openreach

ISIS practice
For Openreach and Contract Partners

AEI/ACC/K004

Issue 12, 21-Sep-2022
Use until 21-Sep-2024

Published by Chief Engineer Network Engineering

Privacy- None

Heavyweight Aerial Cabling

About this document ...

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Content approval

This is the Issue 12 of this document.
The information contained in this document was approved on 21-Sep-2022 by Scott Marshall, Accreditation Professional - Chief Engineers

Version History

Version No.	Date	Author	Comments
Issue 12	21-Sep-2022	Quality Standards & Accreditation	Document review. Safety section updated. Q26 added. . Links to external sources validated/updated where appropriate. Safety requirements added.
Issue 11	21-Sep-2021	Quality Standards & Accreditation	Document review. Document re worked to include the use of the wire wrap method and Telenco products. Method amended to have 2 spans of Aerial Cable erected. Questionnaire added. Links to external sources validated/updated where appropriate. Author/Approver/Publisher details amended. Safety requirements added
Issue 10	24-Sep-2020	Quality Standards & Accreditation Network Engineering	Document review. Links to external sources validated/updated where appropriate. Author/Approver/Publisher details amended. Safety requirements added
Issue 9	27-Jun-2019	Accreditation Standards Network Engineering	Document review. Links to external sources validated/updated where appropriate. Author/Approver/Publisher details amended. Change of author & approver details. Document re-branded to openreach. Section 1, outdated paragraphs removed.
Issue 8	27-Jun-2018	Accreditation Standards Network Engineering	Document review. Links to external sources validated/updated where appropriate. Author/Approver/Publisher details amended. Change of approver.

Issue 7	27-Jun-2017	Quality standards & Accreditation	Document review. Links to external sources validated/updated. Author/Approver/Publisher details amended. Module guidance & NASA checklist have been aligned. Coaching limit amended to 30% of 'c' markings.
Issue 6	26-Jun-2016	Quality standards & Accreditation	Document review. Links to external sources validated/updated. Author/Approver/Publisher details amended. Module guidance aligned with NASA.
Issue 5	23-Jun-2015	Quality standards & Accreditation	Document Review. Section 1 updated to current template. Links to external sources updated. Author/Approver/Publisher details amended.
Issue 4	03-Mar-2015	Document Manager T	Document migrated onto new platform with no content change
Issue 4	26-Jun-2014	Quality standards & Accreditation	Minor amendments to modular guidance.
Issue 3	9-Apr-2013	Quality Standards & Accreditation	Document information updated. Contents reviewed.
Issue 2	28-Apr-2011	Chief Engineer AEI Accreditation	Review. Change approver
Issue 1	27-Apr-2010	Chief Engineer AEI Accreditation	New Issue and Approver. DCC762/SH
Issue Draft 0a	15-Apr-2010	Chief Engineer AEI Accreditation	This document is in the new ISIS format and replaces Module K4 issue 8 which is held in archive on live link

Table of Content

1 Introduction

This ISIS is reviewed and updated annually. Between reviews any changes are communicated using Access Engineering Communications (AEC).

Links to ISIS documents, accreditation modules and all reference material can be found in:

- Technical Library, Bookstore or Policy & Build app for Openreach.
- CANDID for Contract Partners.

Answers for all modules are available via the Author of this document (see above).

In order to comply with the requirements of this accreditation module the Assessor must follow the procedure below:

- Allow the time shown for the Delegate to complete.
- Explain that reference documentation can be used.
- The criteria for **all** sections **must** be fulfilled in order to meet the requirements for this module.

2 Scope

The target audience for this accreditation is anyone working on the Openreach network including Contract Partners.

This module is essential for anyone carrying out Heavyweight Aerial Cabling in the Openreach network. The overall content is covered in the following Description and Method sections, in more detail.

3 Description

This module consists of two parts, a questionnaire and a practical assessment.

Content: It will check the Delegates understanding & ability to complete the provision of Heavyweight Aerial Cabling using current working practices and quality standards.

Duration: Questionnaire 90 mins **Practical:** Open

4 Measurement

Questionnaire: The Delegate must achieve **80%** or greater to be successful. For Openreach people the questionnaire can be found on Learning Home as an online course using the code ORCHK059

Practical: Using the Module Guidance and ISIS documents for reference, the Assessor will check that the Delegate completes the tasks outlined in the Method section.

