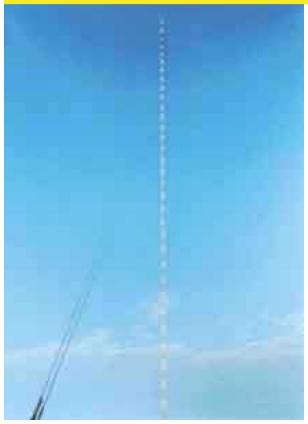
Structural Assemblies

Structural Assembly Characteristics

- *Fitted with a wide variety of zinc- or resin-attached end terminations, including open and closed strand and wire rope sockets, bridge sockets, and anchor sockets*
- *Available with spiral strand or structural wire rope*
- *Provided prestretched, measured, striped, and proofloaded upon request*
- *Used in applications such as main cables, suspender and wind cables of suspension bridges; tower guys; cable stays; supports and suspenders for cable roof structures; anchor and mooring lines*

Spiral Strand

- Arrangement of wires laid helically around a center wire to produce a symmetrical cross section
- Recommended for use as a load-carrying tension member where bending and flexibility are not major requirements
- Offers a high strength-to-weight ratio, high modulus of elasticity, and a small diameter-per-unit strength
- Manufactured to meet ASTM Specification A586
- Available with Class A, B. or C galvanized coating weights in diameters up to 5-1/2″



SS-265™

- High strength spiral strand with a nominal strength 15% higher than traditional spiral strand
- Manufactured to meet ASTM Specification A586
- Recommended for use in all spiral strand applications
- Decreases total weight of spiral strand system due to its higher strength-to-weight ratio
- Available with Class A galvanized coating weight in diameters through 3-3/4″

Structural Wire Rope

- Six strands laid helically around a core, such as another strand or another wire rope
- Recommended for use where bending ability is an important requirement
- Provides greater flexibility when compared with coarse strand constructions
- Manufactured to meet ASTM Specification A603
- Available with Class A, B. or C galvanized coating weights in diameters up to 7″

STRAND DIAMETER		APPROXIMATE WEIGHT (lb./ft.)		NOMINAL STRENGTH (tons)				STRAND DIAMETER		APPROX. WEIGHT (lb./ft.)		NOMINAL STRENGTH (tons)			
				SPIRAL STRAND			SS-265					SPIRAL STRAND			SS-265
inches	mm.	SPIRAL STRAND	SS-265	Class A	Class B*	Class C*	Class A	inches	mm.	SPIRAL STRAND	SS-265	Class A	Class B*	Class C*	Class A
1/2	13.0	0.52	--	15.0	14.5	14.2	--	2-5/16	59.0	11.2	11.0	327	322	317	376
9/16	14.5	0.66	--	19.0	18.4	18.0	--	2-3/8	60.0	11.7	11.6	344	339	334	396
5/8	16.0	0.82	--	24.0	23.3	22.8	--	2-7/16	62.0	12.5	12.2	360	355	349	414
11/16	18.0	0.99	--	29.0	28.1	27.5	--	2-1/2	64.0	12.8	12.9	376	370	365	432
3/4	19.0	1.18	1.16	34.0	33.0	32.3	39.1	2-9/16	65.0	13.6	13.6	392	386	380	451
13/16	21.0	1.39	1.36	40.0	38.8	38.0	46.0	2-5/8	67.0	14.5	14.4	417	411	404	480
7/8	22.0	1.61	1.59	46.0	44.6	43.7	52.9	2-11/16	68.0	15.2	15.0	432	425	419	497
15/16	24.0	1.85	1.85	54.0	52.4	51.3	62.1	2-3/4	70.0	15.9	15.6	452	445	438	520
1	26.0	2.10	2.12	61.0	59.2	57.9	70.1	2-7/8	74.0	17.4	17.2	494	486	479	568
1-1/16	27.0	2.37	2.36	69.0	66.9	65.5	79.4	3	76.0	18.9	18.8	538	530	522	618
1-1/8	29.0	2.66	2.63	78.0	75.7	74.1	89.7	3-1/8	79.0	20.5	20.4	584	575	566	672
1-3/16	30.0	2.96	2.91	86.0	83.4	81.7	98.9	3-1/4	83.0	22.2	21.8	625	616	606	719
1-1/4	32.0	3.28	3.23	96.0	94.1	92.2	110	3-3/8	86.0	23.9	23.6	673	663	653	774
1-5/16	33.0	3.62	3.59	106	104	102	122	3-1/2	89.0	25.7	25.5	724	713	702	832
1-3/8	35.0	3.97	3.94	116	114	111	133	3-5/8	92.0	27.6	27.1	768	756	745	883
1-7/16	37.0	4.34	4.29	126	123	121	145	3-3/4	96.0	29.5	29.4	822	810	797	934
1-1/2	38.0	4.73	4.66	138	135	132	158	3-7/8	99.0	31.5	--	878	865	852	--
1-9/16	40.0	5.13	5.04	150	147	144	172	4	103.0	33.6	--	925	911	897	--
1-5/8	42.0	5.55	5.45	162	159	155	186	4-1/8	105.0	35.7	--	985	**	**	--
1-11/16	43.0	5.98	5.92	176	172	169	202	4-1/4	109.0	37.9	--	1,002	**	**	--
1-3/4	45.0	6.43	6.39	188	184	180	216	4-3/8	111.0	40.2	--	1,108	**	**	--
1-13/16	46.0	6.90	6.80	202	198	194	232	4-1/2	115.0	42.5	--	1,173	**	**	--
1-7/8	48.0	7.39	7.26	216	212	207	248	4-5/8	117.0	44.9	--	1,239	**	**	--
1-15/16	49.0	7.89	7.75	230	226	221	264	4-3/4	122.0	47.4	--	1,306	**	**	--
2	52.0	8.40	8.23	245	241	238	282	4-7/8	124.0	49.9	--	1,376	**	**	--
2-1/16	53.0	8.94	8.79	261	257	253	300	5	128.0	52.5	--	1,448	**	**	--
2-1/8	54.0	9.49	9.39	277	273	269	319	5-1/4	133.0	57.9	--	1,596	**	**	--
2-3/16	56.0	10.1	10.0	293	289	284	337	5-1/2	140.0	63.5	--	1,752	**	**	--
2-1/4	58.0	10.5	10.5	310	305	301	356								

