

ONE SOURCE. ONE SOLUTION.



International Grain Bin

Assembly Manual

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Inspection Upon Delivery

Upon arrival thoroughly check your shipment and ensure that it corresponds with the shipping statement. Any discrepancies should be taken care of immediately. Report any damages or shortage of parts to the delivering carrier as soon as possible. Lambton Conveyor's responsibility to damaged equipment ends with your acceptance of the delivery. Save all paperwork and documentation.

Causes and Prevention of "White Rust"

Galvanized steel sheets and panels when nestled together can very quickly become stained by moisture trapped between them. Sometimes this can occur as rapidly as overnight. Moisture most frequently is trapped between bin body sheets and roof panels subjected to rain in un-tarped trucks or during storage in buildings subjected to high humidity or wide temperature variations causing excessive condensation.

To prevent "white rust" prior to erecting your bin, separate all sheets promptly on delivery and stand them on edge so that adequate airflow is allowed to flow between each sheet. If erection of the bin is not planned in the near future all bin sheets should be stored inside a dry building, preferably heated.

Should your bundled sheets or panels get rained on during delivery they should be wiped dry immediately upon arrival and a light coating of diesel oil should be applied. At the first indication of "white rust" wiping the area with kerosene will arrest the staining and perhaps restore the original appearance. Grey or dark stains associated with "white rust" will not progress into "red rust" once the bin is erected and will not affect the structural strength of the bin.

Damage Due to Moisture

Lambton Conveyor takes no responsibility for water markings, "white rust", stains or any other damage which may have occurred when packaged or nestled materials are exposed to excessive moisture. Such claims are properly charged by the owner against the carrier or against the persons allowing the materials to become wet due to rain, natural condensation, or other causes.



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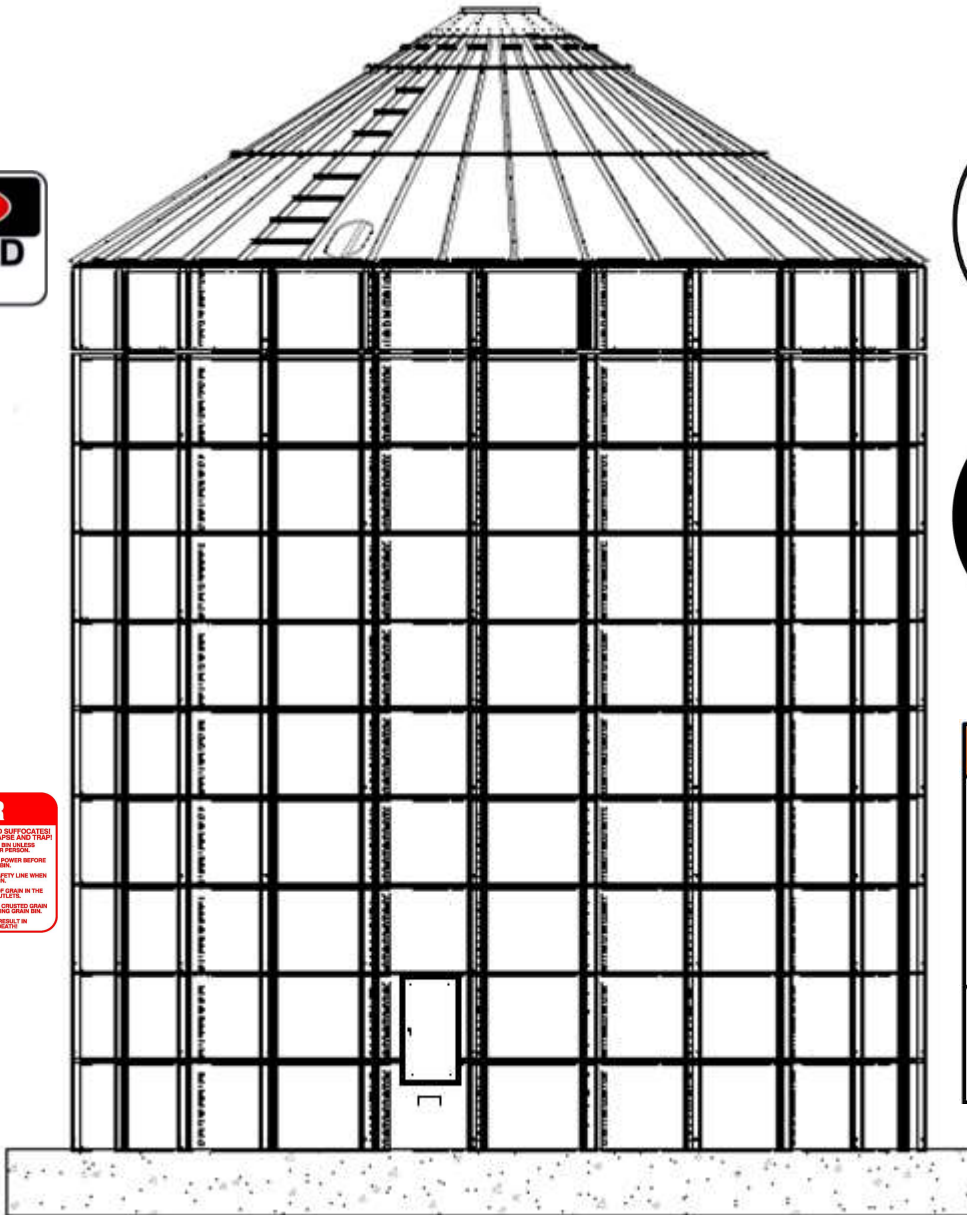
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Grain Bin Safety





