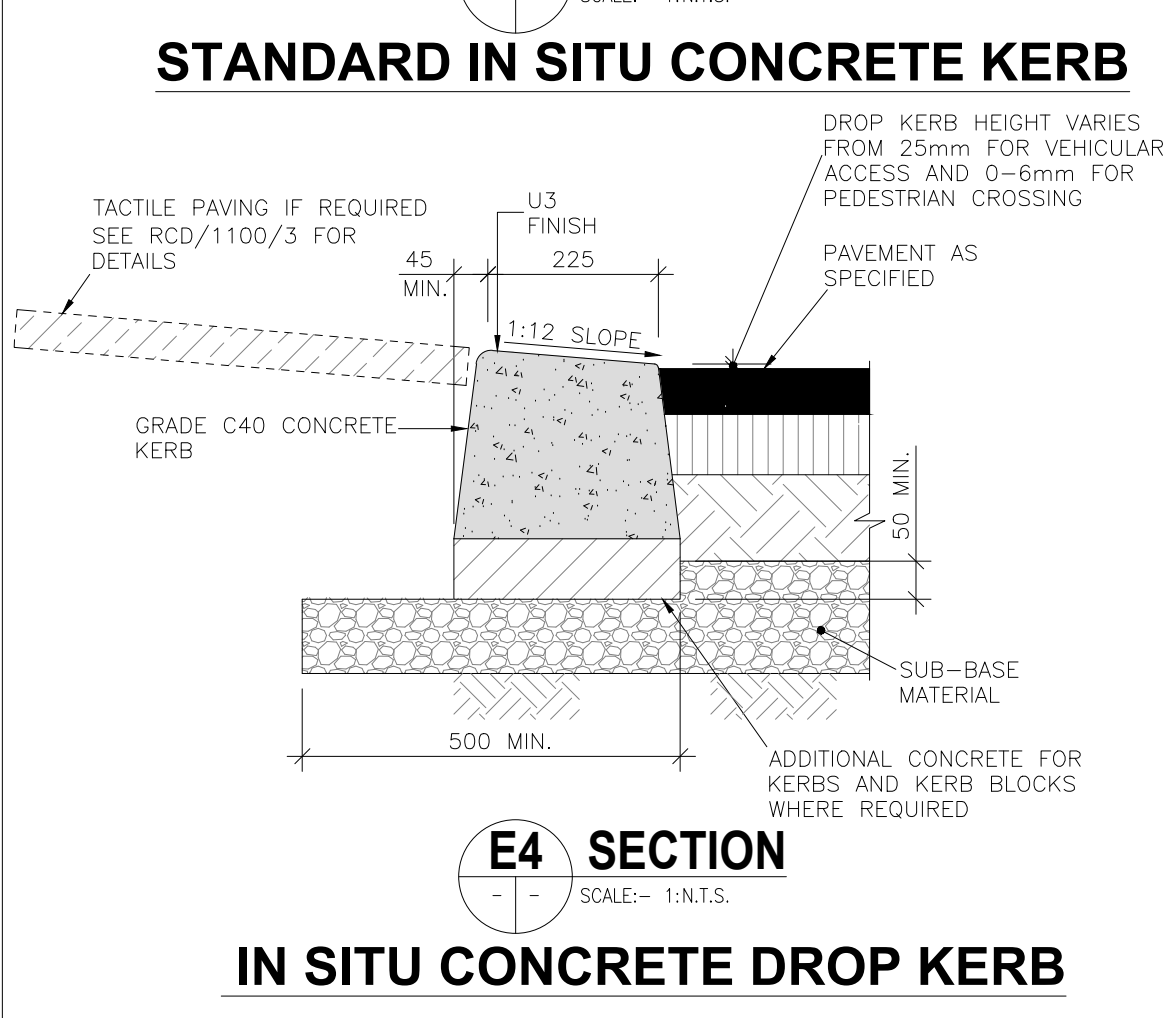
