

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G55.145.1
Issue 1, April, 1951
AT&T Co Standard

CENTRAL OFFICE CABLE VAULTS

LIST OF UNISTRUT MATERIAL

Contents	Page
1. General	1
2. Ordering Information and List of Material.....	1
3. Parts Used in Assembly.....	9
4. Tools	16

1. GENERAL

1.01 This section describes the Unistrut materials used in the steel framework which supports the cables in central office cable vaults. The individual parts and the sub-assemblies in which these parts appear most frequently as the framework is erected are listed and illustrated.

1.02 The methods used in assembly of the Unistrut frame are covered in G55.145.2.

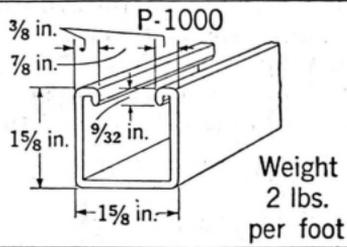
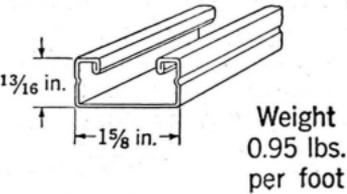
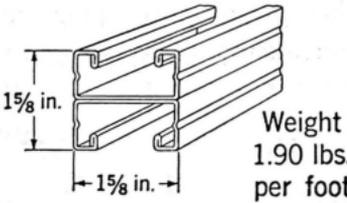
2. ORDERING INFORMATION AND LIST OF MATERIAL

2.01 Unless otherwise specified, Unistrut sections, inserts and fittings will be furnished in a green enamel finish and the nuts and bolts will be furnished cadmium plated. For use in special cases where severe moisture conditions may be encountered all of the material will be supplied with hot dip galvanizing if specified on the order.

2.02 A sketch of the basic piece parts, and an outline of their usage together with the necessary ordering information, is given below.

2.03 The numbers in the detail columns of certain of the tables following indicate the subassemblies of Part 3 in which the use of the fitting is illustrated.

STANDARD SECTIONS

PART NUMBER	NAME OF PART	USED FOR
 <p>P-1000</p> <p>Weight 2 lbs. per foot</p>	Section	Uprights and Cross Pieces
 <p>P-4000</p> <p>Weight 0.95 lbs. per foot</p>	Section	Cable Hanger Support and Rail Strap
 <p>P-4001</p> <p>Weight 1.90 lbs. per foot</p>	Section	Center Rail Straps in Alley Frames

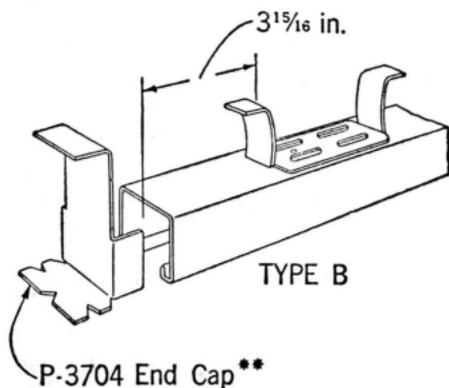
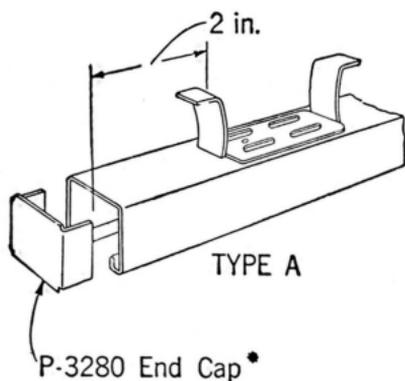
The above parts are available in 10 and 20 foot lengths, or they may be ordered cut to length as desired.

Method of wording orders:-

(Quantity), Section, Unistrut, (Part Number), (Length).

