

ROLLING LADDERS, BRAKES AND LADDER TRACK
COMMON INFORMATION AND REQUIREMENTS

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1.	<u>GENERAL</u>	1.22	When referring to the various sections in this series, additional information on <u>ladder piece parts, replacement procedures and repairs</u> can be found in Section 40G of this handbook and BSP Section 065-105-801.
1.1	<u>Scope</u>		
1.11	This section covers the requirements, information and procedures common to the installation of rolling ladders, rolling ladder brakes and ladder track while the remaining sections in this series (40 series) cover specific requirements and methods.	1.23	Other sources of information are floor plan drawings, cabling, cable rack and auxiliary framing and ladder assembly drawings furnished the job.
1.12	The requirements covered in this series of sections shall be followed except as modified by applicable specifications and drawings or other job information.		NOTE: Depending on where the job was engineered, one of these drawings will have a table showing the location, the width, and number of steps of each ladder involved and which, if any, are to be equipped with brakes. Information covering the number, height and length of the track runs is also shown in the table.
1.2	<u>Associated Information</u>		
1.21	General information pertaining to workmanship, definition of terms, general requirements for the assembly and location of equipment and other information of a general nature pertaining to the installation of equipment will be found in the "General" sections of this handbook.	1.24	The job specification, in which the ladders are ordered, will contain information as to the direction of slant of the ladders in those cases

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where the telephone company requests a particular arrangement. In the absence of such information, the procedure outlined in Section 40D should be followed in determining the direction of slant.

1.3 Arrangement and Use of BSP Figures

- 1.31 The figures in BSP Section 800-614-159 are frequently referred to in job specifications and drawings. For this reason, where figures from this specification are reproduced in handbook sections on Rolling Ladders, Brakes and Ladder Track, they are numbered to agree with the corresponding figures in the BSP. Such figures are identified in the sections by a note beneath each figure title. In order that these references may remain correct, the figure numbers in subsequent issues of both the BSP and the handbook sections will not be changed.

1.4 Arrangement of Tools

- 1.41 Prior to starting operations covered in this series of sections, the tools and other items required should be arranged at the work locations so as to minimize fatigue and inconvenience when handling.

1.5 Verification

- 1.51 Items for the verification of the equipment installed by the operations covered in each section are listed at the end of that particular section.
- 1.52 Where practicable, the essentials of the requirement are included in the verification item. Where this is not practicable, a brief statement of the requirement appears as one or more subparagraphs of the verification item. In each case, a reference is made to the complete requirement.
- 1.53 Verification items marked (P) are so designated to denote that the equipment should be verified before it becomes inaccessible or before a portion of the work becomes indiscernible due to additional installing operations. If a portion of the work is visible on the equipment, that portion should be verified in the regular manner.

- 1.54 The verification items in each section may also be used as a self-check guide when performing operations covered by the section.

2. TOOLS REQUIRED

- 2.1 The tools listed below will be required for the operations listed in this section. Other tools, available in the General Tool Kits, may also be needed.

<u>Code No.</u>	<u>Description</u>
R-7880	Pliers, 6" Gas
R-4393	Drill, Electric, 3/8"
R-2902	Chart, Piece Part

3. PRECAUTIONS AGAINST PERSONAL INJURY AND EQUIPMENT DAMAGE

3.1 General

- 3.11 General precautions to be taken against personal injury and to prevent damage to equipment are outlined in the "General" sections of this handbook and in Handbook O. These precautions are to be observed at all times, as they apply to the particular operation being performed.

- 3.12 Refer to Handbook 3 for information on rolling ladder usage and precautions.

3.2 Specific Operations

- 3.21 Precautions applying to specific operations, with the exception of those covered in the following paragraphs, are listed in the specific sections with their associated methods paragraphs.