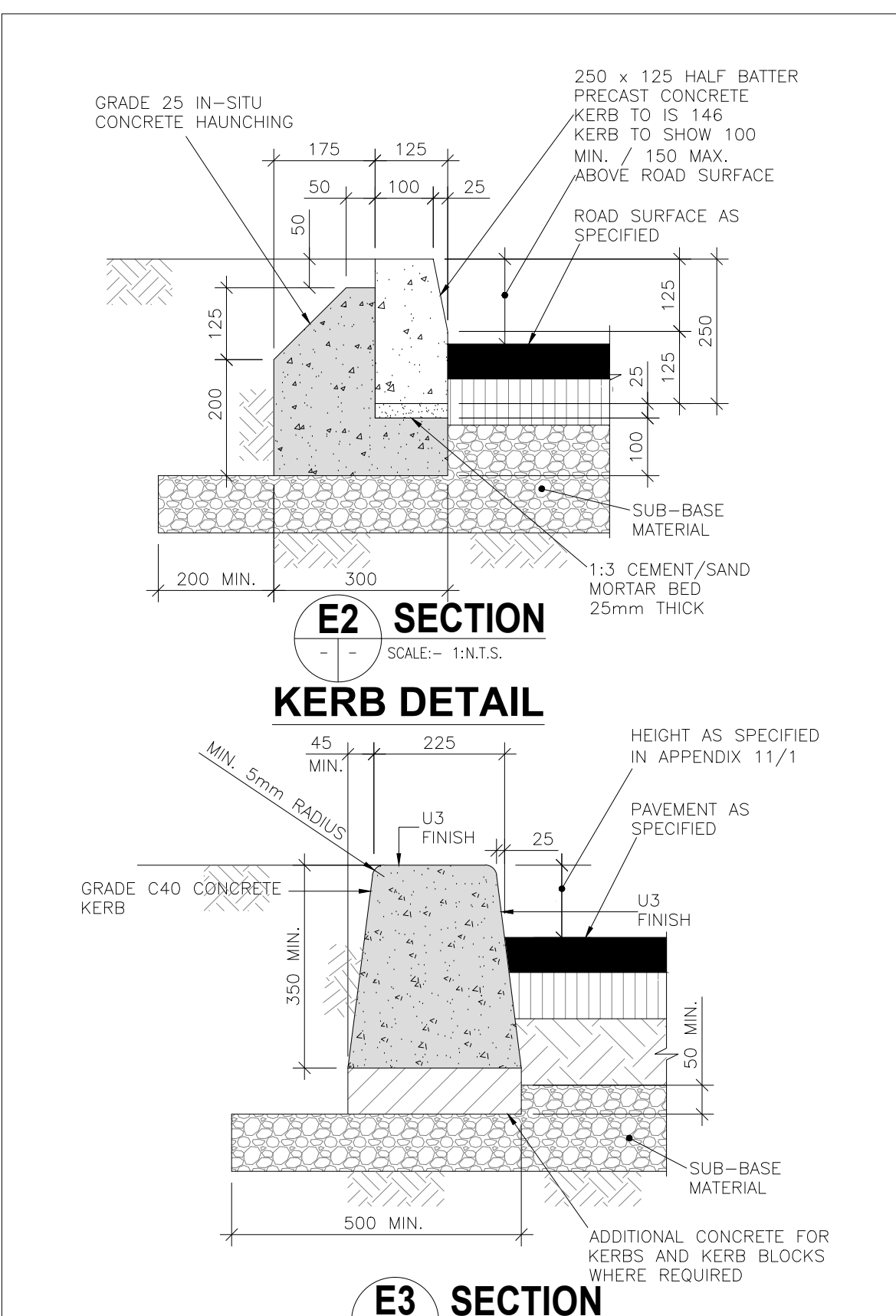