CONCRETE INSERTS

P-3000 SERIES



SHORT LENGTHS

PART NO.	LENGTH (Inches)	TYPE INSERT	WEIGHT (Pounds)
P-3249	3	B	.85
P-3250	4	B	1.0
P-3251	6	B	1.3
P-3252	8	B	1.6
P-3253	12	B	2.3
P-3254	16	A	2.7
P-3255	20	B	3.6
P-3256	24	A	4.0
P-3257	32	A	5.3
P-3258	40	A	6.6

LONG LENGTHS

PART NO.	LENGTH (Feet)	TYPE INSERT	WEIGHT (Pounds)
P-3259	4	A	7.9
P-3260	5	B	10.1
P-3261	6	A	11.7
P-3262	7	B	13.9
P-3263	8	A	15.6
P-3264	9	B	17.8
P-3265	10	A	19.5
P-3266	12	A	23.4
P-3267	14	A	27.3
P-3268	16	A	31.2
P-3269	18	A	35.1
P-3270	20	A	39.0

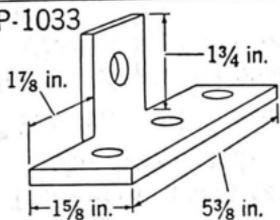
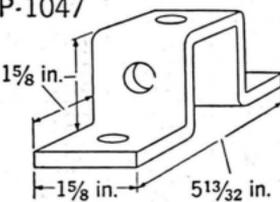
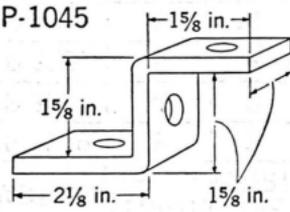
* Two furnished with each insert having type A ends

** Two furnished with each insert having type B ends

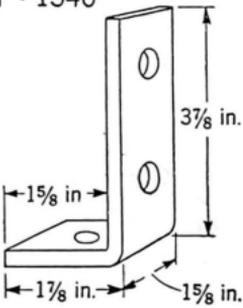
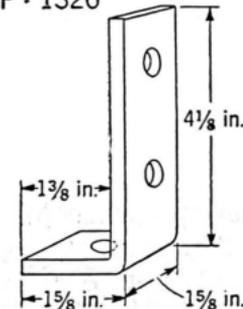
Method of wording orders:-

(Quantity), Insert, Concrete, Unistrut, (Part Number)

TEE PLATE, U AND Z SUPPORTS

PART NUMBER	NAME OF PART	USED IN DETAIL	USED FOR
P-1033 	Tee Plate	2	Fastening upright to floor inserts
P-1047 	U Support	3	Fastening upright to floor insert set on side of pier
P-1045 	Z Support	5	Fastening Standard Single Unistrut to ceiling or to wall
		9	Fastening cable hanger support to cross piece
		16	For insulating cable rack
All holes $\frac{17}{32}$ inch diameter Method of wording orders:- (Quantity), (Name of part), Unistrut (Part Number).			

ANGLES

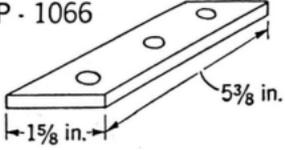
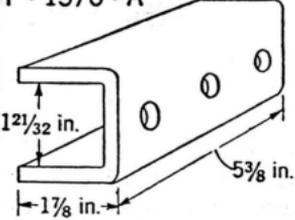
PART NUMBER	NAME OF PART	USED IN DETAIL	USED FOR
P - 1346 	Corner angle	1	Fastening upright to floor inserts
		4	Fastening upright to ceiling inserts
		7	Wall Brace, bracing cross piece against wall
		8	Fastening upright to cross piece
		14	Fastening rail strap support to cross piece
P - 1326 	Corner angle	6	Fastening upright to ceiling anchor
		14	Fastening rail strap to support

All holes $\frac{17}{32}$ inch diameter

Method of wording orders:

(Quantity), Angle, Corner, Unistrut, (Part Number).