The Module Guidance outlines where coaching can be provided, highlighted by a Coaching Mark (**C**) next to each Assessment Pointer. No more than **30%** of the available Coaching Marks can be used.

Assessor Note: The exact score required to pass the questionnaire and the allowed number of Coaching Marks can be found in the Delegates Details section.

Post Assessment: You **must** enter the results onto the Skills Passport or Smart Awards for Contract Partners**.**

5 Safety

Caution: If the Delegate displays a disregard for, or lack of knowledge of safety, then STOP THE ASSESSMENT - re-assessment required - refer to –safety module for guidance

Using their mandatory holding of safety and relevant access equipment, the Delegate will demonstrate to the Assessor, the correct safety practices required to successfully complete this accreditation module. This may include a check of:

- Relevant safety modules on National Operative Passport Scheme (NOPS) card (Partners Only).
- Openreach Construction Design Management (CDM) 2015 Regulations Policy followed.
- Relevant New Roads and Street Works Act (NRSWA) qualification.
- Personal Protective Equipment (PPE).
- Check all access equipment and ancillary devices for defects before use.
- Check, fit and adjust safety harness.
- Safe working practises used when working near overhead power lines.
- Safe use of equipment involving high tensions.
- Injury due to incorrect manual handling techniques.
- Good communication between team members.

- Safe use of access equipment at height.
- Carry out all pre-climb checks for working on a wooden pole.
- Deploy (including Tetra where trained) all required support equipment.
- Safely raise and lower equipment to the work position (either on the pole or at the building).
- Correct deployment of roadworks guarding.

6 *Method*

Questionnaire: Using reference documentation where required, the Delegate will complete the questionnaire. A maximum of **90** minutes is allowed for this exercise.

Practical: Using the correct tools, equipment and working practices, the Delegate will, with the help of an assistant, provide 2 spans of Heavyweight Aerial Cable between 3 wooden poles. Help from a third person will be required when setting up the tensioning equipment. The Delegate must demonstrate the correct termination of the Aerial Cable using both the wire wrap and Telenco methods as well as correct termination of the cable at the intermediate pole with the application of Clamps Aerial Cable (CAC).

The practical assessment can be completed under live or simulated working conditions using one of the below methods:

- On site – During a new installation.
- Simulated in an approved Skill Centre or site.

The Assessor will then use the Module Guidance to verify their understanding and ability to carry out the task.

7 *Delegate Details*

Module No	AEI/ACC/K004
Title	Heavyweight Aerial Cabling
Date	
Delegate's Name	

Delegate's UIN	
OUC	
Assessor's Name	
Assessor's UIN	
Questionnaire	PASS/FAIL
Practical	PASS/FAIL
Notes	

Questionnaire Scoring:

Total Possible Score	Score Achieved	Required Score to Pass
26		21

Practical Scoring:

