

3v - 5/9ths 2x4 Dome Kit Assembly Instructions









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Parts List

All Natural Frequency Hubs, due to their generally identical look, are identified by an alphanumeric numbering system. Located on the underside of every hub you will find impressions that identify the hub as far as identification of which strut is associated to each location in the hub.

| PART# | DESCRIPTION | | QTY |
|--------|------------------------|---|-----|
| O3v1 | OUTSIDE 5 STRUT HUB |  | 6 |
| O3v2 | OUTSIDE 6 STRUT HUB |  | 30 |
| O3v3 | OUTSIDE 6 STRUT HUB |  | 10 |
| HO3v2L | OUTSIDE BASE ROW HUB A |  | 5 |
| HO3v2R | OUTSIDE BASE ROW HUB B |  | 5 |
| HO3v3 | OUTSIDE BASE ROW HUB C |  | 5 |

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| | | | |
|---------------|-------------------|---|-------------|
| TH1210 | 1.5" SCREW |  | 1350 |
|---------------|-------------------|---|-------------|

Required Resources

- Minimum 2 People
- US Standard 2x4 Lumber for Struts (See Strut Preparation section below for sizing and quantity)
- 660 Additional Comparable Screws or Bolts (min. 5/16") for side fastening
- Measuring Tape
- Ground Stake
- String (appropriate amount based on size of dome)
- Spray Paint or other ground marking method for base row layout
- Colored Spray Paint or other marking method for Struts
- Power Drill with #3 Phillips Bit
- Scaffolding (appropriate amount based on size of dome, highest point will be ½ the desired diameter plus any riser wall)
- Step Ladder(s)

NOTE: Natural Frequency only provides the hub connectors and accessories for construction. The guides herein related to site preparation, riser walls, sheathing/paneling/covering are for information purposes only related to the interaction and relationship to our hub connectors and are not a substitute for expert advice on construction methods of these subjects.

Site Preparation Guide

1. Choose an area where you would like the dome to be constructed. Things to keep in mind for site selection are:
 - a. Sun Exposure/Shade Considerations based on dome use/function
 - b. Water runoff
 - c. Grade angle
 - d. Window Locations
2. Clear the area of rocks, foliage, grass or any other item that may interfere with leveling or the functionality of the dome
3. Determine Site Preparation and Anchoring method, this could include:
 - a. **Crushed Stone**
A crushed stone base, 4-5" deep, is one of the best ways to prepare your site. Be sure and use "crushed" stone as opposed to "pea" stone. 1/2" is a good diameter and is relatively inexpensive. Place your dome in the center of the pad leaving a minimum of 1' perimeter of stone around the shed. When digging out the area to accept the stone, start at the lowest area and establish the grade by digging down 4-6". You can now excavate the rest of the site keeping in mind the site should be level when finished.
 - b. **Sono Tubes**
Also known as concrete piers are great for a strong anchor
 - c. **Wooden Post**
Typically 4x4 posts placed in the ground, this method is a great way to provide a strong structure that is easily framed too. It is important to use pressure treated timbers for the posts.
 - d. **Cement Slab**
A cement slab is one of the more expensive ways to prepare your site, however if done correctly it can also be the best. A slab will keep the dome level and prevent grass and weeds from growing both under and around it. It also offers many options for anchoring the dome.
 - e. **Ground**
You may also decide to simply place your dome directly on the ground. It is important that the shed has pressure treated timbers used where there is contact with the ground
 - f. **Riser Wall**
See next section below.
4. Prepare the site using recommended processes depending on method chosen

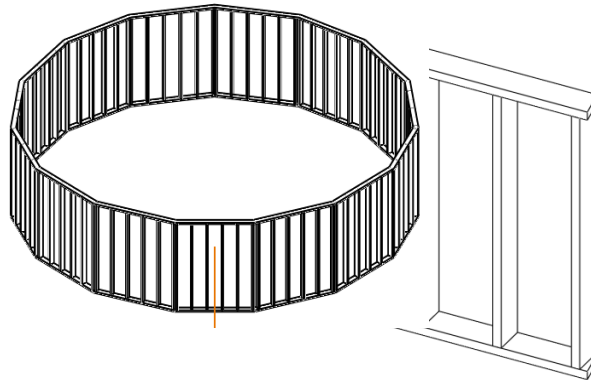
Riser Wall Guide

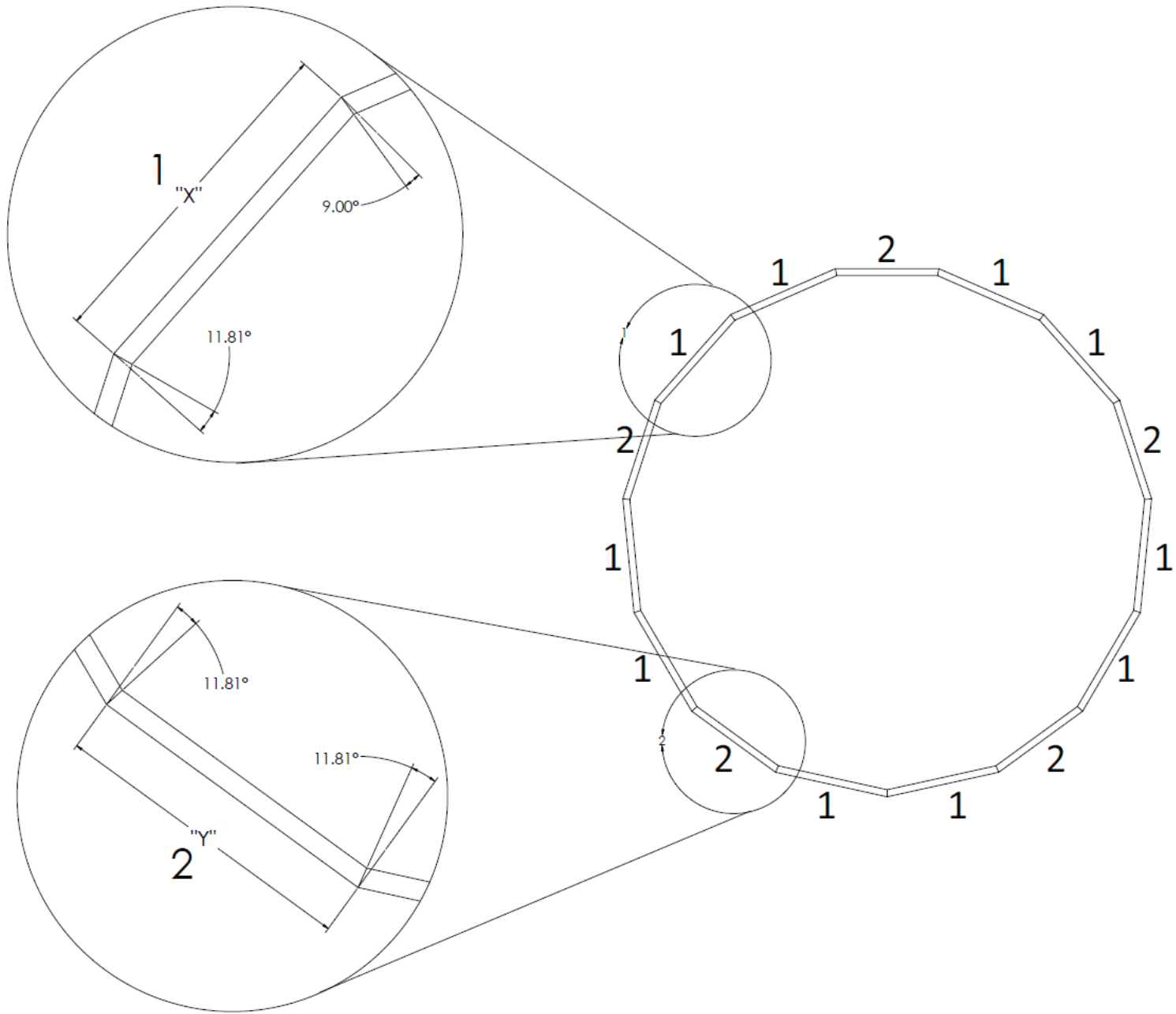
| Riser Wall Strut Length (inches) | | 1 | 2 |
|--|----|----------|----------|
| | | "X" | "Y" |
| | | QTY 20 | QTY 10 |
| DOME DIAMETER (feet) | 12 | 30 3/8 | 27 1/2 |
| | 13 | 32 7/8 | 29 13/16 |
| | 14 | 35 3/8 | 32 1/8 |
| | 15 | 37 15/16 | 34 7/16 |
| | 16 | 40 7/16 | 36 11/16 |
| | 17 | 43 | 39 |
| | 18 | 45 1/2 | 41 5/16 |
| | 19 | 48 1/16 | 43 9/16 |
| | 20 | 50 9/16 | 45 7/8 |
| | 21 | 53 1/8 | 48 3/16 |
| | 22 | 55 5/8 | 50 7/16 |
| | 23 | 58 3/16 | 52 3/4 |
| | 24 | 60 11/16 | 55 1/16 |
| | 25 | 63 1/4 | 57 3/8 |
| | 26 | 65 3/4 | 59 5/8 |
| | 27 | 68 1/4 | 61 15/16 |
| | 28 | 70 13/16 | 64 1/4 |
| | 29 | 73 5/16 | 66 1/2 |
| | 30 | 75 7/8 | 68 13/16 |
| | 31 | 78 3/8 | 71 1/8 |
| | 32 | 80 15/16 | 73 3/8 |
| | 33 | 83 7/16 | 75 11/16 |
| | 34 | 86 | 78 |
| | 35 | 88 1/2 | 80 5/16 |
| | 36 | 91 1/16 | 82 9/16 |

In general the use of a riser wall is to gain vertical height. That raised addition helps create vertical walls for doors, cabinets, windows, sinks etc. Riser Walls can be constructed from poured concrete, cinder block or wood.

