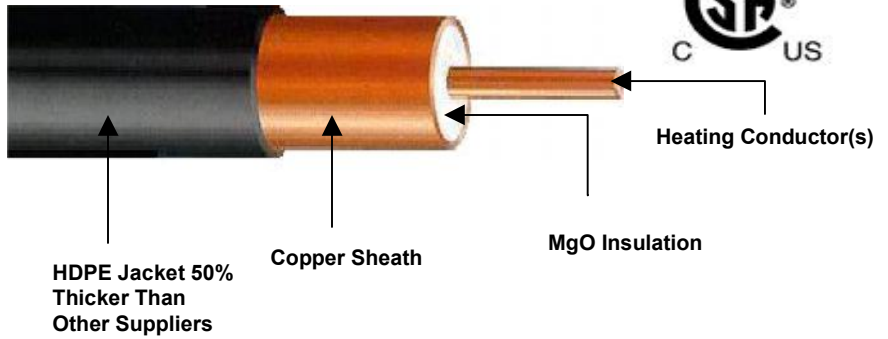




March 2012



MI Cable 101 - Snow Melting Design Basics



Section 1: Cable Spacing

- Calculation for determining the spacing of the cable:
- Cable spacing : (area in square feet x 12) / heating cable length in feet = x inches
- Increasing the spacing above the values demonstrated in the chart below will result in cold spots, unmelted lines of snow and slower/poorer performance, which, ultimately leads to customer dissatisfaction

MAX Spacing in Inches as per TRM standards		
Concrete	8	inches
Asphalt	6	inches
Mastic	8	inches
Sand (interlocking Pavers)	6	inches

Section 2: Prepunched Strapping

- Rolls of 75' prepunched strapping = area in square feet x 0.006 = number of rolls of strapping required for job
- Use stainless steel strapping for concrete or asphalt applications
- Use galvanized strapping for mastic applications



Stainless Steel



Galvanized

Thermal Resources Management (TRM) Inc.
 175 Idema Road, Markham ON, L3R 1A9
 Tel: 1-905-940-4737 Fax: 1-905-940-4731
 trmcanada@rogers.com
 www.theheatingcableguys.com





Heating Conductor(s)



HDPE Jacket 50%
Thicker Than
Other Suppliers

Copper Sheath

MgO Insulation

MI Cable 101 - Snow Melting Design Basics

Section 3: Watts per Area(s) Calculations

Watts per square foot = total wattage / heated area in Ft²

For watts per Ft² (in other words watt density) please see chart based on city and medium

Some form of automatic control or sensor that turns the cables on is necessary in order for these watt densities to melt snow effectively

Chart reflects MINIMUM watt density for each application. Undersized watt density will result in slower performance, snow build up/undermelting and most likely, customer dissatisfaction

Watts per linear foot: Although this is not a code restriction, it is a CSA consideration and directly relates to the spacing of cables



Required Watt Density for Surface Snow Melting		
City	Watts/ft ²	
	Concrete or Mastic	Asphalt or Pavers
(USA)		
Baltimore, MD	35	40
Boston, MA	35	40
Buffalo, NY	40	45
Chicago, IL	35/40	40/45
Cincinnati, OH	35	40
Cleveland, OH	35/40	40/45
Denver, CO	35/40	40/45
Detroit, MI	35	40
Great Falls, MT	50	50
Greensboro, NC	35	35
Indianapolis, IN	35	40
Minneapolis, MN	50	50
New York, NY	35	40
Omaha, NE	45	50
Philadelphia, PA	35	40
Salt Lake City, UT	40	40
Seattle, WA	35	35
St. Louis, MO	35	40
(CANADA)		
Calgary, AB	45	45
Edmonton, AB	50	50
Fredericton, NB	40	45
Halifax, NS	35	40
Moncton, NB	40	40
Montreal, QC	45	45
Ottawa, ON	45	45
Prince George, BC	50	55
Quebec, QC	45	45
Regina, SK	50	55
Saskatoon, SK	50	50
St. John, NB	40	45
St. John's, NF	35	35
Sudbury, ON	40	45
Thunder Bay, ON	50	55
Toronto, ON	35	40
Vancouver, BC	35	40
Winnipeg, MB	50	55

