

Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety
for
Track Lighting Systems, UL 1574

Second Edition, Dated May 24, 1995

Revisions: This Standard contains revisions through and including January 2, 1997.

A change is indicated by a note following the affected item. The note is preceded and followed by an asterisk.

The revisions dated January 2, 1997 include a reprinted title page (page 1) for this Standard.

The revisions dated July 6, 1995 were issued to correct the placement of headings.

As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this Standard outlining the procedures to be followed to retain the approved text of this ANSI/UL Standard.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing, Recognition, Classification and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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This Standard consists of pages dated as shown in the following checklist:

Page	Date
tr1, tr2	January 2, 1997
1	May 24, 1995(Reprinted January 2, 1997)
2, 3	May 24, 1995
4	July 6, 1995
5 – 55	May 24, 1995
56, 57	July 6, 1995
58 – 66	May 24, 1995
67	July 6, 1995
68 – 80, A1, A2, sr1 – sr6	May 24, 1995

MAY 24, 1995

(Title Page Reprinted: January 2, 1997)



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UL 1574

Standard for

Track Lighting Systems

Prior to the first edition, the requirements for the products covered by this standard were included in the Standard for Electric Lighting Fixtures, UL 57.

First Edition – January, 1987

Second Edition

May 24, 1995

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated May 24, 1995 and July 6, 1995. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Approved as ANSI/UL 1574-1989, August 16, 1989
Approved as ANSI/UL 1574-1996, September 23, 1996

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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**Underwriters Laboratories Inc.®**A not-for-profit organization dedicated to public safety
and committed to quality service**July 6, 1995****Revision pages for****Standard for****Track Lighting Systems****UL 1574, Second Edition**

Attached to this transmittal notice is a revision of the Second edition of UL 1574.

THIS REVISION IS BEING ISSUED TO CORRECT THE PLACEMENT OF HEADINGS ON PAGES DATED JULY 6, 1995. THE REQUIREMENTS ARE NOW IN EFFECT.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

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53.5 Test setup – Recessed mounted track

53.5.1 The test setup is to be the same as described in 53.4.1 – 53.4.4 except the recessed channel is installed in the appropriate test box as specified in Section 52, Grounding Resistance Test, for recessed mounted track. See 52.5.1, 52.7.1, and 52.7.2 for recessed track intended for use with non-recessed fixture assemblies, and 52.5.1 and 52.6.1 for recessed track intended for use with recessed fixture assemblies. Four fixture assemblies shall be installed in the test setup, with each assembly centered in a 20 inch (0.51 m) long section of track.

Exception: If the manufacturer's markings allow a closer fixture assembly center to center spacing, the recessed channel and track length shall be reduced to maintain the specified spacing. See 82.12 for recessed fixture assembly marking requirement.

53.5.1 effective November 25, 1996

54 Abnormal Recessed Temperature Test

54.1 A recessed track system intended for use with recessed fixture assemblies and marked in accordance with 79.5.1, shall be assembled and installed with the same components as described in Section 53, Normal Temperature Test, except as described in 54.2 – 54.5.

54.1 effective November 25, 1996

54.2 The recessed channel shall be mounted in a rectangular box built of 1/2 inch (12.7 mm) thick fir plywood, A-D grade. The plywood test box is to have dimensions such that each wall is 8-1/2 inches (216 mm) from the nearest point of the recessed channel, junction box, or any incidental projection. The top edge of each wall is 8-1/2 inches (216 mm) above the height of the installed recessed channel and the top of the box is open.

54.2 effective November 25, 1996

54.3 The interior space between the plywood box and the interior surface of the recessed channel is to be filled with a 4-inch (102 mm) level of loose fill cellulosic insulation rated for a thermal resistance of 3.75 – 3.85 R/inch with a conditioned density of 2.0 – 2.5 pounds per cubic foot (32 – 40 Kg/m).

54.3 effective November 25, 1996

54.4 The recessed track system shall be operated for 7-1/2 hours or until the thermal protector trips, whichever occurs first. If the thermal protector trips within 3 hours, test results are acceptable if one or more fixture assembly lamps are de-energized and temperatures attained on parts of the fixture assembly or recessed channel in contact with combustible materials (for example, the test box and recessed channel support surfaces) do not exceed 160°C (320°F).

54.4 effective November 25, 1996

54.5 If the thermal protector does not trip within 3 hours and the temperatures on parts of the fixture assembly or recessed channel in contact with combustible materials do not exceed 90°C (194°F), the test is to be reconducted with an additional 2-inches (50 mm) of cellulosic insulation. The test is to be repeated in this manner with additional levels of insulation until:

- a) The protector trips within 3 hours; or

- b) The protector does not trip within 3 hours and the temperatures exceed the 90°C (194°F) limit specified above; or
- c) The maximum depth of insulation reaches 8-1/2-inches (215 mm) over the top of the recessed channel and the temperatures do not exceed the 90°C (194°F) limit specified above.