Sizing for the riser wall top and bottom boards can be found on the supplied table for each individual dome diameter which represents the diameter to the outside of the framing members.

- The outer points of each board should lay on a scribed circle the diameter of the dome to be constructed
- Each horizontal board cut to the "X" or "Y" length below must be tapered in accordance with the graphic on the next page.
- The "1" Boards will be utilized twice, but must be flipped over to make the angles match (ie, the 11.81 degree cuts must always meet up and the 9 degree angles must always meet up)
- Each section can be built individually by constructing a bottom and top board with studs 16" or less apart and the length which accomplishes the height of the wall you are constructing
- Once all sections are constructed, combine them in the order outlined by the graphic on the next page and fasten together by bolting and install mending plates at the seams





| 3v | | Strut A (inches) | Strut B (inches) | Strut C (inches) | Strut D (inches) |
|----------------------|----|---------------------|---------------------|---------------------|---------------------|
| Quantity | | 30 | 35 | 80 | 20 |
| DOME DIAMETER (feet) | 12 | 16 3/4 | 20 1/2 | 23 3/8 | 24 3/4 |
| | 13 | 18 11/16 | 22 13/16 | 25 7/8 | 27 3/8 |
| | 14 | 20 11/16 | 25 1/8 | 28 3/8 | 30 1/16 |
| | 15 | 22 11/16 | 27 7/16 | 30 15/16 | 32 11/16 |
| | 16 | 24 5/8 | 29 11/16 | 33 7/16 | 35 5/16 |
| | 17 | 26 5/8 | 32 | 36 | 38 |
| | 18 | 28 5/8 | 34 5/16 | 38 1/2 | 40 5/8 |
| | 19 | 30 9/16 | 36 9/16 | 41 1/16 | 43 5/16 |
| | 20 | 32 9/16 | 38 7/8 | 43 9/16 | 45 15/16 |
| | 21 | 34 9/16 | 41 3/16 | 46 1/8 | 48 9/16 |
| | 22 | 36 1/2 | 43 7/16 | 48 5/8 | 51 1/4 |
| | 23 | 38 1/2 | 45 3/4 | 51 3/16 | 53 7/8 |
| | 24 | 40 1/2 | 48 1/16 | 53 11/16 | 56 1/2 |
| | 25 | 42 7/16 | 50 3/8 | 56 1/4 | 59 3/16 |
| | 26 | 44 7/16 | 52 5/8 | 58 3/4 | 61 13/16 |
| | 27 | 46 7/16 | 54 15/16 | 61 1/4 | 64 7/16 |
| | 28 | 48 3/8 | 57 1/4 | 63 13/16 | 67 1/8 |
| | 29 | 50 3/8 | 59 1/2 | 66 5/16 | 69 3/4 |
| | 30 | 52 3/8 | 61 13/16 | 68 7/8 | 72 3/8 |
| | 31 | 54 5/16 | 64 1/8 | 71 3/8 | 75 1/16 |
| | 32 | 56 5/16 | 66 3/8 | 73 15/16 | 77 11/16 |
| | 33 | 58 1/4 | 68 11/16 | 76 7/16 | 80 5/16 |
| | 34 | 60 1/4 | 71 | 79 | 83 |
| | 35 | 62 1/4 | 73 5/16 | 81 1/2 | 85 5/8 |
| | 36 | 64 3/16 | 75 9/16 | 84 1/16 | 88 1/4 |

Strut Preparation

Using the table to the right, find the diameter of the dome you are constructing in the first column. Then follow that number to the right to find the length of struts. The numbers are rounded to the nearest 1/16th of an inch.

The quantity of each length of board is shown in the second row, 30 of strut A and 35 of strut B, 80 of strut C and 20 of Strut D

Gather your strut material* and ensure that your saw is set to 90 degrees

Cut the appropriate quantity listed in the second row of the table for each length, keep them separated into two piles.

**NOTE: check that the cut and uncut ends are free of staples, protrusions or anything that would prevent it from butting up to the hub connector.*

Label the struts so that they can be easily identified, simply by scribing an "A", "B", etc or apply spray paint to both ends of the boards while they are stacked. These colors will correspond to the markings on the hub connectors.

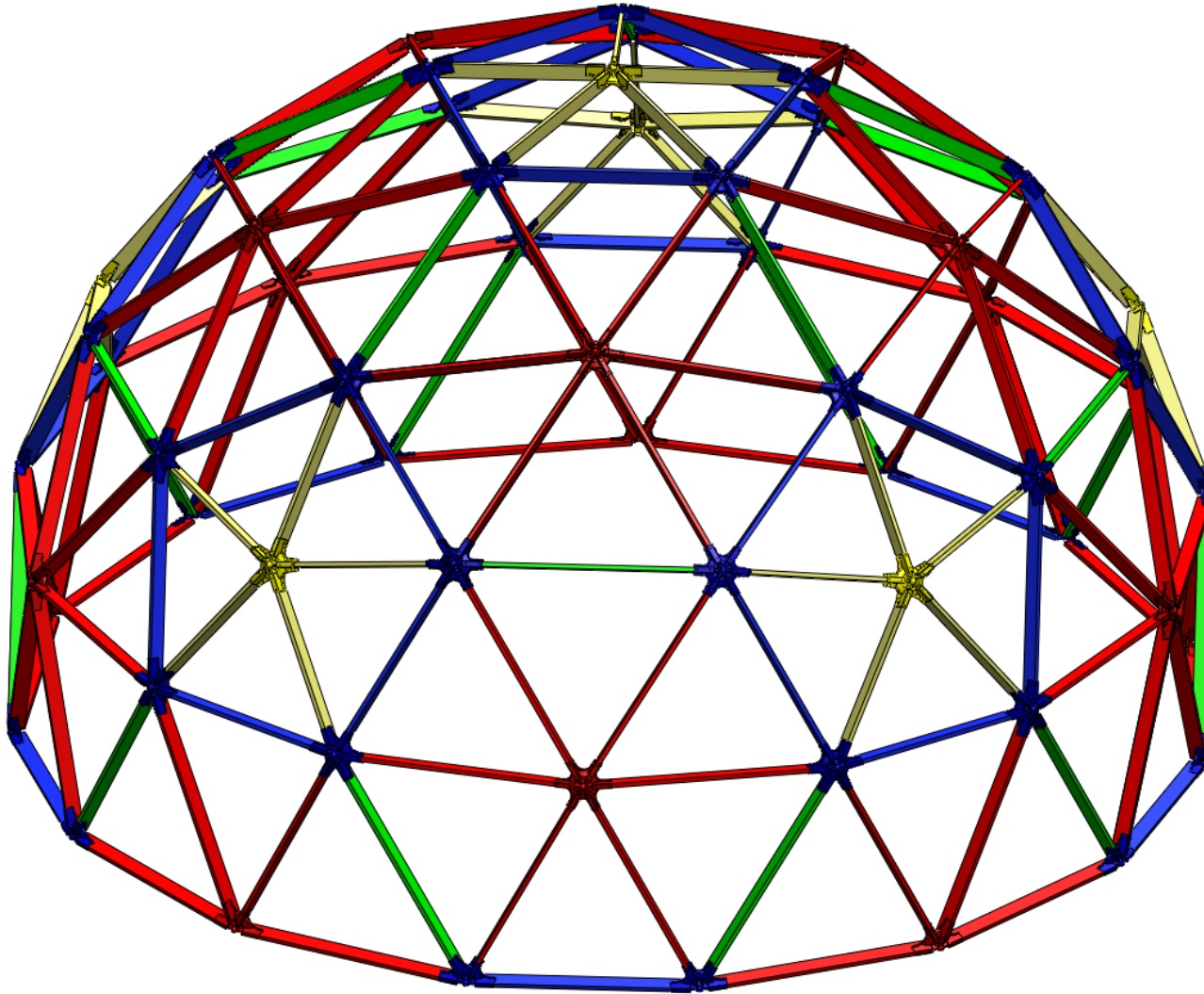


- Amber (Yellow) for Strut A
- Blue for Strut B
- Crimson (Red) for C
- Dark Green for D

NOTE: The 26' dome maximizes the material usage from standard home improvement stores assuming 8' lumber and 4' x 8' plywood/sheathing, smaller domes will leave more material cut off and unused. As seen in the table to the left, domes smaller than about 19' will also maximize the material by allowing two struts from each 8' board

Hub & Strut Location Identification

- The primary method for identifying the strut locations and assembly order is that each strut location has a marking located on it that identifies the type of strut to be used in that location. Locations where “A” struts go will have a yellow (Amber) marking; the locations where “B” struts go will be labeled with a blue marking.
- Lastly, in the case that a marking is missing, the type of strut that is to be used in each strut location on the connector is also embossed in the part near the center and aligned with each strut location.