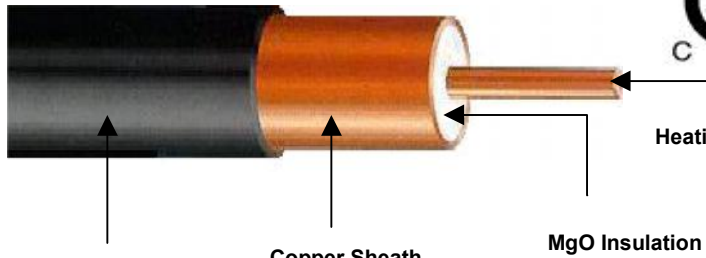
MAX Watts per foot of cable (copper with HDPE jacket)		
Concrete	30 MAX	25 Recommended
Asphalt	25 MAX	25 Recommended
Mastic	30 MAX	25 Recommended
Sand (Interlocking Pavers)	20 MAX	20 Recommended

Thermal Resources Management (TRM) Inc.
175 Idema Road, Markham ON, L3R 1A9
Tel: 1-905-940-4737 Fax: 1-905-940-4731
trmcanada@rogers.com
www.theheatingcableguys.com





Heating Conductor(s)



HDPE Jacket 50%
Thicker Than
Other Suppliers

Copper Sheath

MgO Insulation

MI Cable 101 - Snow Melting Design Basics

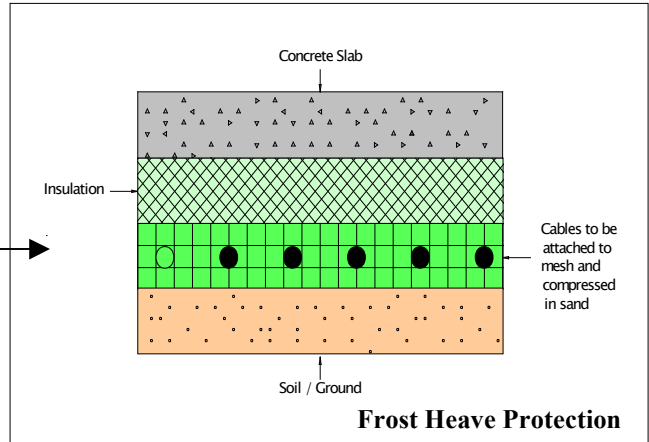
Section 4: Frost Heave Protection

Frost Heave Protection:

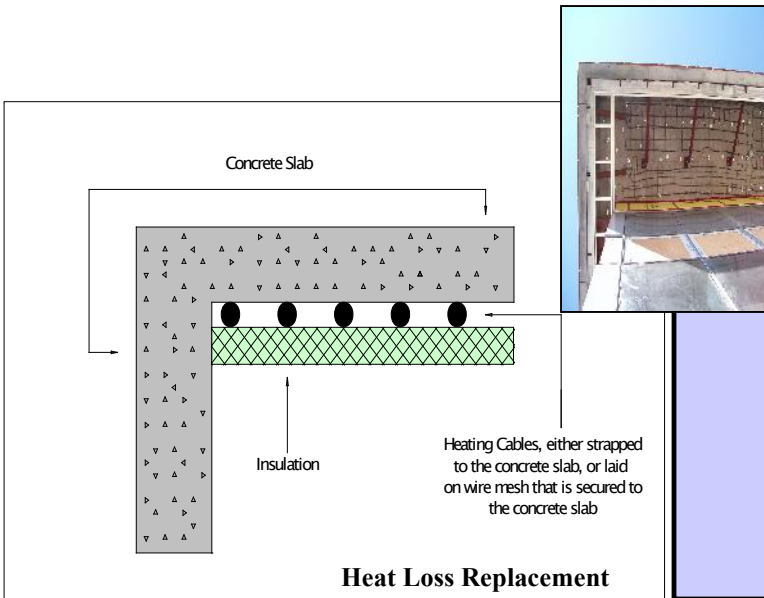
Aim for a maximum watt density of 4 watts per square foot

