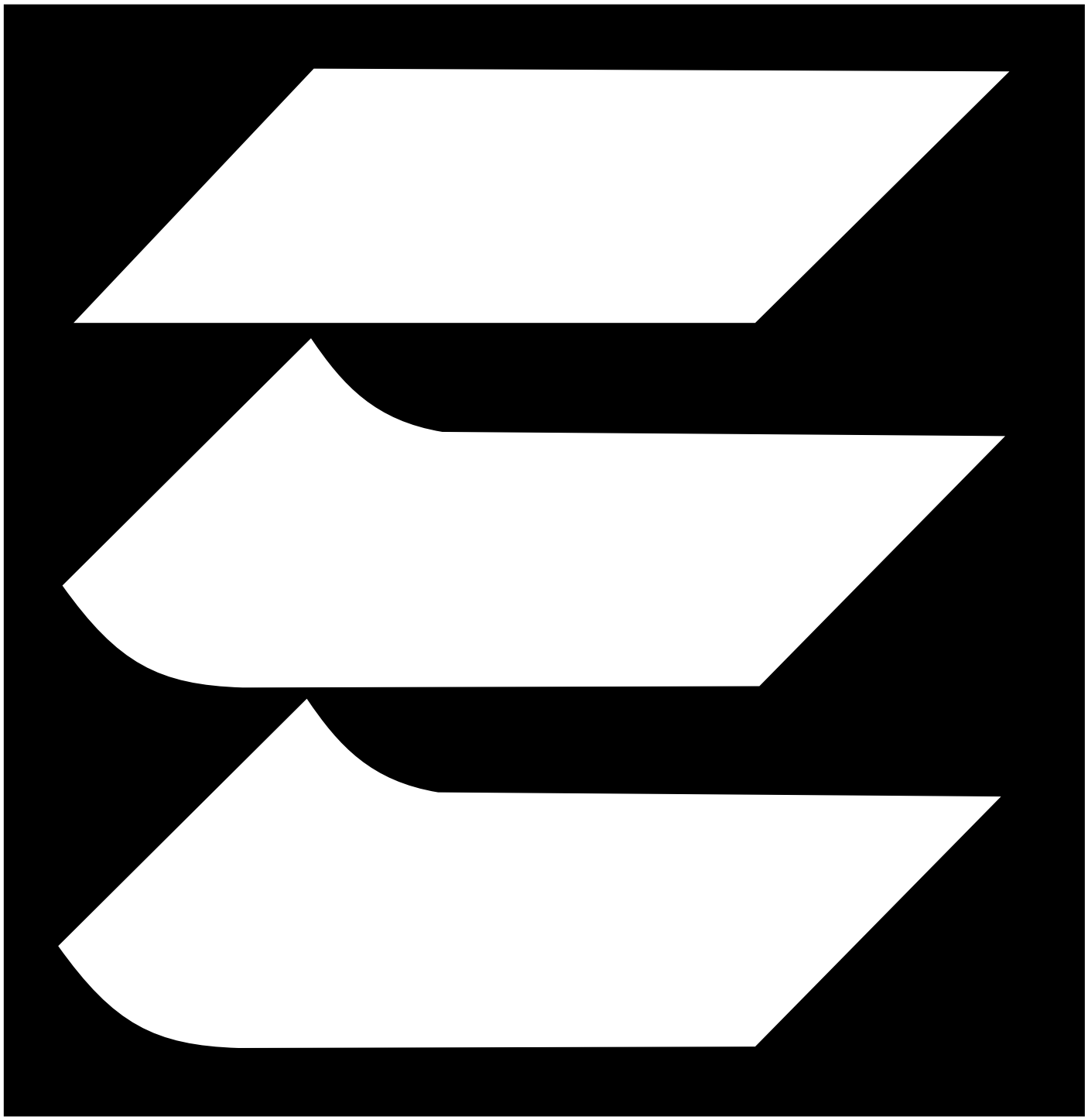
Eastern Sheet Metal

Field Installed
OVAL REINFORCEMENT



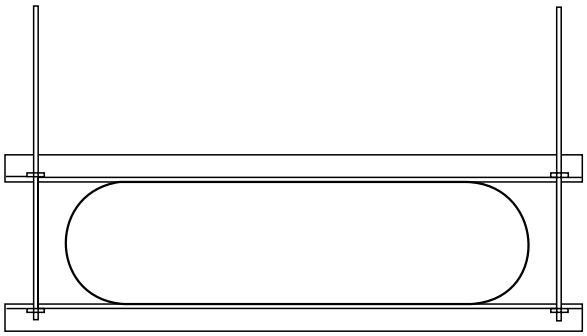
SPIRAL PIPE & FITTINGS

Eastern Sheet Metal

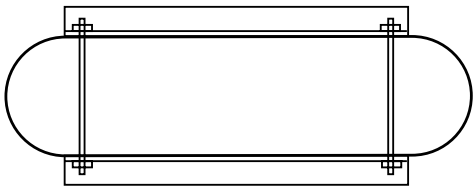
Field Installed
OVAL REINFORCEMENT

Flat oval duct has considerably less flat surface that is susceptible to vibration and requires less reinforcement than a corresponding size of rectangular duct. The deflection of the flat oval duct under pressure is related to the flat span rather than the overall width of the duct. Reinforcement for flat sides of oval duct shall be of the same size and spacing material as specified for rectangular duct. The ends of the reinforcement shall be tied with either external or internal tie rods as shown.

See the accompanying schedules for suggested size and spacing of reinforcements for positive 2", 3", 4" and 6" W.G. systems. These schedules should serve only as guides. The installing contractor should make the final determination of appropriate reinforcement, taking into consideration the spacing of hangers and their potential use as reinforcement, and interpretation of SMACNA standards for oval reinforcement.



DOUBLE ANGLE EXTERIOR REINFORCEMENT FOR OVAL DUCT



FLAT SPAN REINFORCEMENT WITH INTERNAL TIE RODS FOR OVAL DUCTS

USE OF TABLES

1) Find the minor axis of the oval size you wish to reinforce in the first row.

2) Go down the column for that minor axis until you reach the major axis of the oval size you wish to reinforce.

3) To the left of the major axis you will find the appropriate reinforcement.

For example, in the 2" W.G. Reinforcement table, a 16 x 38 oval indicates a D8 reinforcement; that is an angle with a reinforcement class of D at 8' intervals. NR=None Required.