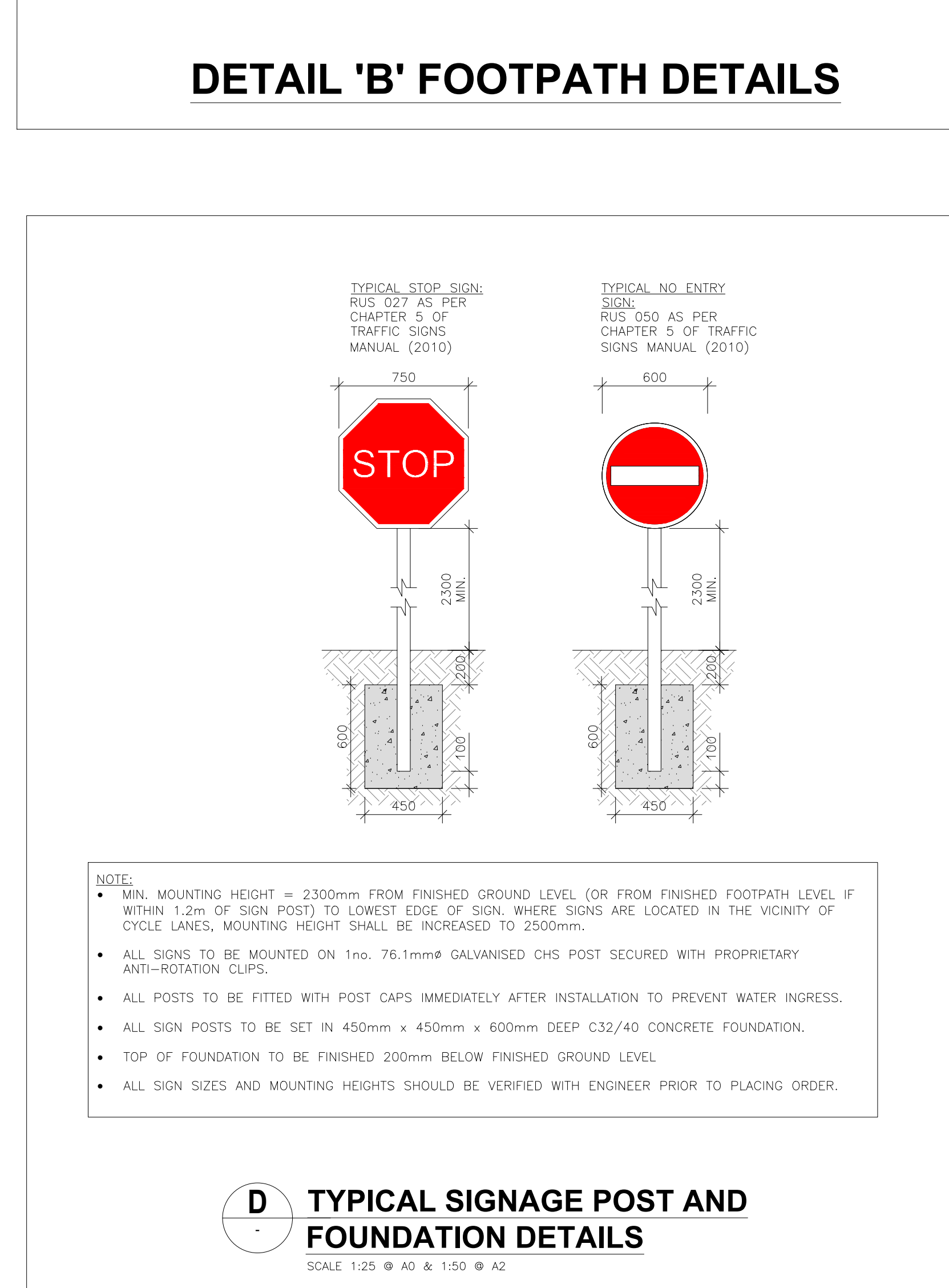


