

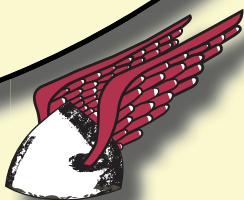
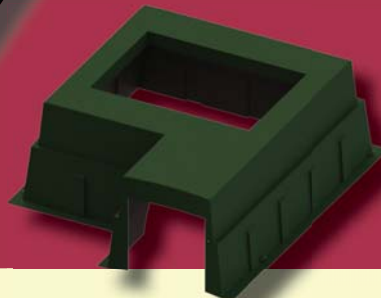
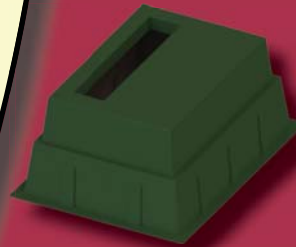
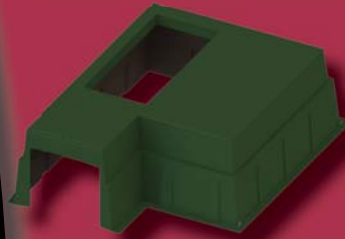
# NORDIC FIBERGLASS, INC.

## Wind Farm Products



# Box Pad Solutions

- Nordic leads the way with the first “chuted” fiberglass box pad. This unique design enables workers to fit the chute against the tower’s base cable opening. Underground cables from the tower are protected by the box pad all the way to the pad-mount transformer.
- Nordic’s standard RT (reinforced top) box pads support three phase grounding transformers. Nordic has been manufacturing RT box pads for over 25 years.
- Two chuted box pads provide the solution for connecting a transformer with another piece of equipment.
- Both box pads have “chutes” for underground cable to run from the tower to the pad mount equipment. By having each piece of equipment in-line, underground cables could be pre-cut to length and terminated with elbows.
- These chuted box pads supported over 15,000 lbs. of weight. They also offered cable training. The box pad’s deep and wide cavity allowed cables to be looped around the inside of the perimeter of the box pad.
- In case of an elbow failure, the extra cable can be used to attach a new elbow.



# **NORDIC FIBERGLASS, INC.**

*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

# Box Pad Testing

- Nordic Fiberglass conducted a toplod weight test by using two steel tubes placed parallel to the 2x6 supports. A total of 24,649 lbs. of plates including the two steel tubes was placed on the GS-82-81-36RTC1-MG-66x30 from October 28, 2008 through February 24, 2009 (see diagram1). Nordic used the Mitutoyo brand measuring device with MeasurLink software for recording the deflection at the points below.(see diagram 2)



## Deflection Results, 2/24/09:

- Point 1: 0.061
- Point 2: -0.065
- Point 3: -0.022
- Point 4: 0.213
- Point 5: 0.499
- Point 6: 0.465
- Point 7: 0.142
- Point 8: 0.165
- Point 9: 0.232

## The deflection results after the 24,649 lbs. was removed 2/25/09:

- Point 1: 0.014
- Point 2: -0.098
- Point 3: -0.044
- Point 4: 0.061
- Point 5: 0.112
- Point 6: 0.174
- Point 7: 0.041
- Point 8: 0.033
- Point 9: 0.078