- 3.211 After a ladder has been placed in the track or when extensions to tracks are being made, do not leave ladders unattended unless stops are installed at both ends of the track. When sections are being added to a line of track, a 6" "C" Clamp placed around the track in front of the last track support, as shown in Figure 1, may be used in place of a stop bolt. However, a warning tag should be

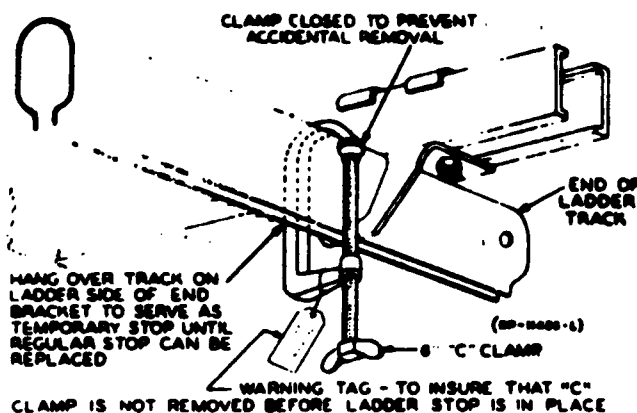


FIG. 1 USE OF "C" CLAMP AS TEMPORARY LADDER STOP
(PAR. 3.211)

attached to the "C" clamp to insure that the clamp is not removed until the ladder stop is in place. Where the installation of intermediate track sections is deferred to provide clearance for the movement of frames to be received later, stop bolts, either permanent or temporary, must be used at all open ends of the track.

- 3.212 Where temporary stop bolts are to be installed and a sufficient number of the standard stop bolts and rubber bushings are not available for that purpose, the use of the stop bolt without the bushing will be satisfactory.
- 3.213 When necessary to modify or remove sections of track after rolling ladders have been installed, take particular care to make certain that the track is rigidly supported and ladder stops provided. This is especially important where old track splices were used which were not bolted to the track. Failure to exercise this caution may result in accidents due to the track sections coming apart and allowing the ladder to fall.

NOTE: Where these splices are encountered, it is recommended that the condition be called to the attention of the telephone company.

4. PIECE PART INFORMATION

- 4.1 The information shown in Figure 2 will facilitate the identification of the piece parts commonly used in the installation of rolling ladders and ladder tracks. While it is intended that the list include all parts which otherwise might be difficult to identify, it will be impracticable to keep the list up to date at all times. The list does not include brake parts.
- 4.2 The R-2902 Piece Part Chart is a large reproduction, similar to Figure 2, which may be located near the piece part bins on the job for ready identification of some of the more common piece parts.

5. PEENING, BURRING, STAKING AND RIVETING OF THREADED FASTENERS, APPLICATION OF SELF-LOCKING NUT

- 5.1 Where "Peening", "Burring" or "Staking" the end of a bolt or screw is specified on drawings or in BSP or handbook information on rolling ladders and ladder track, the methods illustrated in Figure 3 and described in the following paragraphs may be interchangeably used.
- 5.11 The terms "Peen" or "Burr" are used to indicate the upsetting or spreading of the threaded end of a bolt or screw with a hammer in such a manner as to give a mushroom-like appearance. The purpose of "Peening" or "Burring" is to deface the end threads of a bolt or screw to such an extent that the nut, although it may loosen, cannot become disengaged.
- 5.12 The term "Stake" is used to indicate the jamming together of the threads of a nut and bolt or screw with a center punch in such a way as will prevent accidental turning or loosening of the nut.
- 5.13 The term "Rivet" indicates a spreading operation by means of a blunt instrument, such as the hammering of a projecting metal part; for example, the operation of forming a head on the end of a stud. This term should not be confused with "Peen", "Burr", or "Stake" operations.