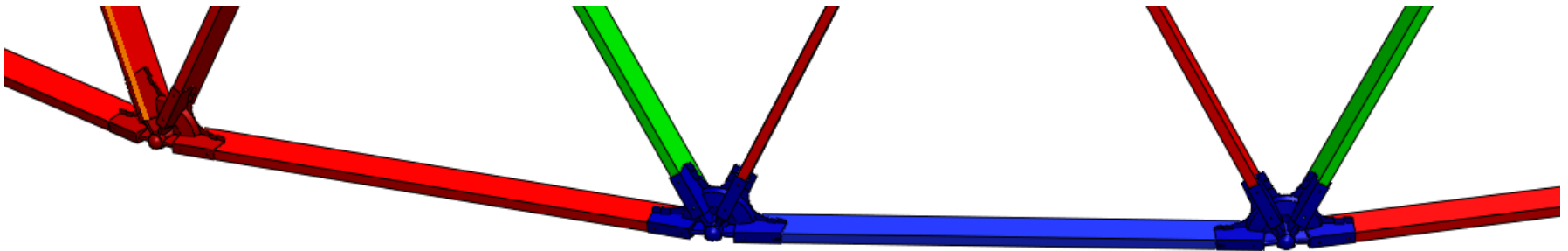
Dome Frame Construction

Special Considerations:

- *When mating a strut to a hub, always make sure that the end of the strut “bottoms out” in the hub strut slot, this ensures the correct dimensions are held throughout construction and will help with consistent panel sizing.*

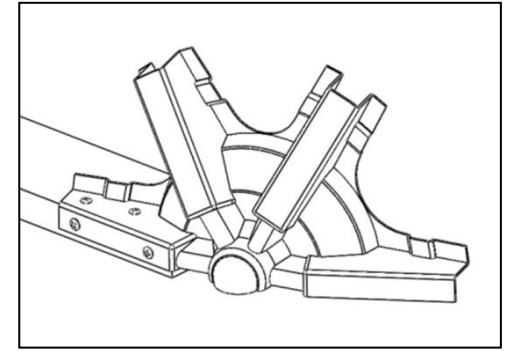
Instructions:

1. Once the site is prepared and level, locate the middle of the site and drive a stake in until about 2” is visible above the ground. Place a screw in the middle of the stake leaving about 1/4” of the screw above the top of the stake.
2. Map out the radius of the dome you are building by hooking a tape measure/string to the screw in the stake and stretch it out to the determined radius. Using some method (i.e. spray paint, scribe, etc) mark the site as you walk around keeping the tape measure/string taught. Complete marking all the way around creating a circle with the full diameter of the desired dome outside dimension.
3. Check that the scribed circle is correct by re-measuring several locations.
4. Choose a Base Row outside hub connector to begin with. There is a pattern to follow for choosing. It starts with an all C (Red) hub, then a C (red to the left), then a C (Red) to the right, then repeat around the rest of the dome.

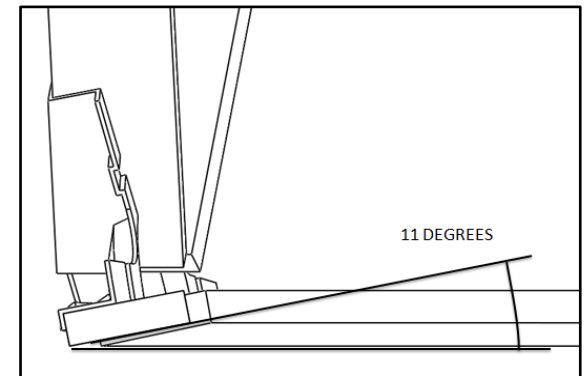


5. Place the hub so that the outside of the hub lines up with the scribed line. **ALL hubs and struts should be in the INSIDE of the circle.**
6. Starting with either side of the hub, insert the first strut, matching the color (See color reference under Strut Preparation) on the hub to the matching colored strut, until it butts up. Fasten with 2 screws in the top as shown in the figure to the right.

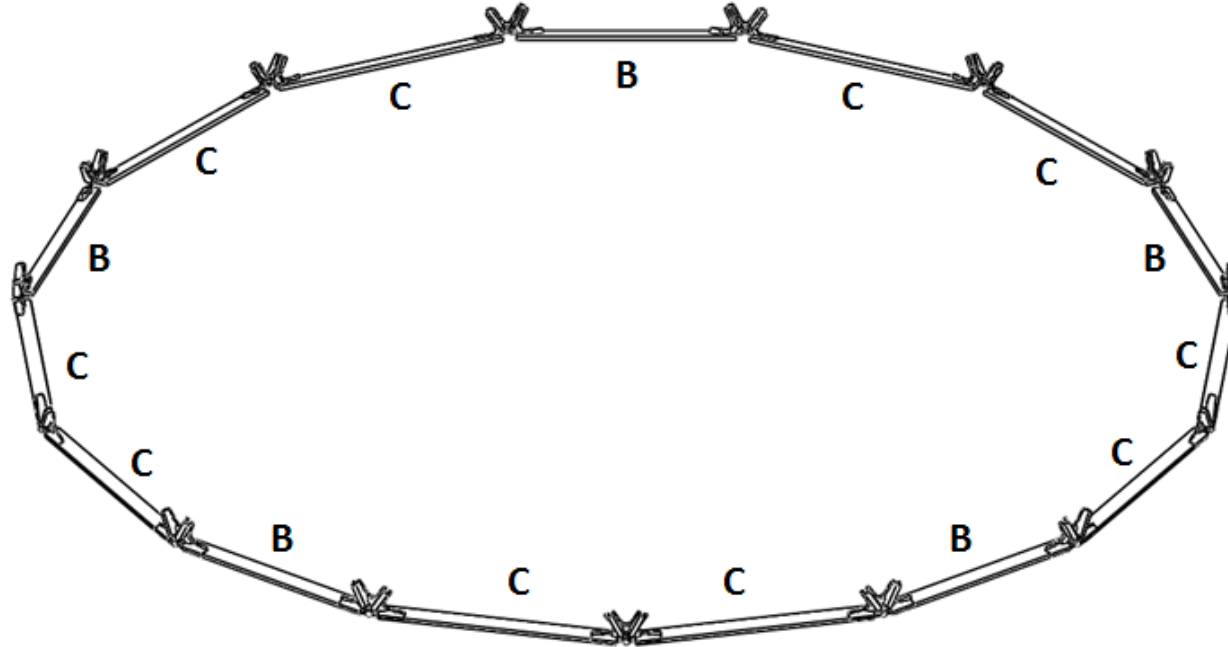
NOTE: Due to different preferences, screws have only been provided for the basic assembly of the dome through the top of the hub connector. Additional comparable screws must be added to the sides of the hubs and for more permanent structures, drill through and use two bolts per each strut end. (min. 5/16" bolts with washers)



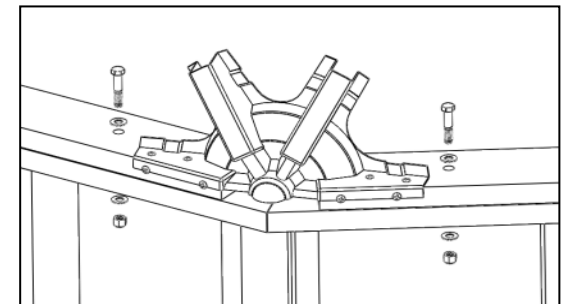
7. Then slide the next hub, making sure the color markings match the strut, onto the opposite end of that strut and fasten. **NOTE: The nature of the 3v Dome causes the base row to be assembled at 11 degrees from flat. See figure below. This is due to the fact that over half sphere is being constructed. This space must be shimmed to the base structure to properly support the dome structure. This is accomplished by fastening shim materials or boards cut to the 11 degree angle into the gap.**