Maximum spacing: 48"

Type of cable to be used In sand: MI cable
In conduit: MI 2 Conductor or SR



Frost Heave Protection



Heat Loss Replacement

Section 5: Heat Loss Replacement

Heat Loss Replacement (Underslab):

- At no time should watts per linear foot exceed 15 for cable that is exposed
- Wattage per square foot = cable watts / square foot of area to be heated: aim for a watt density of 6-8 watts per square foot
- Maximum spacing: 12"



TRM

Thermal Resources Management

MI-101

March 2012



Heating Conductor(s)



HDPE Jacket 50%
Thicker Than
Other Suppliers

Copper Sheath

MgO Insulation

MI Cable 101 - Snow Melting Design Basics

Section 6: Interior Comfort Floor Heating

- Aim for a watt density of approximately 16 - 20 watts per square foot
- Maximum spacing for interior floor heating should be no more than 6"

Section 7: Basic Electrical Calculations

- Ohms Law:
 - Current (Amps) = Voltage / Resistance (Ohms)
 - Voltage = Current (Amps) x Resistance (Ohms)
 - Resistance (Ohms) = Voltage / Current (Amps)
- Wattage:
 - Power (Watts) = Voltage x Current (Amps)
 - Current (Amps) = Power (Watts) / Voltage
- Watts per Linear foot = Wattage / Length of cable

Thermal Resources Management (TRM) Inc.
175 Idema Road, Markham ON, L3R 1A9
Tel: 1-905-940-4737 Fax: 1-905-940-4731
trmcanada@rogers.com
www.theheatingcableguys.com

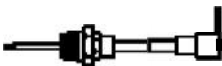


MI-Heat Range of 600 Volt Rated MI copper heating cables
 CSA Approved – Class 287201, CAN/CSA-C22.2 No.130

Standard Design:
B Design Units
 2 x 15' cold leads, 12" tails
 All units factory terminated with above cold leads, and 1/2" NPT glands
 Tolerance on wattages +/-10%

Cross Reference - * Common designs - Mineral Insulated Snow Melting Cables
 * Custom cable designs available upon request

Common Model #	TRM Model #	Length (ft)	120V	Wattages on various voltages			
				208V	240V	347V	600V
Grace	MI-Heat-220/120	108	220	650	875	-----	-----
Gary	MI-Heat-425/120	55	425	-----	-----	-----	-----
Parry	MI-Heat-2000/240	140	500	1500	2000	-----	-----
Host	MI-Heat-1600/208	68	535	1600	-----	-----	-----
Puck	MI-Heat-590/120	40	590	-----	-----	-----	-----
Union	MI-Heat-2100/240	264	530	1561	2100	-----	-----
Emma	MI-Heat-2300/208	95	765	2300	-----	-----	-----
Verna	MI-Heat-3200/240	177	800	2400	3200	-----	-----
Lisa	MI-Heat-1100/120	66	1100	-----	-----	-----	-----
Myra	MI-Heat-3100/208	132	1030	3100	-----	-----	-----
Rona	MI-Heat-4000/240	240	1000	3000	4000	-----	-----
Betty	MI-Heat-5200/240	280	1300	3900	5200	-----	-----
Ella	MI-Heat-6000/240	320	1500	4500	6000	-----	-----
Ida	MI-Heat-5500/208	260	1830	5500	-----	-----	-----
Irma	MI-Heat-7500/240	375	1920	5700	7500	-----	-----
Nancy	MI-Heat-7000/208	310	2300	7000	-----	-----	-----
Magna	MI-Heat-9000/240	550	2300	6800	9000	-----	-----
Juno	MI-Heat-12000/240	630	3000	9000	12000	-----	-----
Susan	MI-Heat-17000/240	717	4300	13000	17000	-----	-----
Ice	MI-Heat-4100/600	225	-----	-----	660	1375	4100
Sleet	MI-Heat-5800/600	310	-----	-----	930	1950	5800
Snow	MI-Heat-8000/600	428	-----	-----	1280	2675	8000
Drift	MI-Heat-11000/600	548	-----	-----	1750	3700	11000



