UTILITY POLES




StressCrete

Pride in Our People. Pride in Our Product.

Our Companies

StressCrete is the registered trade mark of StressCrete Ltd., an Ontario corporation and StressCrete Inc., an Alabama corporation. StressCrete poles have been in use throughout North America since 1953.

Our Policy

It is our objective to use the most advanced technical knowledge available, plus state of the art equipment to manufacture the highest quality product possible. It is also our goal to offer our customers the highest level of service and technical backup possible. Our product is available through an experienced and well educated team of manufacturers' agents who service utility, contractor and distributor accounts.

Our Product

Our product is a centrifugally cast reinforced concrete pole; commonly referred to as a "Spun Pole". It combines elegance with durability and surpasses most other materials in economy. It meets the CSA and ASTM standards for spun concrete poles, as well as our own specifications which are more demanding. The

spinning process introduces qualities into the concrete which cannot be obtained by more conventional casting methods. It provides a higher density and greater strength concrete which is more

resistant to freeze-thaw and scaling by de-icers. As well, the centrifugal casting process automatically forms a hollow raceway inside the pole thereby providing a smooth conduit for electrical cables.

All our poles are custom made whatever the design. An individual work order is issued to the plant, a copy is sent to the customer and one held in our files. Production is geared to your order specification and delivery requirements.

Poles are readily available in a full range of lengths, strengths, colors, finishes and cross-sections for a multitude of uses such as lighting, power distribution, transmission, traffic, traction and communication towers.

Most poles may be equipped with steel base plates for flush mounting installations, although direct embedment is the norm.

Spun Concrete - The Ideal Utility Pole

The use of spun concrete poles for electrical power transfer has many advantages over other materials.

Appearance

- The crisp clean lines and light gray color of spun concrete poles are pleasing to the eye.
- Spun concrete poles give a street a more formal look than wood poles. This projects a progressive image for both the utility and the municipality and enhances the value of adjoining property.

Durability

- Experience has shown, that during its long life, a spun concrete pole is maintenance free.
- Concrete, unlike other materials, suffers no loss of strength over the years, being resistant to woodpeckers, insects, fire, rot and corrosion.
- Its durability in soil permits the economy of direct burial without the use of contaminating chemical treatments.
- As an inert material, it can be recycled or accepted as clean fill, when its long life is over.

Strength & Availability

- Spun concrete poles are manufactured in a wide range of strengths and sizes, to fill many needs.
- By choosing appropriate classes, angle and termination poles can remain unguyed thereby saving space and eliminating clutter.
- Spun concrete poles are manufactured to guaranteed minimum strengths, taking the guess work out of line design.

Added Features

- The hollow raceway of spun concrete poles makes them ideal for joint use applications, such as streetlighting, telephone and cable TV.
- The ability to add handholes and wiring access openings increases versatility.
- Exact placement of prefabricated holes, inserts or couplings can reduce rigging time by as much as 50%.
- In highly visible areas, where a particular architectural appearance is critical, a Decor color can be supplied.
- As a manufactured product spun concrete poles are readily available, and supply does not depend upon the vagaries of nature.
- The stiffness of spun poles make them particularly suitable for angle and termination poles subjected to permanent transverse load.

Satisfying the Applied Design Loads

A Spun concrete pole like any pole supporting conductors, has loads applied by line tension, changes of line direction, wind, and where applicable, ice loadings on both the conductors and the pole itself.

Because of their durability and reliability, spun concrete poles have a favorable load factor specified in ANSI transmission and distribution line requirements. Our engineering staff will be pleased to assist you in establishing and designing for the appropriate loads.

There are three common ways used to select poles for distribution and transmission use. As all our products are custom designed, owners have a choice as to their preferred method.

StressCrete
Since 1953

A. Selection by Experience

When concrete poles are substituted in areas where the prior experience has been obtained using wood poles, it is important to note the following:

Because wood is a naturally grown product, with natural defects, such as splits and knots, strength is defined as the average strength of all poles of that species and dimension, at the time of installation. Since some poles in a batch will have strengths less than the average (up to 30% less) and since there is a further deterioration with time, a particular wood pole could have a strength of only one half the specified average new strength of the class.

In contrast, the strength of concrete poles is defined as a minimum strength, which does not vary with time. Poles are designed and manufactured so that all poles will exceed the specified minimum strength which will be present for the life of each pole.

In theory, therefore, concrete poles strengths could be numerically specified as half of those specified for a wood pole line and be equally effective when installed. In fact, most owners do not go this far. It is common practise to specify a concrete pole, which has a numerical strength value two classes lower than would be traditionally used for a similar wood pole application.

B. Selection by Tip Load Computation

Poles are grouped in alphabetically labelled classes which have a bending capacity appropriate to the design requirements.

The class is defined in terms of a guaranteed minimum ultimate transverse load applied 2 ft. down from the tip of the pole. All poles which can sustain the same tip load have the same class. This should not be confused with the classification systems used with other materials such as wood. As explained in the previous section "Selection By Experience" wood poles are classed according to an average, not minimum ultimate transverse load as with spun concrete.

