

ROLLING LADDERS, BRAKES AND LADDER TRACK
LADDER TRACK

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1.	<u>GENERAL</u>	(a)	ED-91592-70 (Ladder Track Assembly).
1.1	<u>Scope of Section</u>	(b)	H-549-123 (Track Support Material).
1.11	This section covers the specific requirements and procedures for installing rolling ladder track. It also includes information on the reconditioning of existing tracks for use with ladders equipped with brakes.	2.	<u>TOOLS REQUIRED</u>
1.2	<u>General Information Pertaining to Arrangement of Tools, Precautions, Verification, Specifications, Drawings and Figures, and Associated Information</u>	2.1	The tools and supplies required for operations covered in this section are general type tools normally available on the job.
1.21	Refer to Section 40A for information pertaining to the above subjects.	3.	<u>LOCATION AND ARRANGEMENT</u>
1.22	The following are some of the job drawings to which reference should be made.	3.1	<u>Planning</u>
		3.11	Information concerning the number, height and length of ladder track runs and the width of ladders for various lines of frames is provided as part of the Job Information. See Section 40A.
		3.12	The location of the track runs with respect to the guard rails or clearance lines of the frame lineups is

LENGTH OF TRACK	NUMBER OF SECTIONS OF TRACK REQUIRED		LENGTH OF TRACK	NUMBER OF SECTIONS OF TRACK REQUIRED	
	10' SECT. P-450364	8' SECT. P-450363		10' SECT. P-450364	8' SECT. P-450363
8		1	66	5	2
10	1		68	6	1
12		2	70	7	
14		2	72	4	4
16		2	74	5	3
18	1	1	76	6	2
20	2		78	7	1
22		3	80	8	
24		3	82	5	4
26	1	2	84	6	3
28	2	1	86	7	2
30	3		88	8	1
32		4	90	9	
34	1	3	92	6	4
36	2	2	94	7	3
38	3	1	96	8	2
40	4		98	9	1
42	1	4	100	10	
44	2	3	102	7	4
46	3	2	104	8	3
48	4	1	106	9	2
50	5		108	10	1
52	2	4	110	11	
54	3	3	112	8	4
56	4	2	114	9	3
58	5	1	116	10	2
60	6		118	11	1
62	3	4	120	12	
64	4	3			

NOTE:

FOR TOTAL LENGTHS GREATER THAN 120' THE NUMBER OF LENGTHS OF TRACK MAY BE DETERMINED BY ADDING THE NUMBER REQUIRED FOR THE LENGTH IN EXCESS OF 120' TO THE NUMBER REQUIRED FOR 120' AS LISTED IN ABOVE TABLE.

FIG. 7 NUMBER OF SECTIONS OF TRACK REQUIRED
FOR VARIOUS LENGTHS OF TRACK
(PAR. 3.21)
(RSP 800-614-159, Fig. 7)

dependent upon: (1) the type of frames, (2) the widths of the ladders to be used and (3) whether the ladders will ultimately serve a single or double line of frames. See Section 40A.

- 3.13 The location of ladder stops and the direction of slant of rolling ladders must be known to determine the overhang of the track beyond each end frame of a lineup. Refer to Section 40C for information on location of ladder stops and Section 40D for direction of slant.

- 3.14 The most advantageous arrangement of the track sections may conveniently be determined by laying the track sections end to end on the floor beneath the position they will occupy when installed. Then drop a plumb line from the auxiliary framing to determine the location of the ladder track support brackets. This method of locating the track support brackets will reduce the amount of shifting necessary when the track is lifted into position. Where both 8' and 10' track sections are being used, the sections may be arranged to avoid: (a) the installation of additional auxiliary framing, (b) the installation of splices in the main aisles, (see Par. 4.15) and (c) interference between splices and track supports.

3.2 Lengths of Track

- 3.21 Ladder track should be installed, in so far as practicable, in sections 8' - 0" and 10' - 0" in length. The number of sections required for various overall lengths is given in Figure 7.

- 3.211 Where the ultimate length of a lineup of track is being installed initially or when the existing lineup is being extended to the ultimate and the overall length is such that one of the track sections is less than 5 feet 0 inch, the shorter section should be placed at some intermediate location in the track instead of at the end.

- 3.212 Where the ultimate length of a lineup of track is not installed, but the track will be extended at some later

date, the shorter section of track should be located at the growing end of the track.

- 3.213 End sections of ladder track less than 5' - 0" in length should be replaced by full-length sections when the ladder tracks are next extended, unless the added sections are all over 5' - 0" in length and their installation completes the ultimate length of the track run.

- 3.214 The ladder track shall be extended at the position of future frames, where necessary to obtain access to the distributing power terminal strips, power fuse cabinets, aisle pilots, etc., located at the ultimate end of a line-up.

- 3.22 The length of the ladder track installed should be such as to provide the overhang at the ends of the lineup required for access to all of the equipment on the frames and for safety reasons. See Section 40C. It should also be long enough to permit proper support from the auxiliary framing or other details provided.

- 3.221 Provide a minimum clearance of 1' - 3" between one end of the track and the wall or other obstruction toward which the ladder slopes only if space is available and all other requirements pertaining to the location of end supports and ladder stops shown in Figure 27 and covered in Section 40C have been met. This done to allow for the removal of the ladder trolley or brake.

- 3.23 Ladder tracks should ordinarily run continuously across aisles so as to permit concentration of ladders when necessary.

3.3 Height of Track

3.31 Low-Type Auxiliary Framing

- 3.311 Ladder track shall be attached directly to the underside of the auxiliary framing which is located at the following heights:

<u>Type Installation</u>	<u>Approximate Height of Auxiliary Framing</u>
Step-by-Step	11'-8" (11'-6"AGM)
Toll	11'-8" (11'-6"AGM)
Manual (Large)	11'-8" (11'-6"AGM)
Panel	11'-7-1/2"
Crossbar (No. 1 & No. 4 Toll)	11'-8"
Crossbar (No. 5)	11'-9-1/2"

3.32 High-Type Auxiliary Framing

- 3.321 Ladder track shall be located as high as cable racks will permit where frames are supported by high-type auxiliary framing. This height is approximately 11'-8" in panel offices and 11'-6-1/2" in step-by-step offices. At distributing frames supported by high-type auxiliary framing, it is particularly desirable that the ladder track be located as high as possible in order to take full advantage of all available head room.

4. ASSEMBLY

CAUTION: BECAUSE THE OUTER EDGES OF SOME TRACK SECTIONS ARE SO SHARP AS TO CONSTITUTE A SAFETY HAZARD, IT IS RECOMMENDED THAT GLOVES BE WORN WHEN HANDLING TRACK TO AVOID RECEIVING CUTS. THE SHARP EDGES SHOULD BE REMOVED WITH A COARSE FILE BEFORE THE TRACK IS INSTALLED.

CAUTION: WHEN SECTIONS OF TRACK ARE MODIFIED OR REMOVED AFTER LADDERS HAVE BEEN INSTALLED MAKE CERTAIN THAT THE TRACK IS RIGIDLY SUPPORTED AND LADDER STOPS PROVIDED AS COVERED IN SECTION 40A.

4.1 Splices

- 4.11 Sections of track should be spliced as shown in Figure 8. The splicing sleeves should be put on with a driving fit but should not be sprung in fitting to such an extent as to permanently change the shape of the track.

NOTE: The R-3113 Electric Impact Wrench is not to be ordered for use on ladder track splices.

ces. However, if the tool is available on the job it may be used for this purpose. If the bolt head tends to turn, hold the wrench at a slight angle until the nut is brought up snug.

- 4.12 To insure smooth junctions and avoid possible injury to brake lining, see that ends of track sections are not distorted or burred.

- 4.13 To obtain sufficient friction between track and brake shoe, clean inside surfaces of the track with petroleum spirits if there is any indication of oil.

- 4.14 Where splices are already installed and two adjacent track sections are found to be out of alignment, they can be aligned by forcing thin metal shims between the track and the splice at the proper points.

- 4.15 It is desirable not to have splices in track sections fall in main aisles where power cables are to run under the racks initially or ultimately. This is to avoid the possibility of damaging power cable sheathing if cables were to rub against track splice nuts.

- 4.16 When making additions to existing runs of track, check the fit of splices before installing the new track. Any splices which do not fit well should be bent into shape to ensure proper alignment between old and new tracks.

NOTE: This precaution is necessary because of a difference in the cross sectional form of old and new tracks.

- 4.17 The placing of screws at track junctions will be facilitated by using the R-2226 Screwdriver which is equipped with screw holder attachment. Where difficulty is experienced in passing the round head screws through the slot of the track, the track may be spread slightly, by using the tool shown in Figure 8B.