SPLICE PLATES

PART NUMBER	NAME OF PART	USED IN DETAIL	USED FOR
P - 1066 	Splice plate	11	Making members continuous
		15	Fastening top rail strap to upright
P - 1376 - A* 	Splice plate clevis	10	Making members continuous

All holes $\frac{1}{32}$ inch diameter

* For P - 4000 Unistrut, part number is P - 4376 - A

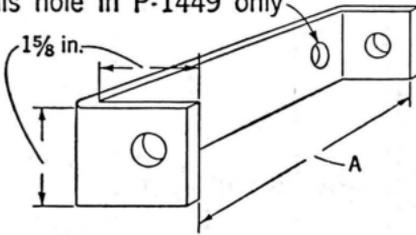
Method of wording orders:

(Quantity) - (Name of part), Unistrut (Part Number)

CLEVISES

PART NUMBER	NAME OF PART	USED IN DETAIL	USED FOR
P-1449 or P-1471	Inside clevis	12	Center rail strap connection
P-1363, P-1449, or P-1471		13	Outside rail strap connection

This hole in P-1449 only



Part Number	Inside Length
	A
P-1363	8 $\frac{1}{4}$ in.
P-1449	6 $\frac{1}{32}$ in.
P-1471	5 $\frac{1}{32}$ in.

Holes $\frac{1}{32}$ inch diameter

Method of wording orders:

(Quantity), Clevis, Inside, Unistrut (Part Number).

UNISTRUT CAP SCREWS

NAME	SIZE	USED FOR
Hex. Head Cap Screw	$\frac{1}{2}$ in. \times $\frac{1}{16}$ in.	Majority of Fittings
Hex. Head Cap Screw	$\frac{1}{2}$ in. \times $1\frac{1}{2}$ in.	Fastening Clevises through Cable Racks

These are $\frac{1}{2}$ inch in diameter, 13 threads per inch.

Method of wording orders:-

(Quantity), Screw, Cap, HH, Unistrut, (Size).

UNISTRUT NUTS

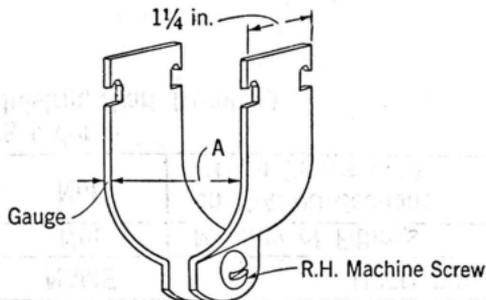
PART NUMBER	NAME	USED FOR
P-1010	Nut	Majority of Fittings
P-4010	Nut	on P-4000 Sections (Rail Straps etc.)

Method of wording orders:-

(Quantity), Nut, Unistrut, (Part Number).

CABLE HANGERS

Used for supporting Vertical and Horizontal Cable Runs
not resting on Cable Hooks



PART NUMBER	DIAMETER A (Inches)	GAUGE	(Size) R.H. MACH. SCREW	(Size) SQ. MACH. NUT	PART NUMBER	DIAMETER A (Inches)	GAUGE	(Size) R.H. MACH. SCREW	(Size) SQ. MACH. NUT			
P-2030	1	16			P-2049	3 ³ / ₈	12	5 ¹ / ₁₆ in. × 1 in.	5 ¹ / ₁₆ in.			
P-2031	1 ¹ / ₈				P-2050	3 ¹ / ₂						
P-2032	1 ¹ / ₄				14	1/4 in. × 3/4 in.				1/4 in.	P-2051	3 ⁵ / ₈
P-2033	1 ³ / ₈										P-2052	3 ³ / ₄
P-2034	1 ¹ / ₂										P-2053	3 ⁷ / ₈
P-2035	1 ⁵ / ₈	12	5 ¹ / ₁₆ in. × 1 in.	5 ¹ / ₁₆ in.	P-2054	4	11	3/8 in. × 1 ¹ / ₄ in.	3/8 in.			
P-2036	1 ³ / ₄				P-2055	4 ¹ / ₈						
P-2037	1 ⁷ / ₈				P-2056	4 ¹ / ₄						
P-2038	2				P-2057	4 ³ / ₈						
P-2039	2 ¹ / ₈				P-2058	4 ¹ / ₂						
P-2040	2 ¹ / ₄				P-2059	4 ⁵ / ₈						
P-2041	2 ³ / ₈				P-2060	4 ³ / ₄						
P-2042	2 ¹ / ₂				P-2061	4 ⁷ / ₈						
P-2043	2 ⁵ / ₈				P-2062	5						
P-2044	2 ³ / ₄				P-2063	5 ¹ / ₈						
P-2045	2 ⁷ / ₈				P-2064	5 ¹ / ₄						
P-2046	3				P-2065	5 ³ / ₈						
P-2047	3 ¹ / ₈				P-2066	5 ¹ / ₂						
P-2048	3 ¹ / ₄											

Method of wording orders:-

(Quantity) Clamp, Tubing, Unistrut, (Part Number).

