LADDERS, BENCHES, AND STOOLS
APPLICATION PRACTICES
EQUIPMENT DESIGN REQUIREMENTS
COMMON SYSTEMS

1. GENERAL

SCOPE

1.01 This specification includes a resume of the practices used in determining the number and kind of ladders, benches, and stools usually provided for central offices, private branch exchanges, and similar equipments. The practices outlined herein should not be considered as requirements but as representative of the general practices followed in cases where definite requirements are not otherwise available.

1.02 This specification is reissued to:

(a) Add KS-21054 ladder (pulpit).

(b) Add KS-21415 platform ladder (rolling).

(c) Add ED-99374-70 instrument tray.

(d) Add requirements for ladders in No. 355A step-by-step offices, at 8-foot distributing frames and in toll terminal areas.

DESCRIPTION AND USE

1.03 Track-supported rolling ladders per KS-5049-02 are straight wooden ladders supported at an angle of approximately 68 degrees from a trolley engaging in a slotted tubular steel track. The bottoms of the ladders are equipped with lubricated wheels having rubber tires. The ladders per KS-5049-02, Lists 9 through 16 and Lists 17 through 24 are 1 foot 0 inch and 1 foot 2 inches wide respectively, and are suspended from the track by a simple trolley per ED-99688-70, Group 2; whereas the KS-5049-02, Lists 33 through 40 and Lists 41 through 48 ladders are of the same type but are suspended by a friction-type brake per ED-99688-70, Group 1, which replaces the ladder suspension details and engages with the track by means of its own trolley-type trucks. Ladders per KS-5049-02, Lists 1 through 8 and Lists 25 through 32 are 10 inches wide and are considered special. Ladders are furnished with brakes or without brakes as specified. It is the usual practice to have all ladders in an office equipped with brakes or to have none so equipped. For ladders not equipped with brakes, the ladder block per ED-99543-70 is available to prevent movement of the ladder. Track-supported rolling ladders are usually furnished for the frames and racks of all systems where auxiliary framing is used to support the equipment, except for frames 9 feet 0 inch or less in height where portable rolling ladders are used. Wheel guards should be furnished on all ladders used in No. 5 crossbar offices, on ladders for new type cable duct frames having removable guardrails, and on the frame side of ladders at distributing frames in all offices.

1.04 The track-supported platform-type rolling ladder per KS-5139-01 is constructed of three major parts: the vertical legs, which are suspended vertically from a track-type trolley to the floor; a small platform located approximately 5 feet 10 inches from the top of the ladder; and an inclined portion equipped with steps reaching from the platform to the floor. A folding step is provided on all ladders to assist in reaching equipment at the top of frames. The inclined legs are equipped with regulation-type floor wheel assemblies which help to support the weight of the ladder, while the vertical legs have a retractile-type wheel which exerts pressure on the floor to eliminate side sway of the ladder. These ladders are used to gain access to equipment installed in close proximity to partitions, columns, and other obstructions which cannot be reached from the slanting-type ladder. Wheel guards should be furnished on all ladders used in No. 5 crossbar offices, on ladders for new type cable duct frames having removable guardrails, and on the frame sides of ladders at distributing frames in all offices.

1.05 Portable rolling ladders per KS-5239-03, Lists 1 and 2 are wooden stepladders provided with spring-equipped retractile-type wheels, which, when the ladder is unoccupied, serve to raise the side rails from the floor to permit it to be rolled about. The lower ends of the side rails rest directly on the floor when the ladder is occupied, and the upper ends are hinged to permit the ladder to be closed like a conventional stepladder. The overall height of the KS-5239-03, List 1 ladder when opened is 5 feet 8-3/8 inches with a base width of 1 foot 6-1/4 inches. The height of the KS-5239-03, List 2 ladder is 6 feet 3-3/8 inches with a base width of 1 foot 10 inches. These ladders are used principally at racks and distributing frames 9 feet 0 inch or less in height and at overhead supported equipment where the amount of maintenance work does not warrant the track-type ladder. It should be noted that the width of the KS-5239-03, List 2 ladder makes it unsuitable for use in offices having aisles with a guardrail-to-guardrail width of less than 1 foot 11 inches.

1.06 The portable rolling ladder per KS-5752 is a nonfolding stepladder 5 feet 9 inches high, 1 foot 10 inches wide, and 3 feet 6-1/2 inches at the base. It is provided with retractile-type wheels under the step rails which allow these rails to rest on the floor when the ladder is occupied. The rear rails are inclined at a very small angle to the vertical and are equipped with a small caster-type wheel. These ladders, like the KS-5139-01 track-supported platform ladder, are used to gain access to equipment located at the end of closed aisles, etc, where the width of the aisle is not less than 1 foot 11 inches.