General Safety Warning

Our foremost concern is your safety and the safety of others associated with grain handling equipment. This manual is to help you understand safe operating procedures and some problems that can be encountered by the operator and other personnel.

As owner and/or operator, you are responsible to know what requirements, hazards, and precautions exist and inform all personnel associated with the equipment or in the area. Avoid any alterations to the equipment. It can produce a very dangerous situation, where SERIOUS INJURY or DEATH can occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction must be consulted before installations are made.

You should consider the location of the bin site relative to power line locations or electrical transmission equipment. Contact your local power company to review your installation plan or for information concerning required equipment clearance. Clearance of portable equipment that can be taken to the bin site must also be reviewed and considered. Any electrical control equipment in contact with the bin must be properly grounded and installed in accordance with National Electric Code provisions and all local codes.

***This product has sharp edges, which may cause serious injury.
To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment.***

Sidewall bundles/sheets must be stored in a safe manner. The safest method of storing sidewall bundles is laying horizontally with the arch of the sheet upward, like a dome.

Follow Safety Instructions – Read and Understand Manual

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction. Unauthorized modifications to the machine can impair the function and/or safety and affect machine life.

Practice Safe Maintenance — Maintain Equipment and Work Area

II. Understand service procedures before doing work. Keep area clean and dry. Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet, and clothing away from rotating parts. Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any built-up grease, oil, and debris.

Safety Instruction

Wear protective clothing and safety Equipment appropriate to the job. Remove all jewelry. Tie long hair and back. Wear safety glasses to protect eyes from flying material.



Wear gloves to protect your hands from sharp edges on plastic or steel parts.

Wear steel-toed boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.



A respirator may be needed to prevent breathing potentially toxic fumes.

Wear a hard hat to help protect your head.







Cautionary symbols appear in the various decals of your product, and alerts the user of potential or imminent risk of danger.

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting personal safety and preventing equipment problems.

It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.

Make sure to familiarize yourself with these symbols prior to installing, operating, or servicing your grain equipment. Failure to do so may lead to serious injury or death.

	This symbol indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, may result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	This symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

! WARNING



DONT



DO

Unloading Instructions

Discharge **ONLY** from center gate until the grain above finishes.

Please open intermediate gates after unloading from centre gate finishes.

Keep intermediate gates **ALWAYS** closed to avoid any accident.

Please contact to the manufacturer for the appropriate side drawing.

Failure to heed this warning may cause serious injury or death.

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A.3041 0002.02.16 (02) / 006

