEEN 250 AND 300mm FROM ANY TRANSVERSE JOINT BETWEEN ADJACENT FORMS. REINFORCING MESH SHOULD BE LAID FROM THE EDGE OF THE SLAB. REINFORCING MATS SHOULD OVERLAP SUCH THAT THE TRANSVERSE BARS OF ONE MAT SHOULD BE WITHIN THE LAST COMPLETE MESH OF THE PREVIOUS MAT AND THE OVERLAP SHOULD BE AT LEAST 400mm. TRANSVERSE JOINTS MUST BE SPACED FOR VARIOUS MESH SIZES SHOULD BE AS FOLLOWS:

LONG MESH REINFORCEMENT TO BS 4483	MAXIMUM SPACING (m) OF CONTRACTION JOINTS
C283	15m
C35	20m
C30.3	25m

- SAWING OF JOINT GROOVES SHOULD BE UNDERTAKEN AS SOON AS POSSIBLE AFTER THE CONCRETE HAS HARDENED SUFFICIENTLY TO ENABLE A SHARP EDGED GROOVE TO BE PRODUCED WITHOUT DISRUPTING THE CONCRETE AND BEFORE RANDOM CRACKS DEVELOP IN THE SLAB. THIS WOULD BE WITHIN 6 TO 24 HOURS AFTER THE CONCRETE IS POURED. THE GROOVES SHOULD BE BETWEEN 8 & 11% THE DEPTH OF SLAB AND OF ANY CONVEINENT WIDTH NOT LESS THAN 3mm. THE GROOVE CAN BE WIDENED BY SAWING AT THIS STAGE, OR LATER, TO ACCOMMODATE THE JOINT SEALANT.
- EXPANSION JOINT FILLER SHOULD BE COMPRESSIBLE ROAD 25mm THICK FOR THE FULL DEPTH OF THE CONCRETE. THE TOP OF THE FILLER BOARD SHOULD BE ROUTED OUT LATER, TO A DEPTH OF 50mm, IN ORDER TO RECEIVE THE JOINT SEALANT.
- DOVEL BARS AND THE BARS SHOULD BE BS5008 STEEL, COMPLYING WITH IS EN 13813-3 AND SHOULD BE FREE FROM OIL, GREASE, SCALE AND RUST. DOVEL BARS SHOULD BE STRAIGHT, FREE OF BURS AND OTHER IRREGULARITIES. WITH THE SLIDING END SHOWN. DOVEL BARS SHOULD BE CURVED WITH THEIR LENGTH WITH A 100% BURABLE. FOR EXPANSION JOINTS, THE EXPANSION SPACE AVAILABLE IN THE WATERPROOF CAP SHOULD BE 10mm GREATER THAN THE THICKNESS OF THE JOINT FILLER BOARD.
- JOINT GROOVES SHOULD BE SEALED WITH A COLD APPLIED JOINT-SEALING COMPOUND COMPLYING WITH BS 5212 TYPE N. THE FINISHED SURFACE OF THE SEAL SHOULD BE 5mm BELOW THE SURFACE LEVEL OF THE CONCRETE.

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