1.07 The portable stepladder per KS-5103-01, List 1 is similar in construction to the KS-5239-03, List 1 portable rolling ladder, except that it is not equipped with floor wheels. It is intended primarily for auxiliary use in all types of offices and at 7-foot 0-inch high frames. When open, the ladder is 4 feet 0 inch high.

1.08 The mechanics stepladders per AT&T Specification AT-7544 are commercial stepladders of the plain type. These ladders are somewhat wider than the corresponding ED ladders and therefore should not be used without checking the aisle widths in the areas involved.

1.09 The B combination ladder per AT-7662 may be used as a 7-foot stepladder or, when extended, as an 11-foot extension ladder.

1.10 The ES-534977 special platform stepladder is a plain commercial folding stepladder having a platform, when the ladder is open, 5 feet 6-3/4 inches from the floor. Sold commercially as the No. 28 Putnam ladder, it was assigned an ES number so that it could be obtained with a shellac and varnish finish. AT&T Long Lines, who is the only known customer for this ladder, is now accepting it unfinished. It is intended for use when working on cable runs in offices having 11-foot 6-inch frames.

1.11 The portable bench per KS-5104 is a wooden structure 1 foot 10 inches high. It may also be turned on its end to provide a step 1 foot 5 inches high or on its side to provide a step 1 foot 1 inch high.

1.12 The footstool per KS-5174 is made of wood and is 1 foot 1 inch high. The top is 1 foot square, and the base occupies 1 foot 2-1/2 inches by 1 foot 2-1/2 inches. It is not arranged for use on its side.

1.13 The ladder seat assembly per KS-5173-01 is a portable, flat wooden seat arranged to hook over a step of the track-supported rolling ladder to provide a temporary seat. This seat is available for some old style ladders which will not accommodate the new magnesium ladder seat.

1.14 The ladder seat per KS-5173-02 is a portable seat fabricated from magnesium and aluminum and is designed to be attached to the steps of a rolling ladder. It is provided with a locking device which automatically drops into operating position when the seat is placed on a ladder. Operation of the locking handle then clamps the seat firmly to the ladder step at the base of the seat.

1.15 The pulpit ladders per KS-21054 are wooden, rolling-type, modified Putman No. 115 pulpit ladders, which are essentially platform-type ladders with a shelf across the vertical extensions of the rear side rails at a height of 2 feet 6 inches above the platform, giving the appearance of a pulpit. These ladders are intended for use in the maintenance of channel bank equipment in toll telephone offices where the aisle spacing is 2 feet 6 inches or greater and other types of ladders are not suitable. The

ladders are equipped with two retractile wheels on the inside of the side rails to which the steps are fastened and two spring loaded retractable swivel casters on the inside of the rear side rails to permit turning. The ladders are available in two platform heights. KS-21054, List 1 provides a 5-foot 0-inch high platform normally used at 11-foot 6-inch high frames. KS-21054, List 2 provides a 6-foot 0-inch high platform and is intended for use at hardened installations. A latching device is provided on each side of the ladder by means of which the latter is locked to the equipment frame when removing heavy equipment units from the frame. A minor modification is required on the frames where the ladders are used to provide bushings which engage the ladder latch. Typical modifications are shown on ED-2C152-01.

1.16 The KS-21415 platform ladder (rolling) is an A-frame design intended for use in telephone central offices. It is functional on frames 8 feet or less in height and in aisles 2 feet or greater in width. Portable ladders of this type may serve one or more aisles with adjacent or parallel frame lineups. In addition, double access to the platform permits passage through a narrow aisle without removing the ladder. The platform ladder is built of hardwood and protected with a clear penetrating woodcoating. It is designed symmetrically, consisting of 10-inch high steps and a 20-inch high work platform with side rails. A folding step 30 inches from the floor is provided for shorter individuals to service the upper frame shelves. Swivel casters support the unoccupied ladder, allowing it to be moved in all directions. The casters retract when weighted so each leg, equipped with nonskid shoes, rests directly on the floor. Rubber bumpers on the rail legs are standard safety accessories. The ladder is available with a wire reel assembly and jumper running tool to facilitate main frame operations where preferential assignment of short wire length terminations is used. The KS-21415, List 1 platform ladder is the basic ladder without accessories. The KS-21415, List 2 platform ladder is the basic ladder equipped with a wire reel mounting assembly, wire guide, and jumper running tool.