54.5 effective November 25, 1996

TRACK NETWORKS

55 Security of Knockout Test

55.1 A knockout in an enclosure of metal or polymeric material shall be subjected to the test described in 55.2 and shall comply with the test results in 55.3.

55.2 A force of 10 pounds (44.5 N) is to be gradually applied and maintained for 1 minute perpendicular to the plane of the enclosure surface in which the knockout is located. The flat end of a metal rod 1/4 inch (6.4 mm) in diameter is to be pressed against the knockout from the outside surface at the point(s) evaluated most likely to provide separation of the knockout from the enclosure.

55.3 Test results are acceptable if the knockout does not separate more than 1/16 inch (1.6 mm) from the enclosure.

56 Mold Stress Relief Distortion Test

56.1 A thermoplastic part as described in Section 7, Enclosures, for track systems, and Section 39, Enclosures, for fixture assemblies, and 20.5 shall be subjected to the test described in 56.2 and shall comply with the test results in 56.3.

56.2 One sample of track, minimum 20 inches (508 mm) in length, with the bus bar support and bus bar installed as intended, or a thermoplastic part as described in 56.1, shall be placed in a full-draft circulating-air oven maintained at a uniform temperature of at least 10°C (18°F) higher than the measured temperature of the thermoplastic part other than the bus bar insulation or 70°C (158°F), whichever is greater. The sample is to remain in the oven for 7 hours. After removal from the oven, the sample is to be allowed to return to room temperature and is to be inspected for compliance with 56.3.

56.3 The results are acceptable if:

- a) There is no softening of the material as determined by handling immediately after the conditioning;
- b) No shrinkage, warpage, or other distortion of the part as judged after cooling to room temperature, that results in any of the following:
 - 1) Spacings being reduced to values less than the minimum spacing values specified in Section 17, Spacings, for spacings between:
 - i) Live parts of opposite polarity;
 - ii) Live parts and accessible dead or grounded metal; and
 - iii) Live parts and the enclosure,

- 2) Live parts being considered accessible as determined by the probe illustrated in Figure 16.1;
 - 3) Integrity of the thermoplastic part being defeated so mechanical protection is not afforded to the live parts; and
 - 4) Intended operation of the track lighting system being impaired; or
- c) Any parts relied on for structural integrity described in the Exception of 20.5 shall comply with a repeated Grounding Resistance Test as described in Section 52.

57 Insulation Resistance Test

57.1 The insulation resistance between:

- a) Conductors of opposite polarity; and
- b) Conductors and grounded metal;

is to be measured using a megohmmeter.

57.2 Each connector, in turn, is to be assembled onto a section of track that is not less than 20 inches (0.51 m) and that has a feed connector at the opposite end.

57.3 The track network is to be at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ($77^{\circ}\text{F} \pm 1.8^{\circ}\text{F}$) at the beginning of the test.

57.4 To measure the resistance, the megohmmeter is to be connected, in turn, between each combination of the feed connector supply leads or terminals, including the grounding terminal.

57.5 Test results are acceptable if the minimum resistance measured is 1 megohm for each track section with the connector.

58 Adaptor Overload Test

58.1 An adaptor shall be subjected to the overload test described in 58.2 and 58.3 and shall comply with the results in 58.4.

58.2 A section of track is to be connected to a source of supply as described in 53.3.3. The track is to be grounded through a 1-ampere fuse. Six samples of each type of fixture adaptor are to be connected one at a time to a tungsten load adjusted to draw 150 percent of the rated current of the fixture adaptor.

58.3 Connections between the track and the adaptor are to be made and broken 50 times for each sample. The on – off cycling rate is to be at least 2 seconds on (or the minimum time required to insert and remove the adaptor) and 15 seconds off.

58.4 Test results are acceptable if the 1-ampere fuse does not open.

59 Adaptor Tests

59.1 Strength of adaptor

59.1.1 An adaptor shall be tested as described in 59.1.2 and 59.1.3 and shall comply with the test results in 59.1.4.

59.1.2 A 4-foot (1.22-m) section of track with two mounting openings, each of which is located 6 inches (150 mm) from each end of the track section, is to be mounted as intended on a flat plywood surface. The electrical contact blades are to be removed from the fixture adaptor.

59.1.3 The fixture adaptor is to be mounted to the track with the track first in a ceiling-mounted position and then in a wall-mounted position. A weight equal to two times the weight of the heaviest fixture assembly, but no less than 10 pounds (4.5 kg), is to be suspended from the adaptor for 1 minute.