! DANGER



**Keep clear of all augers.
DO NOT ENTER this silo!**

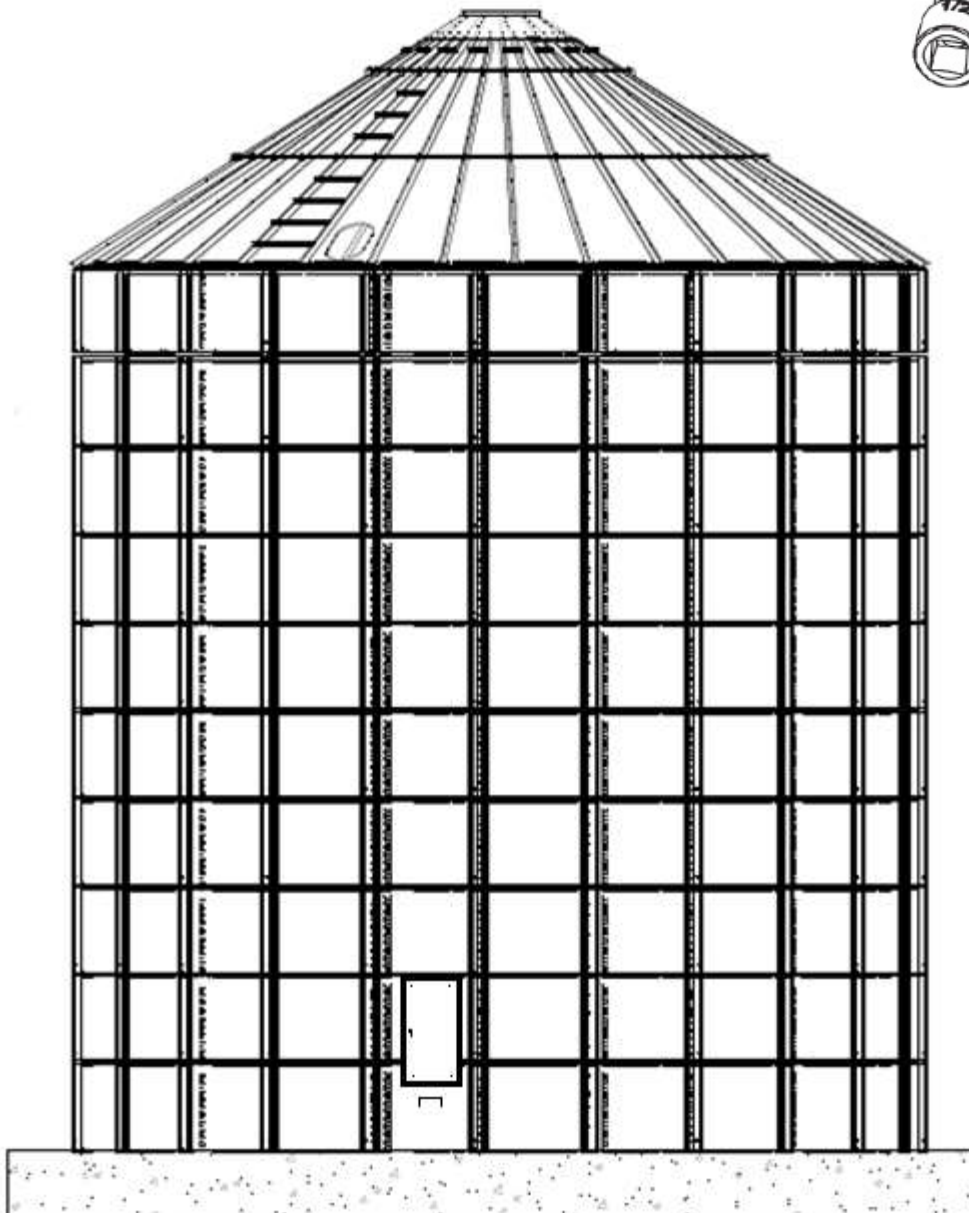
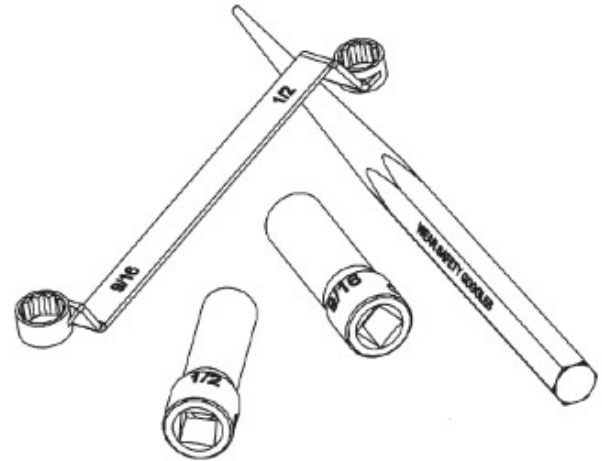
If you must enter the silo:

1. Shut off and lock out all power
2. Use a safety harness and safety line
3. Station a person to help from outside the silo
4. Avoid the center of the silo
5. Wear a dust resperator.

Failure to heed this warning may cause serious injury or death.

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Grain Bin Assembly



General Information

III. General Assembly Instructions

See the details carefully. Follow the instructions for sidewall and stiffener assembly. It is very important to use caulking during installation. You will also need more manuals such as;

- Roof
- Ladder
- Aeration System

Those are not included in this manual.

- Crop stored inside silo may be deteriorated unless caulking is applied properly .
- Tighten bolts in accordance with torque chart on following pages of this manual, otherwise, seal washers may be worn.
- Sidewall sheets are to be assembled in clockwise direction by overlapping top rings over bottom.