Diagram 1. Steel Tubes

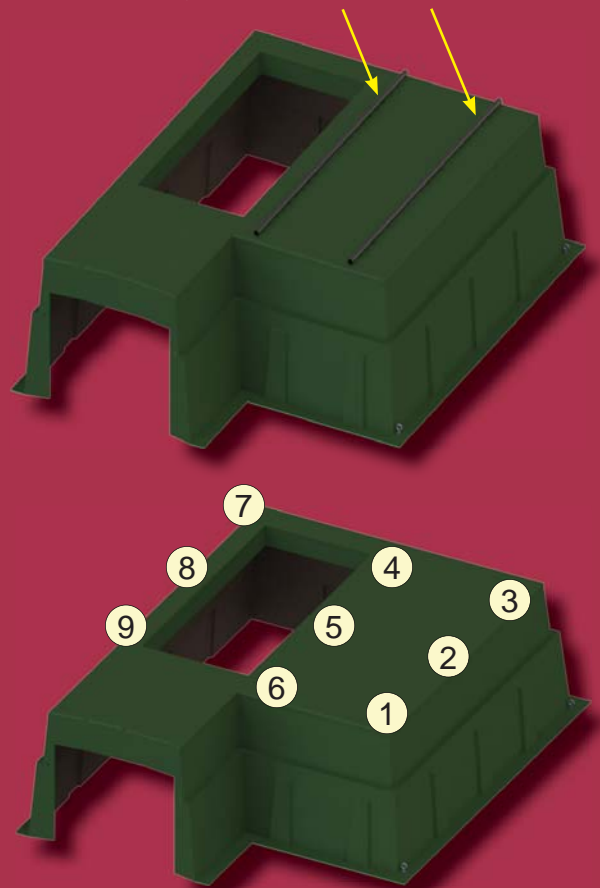
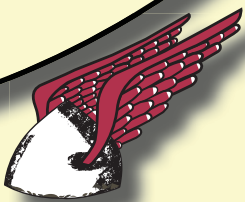


Diagram 2



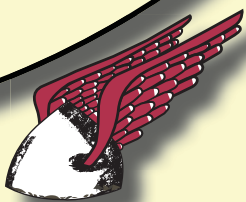
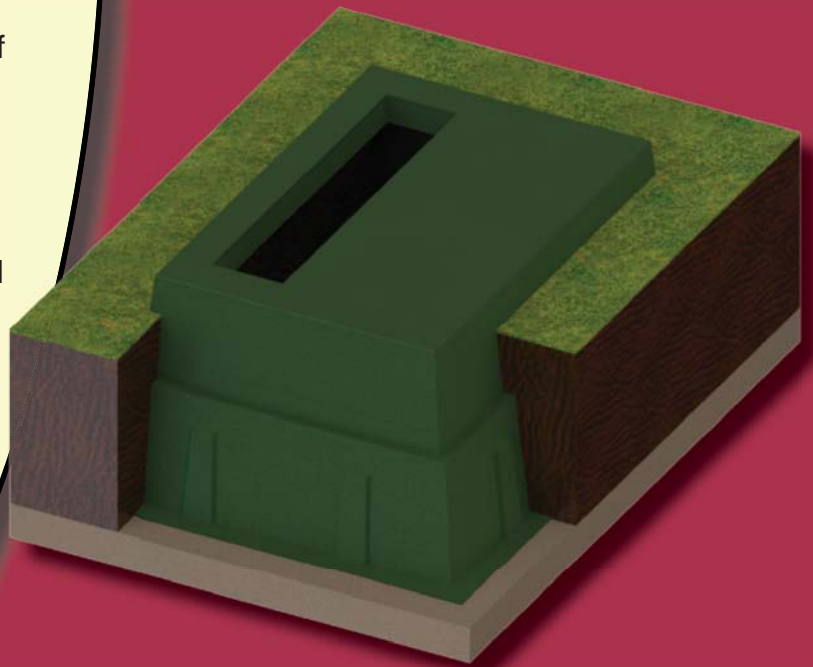
# **NORDIC FIBERGLASS, INC.**

*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

## **Box Pad Installation**

1. Measure the bottom width and depth of the box pad flanges.
2. Measure down 6" below the top surface and mark that spot.
3. Then measure from that spot to the bottom of the box pad, that is the maximum burial depth.
4. Dig a hole approximately 6" deeper than the maximum burial depth and 12" wider than the bottom flange dimensions of the box pad.
5. Add 6" of gravel to the bottom of the hole, machine tamp and level it.
6. Place the box pad on the leveled gravel bed.
7. Using a level, ensure that the top surface is level. If not level, add or remove gravel, re-tamp and level again.
8. Back-fill with loose earth material.
9. Do not back-fill with chunks of frozen material or large rocks next to the ground sleeve.
10. Pack the back-fill material by foot tamping, no machine tamping.