The ground line moment capacity will, of course, depend on the length of the pole, since that moment is the product of the class ultimate load and the distance between the point of application (2 ft. from the tip), and the ground line.

Nevertheless, for applications where all poles have the same or similar length, some owners have become accustomed to the practise of specifying ground line moment, when ordering. If so requested we will be pleased to fill orders placed this way.

Standard Spun Concrete Utility Pole Classes

Class	Min. Ultimate Transverse load (lbs.)	(KN)	Class	Min. Ultimate Transverse load (lbs.)	(KN)
C	1200	5.3	J	4500	20.0
D	1500	6.7	K	5400	24.0
E	1900	8.5	L	6400	28.5
F	2400	10.7	M	7500	33.4
G	3000	13.3	N	8700	38.7
H	3700	16.5	O	10000	44.5

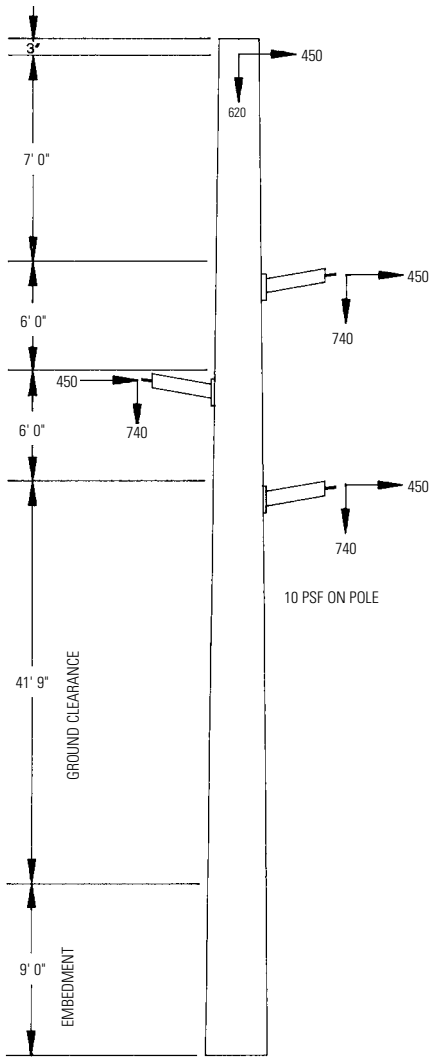
C. Selection by Load Tree

For higher voltage lines, with large conductor spacings and multiple circuits, there may be major reactions distributed over a substantial length of the pole. There may also be many different load combinations along a line, depending on pole spacing and line angles.

For such applications it is usual for the customer to order by specifying a "load tree", for each pole loading variation along the line. Alternatively, we can compute such a tree from data provided by the purchaser.

We have a standard computer program set up to accept multiple elevations at which loads can be applied, so that the required capacity of the pole can be accurately computed along its whole length. We will be pleased, to discuss the use of this program to meet any individual owners specification.

Example of Typical Load Tree



NOTES:

1. ALL LOADS SHOWN IN POUNDS
2. ALL LOADS INCLUDE APPROPRIATE LOAD OCF'S.
3. IN ADDITION TO THE LOAD CONDITIONS SHOWN THE STRUCTURE SHALL WITHSTAND:
   - A. A 10 PSF WIND APPLIED TO THE POLE SHAFT & ALL ATTACHMENTS AT THE MOST CRITICAL DIRECTION, WITH NO WIRES ATTACHED.
   - B. A HORIZONTAL LOAD OF 2800 POUNDS PERPENDICULAR TO THE ℄ OF THE INSULATORS & APPLIED AT THE WIRE ATTACHMENT POINT. APPLY TO ANY ONE INSULATOR.
   - C. A VERTICAL LOAD OF 2800 POUNDS AT THE END OF ANY ONE INSULATOR.
4. DEFINITION OF LOAD DIRECTION:

↓ VERTICAL LOAD

→ HORIZONTAL LOAD ALONG THE X-AXIS, PARALLEL TO THE ℄ OF INSULATOR.

↘ HORIZONTAL LOAD ALONG THE Y-AXIS, PERPENDICULAR TO ℄ OF INSULATOR.

5. "WIND ON POLE" LOAD SHALL BE APPLIED UNIFORMLY ALONG THE POLE SHAFT AT THE MOST CRITICAL HORIZONTAL DIRECTION.

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Distribution Poles

Spun concrete distribution poles are generally selected by strength class (Tip Load Computation). We strongly recommend you read "Satisfying The Applied Design Loads" located on the previous page.

While it is standard practise to locate and cast needed holes, apertures, inserts etc. at the time of production, many utilities minimize the likelihood of future field drilling by adding extra holes to allow for later expansion of the service. This practise can appreciably add to the already considerable versatility of spun concrete poles and is both simple and inexpensive.

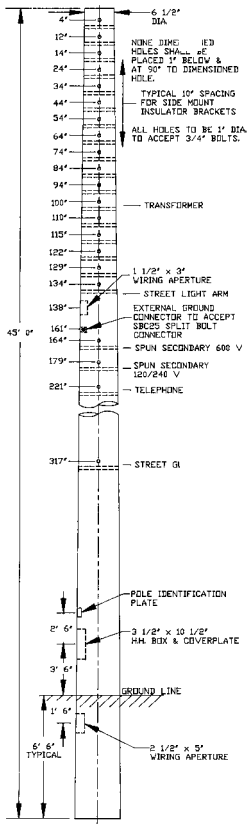
The catalogue numbers of the more common sizes and strength classes along with accompanying technical details are shown below. If the pole you require is not shown, please call your local representative or our sales office.

