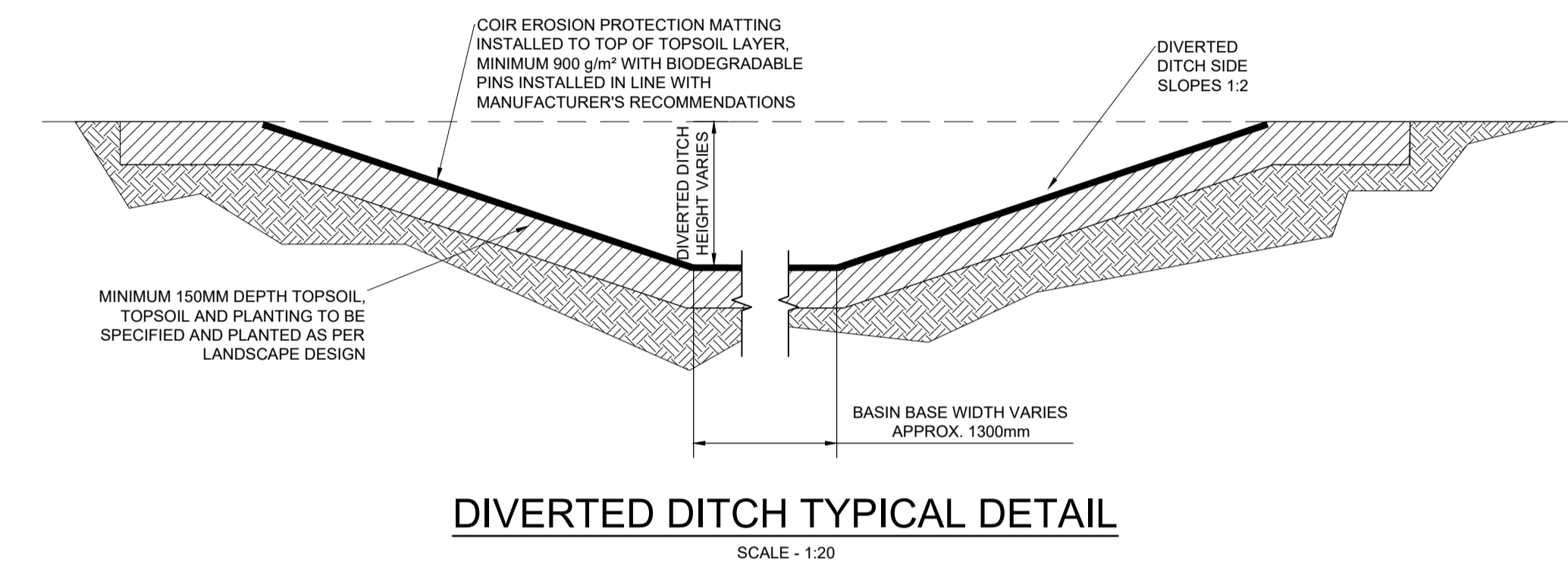
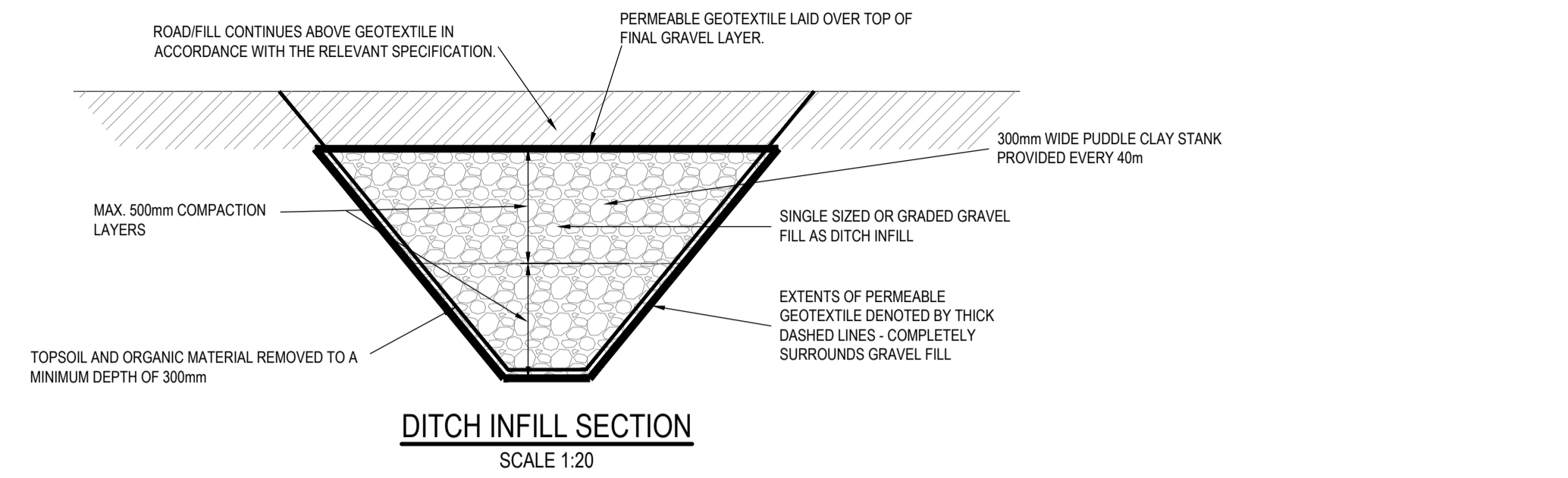
