

# ENGINEERING TECHNICAL LETTERS (ETL)

| Number       | Title  | Status                                | Publication Date |
|--------------|--|---------------------------------------|------------------|
| 82-1         | Energy Budget Figures  | Superseded by ETLs 83-10, 86-1, 87-4  | 10 Nov 82        |
| 82-2         | Energy Efficient Equipment   | Superseded by AFEPPM 88-10            | 10 Nov 82        |
| 82-3         | Computer Energy Analyses – New Facilities  | Superseded by ETLs 83-5, 84-2         | 10 Nov 82        |
| 82-4         | Energy Conservation Investment Program (ECIP)  | Superseded by ETL 84-7                | 10 Nov 82        |
| 82-5         | Solar Applications   | Superseded by ETLs 84-1, 86-13, 86-14 | 10 Nov 82        |
| 82-6         | Normal Passive Solar Applications  | Canceled                              | 30 Dec 82        |
| 82-7         | Unique Passive Solar Applications  | Canceled                              | 30 Nov 82        |
| 83-1         | Design of Control Systems for HVAC   | Superseded by ETL 83-1 (Change 1)     | 16 Feb 83        |
| 83-1 (Chg 1) | U.S. Air Force Standardized Heating, Ventilating & Air Conditioning (HVAC) Control Systems | Superseded by UFC 3-410-02            | 22 Jul 87        |
| 83-2         | Supplemental Design Guidance to AF Standards – Pressurized Hydrant Fueling Systems         | Superseded by ETL 84-3                | 16 Feb 83        |
| 83-3         | Interior Wiring Systems, AFM 88-15, Para 7-3   | Canceled                              | 2 Mar 83         |
| 83-4         | EMCS Data Transmission Media Considerations  | Canceled                              | 3 Apr 83         |
| 83-5         | Computer Energy Analyses   | Superseded by ETL 84-2                | 5 May 83         |
| 83-6         | Solar Applications in Medical Facilities   | Canceled                              | 24 May 83        |
| 83-7         | Plumbing – AFM 83-8, Chapter 4   | Canceled                              | 30 Aug 83        |
| 83-8         | Use of Air-to-Air Unitary Heat Pumps   | Canceled                              | 15 Sep 83        |
| 83-9         | Insulation   | Superseded by ETL 94-4                | 14 Nov 83        |
| 83-10        | Energy Budget Figure (EBF)   | Superseded by ETL 86-1                | 28 Nov 83        |
| 84-1         | Solar Applications   | Superseded by ETL 86-14               | 18 Jan 84        |
| 84-2         | Computer Energy Analysis   | Superseded by ETL 94-4                | 27 Mar 84        |
| 84-3         | AF Petroleum Fuel Facility Criteria and Standards  | Canceled                              | 21 Mar 84        |
| 84-4         | Meters in New Facilities   | Superseded by ETLs 86-7, 86-15, 87-5  | 10 Apr 84        |

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|---------------|--|---|-------------------------|
| 84-5          | Heat Distribution Systems Outside of Buildings                                   | Superseded by ETLs 84-8, 86-11, 86-18, 88-6                           | 7 May 84                |
| 84-7          | MCP Energy Conservation Investment Program (ECIP)                                | Superseded by AFEPPM 96-4   | 13 Jun 84               |
| 84-8          | Heat Distribution Systems Outside of Buildings                                   | Superseded by ETL 86-11   | 19 Jun 84               |
| 84-9          | TEMPEST/EMP Shielding for Facilities   | Superseded by ETL 88-7  | 5 Jul 84                |
| 84-10         | AF Building Construction and the Use of Termiticides                             | Canceled  | 1 Aug 84                |
| 86-1          | Energy Budget Figures (EBFs) for Facilities in the Military Construction Program | Superseded by ETL 87-7  | 3 Feb 86                |
| 86-2          | Energy Management and Control Systems (EMCS)                                     | Canceled  | 5 Feb 86                |
| 86-3          | Paints and Protective Coatings   | Superseded by ETL 86-4  | 21 Feb 86               |
| 86-4          | Coating Systems and Specifications for Exterior and Interior of Steel Tanks      | Canceled  | 12 May 86               |
| 86-5          | Fuels Use Criteria for Air Force Construction                                    | Canceled 5 Apr 07   | 22 May 86               |
| 86-6          | Heat Distribution Systems Outside of Buildings                                   | Superseded by ETLs 86-11, 86-18, 88-6                                 | 3 Jun 86                |
| 86-7          | Utility Meters in New and Renovated Facilities                                   | Superseded by ETL 86-15   | 3 Jun 86                |
| 86-8          | Aqueous Film Forming Foam Waste Discharge Retention and Disposal                 | Superseded by AFI 32-1067   | 4 Jun 86                |
| 86-9          | Lodging Facility Design Guide  | Superseded by AFCEE Temporary Lodging Facilities Design Guide         | 4 Jun 86                |
| 86-10         | Antiterrorism Planning and Design Guidance                                       | Superseded by AFCEE Design Guide, Installation Force Protection Guide | 13 Jun 86               |
| 86-11         | Heat Distribution Systems Outside of Buildings                                   | Superseded by ETL 88-6  | 3 Jul 86                |
| 86-12         | Prewired Workstations and Systems Furniture                                      | Superseded by ETL 90-2  | 3 Jul 86                |
| 86-13         | Solar Applications   | Superseded by ETL 86-14   | 18 Aug 86               |
| 86-14         | Solar Applications   | Canceled  | 15 Oct 86               |
| 86-15         | Utility Meters in New and Renovated Facilities                                   | Superseded by ETL 87-5  | 13 Nov 86               |
| 86-16         | Direct Digital Control of Heating, Ventilation, and Air Conditioning Systems     | Superseded by UFC 3-410-02  | 9 Dec 86                |