2" W.G. Reinforcement

INITIAL SPIRAL SIZE	MINOR AXIS																
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
8	NR/10																
9	NR/12	NR/11															
10	NR/13	NR/12	NR/11														
11	NR/15	NR/14	NR/13														
12	B8/17	NR/15	NR/14	NR/13													
13	B8/18	NR/17	NR/16	NR/15	NR/14												
14	C8/20	B8/19	NR/17	NR/16	NR/15												
15	C8/21	B8/20	NR/19	NR/18	NR/17	NR/16											
16	C6/23	C8/22	B8/21	NR/19	NR/18	NR/17											
17	C6/24	C8/23	B8/22	NR/21	NR/20	NR/19	NR/18										
18	D8/26	C6/25	C8/24	B8/23	NR/21	NR/20	NR/19										
19	E8/28	C8/26	C10/25	B8/24	NR/23	NR/22	NR/21										
20	E8/29	D8/28	C8/27	C10/26	D8/25	NR/23	NR/22	NR/21									
21	E6/31	E8/30	C8/28	C10/27	NR/26	NR/25	NR/24	NR/23									
22	E6/32	E8/31	D8/30	C8/29	C10/28	NR/27	NR/25	NR/24									
23		E6/33	E8/32	C8/30	C10/29	NR/28	NR/27	NR/26	NR/25								
24		E6/34	E8/33	D8/32	C8/31	C10/30	NR/29	NR/27	NR/26								
25		E6/36	E6/35	E8/34	C8/32	C10/31	NR/30	NR/29	NR/28								
26		F5/37	E6/36	E8/35	D8/34	C8/33	C10/32	NR/31	NR/29	NR/28							
27		F5/39	E6/38	E6/37	E8/36	C8/34	C10/33	NR/32	NR/31	NR/30							
28		F5/41	F5/39	E6/38	E8/37	D8/36	C8/35	C10/34	NR/33	NR/31	NR/30						
29		F5/42	F5/41	E6/40	E6/39	E8/38	C8/36	C10/35	NR/34	NR/33	NR/32						
30		F4/44	F5/43	F5/41	E6/40	E8/39	D8/38	C8/37	C10/36	NR/35	NR/33	NR/32					
32		F4/47	F4/46	F5/45	F5/43	E6/42	E8/41	D8/40	C8/39	C10/38	NR/37	NR/35	NR/34				
34		H5/50	F4/49	F4/48	F5/47	F5/45	E6/44	E8/43	D8/42	C8/41	C10/40	NR/39	NR/37	NR/36			
36		H5/53	H5/52	G5/51	G5/50	F5/49	F5/47	E6/46	E8/45	D8/44	C8/43	C10/42	NR/41	NR/39	NR/38		
38		H4/56	H5/55	H5/54	G5/53	G5/52	F6/51	F6/49	E6/48	E8/47	D8/46	C8/45	C10/44	NR/43	NR/41	NR/40	
40		H4/59	H4/58	H5/57	H5/56	G5/55	G5/54	F6/53	F6/51	E8/50	E10/49	D8/48	C8/47	C10/46	NR/45	NR/43	NR/42
42		G3/63	H4/61	H4/60	H5/59	H5/58	G5/57	G5/56	F6/55	F6/53	E8/52	E10/51	D10/50	C8/49	C10/48	NR/47	NR/45
44		G3/66	G3/65	H4/63	H4/62	H5/61	H5/60	G5/59	G5/58	F6/57	F6/55	E8/54	E10/53	D10/52	C10/51	NR/50	NR/49
46		H3/69	G3/68	G3/67	H4/65	H4/64	H5/63	H5/62	G5/61	G5/60	F6/59	F6/57	E8/56	E10/55	F10/54	C10/53	NR/52
48		I4/72	H3/71	G3/70	G3/69	H4/67	H4/66	H5/65	H5/64	G5/63	G5/62	F6/61	F6/59	E8/58	E10/57	D10/56	C10/55
50			I4/74	I4/73	I5/72	G3/71	H4/69	H4/68	H5/67	H5/66	G5/65	G5/64	F6/63	F6/61	E8/60	E10/59	D10/58
52					I5/75	I5/74	I5/73	H5/71	H4/70	H5/69	H5/68	G5/67	G5/66	F6/65	F6/63	E8/62	E10/61
54							I5/76	I5/75	H5/73	H5/72	H5/71	H5/70	G5/69	G5/68	F6/67	F6/65	E8/64
56							I5/79	I5/78	I5/77	H5/75	H5/74	H5/73	H6/72	G5/71	G5/70	F6/69	F6/67
58								I4/81	I5/80	I5/79	H5/77	H5/76	H5/75	H6/74	G6/73	G6/72	F6/71
60										I5/82	I5/81	H5/79	H5/78	H5/77	H6/76	G6/75	G6/74
62										I4/85	I5/84	I5/83	H5/81	H5/80	H5/79	H6/78	G6/77
64												I5/86	I5/85	H5/83	H5/82	H5/81	H6/80
66														I5/87	H5/85	H5/84	H5/83
68															I5/89	H5/87	H5/86
70																I5/91	H5/89
72																	I5/93