Spiral Strand and SS-265

Based on Class A coatings, the minimum moduli of elasticity of the spiral strand are shown below. For heavier coatings, please consult WW's Engineering Department.

1/2" to 2-3/16" ..... 24,000,000 psi
2-5/8" to 4" ..... 23,000,000 psi
4-1/8" & larger ..... 22,000,000 psi

**Nominal strengths are based on furnishing Class B or Class C coating weights on the outside wires with Class A coating on the inside wires. The heavier Class B and Class C zinc coatings reduce the steel metallic area, accounting for the slightly lower nominal strengths.*

***For strength information, please contact WW's Sales or Engineering Department.*

Structural Assemblies

Rope Diameter		Approx. Weight (lb./ft.)	Metallic Area (in^2)	Nominal Strength (tons)			Rope Diameter		Approx. Weight (lb./ft.)	Metallic Area (in^2)	Nominal Strength (tons)		
inches	mm.			Class A Coating	Class B Coating*	Class C Coating*	inches	mm.			Class A Coating	Class B Coating*	Class C Coating*
3/8	9.5	0.24	0.065	6.5	6.2	5.9	2-1/4	58.0	8.66	2.420	235.0	224.0	214.0
7/16	11.5	0.32	0.091	8.8	8.4	8.0	2-3/8	60.0	9.61	2.69	261.0	249.0	237.0
1/2	13.0	0.42	0.119	11.5	11.0	10.5	2-1/2	64.0	10.60	2.97	288.0	275.0	262.0
9/16	14.5	0.53	0.147	14.5	13.8	13.2	2-5/8	67.0	11.62	3.27	317.0	302.0	288.0
5/8	16.0	0.65	0.182	18.0	17.2	16.4	2-3/4	70.0	12.74	3.58	347.0	331.0	315.0
11/16	18.0	0.79	0.221	21.5	20.5	19.5	2-7/8	74.0	13.90	3.91	379.0	362.0	344.0
3/4	19.0	0.95	0.268	26.0	24.8	23.6	3	76.0	15.11	4.25	412.0	393.0	374.0
13/16	21.0	1.10	0.311	30.0	28.6	27.3	3-1/4	83.0	18.00	5.04	475.0	453.0	432.0
7/8	22.0	1.28	0.361	35.0	33.4	31.8	3-1/2	89.0	21.00	5.83	555.0	529.0	504.0
15/16	24.0	1.47	0.414	40.0	38.2	36.4	3-3/4	96.0	24.00	6.67	640.0	611.0	582.0
1	26.0	1.67	0.471	45.7	43.6	41.5	4	103.0	27.00	7.59	730.0	696.0	664.0
1-1/8	29.0	2.11	0.596	57.8	55.1	52.5	4-1/4	109.0	30.50	8.58	828.0	**	**
1-1/4	32.0	2.64	0.745	72.2	68.9	65.6	4-1/2	115.0	34.70	9.62	928.0	**	**
1-3/8	35.0	3.21	0.906	87.8	83.8	79.8	4-3/4	122.0	38.00	10.74	1,036.0	**	**
1-1/2	38.0	3.82	1.076	104.0	99.2	94.5	5	128.0	42.20	11.88	1,146.0	**	**
1-5/8	42.0	4.51	1.270	123.0	117.0	112.0	5-1/4	133.0	46.50	13.09	1,263.0	**	**
1-3/4	45.0	5.24	1.470	143.0	136.0	130.0	5-1/2	140.0	51.00	14.37	1,387.0	**	**
1-7/8	48.0	6.03	1.690	164.0	156.0	149.0	5-3/4	146.0	55.80	15.70	1,515.0	**	**
2	52.0	6.85	1.920	186.0	177.0	169.0	6	152.0	60.70	17.10	1,650.0	**	**
2-1/8	54.0	7.73	2.170	210.0	200.0	191.0							

Structural Wire Rope

Based on Class A coatings, the minimum moduli of elasticity of the structural wire rope are shown below. For heavier coatings, or a combination of coats, please consult WW's Engineering Department.

3/8" to 4" ..... 20,000,000 psi
4-1/4" to 4-3/4" ..... 19,000,000 psi
5" to 6" ..... 18,000,000 psi

WW manufactures structural wire rope through 7"" diameter. For information on diameters larger than 6"", please contact WW's Engineering Department.