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|---------------|--|--|-------------------------|
| 86-17         | Power Conditioning and Continuation Interfacing Equipment (PCCIE)                                | Superseded by ETL 89-6   | 17 Dec 86               |
| 86-18         | Heat Distribution Systems Outside of Buildings   | Superseded by ETL 88-6   | 18 Dec 86               |
| 87-1          | Lead Ban Requirements of Drinking Water  | Superseded by AFI 32-1067  | 15 Jan 87               |
| 87-2          | Volatile Organic Compounds   | Canceled   | 4 Mar 87                |
| 87-3          | Cathodic Protection  | Superseded by ETLs 87-6, 88-5  | 12 Mar 87               |
| 87-4          | Energy Budget Figures (EBFs) for Facilities in the Military Construction Program                 | Superseded by ETL 94-4   | 13 Mar 87               |
| 87-5          | Utility Meters in New and Renovated Facilities   | Superseded by ETL 94-2   | 13 Jul 87               |
| 87-6          | Cathodic Protection  | Superseded by ETL 88-5   | 21 Aug 87               |
| 87-7          | 1987 Energy Prices and Discount Factors for Life-Cycle Cost Analysis                             | Superseded by ETL 89-1   | 14 Oct 87               |
| 87-8          | Built-Up Roof Repair/Replacement Guide Specifications  | Superseded by ETL 90-1   | 19 Oct 87               |
| 87-9          | Prewiring  | Superseded by ETL 02-12  | 21 Oct 87               |
| 88-1          | Standard Guidelines for Submission of Facility Operating and Maintenance Manuals                 | Superseded by ETL 89-2   | 5 Jan 88                |
| 88-2          | Photovoltaic Applications  | Superseded by AFCESA Tech Data Bulletin, Photovoltaic Concept, Design, and Application | 21 Jan 88               |
| 88-3          | Design Standards for Critical Facilities   | Superseded by AFMAN 32-1146(I)   | 15 Jun 88               |
| 88-4          | Reliability & Maintainability (R&M) Design Checklist   | Superseded by ETL 01-1   | 24 Jun 88               |
| 88-5          | Cathodic Protection  | Superseded by ETL 91-6   | 2 Aug 88                |
| 88-6          | Heat Distribution Systems Outside of Buildings   | Superseded by AFI 32-1068  | 1 Aug 88                |
| 88-7          | TEMPEST and High-Altitude Electromagnetic Pulse (HEMP) Protection for Facilities                 | Superseded by ETLs 90-3, 91-2  | 24 Aug 88               |
| 88-8          | Chlorofluorocarbon (CFC) Limitation in Heating, Ventilating, and Air-Conditioning (HVAC) Systems | Superseded by ETL 91-7   | 4 Oct 88                |
| 88-9          | Radon Reduction in New Facility Construction   | Canceled   | 7 Oct 88                |
| 88-10         | Prewired Work Station Guide Specifications   | Canceled   | 29 Dec 88               |

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|--------|--|---|------------------|
| 89-1   | 1988 Energy Prices and Discount Factors for Life-Cycle Cost Analysis   | Superseded by ETL 90-4  | 6 Feb 89         |
| 89-2   | Standard Guidelines for Submission of Facility Operating and Maintenance Manuals                             | Canceled 7 Apr 15   | 23 May 89        |
| 89-3   | Fire Protection Engineering Criteria for Electronic Equipment Installations                                  | Superseded by ETL 93-5  | 9 Jun 89         |
| 89-4   | Systems Furniture Guide Specification  | Canceled  | 6 Jul 89         |
| 89-6   | Power Conditioning and Continuation Interfacing Equipment (PCCIE) in the Military Construction Program (MCP) | Canceled  | 7 Sep 89         |
| 89-7   | Design of Air Force Courtrooms   | Superseded by Air Force Base Legal Facilities Design Guide            | 29 Sep 89        |
| 90-1   | Built-Up Roof (BUR) Repair/Replacement Guide Specification   | Superseded by UFGS 07 51 13, Built-up Asphalt Roofing                 | 23 Jan 90        |
| 90-2   | General Policy for Prewired Workstations and Systems Furniture   | Canceled  | 26 Jan 90        |
| 90-3   | TEMPEST Protection for Facilities  | Canceled  |                  |
| 90-4   | 1990 Energy Prices and Discount Factors for Life-Cycle Cost Analysis   | Canceled  | 24 May 90        |
| 90-5   | Fuel and Lube Oil Bulk Storage Capacity for Emergency Generators   | Superseded by AFI 32-1062, Electrical Power Plants and Generators     | 26 Jul 90        |
| 90-6   | Electrical System Grounding, Static Grounding and Lightning Protection                                       | Canceled 8 Jun 09   | 3 Oct 90         |
| 90-7   | Air Force Interior Design Policy   | Canceled  | 12 Oct 90        |
| 90-8   | Guide Specifications for Ethylene Propylene Diene Monomer (EPDM) Roofing                                     | Superseded by UFGS 07 53 23, Ethylene Propylene Diene Monomer Roofing | 17 Oct 90        |
| 90-9   | Fire Protection Engineering Criteria for Aircraft Maintenance, Servicing, and Storage Facilities             | Superseded by ETL 96-1  | 2 Nov 90         |
| 90-10  | Commissioning of Heating, Ventilating, and Air Conditioning (HVAC) Systems Guide Specification               | Canceled 14 Jan 13  | 17 Oct 90        |
| 91-1   | Fire Protection Engineering Criteria - Testing Halon Fire Suppression Systems                                |   | 2 Jan 91         |
| 91-2   | High Altitude Electromagnetic Pulse (HEMP) Hardening in Facilities   | Canceled 8 Jun 09   | 4 Mar 91         |
| 91-3   | Water Supply for Fire Protection   | Superseded by MIL-HDBK-1008B, Jan 94                                  | 14 Jun 91        |

