Supplementary Information

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NR CIV/SD/320 Rev D

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- CIVSD320

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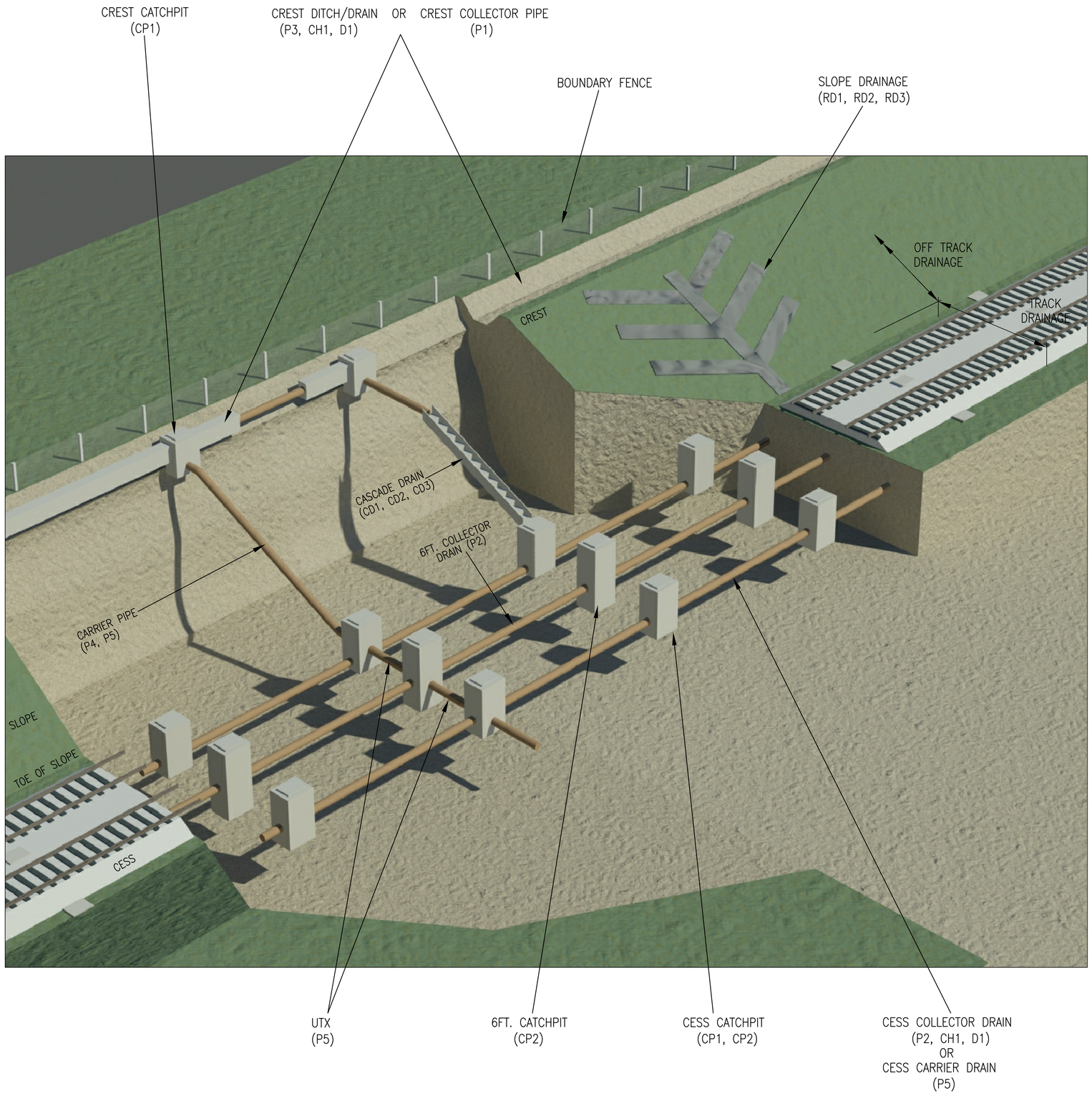

GEOTEXTILES AND GEOCOMPOSITES

11. ALL GEOTEXTILES AND GEOCOMPOSITES SHALL COMPLY WITH RT/CE/S/010.
ALL JOINTS TO BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SHALL BE SO CONSTRUCTED AS TO PREVENT INGRESS OF SOIL FINES INTO DRAINS.
ALL GEOTEXTILE SHALL COMPLY WITH RT/CE/S/010: GEOTEXTILES.

EROSION PROTECTION

12. EROSION PROTECTION TO BE SELECTED TO SUIT APPLICATION AND LOCATION.

13. BIODEGRADEABLE JUTE OVER SUITABLE GRASS SEED MAY BE USED AND SHOULD BE ANCHORED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

14. CONCRETE PAVERS MAY BE USED TO LINE DITCHES.

BRICKWORK.