- 4.18 When removing a section of ladder track, remove the ladder track splicing sleeve as follows:

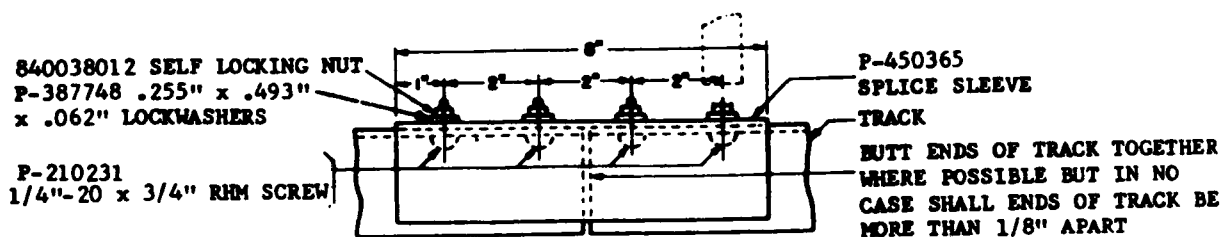


FIG. 8 SPLICING SLEEVE FOR LADDER TRACK
(PARS. 4.11 AND 8.2)
(BSP 800-614-159 FIG. 8)

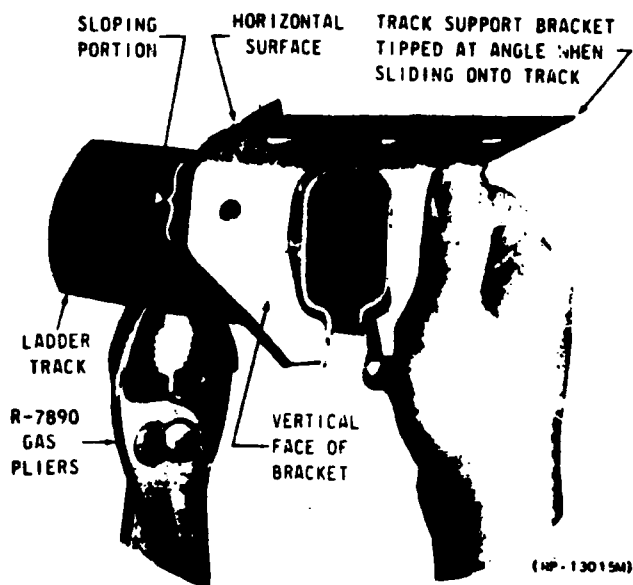


FIG. 8A ASSEMBLING SHEET STEEL HANGER
BRACKETS, P-452149
(PAR. 4.214)

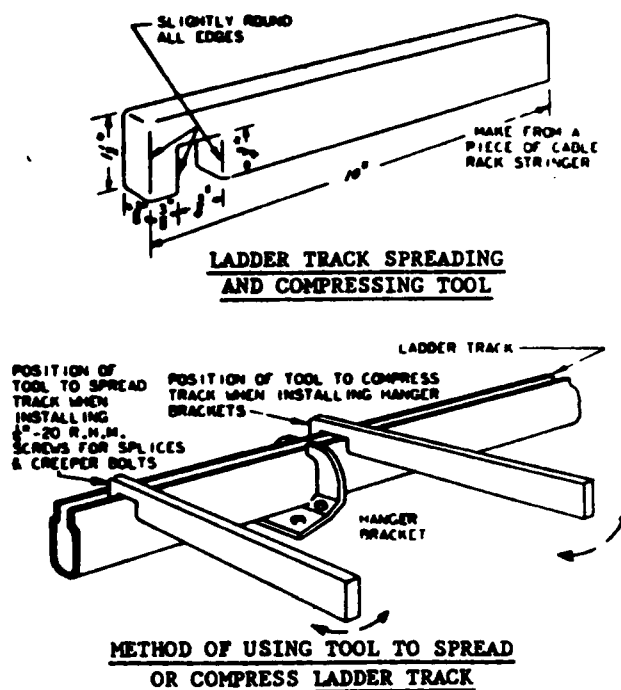
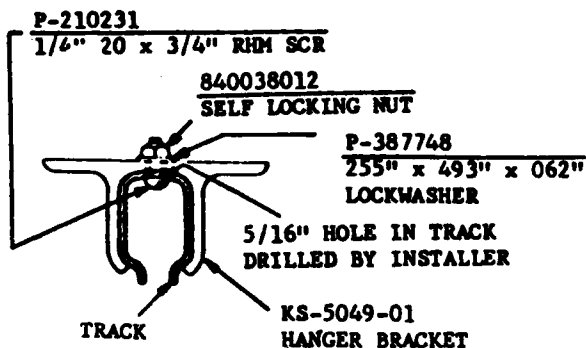


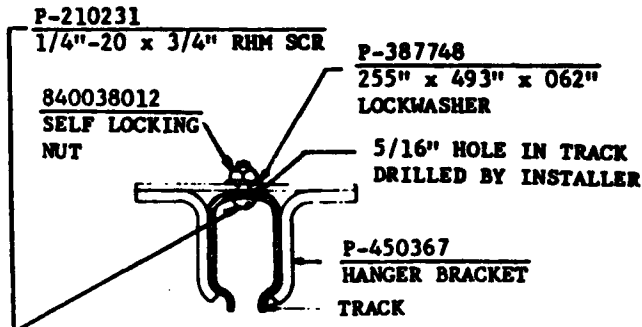
FIG. 8B TOOL FOR SPREADING AND COMPRESSING
LADDER TRACK
(PARS. 4.17, 4.184, 4.2141 & 4.315)

30 - 40B

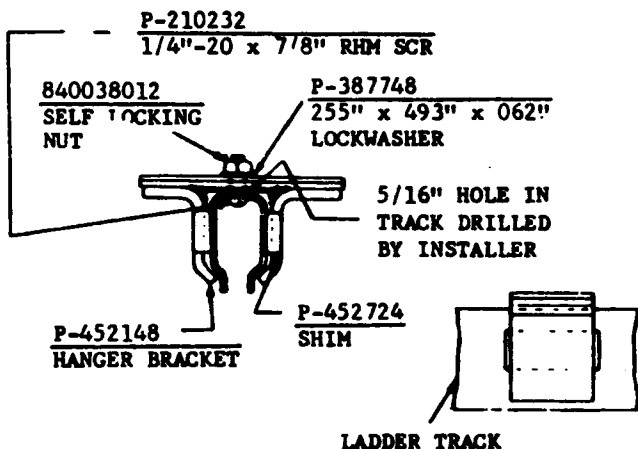
6



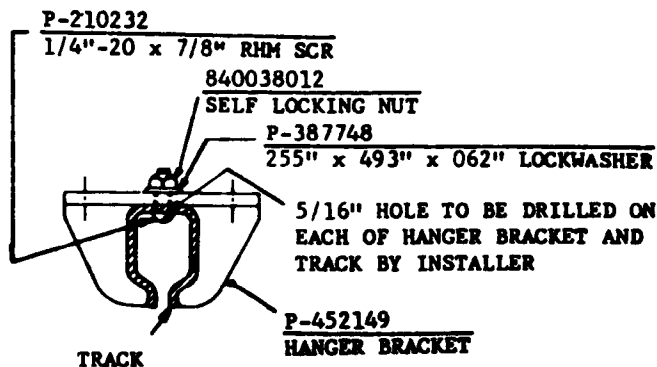
VIEW A - CAST BRACKET



VIEW B - WELDED STEEL BRACKET



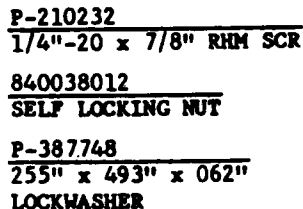
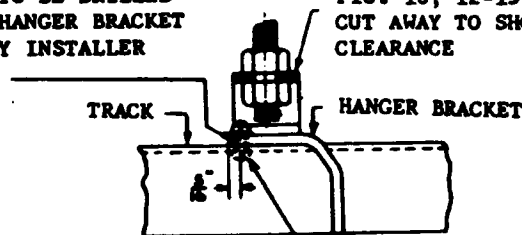
VIEW C - REINFORCED WELDED STEEL BRACKET



VIEW D - SHEET-METAL BRACKET (ANGLE TYPE)

5/16" HOLE TO BE DRILLED
ON EACH OF HANGER BRACKET
AND TRACK BY INSTALLER

LADDER TRACK SUPPORT PER
FIG. 10, 12-15 OR 23-25.
CUT AWAY TO SHOW BOLT
CLEARANCE



VIEW E - RELOCATION OF CREEPER BOLT WHERE INTERFERENCE
FROM END OF THREADED ROD PREVENTS ITS BEING
INSTALLED IN REGULAR HOLE PROVIDED IN BRACKET
(SHEET STEEL BRACKET SHOWN)

FIG. 9 TRACK SUPPORT BRACKETS
(PARS. 4.2 AND 4.3)
(BSP 800-614-159, FIG. 9)

- 4.181 Working from a platform ladder of adequate height, tie the splice end of track section to be removed securely to track support with a short piece of rope.
- 4.182 Remove the splice bolt and nut as follows. With an adjustable wrench (R-4199 or similar) and the R-2226 Screwdriver, loosen the splice nut by twisting several times.
- 4.183 With ball peen hammer, drive splice onto section being removed. The splice may be moved easily, if the lips of track are compressed slightly with the tool shown in Figure 8B.
- 4.2 Support Brackets
- 4.21 Track support brackets, shown in Figure 9, shall be fitted closely to the track so as to hold the track as securely as practicable against lengthwise movement.
- 4.211 When clamps for conduit located above a ladder track are secured by one of the hanger bracket bolts as shown in Figures 11 and 11A, the conduit clamp should be installed at the same time as the bolt.