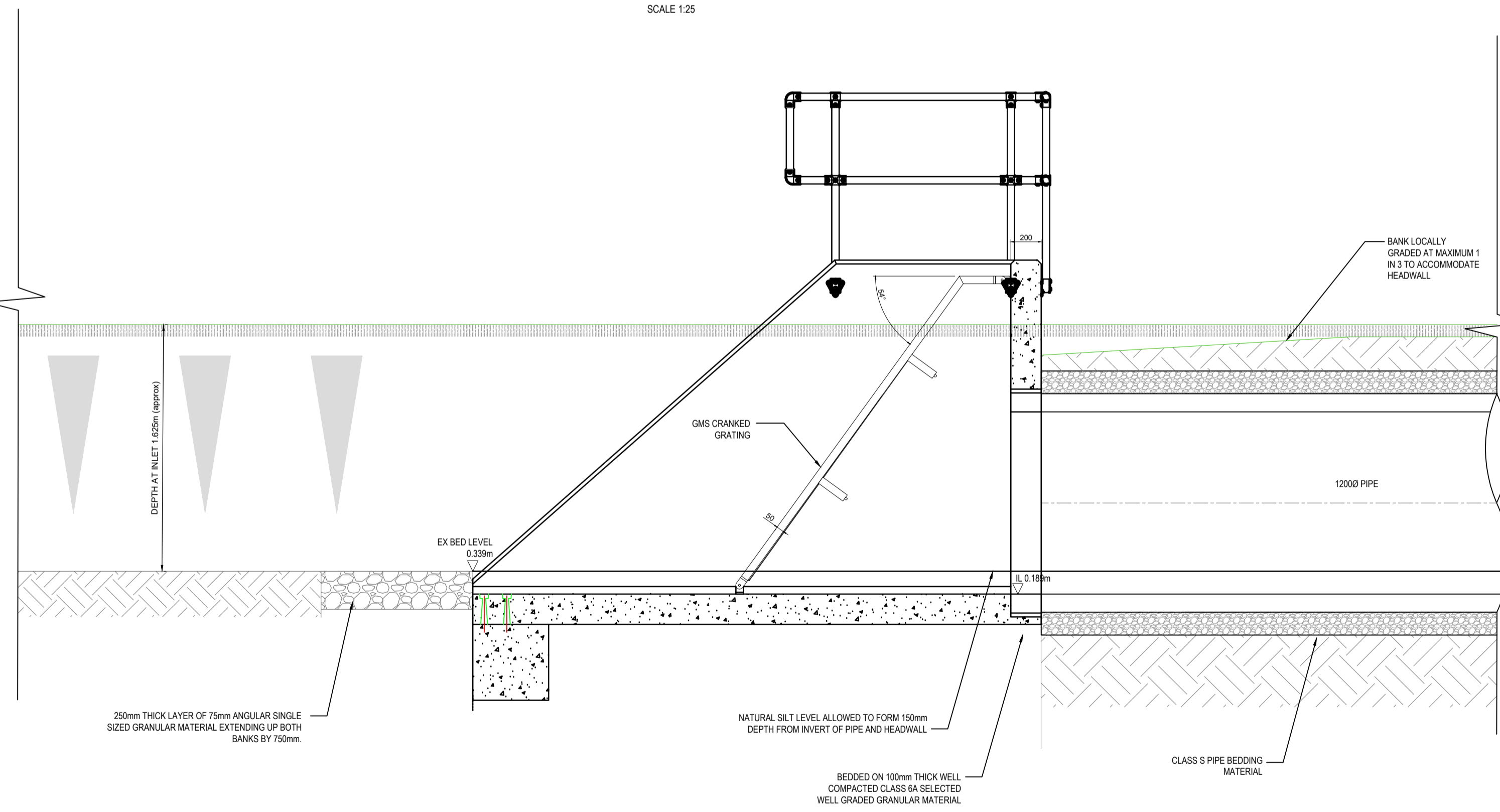


