

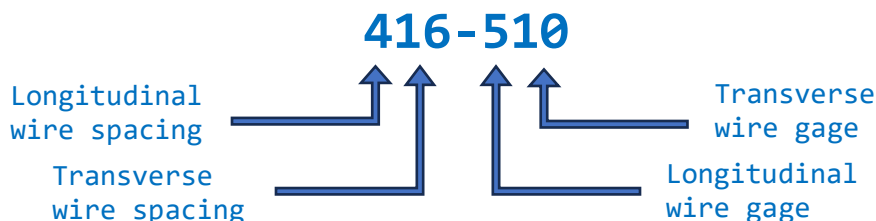
## Historic Welded Wire Reinforcement Nomenclature

The Wire Reinforcement Institute regularly receives designer inquiries related to historic welded wire reinforcement nomenclature. These inquiries are often associated with projects for which buildings are being renovated or repurposed and the original documentation contains identifying language that is unfamiliar to the designer. This brief technical blog is intended to provide some clarity on the topic.

Prior to adopting the wire size numbers in the 1970s as a representation of the wire’s nominal cross-sectional area (i.e., a plain W15.0 wire representing 0.150 in<sup>2</sup> or D12.6 representing a deformed wire with a cross-sectional area equal to 0.126 in<sup>2</sup>), the industry was predicated on the use of gage number references. Gage numbers (commonly interchangeable with “gauge”) were assigned to correlate to particular wire diameters as shown below, taken from the 1962 edition of ASTM A82 “Tentative Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement”:

HISTORIC GAGE (or GAUGE) NUMBER	EQUIVALENT DIAMETER, INCHES	TODAY’S WIRE DESIGNATION
000000, OR 7/0 (“SEVEN-AUGHT”)	0.4900	W OR D18.9
00000, OR 6/0 (“SIX-AUGHT”)	0.4615	W OR D16.8
0000, OR 5/0 (“FIVE-AUGHT”)	0.4305	W OR D14.6
000, OR 4/0 (“FOUR-AUGHT”)	0.3938	W OR D12.2
00, OR 3/0 (“THREE-AUGHT”)	0.3625	W OR D10.3
0, OR 2/0 (“TWO-AUGHT”)	0.3310	W OR D8.6
0, OR 1/0 (“ONE-AUGHT”)	0.3065	W OR D7.4
1	0.2830	W OR D6.3
2	0.2625	W OR D5.4
3	0.2437	W OR D4.7
4	0.2253	W OR D4.0
5	0.2070	W OR D3.4
6	0.1920	W OR D2.9
7	0.1770	W OR D2.5
8	0.1620	W OR D2.1
9	0.1483	W OR D1.7
10	0.1350	W OR D1.4
11	0.1205	W OR D1.1
12	0.1055	W0.9
13	0.0915	W0.7
14	0.0800	W0.5

The manner in which welded wire reinforcement was identified on construction documents was not unlike today’s method, whereby a WWR “style” is used to communicate spacing of both the longitudinal and transverse wires as well as the size of the wires. A WWR style would look something like what is shown below.



The aforementioned style indicates 5 gage longitudinal wires @ 4 inches on center ( $A_s = 0.101 \text{ in}^2$ ) and 10 gage wires @ 16” on center ( $A_s = 0.011 \text{ in}^2$ ).

## STANDARD PAVEMENT STYLES OF AMERICAN WELDED WIRE FABRIC

Showing Styles, Weights, Spacing and Gauges of Wires and Sectional Areas.

Style	Weight of Fabric Based on Net Width of 60 Inches		Spacing of Wires in Inches		A. S. & W. Co. Steel Wire Gauge Number		Sectional Areas in Square Inches per Foot of Width of Fabric	
	Lbs. per 100 Sq. Ft.	Lbs. per Sq. Yd.	Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse
66-88	30	2.70	6	6	8	8	.041	.041
66-77	36	3.24	6	6	7	7	.049	.049
66-66	42	3.78	6	6	6	6	.058	.058
66-55	49	4.41	6	6	5	5	.067	.067
66-44	58	5.22	6	6	4	4	.080	.080
66-33	68	6.12	6	6	3	3	.093	.093
66-22	78	7.02	6	6	2	2	.108	.108
66-11	91	8.19	6	6	1	1	.126	.126
66-00	107	9.63	6	6	0	0	.148	.148
612-77	27	2.43	6	12	7	7	.049	.025
612-66	32	2.88	6	12	6	6	.058	.029
612-55	37	3.33	6	12	5	5	.067	.034
612-44	44	3.96	6	12	4	4	.080	.040
612-33	51	4.59	6	12	3	3	.093	.047
612-24	54	4.86	6	12	2	4	.108	.040
612-22	59	5.31	6	12	2	2	.108	.054
612-11	69	6.21	6	12	1	1	.126	.063
612-00	81	7.29	6	12	0	0	.148	.074
612-2/04	78	7.02	6	12	2/0	4	.172	.040
612-3/04	91	8.19	6	12	3/0	4	.206	.040

For a complete list of STANDARD STYLES refer to page 160.

Historic WWR styles shown in an excerpt from "American Welded Wire Fabric for Concrete Reinforcement" by the American Steel and Wire Company, Copyright 1944.

**TABLE I**

### ONE WAY SOLID CONCRETE SLABS

$E_c = 1,000 f'_c$        $n = 10$   
 $f_s = 30,000$  p.s.i.       $\frac{3}{4}$ " clear fireproofing  
 $f'_c = 3,000$  p.s.i.       $p$  varies from 40 to 60% balanced  $p$   
 $e = 1,350$  p.s.i. (allowable)

Conventional Concrete Reinforcement Draped

Total Thickness of Slab (in.)	Weight of Slab per Sq. Ft. (lb.)	Required Steel Area and Wire Fabric Reinforcing		Condition of Continuity
		Steel Area	Fabric Style	
3	38	0.074	46-75	End or Interior
		0.116	36-65	
3½	44	0.098	36-74	End or Interior
		0.135	36-54	
4	50	0.116	36-63	End or Interior
		0.147	46-1/4 3	
4½	56	0.135	36-5 1/4	End or Interior
		0.159	36-4 1/4	
5	63	0.147	46-1/4 2	End or Interior
		0.187	36-3 2	
5½	69	0.159	36-41	End or Interior
		0.196	36-1/4 1	
6	75	0.187	36-31	End or Interior
		0.239	26-41	
6½	81	0.196	36-1/4 0	End or Interior
		0.239	26-40	
7	88	0.239	26-40	End or Interior
		0.280	26-30	
7½	94	0.239	26-4 00	End or Interior
		0.295	26-1/4 00	

Historic WWR styles shown in an excerpt from "Building Design handbook" by the Wire Reinforcement Institute, Copyright 1963.



*A photo from the WRI Historic Archives (Chicago Architectural Photographing, R-6891, July 1932): “wall mesh, 66-00”.*

While modern WWR nomenclature is predicated on providing an easily recognizable reference to the steel area of the wire instead of the wire gage, the arrangement of the WWR style is nearly identical to the historic sequence of information, with perhaps the only other difference being separating punctuation for added clarity. The previously noted historic WWR style would look something like what is shown below when transformed into the modern format.

## **4x16-W3.4/W1.4**

Identification of constituent wire reinforcement areas that are part of historic WWR styles is a simple task once it is understood that the wire sizes are communicated based on gage dimensions.

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For more information visit [www.wirereinforcementinstitute.org](http://www.wirereinforcementinstitute.org).