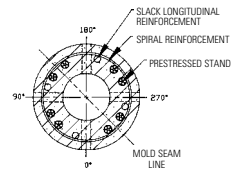
Spun Concrete Distribution Poles

Pole Catalogue Number	Nominal Pole Length (ft.)	Concrete Pole Class	Ultimate Moment At Grade (K - ft.)	Equiv. Wood Pole Class *1	Above Grade Pole Height (ft.)	Burial Depth *2	Pole Tip (in.)	Diameter Butt (in.)	Nominal Pole Weight (lbs.)
E - 300 - CPR - G	30' 0"	C	27.6	5	25' 0"	5' 0"	6.5"	11.9"	1740
E - 300 - DPR - G	30' 0"	D	34.5	4	25' 0"	5' 0"	6.5"	11.9"	1755
E - 300 - EPR - G	30' 0"	E	43.7	3	25' 0"	5' 0"	6.5"	11.9"	1760
E - 300 - FPR - G	30' 0"	F	55.2	2	25' 0"	5' 0"	6.5"	11.9"	1955
E - 350 - CPR - G	35' 0"	C	33.0	5	29' 6"	5' 6"	6.5"	12.8"	2225
E - 350 - DPR - G	35' 0"	D	41.2	4	29' 6"	5' 6"	6.5"	12.8"	2250
E - 350 - EPR - F	35' 0"	E	52.2	3	29' 6"	5' 6"	6.5"	12.8"	2280
E - 350 - FPR - G	35' 0"	F	66.0	2	29' 6"	5' 6"	6.5"	12.8"	2435
E - 400 - CPR - G	40' 0"	C	38.4	5	34' 0"	6' 0"	6.5"	13.7"	2685
E - 400 - DPR - G	40' 0"	D	48.0	4	34' 0"	6' 0"	6.5"	13.7"	2715
E - 400 - EPR - G	40' 0"	E	60.8	3	34' 0"	6' 0"	6.5"	13.7"	2745
E - 400 - FPR - G	40' 0"	F	76.8	2	34' 0"	6' 0"	6.5"	13.7"	3000
E - 450 - DPR - G	45' 0"	D	54.7	4	38' 6"	6' 6"	6.5"	14.6"	3220
E - 450 - EPR - G	45' 0"	E	69.3	3	38' 6"	6' 6"	6.5"	14.6"	3230
E - 450 - FPR - G	45' 0"	F	91.2	2	38' 6"	6' 6"	6.5"	14.6"	3560
E - 450 - GPR - G	45' 0"	G	109.5	1	38' 6"	6' 6"	8.25"	16.35"	4235
E - 500 - DPR - G	50' 0"	D	61.5	4	43' 0"	7' 0"	6.5"	15.5"	3850
E - 500 - EPR - G	50' 0"	E	77.9	3	43' 0"	7' 0"	6.5"	15.5"	3865
E - 500 - FPR - G	50' 0"	F	98.4	2	43' 0"	7' 0"	6.5"	15.5"	4150
E - 500 - GPR - G	50' 0"	G	123.0	1	43' 0"	7' 0"	8.25"	17.25"	4970
E - 500 - HPR - G	50' 0"	H	151.7	H1	43' 0"	7' 0"	8.25"	17.25"	5060
E - 550 - DPR - G	55' 0"	D	68.2	4	47' 6"	7' 6"	6.5"	16.4"	4455
E - 550 - EPR - G	55' 0"	E	86.4	3	47' 6"	7' 6"	6.5"	16.4"	4480
E - 550 - FPR - G	55' 0"	F	109.2	2	47' 6"	7' 6"	6.5"	16.4"	4900
E - 550 - GPR - H	55' 0"	G	136.5	1	47' 6"	7' 6"	8.25"	18.15"	5750
E - 550 - HPR - G	55' 0"	H	168.3	H1	47' 6"	7' 6"	8.25"	18.15"	5875
E - 600 - FPR - G	60' 0"	F	120.0	2	52' 0"	8' 0"	6.5"	17.3"	5680
E - 600 - GPR - G	60' 0"	G	150.0	1	52' 0"	8' 0"	8.25"	19.05"	6550
E - 600 - HPR - G	60' 0"	H	185.0	H1	52' 0"	8' 0"	8.25"	19.05"	6675
E - 650 - FPR - G	65' 0"	F	130.8	2	56' 6"	8' 6"	6.5"	18.2"	6310
E - 650 - GPR - G	65' 0"	G	163.5	1	56' 6"	8' 6"	8.25"	19.05"	7440
E - 650 - HPR - G	65' 0"	H	201.6	H1	56' 6"	8' 6"	8.25"	19.05"	7510
E - 700 - FPR - G	70' 0"	F	141.6	2	61' 0"	9' 0"	6.5"	19.1"	7255
E - 700 - GPR - G	70' 0"	G	177.0	1	61' 0"	9' 0"	8.25"	20.85"	8365
E - 700 - HPR - G	70' 0"	H	218.3	H1	61' 0"	9' 0"	8.25"	20.85"	8445

* 1 Please read the section "Satisfy the Design loads" especially - "Selection by Experience".
* 2 Burial Depths are assumed at 10% of pole length plus 2 ft.