15. BRICKWORK TO BE CONSTRUCTED IN CLASS B ENGINEERING BRICKS IN ACCORDANCE WITH BS EN 771-1.

16. MORTAR TO COMPLY WITH BS EN 998-2 AND BE CLASS M5 UNLESS SPECIFIED OTHERWISE.

TABLE 1

SAFETY. HEALTH AND ENVIRONMENT RISK ASSESSMENT

DESIGNERS NOTES - CDM REG. 11
THE FOLLOWING ARE SIGNIFICANT HAZARDS WHICH MIGHT AFFECT THE HEALTH AND SAFETY OF THOSE UNDERTAKING THE WORKS OUTLINED IN THIS SET OF DRAWINGS ON RAILWAY STRUCTURES OF THOSE AFFECTED BY THESE ACTIVITIES A SITE SPECIFIC RISK ASSESSMENT SHOULD ALWAYS BE UNDERTAKEN PRIOR TO COMMENCING ANY OF THE WORKS DESCRIBED ON SITE.
IT IS ASSUMED THAT A COMPETENT CONTRACTOR IS AWARE OF THE RISKS ASSOCIATED WITH GENERAL CONSTRUCTION ACTIVITIES UNDERTAKEN WITHIN THE RAILWAY ENVIRONMENT

RISK	STAGE	MITIGATION MEASURES
DANGERS ASSOCIATED WITH CULVERT EXCAVATION.	C	INSTALL DRAINAGE AT MINIMUM DEPTH. WHERE THIS DEPTH IS SIGNIFICANT SUITABLE MEASURES MUST BE UNDERTAKEN TO PREVENT AGAINST EXCAVATION COLLAPSE.
CULVERT SETTLING IN SOFT GROUND CONDITIONS RESULTING IN MINOR FLOOD RISK	C	ENSURE BEDDING OF CULVERT IS ADEQUATE, SITE CONDITIONS TO BE MONITORED.
MANUAL LIFTING OF HEAVY MATERIALS	C	ENSURE ADEQUATE LIFTING EQUIPMENT IS PROVIDED.
WORKING CLOSE TO/IN WATERWAY (WET SLIPPERY SURFACES, RISK OF WEILS DISEASE I.E. POLLUTED WATER AND UNKNOWN/VARIABLE WATER DEPTH)	C	ENSURE CORRECT PERSONAL PROTECTIVE EQUIPMENT IS USED. CONDUCT ADEQUATE WATER QUALITY TESTING.
FAILURE OF TEMPORARY WORKS	D/C	ALL STRUCTURAL TEMPORARY WORKS TO USE FORM C DESIGN PROCESS.
CONFINED SPACE, ACCUMULATION OF GAS, FUMES OR VAPOUR WHICH MIGHT BE EXPLOSIVE OR CAUSE ASPHYXIATION	D/C	APPROPRIATE DETAILING OF CULVERT INTERIOR AND MANHOLES ENSURE ADEQUATE VENTILATION ON SITE AND PROVIDE BREATHING APPARATUS WHERE REQUIRED. ONLY USE CONFINED SPACE TRAINED PERSONNEL.
RISK OF HEAD INJURY DUE TO RESTRICTED HEIGHT	C	ENSURE CORRECT PERSONAL PROTECTIVE EQUIPMENT IS USED.
CONTAMINATED LAND	C	ENSURE COMPREHENSIVE GROUND INVESTIGATION IS CARRIED OUT AND ALL POTENTIAL CONTAMINANTS IDENTIFIED AND REMEDIATED AS APPROPRIATE.
RISK OF POLLUTING SENSITIVE RECEPTORS	C/O	CATCHPITS AND SUMPS TO BE DESIGNED AND MAINTAINED, WHERE PROVIDED AS APPROPRIATE.
ADVERSE EFFECTS ON TRACK QUALITY DUE TO EXCAVATIONS ETC.	C/O	ENSURE APPROPRIATE METHODS OF GROUND MONITORING IS ADOPTED DURING AND AFTER WORKS. IN ACCORDANCE WITH NR/CS/CIV/044 MANAGING STRUCTURES WORKS AND NR/PRC/MPI/CI0058 CONTROLLING THE RISK OF EARTHWORK INSTABILITY.
BURIED SERVICES STRIKE	C	ENSURE ALL EXISTING BURIED SERVICES ARE IDENTIFIED AND LOCATED PRIOR TO ANY WORKS COMMENCING IN ACCORDANCE WITH NETWORK RAIL PROCEDURES REFERENCED IN NR/L2/AMC/1030 - WORKING SAFELY IN VICINITY OF BURIED CABLES.
ENTRAPMENT WITHIN CULVERT DURING FLOOD	O	DO NOT SPECIFY SINGLE DOWNSTREAM TRASH SCREEN. THESE SHOULD ONLY BE USED IN CONJUNCTION WITH AN UPSTREAM SCREEN.
MAINTENANCE ASSOCIATED RISK	O	AS SITE CONDITIONS VARY THE PROVISION OF SAFE MEANS OF ACCESS FOR SITE INSPECTION AND MAINTENANCE SHOULD BE ADDRESSED BY DESIGNERS IN A SITE SPECIFIC RISK ASSESSMENT.

