



SECTION A-A  
TYPICAL CROSS SECTION INDICATING TRENCH FOR  
CABLE ROUTE THROUGH BOX CULVERT  
FLAT FORMATION SCALE 1:10

APPROXIMATE LOCATION OF M11

FRL  
26.1m

- NOTES:
- A. ALL PRODUCTS TO BE UTILISED DURING CONSTRUCTION TO COMPLY WITH EIRGRID FUNCTIONAL SPECIFICATION, TII SPECIFICATION FOR ROAD WORKS AND ALL RELEVANT IRISH (EUROPEAN) AND BRITISH STANDARDS.
  - B. 300mm MINIMUM VERTICAL AND HORIZONTAL CLEARANCES AS SPECIFIED TO BE OBSERVED BETWEEN CABLE DUCTS AND THIRD PARTY SERVICES (e.g. GAS PIPES (600mm MIN CLEARANCE), WATER MAINS, CULVERTS etc.) IN THE CASE OF HIGH RISK 3RD PARTY SERVICES, GREATER CLEARANCES MAY BE REQUIRED. DESIGNER TO CONSULT 3RD PARTY SERVICE OWNERS FOR GUIDANCE.
  - C. WHERE REQUIRED STEEL PLATES MUST COVER DUCTS. NO OVERLAP IS REQUIRED HOWEVER STANDARD DIMENSIONS MAY RESULT IN AN OVERLAP. SPACING OF 25mm TO BE MAINTAINED BETWEEN STEEL PLATES TO PREVENT THE TRANSFER OF STRAY CURRENT.
  - D. THE MINIMUM CLEARANCE BETWEEN ALL HV AND COMMUNICATION DUCTS IS 75mm, BUT INCREASED SPACING MAY BE REQUIRED IN ORDER TO ACHIEVE THE CABLE RATING (TO BE CONFIRMED BY DESIGNER CABLE RATING CALCULATIONS).
  - E. DRAWING IS INDICATIVE ONLY, TO BE USED TO AID IN THE DESIGN OF RELEVANT INFRASTRUCTURE.
  - F. TEMPLATES ARE TO BE USED AT 5m INTERVALS DURING DUCT INSTALLATION IN CBGM. PRE-MADE 75mm WIDE CONCRETE SPACERS (OR SIMILAR APPROVED) TO BE USED DURING DUCT INSTALLATION IN WET CONCRETE.
  - G. HAND DIG WITHIN 500mm OF EXISTING SERVICE.
  - H. EARTH CONTINUITY CONDUCTOR IS A MIN 125mm DUCT TO BE INSTALLED OUTSIDE OF PHASE DUCT.
  - I. SAFE EGRESS AND ACCESS VIA RAMP NE 8% GRADIENT TO ALLOW FOR MAINTENANCE AND SECURITY TO UNDERPASS TO BE FORMED USING AN APPROPRIATE METHOD(S) AGREED WITH OVERSEEING ORGANISATION AND CONFORM TO EIRGRID RELEVANT SPECIFICATIONS.
- A= 125mm O.D. HDPE DUCT FOR COMMUNICATIONS, SDR=17.6  
 B= 250mm O.D. HDPE DUCT FOR HV CABLE, SDR=17.6  
 E= 125mm O.D. HDPE DUCT FOR EARTH CONTINUITY CONDUCTOR, SDR=17.6
- RED MARKER STRIP
  - YELLOW MARKER WARNING TAPE
  - CBGM B (CL. 822). COMPACTED TO CL 813.10
  - 300mm THICK C28-35 CONCRETE SLAB WITH A393 MESH