TYPICAL 45' CLASS E JOINT USE DISTRIBUTION POLE





TYPICAL POLE CROSS-SECTION

StressCrete
Since 1953

Unguyed Terminal and Angle Poles

In areas where unsightly back guys are either undesirable or impractical, a self-supporting spun concrete pole is the solution. Spun concrete poles can be designed and built to such great strengths that the need for back guying is unnecessary. They give a clean uncluttered look to the pole line, and minimize land use as they do not impede walkways, violate private property nor require overhead guys to be strung across roadways.

Non-guyed termination poles lend themselves to a pleasing transition from overhead to underground. If desired, the internal raceway may be used to carry the cables rather than banding them to the outside of the pole: this greatly improves appearance. The poles can also accommodate fuses, arresters and switchgear if required. Non-guyed poles can be designed to accept angles of up to 90°.

If unfamiliar with designing poles of this type, please contact our sales office so the correct pole for your situation can be determined. For poles with high imbalanced loads, foundations to suit the load and soil conditions must be considered.

High Voltage Transmission Poles

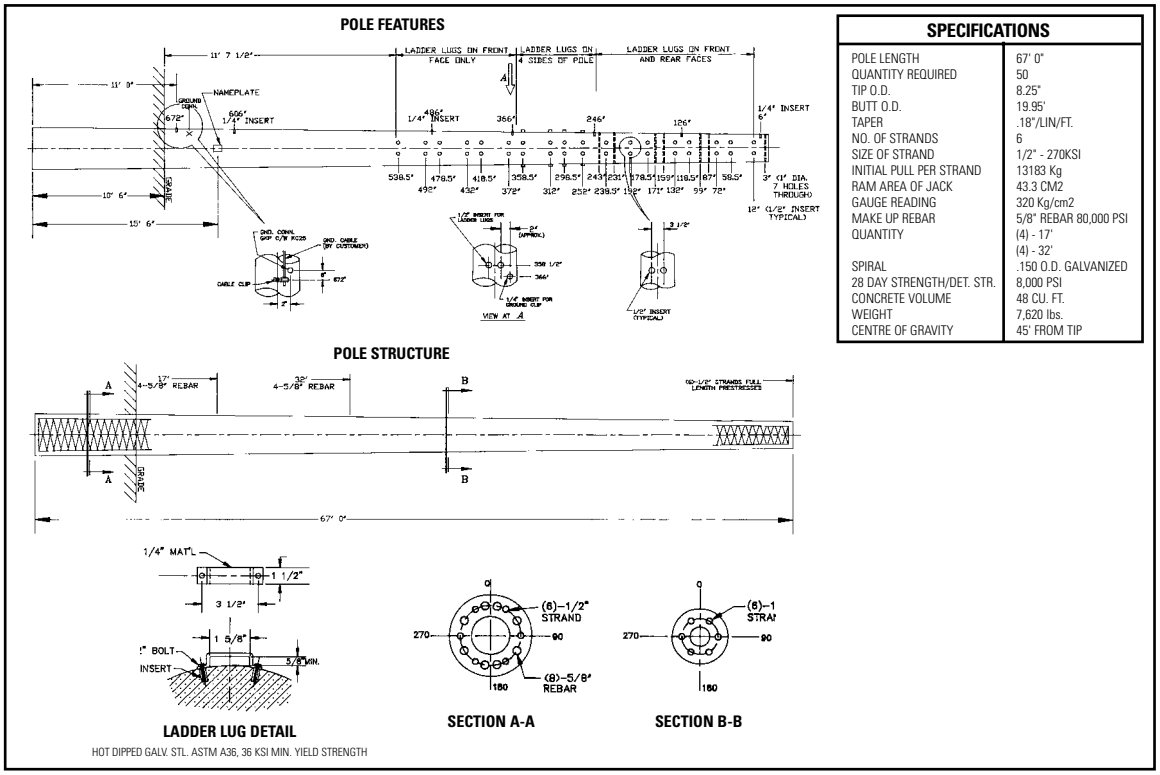
Spun concrete pole designs are exceptionally versatile and an almost unlimited selection of heights and strengths is available. Spun concrete transmission poles are generally single pore or H-Frame structures.

H-Frame poles are usually selected by strength class (Tip Load Computation) and since concrete poles are generally replacing damaged wood poles, the concrete class can be determined by the owner's previous experience with wood poles. Please read "Satisfying The Applied Design Loads" in particular entitled "Selection By Experience" located earlier in this section.

Single pole transmission structures, due to the complexity of the loads being applied are generally custom designed to individual requirements. It is common for the customer to make available a "load tree diagram", for each pole loading variation or to supply the data from which such a "load tree" can be computed.