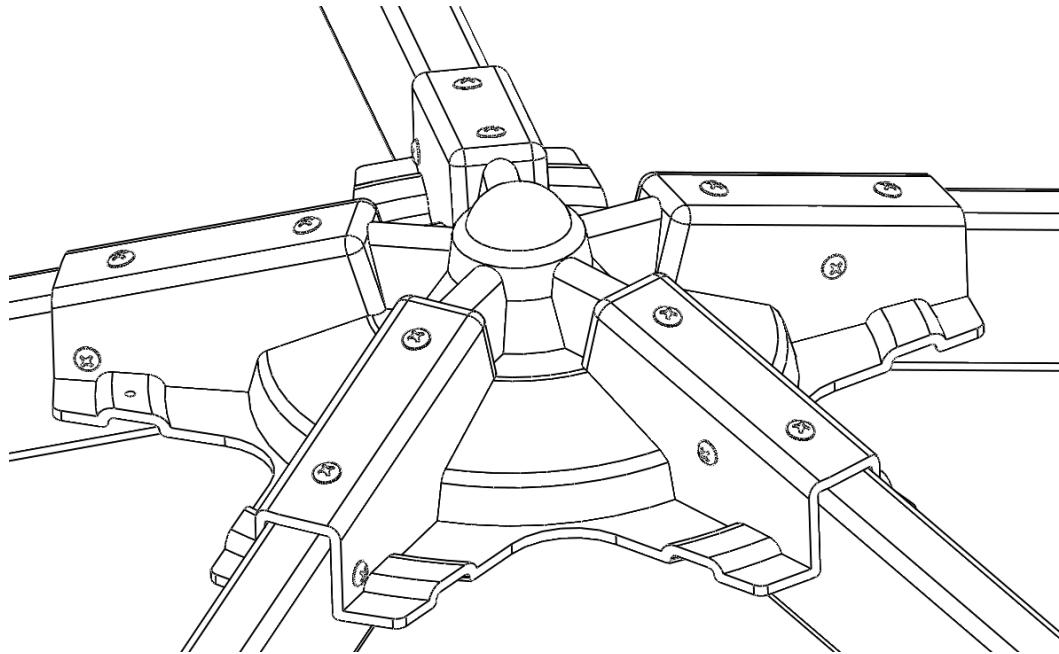
8. Following the colors, continue adding hub connectors and struts, fastening as you go. Continue around the circle, until you reach the hub you started with, completing the 1st horizontal or base row.



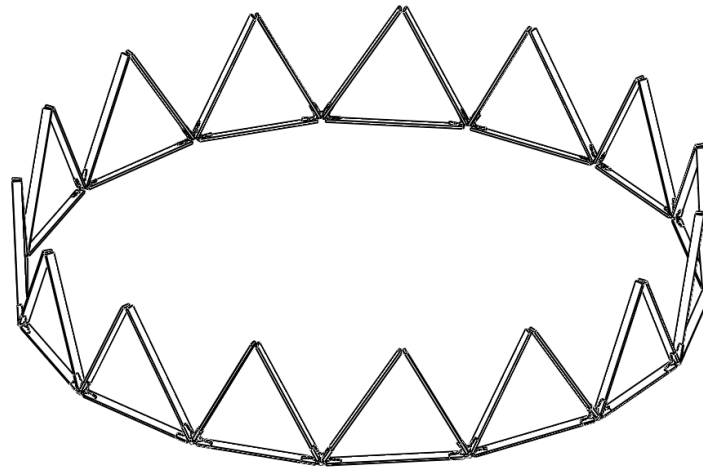
9. Using a tape measure, check that the hubs are all equal distance from the center stake, pushing or pulling the hubs into position as you go around.
10. At this time, the structure can be anchored to the sub-structure. Utilize the best method based on the type of substructure. Some options are listed below. An anchor point should be positioned just outside the edges of each connector on both sides as well as the center of the strut between the two hub connectors. Ensure that proper shims are used at all bolting and support points to compensate for the 11 degree angle of the base boards.
- Concrete – Minimum ½" Concrete Anchors with Nuts and Fender Washers
 - Riser Wall – Bolt through using minimum 7/16" Hex Bolts, Nuts and Washers (See Image), Hurricane Straps
 - Ground –ground anchors, spikes, U-shaped rebar



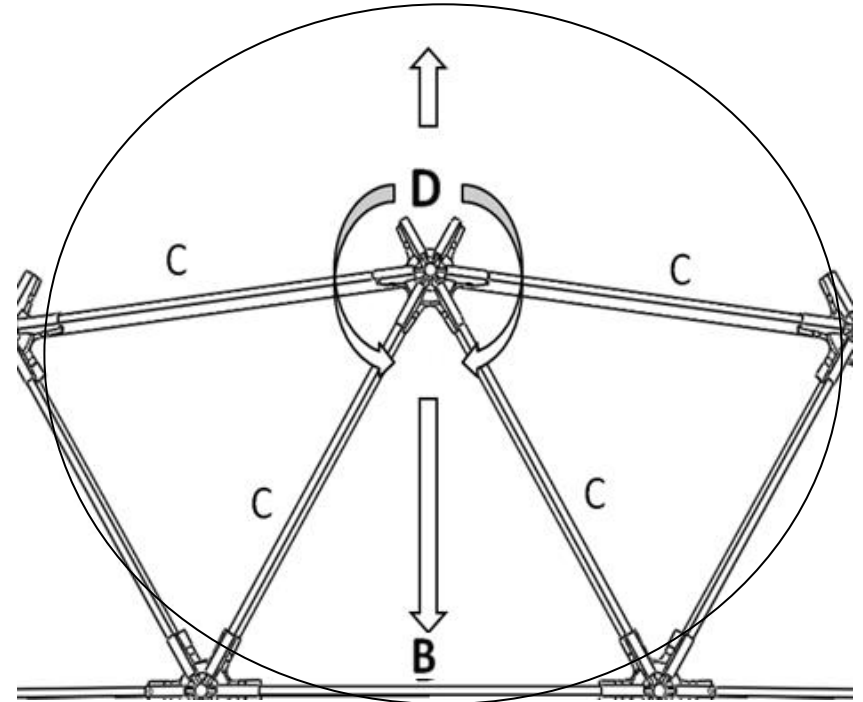
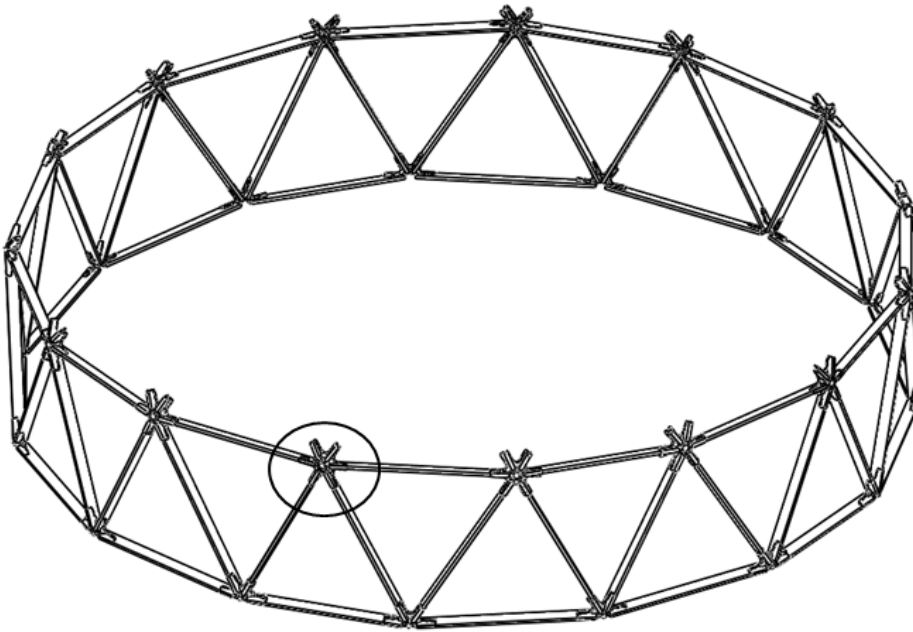
11. Following the colors on the connectors, insert the correct vertical struts from two base row hubs and join them with the correct hub. Fasten as shown below (Or with bolts through the sides). The holes for the side screws are not drilled due to some customers preferring to use bolts.



12. Continue around until all vertical struts are installed. When necessary, support any hanging struts until both ends are supported so undue forces are not put on the connectors which may bend or break them. The true strength of a geodesic dome comes from the completed structure and care must be taken until all pieces are in place.

