

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

Black text – from standard FAA spec

Blue text – additions to FAA standard spec

~~Strikeout text~~ – deletions from FAA standard spec

Red text – notes to the Engineer/won't appear in spec

I. DESCRIPTION

A. GENERAL

1. Construction of new fiber optic cables and modifications to the Airport Lighting Control and Monitoring System (ALCMS)

B. BACKGROUND

1. Modifications to be carried out with the participation of Crouse-Hinds Airfield Lighting Product Company

C. QUALIFICATIONS

1. The contractor shall ensure that:
 - a) Contractor or Sub-contractor is a specialized installation contractor
 - b) Contractor or Sub-contractor has, within the last year contracted similar work
 - c) Contractor or sub-contractor has at least 5 years experience

D. SUBMITTAL OF QUALIFICATIONS

1. Contractor shall submit a complete qualifications package

E. PROJECT SCOPE

1. FIBER CUT LAWA ALCMS
 - a) Agencies involved
 - 1) FAA
 - 2) LAWA IT
 - 3) Airfield Ops
 - 4) LAWA Electric Shop
 - b) Affected Circuits
 - 1) Airfield Taxiway Lighting Circuits
 - 2) Airfield Runway Lighting Circuits
 - 3) Any additional affected circuits
 - c) Required Work/Restrictions

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

- 1) Perform all new work prior to cutting existing
 - 2) Contractor shall splice existing cables to new bypass cable
 - 3) Contractor shall contact LAWA Inspection
 - d) Test Points
 - 1) ATCT
 - 2) Airfield Electrical Vault
 - e) Cable
 - 1) Corning Cable Systems ALTOS® LST™ 12 fiber cable
2. ALCMS Scope of Work
- a) Existing Airfield Lighting Vaults contain CCRs
 - b) Graphic displays shall be modified to include the changes
 - c) All Digitrac/Megatrac control cabinets shall be re-calibrated to accommodate changes
 - d) Work also includes software, programming, calibration, etc.
3. FIBER OPTIC INSTALLATION EQUIPMENT SPECIFICATIONS
- a) Stripping Tools
 - 1) Stripping methods and materials shall not damage fiber optics
 - 2) Fixed fiber diameter tools
 - 3) Variable fiber diameter tools
 - b) Cleaving Tools
 - 1) Fiber cleaving tools shall allow a clean cleave
 - 2) A precision fiber cleaver
 - 3) Capable of allowing the operator to control the strip length
 - 4) Alcoa AFL CT-20 Fiber Cleaver or equal
 - c) Splicing Tools
 - 1) Fusion splicer shall have the following specifications:
 - i. Core-to-core fiber PAS

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

- ii. Full automatic operation
 - iii. 2 CCD cameras, no up-down mirror
 - iv. High resolution LCD monitor
 - v. Simultaneous X & Y axes observation
 - vi. Automatic arc calibration
 - vii. Automatic fiber type identifier
 - viii. 0.02dB with SM fiber
 - ix. 0.01dB with MM fiber
 - 2) Alcoa Fujikura FSM-40S Splicer or equal
- d) Inner Duct
 - 3) for fiber optic cable are to be of the corrugated type
 - 4) Inner duct shall have measured mule tape inside, 1" in size
- 4. ALCMS Fiber
 - a) Shall be Corning Cable Systems ALTOS® LST™ 12 fiber cable
- 5. Fiber Optic Splice Case
 - a) Preform Line Products Coyote Runt closure
 - 5) Preform Line Products Coyote 12 fiber splice trays
 - 6) Preform Line Products Runt Manhole Support Kits
- F. INSTALLATION METHOD OF CABLES
 - 1. All rack steps will have rack clips
 - 2. At every 1300' interval 50' of slack shall be anchored on side of pull box
 - 3. FAA fiber optic cable may travel in the same duct bank FAA power cable
- G. INSTALLATION OF DUCT OR CONDUIT
 - 1. Inner duct coupling
 - 2. Magnetic caution tape
- H. CABLE CUT OVERS
 - 1. Cable cuts must be coordinated

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

- I. FIBER OPTIC CABLE TERMINATIONS
 - 1. Contractor shall only fusion-splice pigtails
 - 2. ST pre-connectorized, pre-terminated, pigtails
 - 3. Fiber optic cable used shall have similar optical characteristics
 - 4. Mechanical splices are not permitted
 - 5. Contractor shall protect all fusion splices

- J. TESTING
 - 1. Working Fibers shall be verified
 - 2. Vacant fibers shall be OTDR tested

- K. OTHER REFERENCED SPECS
 - 1. Sections 71 and 72

- L. PROJECT COORDINATION
 - 1. Manufacturer shall provide an experienced technician
 - 2. ALCMS modification work requires scheduling
 - 3. Contractor shall furnish a schedule

- M. INSTALLATION AND COMMISSIONING
 - 1. Contractor shall be responsible for the physical installation
 - 2. Manufacturer shall perform:
 - a) Verify Contractor connections
 - b) Hardware calibrations
 - c) System testing
 - d) System Acceptance

- N. SYSTEM ACCEPTANCE TEST (SAT)
 - 1. Detailed test plan shall be submitted
 - 2. Manufacturer shall perform on-site a demonstration:
 - a) Control functions
 - b) Monitoring functions

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

- c) Surveillance functions
- d) Alarm functions
- e) Print functions
- f) Display functions

3. System must complete (1) week of operation

O. AS-BUILT DRAWINGS

1. Contractor shall provide updated as-built drawings

P. OPERATION AND MAINTENANCE MANUALS

1. Manufacturer shall provide instruction manuals

- a) Operational overview
- b) Logic and block diagrams
- c) GUI Screen operation
- d) User configuration
- e) System Block Diagram
- f) Drawings and data sheets
- g) Detailed wiring diagrams
- h) Detailed assembly drawings
- i) (OEM) Manuals

2. Manufacturer shall provide operation manuals

- a) Touch screen operation
- b) Touch screen maintenance

Q. SYSTEM WARRENTY

1. All new equipment shall be warranted (12) months

R. SPARE PARTS

1. A spare parts list shall be included

II. EQUIPMENT AND MATERIALS

Section 77 – FIBER OPTIC CABLE AND AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)
(FAA L-890)

A. GENERAL

1. New equipment and new material shall match the existing equipment and material

III. METHOD OF MEASUREMENT

- A. Modification of the existing ALCMS shall be measured as a lump sum
- B. Fiber optic cable, will be measured at the contract price per linear foot
- C. Fiber optic inner duct, will be measured at the contract price per linear foot
- D. Pullboxes and manholes will be made under Section 56
- E. Cutting and splicing of all cables will be a lump sum item
- F. Trenching, backfilling, cable connection, testing will be considered incidental

IV. BASIS OF PAYMENT

- A. Modifications to the existing ALCMS shall be paid from the allowance
- B. Payment for Fiber Optic Cable will be made at the contract unit price
- C. Payment for Inner Duct will be made at the contract unit price
- D. Payment for cutting and splicing will be paid at the contract lump sum price
- E. Trenching, backfilling, cable connection, testing shall not be measured for payment
- F. Payment will be made under:

Item 77.1	Modifications to ALCMS	per allowance
Item 77.2	12SM/12MM Fiber Optic Cable	per linear foot
Item 77.3	1" Inner Duct	per linear foot
Item 77.4	Fiber Optic Cuts and Splices	per lump sum

END OF SECTION 77