1.17 The ED-99374-70 instrument tray is a metal tray 16-7/16 inches long and 9-5/8 inches wide for use with track-type rolling ladders. The tray is designed to clamp onto a ladder step and to be used for holding small tools and test sets.

2. SUPPLEMENTARY INFORMATION

801-000-000—Equipment Design and General Equipment Requirements and Engineering Information—Common Systems
800-600-000—List of General Equipment Requirement Sections
AT-7544—Mechanics Stepladder
AT-7662—B Combination Ladder
J85506—802-015-151—Bus Duct—KS-20085— Trolley Type
KS-21054—Pulpit Ladder
KS-21415—Platform Ladder (Rolling)
KS-5049-02—Rolling Ladders 1 Foot 2 Inches and 1 Foot 0 Inch Wide and 10 Inches Wide With or Without Brakes
KS-5103-01—Portable-Type Stepladder
KS-5104—Portable Bench
KS-5139-01—Platform-Type Rolling Ladder
KS-5173-01—Seat for Rolling Ladders
KS-5173-02—Magnesium Ladder Seat
KS-5174—Footstool
KS-5239-03—Portable Rolling Ladders 5 Feet 8-3/8 Inches and 6 Feet 3-3/8 Inches High
KS-5752—Portable Rolling Ladder

3. DRAWINGS

WE J drawings should be ordered by referring to the prefix and base number and requesting the current dash (—) number.

ED-2C152-01—Typical Modification of A5 Channel Bank Equipment To Provide Lock Bushing for KS-21054 Puplit Ladder
ED-32384-01—No. 355A Dial Office—Method of Supporting Track for Rolling Ladders
ED-91589-70—Ladder Brake and Accessories
ED-99374-70—Instrument Tray for Rolling Ladders
ED-99543-70—Ladder Block
ED-99688-70—Brakes, Trolleys, Hanger Rods, Wheel Guards, and Fenders for KS-5049-02 Rolling Ladders
ES-534977—Special Platform Stepladder

4. EQUIPMENT

Application of Ladders, Benches, and Stools

4.01 Rolling ladders, stepladders, benches, or stools are furnished for the maintenance of terminal and apparatus room equipment, located above ordinary reach in central offices and large

private branch exchanges. For the sake of maximum safety and efficient maintenance practices, the ladders furnished should be of sufficient height to allow crafts personnel, when working at the topmost equipment in an office, to steady themselves when necessary by grasping the ladder. When standing on the second step from the top of stepladders, it should not be necessary to perform work operations with the hands above shoulder level.

4.02 Track-support rolling ladders are usually furnished for frames, racks, distributing frames, and protector frames 11 feet 6 inches or more in height.

4.03 Portable rolling stepladders are usually furnished for frames, racks, and distributing frames 9 feet 0 inch or less in height. Also, they are sometimes used for 11-foot 6-inch frames in cases where the maintenance activity is such that the use of track-supported rolling ladders is not warranted. The portable stepladder (nonrolling type) is also furnished for auxiliary use at this class of equipment, particularly in offices and PBXs having 9-foot 0-inch high frames and for general use at 7-foot 0-inch frames. Equipments less than 7 feet 0 inch in height do not ordinarily require ladders, since the upper apparatus of such equipment is readily reached from portable benches or foolstools. The KS-5239-03, List 2 portable rolling ladder, because of the base width of 1 foot 10 inches, cannot be used in offices with narrow wiring aisles, such as the smaller step-by-step units. The KS-5752 portable rolling ladder, which was developed for use in end-closed aisles of automatic message accounting (AMA) centers, also has a base width of 1 foot 10 inches.

Panel and Step-by-Step Offices

4.04 One rolling ladder is usually furnished for approximately each 50 feet of track for selector frames or other equipment having a continuous ladder track. This approximates, in the usual case, one ladder per lineup of panel frames or one ladder per two lineups of step-by-step frames. Ladders are furnished on both the apparatus and wiring sides of panel frames. In step-by-step offices, the number of ladders furnished in the wiring aisles can usually be somewhat less than in the apparatus aisles.

4.05 For single office distributing frames, two ladders are furnished on each side of the intermediate distributing frame or a main distributing or protector frame not equipped with mezzanine platforms. For multiunit frames, three ladders are furnished on a side for each two units. For trunk distributing frames (TDFs) in a separate lineup, one ladder is usually furnished on each side of the frame for approximately every 40 verticals. Narrow TDFs in line with switch frames are usually served by the ladders serving the remainder of the lineup.