Total Coaching Marks Available	Total Coached	Total Coaching Marks Allowed
25		7

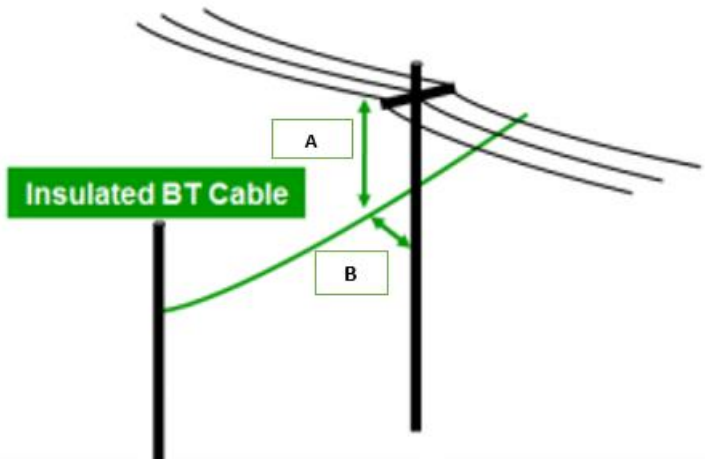
8 *Questionnaire*

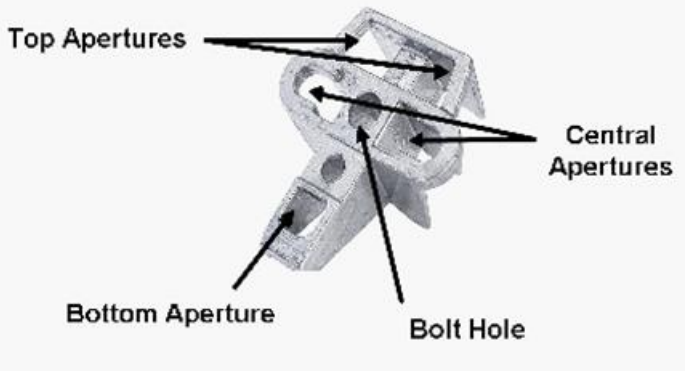
No.	Question	Mark(s)
1	How is Heavyweight Aerial Cable distinguished? A. A cable containing a single strand suspension wire. B. The number of copper cable pairs in the cable. C. A cable containing a multi-stranded suspension wire.	

2	On a pole without fittings at what distance should Heavyweight Aerial Cable be fitted from the top of a pole? A. 300mm B. 200mm C. 350mm	
3	What fixing would you use to fix a Heavyweight Aerial Cable to a brick building? A. Plate Wall No.5 B. Plate Wall No.4 C. Plate Wall No.5a	
4	Self-Supporting Aerial Cables should have twists applied to prevent “galloping”. At what frequency should they be applied? A. Approximately 1 twist every 7m. B. Approximately 1 twist every 10m. C. Approximately 1 twist every 5m.	
5	On a newly installed 50/0.5 Aerial Cable with a span length of 63m, what is the maximum permitted dip in the span after tensioning? (Minimum height must be obtained). A. 1300mm B. 1500mm C. 1900mm	
6	What is the preferred method of attachment for Heavyweight Aerial Cables on intermediate poles? A. Hook Aerial Cable 1A B. Clamp Aerial Cable (CAC) C. AC10-320 Aerial Cable Clamp	
7	For new work where the suspension wire has to be terminated directly onto the pole , how many times should it be wrapped around the pole?	

	A. 3 B. 1 C. 2	
8	What is the preferred method of terminating a Heavyweight Aerial Cable on a pole? A. 2 X Clamp Aerial Cable B. Telenco AC10-320 Clamp C. Wire wrap method	
9	A Telenco Aerial Cable Clamp should be fitted to which pole mounted bracket? A. Universal Pole Bracket (UPB) B. Openreach Pole Bracket (OPB) C. Aerial Pole Bracket (APB)	
10	Which Telenco Clamp can be used to complete a full termination directly onto the 7 strand (1.6mm) bare steel catenary wire of Heavyweight Aerial Cable? A. Bare Wire Clamp (BWC) 25 B. Bare Wire Clamp (BWC) 47 C. In Line Clamp (ILC) 25	
11	On intermediate poles where pull on pole is between 5 and 9 metres what method should be used to secure Heavyweight Aerial Cable? A. Hook Aerial Cable 1A with Wire Lashing 2A B. A single CAC C. 2 CACs are used back-to-back , one clamp on each leg of the Aerial Cable	
12	What is the purpose of the Aerial Cable Relief Clamp (ARC)?	

	A. Used as an insulator on Joint User Poles. B. Is a retro fit solution that can be used as a replacement for Lashing Wire 2A on intermediate poles. C. It is used to cover and protect existing webbing that is in poor condition on intermediate poles.	
13	The ARC must be used in conjunction with what when a Heavyweight Aerial Cable is being installed? A. Telenco Hook Aerial 1A B. Telenco Hook Aerial 1 C. Telenco Hook Aerial 3A	
14	Where a heavyweight cable crosses under power and the Telenco AC10 type clamp is to be used to terminate, how is the cable isolated at both sides of the power crossing? A. Use insulators and the wire wrap method to terminate the aerial cable at both ends. B. Nothing needs to be done as the catenary wire is insulated within the cable. C. Introduce a large enough loop between the clamps to remove a 300mm section (minimum) of catenary wire.	
15	Where a Heavyweight Aerial Cable is to be terminated on a pole using an AC10-320 Clamp for the purpose of jointing, how is the catenary wire managed? A. It should be cut and removed from the webbing at a point not less than 100mm from the clamp and the ends taped. B. It should be cut at the butt of the cable within the cable joint. C. The wire must be left insulated and attached to the cable to the point where the bend radius is required to allow the cable to turn up the pole.	
16	How is a Plate Wall No.4 fixed to a brick building?	