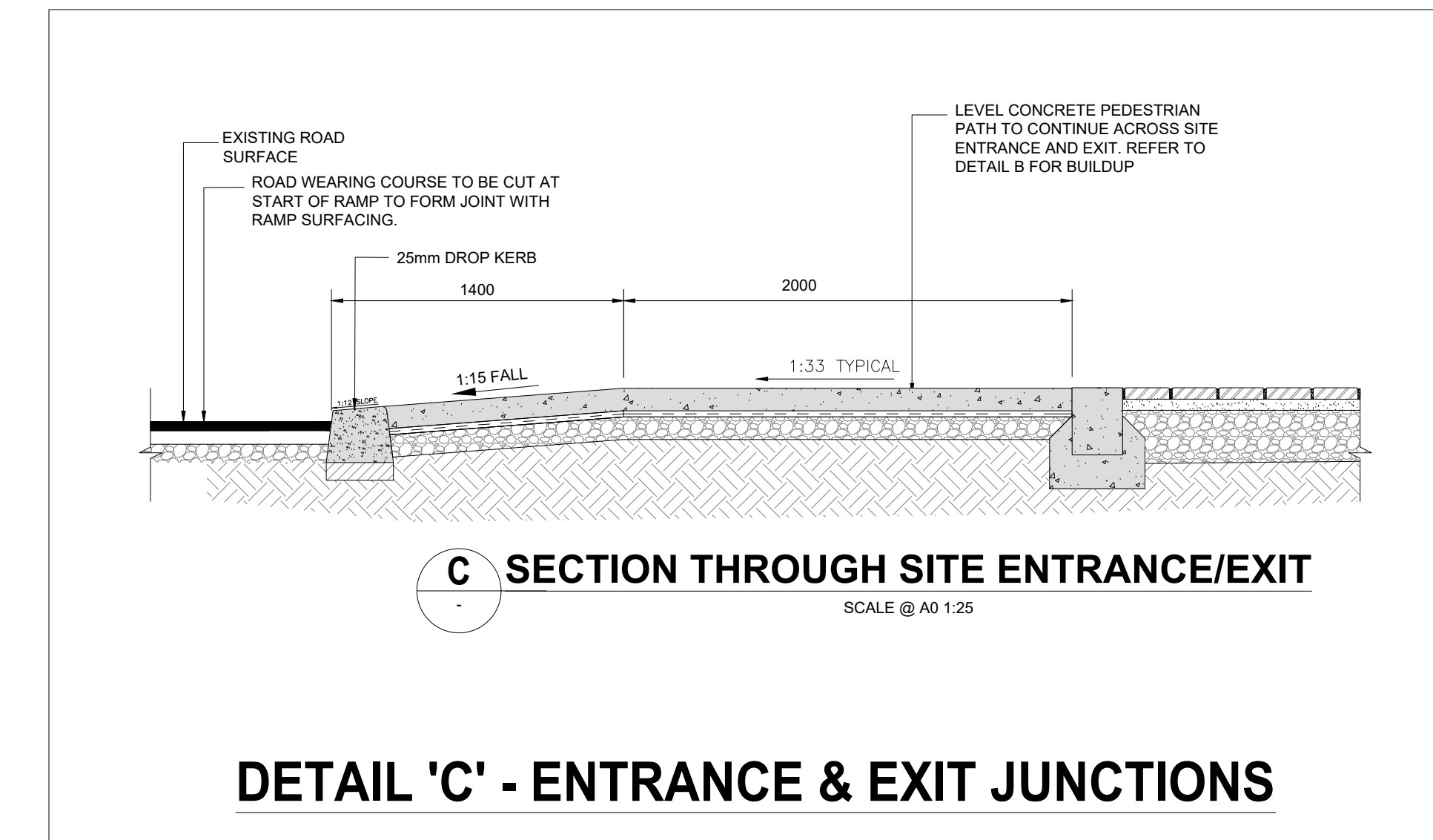
DETAIL 'B' FOOTPATH DETAILS



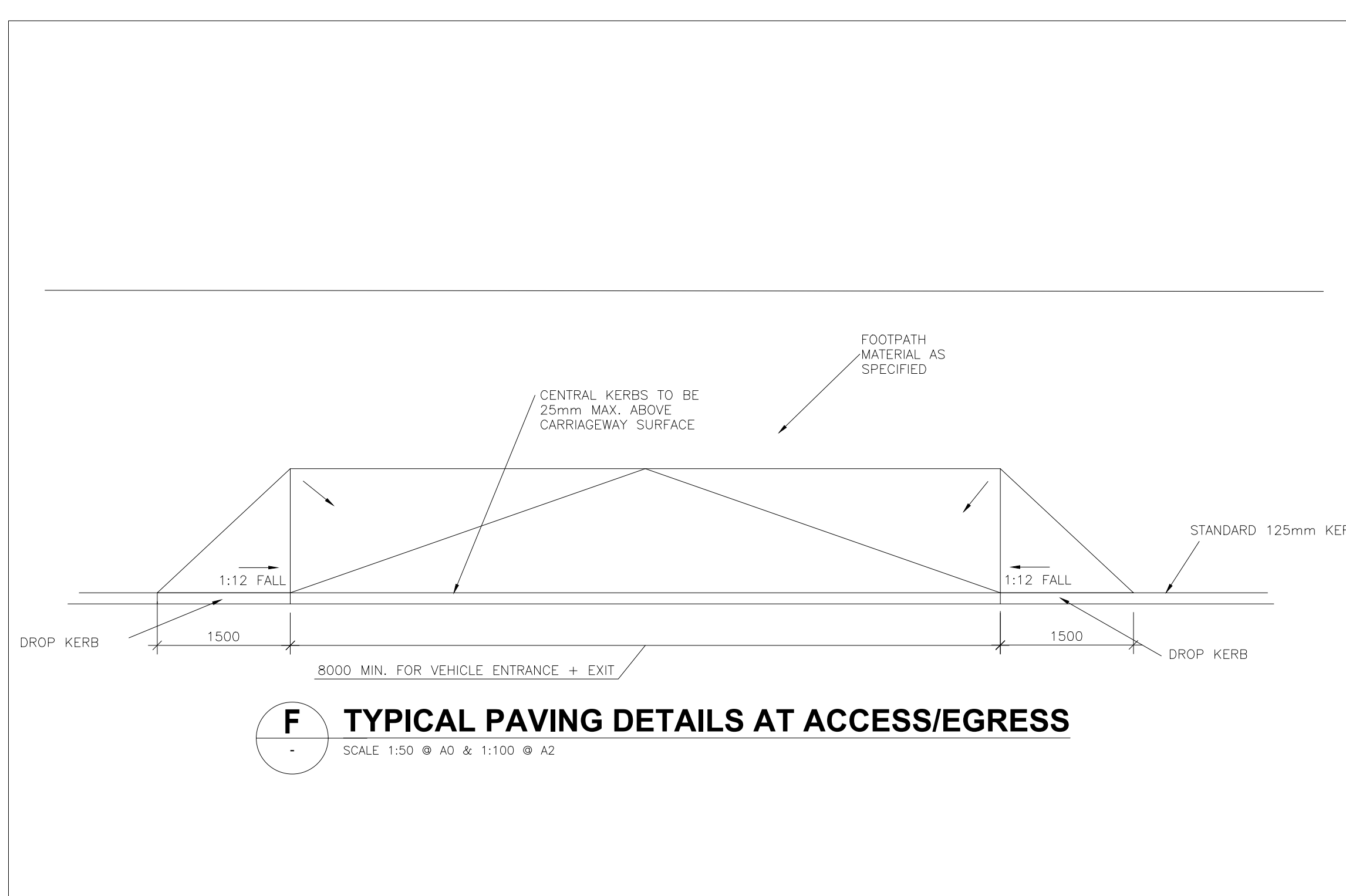
DETAIL 'E' - KERB DETAILS



DETAIL 'D' TYPICAL SIGNAGE POST AND FOUNDATION DETAILS



DETAIL 'C' - ENTRANCE & EXIT JUNCTIONS



DETAIL 'F' TYPICAL PAVING DETAILS AT ACCESS/EGRESS



DETAIL 'E' - KERB DETAILS

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 ALTERNATE TO ASPHALTIC CONCRETE BASE COURSE THE CONTRACTOR CAN USE AN STANDARD CONCRETE MIX '12' LEAN MIX' BASE COURSE 150mm THICK STANDARD CONCRETE MIX '12' SHALL CONFORM TO IS 10262 BS 8500-1 BS 8500-2 & IS EN 12897-1. CURING OF LEAN-MIX ROAD BASE SHALL BE BY BITUMINOUS SPRAYING TO CLASS 622 MIX SPECIFICATION FOR ROADWORKS.
- USE OF BASE COURSE FOR CONSTRUCTION TRAFFIC