**HEADWALL 501 (INLET)**  
**DITCH HEADWALL DETAIL - IN LINE WITH FLOW**  
**PRECAST JKH DRAINAGE TYPE X HEADWALL**  
 SCALE 1:25

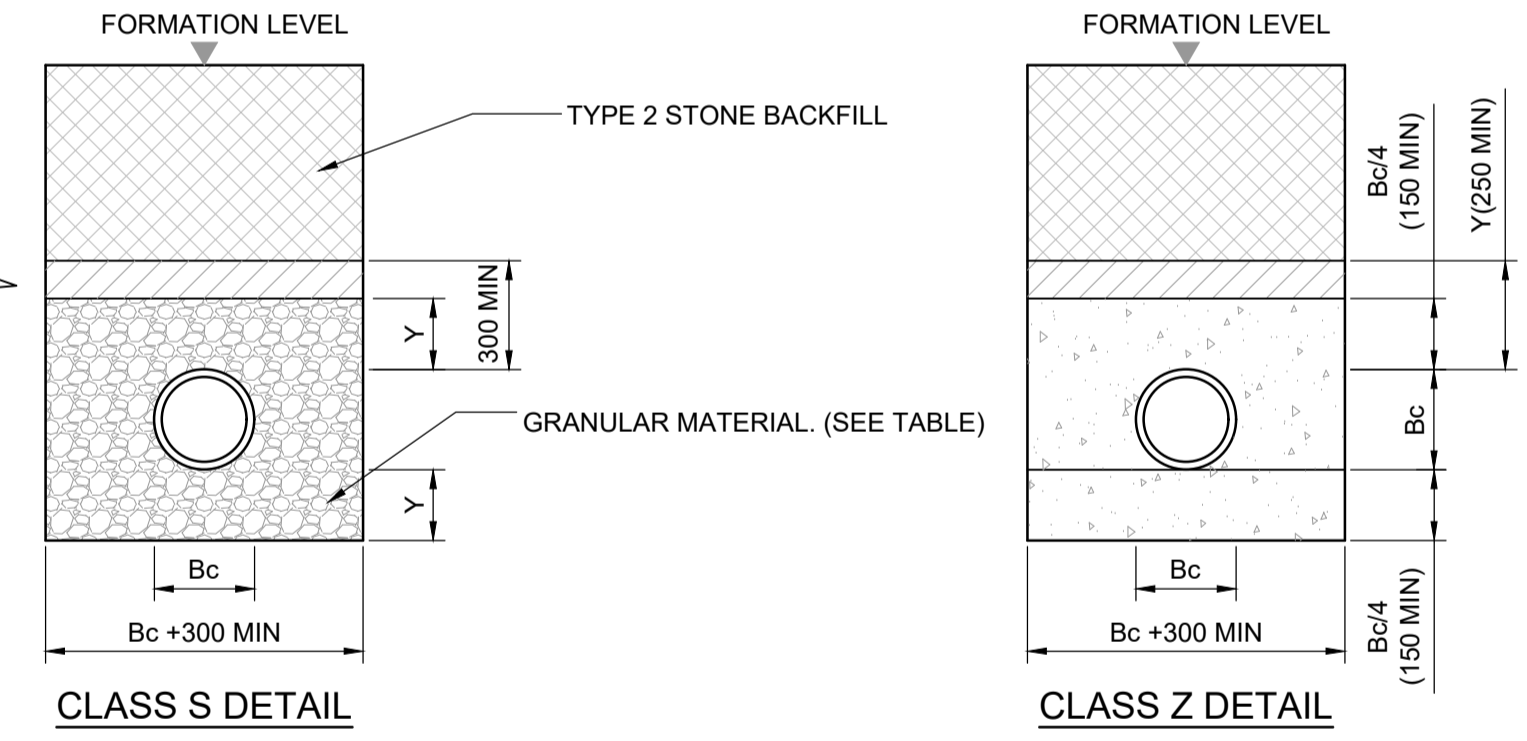


**DIVERTED DITCH TYPICAL DETAIL**  
 SCALE 1:20



**HEADWALL 502 (OUTLET)**  
**DITCH HEADWALL DETAIL - IN LINE WITH FLOW**  
**PRECAST ALTHON LR22G 01 3500 HEADWALL**  
 SCALE 1:25

NOTE:  
 A) Bc = OUTSIDE DIAMETER OF PIPE BARREL  
 B) Y = FOR UNIFORM SOILS:  
 Y = Bc/6, WITH MIN. 100mm UNDER BARRELS (MIN. 50mm FOR SLEEVE JOINTED) AND Bc/6 OR MIN. 50mm UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH MAX. OF 400mm  
 C) Y = FOR ROCK OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, STONES OR OTHER IRREGULAR HARD SPOTS:  
 Y = Bc/4, WITH MIN. 200mm UNDER BARRELS (MIN. 150mm FOR SLEEVE JOINTED) AND Bc/4 OR MIN. 150mm UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH MAX. OF 400mm



**CLASS S DETAIL**

NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
100	N/A	N/A
OVER 100 TO 150	10 OR 14	14 TO 5
OVER 150 TO 300	10, 14 OR 20	14 TO 5 OR 20 TO 5
OVER 300 TO 550	14 OR 20	14 TO 5 OR 20 TO 5
GREATER THAN 550	14, 20 OR 40	14 TO 5, 20 TO 5 OR 40 TO 5
	Crushed Rock	