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| 91-4   | Site Selection Criteria for Fire Protection Training Areas  |   | 14 Jun 91        |
| 91-5   | Fire Protection Engineering Criteria – Emergency Lighting and Marking of Exits                                      | Superseded by ETL 94-5  |                  |
| 91-6   | Cathodic Protection   | Superseded by MIL-HDBK-1136 (now UFC 3-570-06) and MIL-HDBK-1004/10 (now UFC 3-570-02N) | 3 Jul 91         |
| 91-7   | Chlorofluorocarbon (CFC) Limitation in Heating, Ventilating, and Air-Conditioning (HVAC) Systems                    | Canceled  | 21 Aug 91        |
| 91-8   | Facility Electrical Power for Aircraft Ground Support Equipment (Hangars, Aprons, and Ramps)                        | Canceled  | 24 Sep 91        |
| 93-1   | Construction Signs  | Superseded by ETL 02-9  | 11 Mar 93        |
| 93-2   | Dormitory Criteria for Humid Areas  | Superseded by ETL 03-2  | 13 Jul 93        |
| 93-3   | Inventory, Screening, Prioritization, and Evaluation of Existing Buildings for Seismic Risk                         | Canceled  | 18 Aug 93        |
| 93-4   | Fire Protection Engineering Criteria - Automatic Sprinkler Systems in Military Family Housing (MFH)                 | Superseded by UFC 3-600-01  | 11 Aug 93        |
| 93-5   | Fire Protection Engineering Criteria - Electronic Equipment Installations   | Superseded by ETL 01-18   |                  |
| 94-1   | Standard Airfield Pavement Marking Schemes  | Superseded by ETL 04-2  | 5 Apr 94         |
| 94-2   | Utility Meters in New and Renovated Facilities  | Superseded by UFC 3-400-01  | 10 Jun 94        |
| 94-3   | Air Force Carpet Standard   | Superseded by ETL 00-6  | 10 Jun 94        |
| 94-4   | Energy Usage Criteria for Facilities in the Military Construction Program   | Superseded by UFC 3-400-01  | 19 Aug 94        |
| 94-5   | Fire Protection Engineering Criteria and Technical Guidance   | Superseded by ETL 99-4  | 8 Nov 94         |
| 94-6   | Fire Protection Engineering Criteria and Technical Guidance - Removal of Halogenated Agent Fire Suppression Systems |   | 5 Dec 94         |
| 94-7   | EPA Guideline Items in Construction and Other Civil Engineering Specifications                                      | Superseded by ETL 00-1  | 14 Dec 94        |
| 94-8   | Design in Metric  | Canceled 1 Sep 07   | 14 Dec 94        |
| 94-9   | Silicone Joint Sealants for Pavements   | Superseded by ETL 96-4  | 14 Dec 94        |

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|--------|--|---|------------------|
| 95-1   | Halon 1301 Management Planning Guidance  |   | 12 May 95        |
| 95-2   | Preparation of Requirements and Management Plan (RAMP) Packages for Military Construction (MILCON) Program Projects                                    | Superseded by AFCEE <i>Project Managers Guide For Design And Construction</i> | 26 Oct 95        |
| 95-3   | Planning Guide for Installation of Ultra-High-Molecular-Weight (UHMW) Polyethylene Panels Under Aircraft Arresting System Cables (CONUS Installations) | Superseded by AFI 32-1043   | 26 Oct 95        |
| 95-4   | Mandatory Energy/Water Performance Standards for Replaced or Modified Equipment  | Superseded by UFC 3-400-01  | 31 Oct 95        |
| 96-1   | Fire Protection Engineering Criteria - New Aircraft Facilities   | Superseded by ETL 98-7  | 22 Jan 96        |
| 96-2   | Elimination of Liquid Polychlorinated Biphenyls (PCBs) Prioritization Guidance   | Canceled 6 Apr 07   | 2 May 96         |
| 96-3   | Typical Statement of Work for Airfield Pavement Condition Survey   | Canceled 9 Feb 09   | 26 Jun 96        |
| 96-4   | Temporary Joint Sealing Details and Procedures for Pavements   | Superseded by UFC 3-270-01  | 9 Jul 96         |
| 96-5   | Hangar Concrete Floor Reflective Coating Criteria  | Superseded by UFGS 03 53 14.00 20, UFGS 09 67 23.15, UFGS 09 67 23.16         | 26 Aug 96        |
| 97-1   | National Primary Drinking Water Regulations: Lead and Copper Rule (LCR) Corrosion Control Desk-Top Report Statement of Work (SOW)                      | Canceled 23 Apr 04  | 29 Jan 97        |
| 97-2   | Maintenance and Repair of Rigid Airfield Pavement Surfaces, Joints, and Cracks   | Superseded by UFC 3-270-01  | 28 Jul 97        |
| 97-3   | Base Course Proof Rolling Requirements   | Superseded by UFC 3-260-02, UFGS 32 11 23, UFGS 32 11 16                      | 25 Mar 97        |
| 97-4   | Expedient Trim Pad Anchoring   | Superseded by ETL 06-4  | 2 Jun 97         |
| 97-5   | Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements  |   | 25 Apr 97        |
| 97-8   | Building Manager Energy Conservation Handbook  | Superseded by ETL 98-4  | 9 Jun 97         |
| 97-9   | Criteria and Guidance for C-17 Contingency Operations on Semi-Prepared Airfields   |   | 25 Nov 97        |
| 97-10  | Structural Evaluation of Existing Buildings for Seismic and Wind Loads   | Superseded by ETL 00-5  | 30 Oct 97        |