**NORDIC FIBERGLASS, INC.**  
*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

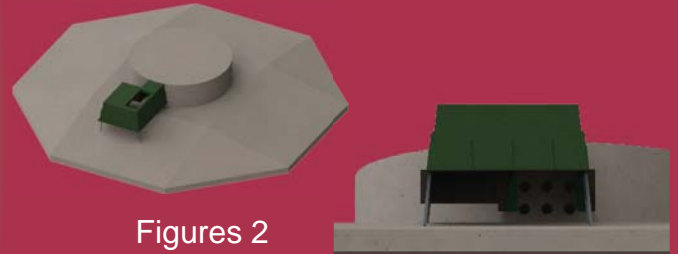
## Box Pad /Uni-strut Installation

### Guidelines:

1. Attach cable straps to the 4 eyebolts located at the 4 corners of the box pad.
2. Lift the entire box pad off the ground.
3. Attach the 4 uni-strut plates to each corner of the box pad, using the pre-drilled holes. (See Figures 1)
4. Slide the uni-strut over the uni-strut plate as far as allowed. Two short uni-strut channels towards the tower side and two longer uni-strut channels away from the tower. Tighten the nuts. Do this to all four corner uni-strut assemblies. (See Figures 1)
5. Move the box pad to the foundation and line up the box pad's chute near the opening of the tower. Adjust the height of the box pad until the top of the box pad is level to the top of the tower pedestal. (See Figures 2)
6. Level the entire box pad. Loosen the uni-strut bolts allowing the uni-struts to drop and contact the tower foundation. When level, tighten the nuts.
7. After the box pad is level, attach the box pad chute to the tower's pedestal using the two pre-drilled holes in the chute flange.
8. Backfill and compact the entire foundation, leaving a trench around the box pad. (See Figure 3)
9. Proceed with pouring a cement slurry around the box pad. Covering 3" above the base flange on the inside and outside of the box pad. (See Figure 4)
10. When the slurry has cured, backfill around the box pad, so the final grade is about 4-6 inches below the top surface. Hydraulic tamping is not recommended. (See Figures 4)



Figures 1



Figures 2

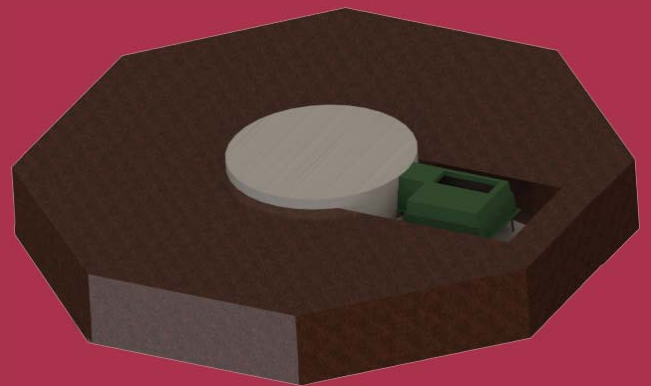
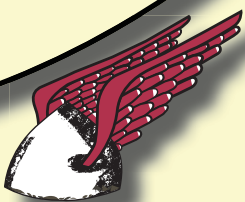
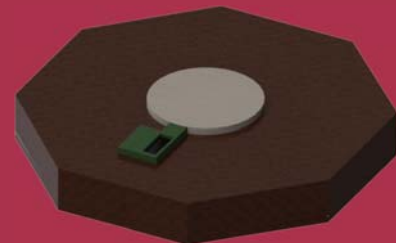


Figure 3



Figures 4



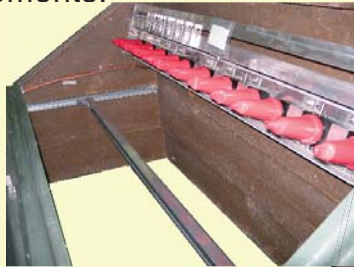
# NORDIC FIBERGLASS, INC.