(Quantity) Screw, Machine, RH, Unistrut, (Size).

(Quantity) Nut, Machine, Square, Unistrut, (Size).

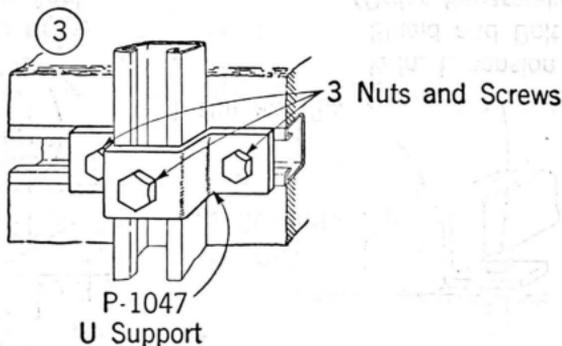
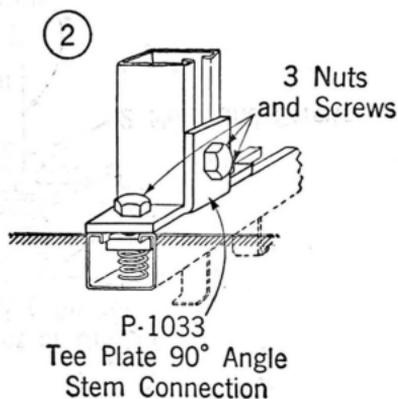
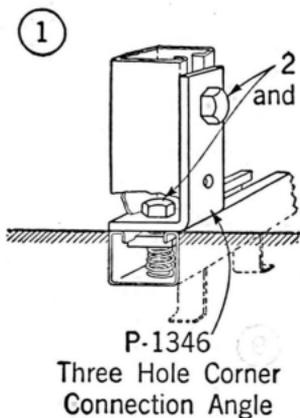
3. PARTS USED IN ASSEMBLY

3.01 The following illustrations show the parts required at the more common points of connection between Unistrut members.

3.02 The subassembly numbers shown encircled in the illustrations following are for the purpose of identifying connections on construction prints. Details of fittings appearing in these subassemblies are given in the tables of Part 2 opposite the corresponding number.

BASE CONNECTIONS

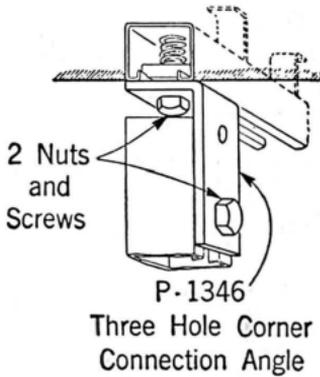
Uprights P-1000 Unistrut
Concrete Inserts P-3000 Unistrut Series



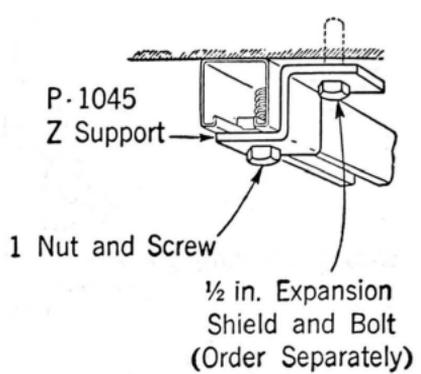
Nuts and Screws Shown are:-
P-1010 Unistrut Nut
Hex. Headed Cap Screw $\frac{1}{2}$ in. \times $\frac{15}{16}$ in.