MAJOR AXIS

3" W.G. Reinforcement

INITIAL SPIRAL SIZE	MINOR AXIS																
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
8	NR/10																
9	NR/12	NR/11															
10	NR/13	NR/12	NR/11														
11	NR/15	NR/14	NR/13														
12	B8/17	NR/15	NR/14	NR/13													
13	B8/17	NR/17	NR/16	NR/15	NR/14												
14	C6/20	B8/19	NR/17	NR/16	NR/15												
15	C6/21	B8/20	NR/19	NR/18	NR/17	NR/16											
16	D6/23	C6/22	B8/21	NR/19	NR/18	NR/17											
17	D6/24	C6/23	B8/22	NR/21	NR/20	NR/19	NR/18										
18	E6/26	D6/25	C6/24	B8/23	NR/21	NR/20	NR/19										
19	E6/28	D6/26	D8/25	B8/24	NR/23	NR/22	NR/21										
20	E6/29	E6/28	D6/27	C8/26	B8/25	NR/23	NR/22	NR/21									
21	F5/31	E6/30	D6/28	D8/27	C8/26	NR/25	NR/24	NR/23									
22	F5/32	E6/31	E6/30	D6/29	C8/28	C8/27	NR/25	NR/24									
23		F5/33	E6/32	D6/30	D8/29	C8/28	NR/27	NR/26	NR/25								
24		F5/34	E6/33	E6/32	D6/31	C8/30	C8/29	NR/27	NR/26								
25		F5/36	F5/35	E6/34	D6/32	D8/31	C8/30	NR/29	NR/28								
26		F4/37	F5/36	E6/35	E6/34	D6/33	C8/32	C8/31	NR/29	NR/28							
27		F4/39	F5/38	F5/37	E6/36	D6/34	D8/33	C8/32	NR/31	NR/30							
28		F4/41	F4/39	F5/38	E6/37	E6/36	D6/35	C8/34	C8/33	NR/31	NR/30						
29		F4/42	F4/41	F5/40	F5/39	E6/38	D6/36	C8/35	C8/34	NR/33	NR/32						
30		G4/44	F4/43	F4/41	F5/40	E6/39	E6/38	D6/37	C8/36	C8/35	NR/33	NR/32					
32		G4/47	G4/46	F4/45	F4/43	F5/42	E6/41	E6/40	D8/39	C8/38	C8/37	NR/35	NR/34				
34		H4/50	G4/49	G4/48	F4/47	F4/45	F5/44	E6/43	E6/42	D6/41	C840	C8/39	NR/37	NR/36			
36		H4/53	H4/52	H5/51	H5/50	F4/49	F4/47	F5/46	E6/45	E6/44	D6/43	C8/42	C8/41	NR/39	NR/38		
38		H3/56	H4/55	H4/54	H5/53	H5/52	G5/51	G5/49	F5/48	E6/47	E6/46	D6/45	C8/44	C8/43	NR/41	NR/40	
40		H3/59	H3/58	H4/57	H4/56	H5/55	H5/54	G5/53	G5/51	F6/50	E6/49	E6/48	D6/47	C8/46	C8/45	NR/43	NR/42
42		H3/63	H3/61	H3/60	H4/59	H4/58	H5/57	H5/56	G5/55	G5/53	F6/52	E6/51	E8/50	D6/49	C8/48	C8/47	NR/45
44		H3/66	H3/65	H3/63	H3/62	H4/61	H4/60	H5/59	H5/58	G5/57	G5/55	F6/54	E6/53	E8/52	D8/51	C8/50	C8/49
46		I3/69	H3/68	H3/67	H3/65	H3/63	H4/63	H4/62	H5/61	H5/60	G5/59	G5/57	F6/56	E6/55	E8/54	D8/53	C8/52
48		I3/72	I3/71	H3/70	H3/69	H3/67	H3/66	H4/65	H4/64	H5/63	H5/62	G5/61	G5/59	F6/58	E6/57	E8/56	D8/55
50			I3/74	I3/73	I4/72	H3/71	H3/69	H4/68	H5/67	H5/66	G5/65	H5/64	G5/63	G5/61	F6/60	E6/59	E8/58
52					I4/75	I4/74	I4/73	I5/71	H3/70	H4/69	H4/68	H5/67	H5/66	G5/65	G5/63	F6/62	F6/61
54							I4/76	I4/75	I5/73	I5/72	I5/71	H4/70	H5/69	H5/68	G5/67	G5/65	F6/64
56							I3/79	I4/78	I4/77	I5/75	I5/74	I5/73	I5/72	H5/71	H5/70	G5/69	G5/67
58								I3/81	I4/80	I4/79	I5/77	I5/76	I5/75	I5/74	H6/73	H6/72	G5/71
60										I4/82	I4/81	I5/79	I5/78	I5/77	I5/76	H6/75	H6/74
62										I3/85	I4/84	I4/83	I5/81	I5/80	I5/79	I5/78	H6/77
64												I4/86	I4/85	I5/83	I5/82	I5/81	I6/80
66														I4/87	I5/85	I5/84	I5/83
68															I4/89	I5/87	I5/86
70																I4/91	I5/89
72																	I4/93