*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

# Cabinet Solutions

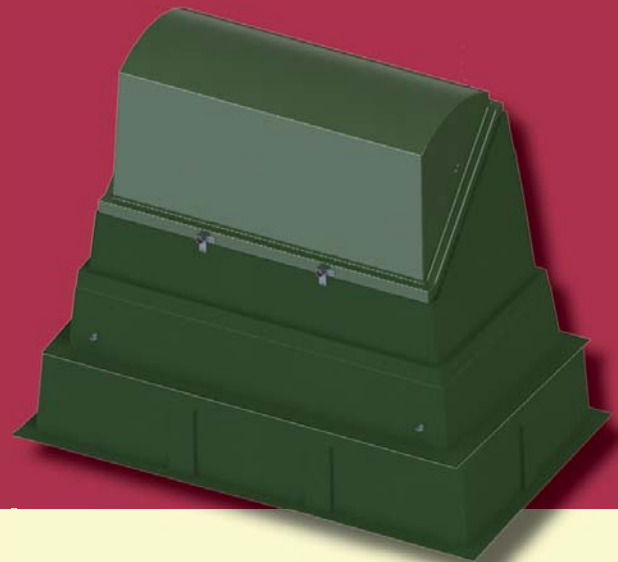
- Nordic sectionalizing cabinets are the junction point solution for collection systems. Each cabinet is part of the “daisy chain” solution from the towers to the substation.
- Nordic’s 600Amp cabinets will accommodate up to 3; 2, 3 or 4-point 35kV 600A Elastimold or Cooper dead-break junctions with U-straps.
- 18” or 36” extensions are available for extra depth for large cable bends for todays underground cable requirements.
- Uni-strut channel for cable clamping are designed to hold cables upright for less elbow fatigue.
- ND-6830 rotational lid rotates on pivot bolts creating a lower center of gravity that reduces the force required to open the cabinet.
- ND-450 cabinet has a stainless steel hinge and two cam arms to lock the lid in place.
- Both cabinets allow for spacious cable training. In case of a elbow failure, extra cable slack can be used to attach a new elbow.
- Copper grounding systems available.



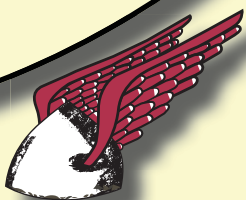
Installed ND-683054 cabinet



ND-683054-MG-PA71-43564-B3B



ND-450-MG-10135-43564-W3E with 18” High Extension



# **NORDIC FIBERGLASS, INC.**

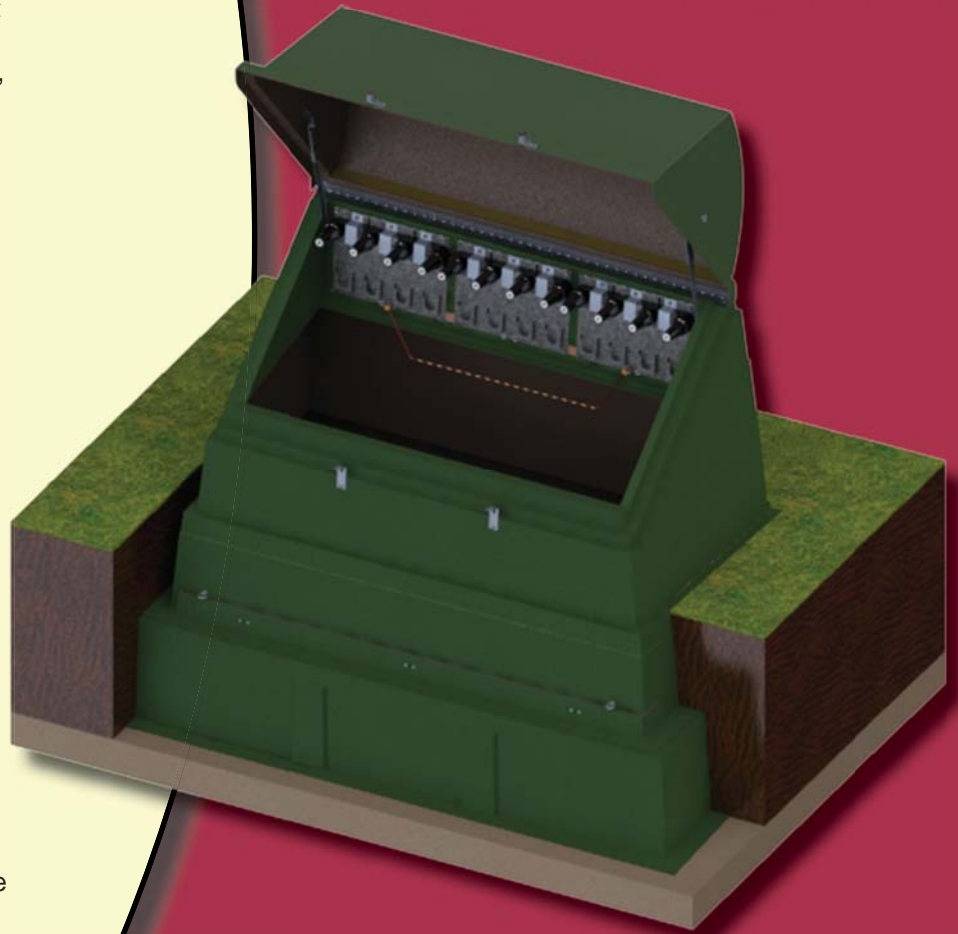
*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

