Fig. 285 (Rev. 10/15) (Concluded)
(New 10/73)

PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG, SINGLE PILE—FLATCARS, 89 FT

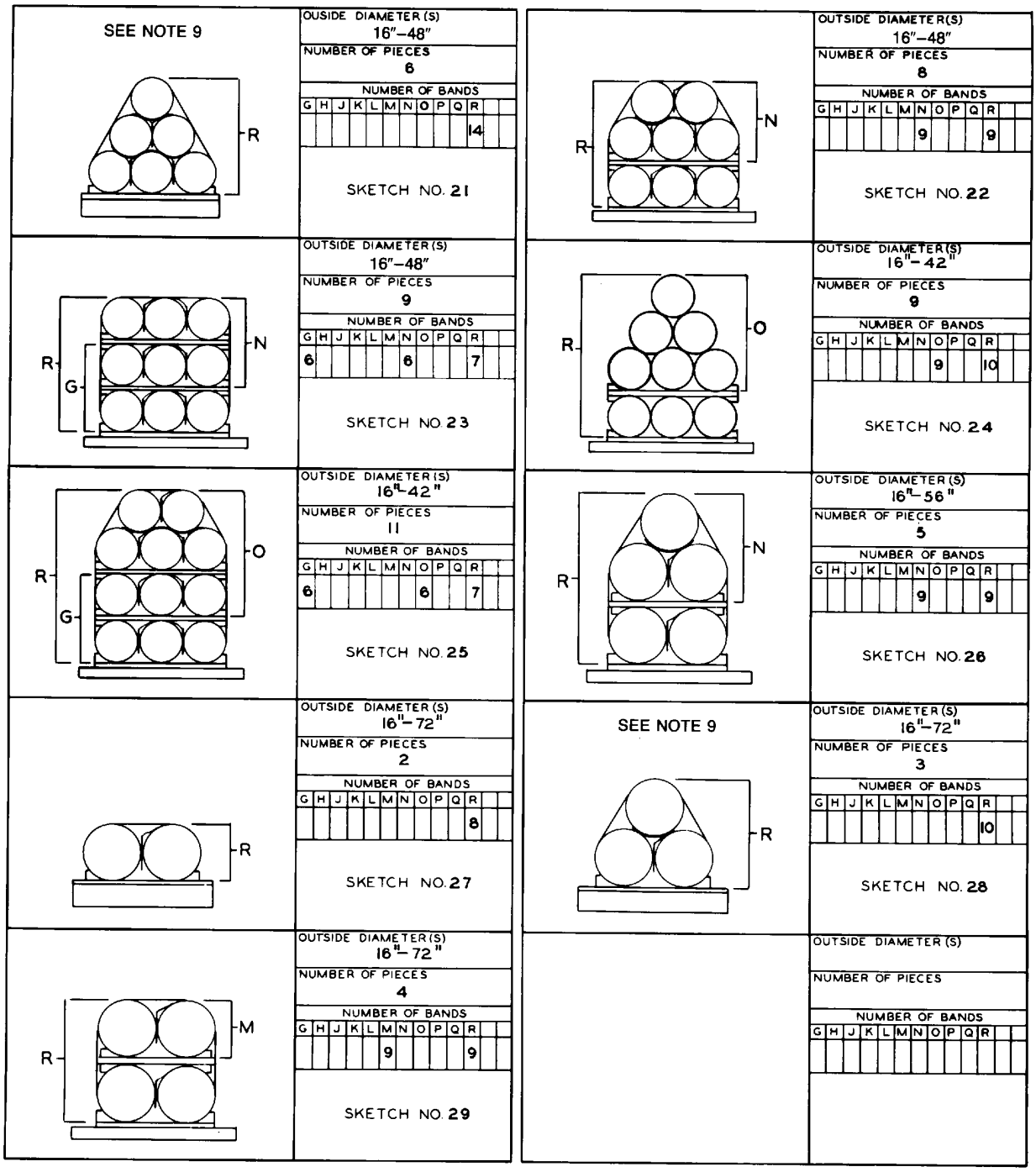
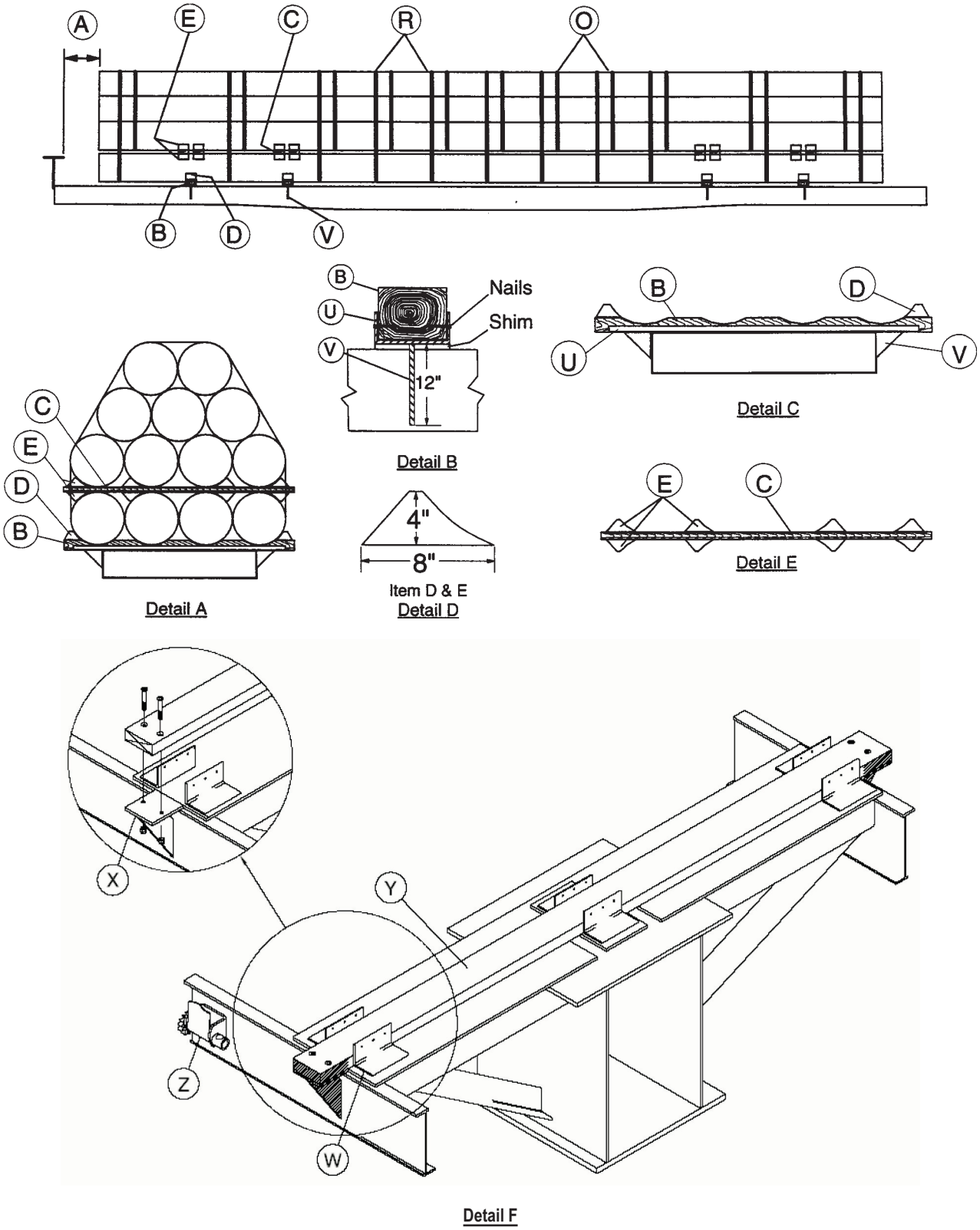