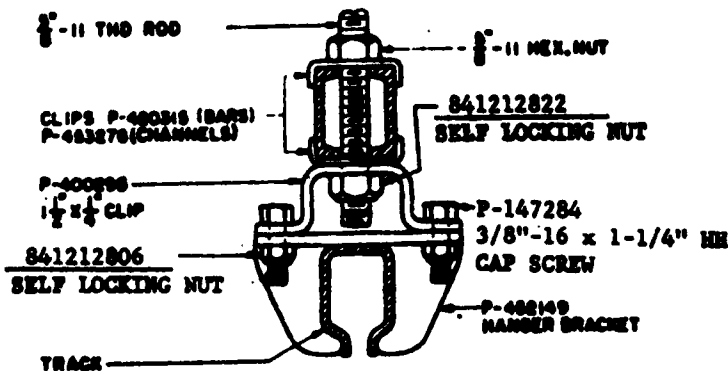


FIG. 10 TRACK SUPPORTED PARALLEL TO OR AT RIGHT ANGLES TO AUXILIARY FRAMING - (PARALLEL SHOWN)
(PARS. 4.313 AND 5.31)
(BSP 800-614-159 FIG. 10)

- 4.212 Where hanger brackets P-452148 are used, clearance in excess of 1/32" may be encountered between the sides of the ladder track and the inside of the bracket. Shims 1/32" thick (P-452724)

are available and should be used to insure a tight fit of the track in the bracket. They should be installed as shown in View C of Figure 9, using one, two, or three shims, as required, on either or both sides of the track so as to hold the track vertical and in proper position against both lips of the brackets.

- 4.2121 The shims (P-452724) which are 2-5/16" long, 1" wide, and .031" thick, have one end bent up. The shims should not be driven into place, but should be placed in position by hand. After the shims are in position, the exposed ends should be bent around the support to hold them in place.
- 4.213 When hanger brackets P-450367, shown in View B of Figure 9, are removed while making changes or extensions to existing track, they should be discarded and replaced by any of the brackets shown in View A, C or D of Figure 9. All new brackets are the type shown in View D of Figure 9.
- 4.214 Tipping the angle type sheet steel hanger brackets, P-452149, (View D in Figure 9) at an angle when assembling them on the track gives, in effect, an elongated opening and prevents binding on the upper and lower surfaces. Binding on the sides can usually be eliminated by squeezing the track with the 10" Gas Pliers, R-7890, as illustrated in Figure 8A. Where the dimensions of the track are such that the use of the pliers is ineffective, the location of the hanger brackets should be marked on the track and a bench vise used for the compressing operation. Protection should be used over the vise jaws to prevent marring the finish on the track.

- 4.2141 When a large number of ladder track sections are to be installed, a tool, shown in Figure 8B, may be made for compressing the ladder track.
- 4.2142 When installing hanger bracket P-452149, the horizontal portion of the bracket may be turned in either direction.

NOTE: The two elongated holes through the sloping portion of hanger bracket P-452149 are not used by the installer.

4.3 Creeper Bolts

4.31 To prevent creeping of the track in the supports, the track should be bolted to both end support brackets in each continuous line of track as shown in Figure 9. Where the ladder track is supported from high-type auxiliary framing and end braces are required per Figure 24, (see Paragraph 7.11), additional creeper bolts shall be installed in the track support brackets associated with both end braces.

4.311 When a line of track is extended, either the existing creeper bolts should be relocated to the track support at the end of the new section or an additional creeper bolt installed. In the latter case this intermediate bolt may be left in place.

4.312 Where an end support is bolted to the track by means of the ladder stop bolt as shown in Figure 26, the 1/4" bolt per Figure 9 may be omitted from this end.

4.313 Where there is interference between the 1/4" creeper bolts shown in Figure 9 and the hanger rod in the end ladder track supports per Figures 10, 12 to 15 and 23, the creeper bolts

may be located in the next to the end track supports. Should similar interference also be encountered in the next to the end supports, the creeper bolt should be located in the end support bracket as shown in View E of Figure 9, the installer to redrill the track support bracket as necessary. The latter arrangement also applies should interference from the P-160838 Bolt prevent placing a creeper bolt in the regular location in the track support below the end brace shown in Figure 24.

4.314 Where track is supported from cable rack or lattice work as shown in Figures 18 and 19, the regular creeper bolt cannot be used. Here a 5/16" hole should be drilled in the 1/2" bar in line with the hole in the hanger bracket and a P-210305, 1/4" 20 x 1-1/4" R.H.M. Screw should be used for bolting the track to the support bracket on the 1/2" bar.

4.315 When installing creeper bolts, the tool shown in Figure 83 may be used to spread the slot in the track to permit the head of the creeper bolt to enter.

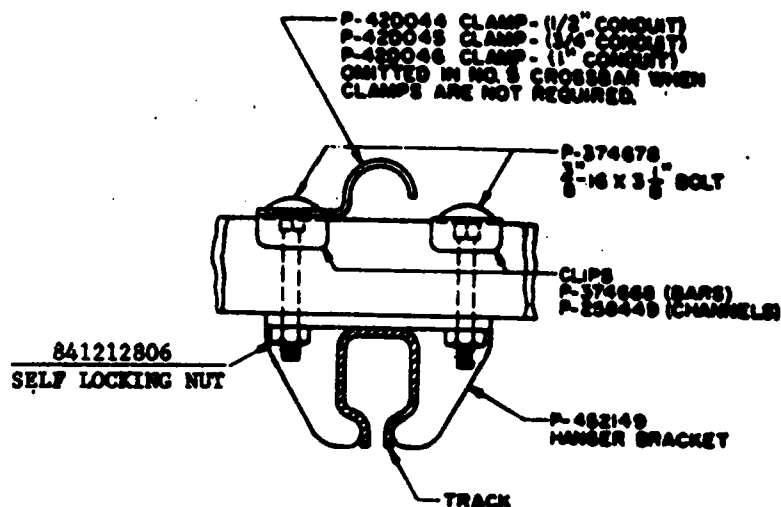


FIG. 11 TRACK SUPPORTED DIRECTLY FROM AND AT RIGHT ANGLES TO AUXILIARY FRAMING
(PARS. 4.211, 5.31 AND 5.43)
(BSP 800-614-159 FIG. 11)

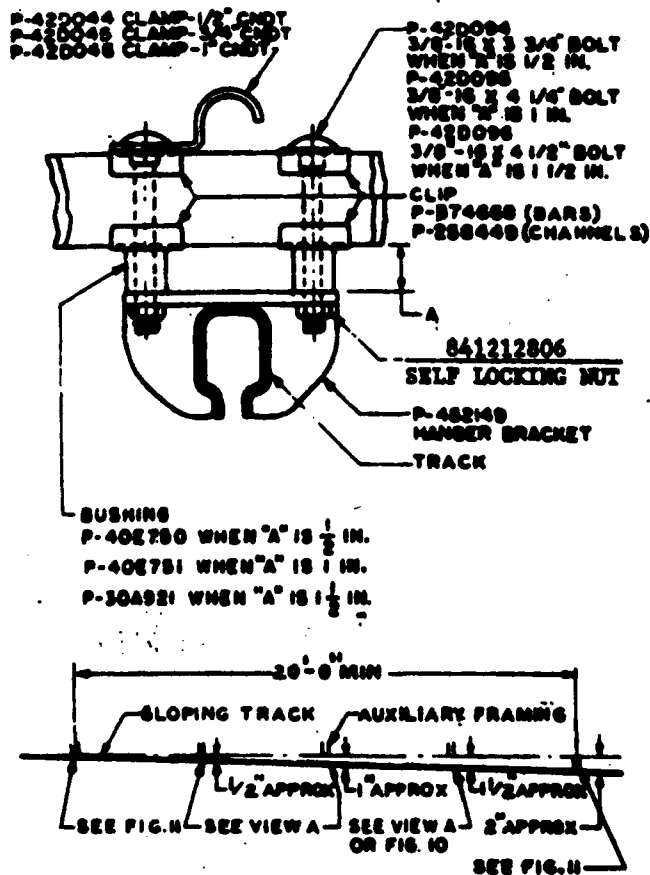


FIG. 11A TRACK SUPPORTED FROM AND AT RIGHT ANGLES TO AUXILIARY FRAMING-SLOPING TRACK-2" DIFFERENCE IN AUXILIARY FRAMING LEVEL (PARS. 4.211, 5.31 and 6.12) (BSP 800-614-159 FIG. 11A)