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|---------------|--|--|------------------|
| 97-11         | Mitigation of Non-Structural Seismic and High Wind Deficiencies for Existing Buildings         | Superseded by ETL 00-5                   | 30 Oct 97        |
| 97-12         | Mitigation of Existing Building Structural Deficiencies for Seismic and High Wind Loads        | Superseded by ETL 00-5                   | 30 Oct 97        |
| 97-13         | Dormitory Ventilation and Exhaust System Design Criteria                                       | Superseded by ETL 03-2                   | 7 Aug 97         |
| 97-14         | Procedures for Airfield Pavement Condition Index Surveys                                       | Superseded by UFCs 3-270-05/06           | 15 Sep 97        |
| 97-16         | Pavement Marking Systems for Low Temperature Applications                                      | Superseded by UFGS 32 17 23              | 25 Nov 97        |
| 97-17         | Paint and Rubber Removal from Roadway and Airfield Pavements                                   | Superseded by UFGS 32 01 11.51           | 1 Dec 97         |
| 97-18         | Guide Specification for Airfield and Roadway Marking   | Superseded by ETL 97-18 (Chg 1)          | 5 Dec 97         |
| 97-18 (Chg 1) | Guide Specification for Airfield and Roadway Marking   | Superseded by ETL 97-18 (Chg 2) 2 Jun 16 | 5 Dec 97         |
| 97-18 (Chg 2) | Guide Specification for Airfield and Roadway Marking   | Superseded by UFGS 32 17 23              | 5 Dec 97         |
| 97-22         | Competing Facility Keying Systems  | Canceled 17 Mar 15                       | 5 Dec 97         |
| 98-1          | Design Criteria for Aggregate Surfaced Helicopter Slide Areas and Heliports                    | Canceled 3 Apr 15                        | 14 Jan 98        |
| 98-2          | Clean Air Act Amendments Requirements for Electric Generators and Power Plants                 | Canceled 18 Mar 08                       | 1 Jun 98         |
| 98-4          | Building Manager Energy Conservation Handbook  | Canceled 6 Dec 16                        | 16 Jan 98        |
| 98-5          | C-130 and C-17 Contingency and Training Airfield Dimensional Criteria                          | Superseded by ETL 04-7                   | 19 Oct 98        |
| 98-7          | Fire Protection Engineering Criteria - New Aircraft Facilities                                 | Superseded by ETL 01-2                   | 29 Apr 98        |
| 98-8          | Fire Protection Engineering Criteria – Existing Aircraft Facilities                            | Superseded by UFC-4-211-01               | 25 Jun 98        |
| 98-10         | Installation and Operation Guide for the Stanley Hydraulic Power Unit (HPU) (M (MAAS) Upgrade) | Superseded by Technical Orders           | 5 Nov 98         |
| 99-1          | Treatment and Disposal of Aircraft Washwater Effluent  | Canceled 2 Apr 15                        | 7 Jan 99         |
| 99-4          | Fire Protection Engineering Criteria - Emergency Lighting and Marking of Exits                 | Superseded by UFC 3-600-01               | 9 Nov 99         |
| 99-6          | Programming Fuels Projects   | Superseded by ETL 01-15                  | 10 Dec 99        |

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| 99-7   | Airfield Pavement Condition Index Survey   | Superseded by ETL 02-13             | 27 Sep 99        |
| 00-1   | EPA Guideline Items in Construction and Other Engineering Specifications                               | Canceled 16 Mar 15                  | 5 Jan 00         |
| 00-2   | Inspection and Testing of Trim Pad Anchoring Systems   | Superseded by TSPWG M 3-260-03.00-2 | 1 Feb 00         |
| 00-5   | Seismic Design for Buildings and Other Structures  | Canceled 10 Nov 05                  | 5 Jun 00         |
| 00-6   | Air Force Carpet Standard  | Superseded by ETL 03-3              | 11 May 00        |
| 00-7   | Fire Protection Engineering Criteria — Correlation of US and Host Nation Codes and Criteria            |                                     | 10 May 00        |
| 00-8   | Airfield Pavement Design Criteria  | Superseded by UFC 3-260-02          | 28 Apr 00        |
| 00-9   | Airblast Protection Retrofit for Unreinforced Concrete Masonry Walls                                   |                                     | 8 Aug 00         |
| 00-12  | Fire Protection Engineering Criteria — Conversion of Fire Alarm Radio Systems to Narrowband Technology | Superseded by ETL 03-5              | 19 Dec 00        |
| 01-1   | Reliability and Maintainability (R&M) Design Checklist   | Canceled 22 Feb 17                  | 11 Oct 01        |
| 01-2   | Fire Protection Engineering Criteria - New Aircraft Facilities   | Superseded by ETL 02-15             | 1 Apr 01         |
| 01-4   | Fire Protection Engineering Criteria - Protective and Hardened Aircraft Shelters                       | Superseded by UFC-4-211-01          | 31 Dec 01        |
| 01-5   | Jet Engine Thrust Standoff Requirements for Airfield Asphalt Edge Pavements                            | Superseded by ETL 07-3              | 24 May 01        |
| 01-6   | Contingency Airfield Pavement Specifications   | Superseded by ETL 09-2              | 12 Jun 01        |
| 01-7   | Large Aggregate Asphalt Mixtures   | Superseded by UFC 3-250-03          | 5 Jun 01         |
| 01-8   | Resin Modified Pavement Design and Application Criteria  |                                     | 25 Sep 01        |
| 01-9   | Procedures to Retard Reflective Cracking   | Superseded by UFC 3-250-03          | 17 Jul 01        |
| 01-10  | Design and Construction of High-Capacity Trim Pad Anchoring Systems                                    |                                     | 24 Jul 02        |
| 01-13  | Small Arms Range Design and Construction   | Superseded by ETL 02-11             | 31 Dec 01        |
| 01-15  | Programming Fuels Projects   | Canceled 12 Apr 07                  | 5 Jun 01         |
| 01-18  | Fire Protection Engineering Criteria – Electronic Equipment Installations                              |                                     | 24 Oct 01        |
| 01-20  | Guidelines for Airfield Frangibility Zones   | Superseded by UFC 3-260-01          | 17 Nov 08        |
| 02-1   | Design of Drainage Structures for Heavy Aircraft Loading   | Superseded by UFC 3-260-01          | 1 Aug 02         |