Fig. 298 (Rev. 11/15)
(New 11/97)

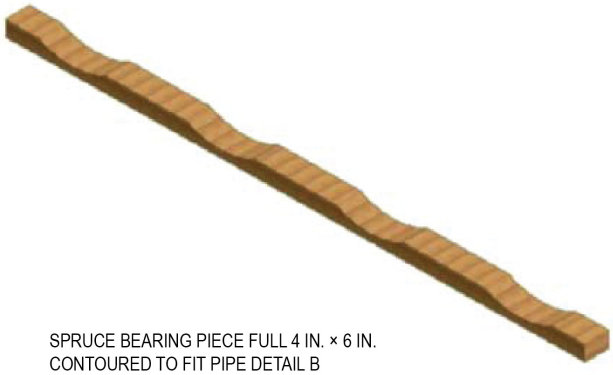
PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG—FLATCARS, 89 FT, WITH CUSHIONING DEVICES AND FIXED CONTOURED BEARING PIECES



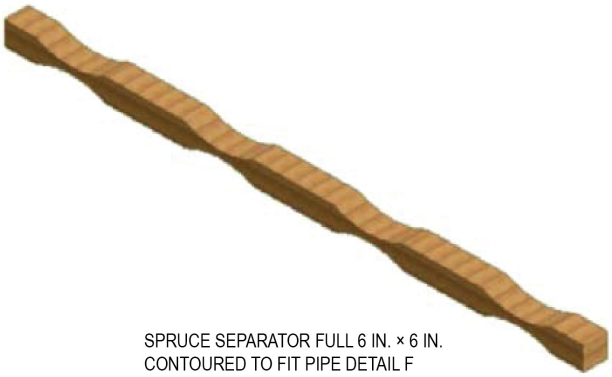
IMPLEMENTED 11/2015

Fig. 298 (Rev. 11/15) (Continued)
(New 11/97)

PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG—FLATCARS, 89 FT, WITH CUSHIONING DEVICES AND FIXED CONTOURED BEARING PIECES



SPRUCE BEARING PIECE FULL 4 IN. × 6 IN.
CONTOURED TO FIT PIPE DETAIL B



SPRUCE SEPARATOR FULL 6 IN. × 6 IN.
CONTOURED TO FIT PIPE DETAIL F

Item	No. of Pcs.	Description
A		Brake wheel clearance: see General Rule 2 in Section 1.
B	4 per pile.	Bearing pieces: hardwood or spruce, 4 in. × 6 in., contoured 2 in. deep to fit radius of pipe, length about equal to width of load. Item D chock blocks optional. Secure to car floor with a minimum of ten 7-in. nails or two 3/4-in. bolts. Locate bearing pieces approximately 8 ft and 18 ft from each end of pile. When extended more than 4 in. beyond edge of car floor, Items U and V must be used. When coated pipe is loaded, rubber tire treads or rubber belting must be applied to top surface of bearing pieces as required in Note 8.
C	Minimum of 8 between each layer not nested.	Separators: hardwood, 2 in. × 6 in., length about equal to width of load and sufficient to apply Item E chock blocks. Locate two above and in line with each Item B between each tier not nested. Separator: 6 in. × 6 in. contoured to a maximum of 2 in. top and bottom may be used as an alternate.
Alt C	Minimum of 8 between each layer not nested.	Separators: spruce, full 6 in. × 6 in., contoured 2 in. deep to fit radius of pipe as illustrated in Detail F. Length about equal to width of load. Locate two above and in line with each Item B between each tier not nested.
D	2 each Item B.	Chocks: hardwood, 4 in. × 6 in. × 8 in., cut to fit contour of pipe. Locate one on each end of Items B to contact outside pipe. Secure each to Item B using six 16-D nails. (Optional when Alt C is used.)
E	As required for Item C.	Chocks: hardwood, 4 in. × 6 in. × 8 in., may be cut to fit contour of pipe or cut wedge-shaped. Locate one on each end, top and bottom of each Item C. On the Item C separators at each end of the pile, locate additional chocks top and bottom and against the outside of each interior length of pipe as illustrated in Detail A. Secure each to Item C using six 16-D nails.
F	As required.	Vertical separators and protective material: plywood, hardwood, nylon rope, or hard rubber that will not easily compress to be placed vertically between pipe to avoid contact. Use optional.
G thru R	See banding tables on sketches.	High tensile bands: 2 in. × .044 in. All bands passing around bottom of load between end bearing pieces Items B should be as close as possible without touching and centered between bearing pieces. All others should be equally spaced but at least 3 ft from bearing pieces. Intermediate bands above the bottom layer should be located near overall bands but as far from separators Item C as practical.
G	"	To encircle bottom two tiers.