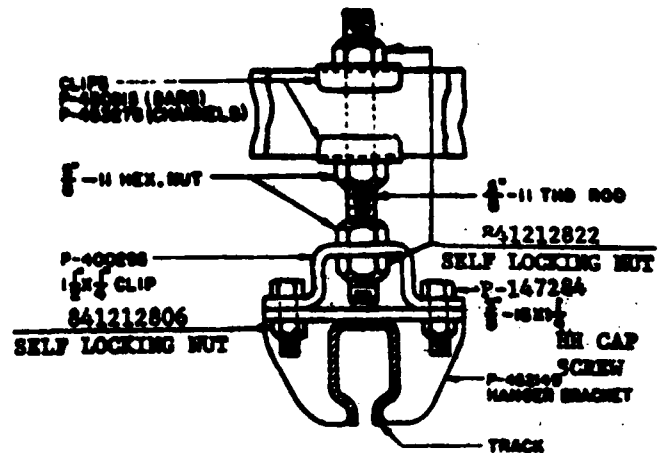


FIG. 12 TRACK SUPPORTED FROM AUXILIARY FRAMING WITH EXTENSION ROD (PARS. 4.313, 5.31 and 5.43) (BSP 800-614-159 FIG. 12)

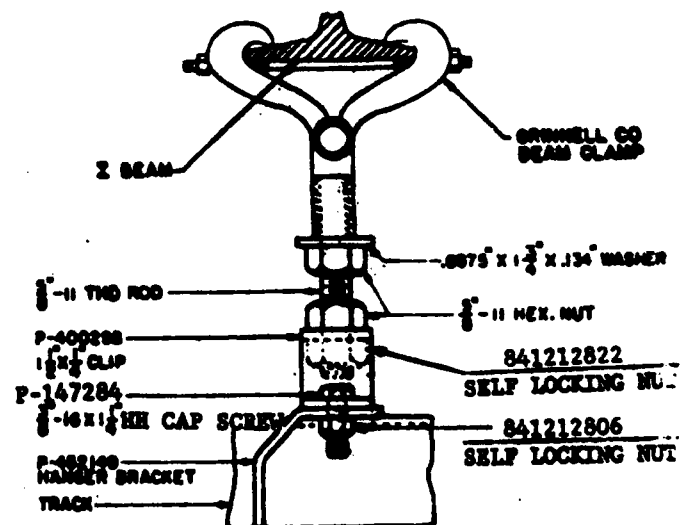


FIG. 13 TRACK SUPPORTED DIRECTLY FROM CEILING (PARS. 4.313 and 5.31) (BSP 800-614-159 FIG. 13)

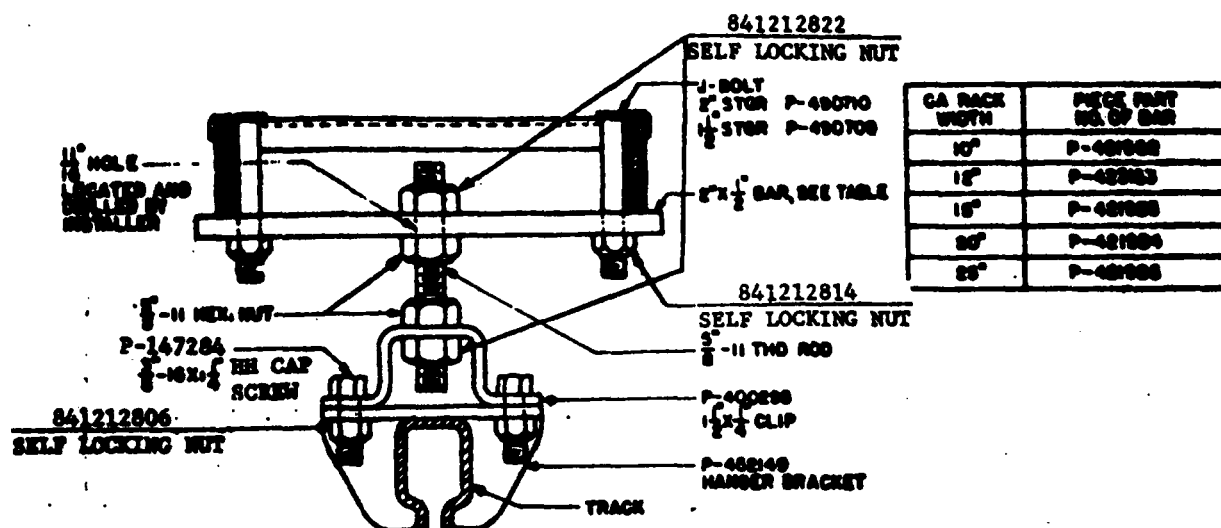


FIG. 14 TRACK SUPPORTED WITH EXTENSION RODS FROM CABLE RACK 2'-1" OR LESS WIDE-TRACK BELOW AND PARALLEL WITH CABLE RACK (PARS. 4.313, 4.411 and 5.41) (BSP 800-614-159 FIG. 14)

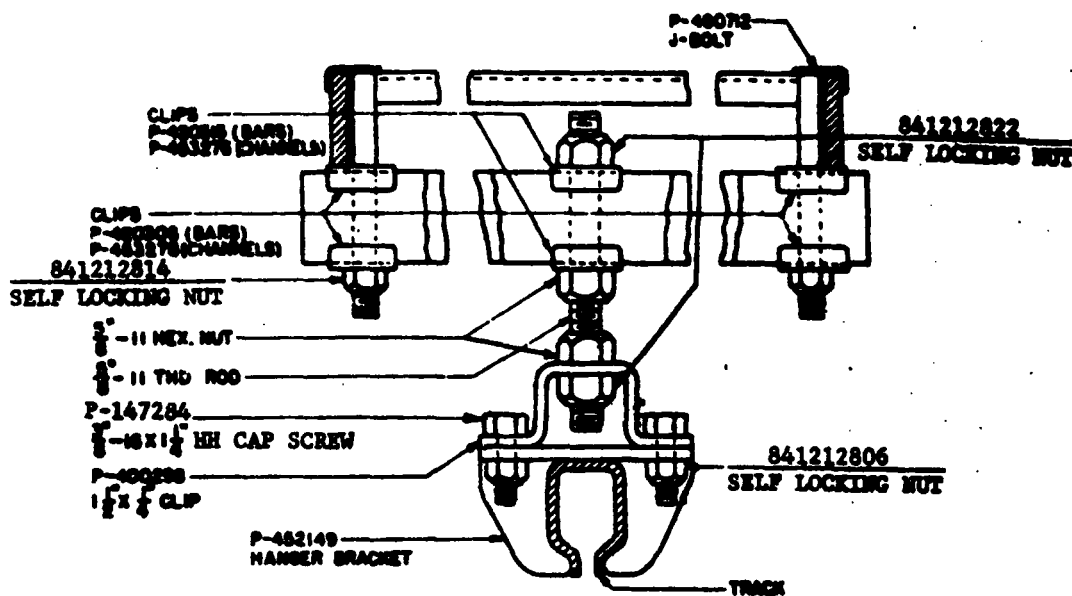


FIG. 15 TRACK SUPPORTED WITH EXTENSION ROD FROM CABLE RACK MORE THAN 2'-1" IN WIDTH (PARS. 4.313, 4.411, 5.41 and 5.43) (BSP 800-614-159 FIG. 15)

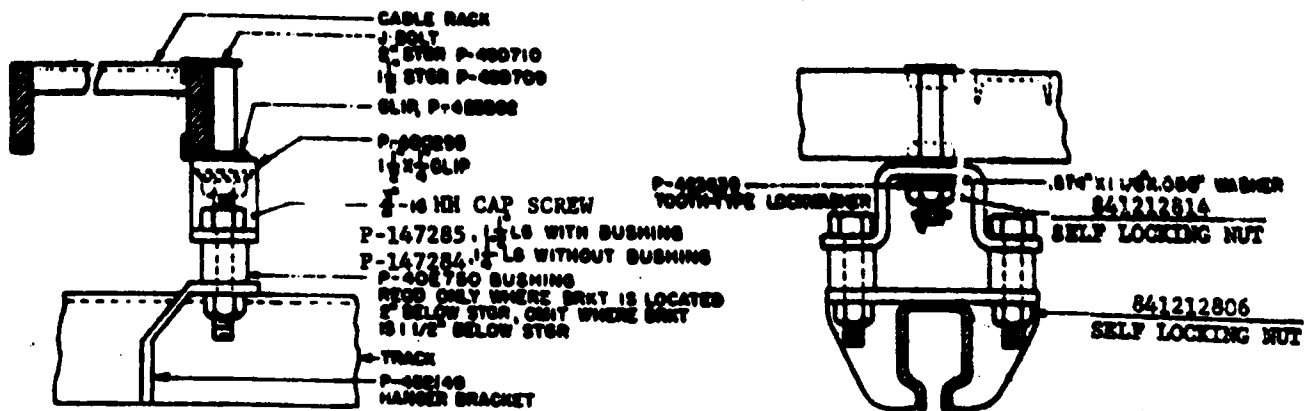


FIG. 16 TRACK SUPPORTED BELOW AND AT RIGHT ANGLES TO CABLE RACK
(PARS. 4.411 AND 5.41)
(BSP 800-614-159 FIG. 16)

5. SUPPORT OF TRACK

5.1 Spacing of Supports

5.11 Continuous runs of ladder track shall be supported at approximately 5'-0" intervals where possible and in no case should the spacing between adjacent supports exceed 6'-0". In step-by-step offices the auxiliary framing bars or channels are located over the uprights of universal-type frames to facilitate support during installation. This will result in a ladder track support spacing of 6'-0-5/8" in these offices. (Does not apply in wood joist constructed buildings. See Paragraph 5.71).