4.06 For small step-by-step offices such as the 350-type dial offices having 11 foot 6 inch frames, one track-supported rolling ladder is furnished on the apparatus side of each two lineups of frames. The wiring sides are maintained from portable rolling ladders per KS-5239-03, List 1. For offices having 9-foot 0-inch high frames, both the apparatus and wiring sides are served by portable rolling ladders per KS-5239-03, List 1 and portable stepladders per KS-5103-01, List 1. Mechanics stepladders in accordance with AT-7544 may also be used, except in narrow wiring aisles where the KS-5103-01, List 1 ladder is suggested.

4.07 For 355A distribution offices, although track supported rolling ladders have not been previously requested, they have been requested in some cases where the switch frame lineup is 24 feet or longer, and where the common distribution frame (CDF) has 20 or more verticals. In such case, the ladder installation is job engineered and the track shall be supported in accordance with ED-32384-01 (AT&TCo Special). Ladders will only be provided on the equipment side of switch frame lineups and on both sides of distributing frames.

Crossbar Offices (All Types)

4.08 One rolling ladder is usually furnished for approximately each 50 feet of frame in the apparatus aisles, except at line distributing and block relay frames where two ladders are furnished for each full lineup. In the wiring aisles, one rolling ladder for approximately each 100 feet of frame is usually sufficient for all types of frames.

Manual, Toll, and Telegraph Offices

4.09 Ladder requirements for manual, toll, and telegraph offices vary greatly in accordance with the type and height of the equipment, as well

as with the size of the installation and the amount of maintenance required. Application practices usually followed for various equipments are grouped below according to ladder usage.

(a) Manual, toll, and teletypewriter relay rack lineups usually require one rolling ladder at the front and one at the rear of each lineup. In lineups which include a main fuseboard, one additional ladder is provided in the front aisle.

(b) Telephone repeater equipment in toll offices requiring rolling ladders is provided with one ladder per lineup on the apparatus side only.

(c) Telegraph repeater equipments, relay-rack mounted, do not unless otherwise specified require track supported ladders, since in most cases the adjustable apparatus is located within ordinary reach. The KS-5103-01, List 1 stepladder may be furnished for general use.

(d) Toll and telegraph auxiliary stations of all types, because of the small amount of maintenance required, are usually supplied with portable rolling ladders per KS-5239-03, List 1 or KS-5239-03, List 2 and stepladders per KS-5103-01, List 1. Mechanics stepladders per AT-7544 may also be used, but a check of aisle width should first be made, as these ladders are somewhat wider than other types.

(e) In toll terminal areas at broadband and multiplex equipment and at toll testboards, rolling ladders may be provided if desired by the customer and if no special arrangements are required to install the track.

4.10 Message register racks are not usually furnished with rolling ladders, unless so specified.

4.11 Distributing frames and protector frames usually require one rolling ladder on each side for approximately every 50 equipped verticals. Where the frame has many partially equipped or unequipped verticals, one ladder may satisfactorily serve more than 50 verticals.

4.12 Distributing frames 8 feet in height or less (COSMIC, ESS, etc) generally require one KS-21415 platform ladder for 50 verticals, 50 feet of equipment, or 10 modules or equivalent. Additional platform ladders may be provided depending on frame activity.

Widths of Track-Supported Ladders To Be Used With Various Aisle Widths

4.13 Track supported rolling ladders per KS-5049-02 are available in 1-foot 2-inch and 1-foot 0-inch widths. The 1-foot 2-inch wide ladder should be furnished for aisles where the distance between the equipment guardrails is 1 foot 6-1/2 inches or more. In lineups where the ultimate cabling in the upper portion of the frame equipment will extend beyond the guardrail line into the aisle, for example at fuseboards, a 1-foot 0-inch ladder should be used instead of the 1-foot 2-inch wide ladder if the guardrails are 1 foot 8 inches or less apart. Also, the 1-foot 0-inch ladder is furnished where the distance between the guardrails is 1 foot 4-1/2 inches minimum and less than 1 foot 6-1/2 inches. The 10-inch ladder per KS-5049-02, which is considered special, may be furnished where the distance between guardrails is 1 foot 2-1/2 inches minimum and less than 1 foot 4-1/2 inches.

4.14 Two lines of 1-foot 2-inch ladders may be furnished where the distance between guardrails is 3 feet 1-3/4 inches or more, and two lines of 1-foot 0-inch ladders if the distance is less than 3 feet 1-3/4 inches, but not less than 2 feet 9-3/4 inches.

4.15 Where track-supported rolling ladders are located at distributing frames or other frames and the bottoms of the guardrails are more than 6 inches above the floor, the ladders should be equipped with fenders located centrally with respect to the equipment guardrail. The guard plates on the vertical legs of platform-type ladders should be relocated to engage with the guardrails in such cases.