IMPLEMENTED 11/2015

Fig. 298 (Rev. 11/15) (Continued)
(New 11/97)

PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG—FLATCARS, 89 FT, WITH CUSHIONING DEVICES AND FIXED CONTOURED BEARING PIECES

Item	No. of Pcs.	Description
H	"	To encircle bottom three tiers.
J	"	To encircle bottom four tiers.
K	"	To encircle tiers 2 and 3.
L	"	To encircle tiers 2, 3, and 4.
M	"	To encircle top tier only.
N	"	To encircle top two tiers.
O	"	To encircle top three tiers.
P	"	To encircle top four tiers
Q	"	To encircle top five tiers.
R		To encircle all tiers.
U	1 per each Item B when required.	Bearing piece channels: steel channel, 8 in. × 2 1/4 in. - C-8. Locate crosswise of car so as to support Item B bearing pieces when extended beyond sides of car by 6 in. or more. When used, length must be one piece and must extend a distance equal to or greater than 28% of the pipe diameter beyond the vertical center line of the outside pipe sections, but no wider than the load. Secure to car by welding, or with ten 20-D nails to floor through holes drilled in base of channel. When channel is used, secure Item B with four 20-D nails through holes drilled in each side of channel as depicted. See Details B and C.
V	2 each Item U.	Channel supports: steel plate, triangular in shape, 12 in. high × 1/2 in. thick. To be applied when the minimum required Item U channel length extends 10 in. or more beyond the side of the car. The length of channel support to be equal to 70% of the overhanging portion of Item U. Locate centered under the outside end of each Item U channel. Attach by welding to both the channel and the car side. See Details B and C.
Alternate method when Item B bearing pieces extend beyond car sides by 6 in. or more		
W	6 per Item B.	Retaining steel angle: L4 in. × 3 in. × 1/4 in. × 8 in., attached by welding to steel car deck. See Detail F.
X	2 per Item B.	Side extension support: 1/2 in. thick steel plate and triangular plate welded to car side. See Detail F.
Y	1 per Item B.	Hardwood: 2 in. × 6 in., length about equal to width of load and secured to Item X with four 1/2 in. bolts and self-locking nuts. See Detail F.
Z	2 per pile.	Tie-down assemblies: consisting of ratchet and polyester woven straps, 4 in. wide with 20,000 lbs minimum break strength. Locate winch near bearing piece where practical. Place straps over bottom layer of pipes and anchor to opposite side of car. Winch taut using a minimum 30 in. bar. See Detail F.

IMPLEMENTED 11/2015

Fig. 298 (Rev. 11/15) (Continued)
(New 11/97)

PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG—FLATCARS, 89 FT, WITH CUSHIONING DEVICES AND FIXED CONTOURED BEARING PIECES

Notes and Additional Requirements:

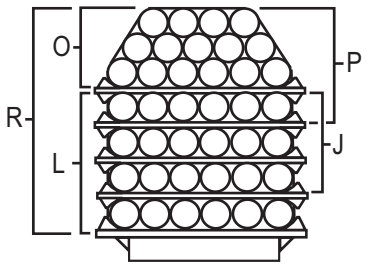
1. This figure is designed and intended for nominal pipe lengths of 80 ft (–15 ft). Random-length variations are acceptable provided all other criteria of this figure are met (see Note 2 and Note 7).
2. Longer-length pipe must be located on the bottom layer of the load. Place pipe shorter than 65 ft on the top two tiers, unless complying with Note 14. Length of pipe to be no less than 20 ft.
3. Bands are sufficient for loads up to 140,000 lb. Add one band of each designation on load sketch used for each additional 20,000 lb or less of load weight.
4. When short pipe lengths are loaded on the top two tiers (see Note 2), place two extra bands that encircle the top two-thirds of the pile to include the shortest pipe length. A short length of pipe is defined as 15 ft less than the longest pipe.
5. Spruce is acceptable for use as a substitute for hardwood items in this figure. See Detail C and F.
6. Bearing pieces and separators shown are sufficient for loads up to a maximum of 180,000 lb.
7. Pipe must be centrally located on car at origin. Coated pipe must have a minimum of 4 ft void space and bare pipe a minimum 3 ft void space between end of load and end of car, except on cars equipped with bulkheads.
8. When pipe is coated, rubber tire treads (not shown in drawings) must be applied to the top of all Item B bearing pieces and Item D chock blocks to retard pipe movement. Tire tread must be of one piece with an average tread depth of 1/8 in. and wide enough to fully cover the width of the bearing piece and chocks. Rubber must be applied with tread facing pipe and secured with headed nails no less than 8-D. A sufficient number of nails must be used to prevent displacement under pipe movement. After application of the rubber, a 1/8-in.-wide groove must be cut crosswise of the tire tread at the bottom of each contour radius deep enough to allow water to drain from the tread. May be substituted with rubber belting. Item D optional when Alt C is utilized.
9. Item B bearing pieces (or Item U channels) must be applied on the same horizontal plane to minimize car camber and insure contact between pipe and all bearing pieces. They may be shimmed with exterior grade plywood, hardwood lumber, or steel of sufficient thickness to achieve level. Shims must be the full width of the bearing piece or channel, whichever is applicable, and secured to prevent displacement.
10. More pieces per tier (width of load) may be loaded if the same end configuration and number of bands required by all sketches are applied as indicated.
11. When bearing pieces and separators are fully contoured and used together, Items D and E chocks are not required.
12. All banding should be equally spaced throughout the entire pile.
13. Maximum two pipe lengths can be loaded end to end (double-ended) on the top two tiers. The distance between the pipe must be a minimum of 12 in. and a maximum of 24 in. Pipe that is double-ended can be no longer than the pieces directly beneath it.
14. Maximum two pipe lengths can be loaded end to end (double-ended) on the bottom layer and must be equal to the length of pipes above it. The distance between the pipe must be a minimum of 12 in. and a maximum of 24 in. Outside pipe must be a single piece and be the full length of the load.
15. Sweet gum is an acceptable substitute for hardwood in this figure.