Exception: A fixture adaptor not intended for use on a wall-mounted track system need not be tested in a wall-mounted position and shall be marked as specified in 82.10.

59.1.4 Test results are acceptable if:

- a) The track is not deformed in a manner that would:
 - 1) Increase the risk of fire or electric shock; or
 - 2) Reduce spacings below the minimum values specified in Section 17, Spacings; and
- b) The bus bars and live components are rendered not accessible as determined by using the probe illustrated in Figure 16.1.

59.2 Adaptor moment

59.2.1 An adaptor is to be subjected to the test described in 59.2.2 and 59.2.3 and shall comply with the test results in 59.1.2.

59.2.2 The adaptor and stem, fixture, or other rigid object (for example, a fixture head and stem) of a length equal to the maximum length of stem intended to be provided on an adaptor are to be installed as intended in the track described in 59.1.2.

59.2.3 A 5-pound (22-N) force is to be applied to the end of the stem farthest from the track for 1 minute. The force is to be applied parallel to the plane of the mounting surface, in each direction parallel to the orientation of the track and in each direction perpendicular to the orientation of the track, as illustrated in Figure 59.1.

70.5 Each general-purpose Kelvin-bridge potential electrode shall contact the bus bar or conductor specimen with a surface that is a sharp knife edge (see 70.8). The length of the bus bar or conductor specimen between the knife edges is to be measured to the nearest 0.01 inch (0.2 mm).

70.6 When using the general-purpose Kelvin-bridge, bus bar, or conductor specimen, all equipment and the surrounding air are to be in thermal equilibrium with one another at a temperature of 25°C (77°F).

70.7 Because the general-purpose Kelvin-bridge measuring current raises the temperature of the specimen, the magnitude of the current is to be as low as possible and the time of its use is to be brief. Too much current, too much time, or both are being used for a measurement if any change in resistance is detected with the galvanometer in two successive readings.

70.8 The contact surfaces of the general-purpose Kelvin-bridge current electrodes, the surface of the bus bar or conductor specimen, and the knife edges of the general purpose Kelvin-bridge potential electrodes are to be clean and undamaged. Contact-potential error is to be eliminated by taking four readings in direct succession: the first with the current flowing in one direction, the second with the current flowing in the other direction, then – after the specimen has been turned end for end – the third with the current flowing in one direction, and the fourth with the current flowing in the other direction. Contact-potential imbalance is to be minimized by having the potential electrodes made of the same material.

70.9 Test results are acceptable if the measured values do not exceed the values specified in Table 70.1.

Table 70.1
Bus bar and conductor resistance
equivalency at 25°C (77°F)

Track rating amperes	Maximum milliohms/foot	Maximum ohms/kilometer
15 or 20	1.65	5.42
30	1.04	3.41
40	0.65	2.13
50	0.41	1.35

FIXTURES

71 Strain Relief Test – Cord-Pendant Fixture Head

71.1 The strain relief means at each end of the flexible cord on a cord-pendant fixture head shall be subjected to a pulling force as specified in 71.2 and shall comply with the test results in 71.3.

Exception: This test need not be conducted on a strain relief means in a Class 2 circuit.

71.2 For the test, the conductors of the flexible cord are to be severed immediately adjacent to the terminals or splices. The flexible cord is to be subjected, for 1 minute, to a pulling force equal to the weight of the suspended portion of the fixture head plus 10 pounds (4.6 kg) or 35 pounds (15.9 kg), whichever is greater. The pull is to be applied in a direction perpendicular to the plane of the surface through which the flexible cord enters the enclosure.

71.3 Test results are acceptable if the pull is not transmitted to the terminals, splices, or internal wiring, where strain on the connections would result.

72 Strain Relief Test – Lamp-Supported Lampholders and Exposed Wires or Cords

72.1 General

72.1.1 A strain relief means for a wire of a lamp-supported lampholder or an exposed wire or cord that is not relied upon to limit motion of the fixture assembly shall be subjected to the test described in 72.2.1 and shall comply with the test results in 72.1.2. A strain relief means for an exposed wire or cord that is relied upon to limit motion of the fixture assembly shall be subjected to the test described in 72.3.1 and shall comply with the test results in 72.1.2.

Exception: This test need not be conducted on a strain relief means in a Class 2 circuit.

72.1.2 Test results are acceptable if the pull is not transmitted to the terminals, splices, or internal wiring, where strain on the connections would result.