5.12 Track shall not extend cantilever fashion more than 3'-0" beyond a support if the trolley traverses the entire length of the extension. If the travel of the trolley in the extension is limited by a stop bolt the total extension beyond the last support shall not exceed 4'-0". In this case, the distance from the last support to the stop bolt may be up to 3'-0" and the track may extend beyond the stop bolt. Figure 27 illustrates conditions that may be encountered.

5.2 Number of Supports Per Section of Track

5.21 High-Type Auxiliary Framing

5.211 Provide at least two supports for each section of track supported from high-type auxiliary framing.

5.22 Low Type Auxiliary Framing or Cable Rack

5.221 Provide at least one support for each section of track supported from low-type auxiliary framing or cable rack except that end pieces of track shall have not less than two supports.

5.3 From Auxiliary Framing or Ceiling

5.31 Tracks should be supported from auxiliary framing or the ceiling in steel frame and concrete buildings as shown in Figure 10 to 13, inclusive. Where the proper support cannot be obtained

with the usual auxiliary framing, additional framing should be installed, as required.

5.4 From Cable Racks

5.41 When supports from cable racks are required, tracks shall be fastened to the cable racks as shown in Figures 14 to 18, inclusive. The track supporting details shall be fastened to the cable rack as near as practicable to the cable rack supports, this distance not to exceed 1'-0". Tracks shall not be attached to cable racks that are mainly supported by offset bent hanger rods.

5.42 When tracks are to be supported from cable racks that are supported by hanger rods, 5/8"-11 hexagon nuts shall be placed above the cable rack hanger clips. See sections in this handbook covering support of cable rack.

5.43 Where tracks are to be supported under cable racks that are supported by low-type auxiliary framing, the track shall be attached to the cable rack supporting bars as shown in Figures 11 or 12. If track supports are required at points between the cable racks supports, pairs of bars or channels shall be attached to the cable rack as shown in Figure 15. The track is then supported from these bars or channels as shown in Figures 11 and 12.

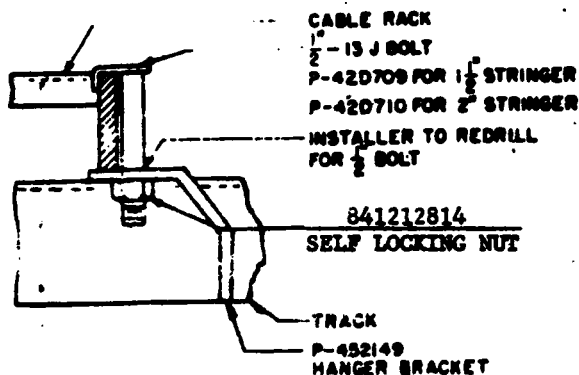


FIG. 17 TRACK SUPPORTED DIRECTLY FROM AND AT RIGHT ANGLES TO CABLE RACK
(PARS. 4.411 AND 5.41)
(BSP 800-614-159 FIG. 17)

5.44

Where the track runs at right angles to the cable rack from which it is supported, and cross straps interfere with the regular "J" bolts, use a 1/2" round head bolt, with a spanner type clip, P-420919, and a pipe spacer to keep the clips from tipping.

5.5 From Lattice Work

5.51 Tracks shall be supported from lattice work in accordance with Figure 19.

5.6 From Walls

5.61 Where ceiling inserts are not available adjacent to the walls, ladder tracks may be supported from the wall in accordance with Figure 28.

5.7 In Wood Joist Constructed Buildings

5.71 Timbers should be installed as required in wood joist constructed buildings for the support of ladder track. The track shall be supported from these timbers as shown in Figures 20, 21, 22 or 23. The track supports may be fastened directly to, or suspended by threaded rods from, the timbers. Track supports should be located approximately 3'-0", but not to exceed 4'-0", apart.

6. LEVEL AND ALIGNMENT

6.1 Ladder track shall be approximately level.

6.11 A slight slope of the track is permissible, to take care of differences in level, where the ladder track runs continuously between areas having auxiliary framing at different levels.

EXAMPLE 1: Ladder track between an area having high type auxiliary framing and an area having low type auxiliary framing.

EXAMPLE 2: Ladder track between two heights of low type auxiliary framing which have been employed in step-by-step offices.

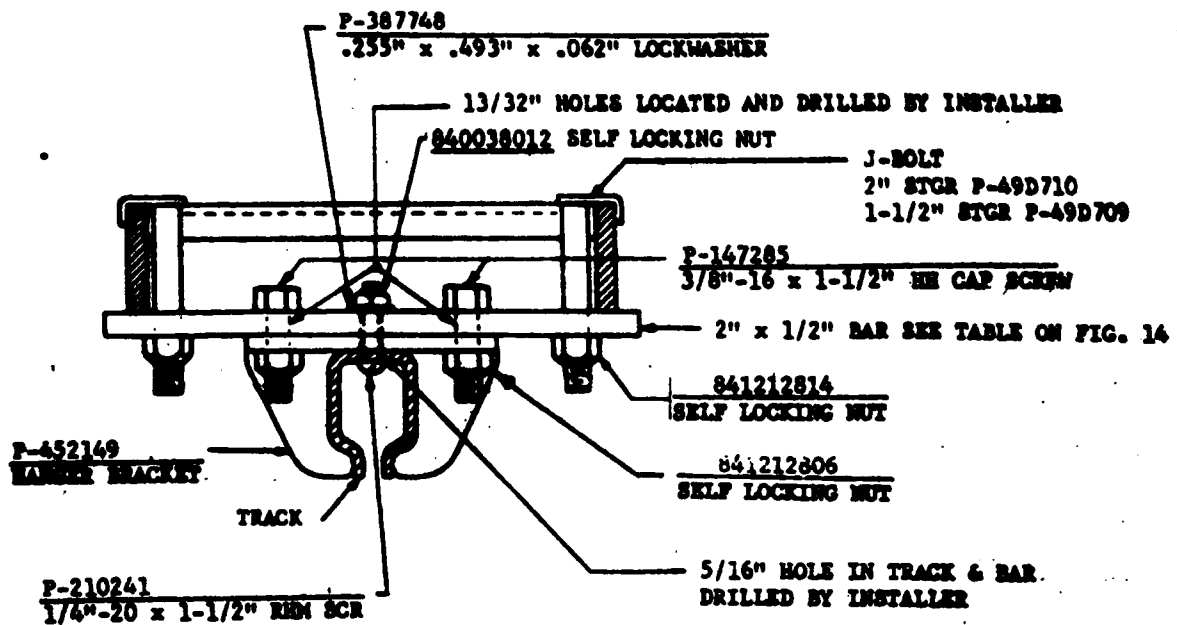


FIG. 18 TRACK SUPPORTED WITH SINGLE BAR DIRECTLY FROM CABLE RACK 2'-1" OR LESS WIDE (PARS. 4.314, 4.411 AND 5.41) (BSP 800-614-159 FIG. 18)

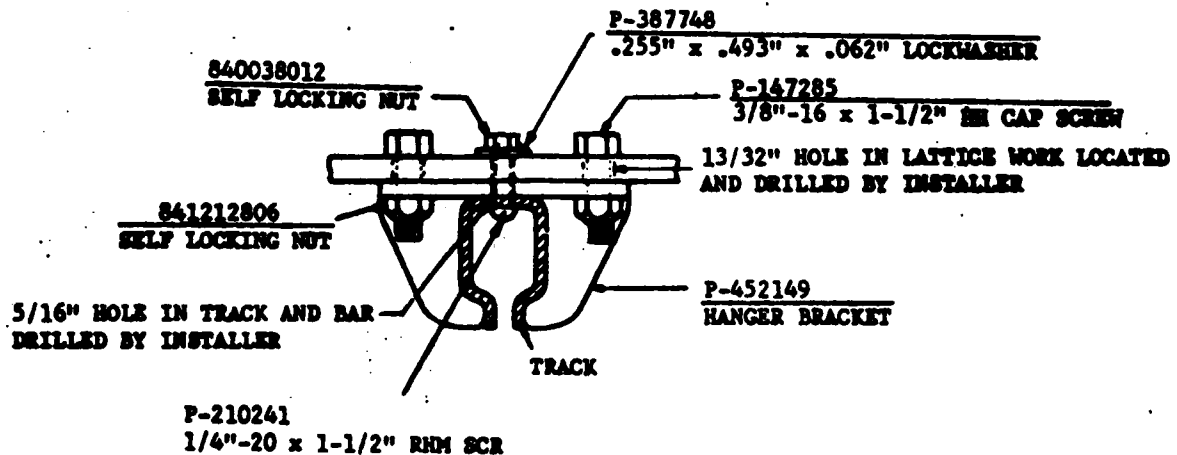


FIG. 19 TRACK SUPPORTED FROM LATTICE WORK (PARS. 4.314 AND 5.51) (BSP 800-614-159 FIG. 19)