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| 02-4   | Airblast Protection Polymer Retrofit of Unreinforced Concrete Masonry Walls   |                                 | 12 Jun 02        |
| 02-5   | Guidance for Energy Savings Performance Contracts   | Superseded by ETL 04-12         | 31 Oct 02        |
| 02-7   | Preventing Concrete Deterioration Under B-1 Aircraft  | Superseded by UFC 3-270-01      | 7 Aug 02         |
| 02-8   | Silicone Joint Sealant Specification for Airfield Pavements   | Superseded by UFC 3-270-01      | 5 Sep 02         |
| 02-9   | Construction Signs  | Canceled 17 Mar 15              | 15 May 02        |
| 02-10  | Airblast Protection Retrofit of Lightweight Manufactured Structures   |                                 | 12 Jun 02        |
| 02-11  | Small Arms Range Design and Construction  | Superseded by ETL 05-5          | 22 Nov 02        |
| 02-12  | Communications and Information System Criteria for Air Force Facilities   | Superseded by UFC 3-580-01      | 27 Jun 02        |
| 02-13  | Pavement Engineering Assessment Standards   | Superseded by ETL 04-9          | 5 Sep 02         |
| 02-14  | Determining the Need for Runway Rubber Removal  | Superseded by ETL 04-10         | 4 Sep 02         |
| 02-15  | Fire Protection Engineering Criteria – New Aircraft Facilities  | Superseded by UFC-4-211-01      | 3 Dec 02         |
| 02-16  | Design, Construction, Maintenance, and Evaluation of the Pegasus Glacial Ice Runway for Heavy Wheeled Aircraft Operations | Superseded by FC 3-260-06F      | 16 Oct 02        |
| 02-17  | Use of Non-Potable Water to Replace Potable Water   | Superseded by ETL 08-10         | 25 Oct 02        |
| 02-19  | Airfield Pavement Evaluation Standards and Procedures   |                                 | 12 Nov 02        |
| 03-1   | Storm Water Construction Standards  | Superseded by ETL 14-1          | 24 Mar 03        |
| 03-2   | Design Criteria for Prevention of Mold in Air Force Facilities  | Superseded by ETL 04-3          | 12 Aug 03        |
| 03-3   | Air Force Carpet Standard   | Superseded by ETL 07-4          | 16 Apr 03        |
| 03-4   | Alternate Fuels E85 and B20   | Superseded by UFC 3-460-03      | 21 Oct 03        |
| 03-5   | Converting Civil Engineering Radio Frequency Devices to Narrowband Technology   | Canceled 2 Apr 15               | 21 Oct 03        |
| 03-8   | Rejuvenation of Hot-Mix Asphalt (HMA) Pavements   | Superseded by UFGS 32 01 22     | 19 Dec 03        |
| 04-2   | Standard Airfield Pavement Marking Schemes  | Superseded by ETL 97-18 (Chg 1) | 19 Jul 04        |