72.2 Lamp-supported lampholder and exposed wires or cords

72.2.1 The conductors supplying the lamp-supported lampholder or exposed wire or cord that is not relied upon to limit motion of the fixture assembly shall be subjected to a pulling force of 20 pounds (89 N) for 1 minute. The pull is to be applied in a direction perpendicular to the plane of the surface through which the wires enter the enclosure.

72.2.1 effective November 25, 1996

72.3 Exposed wires or cords used to limit fixture motion

72.3.1 The exposed wires or cords that limit fixture motion shall be subjected to a pulling force as specified in (a) or (b):

- a) For a strain relief device which is independent of the conductor connections for the strain relief means, the conductors are to be severed immediately adjacent to the terminals or splices. The wire is then to be subjected to a pulling force of 20 pounds (89 N) for a period of 1 minute; or
- b) For a strain relief device which depends upon the conductor connections for the strain relief means, the wire with un-severed conductors are subjected to a pulling force of 35 pounds (155 N) for a period of 1 minute.

The pull is to be applied in a direction perpendicular to the plane of the surface through which the wires enter the enclosure.

73 Glass Thermal Shock/Containment Test

73.1 General

73.1.1 In accordance with Exception No. 2 of 40.2, a glass material shall be subjected to the glass thermal shock/containment test described in 73.2.1 – 73.2.3 to determine its suitability for use as a lamp containment barrier. The test results shall comply with 73.2.4.

73.2 Test method

73.2.1 Each of three samples of the lamp containment barrier material to be tested is to be supported by its outer edges and oriented as it would be during normal operation. The lamp containment barrier material is to be maintained at a temperature of $25 \pm 5^{\circ}\text{C}$ ($77 \pm 9^{\circ}\text{F}$).

UL 1574

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Track Lighting Systems



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May 24, 1995

Standard for

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UL 1574, Second Edition

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A CHANGE IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THIS EDITION OF THE STANDARD IS NOW IN EFFECT EXCEPT FOR PARAGRAPHS 1.5, 1.6, 1.7, 3.36, 20.7, 30.3, 36.5, 36.6, 40.1, 40.2, 46.3, 52.5.1, 52.6.1, 52.7.1, 52.7.2, 53.1.1, 53.5.1, 72.2.1, 74.1.1, 74.1.3, 79.5.1, 82.7, 82.11, 82.12, AND 85.6, SECTION 54, AND TABLES 59.1 AND 73.1, WHICH BECOME EFFECTIVE NOVEMBER 25, 1996 AS INDICATED IN THE SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEMS.

THE CURRENT REQUIREMENTS IN EFFECT FOR THE REQUIREMENTS HAVING FUTURE EFFECTIVE DATES ARE LOCATED IN THE BACK OF THE STANDARD.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this standard unless the applicant specifically requests that the product be judged under the current requirements. However, should the applicant elect this option, it should be noted that compliance with all the requirements in this standard will be required as a condition of continued Listing and Follow-Up Services after the effective date and understanding of this should be signified in writing.

The requirements in this standard are substantially in accordance with UL's bulletin on this subject dated September 6, 1994. This bulletin is now obsolete and may be discarded.

Revised and/or additional pages may be issued from time to time.

MAY 24, 1995

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover track lighting systems intended for permanent connection to sources of supply in commercial or residential ordinary locations in accordance with the National Electrical Code, NFPA 70-1993. The track lighting systems covered by this standard are rated:

- a) 300 volts or less;
- b) 150 volts or less to ground; and
- c) 50 amperes or less.

1.2 These requirements cover:

- a) Track networks consisting of track and connectors;
- b) Mono-, duo-, and multi-point canopies;
- c) Incandescent, fluorescent, and high intensity discharge (HID) fixture assemblies intended to be electrically connected to and physically supported by the track in track networks and canopies;
- d) Mounting means for the track; and
- e) Accessories.

1.3 These requirements do not cover:

- a) Busways intended for lighting, receptacles, or other general-purpose adaptors covered by the Standard for Electric Busways and Associated Electrical Fittings, UL 857, and intended for use in accordance with Article 364 of the National Electrical Code, NFPA 70-1993; or
- b) Track lighting systems for marine use aboard a ship or boat.

1.4 Track lighting systems are not intended for use:

- a) In wet or damp locations;
- b) In installations where the track is concealed;
- c) In hazardous locations;
- d) Where subject to physical damage;
- e) Where the track is extended through walls or partitions of building structures;
- f) Where subject to corrosive vapors; or
- g) In storage battery rooms.

1.5 A track lighting fixture assembly that uses a tungsten-halogen lamp shall also comply with the applicable requirements from the Standard for Incandescent Lighting Fixtures, UL 1571.

1.5 effective November 25, 1996

1.6 A track lighting fixture assembly that uses a fluorescent lamp shall also comply with the applicable requirements from the Standard for Fluorescent Lighting Fixtures, UL 1570.