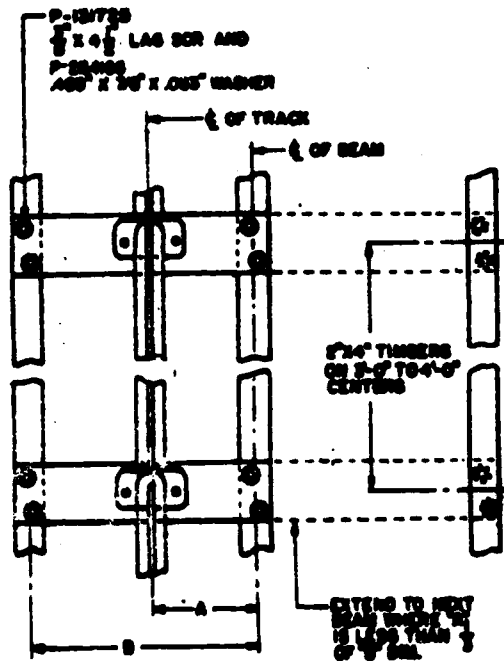


FIG. 20 TRACK SUPPORTED PARALLEL TO WOOD JOISTS
(PAR. 5.71)
(BSP 800-614-159 FIG. 20)

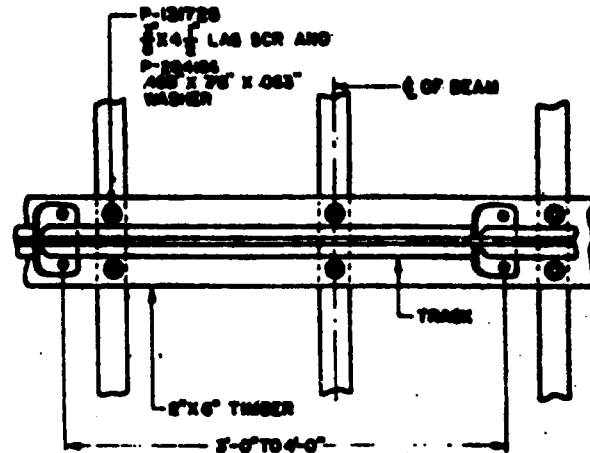


FIG. 21 TRACK SUPPORTED AT RIGHT ANGLES TO WOOD JOIST
(PAR. 5.71)
(BSP 800-614-159 FIG. 21)

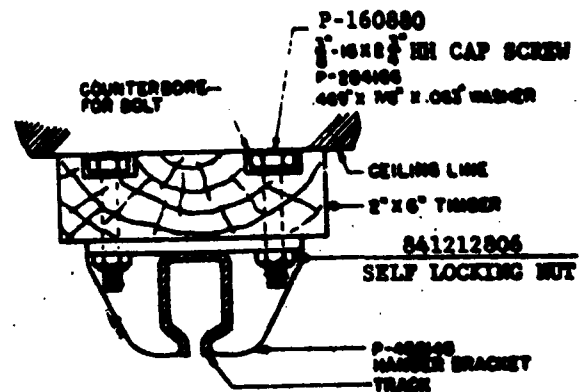
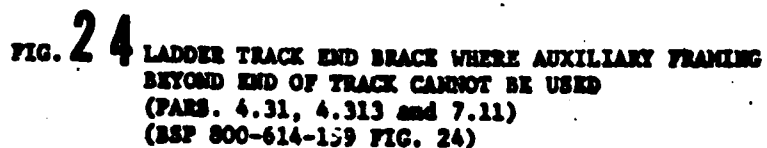
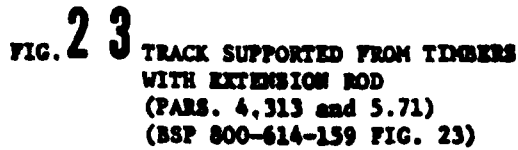


FIG. 22 TRACK SUPPORTED DIRECTLY FROM TIMBERS
(PAR. 5.71)
(BSP 800-614-159 FIG. 22)



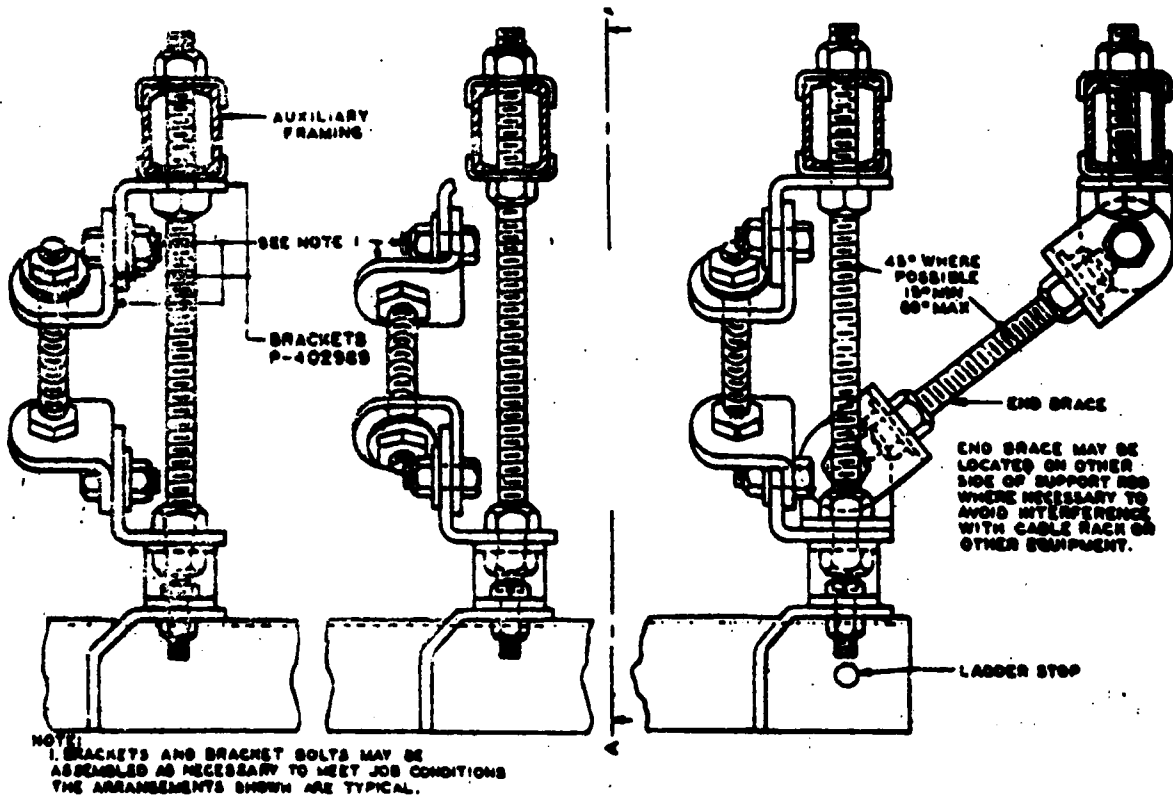
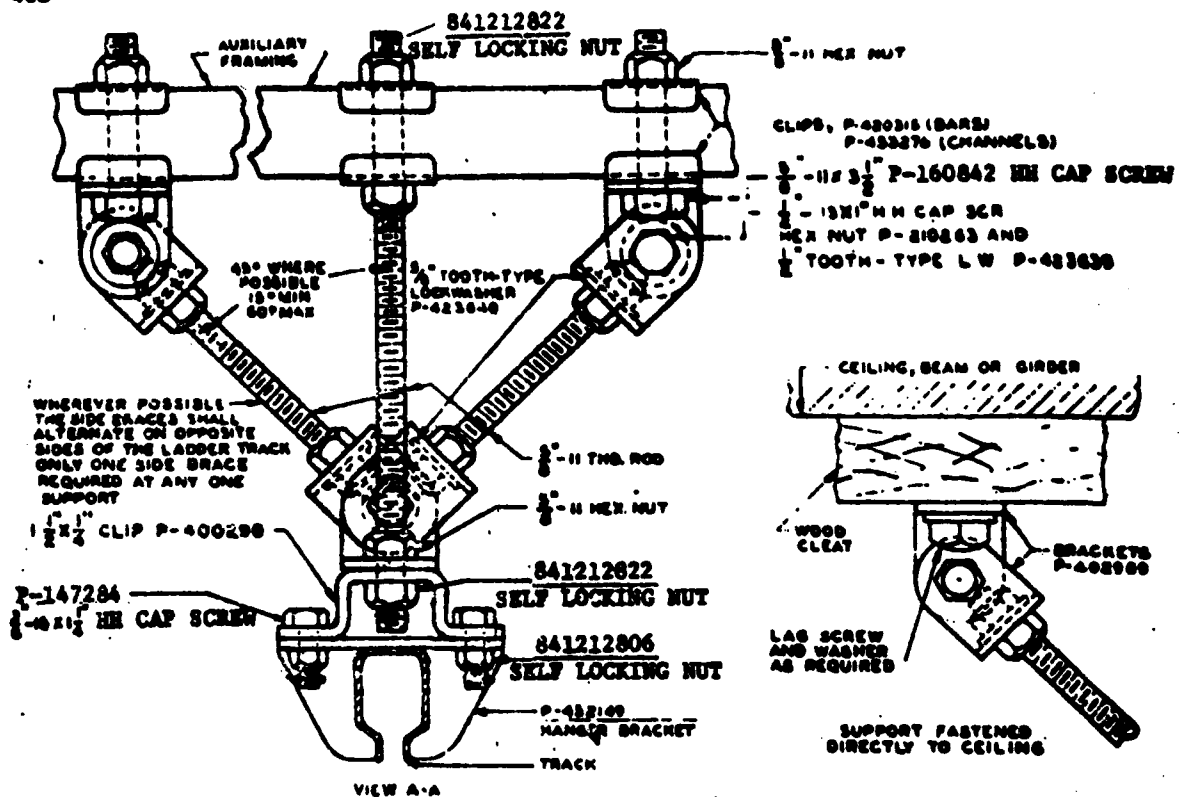