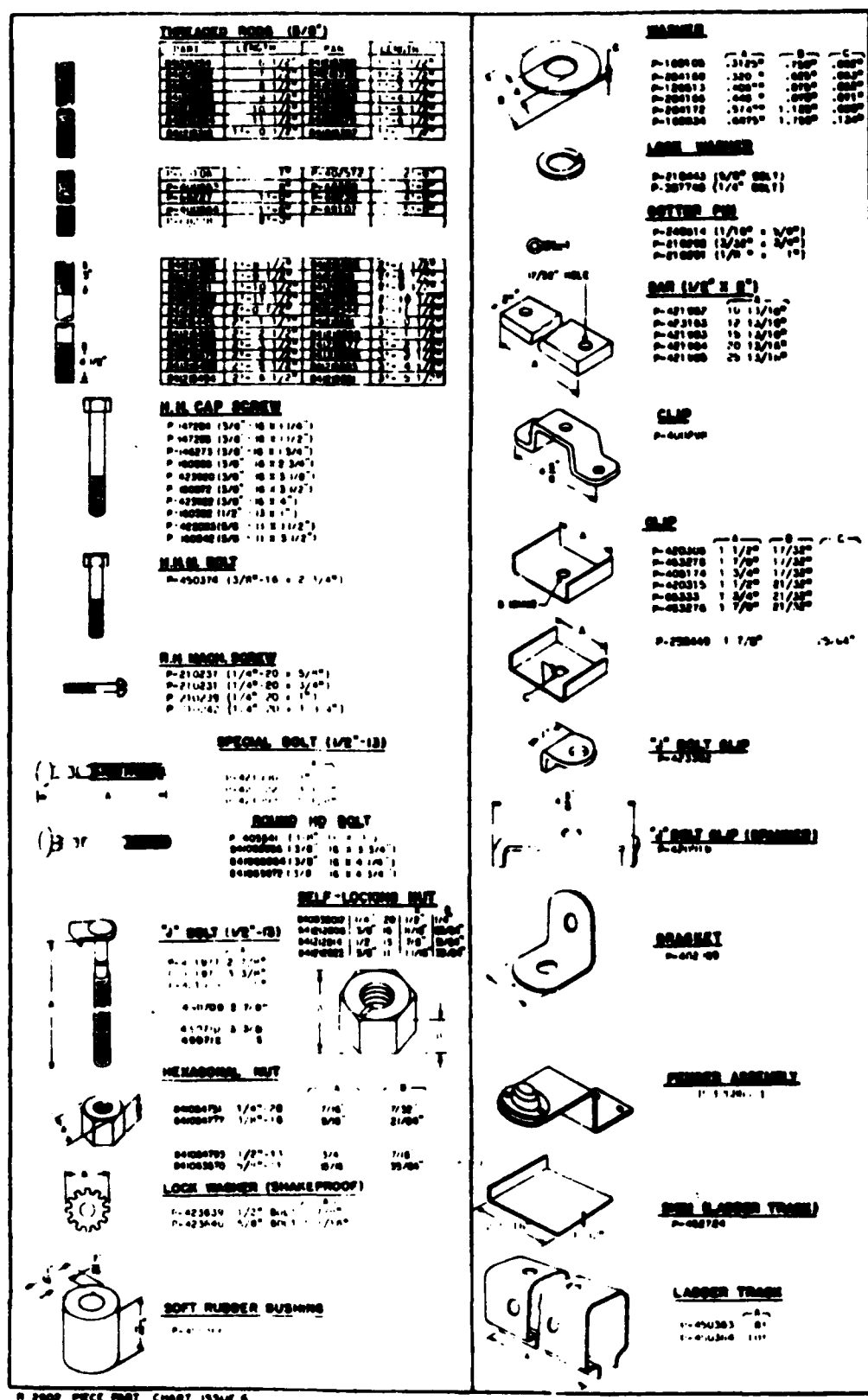


FIG. 2 PIECE PARTS FREQUENTLY USED IN INSTALLATION OF ROLLING
LADDERS AND LADDER TRACK
(PARS. 4 AND 6.3)

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5.2 Application of Self-Locking Nut

- 5.21 Where application of the "Self-Locking Nut" is specified on drawings or in BSP's or handbook information on the installation of rolling ladder track, the methods illustrated in Figure 3C and described in the following paragraphs may be used:

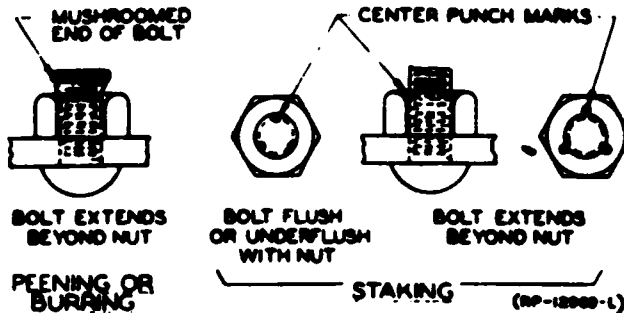


FIG. 3 METHOD OF PEENING, BURRING OR STAKING
(PAR. 5.1)

- 5.22 The Self-Locking Nut should be installed in the same manner as the present 1/4"-20 Hex Nut on ladder track splice bolts and creeper bolts.
- 5.23 The Self-Locking Nut shall be positioned with the locking pin on the top side of the nut. Figure 3D indicates the proper position of the locking pin on a fully torqued nut.
- 5.24 The nut may be removed with a wrench by applying sufficient force to reverse the direction of the pin as indicated in Figure 3E.

6. USE OF COTTER PINS

- 6.1 Wherever cotter pins are specified, their spread ends shall be bent back around the rods or bolts as illustrated in Figure 3A with the R-7880 6" Gas Pliers. The tips of the pin must rest against the rod or bolt to prevent injury by projecting ends.

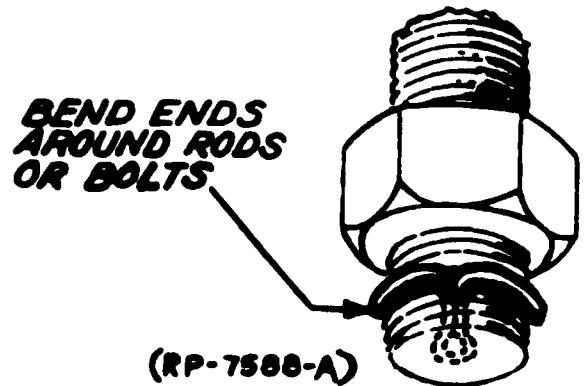
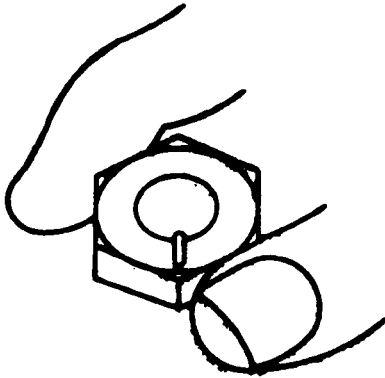


FIG. 3A INSTALLATION OF COTTER PINS
(PAR. 6.1)



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NOTE: NOTICE THE POSITION OF THE LOCKING NUT.

FIG. 3C INSTALLATION OF SELF LOCKING NUTS
(PAR. 5.21)

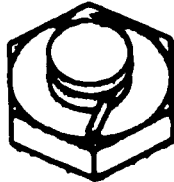
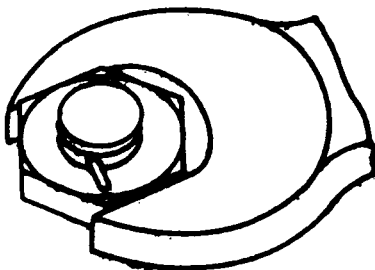


Fig. 3D A FULLY TORQUED SELF LOCKING NUT
(PAR. 5.23)



NOTE: NOTICE THAT THE DIRECTION OF THE LOCKING PIN HAS BEEN REVERSED

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FIG. 3E REMOVAL OF A SELF LOCKING NUT
(PAR. 5.24)

7. LOCATION OF LADDERS AND LADDER TRACK WITH RESPECT TO FRAMES THEY SERVE

7.1 General

7.11 To insure proper clearance between rolling ladders and the frames which they serve, rolling ladders and ladder track shall be located as outlined in the following paragraphs.