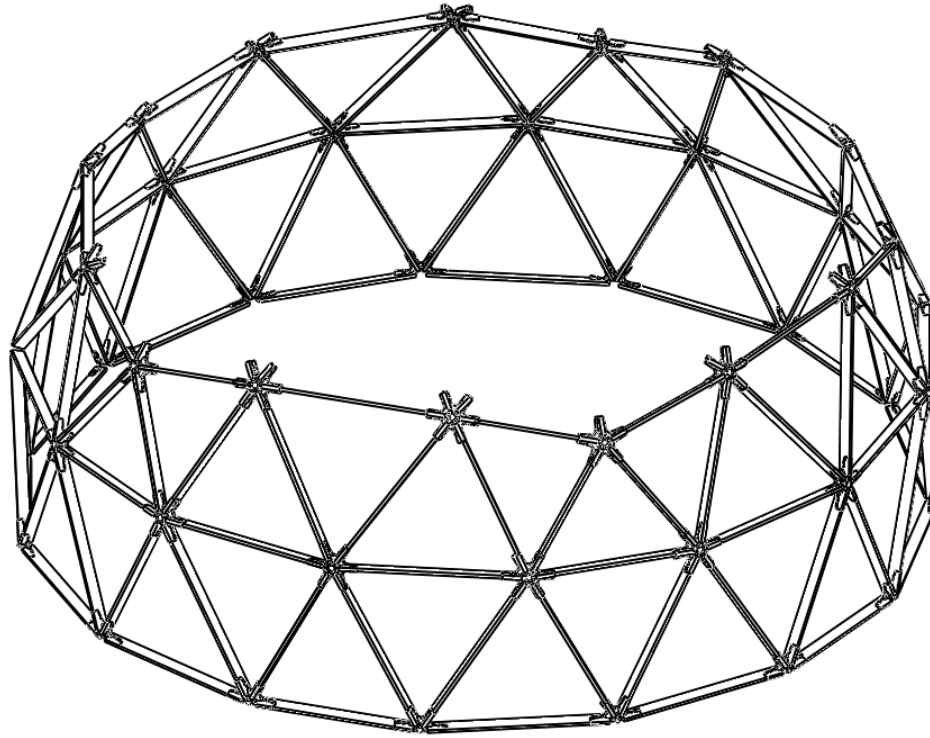


13. Now start to install the hubs to the vertical struts per the colors, fastening along the way. **Anywhere there are two C struts coming up from the base together the O3v3 hubs which install at their ends and have all "C" (Red) struts must be oriented per the detailed diagram to the right with the B marking facing the "B" strut below it. Failure to orient the hub correctly will result in an incorrect assembly.**

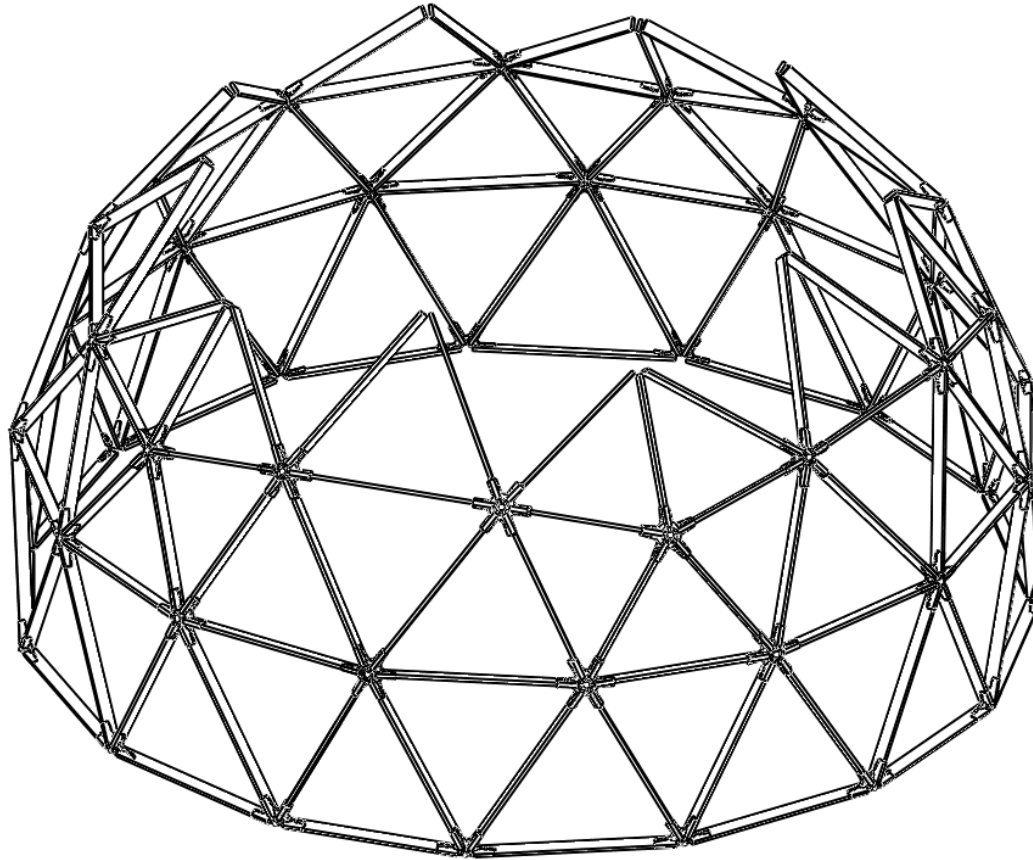


14. Insert the correct horizontal struts between the newly installed hubs and fasten to form the 1st horizontal row.

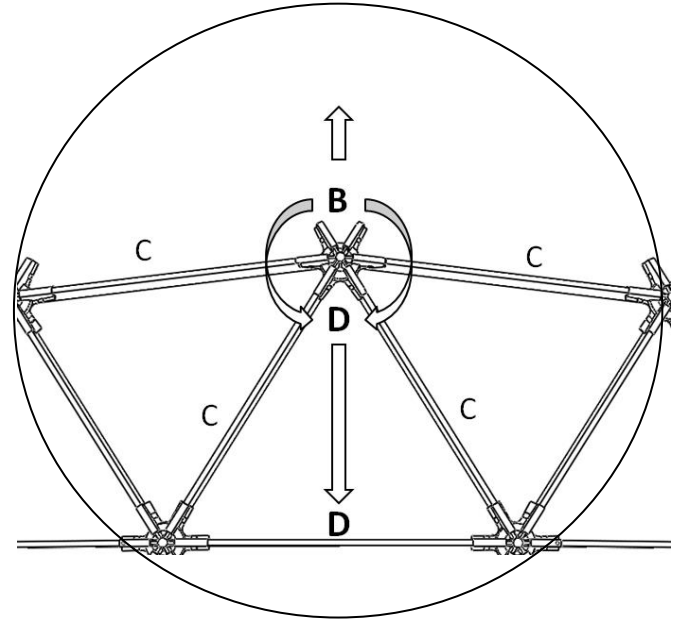
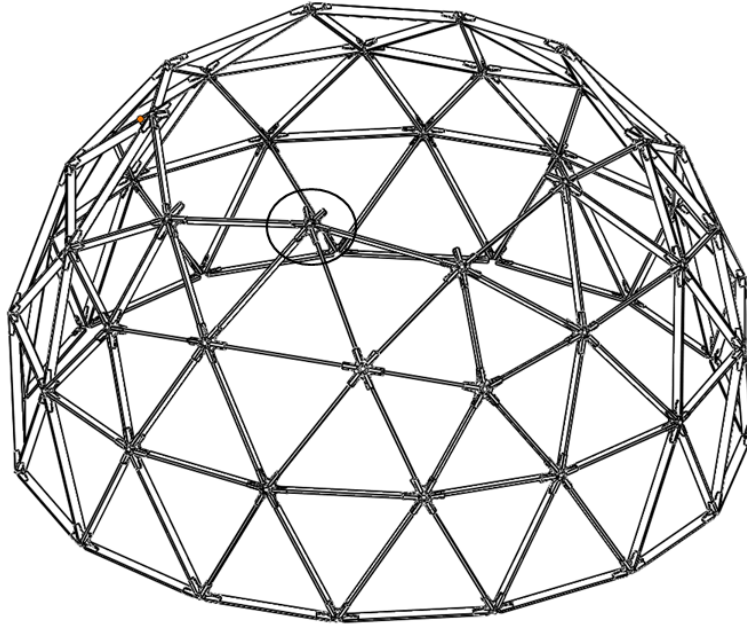
15. Continue around until all vertical struts are installed in the second row. When necessary, support any hanging struts until both ends are supported so undue forces are not put on the connectors which may bend or break them. The true strength of a geodesic dome comes from the completed structure and care must be taken until all pieces are in place.