1.6 effective November 25, 1996

1.7 A track lighting fixture assembly that uses a high-intensity-discharge lamp shall also comply with the applicable requirements from the Standard for High Intensity Discharge Lighting Fixtures, UL 1572.

1.7 effective November 25, 1996

1.8 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this Standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard cannot be judged to comply with this Standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 Units of Measurement

2.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

2.2 Unless indicated otherwise, all voltage and current values mentioned in this standard are root mean square (rms).

3 Glossary

3.1 For the purpose of this standard, the following definitions apply. Some terms unique to track systems are illustrated in Figure 3.1.

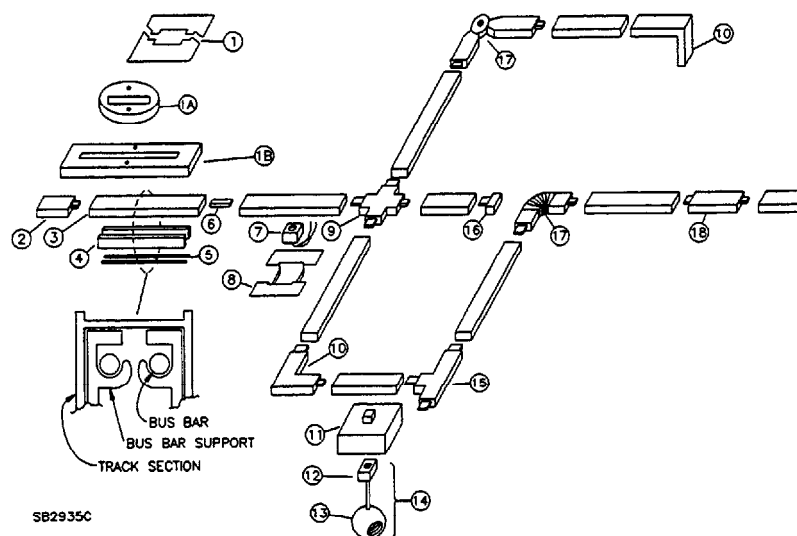
3.2 **ACCESSORY** – An attachment (such as a shutter, barn door assembly, or iris) provided by the manufacturer for connection to a fixture assembly.

3.3 **ADAPTOR** – A component of a fixture assembly intended to mate with a track and provide mechanical securement and electrical connection.

3.4 **BUS BAR** – A conductor electrically connected to the source of supply and physically located inside a track (conductors in connectors are considered internal wiring). The bus bar provides power supply connection for fixture assemblies along the length of the track.

3.5 **BUS BAR SUPPORT** – An insert, usually made of a polymeric material, that runs the length of a section of track and serves to support the bus bars and to isolate them while providing an opening that makes electrical contact between the bus bars and an adaptor possible.

Figure 3.1
Electrical fittings in a typical track system



- | | | |
|--|--|--|
| 1 – Canopy (see 3.6) | 6 – Straight intercept connector (see 3.23) | 13 – Fixture head (see 3.21) |
| 1A – Mono- or duo-point canopy (see 3.7) | 7 – Floating feed connector (see 3.22) | 14 – Fixture assembly (see 3.20) |
| 1B – Multi-point canopy (see 3.8) | 8 – Canopy for floating feed connector (see 3.6) | 15 – T-shaped intercept connector (see 3.23) |
| 2 – End feed connector (see 3.17) | 9 – X-shaped intercept connector (see 3.23) | 16 – End cap (see 3.16) |
| 3 – Track (see 3.43) | 10 – L-shaped intercept connector (see 3.23) | 17 – Adjustable intercept connector (see 3.23) |
| 4 – Bus bar support – mounted inside track section (see 3.5) | 11 – Power pack (see 3.34) | 18 – Center feed connector (see 3.9) |
| 5 – Bus bars – mounted inside bus bar support (see 3.4) | 12 – Adaptor (see 3.3 and 3.20) | |

3.6 CANOPY – A cover, either provided integral with or separate from a feed connector, that is intended to cover the outlet box by securing to the outlet box feed connector or directly to the ceiling.

3.7 CANOPY, MONO- OR DUO-POINT – A canopy which mounts directly over an outlet box and is provided with a section of track that can accept one or two fixture assemblies at a time. A mono- or duo-point canopy is constructed such that additional lengths of track cannot be mechanically or electrically connected to the canopy.

3.8 CANOPY, MULTI-POINT – A canopy which mounts directly over an outlet box and is provided with a section of track that can accept more than one fixture assembly at a time. A multi-point canopy is constructed such that additional lengths of track cannot be mechanically or electrically connected to the canopy.