NOTES:  
**ELECTRICAL CABLE DUCT 220KV HV DUCTING AND JOINTS (OR SIMILAR AND APPROVED)**  
**MAIN CABLE DUCT (250MM OD)** - SHALL BE 250MM OD - SDR21 HDPE (ESB APPROVED RED) ELECTRIC CABLE DUCT SMOOTH WALL DUCT IS MANUFACTURED FROM POLYETHYLENE (PE) IN ACCORDANCE WITH BS EN50086-2-4 (BS EN 61386-24:2010) AND CONFORM TO ESB CONFORM SPEC 16113 AND EIRGRID SPEC FOR POWER DUCTING.  
**JOINTS** - THE MAIN CABLE DUCT TO BE JOINED USING COMPATIBLE AND APPROVED MECHANICAL FITTINGS/PUSH-FIT COUPLERS. DOUBLE RING-AIRTIGHT SEAL COUPLERS CONNECTION TO EN 1401-1:1998/BS EN 681-1 TYPE WA  
**DIMENSIONS** - O.D. MIN-MAX 250.0-251.0MM, MIN. WALL THICKNESS INCLUDING SKIN 11.9-13.2MM, OVALITY MAX 3.0MM  
**LENGTHS** - 12M OR 6M, 9M, 13.5M AS PER ORDER.  
**MARKING** - PRINTLINE SHALL READ E.G. "DANGER ELECTRICITY CABLES - RADIUS 200MM SDR21 - 200J - DANGER ELECTRICITY CABLES - ESB SPEC 16113 REV8 - BATCH NUMBER - LINE NUMBER"

**TELECOMMUNICATION AND EARTH BOND DUCTING AND JOINTS. (OR SIMILAR AND APPROVED)**  
**MAIN CABLE DUCT (125MM OD)** - 125MM OD HDPE SMOOTH INNER WALL DUCT TO BSI KITEMARK, BBA APPROVED, ENA TS 12-24 CERTIFICATION/BS EN 61386-24  
**JOINTS** - DUCTING TO BE JOINED USING COMPATIBLE AND APPROVED MECHANICAL FITTINGS/PUSH-FIT AIRTIGHT -SEAL COUPLERS COUPLERS AS PER MANUFACTURES DATA.  
**LENGTHS** STANDARD PIPE OR COIL LENGTHS  
**MARKING** -DUCT MARKING FOR EARTH BOND AND TELECOMMUNICATIONS ELECTRICITY IS PRINTED "ELECTRIC CABLE". ENATS C2 IS PRINTED IN ACCORDANCE TO ENA TS 12-24

**ELECTRICAL INSTALLATION AND TESTING**  
 ALL ELECTRICAL WORKS INCLUDING EARTH BONDING SHALL BE AS PER ELECTRICAL ENGINEER DESIGN

YELLOW MARKER WARNING TAPE 2X500mm WIDE

FSL  
22.34m

300mm THICK RC SLAB C28/35

A393 MESH

HEAVY DUTY 6X200mm (NOT LESS THAN 3 NO. PLATES) WIDE GALVANISED STEEL PLATES WITH RED MARKER STRIP FIXED TO THE TOP SURFACE TO BE INSTALLED UNTIL STANDARD COVER IS ACHIEVED OVER HV DUCTS AND COMMUNICATION DUCTS

12mm DIAMETER PULL ROPE IN ALL DUCTS

DUCTS LAID IN CBGM B (CL. 822) COMPACTED TO CL.813.10 AND TABLE 8/4 OF TII SPECIFICATION FOR ROADWORKS (15N/mm<sup>2</sup> AFTER 7 DAYS)

PL1	22.03.21	SB	SO'S	MW
Rev	Date	By	Chkd	Appd

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Client  
**Sure Partners Limited**  
 Design Consultant  
**AECOM**  
 Project Title  
**Arklow Bank Wind Park  
 Phase 2  
 Onshore Grid Infrastructure**

Drawing Title  
**Typical Box Culvert Underpass Detail**

Scale at A1	As Shown
Role	Civil
Suitability	Planning
Arup Job No	Rev
<b>271715-00</b>	<b>PL1</b>
Name	
<b>ONS-GEN-007</b>	