	A. 4 X Bolt Expanding 2A so that when fitted, the plate is at an angle of 45° to the horizontal. B. 4 X Bolt Expanding 2A with the plate horizontal. C. 4 X Bolting Expanding 1A with the plate horizontal.	
17	When is it permissible to terminate a heavyweight Aerial Cable on to a pole carrying high voltage (HV) cables? A. When replacing an existing cable like for like. B. Never, we don't attach any cables to high voltage poles. C. Where permission has been granted from the Distribution Network Operator (DNO).	
18	Where an Aerial Cable crosses under an HV route (11KV or below) what are the minimum separation distances A and B shown on the Diagram?  A. A = 1.8m B = 1.2m B. A = 2m B = 2m C. A = 1.8m B = 3m	
19	Which aperture on the UPB should be used to attach an aerial cable?	

	 A. The top aperture only. B. Either the top or middle aperture. C. Middle aperture only.	
20	What is the maximum span length for newly erected Aerial Cable? A. 68m B. 55m C. 63m	
21	How should the ground anchor point be provided when tensioning aerial cable from ground level? A. An Openreach vehicle can be used as long as the hand brake has been applied. B. Drive 3 Crowbar No.1 into the ground at a 45 degree angle and lash together using Rope Cabling No.1 C. Drive 2 Crowbar No.2 into the ground at a 90 degree angle and lash together using Rope Cabling No.3.	
22	What should be attached at the top of the pole to aid tensioning? A. Block Snatch 1 B. Pulley No.6 C. Snatch Block 4	

23	What should be used in conjunction with Tensioner 2B when tensioning an aerial cable? A. An Anemometer to ensure the maximum load of 6kN is not exceeded. B. A Dilatometer to ensure the maximum load of 5kN is not exceeded. C. A Dynamometer to ensure the maximum load of 4kN is not exceeded.	
24	At what locations can a Tensioner 2B be used? A. At ground level only. B. At ground level or aloft from a ladder or Platform Elevating (PE). C. At ground level or aloft with the operator working from the cage of the PE.	
25	When erecting an Aerial Cable, what can be used to hold it in place at the top of the pole when terminating? A. Grip Pulling Aerial Cable 4 in conjunction with a Draw Rope. B. Grip Pulling Aerial Cable 2A in conjunction with a Rope Cabling NO.1 C. Grip Pulling Aerial Cable 1 in conjunction with a Draw Rope,	
26	If a pole is deemed un-safe to because of spiked railing, what can we do to make the pole safe to climb? A. If a pole has spiked railings within 1m it must never be accessed B. We can raise a task to have the pole moved C. The new spiked railing covers allow the spiked railings to be safely covered to allow overhead works to take place safely above.	
	Total	

9 *Modular Guidance (Practical)*

The below table should be used as a guide for the Assessor to accurately assess the Delegates knowledge and ability during the practical assessment.

Coaching Marks '**C**' are explained in the Measurement section and the total allowed can be found in Delegate Details.

If an Assessment Pointer is followed by an '**X**' then not only is no coaching allowed, but failure to meet the standard on the Assessment Pointer means that the standard has not been met for the accreditation a whole.