**GRANULAR BEDDING MATERIAL - RIGID PIPES WIS 4-08-02**  
 PROCESSED GRANULAR MATERIALS TO INCLUDE AGGREGATES TO BS880, AIR COOLED BLASTFURNACE SLAG TO BS1047 AND LIGHTWEIGHT AGGREGATES TO BS 3797

**HEADWALL INSTALLATION NOTES:**  
 • ALL DIMENSIONS IN MM  
 • ALL MEASUREMENTS ± 1MM

**SPECIFICATION INFORMATION**  
 • OPENING IN RACK WALL CAST TO SUIT OUTSIDE DIAMETER OF THE PIPEWORK  
 • INVERT LEVEL OF PIPE CAN BE SET TO YOUR SPECIFICATION

**HEADWALL INSTALLATION**  
 UNITS SHOULD BE BEDDED ON MINIMUM 150mm THICK WELL COMPACTED CLASS 6A OR 6K WELL GRADED GRANULAR MATERIAL WITH A 50mm TOPPING OF FINE MATERIAL (CLASS 6L) TO ENSURE UNITS ARE LEVEL AND STABLE.  
 \*MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME (MCHW1) SPECIFICATION FOR HIGHWAY WORKS, SERIES 600 (NOV 09).

**HANDLING**  
 A. WEIGHT OF CONCRETE IS BASED ON 2.4 TONNE/M³ - 5% IS RECOMMENDED FOR SIZING LIFTING EQUIPMENT  
 B. ALL LIFTING POINTS SHALL BE USED AS SPECIFIED BELOW  
 C. UNIT TO BE LIFTED AS PER LIFTING DIAGRAM

**CONCRETE**  
 A. MIX REF: SELF-COMPACTING C40/D54 MIX  
 B. LIFTING STRENGTH BASED ON 2 CUBES = 20N/MP  
 C. CHARACTERISTIC 28 DAY CUBE STRENGTH = 50N/MP  
 D. CONCRETE PROVIDES DESIGN CHEMICAL CLASS 4 (C4) TO SPECIAL DIGEST 1, TABLE F2.