THE BASE COURSE MAY BE USED FOR CONSTRUCTION TRAFFIC PROVIDED IF IT IS RECALCULATED THE THICKNESS BY USING SURFACE STRENGTH. SURFACE DRESSING SHOULD BE CARRIED OUT IN ACCORDANCE WITH CLAUSE 819 AND 922 OF THE NRS 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. CURRING SHOULD BE OF A SINGLE SIZE (AS APPROVED BY THE LOCAL AUTHORITY). CURBICAL IN SHAPE AND SHOULD COMPLY WITH THE REQUIREMENTS OF TABLE 2.4 OF CLAUSE 819 OF THE NRS SPECIFICATION FOR ROAD WORKS.
- DEPTH OF SUB-BASE & CAPPING LAYERS
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 VALUES AS INDICATED IN TABLE 3.1 BELOW. IF THE CBR VALUE OF THE SUBGRADE EXCEEDS 15%, NO CAPPING LAYER IS REQUIRED. SEE FIGURE 4.1 IN PART 2A, HD25-24 OF NRS DESIGN MANUAL FOR ROADS AND BRIDGES.

TABLE 3.1 CAPPING LAYER - MINIMUM CONSTRUCTION THICKNESS

LOWEST SUBGRADE CBR (%)	MINIMUM CAPPING LAYER THICKNESS (mm)
* LESS THAN 2	450-250
2-5	250-150
5-15	NO CAPPING LAYER REQUIRED
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 TO COMPLY FOR CBR VALUES 4. IF THE SUB-BASE THICKNESS WILL HAVE TO BE INCREASED BY 100mm FOR CBR VALUES > 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 100M OF ROAD AND IN ACCORDANCE WITH THE REQUIREMENTS OF BS 1377-4:1990. EXTRA SAMPLES MAY BE REQUIRED BY THE LOCAL AUTHORITY WHERE THE VARIATION IN STRENGTH BETWEEN TWO ADJACENT SAMPLES INDICATES A SIGNIFICANT VARIATION IN SOIL TYPE. IN PREPARING THE TEST SPECIMENS, THE METHOD OF COMPACTION SHOULD BE THE STATIC COMPACTION METHOD 2, AS SPECIFIED IN PARAGRAPH 7.2.3.3 OF BS 1377-4:1990.