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| 04-2<br>(Chg 1) | Standard Airfield Pavement Marking Schemes  | Superseded by ETL 97-18 (Chg 2) 24 Jun 16   | 19 Jul 04        |
| 04-2<br>(Chg 2) | Standard Airfield Pavement Marking Schemes  | Superseded by UFC 3-260-04                  | 19 Jul 04        |
| 04-3            | Design Criteria for Prevention of Mold in Air Force Facilities  | Superseded by UFC 3-101-01 and UFC 3-410-01 | 6 Apr 04         |
| 04-4            | Trenchless Technology (TT) for Crossing Air Force Pavements   |   | 31 Mar 04        |
| 04-5            | Design Recommendations for Potable Water System Security (FOUO)   |   | 20 Aug 04        |
| 04-6            | Inspection of Drainage Systems  | Superseded by TSPWG M 3-260-03.04-6         | 8 Jan 04         |
| 04-7            | C-130 and C-17 Landing Zone (LZ) Dimensional, Marking, and Lighting Criteria  | Superseded by ETL 09-6                      | 29 Mar 04        |
| 04-8            | Stone Matrix Asphalt (SMA) for Air Force Pavements  | Superseded by UFGS 32 13 17                 | 9 Jan 04         |
| 04-9            | Pavement Engineering Assessment (EA) Standards  | Superseded by AFI 32-1041                   | 29 Apr 04        |
| 04-10           | Determining the Need for Runway Rubber Removal  |   | 12 May 04        |
| 04-11           | Recommendations for Incorporating Water System Emergency Response Plan (ERP) Requirements (FOUO)                            | Superseded by ETL 12-1                      | 18 Oct 04        |
| 04-12           | Energy Savings Performance Contracts (ESPC)   | Superseded by ETL 06-8                      | 13 Oct 04        |
| 04-15           | Electrical Safety Guidance  | Superseded by UFC 3-560-01                  | 30 Sep 04        |
| 05-1            | Use of Acrylic Diffusers with Metal Halide Fixtures   | Canceled 4 Feb 15                           | 5 Feb 05         |
| 05-2            | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations | Superseded by ETL 06-7                      | 6 Jun 05         |
| 05-5            | Small Arms Range Design and Construction  | Superseded by ETL 06-11                     | 8 Nov 05         |
| 05-8            | Use of Off-the-Shelf Concrete Admixtures as Cold Weather Admixture Systems (CWAS)   |   | 4 Nov 05         |
| 06-1            | Arc Flash Personal Protective Equipment (PPE) Requirements for High-Voltage Overhead Line Work at 69 kV (nominal) or Less   | Superseded by ETL 06-9                      | 5 Jan 06         |
| 06-2            | Alkali-Aggregate Reaction in Portland Cement Concrete (PCC) Airfield Pavements  |   | 9 Feb 06         |

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| 06-4   | Expedient Trim Pad Anchoring Systems  |                             | 8 May 06         |
| 06-6   | Interim Swaged End Inspection Criteria for Aircraft Arresting System (AAS) Pendants   | Superseded by AFI 32-1043   | 16 Jun 06        |
| 06-7   | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations   | Superseded by ETL 07-12     | 19 Jul 06        |
| 06-8   | Energy Savings Performance Contracts (ESPC)   | Superseded by ETL 08-5      | 19 Sep 06        |
| 06-9   | Arc Flash Personal Protective Equipment (PPE) Requirements for High-Voltage Overhead Line Work at 69 kV (nominal) or Less   | Superseded by UFC 3-560-01  | 15 Aug 06        |
| 06-11  | Small Arms Range Design and Construction  | Superseded by ETL 08-11     | 28 Nov 06        |
| 07-1   | Design Criteria for Underground Electrical Distribution Systems Using Directional Boring (DB) Installation Methods for Installing High Density Polyethylene Electrical (HDPE) Conduit | Superseded by UFC 3-550-01  | 9 Feb 07         |
| 07-2   | Anchoring a Fiberglass Mat Assembly in Asphalt Concrete (AC) Pavement   |                             | 19 Dec 07        |
| 07-3   | Jet Engine Thrust Standoff Requirements for Airfield Asphalt Edge Pavements   |                             | 14 Feb 07        |
| 07-4   | Air Force Carpet Standard   | Superseded by UFGS 09 68 00 | 28 Mar 07        |
| 07-5   | Bridge Inspections  | Superseded by UFC 3-310-08  | 18 Apr 07        |
| 07-6   | Risk Assessment Procedure for Recycling Portland Cement Concrete (PCC) Suffering from Alkali-Silica Reaction (ASR) in Airfield Pavement Structures                                    |                             | 14 Aug 07        |
| 07-7   | Compact Fluorescent Lamp (CFL) Applications (FOUO)  | Canceled 1 Apr 15           | 6 Nov 07         |
| 07-8   | Spall Repair of Portland Cement Concrete (PCC) Airfield Pavements in Expeditionary Environments   | Superseded by AFTTP 3-32.16 | 27 Jul 07        |
| 07-10  | Evaluation and Restoration of Folded Fiberglass Mats (FFM)  |                             | 19 Dec 07        |
| 07-11  | Evaluation of Aged Asphalt Concrete Surfaces  | Superseded by ETL 08-1      | 25 Sep 07        |
| 07-12  | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations   | Superseded by FC 3-260-06F  | 24 Sep 07        |