**REINFORCEMENT**  
 A. REINFORCEMENT TO BS EN 13369  
 B. SCHEDULING, DIMENSIONING, BENDING & CUTTING TO BS8666  
 C. CAGE TO BE MACHINE TIED WITH STEEL WIRE

**MANUFACTURE**  
 A. MANUFACTURE TO BS EN 15258:2008 PRECAST CONCRETE PRODUCTS - RETAINING WALL ELEMENTS, FACTORY PRODUCTION CONTROL, CERTIFICATE NUMBER, 0086-CP6-650448 & BS EN 13369  
 B. TOLERANCES TO BS EN 13369 CLAUSE 4.3.1.1  
 C. FINISHING:  
 Top: 10mm  
 Side: 10mm  
 Rear: 10mm  
 Front: 10mm  
 D. MARKING: UNITS SHALL BE INDUBLY MARKED TO SHOW:  
 • MOULD REFERENCE CODE  
 • DE-MOULD DATE  
 • JOB REFERENCE NUMBER & UNIQUE PRODUCT NUMBER  
 • UNIT WEIGHT (KG)

**DESIGN**  
 A. CONCRETE DESIGN TO EC2  
 B. ALTHON HAVE DESIGNED THE CONCRETE UNITS ONLY, THE SITE CONDITIONS SHOULD BE ASSESSED FOR SUITABILITY BY THE SCHEME DESIGNER  
 C. UNITS ARE DESIGNED TO WITHSTAND A VERTICAL LIVE LOAD SURCHARGE OF 10KN/MP  
 D. WEIGHT OF SOIL = 18KN/MP  
 E. ANGLE OF INTERNAL FRICTION = 30 DEG.  
 F. DESIGN LIFE: >120 YEARS

**FABRICATION SPECIFICATION**  
 A. MANUFACTURE IAW EN 1090-2 EXC CLASS 1  
 B. MATERIAL GRADE IS TO BE BS EN 10025 S275  
 C. WELDING CARRIED OUT IAW EN 1090-2 PARA 7.5.4 - 7.5.15  
 D. ALL FILLET AND BUTT WELDS TO HAVE A MINIMUM THROAT THICKNESS OF 6MM & JOINTS TO BE FULLY WELDED WHERE POSSIBLE  
 E. ENSURE VERTICAL FLATS ARE FULLY WELDED BOTH SIDES WHERE POSSIBLE  
 F. ALL SHARP EDGES AND BURRS ARE TO BE REMOVED  
 G. REMOVE ALL WELD SPATTER  
 H. HOLES BY PUNCHING ARE PERMITTED WITH REAMING  
 L. GALVANISING IS CARRIED OUT AFTER FABRICATION TO BS EN ISO 1461

**HANDRAIL SPECIFICATION**  
 A. KEE KLAMPING GALVANISED SIZE 8 FITTINGS  
 B. SIZE 48.3MM OD 3.2MM WALL THICKNESS GALVANISED MEDIUM DUTY TUBE TO BS EN 10255  
 C. 36kN/m DESIGN LOAD AT STATED IN BS 8118, BS 6190, BS 6399 & BS 7818, CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (CESWI) 7TH EDITION CLAUSE 2.40 HANDRAILS & BALUSTERS & THE ENGINEERING EQUIPMENT AND MATERIALS USERS' ASSOCIATION (EEMUA) PUBLICATION 105 7TH EDITION FACTORY STAIRWAYS, LADDERS AND HANDRAILS  
 OTHER DESIGN LOADS AVAILABLE ON REQUEST  
 D. GRP/FRP HANDRAILS ALSO AVAILABLE

- NOTES:**
- THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
  - DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
  - ALL LEVELS ARE AOD (ABOVE ORDNANCE DATUM) UNO.

P02	HEADWALL 502 SPEC CHANGED TO SUIT ALTHON LR22G 01 3500 HEADWALL	26.03.26	ERD	JP	BH
P01	FIRST ISSUE	13.03.26	ERD	JP	SPG
Rev	Description	Date	By	Chk	App

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Project: **M181 Southern Junction - Phase 2 B1450 Spur and East Roundabout**

Client: **North Lincolnshire Council**

Drawing: **Temporary Phase - Southern Ditch Diversion And Culverting Details**

Role: **CIVIL ENGINEER**

Status: **FOR REVIEW & COMMENT** Submittal Code: **S3**

Job. no. **53335** Scale: **A1: AS NOTED** Rev. **P02**

Project Originator Zone Level Type Role Number  
**SER- AWP - ZZ - 05 - D - C - 3103**