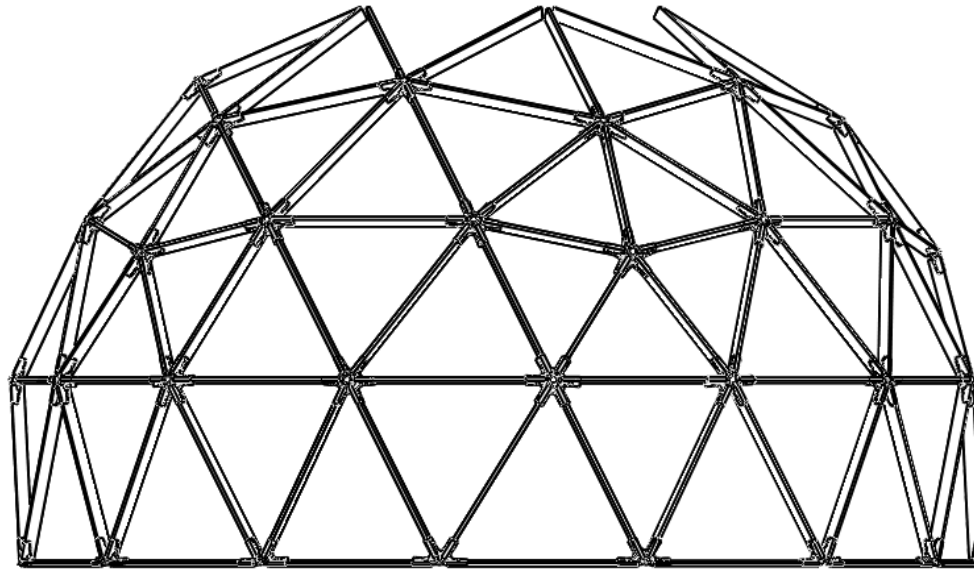
16. Now is a good time to test fit the sheathing panels if utilizing any. **Refer to the Panel Guide below.** To ensure a correct fit, the panels should create an expansion/contraction gap and be sized so that the edge of each panel is kept approximately $1/16^{\text{th}}$ of an inch from the center of the strut. If they do not fit correctly, check that the strut lengths are correct and that the panel dimensions match the table. It is recommended that all panels be measured to fit each section prior to cutting.



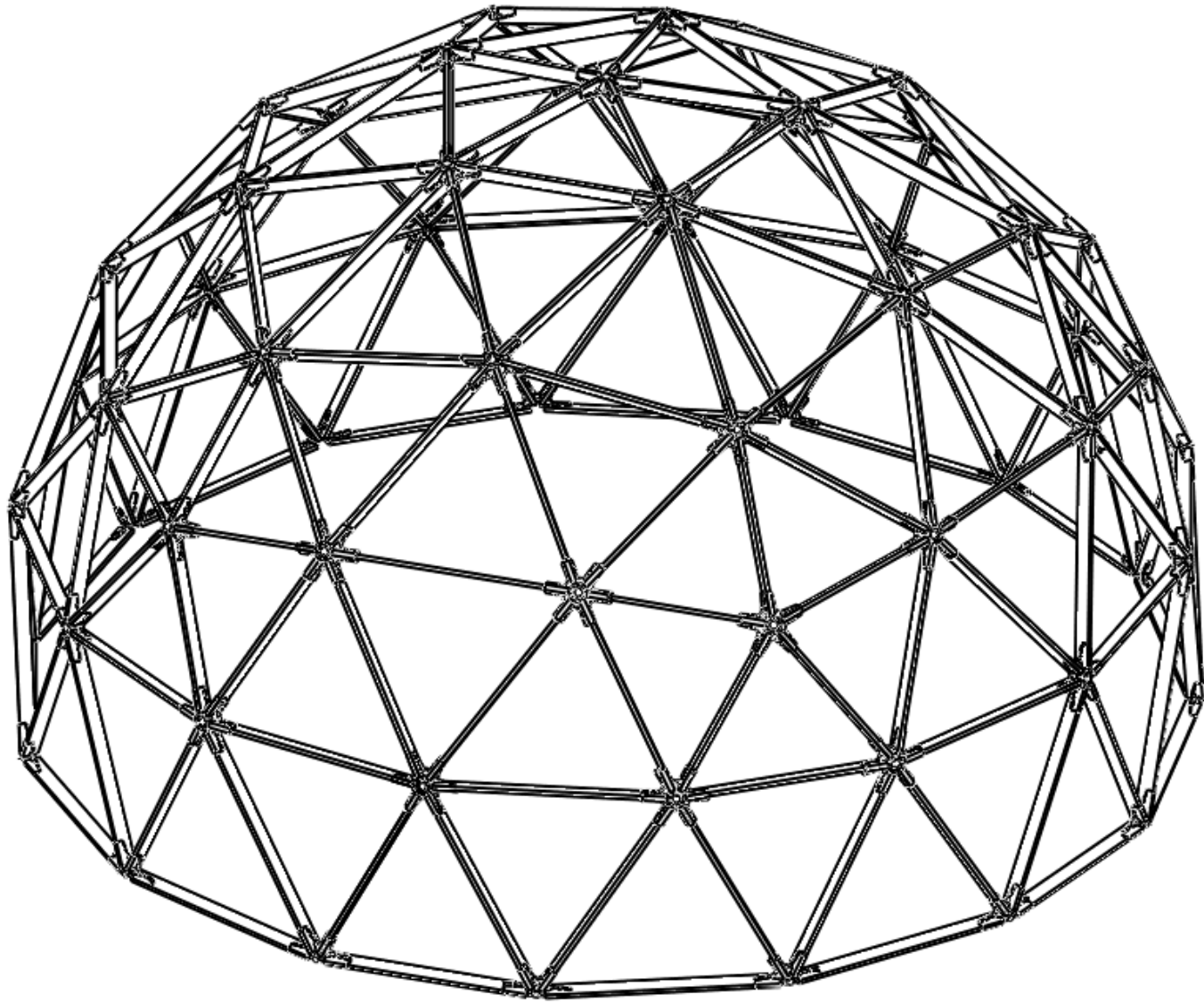
17. Continue around until all vertical struts are installed in the third row. When necessary, support any hanging struts until both ends are supported so undue forces are not put on the connectors which may bend or break them.
18. Now start to install the hubs to the vertical struts per the colors, fastening along the way. **Anywhere there are two C struts coming up from the base together the O3v3 hubs which install at their ends and have all "C" (Red) struts must be oriented per the detailed diagram to the right with the D marking facing the "D" strut below it. Failure to orient the hub correctly will result in an incorrect assembly.**



19. Once all hubs are attached to the vertical struts and supported, install the horizontal struts to complete the third row.
20. Again, continue around adding and fastening vertical struts to the fourth row. When necessary, support any hanging struts until both ends are supported so undue forces are not put on the connectors which may bend or break them.

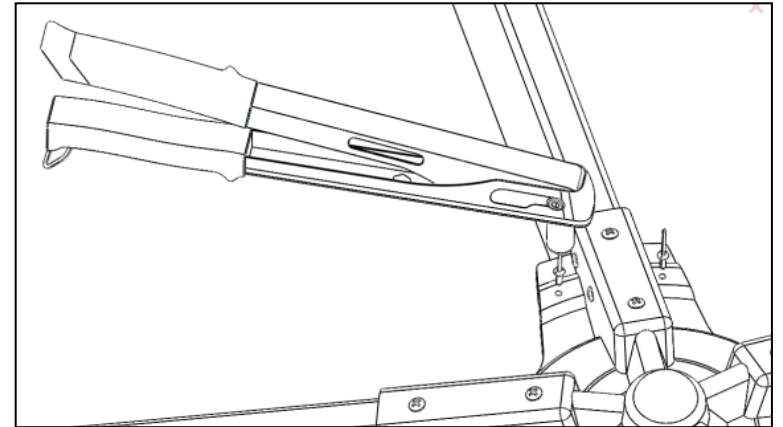
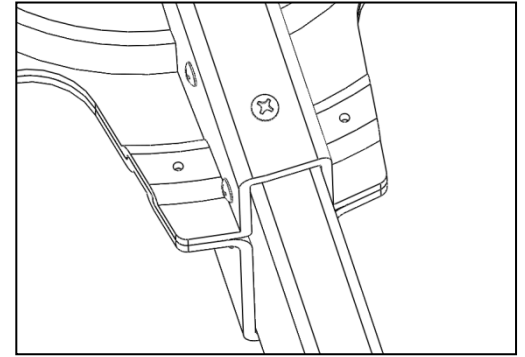


21. Once all hubs are attached to the vertical struts and supported, install the horizontal struts to complete the fourth row.
22. For the last time, continue around adding and fastening vertical struts to the fourth row. Support any hanging struts so undue forces are not put on the connectors which may bend or break them.
23. Once you've started to add the final 5 struts, fasten the "keystone" hub to the first board and add each additional strut, butting up tight to the hub and fastening along the way until the dome frame is completed.



24. Add additional side fasteners and check that all fasteners are tight.

25. If working with an HD Kit, fasten the INSIDE hub connectors. This can be done in any order using the same fastening method as the outside hub connectors.
26. Once all of the connectors are in place, pop rivets should be installed between the two Hub Connectors. Using a #11 (.192") drill bit, drill holes centered on the raised portion of the flange on either side of each strut.
27. Insert 3/16" blind pop rivets into the drilled holes and use a riveting gun to rivet the two hub connectors together. (Pneumatic riveting tool recommended, although a hand version will work, it is tedious due to the quantity)
28. Repeat this process at each strut location on all hubs until the dome is completed.
29. Once all fasteners are installed, the dome is completed and can now be finished with covers, doors, etc to suit your application.