We would be pleased to consult with you regarding your needs in this area. Please contact your local representative or call one of our sales offices.

Typical Transmission Pole Layout



SPECIFICATIONS	
POLE LENGTH	67' 0"
QUANTITY REQUIRED	50
TIP O.D.	8.25"
BUTT O.D.	19.95'
TAPER	.18"/LIN/FT.
NO. OF STRANDS	6
SIZE OF STRAND	1/2" - 270KSI
INITIAL PULL PER STRAND	13183 Kg
RAM AREA OF JACK	43.3 CM2
GAUGE READING	320 Kg/cm2
MAKE UP REBAR	5/8" REBAR 80,000 PSI
QUANTITY	(4) - 17' (4) - 32'
SPIRAL	.150 O.D. GALVANIZED
28 DAY STRENGTH/DET. STR.	8,000 PSI
CONCRETE VOLUME	48 CU. FT.
WEIGHT	7,620 lbs.
CENTRE OF GRAVITY	45' FROM TIP

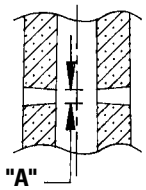
Utility Pole Accessories

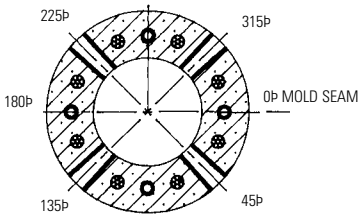
Through Holes

OUR STANDARD HOLE SIZES ARE 1/2", 3/4" AND 1" NOMINAL SIZE.

NOMINAL HOLE DIA.	A
STANDARD SIZES	1/2"
	3/4"
	1"

STANDARD HOLE POSITIONING IS 45" TO THE MOLD SEAM LINE. LONGITUDINAL REINFORCING STEEL IS POSITIONED AWAY FROM THESE AREAS TO ALLOW FOR FIELD DRILLING IF NECESSARY. WE DO HOWEVER RECOMMEND THAT ALL HOLES BE CAST IN AT TIME OF MANUFACTURE. THIS IS ESPECIALLY SO FOR HOLES REQUIRED OFF THE 45" LINE.



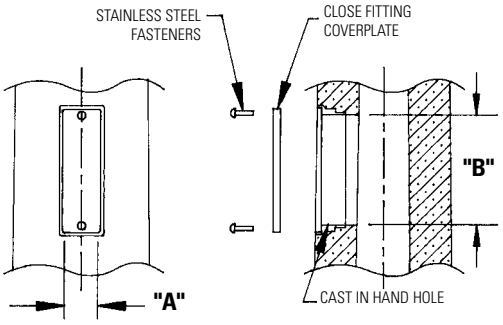


TYPICAL CROSS SECTION

Handholes and Coverplates

OUR STANDARD HANDHOLES ARE COMPOSED OF NON-METALLIC, NON-CONDUCTIVE INJECTION MOLDED MATERIAL AND ARE SUPPLIED WITH A CLOSE FITTING INSET COVER OF THE SAME MATERIAL. ALL FASTENERS WILL BE STAINLESS STEEL.

STANDARD SIZES	A x B
	2 1/2" x 8"
	3 1/2" x 10 1/2"

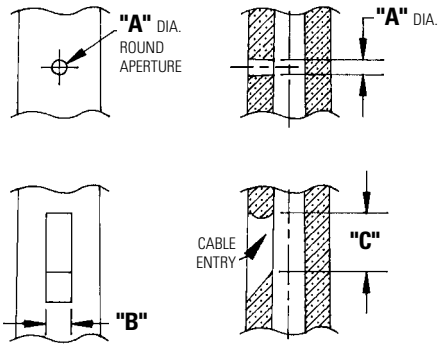


FRONT VIEW **CROSS SECTION**

Wiring Apertures

ROUND APERTURES	A DIA.
	1 1/4" DIA.
	1 1/2" DIA.
SHAPED APERTURES	B x C
	1 1/2" x 3"
	2" x 3"
	2 1/2" x 5"
	3" x 12"
	4" x 10"
	* 6" x 24"

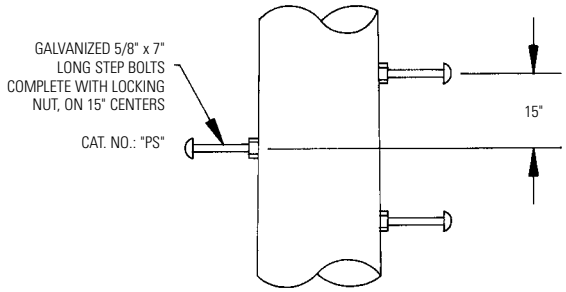
* AVAILABILITY MAY BE GOVERNED BY DESIGN LIMITATIONS OR PHYSICAL CONSTRAINTS.