Thermal Resources Management (TRM) Inc.
 175 Idema Road, Markham ON, L3R 1A9
 Tel: 1-905-940-4737 Fax: 1-905-940-4731
 trmcanada@rogers.com
 www.theheatingcableguys.com



MI-Heat Range of 300/600 Volt Rated MI copper heating cables
CSA Approved – Class 287201, CAN/CSA-C22.2 No.130

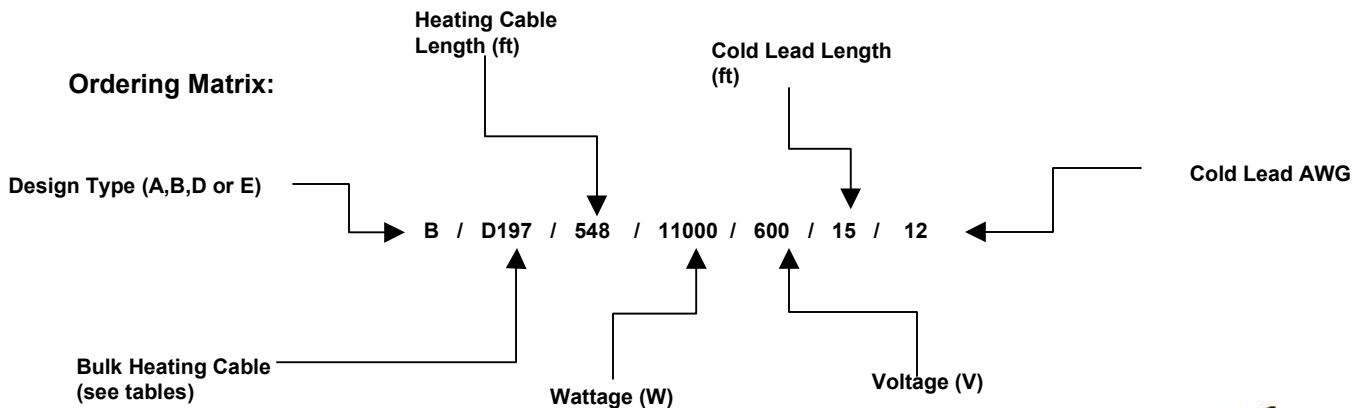
TRM Custom Copper MI Cables

** Custom cable designs using these parts available upon request*

Heating Cable Bulk Reference #	Ohms Resistance per foot	Max Voltage
D2000	0.61	300
D1280	0.39	600
D984	0.3	600
D656	0.2	600
D492	0.15	600
D345	0.105	600
D262	0.08	600
D197	0.06	600
D131	0.04	600
D98	0.03	600
D66	0.02	600
C33	0.01147	600
C21	0.00730	600
C13	0.00452	600

Cold Lead Bulk Reference Sizes:

AWG Size	Max Amps per CEC
# 14	20
#12	25
#10	40
#8	70
#4	135



Thermal Resources Management (TRM) Inc.
 175 Idema Road, Markham ON, L3R 1A9
 Tel: 1-905-940-4737 Fax: 1-905-940-4731
 trmcanada@rogers.com
 www.theheatingcableguys.com