Task Assessment	Assessment Pointers	Coaching	Document Guidance
Questionnaire	Completed at required % or above.	X	
Trained /Skilled	The Delegate is trained, experienced and craft competent in this skill.	X	
Safety	All safety procedures followed, and safe working practices adopted.	X	
Risk Assessment	An on-site risk assessment should be carried out.	X	
Personal Protective Equipment (PPE)	Correct PPE held, in good condition and used where necessary.	X	
Environment	Weather conditions considered before commencing work.	X	
	All rubbish and waste removed from site when the works have been completed.	X	
Equipment Available	Delegate has the correct tools and they are in good condition to complete the task to the current work practices and quality standards.	X	
	Tools used correctly and safely.	X	
Termination of Suspension Wire (full wrap	Suspension wire separated from the cable correctly.	X	EPT/OHP/B012

method)			EPT/ANS/A012
	Mullti strand suspension wire taped to prevent unwrapping.	C	
	The suspension wire must be wrapped around the pole correctly (not crossed, and new work requires 3 wraps).	X	
	Staples must be correctly fitted and driven home.	X	
	Grip wire suspension fitted correctly.	X	
	“O ring” fitted correctly (within.25mm of the end of the suspension wire).	C	
Binding in of End Termination.	Lashing wire 2A used for binding in and fitted correctly.	C	
	5-10 turns of lashing wire applied at the start, at the “V” and at the end.	C	
Termination of Suspension Wire (Telenco)	Correct Telenco clamp used. AC 10-320 or BCW47 for Heavyweight Aerial Cable and fitted correctly.	X	
	UPB Fitted correctly	X	
	Minimum of 300mm of Catenary/Suspension Wire removed at power crossings.	X	
	Catenary wire managed correctly on poles where cable is terminated and to be used for jointing purposes.	C	
Attachment of Cable at Intermediate Poles.	CAC used in preference over Telenco products at intermediate poles. (Cost Savings). Fitted correctly.	C	
	ARC fitted correctly if used.	C	
	If pull on pole is between 5 and 9 meters, then 2 X CAC are used and fitted correctly.	C	
Rigging Pole with Snatch Block and End Chain.	The pole must be rigged correctly as per ISIS EPT/OHP/B012	X	
Temporary Ground Anchor	Ground area correctly checked for services using Cat and Genny.	X	
	Anchor point located in the correct position.	C	

	IR Gloves should be used for installing Crow Bars.	X	
	3 Crow Bars installed 45 degrees.	C	
	Crow Bars lashed correctly using Rope Cabling No.1.	C	
	Eyeshields worn.	X	
Temporary Stay	Stay secured correctly	C	
	Correctly fitted and functional.	X	
Aerial Cable Twists	Maximum span length not exceeded.	X	
	Approximately 1 twist per 7m of cable.	X	
Cable Tensioning	Tensioner 2B fitted and used correctly.	C	
	Temporary hook used correctly.	C	
	Snatch block fitted and used correctly.	C	
	Wire steel attached and used correctly.	C	
	Grip Pulling Aerial Cable 2A fitted and used correctly.	C	
	Dynamometer fitted and used correctly.	C	
	Rope Tail Temporary Hold (Rope Cabling No.1) fitted and used correctly.	C	
Aerial Cable Dip	Cable tensioned correctly.	C	
	Cable dip correct.	C	
Aerial Cable Recovery (Simulated provision only)	Temporary Stay fitted and used correctly.	X	
	Pole rigged as per ISIS EPT/OHP/B012.	X	
	Temporary hooks used correctly.	C	
	Tension released gradually without jerks.	C	
	Cable recovered correctly.	C	
	All waste recovered and site left in a tidy state on completion.	C	

10 *References*

All the documents below are available through the sites and systems described in the Introduction section. If you require access to external sources within them, then please contact the Author (see above) of this accreditation module.

Assessors Note: All Openreach people should have access to the Policy & Build app via their work mobile phones. Please make sure that this app is accessed during the accreditation.

- SFY/HSH/A001 - Health & Safety Handbook (Openreach only).
- CPE/NNS/V060 - Guide to Health & Safety Minimum Standards.
- SFY/HSH/C031 - Openreach Construction Design Management (CDM) 2015 Regulations Policy.
- SFY/HSH/D043 - Working in the Vicinity of OH Power (LV & HV) and Joint User Poles.
- EPT/OHP/B012 - Self Supporting Aerial Cable.
- EPT/ANS/A012 - Specification for Aerial Cabling.
- EPT/ANS/A014 - Specification for Overhead Route Stability.
- EPT/ANS/A013 – Minimum Heights & Carriageway Definitions.

END OF DOCUMENT