7.2 At Distributing Frames

7.21 Rolling ladders and ladder track at distributing frames should be located as shown in Figure 4 and in accordance with the following:

7.211 Where a ladder serves a distributing frame on one side and relay racks or other frames on the other side, the ladder should be located with respect to the distributing frame.

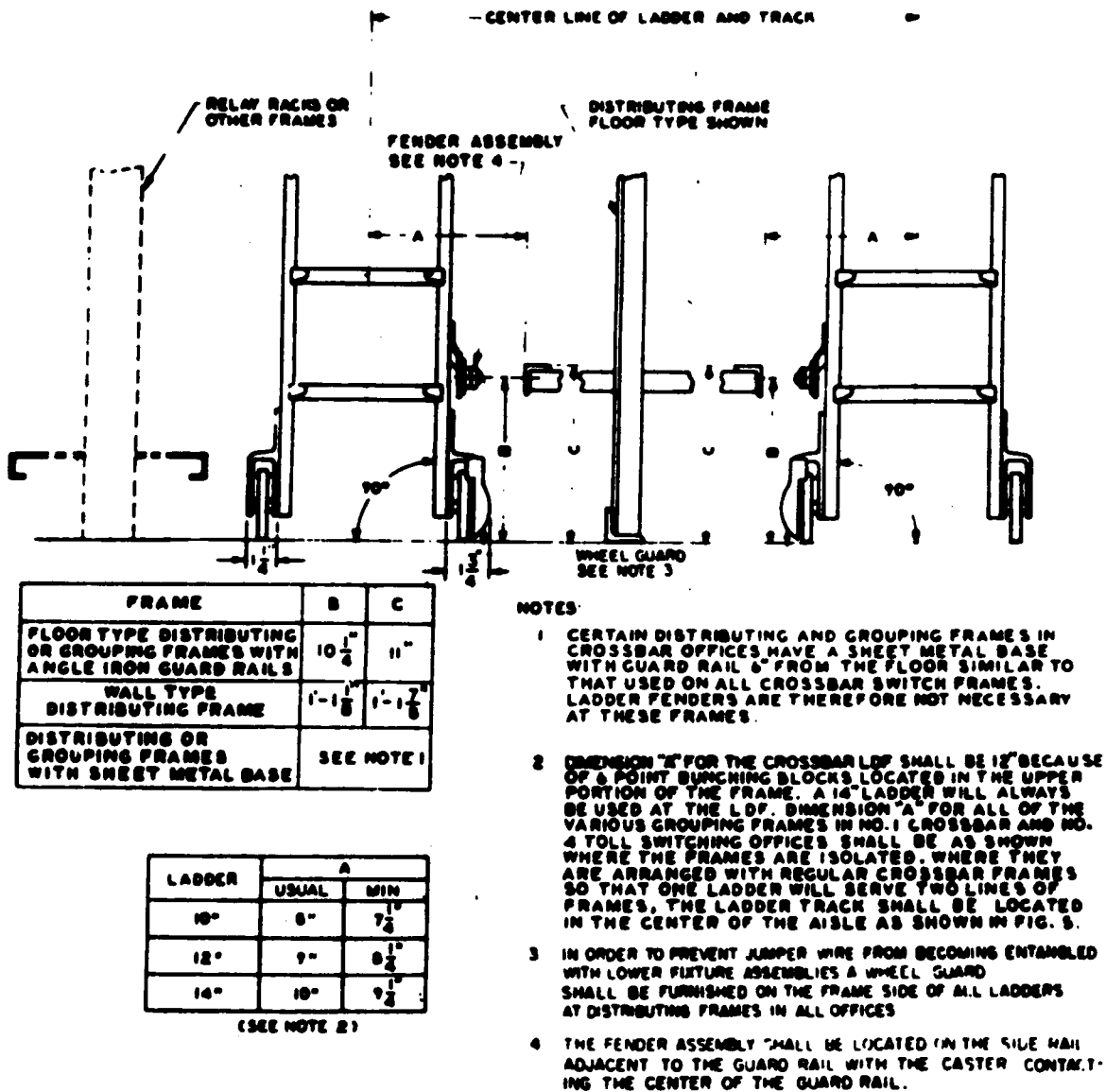
7.212 When a ladder serves a narrow type distributing frame of approximately the same width as and in line with relay racks or dial frames, the ladder should be located as shown in Figure 5.