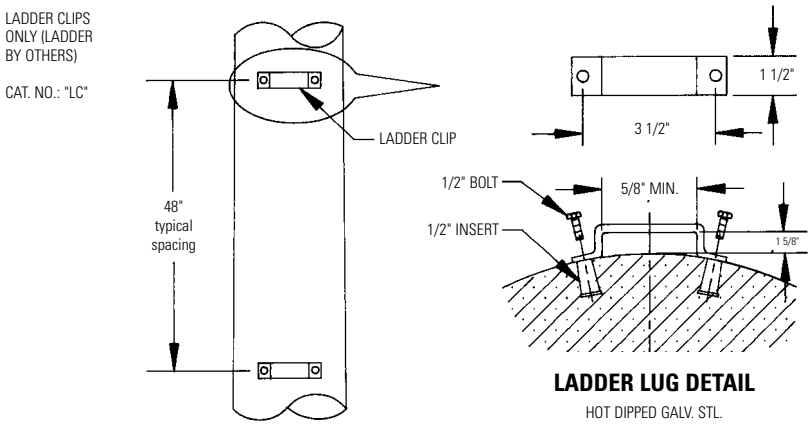
FRONT VIEW **CROSS SECTION**

Pole Steps

STEPS ARE SET AT 180° TO EACH OTHER EXCEPT ON THE LARGER POLES WHERE THEY MOVE TO 120° AT THE POINT WHERE THE POLE DIAMETER SURPASSES 19".



Ladder System (Ladder by Others)



LADDER LUG DETAIL

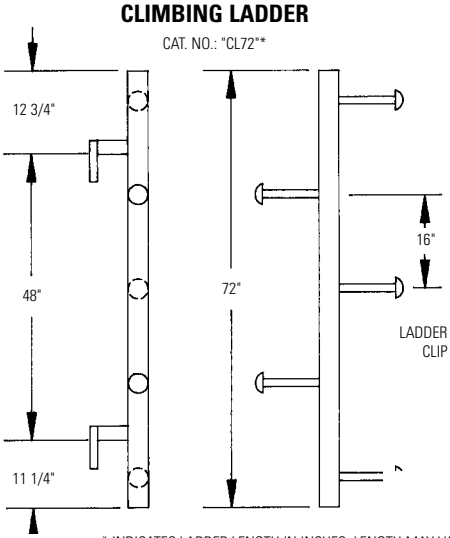
HOT DIPPED GALV. STL.

Ladder System (Supplied by StressCrete)

DETAILED BELOW ARE STANDARD TYPES. SPECIFIC LENGTHS ARE AVAILABLE UPON REQUEST.

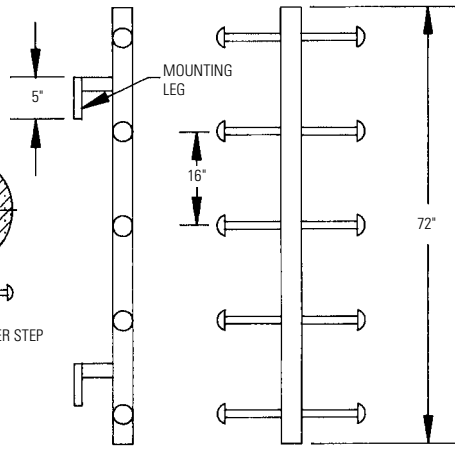
CLIMBING LADDER

CAT. NO.: "CL72"*



WORKING LADDER

CAT. NO.: "WL72"*

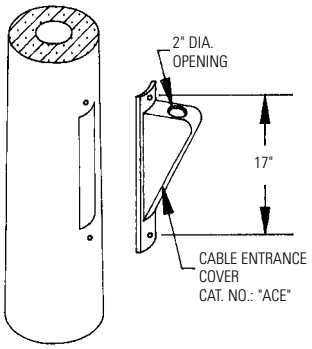


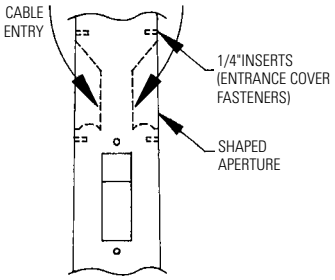
* INDICATES LADDER LENGTH IN INCHES. LENGTH MAY VARY WHEN NECESSARY. SIMPLY CHANGE THIS NUMBER TO DESIRED LENGTH.

StressCrete
Since 1953

Cast Aluminum Cable Entrance Covers

THE INTERNAL RACEWAY OF SPUN CONCRETE POLES ALLOWS FOR WIRES AND CABLE TO BE RUN INTERNALLY. TO GIVE AN EVEN, SMOOTH TRANSITION WE CAN SUPPLY CAST ALUMINUM CABLE ENTRANCE COVERS WHICH WILL ACCEPT LINES OF 2" DIA. THIS IS VERY POPULAR ON TERMINATION POLES INTO SUBSTATIONS. -SO CLEAN, SO NEAT, SO SIMPLE!!