3.9 CENTER FEED CONNECTOR – An intercept connector provided with means for connection between two sections of track and to a source of supply.

- 3.10 **CLASS 2 CIRCUIT** – A low-voltage circuit supplied by:
- a) A transformer that complies with Class 2 requirements in the Standard for Class 2 and Class 3 Transformers, UL 1585; or
 - b) A power supply that complies with the Class 2 requirements in the Standard for Class 2 Power Units, UL 1310.
- 3.11 **COMPONENT** – An electrical device such as a lampholder, current-interrupting device, fuse wire, or transformer.
- 3.12 **CONNECTOR** – A generic term used to refer to an electrical fitting that connects:
- a) Track sections to each other (intercept connectors); and
 - b) A track system to a power supply (feed-type intercept connectors).
- 3.13 **CURRENT-INTERRUPTING DEVICE** – A component (such as a switch or breaker) intended to stop the flow of current in a track network or fixture assembly circuit.
- 3.14 **ELECTRIC SHOCK** – A risk of electric shock is considered likely to occur at any part if the potential between the part and earth ground or any other accessible part is more than 42.4 volts peak and the continuous current flow through a 1500-ohm resistor exceeds 5 milliamperes.
- 3.15 **ELECTRICAL FITTING** – A generic term used to refer to each separate electrical portion of a track system. (For example: adaptors, connectors, fixture assemblies, and track sections are electrical fittings.)
- 3.16 **END CAP** – A cover intended to close the open end of a track.
- 3.17 **END FEED CONNECTOR** – An electrical fitting intended to connect a source of supply to the end of a track. The connector is provided with a knockout or canopy for permanent connection to a source of supply.
- 3.18 **FEED CONNECTOR** – An electrical fitting (such as an end feed connector or a floating feed connector) intended to connect a track network to a power supply.
- 3.19 **FITTING** – A hook, stem, or other part of a track system intended primarily to perform a mechanical rather than an electrical function.
- 3.20 **FIXTURE ASSEMBLY** – An assembly consisting of a fixture head and an adaptor.
- 3.21 **FIXTURE HEAD** – An assembly that includes a lamp enclosure or lamp compartment and any components and parts necessary for connecting the lamp compartment to the adaptor.
- 3.22 **FLOATING FEED CONNECTOR** – An electrical fitting intended to connect a track to a source of supply at any point along the length of the track. This is accomplished by attaching the connector to the bus bars in the same manner as an adaptor connects to the bus bars.
- 3.23 **INTERCEPT CONNECTOR** – An electrical fitting intended to connect two or more sections of track together. The connector may be L-shaped, T-shaped, X-shaped, straight, or adjustable. An intercept connector that is also intended to connect a track system to the power supply is considered to be a feed connector.

- 3.24 **KNOCKOUT** – A precut portion of a feed connector that can be readily removed at the time of installation to provide an open hole for the attachment of a permanent wiring system.
- 3.25 **LAMP** – A part, commonly called a "light bulb" or "bulb" for incandescent fixtures or a "fluorescent tube" for fluorescent fixtures, intended to be inserted into a lampholder (socket) to produce light.
- 3.26 **LAMP CONTAINMENT BARRIER** – A barrier that consists of the top, sides, and bottom that enclose the lamp compartment. The barrier may consist of a metal housing, a polymeric enclosure, a glass diffuser or lens, a metal screen, or the like.
- 3.27 **LAMP-SUPPORTED LAMPHOLDER** – A lampholder that, when connected as intended, is supported by the lamp, which is in turn supported by the fixture assembly. Lamp-supported lampholders are usually constructed to accept lamps with prong connectors.
- 3.28 **LOW-VOLTAGE CIRCUIT** – A circuit that operates at 30 volts or less and that is electrically isolated from the primary of a transformer.
- 3.29 **MOUNTING MEANS** – Hardware (such as screws or clips) provided for mechanically securing a track to a mounting surface.
- 3.30 **OPEN HOLE** – An opening without a cover or similar closure material.
- 3.31 **PACKAGING OF TRACK** – A single section of track individually wrapped or multiple sections of track packaged together.
- 3.32 **PART** – A generic term used to refer to any nonelectrical segment of an electrical fitting.
- 3.33 **PENDANT-TYPE TRACK** – A ceiling-mounted track system in which the track sections and connectors are suspended from the ceiling by a metal stem, metal chain, or metal cable.
- 3.34 **POWER PACK** – Generally a separate unit connected between the track and the adaptor of the fixture assembly. It is provided with a switching power supply, linear power supply, or isolating transformer to supply power to a track lighting fixture.
- 3.35 **RECESSED CHANNEL** – A metal channel intended to be recessed into a wall or ceiling with a means provided for securing a track lighting system within it. The channel may be integral with the track.
- 3.36 **RECESSED FIXTURE ASSEMBLY** – A fixture assembly intended for installation in a recessed channel such that all or part of the fixture head is recessed into a wall or ceiling. A fixture assembly, where only the stem and/or adapter is recessed when installed, is not considered a recessed fixture assembly.
- *3.36 effective November 25, 1996*
- 3.37 **RECESSED TRACK** – A track intended to be installed in a recessed channel such that all or part of the track is behind the mounting surface.
- 3.38 **STRAIN RELIEF DEVICE** – A knot, bushing, or the equivalent intended to prevent strain from being transmitted to a wire or cord at a termination point.
- 3.39 **SURFACE-MOUNTED TRACK** – A non-recessed track.
- 3.40 **TERMINAL, PRESSURE-WIRE** – A terminal where one or more conductors are clamped under a pressure plate or saddle by one or more screws or nuts.