CEILING ANCHORS FOR
SINGLE SIDED VAULT FRAME

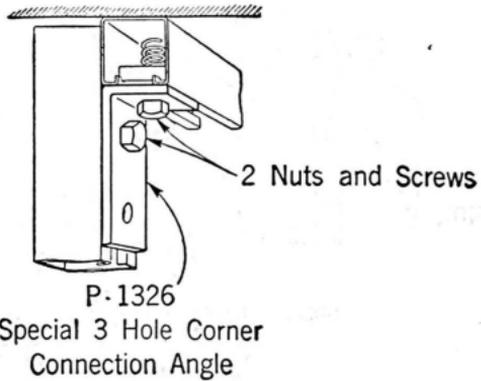
④ When Ceiling is Poured with Inserts



⑤ When Ceiling is Poured without Inserts



⑥ Attachment of Upright to Ceiling Anchor



Nuts and Screws Shown are:-

P-1010 Unistrut Nut

Hex. Headed Cap Screw 1/2 in. x 15/16 in.

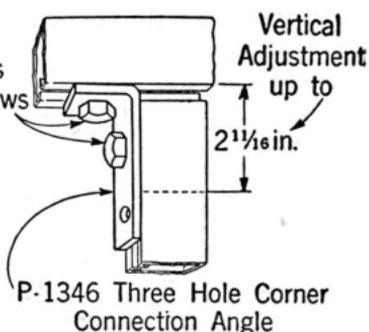
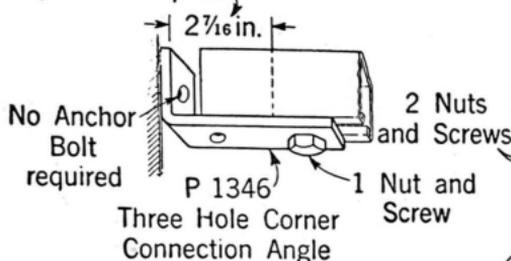
TOP CONNECTIONS

For Single and Multiple Alley Vault Frame

⑦ Wall Brace

⑧ Cross Piece Connections to Uprights

Adjustment up to

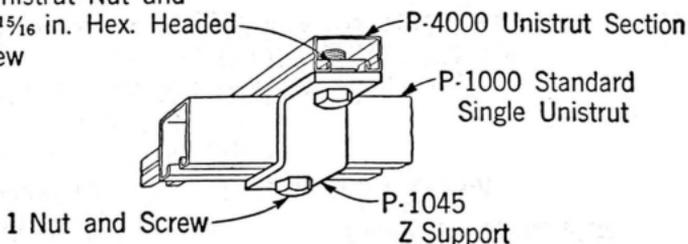


CABLE HANGER SUPPORT

⑨

Connection to Cross Piece

P-4010 Unistrut Nut and
1/2 in. x 1 5/16 in. Hex. Headed
Cap Screw



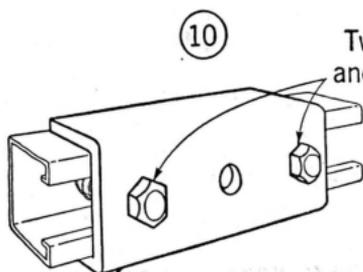
Nuts and Screws shown are:-

P-1010 Unistrut Nut

Hex. Headed Cap Screw 1/2 in. x 1 5/16 in.