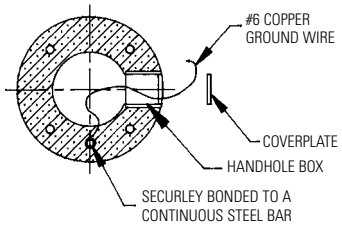




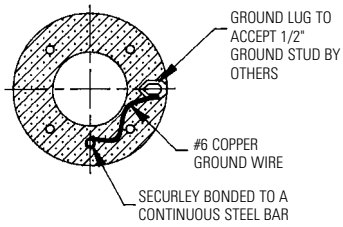
TYPICAL POLE LAYOUT

Electrical Grounding

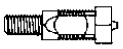
WHERE ELECTRICAL CONDUCTIVITY IS CONCERNED, A CONCRETE POLE IS IN ESSENCE A STEEL POLE, THUS WE STRONGLY RECOMMEND THAT IT BE GROUNDED. THE LAST LETTER "G" IN THE POLE CATALOGUE NUMBER MEANS THE POLE WILL BE SUPPLIED WITH A MEANS TO ELECTRICALLY GROUND IT. DETAILED BELOW ARE TWO METHODS BOTH APPROVED BY THE (CSA) CANADIAN STANDARDS ASSOCIATION.



STANDARD GROUND IN HANDHOLE



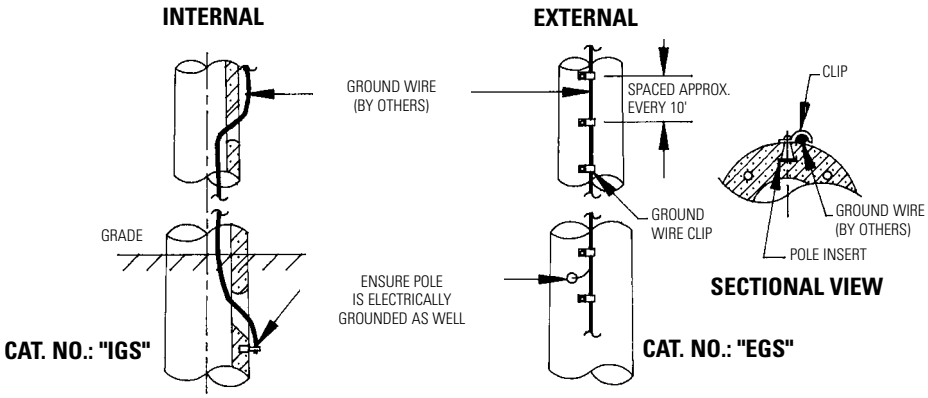
EXTERNAL GROUND



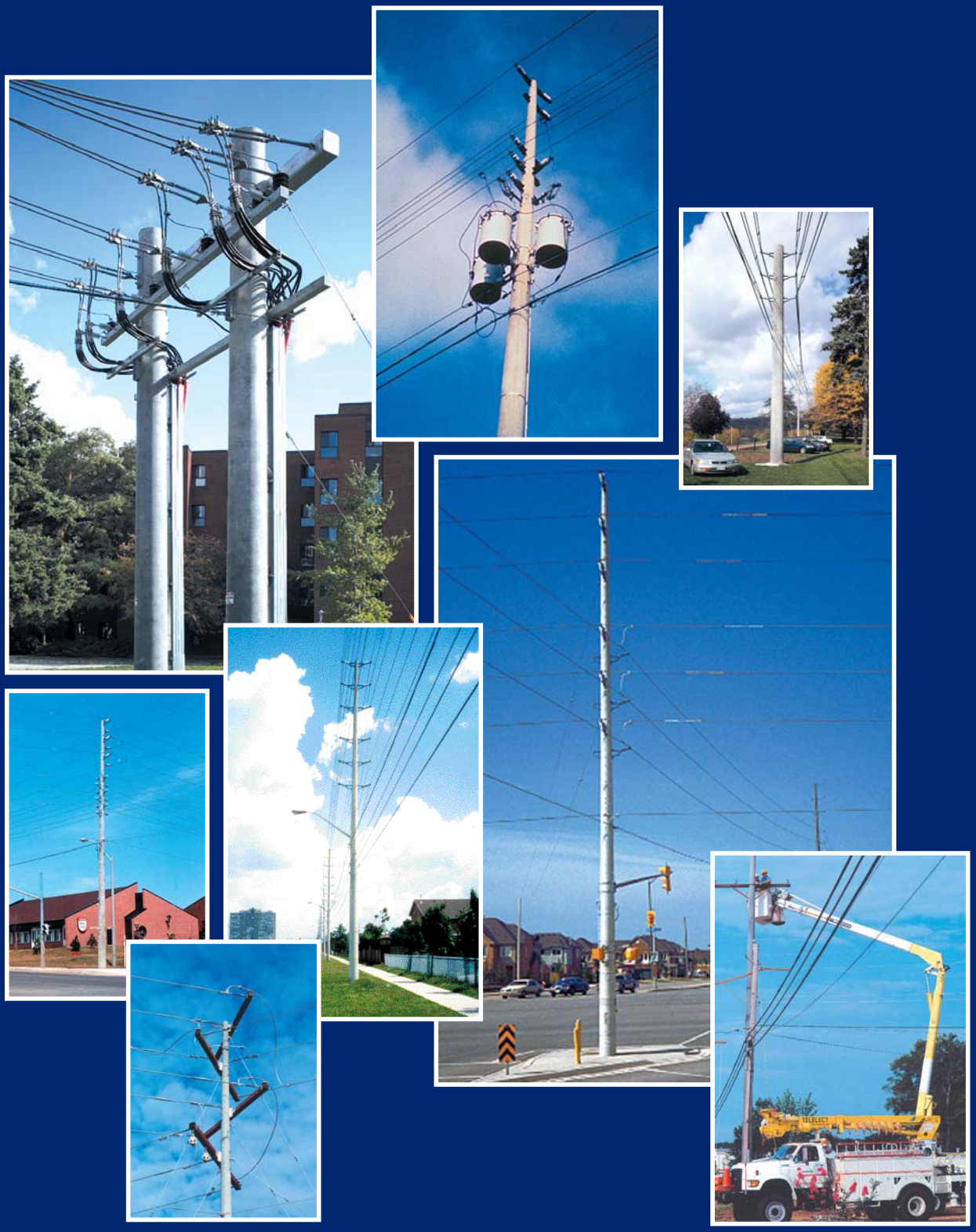
OPTIONAL BRASS
SPLIT BOLT
CONNECTOR (SCREWS
INTO 1/2" EXTERNAL
GROUNDING LUG)