NOTE: C = CONSTRUCTION, D = DESIGN, O = OPERATION.

DRAWING No. NR/CIV/SD/320

NOTES

GENERAL NOTES

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

2. ALL WORKS TO BE IN ACCORDANCE WITH NR/L3/CIV/005 RAILWAY DRAINAGE SYSTEMS MANUAL.

3. UNLESS OTHERWISE NOTED ALL WORK TO BE IN ACCORDANCE WITH NR/L3/CIV/140 MODEL CLAUSES FOR SPECIFYING CIVIL ENGINEERING WORKS.

4. ALL CONSENTS AND/OR LICENCES TO BE OBTAINED FROM STATUTORY AUTHORITIES SHALL BE IDENTIFIED BY A DESIGNER IN THE SITE SPECIFIC FORM A/B. (SITES IN SCOTLAND SHALL COMPLY WITH THE REQUIREMENTS OF WATER ENVIRONMENT (CONTROLLED ACTIVITIES) (SCOTLAND) REGULATIONS 2005)

SPECIFICATIONS

CONCRETE

5. ALL CONCRETE TO COMPLY WITH BS EN 206-1.
PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY CUBE COMPRESSIVE STRENGTH OF 20MPA.
CAST-IN-SITU CONCRETE TO BE MIX ST2 OF SLUMP CLASS S1/S2. (50mm NOM. UNLESS OTHERWISE STATED).
CONCRETE SUBGRADE IS TO BE FREE OF PONDED AND/OR RUNNING WATER. FRESH CONCRETE IS TO BE PROTECTED FROM EROSION BY RUNNING WATER.
SULPHATE RESISTANCE OF CONCRETE MIX IS TO BE APPROPRIATE FOR SITE CONDITIONS.

6. REINFORCEMENT
ALL BAR REINFORCEMENT TO BE IN ACCORDANCE WITH BS 4449.
ALL FABRIC REINFORCEMENT TO BE IN ACCORDANCE WITH BS 4483.

7. PIPES
ALL PIPES TO COMPLY WITH THE RELEVANT BRITISH STANDARDS SET OUT IN TABLE 185/1 FROM NR/L3/CIV/140/185, CLAUSE 185.005.
ALL PLASTIC DRAIN PIPES TO COMPLY WITH BS 4962:2005.
ALL CONCRETE PIPES TO COMPLY WITH BS EN 1916 AND BS EN 1917.
ALL PIPE AND PIPE/MANHOLE JOINTS TO BE SEALED AND MADE SECURE. INLET/OUTLET HOLES IN PLASTIC MANHOLE TO BE PRE-FORMED.
ALL PIPES SHALL BE EITHER FULLY PERFORATED OR COLLECTOR SOLID WALL CARRIER PIPES UNLESS OTHERWISE STATED IN THE PROJECT SPECIFIC FORM A/B SPECIFICATION. DESIGNERS SHALL ENSURE THAT PERFORATED COLLECTOR AND SOLID WALLED CARRIER PIPES WITH INVERT LEVEL LESS THAN 1.1 METRES, WITHIN TRACK ZONE, CAN WITHSTAND TRACK LOADING. FERROUS PIPES SHOULD NOT BE USED ON ELECTRIFIED LINES.

8. PVC WATERPROOFING
ALL PVC SHEET WATERPROOFING TO BE IN ACCORDANCE WITH NR/L3/CIV/140/113.

9. AGGREGATES AND FILL
FILTER MATERIAL CAN CONSIST OF NATURAL AGGREGATE OR RE-CYCLED AGGREGATE COMPLYING WITH BS EN 13242

10. TRACK DRAINAGE AGGREGATES AND FILL TO COMPLY WITH TABLE 185/2 FROM NR/L3/CIV/140/185.

Rev	Date	Description of revision	Design'd	C'kd
D	MAY 2011	THIRD ISSUE	GPR	SWMF
C	18.04.08	SECOND ISSUE	GPR	NGAY
B	25.05.07	REVISED FORM B	HCHS	NGAY
A	08.08.06	FIRST ISSUE	TWHS	NGAY

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DRAINAGE SYSTEMS (TRACK AND OFF TRACK)

GENERAL ARRANGEMENT CUTTING

SHEET 1 OF 2

Scale	DIAGRAMMATIC (NTS)	
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