MAJOR AXIS

4" W.G. Reinforcement

INITIAL SPIRAL SIZE	MINOR AXIS																	MAJOR AXIS
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	
8	NR/10																	
9	NR/12	NR/11																
10	B6/13	NR/12	NR/11															
11	C6/15	NR/14	NR/13															
12	C5/17	B6/15	NR/14	NR/13														
13	C5/18	C6/17	NR/16	NR/15	NR/14													
14	C5/20	C5/19	B6/17	NR/16	NR/15													
15	D5/21	C5/20	C6/19	NR/18	NR/17	NR/16												
16	E5/23	C5/22	C5/21	B6/19	NR/18	NR/17												
17	E5/24	D5/23	C5/22	C6/21	NR/20	NR/19	NR/18											
18	E5/26	E5/25	C5/24	C5/23	B6/21	NR/20	NR/19											
19	E5/28	E6/26	D6/25	C5/24	C6/23	NR/22	NR/21											
20	F5/29	E5/28	E6/27	D6/26	C5/25	B6/23	NR/22	NR/21										
21	F5/31	E5/30	E6/28	D6/27	B8/26	C6/25	NR/24	NR/23										
22	F5/32	F5/31	E5/30	E6/29	D6/28	B8/27	NR/25	NR/24										
23		F5/33	E5/32	E6/30	D6/28	B8/28	B10/27	NR/26	NR/25									
24		F5/34	F5/33	E5/32	E6/31	D6/30	B8/29	NR/27	NR/26									
25		G5/36	F5/35	E5/34	E6/32	D6/31	B8/30	B10/29	NR/28									
26		G4/37	F5/36	F5/35	E5/34	E6/33	D6/32	B8/31	NR/29	NR/28								
27		G4/39	G5/38	F5/37	E5/36	E6/34	D6/33	B8/32	B10/31	NR/30								
28		G4/41	G4/39	F5/38	F5/37	E5/36	E6/35	D6/34	B8/33	NR/31	NR/30							
29		G4/42	G4/41	G5/40	F5/39	E5/38	E6/36	D6/35	B8/34	B10/33	NR/32							
30		G3/44	G4/43	G4/41	F5/40	F5/39	E5/38	E6/37	D6/36	B8/35	NR/33	NR/32						
32		G3/47	G3/46	G4/45	G4/43	F5/42	F5/41	E5/40	E6/39	D6/38	B8/37	NR/35	NR/34					
34		H3/50	G3/49	G3/48	G4/47	G4/45	F5/44	F5/43	E5/42	E6/41	D6/40	B8/39	NR/37	NR/36				
36		H3/53	H3/52	H4/51	H4/50	G4/49	G4/47	F5/46	F5/45	E5/44	E6/43	D6/42	B8/41	NR/39	NR/38			
38		I3/56	H3/55	H3/54	H4/53	H4/52	H5/51	H5/49	F5/48	F5/47	E5/46	E6/45	D6/44	B8/43	NR/41	NR/40		
40		I3/59	I3/58	H3/57	H3/56	H4/55	H4/54	H5/53	H5/51	G6/50	F6/49	E5/48	E6/47	D6/46	B8/45	NR/43	NR/42	
42		I3/63	I3/61	I3/60	H3/59	H3/58	H4/57	H4/56	H5/55	H5/53	G6/52	F6/51	E6/50	E5/48	D6/48	B8/47	NR/45	
44		I3/66	I3/65	I3/63	I3/62	H3/61	H3/60	H4/59	H4/58	H5/57	H5/55	G6/54	F6/53	E6/52	E8/51	D8/50	B8/49	
46		I2.5/69	I3/68	I3/67	I3/65	I3/64	H3/63	H3/62	H4/61	H4/60	H5/59	H5/57	G6/56	F6/55	E6/54	E8/53	D8/52	
48		J3/72	I2.5/71	I3/70	I3/69	I3/67	I3/66	H3/65	H3/64	H4/63	H4/62	H5/61	H5/59	G6/58	F6/57	E6/56	E8/55	
50			J3/74	J3/73	J3/72	I3/71	I3/69	I3/68	H3/67	H3/65	H4/65	H4/54	H5/63	H5/61	G6/60	F6/59	E6/58	
52					J3/75	J3/74	J3/73	I4/71	I3/70	H3/69	H3/65	H4/67	H4/65	H5/65	H5/63	G5/62	F6/61	
54							J3/76	J3/75	I4/73	I4/72	I5/71	H3/70	H4/69	H4/58	H5/67	H5/65	G6/64	
56							J3/79	J3/78	J3/77	I4/75	I4/74	I5/73	I5/72	H4/71	H4/70	H5/69	H5/67	
58								J3/81	J3/80	J3/79	I4/77	I4/76	I5/75	I5/74	I5/73	I5/72	H5/71	
60										J3/82	J3/81	I4/79	I4/78	I5/77	I5/76	I5/75	I5/74	
62										J3/85	J3/84	J3/83	I4/81	I4/80	I5/79	I5/78	I5/77	
64												J3/86	J3/85	I4/83	I4/82	I5/81	I5/80	
66														J3/87	I4/85	I4/84	I5/83	
68															J3/89	I4/87	I4/86	
70																J3/91	I4/89	
72																	J3/93	