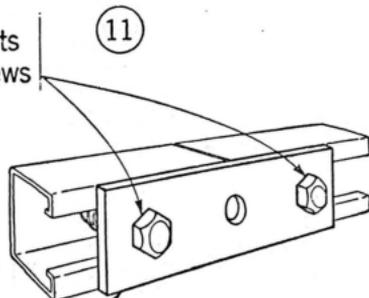
SPLICE PLATES

For Making Members Continuous



P-1376A*

5 3/8 in. Splice Plate Clevis



P-1066

Three Hole Splice Plate

Two Nuts and Screws

*For P-4000 Unistrut, Part Number is P-4376-A

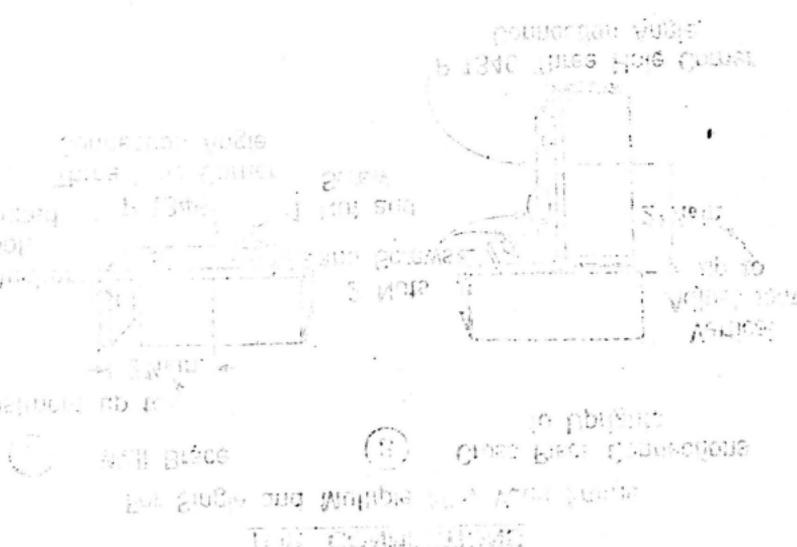
Nuts and Screws shown are:-

P-1010 Unistrut Nut

Hex. Headed Cap Screw 1/2 in. x 1 5/16 in.

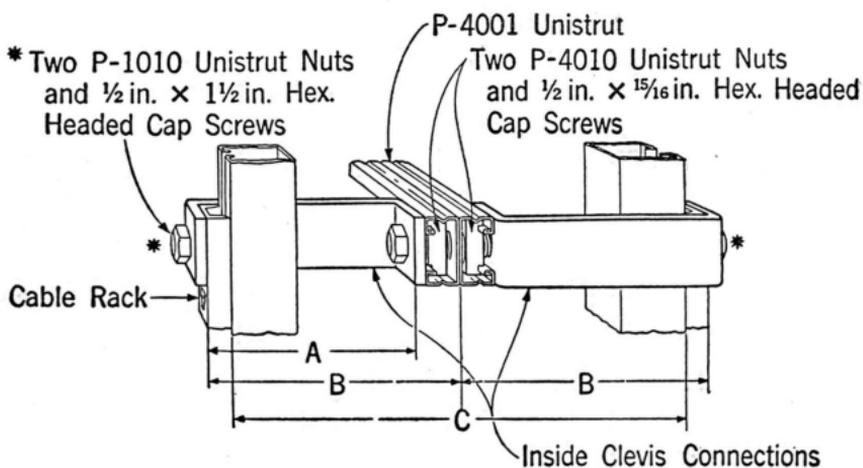
For P-4000 Unistrut, use P-4010 Unistrut Nut and

Hex. Headed Cap Screw 1/2 in. x 1 5/16 in.



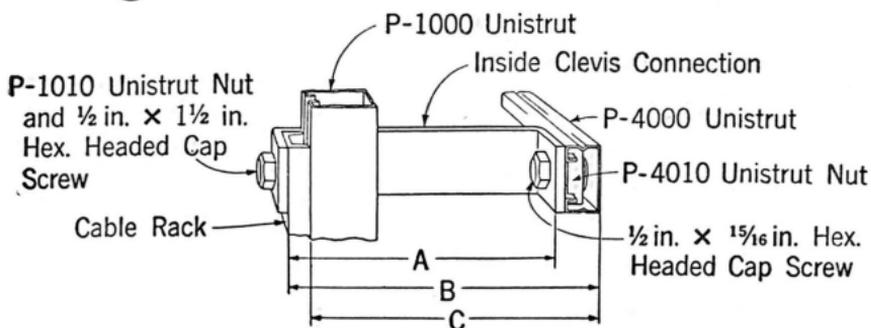
12

CENTER RAIL STRAP CONNECTION



Part Number	Inside Length	Rack to Center of Rail	Rack to Rack	Upright to Upright
	A	B	B + B	C
P-1471	5 1/32 in.	6 3/32 in.	12 3/16 in.	11 1/16 in.
P-1449	6 1 7/32 in.	7 19/32 in.	15 3/16 in.	14 1/16 in.