Heights of Track-Supported Rolling Ladders

4.16 Straight-type ladders are available in sizes from 8 through 15 steps. Ladders having more than 15 steps are special, since for this length it is necessary to splice the side rails. Platform-type ladders are available in sizes from four through eight steps below the platform. Platform-type ladders having nine or more steps are special.

4.17 Table A shows the heights of ladder track for the different sizes and types of rolling ladders.

4.18 Ladder tracks at distributing frames and message register racks in line with distributing frames should be located as high as practicable to provide ample head room for the maintenance of the uppermost equipment. Care should be taken, however, at the vertical side of the intermediate distributing frame (VIDF) to check the height of the ladder used so as to avoid interference of the ladder side rails with the service observing jack box equipment mounted above the frame.

Brakes for Track-Supported Rolling Ladders

4.19 Brakes for existing track-supported rolling ladders should be furnished in accordance with ED-91589-70. Brakes for KS-5049-02 ladders are ordered per ED-99688-70.

Trolley-Type Appliance Outlet

4.20 A trolley-type appliance outlet system providing a readily accessible continuous source of 115 volts (nominal) as power for the connection of portable appliances is available for use with rolling ladders. Requirements for this system are covered in J85506.

Stepladders, Benches, Stools, and Ladder Seats

4.21 These are furnished only where specified and should be in accordance with the following:

ES-534977 Special Platform Stepladder

Stepladder per KS-5103-01

Mechanics Stepladder per AT-7544

Bench per KS-5104

Stool per KS-5174

Ladder Seat per KS-5173-01

Ladder Seat per KS-5173-02

The telephone company will specify the quantities wanted.

5. GENERAL NOTES

None.

TABLE A

LADDERS WITHOUT BRAKES*

HEIGHT OF TRACK FROM FLOOR†				ORDER AS REQUIRED‡	
FROM		TO LESS THAN		HANGER RODS	LADDER
FEET	INCHES	FEET	INCHES		
8	1	8	3	P-400232	
8	3	8	5	P-400234	8-Step
8	5	8	7	P-400236	Straight
8	7	8	9	P-400238	Ladder
8	9	8	10-3/4	P-400240	
8	10-3/4	9	0-3/4	P-400232	
9	0-3/4	9	2-3/4	P-400234	9-Step
9	2-3/4	9	4-3/4	P-400236	Straight
9	4-3/4	9	6-3/4	P-400238	Ladder
9	6-3/4	9	8-1/2	P-400240	
9	8-1/2	9	10-1/2	P-400232	
9	10-1/2	10	0-1/2	P-400234	10-Step
10	0-1/2	10	2-1/2	P-400236	Straight
10	2-1/2	10	4-1/2	P-400238	Ladder
10	4-1/2	10	6-1/4	P-400240	
10	6-1/4	10	8-1/4	P-400232	11-Step
10	8-1/4	10	10-1/4	P-400234	Straight
10	10-1/4	11	0-1/4	P-400236	and 4-Step
11	0-1/4	11	2-1/4	P-400238	Platform
11	2-1/4	11	4	P-400240	Ladder
11	4	11	6	P-400232	12-Step
11	6	11	8	P-400234	Straight
11	8	11	10	P-400236	and 5-Step
11	10	12	0	P-400238	Platform
12	0	12	1-3/4	P-400240	Ladder
12	1-3/4	12	3-3/4	P-400232	13-Step
12	3-3/4	12	5-3/4	P-400234	Straight
12	5-3/4	12	7-3/4	P-400236	and 6-Step
12	7-3/4	12	9-3/4	P-400238	Platform
12	9-3/4	12	11-1/2	P-400240	Ladder
12	11-1/2	13	1-1/2	P-400232	14-Step
13	1-1/2	13	3-1/2	P-400234	Straight
13	3-1/2	13	5-1/2	P-400236	and 7-Step
13	5-1/2	13	7-1/2	P-400238	Platform
13	7-1/2	13	9-1/4	P-400240	Ladder
13	9-1/4	13	11-1/4	P-400232	15-Step
13	11-1/4	14	1-1/4	P-400234	Straight
14	1-1/4	14	3-1/4	P-400236	and 8-Step
14	3-1/4	14	5-1/4	P-400238	Platform
14	5-1/4	14	7	P-400240	Ladder

* Where ladders are to be equipped with 2-A brakes, the heights of track required are 2 inches more than listed in this table.

† Height of track is measured to the underside of the auxiliary framing or to the upper face of the track-support bracket if track is not attached directly to auxiliary framing.

‡ Hanger rods for KS-5049-02 ladders are ordered per the various groups on ED-99688-70.

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