**Nominal strengths are based on furnishing Class A, B or C coat throughout the wire rope. For a combination of coatings, please consult our Engineering Department for technical data.*

***For strength information, please contact WW's Sales or Engineering Department.*

Note: *Assemblies utilizing structural wire rope are not suitable for use in certain applications, such as where the assembly is required to operate over sheaves, drums, rollers and the like. For these types of applications, assemblies utilizing traditional wire rope constructions are used. Please consult with WW's Engineering Department before specifying structural wire rope.*

Structural Assembly Options

Many options are available for Bethlehem Wire Rope® Structural Assemblies. The options listed here are but a few, and by no means should be considered inclusive. In fact, WW has designed many unique products for specific structural applications. Please consult with our Engineering Department to discuss your needs and requirements.

Aesthetic Options

A number of options exist for overall aesthetic appeal. End terminations may be brightly painted, and plastic-extruded coverings for cable also offer a wide variation of color in addition to providing a stain free environment where roof fabric is expected to contact the cable. WW encourages designers, engineers and architects to contact us during design stages to discuss their ideas and requirements.

Corrosion Protection Options

Plastic Sheathing — A polymeric covering may be extruded over the wire rope or strand to enhance corrosion protection.

Z-nodes™ — As a cost-effective alternative to plastic sheathing, Z-nodes may be used. Specially-shaped zinc anodes, Z-nodes are symmetrically positioned in the outer layer to cathodically protect the cable from corrosion. Used predominantly in anchor line applications, the quantity of anodic zinc used is dependent upon the life expectancy requirement. Z-nodes may be applied to either wire rope or spiral strand designs.

Poly-Bloc™ — Poly-Bloc is an internal lubricant and blocking compound which is melted and pumped around each wire and into the cable during manufacturing. Poly-Bloc seals the interior of the cable, preventing the intrusion and entrapment of moisture. The use of Poly-Bloc impedes corrosion, rusting and general deterioration.

Design Options

WW has engineered a number of unique cable designs, as well as special end termination and attaching methods, to meet individual requirements. Please contact our Engineering Department to discuss your needs.

For more information on Bethlehem Wire Rope® Structural Assemblies and related end terminations, please refer to our Structural Products catalog.

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