3.41 **TERMINAL, PUSH-IN** – A terminal where the stripped end of a conductor is pushed into the terminal and the clamping pressure is maintained by a spring mechanism, without the use of screws.

3.42 **TERMINAL, WIRE-BINDING SCREW** – A terminal in which a single conductor is clamped directly under the head of the screw when it is tightened. The single conductor is either bent around the screw in a 3/4 loop or is otherwise retained by interference fit.

3.43 **TRACK** – An enclosure that houses the bus bars and that houses or is integral with the bus bar support. Track is usually made of extruded material that usually resembles an "H" in cross section, with two vertical members connected by a horizontal member. The bus bar support and bus bars are factory-mounted in the lower half of the "H" and the connection of fixture assemblies is accomplished through the open bottom.

3.44 **TRACK NETWORK** – An electrical distribution system consisting of track and connectors.

3.45 **TRACK SYSTEM** – A complete assembly that includes a track network, mounting hardware, and one or more fixture assemblies.

4 Components

4.1 Except as indicated in 4.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

4.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product by this standard; or
- b) Is superseded by a requirement in this standard.

4.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

4.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions for which they have been recognized.

CONSTRUCTION – TRACK SYSTEMS

5 Assembly

5.1 The electrical portion of each electrical fitting shall be completely assembled and wired prior to being shipped from the factory.

Exception: An "X" or "T" shaped intercept connector complying with 32.2 and 80.1 need not be prewired prior to being shipped from the factory.

5.2 Adaptors shall be of such construction as to preclude the user from making electrical connections.

Exception: A pendant adaptor intended for cord or chain suspended fixtures may have provision for making electrical connections if the adaptor complies with Section 51, Pendant Fixture Adapter.

6 Packaging

6.1 If a feed connector is intended to be used with a separable canopy, the canopy shall be included in the same package as the feed connector or marked as specified in 81.4 with a marking that is visible during installation or mounting of the track.

7 Enclosures

7.1 When a track system is installed as intended, all splices, wires, components, and leads or terminals for connection of supply wires shall be enclosed in accordance with 7.2 for a track network and 39.1 for a fixture assembly."

7.2 An enclosure for a track network as specified in 7.1 shall be constructed of:

- a) Metal; or
- b) A polymeric material that complies with the requirements in 7.5.

7.3 A canopy shall be made of metal at least 0.016 inch (0.4 mm) thick or of a polymeric material that complies with the requirements in 7.5.

7.4 The minimum wall thickness of a pendant mounted metal stem shall be:

- a) 0.025 inch (0.64 mm) without threads or with pressed (rolled) threads; and
- b) 0.040 inch (1.02 mm) with die-cut threads.

7.5 A polymeric material used as an enclosure for a track network shall comply with:

- a) The requirements in Table 7.1;
- b) The requirement in 7.6;
- c) The Normal Temperature Test described in Section 53;
- d) The Impact Test described in Section 60; and
- e) The Mold Stress Relief Test described in Section 56.

Exception No. 1: A small part as described in 7.7 that is not used for direct support of a live part need not comply with the requirements in (a) – (e).