Reference the General Rules in Section No. 1 of the *Open Top Loading Rules Manual* for additional details.

IMPLEMENTED 11/2015

Fig. 298 (Rev. 11/15) (Concluded)
(New 11/97)

PIPE, STEEL, BARE, COATED, OR WRAPPED, 16 IN. TO 72 IN. O.D., 80 FT LONG—FLATCARS, 89 FT, WITH CUSHIONING DEVICES AND FIXED CONTOURED BEARING PIECES



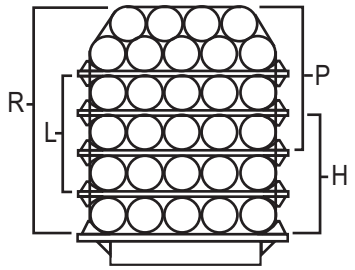
OUTSIDE DIAMETER(S)
16" – 20"

NO. OF PIECES
39

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
		4		4			3	4		5

SKETCH NO. 1



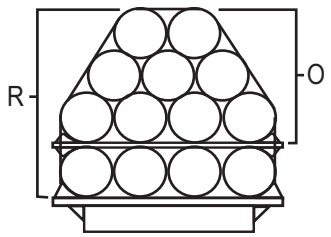
OUTSIDE DIAMETER(S)
16" – 24"

NO. OF PIECES
29

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
	4			4				4		7

SKETCH NO. 2



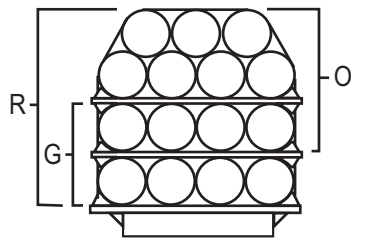
OUTSIDE DIAMETER(S)
16" – 36"

NO. OF PIECES
13

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
							9			9

SKETCH NO. 3



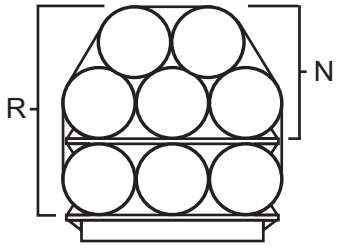
OUTSIDE DIAMETER(S)
16" – 36"

NO. OF PIECES
15

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
6							6			6

SKETCH NO. 4



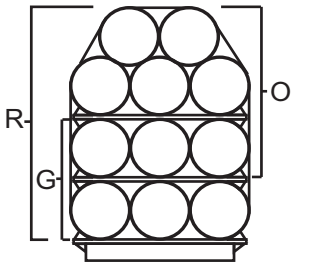
OUTSIDE DIAMETER(S)
16" – 48"

NO. OF PIECES
8

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
						9				9

SKETCH NO. 5



OUTSIDE DIAMETER(S)
16" – 42"

NO. OF PIECES
11

NUMBER OF BANDS

G	H	J	K	L	M	N	O	P	Q	R
6							6			7

SKETCH NO. 6

IMPLEMENTED 11/2015