7.213 Where a single line of ladders is located between distributing frames or between a protector frame and a distributing frame, the ladders should be located in the center of the aisle.

7.22 When guard rail extensions have been added to increase the effective apparatus mounting depth on a distributing frame, refer to drawing ED-95099-70 for general information and requirements.

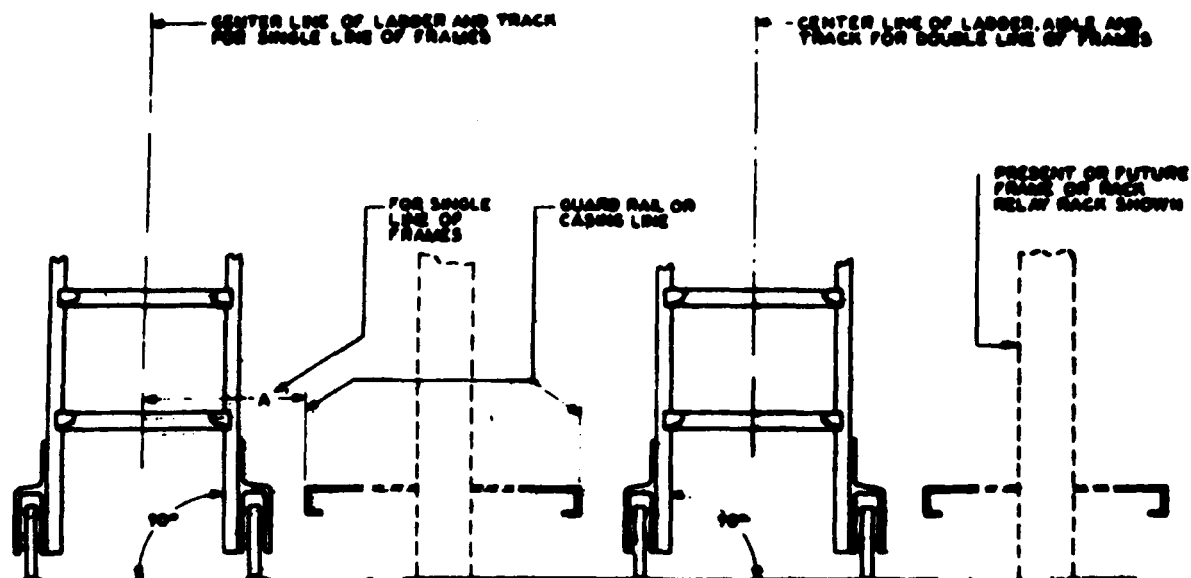
7.3 At Relay Racks, Fuse Boards, Register Racks and Dial Frames

7.31 At relay racks, fuse boards, register racks and dial frames, ladders and ladder track should be located as shown in Figure 5. Where a ladder is to serve a double line of frames, only one line of which is installed



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FIG. 4 LOCATION AND CLEARANCES FOR LADDERS AT DISTRIBUTING FRAMES
(PAR. 7.21)
(BSP 800-614-159, FIG. 4)