FIG. 2 5 LADDER TRACK SIDE BRACES AND PREFERRED
LOCATION FOR END BRACES
(PARS. 7.11 and 7.21)
(BSP 800-614-159 FIG. 25)

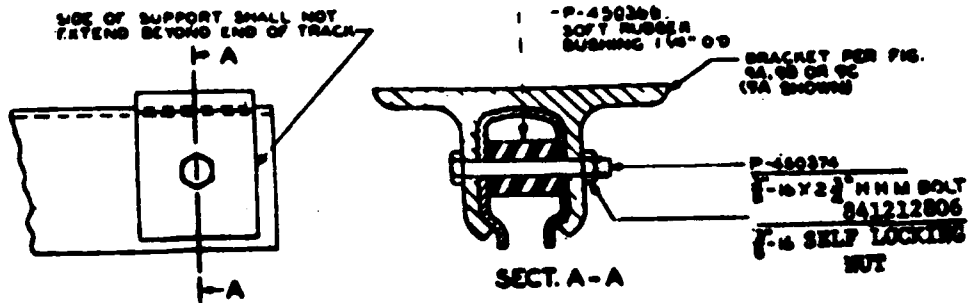
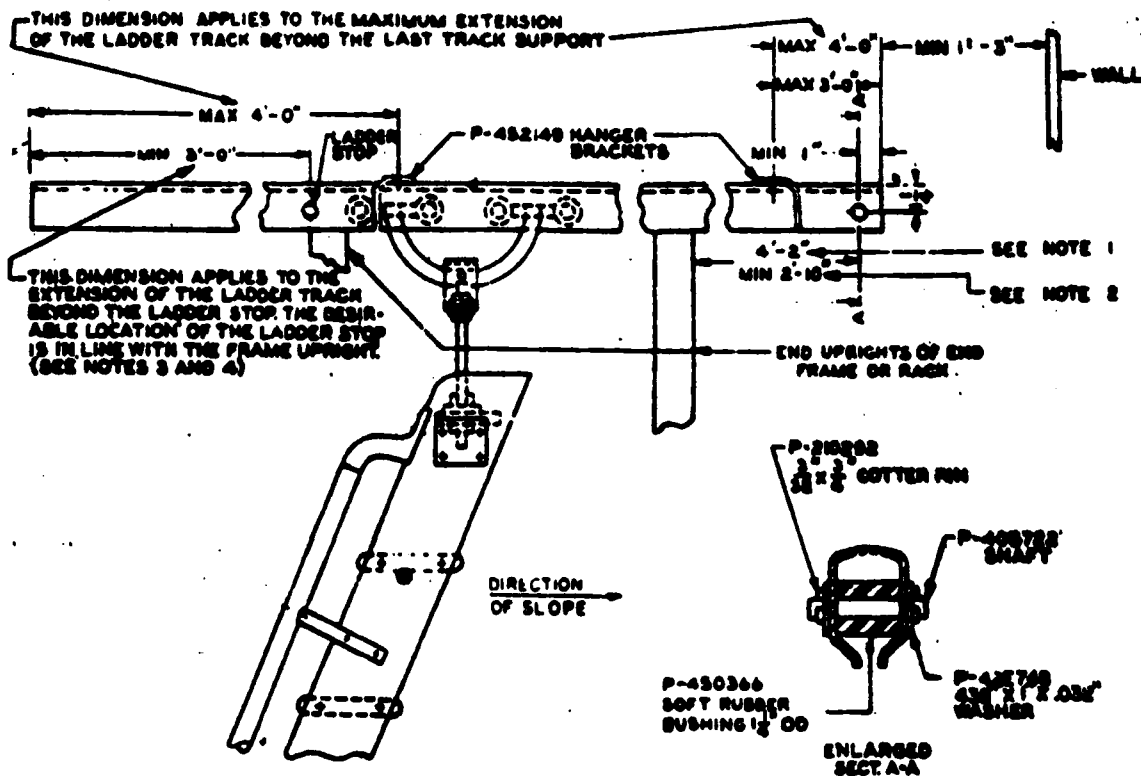


FIG. 26 LADDER STOP AT SUPPORT BRACKET
(PAR. 4.312)
(BSP 800-614-159 FIG. 26)



NOTES

1. PREFERRED LOCATION BUT NOT NECESSARILY A MAXIMUM. WHERE SPACE PERMITS AND IF REQUESTED BY THE TELEPHONE CO, THE END OF THE TRACK MAY BE EXTENDED TO PERMIT THE STOP TO BE LOCATED ANY DISTANCE BEYOND THE 4'-8\"/>

FIG. 27 LOCATION OF END SUPPORTS AND
LADDER STOPS IN TRACK
(PARS. 3.221 and 5.12)
(BSP 800-614-159 FIG. 27)

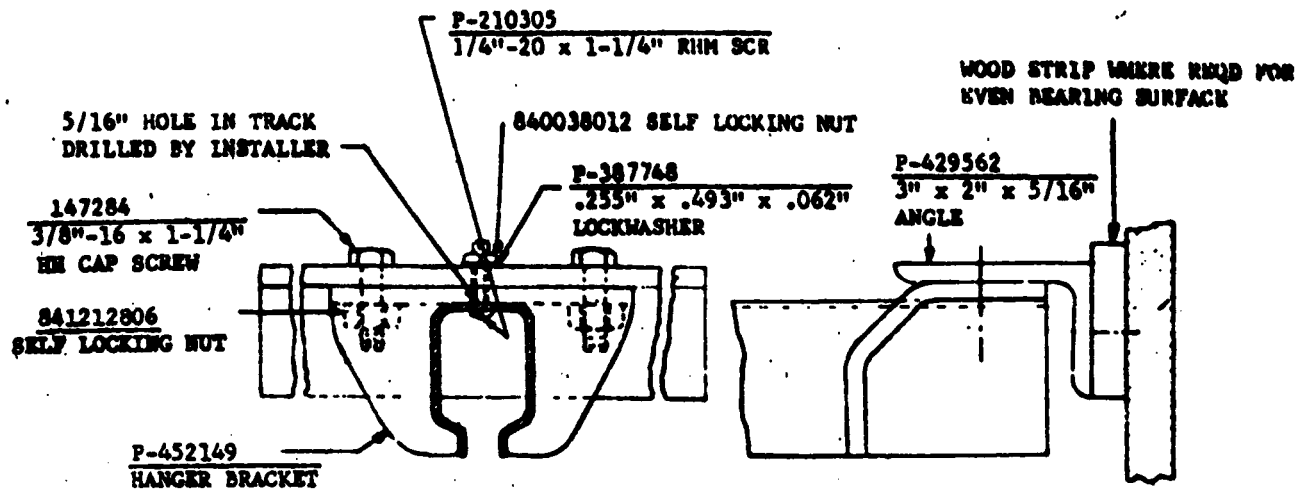


FIG. 28 LADDER TRACK SUPPORTED FROM WALL
(PAR. 5.61)
(BSP 800-614-159 FIG. 28)

6.12 Where differences in level of 1-1/2" to 2" between the ends of the run are experienced, the sloped portion of the track shall not be less than 20'-0" long. The track shall be installed as shown in Figure 11A. The ladder used in a sloping run of track shall be adjusted so that the steps are level at the midpoint of the slope. Differences in level of 1/2" or less may be taken care of by sloping the track between adjacent supports of the different levels.