# Cabinet Installation

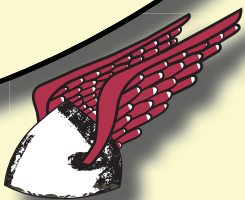
All Nordic Fiberglass cabinets and extensions are shipped separately. Bolt cabinet to extension before installation begins. (If using the 36" high extension, make sure the treated 4x4 is installed)

1. Measure the bottom width and depth of the extension flanges.
2. Measure 10" down from the top of the cabinet locking system, mark that spot.
3. Then measure from that spot on the cabinet to the bottom of the attached extension, that's the maximum burial depth.
4. Dig a hole approximately 6" deeper than the maximum burial depth and 12" wider than the bottom flange dimensions of the extension.
5. Add 6" of gravel to the bottom of the hole, machine tamp and level it.
6. Close the cabinet lid and tighten the penta-head bolt(s).
7. Hook-up lifting slings to the cabinet's 4 eyebolts.
8. Lower the cabinet & extension into the hole.
9. Using a level, ensure that the cabinet is level. If not level, add or remove gravel, re-tamp and level again.
10. Backfill with loose dirt, no chunks of dirt or rocks, no machine tamping.
11. Finish grade approximately 6" below locking system.
12. Unscrew the penta-head bolts and open the lid.



ND-450-MG-10135-43564-B3B shown installed with the ND-450-MG-18EXT, 18" high extension. Extensions allows for cables that need a greater bending radius. Also available is a 36" high extension called the ND-450-MG-36EXT.

For the ND-683054 cabinet, an 18" high extension is available called the ND-683054-MG-18EXT, for the 36" high unit, it's called the ND-683054-36EXT. Be sure to ask about cable support brackets for both cabinets since the weight of the hanging cable pulls down on the junction and elbow causing fatigue.



# **NORDIC FIBERGLASS, INC.**

*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)

## Cross Bonding Enclosures

- Nordic's ND-130-MG-ZHP003-X-X fiberglass cabinet for cross bonding cable applications. Three installed surge arrestors provide stable electrical flow by protecting against over current situations.
- MPP-141480-MG-CB is an 80" high plastic pedestal with accommodations for three arrestors.

## Splice Cabinets

- One of the newest Nordic innovations is the ND-362436-MG-TBS-X-X cabinet for cable splices (pictured to the right inset). Customer supplied cable clamps on a strut assembly hold the cables in place for a secure splice. Up to three splices can be made in this enclosure. Extensions are available. For numerous splices, check our ND-683054-MG-X-X-X and the ND-450-MG-X-X-X.



ND-683054-MG-X-X-X



ND-450-MG-X-X-X

## Hand Holes & Above Grade Pedestals

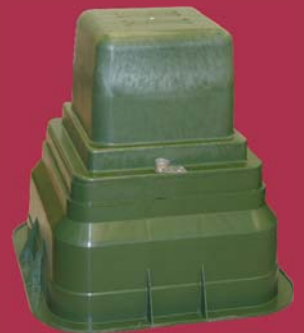
- For fiber optic splices



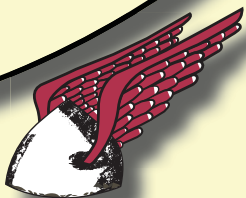
PHH-212115-MG



PSP-151530-MG-L6350



PSPX-151530-MG



# NORDIC FIBERGLASS, INC.

*Quality Products for the Electric Utility Industry*

P.O. Box 27 Warren, MN 56762 Tel: 218-745-5095 Fax: 218-745-4990 [www.nordicfiberglass.com](http://www.nordicfiberglass.com)