Sheathing Guide

There are many ways to cover a geodesic dome, a few of the more common are listed below with notes specific to their application on a Natural Frequency dome. This section acts as a guide to different methods and does not attempt to outline a “how to” process. There are a lot of great resources on this matter, it is suggested that once you have chosen a method, that you take the time to educate yourself on the process

- Plywood/Shingles
 - a. Using the Panel Guide included in this manual, cut a panel to test fit in the location to ensure a good fit. The same panel can be used in several locations to ensure that repeating the dimensions will provide a good fit.
 - b. Once you have confirmed that the panel is sized correctly, cut the allotted number of panels needed.
 - c. Using 16D Nails, hammer a nail in the center of the strut at each end near the hub, leaving the head of the nail higher than the thickness of the paneling. These nails will act to establish the expansion gap between the panels.
 - d. Snap chalk lines along the center of each strut to act as a guideline when placing the panel.
 - e. Install Natural Frequency sheathing spacers or other .25” thick shim along the strut to support the panel between hubs
 - f. Position the panel and fasten it to the struts and hubs.
 - g. Repeat for the remaining panels
 - h. Once completed, shingle using a conventional process
- Shrink Wrap
 - Shrink Wrap is applied by draping the sheet over the dome structure and applying heat with a hand-held propane powered heat gun. Zipper doors, vents, fans and more can all be applied to the heat shrink plastic for a quick covering method.
- Tarp, Canvas, Screen
- Plexiglas/Polycarbonate Panels

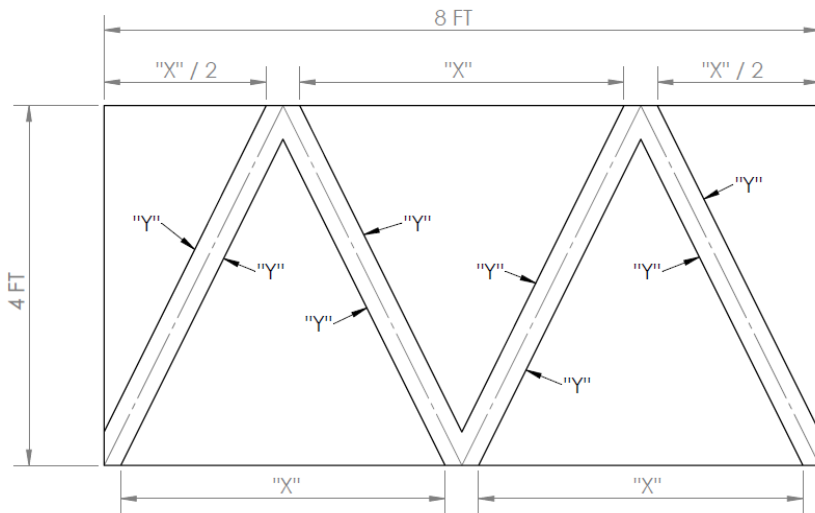
Caution: When using a flexible cover like a tarp, canvas or film, ensure that it is pulled tight and cannot come loose. A loose cover can allow water to accumulate which could result in excessive weight on the dome in a manner unintended. If too much water is allowed to pool, the dome structure risks damage or collapse. Natural Frequency will not warranty any connectors which are damaged in this way.

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Paneling Guide

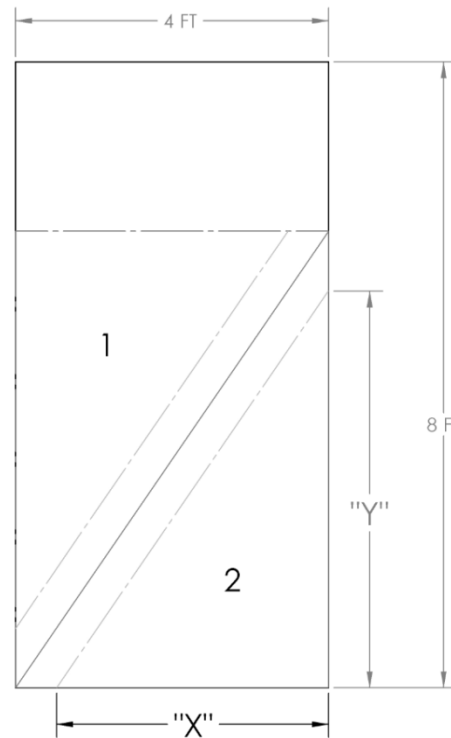
***As stated, this is meant to be a guide and all measurements should be checked on the actual structure prior to cutting material, variances in struts including twisting, bending and length as well as base row layout may cause the need for slight changes to the guide dimensions below or between individual panels.*

This guide outlines the general procedure of cutting the panel triangles used for a 3v Dome. Always account for overlap on the struts and an expansion gap between panels. Additionally, since the hubs go on the outside of the struts, they sit higher than the strut. So if you plan to panel them, it is recommended that you fill that gap with 3/16"-1/4" thick material over the top of the strut wherever you plan to fasten the panel to the strut. Natural Frequency offers our SHEATHING SPACER Kit which contains lengths of "U" shaped material which accomplishes this.



As a general rule, the panel side dimension should be 7" longer than the strut that it would be covering. Always check prior to cutting.

Using the methods depicted, a 4'x8' sheet of panel material (i.e. tongue & groove plywood, etc) you can yield from 1 to 3 Other methods and layouts are possible and may work better for in different applications.



The size of the dome will dictate whether you can use full panels as shown on the left, or will have to assemble panels from two halves as shown on the right.

NATURAL FREQUENCY TERMS & CONDITIONS

1. PAYMENT, CANCELLATIONS, AND DELIVERY.

(a) Payment. Customer agrees to pay Natural Frequency according to these terms and conditions: 100% deposit due at time of Order.

(b) Cancellations. Cancellations may be made within 48 hours of time of Order. Any cancellation made after 48 hours of Order time will be subject to a minimum \$500 cancellation fee.

(c) Shipping & Delivery. Shipping and delivery is handled through a certified freight company. Product is packaged in a warehouse. Delivery details and information should be noted with your order if applicable

2. ORDERS. It is the customer's responsibility to make sure the Product you Order meets local codes or rules that may apply to your property. Orders are not binding upon Natural Frequency until accepted by Natural Frequency in writing or online, including facsimile and e-mail. Natural Frequency's acceptance of your Order is expressly conditioned upon your acceptance of the terms and conditions herein. Any additional or different terms or conditions contained in your Order or in any other correspondence shall be of no force or effect, unless such terms and conditions are specifically agreed to in writing by Natural Frequency.

3. PRICES AND QUOTATIONS. Unless specifically agreed to in advance by Natural Frequency, all Product prices shall be Natural Frequency's list prices in effect at the time of its receipt of your Order (the "Price"). The Price does not include sales or other taxes, if applicable. In addition to the Price, you agree to pay (either directly to the appropriate governmental entity or to Natural Frequencies) any sales or other tax due under any applicable law.

4. DIY. (Do-It-Yourself). As the name implies, DIY requires you to install the Product yourself. The Product does not include struts, covers, doors, windows, lighting, electrical, steps, etc. If you order a DIY kit, you are solely responsible for all necessary permits, architectural/engineering work, foundational work (including site preparation), lumber, other construction materials as well as the installation and assembly of the Product. You represent and warrant to Natural Frequency that you have building experience, including but not limited to carpentry, roofing, reading of architectural plans and manuals, and any other necessary related experience in the building and construction industry or that you will hire someone with such qualifications to install and assemble the Product. Natural Frequency accepts no responsibility and will not be liable for anything related to a DIY installation. You are solely responsible for obtaining all necessary building permits and complying with all applicable building and safety codes in the installation of the Product.

5. DELIVERY AND FORCE MAJEURE. Any and all shipping, and delivery are estimates only, and Natural Frequency does not guarantee that the Product will be shipped or delivered in accordance with such estimates. Without limiting the generality of the foregoing, Natural Frequency may delay delivery of the Product without any liability therefore as a result of any delay caused by events outside Natural Frequency's reasonable control. Natural Frequency's inability to obtain necessary materials, components, labor, or manufacturing facilities, or anything else that would in any way impair Natural Frequency's ability to deliver the Product in the quantities ordered at the prices quoted.

6. SHIPMENT AND TITLE. You are deemed to receive the Product when you pick up the Product from Natural Frequency's warehouses or upon delivery of the Product to your delivery address. Natural Frequency shall bear all risk of loss and casualty to the Product until such time as the Product has been received or deemed to be received by you. You shall bear all risk of loss and casualty to the Product upon and after the Product has been received or deemed to be received by you. If the Product is delivered to your delivery address, you are solely responsible for and will insure against loss or casualty incurred during and after the unloading process at such location. You are solely responsible to inspect the Product upon receipt for any damages incurred during shipping before signing off with the delivery service. Upon delivery, you are solely responsible for the Product and any and all costs associated with the Product.