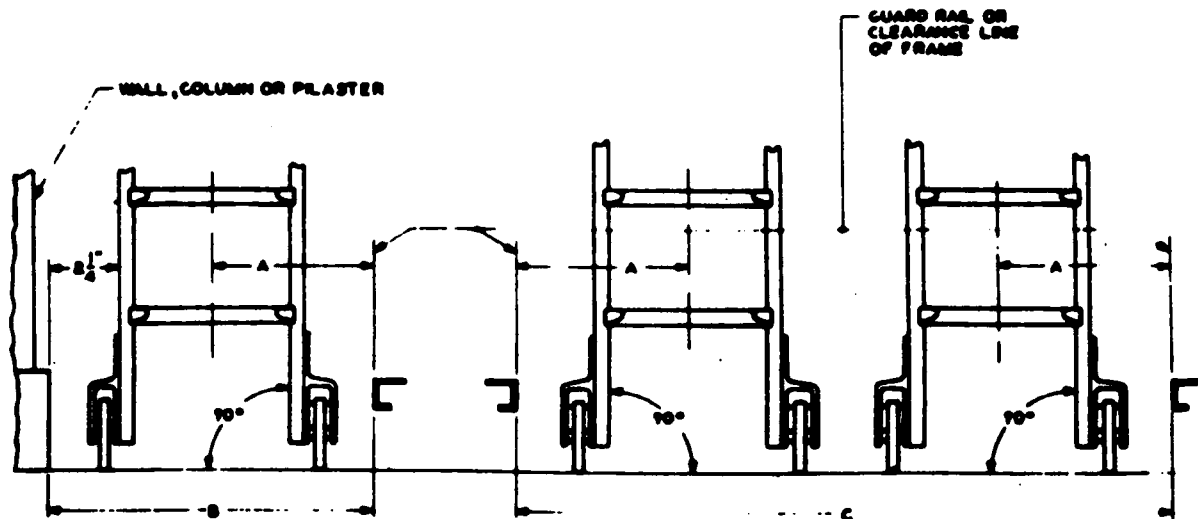
NOTES.

1. DIMENSION "A" FOR FUSE BOARDS, MESSAGE REGISTER RACKS, FUSE BOARDS, AND CROSSBAR, PANEL AND STEP-BY-STEP FRAMES SHALL BE 8 1/2" OR 9 1/2" OR 10 1/2" FOR 10", 12" & 14" LADDERS, RESPECTIVELY.
2. WHENEVER IN CROSSBAR OFFICES (ALL TYPES) A 14" LADDER CROSSES A DOUBLE LINE OF FRAMES AND TRACK, IN A FRAME, THE TRACK SHALL BE LOCATED 12" FROM THE GUARD RAIL.

LADDER	A	
	MIN.	MAX.
10"	8"	7 1/2"
12"	9"	8 1/2"
14"	10"	9 1/2"

RF-12980

FIG. 5 LOCATION AND CLEARANCES FOR LADDERS AT RELAY RACKS, MESSAGE REGISTER RACKS, FUSE BOARDS, AND CROSSBAR, PANEL AND STEP-BY-STEP FRAMES
(PARS. 7.212 AND 7.31)
(BSP 800-614-159, FIG. 5)



NOTES

1. WHERE THE "B" DIMENSION IS GREATER THAN THAT SHOWN THE LADDER SHALL BE CENTERED BETWEEN THE GUARD RAIL AND THE C OF THE COLUMN. DEVIATING FROM THIS LOCATION ONLY TO THE EXTENT REQUIRED TO MAINTAIN THE NECESSARY 2 1/4" CLEARANCE BETWEEN THE LADDER SIDE RAIL AND THE BASE OF THE COLUMN. WHERE PRINT DISPLAY BOARDS ARE LOCATED ON THE C OF THE COLUMN ROWS THIS 2 1/4" MINIMUM SHALL BE INCREASED TO 3" TO ALLOW A 5" CLEARANCE BETWEEN THE LADDER SIDE RAIL AND THE DISPLAY BOARD LIGHTING FIXTURE.