Exception No. 2: A polymeric material that is not rated for or does not comply with the hot wire ignition or high current arc resistance to ignition requirements in Table 7.1 may be determined to be acceptable if the part fabricated with the polymeric material is tested in accordance with, and found to comply with, the applicable tests for stationary equipment described in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

Table 7.1
Network polymeric material requirements

Properties					
Application	Minimum flammability class ^a	Resistance to Ignition		Electrical	
		Minimum hot wire (HWI) ^b	Minimum high current (HAI) ^b	Minimum dielectric breakdown strength ^b	Comparative tracking Index (CTI) ^b
		Maximum performance level category	Maximum performance level category	Minimum volts	Maximum performance level category
Enclosure ^c	94V-0	–	3	–	–
Enclosure - indirect support of live parts ^d	94V-0	–	3	–	–
Enclosure - direct support of live parts ^e	94V-0	4	3	5000	5
Bus bar support	94V-0	4	3	5000	5
	94V-1	3	2	5000	5
^a The flammability classification is to be determined by the tests described in the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94. ^b Tests are to be conducted in accordance with the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A. ^c An enclosure of an electrical fitting that is not used for direct or indirect support of live parts (such as cover). ^d An enclosure in direct contact with insulated current-carrying live parts. ^e An enclosure in direct contact with uninsulated current-carrying live parts.					

7.6 A polymeric material used in the construction of a part shall have a temperature rating consistent with the temperature measured on the part during the temperature test.

Exception: A polymeric material used for a small part as defined in 7.7 need not have a temperature rating if the small part is not used for the direct or indirect support of a live part or if the small part is not used as electrical insulation.

7.7 A small part is one that:

- a) Has a volume not exceeding 0.012 cubic inches (0.2 cm³);
- b) Has a maximum dimension not exceeding 1.2 inches (3.0 cm); and
- c) Cannot propagate flame from one area to another or act as a bridge between a possible source of ignition and other ignitable parts because of its location.

7.8 A knockout in an enclosure of metal or polymeric material shall comply with the Security of Knockout Test described in Section 55.

8 Corrosion Protection

8.1 All ferrous sheet-metal parts shall be plated, galvanized, enameled, painted, varnished, lacquered, or the equivalent.

Exception No. 1: Parts need not be provided with corrosion protection if they are intended only for decoration.

Exception No. 2: A coating need not be applied to:

- a) *The cut edges of precoated stock;*
- b) *Steel nuts, bolts, and screws; and*
- c) *The inside surface of a pipe stem.*

Exception No. 3: A coating need not be applied to stainless steel.

Exception No. 4: Mounting hardware need not be provided with corrosion protection.

9 Joining of Enclosure Parts

9.1 The method of making a joint between metal parts and fastening arms and supports shall provide strength and rigidity and shall prevent turning that could result in movement that may be adverse to the wires after the assembly is completed.

Exception: A swivel lighting fixture may be turned, but no more than 200 degrees in either direction (for a total of 400 degrees).

9.2 Friction between parts is not acceptable as the sole means to prevent turning. Turning shall be prevented by the use of:

- a) A star washer;
- b) A locking-type nut;
- c) A nut seated against another nut;
- d) Some other mechanical method where two parts mate by interference fit; or
- e) A suitable factory-applied adhesive.

10 Prevention of Wire Damage

- 10.1 A wire enclosure shall be free from burrs, fins, and other sharp edges that can contact wires.
- 10.2 If a conductor passes through an opening or crosses over the edge of sheet metal, it shall be:
- a) Secured away from the edges of the metal;
 - b) Protected by a bushing or a grommet; or
 - c) Protected by rolling the edge of the metal not less than 120 degrees.

Sleeving is not an acceptable means of preventing cutting and abrasion of wires. A bushing used to prevent cutting and abrasion shall comply with the requirements in 10.3.

Exception: The edges of sheet metal thicker than 0.042 inch (1.07 mm) need only be treated to remove burrs, fins, and sharp edges.

10.3 A bushing used to comply with 10.2 shall be securely held in place. If the bushing is constructed of insulating material, it shall be at least 3/64 inch (1.2 mm) thick. A rubber bushing is not acceptable.

Exception: A bushing less than 3/64 inch (1.2 mm) thick is acceptable if an investigation shows that the bushing provides mechanical properties equivalent to those provided by a bushing 3/64 inch (1.2 mm) thick.

11 Wire and conductors

- 11.1 A conductor shall be made of copper or copper alloy.
- 11.2 A conductor shall have insulation rated for the voltage, temperature, and condition of service to which it will be subjected under conditions of intended use.
- Exception: The insulation of a conductor need not be rated for the voltage, temperature, or condition of service if connected to a Class 2 circuit.*
- 11.3 A conductor for a fixture assembly (including bonding and grounding conductors) shall be no smaller than No. 18 AWG (0.82 mm²).
- Exception: Wire smaller than No. 18 AWG may be used if connected to a Class 2 circuit.*
- 11.4 An insulated wire connector shall be rated for the voltage and temperature involved.
- Exception: An insulated wire connector need not be rated for the voltage and temperature involved if connected to a Class 2 circuit.*
- 11.5 If stranded internal wiring is connected to a wire-binding screw or stud terminal, the construction shall be such that no loose strands result.