6" W.G. Reinforcement

INITIAL SPIRAL SIZE	MINOR AXIS																	MAJOR AXIS
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	
8	NR/10																	
9	NR/12	NR/11																
10	C5/13	NR/12	NR/11															
11	C5/15	NR/14	NR/13															
12	C4/17	C5/15	NR/14	NR/13														
13	C4/18	C5/17	NR/16	NR/15	NR/14													
14	D4/20	C4/19	C5/17	NR/16	NR/15													
15	E4/21	C4/20	C5/19	NR/18	NR/17	NR/16												
16	E4/23	D4/22	C4/21	C5/19	NR/18	NR/17												
17	E4/24	E4/23	C4/22	C5/21	NR/20	NR/19	NR/18											
18	F5/26	E4/25	D4/24	C4/23	C5/21	NR/20	NR/19											
19	F5/28	E5/26	E5/25	C4/24	C5/23	NR/22	NR/21											
20	F4/29	F5/26	E5/27	D5/26	C4/25	C5/23	NR/22	NR/21										
21	G4/31	F5/30	E5/28	E5/27	D5/26	C5/25	NR/24	NR/23										
22	G4/32	F4/31	F5/30	E5/29	D5/26	D5/27	B6/25	NR/24										
23		G4/33	F5/32	E5/30	E5/29	D5/28	C6/27	NR/26	NR/25									
24		G4/34	F4/33	F5/32	E5/31	D5/30	D5/29	B6/27	NR/26									
25		G4/36	G4/35	F5/34	E5/32	E5/31	D5/30	C6/29	NR/28									
26		H3/37	G4/36	F4/35	F5/34	E5/33	D5/32	D5/31	B6/29	NR/28								
27		H3/39	G4/38	G4/37	F5/36	E5/34	E5/33	D5/32	C6/31	NR/30								
28		H3/41	H3/39	G4/38	F4/37	F5/36	E5/35	D5/34	D5/33	B6/31	NR/30							
29		H3/42	H3/41	G4/40	G4/39	F5/38	E5/36	E5/35	D5/34	C6/33	NR/32							
30		H2.5/44	H3/43	H3/41	G4/40	F4/39	F5/38	E5/37	D5/36	D5/35	B6/33	NR/32						
32		H2.5/47	H2.5/46	H3/45	H3/43	G4/42	F4/41	F5/40	E5/39	D5/38	D5/37	B6/35	NR/34					
34		I2.5/50	H2.5/49	H2.5/46	H3/47	H3/45	G4/44	F4/43	F5/42	E5/41	D5/40	D5/39	B6/37	NR/36				