⑬ OUTSIDE RAIL STRAP CONNECTION

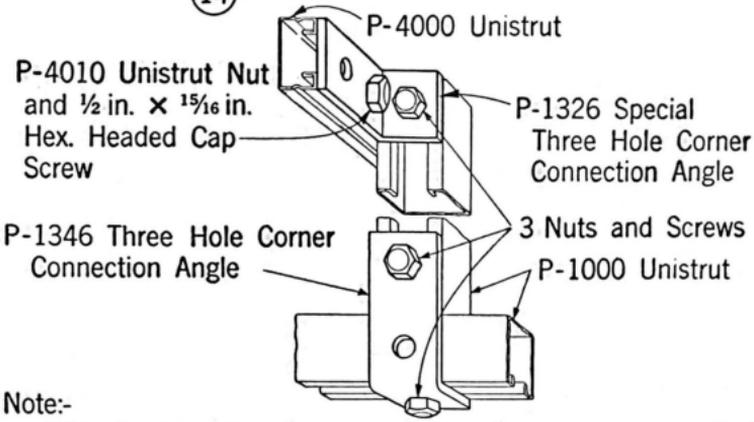


Part Number	Inside Length	Rack to Rail Outside	Upright to Rail Outside
	A	B	C
P-1471	5 ¹ / ₃₂ in.	6 ³ / ₃₂ in.	5 ¹ / ₃₂ in.
P-1449	6 ¹⁷ / ₃₂ in.	7 ¹⁹ / ₃₂ in.	7 ¹ / ₃₂ in.
P-1363	8 ¹ / ₄ in.	9 ⁵ / ₁₆ in.	8 ³ / ₄ in.

TOP RAIL STRAP

(14)

Fastened to Cross Piece

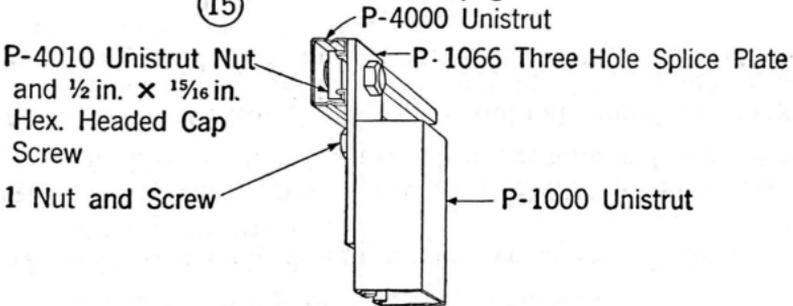


Note:-

With Double Sided Protector Frame directly above, use P-4001 for Rail Strap.

(15)

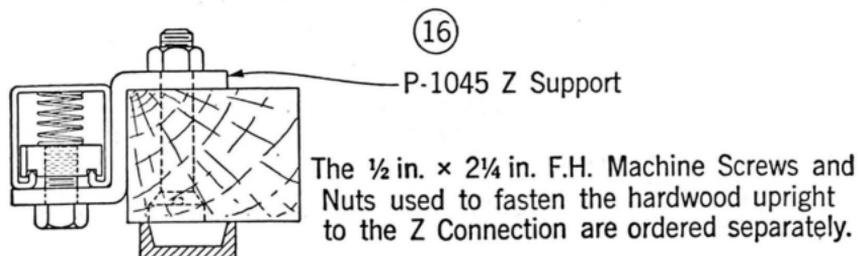
Fastened to Upright



Nuts and Screws Shown are:-

P-1010 Unistrut Nut, except where P-4010 Unistrut Nut is shown. Hex. Headed Cap Screw $\frac{1}{2}$ in. \times $\frac{15}{16}$ in.

INSULATING UPRIGHT AT VAULT ENTRANCE



4. TOOLS

4.01 The following special tools should be on hand for use in the assembly of Unistrut members:

Wrench— $\frac{3}{4}$ -inch double-ended wrenches of about 10 or 12 inches in length, or

Ratchet Wrench—The work of assembling the parts can be facilitated by the use of a suitable ratchet wrench.

Hack-Saw—Although the longitudinal members may be ordered cut to the desired length by the supplier, a metal cutting hack-saw should be on hand for any cuts necessary during the assembly.

Spirit Level—For checking vertical and horizontal alignment of frame members.