CAT. NO.: "SBC-25"

Attachment of Grounding System



OTHER ACCESSORIES SUCH AS CROSS ARMS, INSULATOR BRACKETS OR ARMS ARE AVAILABLE. FOR MORE INFORMATION PLEASE CONTACT YOUR LOCAL REPRESENTATIVE OR ONE OF OUR SALES OFFICES.



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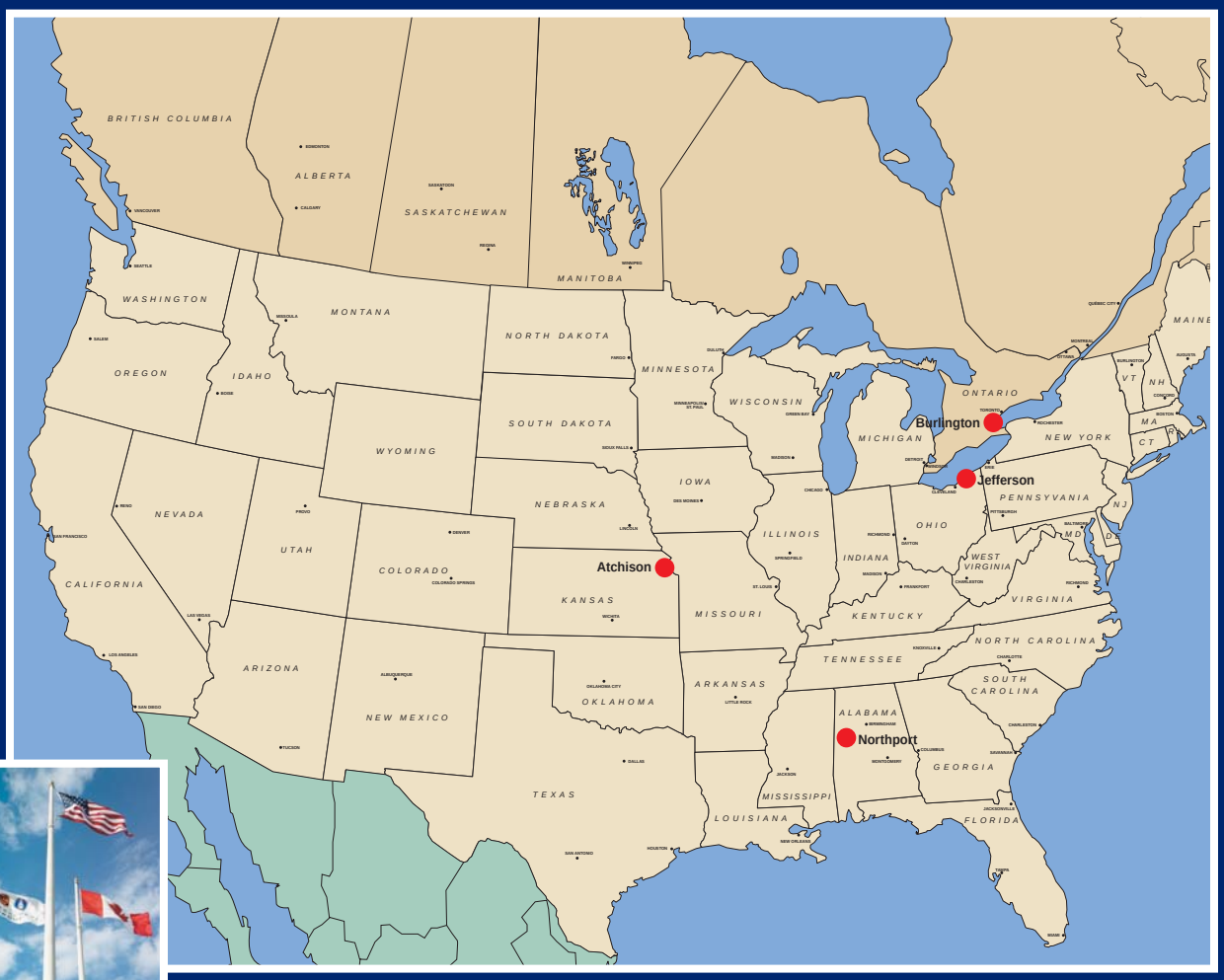

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