LADDER	A	B	C
10"	7 1/2"	1'-2 1/2"	2'-0 1/2"
12"	8 1/2"	1'-4 1/2"	2'-9 1/2"
14"	9 1/2"	1'-6 1/2"	3'-1 1/2"

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FIG. 6 MINIMUM CLEARANCES FOR SINGLE AND DOUBLE LINES OF LADDERS
(PAR. 7.51)
(BSP 800-614-159, FIG. 6)

Initially, the ladder should be located in the center of the aisle between the present and future line of frames.

7.4 Other Frames, Racks and Equipment

7.41 For frames, racks or other equipment not specifically covered herein, the ladder locations should agree, as far as possible, with the locations shown on the illustrations for the equipment they most closely resemble.

7.5 Minimum Clearances

7.51 The minimum clearances for a single or double line of ladders are shown in Figure 6.

7.52 The interference of removable writing shelves (2-A or similar type) with the operation of rolling ladders is unavoidable.

8. LENGTH OF LADDER TRACK RUNS

8.1 The length of the ladder track runs should be such as will provide the necessary overhang at both ends of the frame lineups as specified in Sections 40B and 40C. The location of the ends of the track, with respect to the end bays in the lineup, will depend upon the direction of slant of the ladders (see Paragraph 1.23). Following are some of the reasons why this overhang is provided.

- 8.11 Overhang of the track at the end toward which the ladders are to slope is provided to insure that access can be had by a man standing on a ladder, to all the equipment which cannot be reached from the floor in the last bay at that end of the lineup.
- 8.12 Overhang of the track at the end away from which the ladder slopes is to, (1) provide for track always being overhead regardless of the position in which a ladder may be with respect to any frame in the lineup and (2) eliminate the possibility of a man, while standing on or ascending a ladder opposite the end frame at that end of the lineup, from bumping into or against the end of the ladder track as might otherwise occur.

- 8.13 The track should also be long enough to provide for the use of two supports for both end sections. Frequently, in the case of low type framing, the last set of framing bars over the end bay in the lineup does not provide for this and an additional support has to be provided.

9. HEIGHT OF LADDER TRACKS

- 9.1 The height of the track should be in accordance with information shown in the table on the floor plan drawings or the cabling, cable rack and auxiliary framing drawings furnished the job. Refer to Section 40B.

10. VERIFICATION ITEMS

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par. No.	Fig. No.
10.1	<u>Threaded Parts</u>		
10.11	Staked, peened or burred where required.	5.1	3
10.12	Locking pin in proper position.	5.23	3D
10.2	<u>Cotter Pins</u>		
10.21	Spread ends bent back around the rod or bolt with the tips of the pin resting against the rod or bolt.	6.2	3A
10.3	<u>Location of Ladders and Ladder Tracks With Respect to Frames</u>		
10.31	Locations and clearances with respect to frames as specified.	7.1	
	(a) at distributing frames	7.2	4 & 5
	(b) at relay racks, fuse boards, register racks and dial frames.	7.3	5
	(c) at other frames, racks and equipment	7.4	4 & 5
10.32	Minimum clearances maintained.	7.51	6

→ Indicates new or changed information.

[Vertical lines as side of paragraph indicates requirements.

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Reason for Reissue:

1. Par. 2.1, R-2308, R-1938 and R-1940 removed. R-3788 Electric Drill replaced by R-4393 Electric 3/8" Drill.
2. Par. 3.212 use of cotter pins for temporary stop bolts removed.
3. Fig 2 Threaded Rods, P-400231 to P-400266 replaced by Comco 841215254 to 841215601, Square Head Bolts P-400299 to P-400302, P-403233, P-160838, R-205257 and P-40A155 replaced by HH Cap Screws P-147284, P-147285, P-423920, P-160842, P-160880, P-422083, P-42D095 and P-146273 resp. Round Head Bolt P-374678, P-42D084, P-42D093 and P-42D096 replaced by P-405541, 841065956, 841065964, 841065972 resp.