TABLE 4.1 SUB-BASE MATERIAL - PERCENTAGE BY MASS PASSING

150 SIZE SIEVE (mm)	GENERAL GRADING RANGE (%)	SUPP. DECLARED VALUE GRADING RANGE (%)	TOLERANCE (%)
63	100	NR	NR
75	100	NR	NR
100	100	NR	NR
150	80-99	NR	NR
16	55-85	63-77	+/-8
2	35-65	43-57	+/-8
4	22-50	30-42	+/-8
2	15-40	22-33	+/-7
1	10-30	15-30	+/-5
0.5	0-20	5-15	+/-5
0.075	0-7	NR	NR

NUMERICAL SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND SIEVING METHOD OF IS EN 933-1. ALL MATERIAL USED SHOULD BE FINEST RESISTANT.
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 FINE'S VALUE OF 100%, OR MORE THICK FOR PEDESTRIAN AREAS IN ACCORDANCE WITH BS EN 933-1.
THE SUB-BASE SHOULD BE LAD AND COMPACTED TO THE REQUIREMENTS OF CLAUSE 802 OF THE NRS SPECIFICATION FOR ROADWORKS, WITHOUT SPRING OUT, OR SEGREGATION.

(d) CAPPING LAYER
THE CAPPING LAYER SHALL BE CONSTRUCTED WITH CLASS 6/1 OR 6/2 MATERIAL, AS PER SERIES 600 OF THE NRS SPECIFICATION FOR ROADWORKS AND COMPOSING OF EITHER CRUSHED ROCK, NATURAL GRAVEL OR CRUSHED GRAVEL OR CRUSHED CONCRETE. THE MATERIAL SHOULD HAVE A MAXIMUM SIZE OF 125mm AND THE MAXIMUM ALLOWABLE FINES SHALL BE AS SPECIFIED IN TABLE 4.1. 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:
PAVING QUALITY CONCRETE SHOULD BE READY MIX (OR EXTRACTED CONCRETE) MADE FROM NATURAL AGGREGATES, CEMENT, WATER AND AIR ENTRAINING AGENT COMPLYING WITH IS 206-1, BS 800-1, BS 800-2, BS EN 12620-2 AND THE REQUIREMENTS OF SERIES 1000 OF THE NRS SPECIFICATION FOR ROAD WORKS.

TABLE 5.1 CONSTITUENTS FOR PAVING QUALITY CONCRETE

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 OIL, FAT, MILL SCALE, RUST, DIRT, OIL PAINT OR GREASE. THE MINIMUM WEIGHT OF REINFORCEMENT SHOULD BE 2.0 kg/m² OF THE REINFORCEMENT AREA. REINFORCEMENT SHOULD BE 50mm MINIMUM COVER FROM THE SURFACE AND SHOULD TERMINATE BETWEEN AND THROUGH JOINTS. REINFORCEMENT SHOULD BE 40 AND 80mm FROM A LONGITUDINAL JOINT. THE REINFORCEMENT SHOULD BE 100 AND 150mm FROM THE EDGE OF THE SLAB. REINFORCING MATS SHOULD OVERLAP SUCH THAT THE TRANSVERSE WIRE OF ONE MAT SHOULD LIE WITHIN THE LAST COMPLETE MESH OF THE PREVIOUS MAT AND THE OVERLAP SHOULD BE AT LEAST 400mm. TRANSVERSE JOINT SPACING FOR VARIOUS MESH SIZES SHOULD BE AS FOLLOWS:

LONG MESH REINFORCEMENT TO BS 4483	MAXIMUM SPACING (m) OF CONTRACTION JOINTS
C283	15m
C385	20m
C503	25m

7. FINISHING 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 PLACED. THE GROOVES SHOULD BE BETWEEN 1/4 & 1/2 THE DEPTH OF SLAB AND OF ANY CONCREDE WITHIN 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 BOARD 25mm THICK, FOR THE FULL DEPTH OF THE CONCRETE. THE TOP OF THE FILLER BOARD SHOULD BE NOTED OUT LATER, TO A DEPTH OF 20mm, IN ORDER TO RECEIVE THE JOINT SEALANT.