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| 08-1   | Evaluation Criteria for Aged Asphalt Concrete (AC) Surfaces   |  | 8 Feb 08         |
| 08-2   | Testing Protocol for Rigid Spall Repair Materials   | Superseded by TSPWG M 3-270-01.08-2                      | 30 Jan 08        |
| 08-3   | Crater Repair Methods Using Rapid-Setting (RS) Materials (FOUO)   |  | 4 Apr 08         |
| 08-4   | Testing Protocol for Polymeric Spall Repair Materials   | Superseded by TSPWG M 3-270-01.08-4                      | 10 Apr 08        |
| 08-5   | Energy Savings Performance Contracts (ESPC)   | Superseded by ETL 11-24                                  | 14 Apr 08        |
| 08-6   | Design of Surface Drainage Facilities   | Superseded by UFC 3-201-01                               | 5 Feb 08         |
| 08-10  | Alternative Water Sources - Use of Non-Potable Water  | Canceled   | 10 Jul 08        |
| 08-11  | Small Arms Range Design and Construction  | Superseded by ETL 11-18                                  | 20 Oct 08        |
| 08-13  | Incorporating Sustainable Design and Development (SDD) and Facility Energy Attributes in the Air Force Construction Program | Superseded by UFC 1-200-02                               | 14 Sep 08        |
| 08-14  | Structural Evaluation Procedure for Stabilized Soil-Surfaced Airfields  |  | 28 Aug 08        |
| 08-15  | Utilities Privatization (UP) Service Contract Post-Award Management   | Superseded by Air Force Utilities Privatization Playbook | 14 Sep 08        |
| 09-1   | Airfield Planning and Design Criteria for Unmanned Aircraft Systems (UAS)   |  | 28 Sep 09        |
| 09-2   | Contingency Airfield Pavement Specifications  |  | 11 Mar 09        |
| 09-3   | Chemical Dust Control for Contingency Roads, Base Camps, Helipads, and Airfields  | Superseded by AFTTP 3-32.16 and UFC 3-260-17             | 3 Mar 09         |
| 09-4   | Fire Protection Engineering Criteria – Expeditionary and Force Projection Operational Theaters                              | Superseded by UFC 1-201-01                               | 9 Feb 09         |
| 09-6   | C-130 and C-17 Landing Zone (LZ) Dimensional, Marking, and Lighting Criteria (FOUO)   |  | 17 Aug 09        |
| 09-8   | Resource Efficiency Manager (REM) Tracking and Results Verification   | Canceled 17 Aug 12                                       | 3 Mar 09         |
| 09-9   | Connection Methods For Standby Generators - 600 Volts or Less   | Superseded by ETL 10-7                                   | 18 May 09        |
| 09-10  | Aurora Electrical System Vulnerability Assessment and Mitigation Actions (FOUO)   | Superseded by UFC 3-550-07                               | 16 Apr 09        |

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| 09-11  | Civil Engineering Industrial Control System Information Assurance Compliance   | Superseded by ETL 11-1        | 26 Oct 09        |
| 09-12  | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations | Superseded by ETL 10-15       | 18 Aug 09        |
| 09-13  | Irrigation of Installation Turfgrass and Landscaping   | Superseded by UFC 3-201-02    | 23 Oct 09        |
| 09-15  | External Foam Insulation of Temporary Structures   | Superseded by ETL 09-18       | 19 Oct 09        |
| 09-18  | External Foam Insulation of Temporary Structures   | Superseded by ETL 10-6        | 18 Nov 09        |
| 10-2   | Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications            | Superseded by ETL 10-18       | 18 Mar 10        |
| 10-3   | Procedures and Acceptance Criteria for Protective Materials Resistant to 155 mm and Smaller Fragmenting Munitions              |                               | 1 Mar 10         |
| 10-4   | Joint Strike Fighter (JSF) F-35B Vertical Landing (VL) Pad Design (FOUO)   | Canceled 2 Nov 12             | 8 Jul 10         |
| 10-5   | Self-Help Pest and Vegetation Management Program   |                               | 30 Aug 10        |
| 10-6   | External Foam Insulation of Temporary Structures   | Canceled 16 Jul 15            | 22 Feb 10        |
| 10-7   | Connection Methods For Standby Generators - 600 Volts or Less  | Superseded by UFC 3-540-01    | 3 Mar 10         |
| 10-15  | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations | Superseded by ETL 11-13       | 24 Sep 10        |
| 10-18  | Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications            | Superseded by ETL 12-4        | 13 Dec 10        |
| 11-1   | Civil Engineer Industrial Control System Information Assurance Compliance  | Superseded by AFGM 2017-32-01 | 30 Mar 11        |
| 11-3   | Warm Mix Asphalt (WMA)   |                               | 8 Aug 11         |
| 11-4   | Airfield Pavement Drainage Layers  |                               | 13 Dec 11        |
| 11-6   | Utilities Reporting for Air Force Facilities   |                               | 21 Jun 11        |
| 11-7   | Nuclear Weapons-Capable Maintenance and Storage Facilities   | Superseded by FC 4-420-07F    | 1 Sep 11         |
| 11-8   | Decision Criteria for Installing Vegetative Green Roofs at CONUS Installations   |                               | 13 Jan 11        |
| 11-9   | Electrical Manhole Entry and Work Procedures   | Superseded by AFI 32-1064     | 19 Jan 11        |

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| 11-10         | Electrical Manhole Design Considerations  | Superseded by UFC 3-550-01      | 19 Jan 11        |
| 11-12         | Grounding, Bonding, Testing, and Recordkeeping for Communications Facilities  | Superseded by AFI 32-1065       | 24 Feb 11        |
| 11-13         | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations        | Superseded by ETL 11-29         | 14 Apr 11        |
| 11-15         | Repairing and Backfilling Earthen Structures with Flowable Fill   |                                 | 1 Aug 11         |
| 11-18         | Small Arms Range Design and Construction  |                                 | 19 Apr 11        |
| 11-21         | Emergency and Standby Generator Design, Maintenance, and Testing Criteria   | Superseded by ETL 11-21 (Chg 1) | 31 Oct 11        |
| 11-21 (Chg 1) | Emergency and Standby Generator Design, Maintenance, and Testing Criteria   | Superseded by ETL 11-21 (Chg 2) | 16 Feb 12        |
| 11-21 (Chg 2) | Emergency and Standby Generator Design, Maintenance, and Testing Criteria   | Superseded by ETL 13-4          | 16 Mar 12        |
| 11-22         | Water Distribution Lines Leak Detection   | Superseded by UFC 3-230-02      | 21 Jun 11        |
| 11-24         | Energy Savings Performance Contracts (ESPC)   | Superseded by ETL 13-13         | 18 Jul 11        |
| 11-25         | Implementation of Major and Area Source Rules as Applied to Boiler Tune-ups and Energy Assessments for the Boiler MACT Rule           | Superseded by AFI 32-1068       | 8 Aug 11         |
| 11-26         | Using Asphalt Surface Treatments as Preventive Maintenance on Asphalt Airfield Pavements  | Superseded by UFC 3-270-01      | 21 Dec 11        |
| 11-27         | Solar Lighting for Airfields  |                                 | 7 Dec 11         |
| 11-28         | Mandatory Review and Update of Record Drawings for Nuclear-Capable Weapons and Munitions Storage and Maintenance Facilities           |                                 | 7 Dec 11         |
| 11-29         | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Enduring/Contingency Locations |                                 | 22 Dec 11        |
| 12-1          | Recommendations for Incorporating Water System Emergency Response Plan Requirements (FOUO)  |                                 | 13 Jan 12        |
| 12-4          | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications  | Superseded by ETL 12-4 (Chg 1)  | 9 Jan 12         |