36		I2.5/53	I2.5/52	H3/51	H3/50	H3/49	H3/47	G4/46	F4/45	F5/44	E5/43	D5/42	D5/41	B6/39	NR/38			
38		I2.5/56	I2.5/55	I2.5/54	H3/53	H3/52	H4/51	H4/49	G4/48	F4/47	F5/46	E5/45	D5/44	D5/43	B6/41	NR/40		
40		I2.5/59	I2.5/58	I2.5/57	I2.5/56	H3/55	H3/54	H4/53	H4/51	H5/50	G5/49	F5/48	E5/47	D5/46	D5/45	B6/43	NR/42	
42		I2.5/63	I2.5/61	I2.5/60	I2.5/59	I2.5/58	H3/57	H3/56	H4/55	H4/53	H5/52	G5/51	F6/50	E5/49	D5/46	D5/45	B8/45	
44		I2.5/66	I2.5/65	I2.5/63	I2.5/62	I2.5/61	I2.5/60	H3/59	H3/56	H4/57	H4/55	H5/54	G5/53	F6/52	F6/51	D6/50	D5/46	
46		J2/69	I2.5/68	I2.5/67	I2.5/65	I2.5/64	I2.5/63	I2.5/62	H3/61	H3/60	H4/59	H4/57	H5/56	G5/55	F6/54	F6/53	D8/52	
48		J2.5/72	J2/74	I2.5/70	I2.5/69	I2.5/67	I2.5/66	I2.5/65	I2.5/64	H3/63	H3/62	H4/61	H4/59	H5/56	G5/57	F6/56	F6/55	
50			J2.5/74	J2.5/73	J3/72	I2.5/71	I2.5/69	I2.5/68	I2.5/67	I2.5/66	H3/65	H3/64	H4/63	H4/61	H5/60	G5/59	F6/56	
52					J2.5/75	J3/74	J3/73	I3/71	I2.5/70	I2.5/69	I2.5/66	H3/67	H3/66	H4/65	H4/63	H5/62	G5/61	
54							J3/76	J3/75	I3/73	I3/72	I4/71	I2.5/70	H3/69	H3/68	H4/67	H4/65	H5/64	
56							J2.5/79	J3/78	J3/77	I3/7S	I3/74	I4/73	I4/72	H3/71	H3/70	H4/69	H4/67	
58								J2.5/81	J3/60	J3/79	I3/77	I3/76	I4/75	I4/74	I4/73	I4/72	H4/71	
60										J3/82	J3/81	I3/79	I3/78	I4/77	I4/76	I4/75	I4/74	
62										J2.5/85	J3/84	J3/83	I3/61	I3/80	I4/79	I4/78	I4/77	
64												J3/86	J3/85	I3/83	I3/82	I4/81	I4/80	
66														J3/87	I3/85	I3/84	I4/83	
68															J3/89	I3/67	I3/66	
70																J3/91	I3/89	
72																	J3/93	