6.2 The use of a tight line stretched between two ends of a run of track will facilitate the alignment. After obtaining the proper location of the two ends of the run, insert a 3/8" diameter screw (for example, P-160113) with head down, in the slot of the track at each end of the run. (The screws can be held in place with tape.) The line is then stretched between the ends of the track and suitably anchored, using the slots of the screws as guides. The intermediate sections of track are then aligned with the tight line as a guide.

6.3 The assembly and alignment of the track shall be such as to insure the proper operation of the ladder trolley and brake at all points.

7. BRACING

7.1 End Braces

7.11 End braces in accordance with Figure 24 or 25, to prevent lengthwise motion of the track, are required at each end where the distance between the top of the track support and the bottom of the auxiliary framing or other support is 10" or more. The preferred location for the end braces is shown in Figure 25.

7.111 When a line of track is extended, an end brace will be required at the end of the extension. This may be the existing end brace relocated or a new end brace if available. If a new end brace is used the existing end brace may be left in place.

7.2 Side Braces

- 7.21 Side braces in accordance with Figure 25 are required for ladder track where the distance between the top of the track supports and the bottom of the auxiliary framing or other support is 10" or more. Where this distance is 10" but less than 1'-3", provide a side brace at each end support and at each alternate intermediate support. Wherever possible, the side braces shall alternate on opposite sides of the track. Where this distance is 1'-3" or more, provide a side brace at every support, alternating the support on opposite sides of the track wherever possible.

8. RECONDITIONING EXISTING TRACKS FOR USE WITH LADDERS EQUIPPED WITH BRAKES

- 8.1 Where necessary, the track shall be reconditioned so that the ladder runs smoothly at all points along the track. It is very important that no offsets or burrs exist at the track joints as

such defects are liable to damage the brake shoe lining. It is also important that the interior and exterior surfaces of the track are free from all traces of oil, grease, or other lubricants which would reduce the friction of the brake. Clean with KS-7860 Petroleum Spirits.

- 8.2 Where the existing track is supported at a splice, the supports shall be removed and additional supports installed so that each piece of track adjacent to the splice is supported in accordance with Paragraph 5. The new splices shall be installed in accordance with Figure 8.
- 8.3 Braces shall be added to the existing track to meet the requirements outlined in Paragraph 7.
- 8.4 The nuts on all hanger rods and bolts used for the direct support of the track shall be drawn up tight.

9. VERIFICATION ITEMS

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par. No.	Fig. No.
9.1	<u>Lengths of Track</u>		
9.11	Installed in section 8' to 10' in length, in so far as practicable.	3.21	
9.12	A section less than 5' long used only at an intermediate location when ultimate length of track is installed.	3.211 3.213	
9.13	Shorter section of track at growing end when ultimate length of track is not installed but will be extended at some future date.	3.212	
9.14	Sufficient overhang beyond end bays at both ends of lineup.	3.22	
9.15	Where possible, 1'-3" minimum clearance between wall and end of track towards which ladders slopes.	3.221	27
9.2	<u>Height of Track</u>		
9.21	<u>Low-Type Auxiliary Framing</u>		
9.211	Attached to underside of auxiliary framing.	3.311	
9.22	<u>High-Type Auxiliary Framing</u>		
9.221	Located as high as cable rack will permit.	3.321	
9.222	Located as high as possible at distributing frames.	3.321	

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par. No.	Fig. No.
9.3	<u>Assembly</u>		
9.31	<u>Splices</u>		
9.311	Track not distorted by splice, track ends free of burrs and adjacent track sections in alignment with each other.	4.11,4.12	
9.312	Screw equipped with lockwashers.		8
9.313	Minimum of 2 screw threads protruding thru top of self-locking nut to insure proper engagement of the locking pin in screw thread.		8
9.314	Locking pin in proper position.		8
9.32	<u>Support Brackets</u>		
9.321	Brackets fitted to minimize lengthwise movement.	4.21	9
9.322	Shims used between track and old type hanger brackets, P-452148, to insure tight fit and proper alignment.	4.212	9
9.323	Old style brackets, P-450367, not reused when changes in track were made.	4.213	9
9.33	<u>Creeper Bolts</u>		
9.331	Creeper bolts installed in hanger brackets at both ends of continuous lines of track.	4.31	9,18,19
9.332	Additional bolts installed in hanger brackets associated with both end braces when used to support track from high-type auxiliary framing.	4.31	
9.333	Bolts located at other points of support near end of track when there is interference from hanger rods.	4.313	
9.334	Bolts of suitable length used where regular creeper bolts are too short.	4.314	18,19
9.34	<u>Self Locking Nuts</u>		
9.341	Installed at ends of all hanger rods and bolts used for the direct support of rolling ladders or ladder tracks.		10-19, 22-26,28
9.342	Minimum of 2 screw threads protruding thru top of self-locking nut to insure proper engagement of the locking pin in screw thread.		
9.343	Locking pin in proper position.	5.11	
9.4	<u>Support of Track</u>		
9.41	Supports spaced at approximately 5' (Max. 6') intervals; 6'-0-5/8" in Step-by-Step offices.	5.11	

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par. No.	Fig. No.
9.42	Cantilever extension of track beyond last support not exceeding limits specified.	5.12	27
9.43	At least 2 supports for each section of track supported from high-type framing.	5.211	
9.44	At least 1 support for intermediate sections and 2 supports for end sections supported from low-type framing or cable rack.	5.221	
9.45	Fastened to framing or ceiling in steel frame and concrete buildings per Figures 10 to 13.	5.31	10 to 13
9.46	Fastened to cable racks per Figures 14 to 18.	5.41	14 to 18
9.461	Track supports located not more than 1' from cable rack support.	5.41	
9.462	Not attached to cable racks mainly supported by offset hanger rods.	5.41	
9.463	Hex nuts installed on hanger rods above cable rack where tracks are supported from cable racks that are supported from hanger rods.	5.42	
9.464	Tracks supported under cable racks that are supported by low-type framing per Figure 11, 12 or 15.	5.43	11,12,15
9.465	Round head bolt, spanner clip, and pipe spacer used when cable rack cross strap interferes with regular "J" bolt.	5.44	
9.47	Fastened to lattice work per Figure 19.	5.51	19
9.48	In wood joist constructed buildings:	5.71	20,21,22 or 23
9.481	Track supported from timbers per Figure 20, 21, 22 or 23.		
9.482	Supports located approximately 3' (Max. 4') apart.		
9.5	<u>Level and Alignment</u>		
9.51	Approximately level or within sloping requirement where two levels of framing are encountered.	6.1	11A
9.52	Alignment such as to insure proper operation of ladder trolleys and brakes.	6.3	
9.6	<u>Bracing</u>		
9.61	End braces installed in accordance with Figure 24 or 25 where distance between top of track support and bottom of auxiliary framing or other support is 10" or more.	7.11	24 or 25
9.611	End brace installed at end of track extension.	7.111	
9.62	Side braces installed in accordance with Figure 25 where distance between top of track supports and bottom of auxiliary framing or other supports is 10" or more.	7.21	25

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par. No.	Fig. No.
9.621	Where distance is between 10" and 1' and 1'-3", a side brace at each end support and each alternate intermediate support, with braces alternating on opposite sides of track.		
9.622	Where distance is 1'-3" or more, a side brace at every support with braces alternating on opposite sides of the track.		
9.7	<u>Track Reconditioned For Use With Ladders Equipped With Brakes</u>		
9.71	Free movement of ladders at all points in track.	8.1	
9.72	Burrs removed and offsets corrected at track joints.	8.1	
9.73	Track free from oil, grease or other lubricant.	8.1	
9.74	Track not supported at splices.	8.2	
9.75	Braces added as required.	8.3	
9.76	All nuts on hanger rods and bolts used for the direct support of track drawn up tight.	8.4	

→ Indicates new or changed information

[Vertical line at side of paragraph indicates requirement.

Engineering Planning Manager
Common Installation and Services

Reason for Reissue:

1. To replace P-400299 SQ HM Bolt with P-417284 HH Cap Screw in Figures 10, 12-16, 23, 24, 25, and 28.
2. To replace P-401452 Hex Nut with ANCO Self Locking Nut 841212806 and to remove cotter pins in Figures 10, 11, 11A, 12-16, 18, 19, 22-25, 26, and 28.
3. To replace P-205261 Hex Nut with ANCO Self Locking Nut 841212822 and to remove cotter pins in Figures 10, 12-15, 23-25.
4. To replace P-125614 Hex Nut with ANCO Self Lock Nut 841212814 and to remove cotter pins in Figures 14-18.
5. To replace P-400300 SQ HM Bolt with P-147285 HH Cap Screw in Figures 16, 18, 19.
6. To replace P-160838 SQ HM Bolt with P-422083 HH Cap Screw in Figure 24.
7. To replace P-403233 SQ HM Bolt with P-160880 HH Cap Screw in Figures 22 and 23.
8. To replace P-400302 6Q HM Bolt with P-160842 HH Cap Screw in Figure 25.
9. Paragraph 4.4 removed, 5.44, 9.34, and 9.465 changed