7. RETURNS. Product may be returned only with the prior written authorization of Natural Frequency, in Natural Frequency's sole discretion. A return authorization number will be assigned to you by Natural Frequency if Natural Frequency authorizes a return. The return authorization number must be marked on the shipping container for the Product being returned. Any Product so returned shall be subject to a restocking fee of at minimum of 30% of the purchase Price. You shall bear the risk of loss during shipment with respect to any such returned Product and shall be responsible for insuring the Product for its purchase price. Any Product returned to Natural Frequency without prior authorization shall be returned to you, freight collect. Natural Frequency may place in storage any Product for which shipment is delayed by your inability or unwillingness to pay for and receive the Product. Such storage by Natural Frequency shall be for your account at your expense, and the Product so stored shall be at your risk while stored.

8. LIMITED WARRANTY. Natural Frequency warrants to the original purchaser of the Product that, should there be any defects in the material or workmanship during the initial 12 months (one year) from your receipt of the Product, Natural Frequency will repair or replace the defective component(s) at its option. You must notify Natural Frequency of any claim of defects in the material or workmanship within 12 months (one year) after your receipt of the Product. Said notice must be in writing, set forth specifically the basis for the claim, and include a photograph of the defect(s). The failure to satisfy the requirements above will constitute irrevocable acceptance of the Product. All warranty claim notices should be sent to Natural Frequency, attention to General Manager, 107 Ransom Ave, McLeod ND 58057. This warranty gives you specific legal rights. (You may also have other rights which vary from state to state). Failure to follow the Construction Manual or any related instructions, and any abuse or misuse of the Product including unauthorized alterations, will void this Limited Warranty. Natural Frequency is not responsible for damage caused by the location of the Product on or over inappropriate soils or terrain or by the use of improper replacement parts. Natural Frequency assumes no responsibility and expressly disclaims all liabilities for damages due to misuse, neglect, improper maintenance or adjustments, and normal wear and tear of the Product. Natural Frequency reserves the right to change and/or improve the design and/or specifications of the Product without notice or obligation to modify previously produced units. No installation or other instructions, advice, Product information, or marketing materials, whether oral or

written, obtained by you at any time from Natural Frequency or any vendor or retailer of Natural Frequency Products shall create any Natural Frequency express warranty not expressly stated in this Section.

NATURAL FREQUENCY MAKES NO EXPRESS WARRANTIES EXCEPT AS STATED IN THIS SECTION. ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL TERMINATE THREE HUNDRED SIXTY FIVE (365) DAYS FROM YOUR RECEIPT OF THE PRODUCT. (SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.)

9. THE PRODUCT IS NOT DESIGNED OR INTENDED TO BE USED AS A RESIDENCE OR DWELLING. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT THE PRODUCT IS NOT DESIGNED OR INTENDED TO BE USED AS A RESIDENCE OR DWELLING. USE OF THE PRODUCT AS A RESIDENCE OR DWELLING MAY RESULT IN LOSS OF PROPERTY AND/OR SERIOUS INJURY. ANY USE OF THE PRODUCT AS A RESIDENCE OR DWELLING SHALL TERMINATE ANY AND ALL WARRANTIES HEREUNDER. YOU EXPRESSLY AGREE TO INDEMNIFY NATURAL FREQUENCY (PURSUANT TO SECTION 10 BELOW) FROM AND AGAINST ANY AND ALL DAMAGES, LIABILITIES, AND LOSSES ARISING FROM YOUR USE OF THE PRODUCT AS A RESIDENCE OR DWELLING.

10. INDEMNIFICATION. You agree to defend, with counsel approved by Natural Frequency, all actions against Natural Frequency, its officers, directors, managers, shareholders, members, employees, agents, beneficiaries, successors, and other representatives (the "Indemnified Parties") with respect to, and to pay, protect, and indemnify and save harmless all Indemnified Parties from and against, any and all liabilities, losses, damages, costs, expenses (including reasonable attorneys' fees and expenses), causes of action, suits, claims, demands, or judgments of any nature arising from or relating to the injury to or death of any person, or damage to or loss of property, caused by or incurred in connection with your use or misuse of the Product.

11. LIMITATION OF LIABILITY. IN NO EVENT SHALL NATURAL FREQUENCY BE LIABLE FOR LOST PROFITS, BUSINESS INTERRUPTION, LOST BUSINESS OPPORTUNITIES, OR ANY OTHER INDIRECT, SPECIAL, PUNITIVE, EXEMPLARY, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR RELATING TO THE THESE TERMS AND CONDITIONS OR YOUR PURCHASE OF PRODUCT (WHETHER IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE WHETHER ACTIVE, PASSIVE, OR IMPUTED), PRODUCT LIABILITY, STRICT LIABILITY, OR OTHER THEORY), EVEN IF NATURAL FREQUENCY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

IN NO EVENT SHALL THE AGGREGATE LIABILITY OF NATURAL FREQUENCY (WHETHER IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE WHETHER ACTIVE, PASSIVE, OR IMPUTED), PRODUCT LIABILITY, STRICT LIABILITY, OR OTHER THEORY), EXCEED THE PRICE PAID BY YOU TO NATURAL FREQUENCY

(Certain state laws do not allow the exclusion or limitation of certain damages. If these laws apply, some or all of the above exclusions or limitations may not apply to you, and you may have additional rights to those contained herein. In such states, Natural Frequency's liability is limited to the greatest extent permitted by law.)

12. TRADEMARKS AND TRADENAMES. You acknowledge and agree that all brand names, trade names, and trademarks incorporated onto or associated with the Product (collectively, the "Marks") purchased hereunder are the exclusive property of Natural Frequency and that you shall not acquire any rights in any of the Marks by purchasing the Product. You shall not make any use of the Marks at any time except as otherwise authorized in writing by Natural Frequency.

13. PROPRIETARY INFORMATION/NONDISCLOSURE. You acknowledge and agree that any knowledge or information, including drawings, designs, specifications, plans, and data, that Natural Frequency may have disclosed or may hereafter disclose to you incident to the placing and filling of an Order shall, at all times, remain the exclusive property of Natural Frequency, and you shall acquire no interest in, or right with respect to, such proprietary information unless otherwise stated in writing by Natural Frequency. You further acknowledge and agree that such proprietary information constitutes valuable, special, and unique business assets of Natural Frequency and that you shall not now or at any time in the future use any such information in any manner or disclose any such information to any person or entity, except as expressly permitted in writing by Natural Frequency.

14. GOVERNING LAW AND JURISDICTION. ALL MATTERS ARISING OUT OF OR RELATING TO THESE TERMS AND CONDITIONS OR YOUR PURCHASE OF PRODUCT SHALL BE GOVERNED BY THE LAWS OF THE STATE OF NORTH DAKOTA, WITHOUT REGARD TO CONFLICTS OF LAWS RULES. EXCLUSIVE JURISDICTION OVER AND VENUE OF ANY SUIT WILL BE IN THE STATE COURTS LOCATED IN RANSOM COUNTY, NORTH DAKOTA OR THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NORTH DAKOTA LOCATED IN BISMARCK, NORTH DAKOTA.

15. ENTIRE AGREEMENT. These terms and conditions together with the Order constitute the parties' entire agreement relating to the subject matter hereof and supersede all prior or contemporaneous oral or written communications, proposals, and representations with respect to such subject matter. No modification to these terms and conditions will be binding unless in writing and signed by each party.

16. NO WAIVER. No waiver of any provision of these terms and conditions or delay by either party in enforcement of any right hereunder shall be construed as a continuing waiver or create an expectation of non-enforcement of that or any other provision or right.

17. SEVERABILITY. In the event any provision herein should be held unenforceable by a court of competent jurisdiction, such court is hereby authorized to amend such provision so that it will be enforceable to the fullest extent permitted by law, and all remaining provisions shall continue in full force without being affected, impaired, or invalidated thereby in any way.

18. NO ASSIGNMENT. You agree that you may not to assign or transfer any of your rights arising out of or related to these terms and conditions or your purchase of Product.

19. ATTORNEYS FEES. You agree that if you fail to timely pay to Natural Frequency any sums due hereunder and Natural Frequency sues to collect such sums, you will be liable for reasonable attorney's fees so incurred by Natural Frequency

I hereby agree to order the Product at the stated costs and have read and agree to the TERMS AND CONDITIONS, incorporated herein under this reference. I understand that Natural Frequency reserves the right to change, discontinue or substitute materials. I understand that the Product delivered will consist of all hub connector parts and pieces, as well as fasteners, but does not include any foundational work, struts, covers, doors, windows, lighting, electrical, steps, etc. from Natural Frequency or its delivery personnel, unless otherwise stated.