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| 12-4<br>(Chg 1)  | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications   | Superseded by ETL 12-15         | 17 Feb 12               |
| 12-7             | Repair of Cement-Stabilized Soil (CSS) Surfaces  | Superseded by AFTTP 3-32.16     | 7 Feb 12                |
| 12-8             | Contingency Aircraft Mooring Points in Portland Cement Concrete Pavements  |                                 | 18 Jan 12               |
| 12-9             | Personnel Certification Requirements for Inspection of Lightning Protection Systems (LPS) on Nuclear Weapons Maintenance, Handling, and Storage Facilities |                                 | 13 Apr 12               |
| 12-10            | Utility Energy Service Contracts (UESC)  | Superseded by UESC Playbook     | 3 Apr 12                |
| 12-12            | Solar-Powered Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Exterior Lighting Applications in Contingency Environments           | Superseded by UFC 3-530-01      | 27 Jul 12               |
| 12-15            | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications   | Superseded by ETL 12-15 (Chg 1) | 22 Aug 12               |
| 12-15<br>(Chg 1) | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications   | Superseded by UFC 3-530-01      | 22 Oct 12               |
| 13-2             | Design, Construction, Operations, and Maintenance of Semi-permanent Wastewater Treatment Plants at Contingency Locations                                   |                                 | 20 May 13               |
| 13-3             | Minimum Airfield Operating Surface Selection and Repair Quality Criteria   | Superseded by AFTTP 3-32.12     | 18 Jan 13               |
| 13-4             | Standby Generator Design, Maintenance, and Testing Criteria  | Superseded by ETL 13-4 (Chg 1)  | 18 Nov 13               |
| 13-4<br>(Chg 1)  | Standby Generator Design, Maintenance, and Testing Criteria  | Superseded by UFC 3-540-07      | 15 May 14               |
| 13-6             | Energy-Efficient Motors and Adjustable-Speed Drives  | Superseded by UFC 3-520-01      | 18 Sep 13               |
| 13-13            | Energy Savings Performance Contracts (ESPC)  | Superseded by ESPC Playbook     | 15 Aug 13               |
| 14-1             | Construction and Operation and Maintenance Guidance for Storm Water Systems  |                                 | 7 Aug 14                |
| 14-2             | Preventing and Repairing Concrete Deterioration Under MV-22 and CV-22 Aircraft   | Superseded by ETL 14-2 (Chg1)   | 2 Apr 14                |

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| 14-2<br>(Chg 1) | Preventing and Repairing Concrete Deterioration Under MV-22 and CV-22 Aircraft   | Superseded by UFC 3-270-01  | 21 Nov 14               |
| 14-3            | Preventive Maintenance Plan (PMP) for Airfield Pavements   |                             | 18 Aug 14               |
| 14-4            | Vertical Landing Zone (VLZ) and Other Airfield Pavement Design and Construction Using High Temperature Concrete                  |                             | 18 Aug 14               |
| 14-5            | Requirements for Wear of Military Uniforms with Arc Thermal Performance Value- (ATPV-) Rated Personal Protective Equipment (PPE) | Superseded by AFI 32-1064   | 28 May 14               |
| 14-10           | Sustainment Pavement Repair (SuPR) Kit   | Superseded by AFTTP 3-32.16 | 7 Aug 14                |

**(Construction Technical Letters [CTL] On Next Page)**



# CONSTRUCTION TECHNICAL LETTERS (CTL)

| Number | Title   | Status  |
|--------|---|---|
| 87-1   | [Construction Signs]                                      | Superseded by CTL 88-3  |
| 88-1   | [Management of the MILCON Planning and Execution Process] | Superseded by CTL 90-1  |
| 88-2   | DD Form 1354 Checklist                                    | Canceled  |
| 88-3   | [Construction Signs]                                      | Superseded by ETL 93-1  |
| 88-4   |   | Replaced by Electronic Data File and Documentation in PDC/WIMS                      |
| 88-5   | [Definitions for Design Milestones]                       | Superseded by CTL 90-2  |
| 88-6   |   | Canceled  |
| 88-7   | Constructibility Review Checklist                         | Superseded by AFPAM 32-1005   |
| 89-1   | Thirty-Percent Design Submittal                           | Canceled  |
| 89-2   | MAJCOM Construction Management                            | Superseded by AFPAM 32-1005   |
| 89-3   | Warranty and Guarantee Program                            | Superseded by AFPAM 32-1005   |
| 90-1   | Management of the MILCON Planning and Execution Process   | Superseded by ETL 95-2 and USAF Project Manager's Guide for Design and Construction |
| 90-2   | Definitions for Design Milestones                         | Canceled  |