8. DOGEL BARS AND THE BARS SHOULD BE BROSSE STEEL, COMPLYING WITH IS EN 1387-3 AND SHOULD BE FREE FROM OIL, FAT, LOOSE SCALE AND RUST. BARS SHOULD BE STRAIGHT, FREE OF BENDS AND OTHER IRREGULARITIES, WITH THE SQUARED END SAWN. DOGEL BARS SHOULD BE CORRODED OVER THEIR LENGTH WITH A TYPICAL CORROSION PLASTIC SHEATH OF AVERAGE THICKNESS NOT GREATER THAN 1.25mm. FOR EXPANSION JOINTS, THE EXPANSION SPACE AVAILABLE IN THE WATERPROOF CAP SHOULD BE 10mm GREATER THAN THE THICKNESS OF THE JOINT FILLER BOARD.

9. JOINT GROOVES SHOULD BE SEALED WITH A COLD APPLIED JOINT SEALING COMPOUND COMPLYING WITH BS 5472 TYPE N. THE FINISHED SURFACE OF THE SEAL SHOULD BE 3mm BELOW THE SURFACE LEVEL OF THE CONCRETE.

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 GALVANISED STEEL EDGE PANELS. THE CHANNELS SHALL BE INSTALLED WITH MANUFACTURERS' EXCITILE ROSS OR STAINLESS STEEL GRATING APPROPRIATE TO THE SPECIFIED LOAD CLASS AND LOADED 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 10mm WIDE CENTRALLY POSITIONED SLOT. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS.
- PRECAST KERBS SHALL BE LAD AND LEVELLED IN ACCORDANCE WITH BS 7532: PART 4. A BASED 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 BASED 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 WORKS.

NOTES Ctd.

- CLAY AND CALCIUM SILICATE PAVERS SHOULD COMPLY WITH IS EN 1344 TYPE B3 WITH DIMENSIONS 200 x 100 x 60mm FOR TRAFFICKED AREAS & 50mm THICK FOR PEDESTRIAN AREAS.
CONCRETE BLOCK PAVERS SHOULD COMPLY WITH BS EN 1338- TYPE B, 200 x 100 x 60mm THICK FOR TRAFFICKED AREAS & 60mm 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 PATTERN. AT THE EDGE OF THE PAVEMENT, RESTRAINT SHOULD BE PROVIDED, IN ORDER TO PREVENT THE PAVERS AND THE LAYING COURSE FROM MIGRATING OUTWARDS AND LONGITUDINAL.
CLAY, CALCIUM SILICATE & CONCRETE BLOCK PAVERS SHOULD BE LAD IN ACCORDANCE WITH BS 7533-3.
- LAYING COURSE SAND SHALL BE '088 0/4 (MP)' AS PER IS EN 12620. AS A GUIDE TO MOISTURE CONTENT, AFTER THE MATERIAL IS COMPRESSED THE MATERIAL SHOULD BND 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 SEPARATION FROM RAINFALL.
IF THE LAYING COURSE MATERIAL BECOMES SATURATED AFTER PLACEMENT THEN IT SHOULD BE REMOVED AND REPLACED WITH LAYING COURSE MATERIAL, IN A CONDITION SUITABLE FOR THE BLOCK 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 LAD 100% (2mm to 5mm WIDE).
- 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.

PL1 04.09.20 ISSUED FOR PLANNING

DATE	DESCRIPTION	ISSUED BY	CHECKED BY

PLANNING

BM Barrett Mandry
 12788 Essex London SE1 2AX, United Kingdom
 Tel: (0204) 084 5413 2722

The Institution of Structural Engineers **ACEI**

ORCHID RESIDENTIAL LTD.

PROJECT TITLE: **GOATSTOWN STUDENT ACCOMMODATION** PROJECT No: **19.289**

MODEL/REV: **P1** SUBMITTY: **80**

DRAWING TITLE: **ROAD & HARDSTANDING STANDARD DETAILS**

DRAWING No: **19289-BMD-ZX-XX-DR-C-1210** DATE: **PL1**