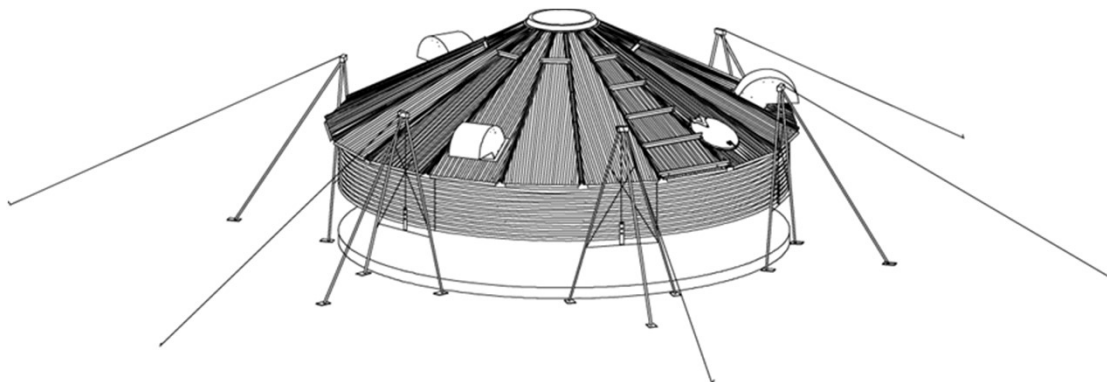
IV. Lifting Jacks

Determine the location of each accessory such as access door and others after roof assembly. The number of lifting jack depends on the some considerations like silo model, wind speed and jack design. In case of any suspect, use one lifting jack for each sidewall sheet. It is highly recommended to use heavy duty lifting material for higher capacity silo.

Make sure that all lifting jacks are fixed properly. Lift silo equally in order to prevent any misalignment and sheet bending.

Mount the bolts onto stiffener splicing holes and always use fasteners which are not used before. Do not stand under lifting jack for your safety.

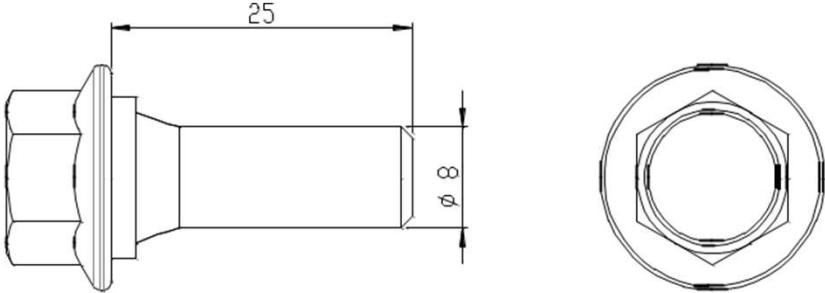
Reminder: Keep mounting ladder parts from inside and outside of sidewall while lifting silo. See ladder assembly manual for the details.



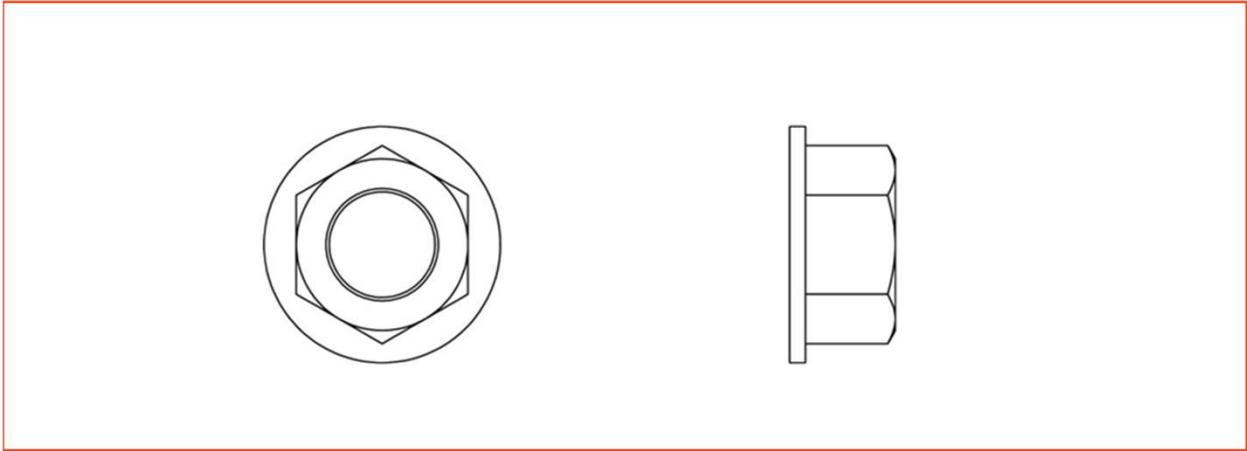


V. Fastener Assortment

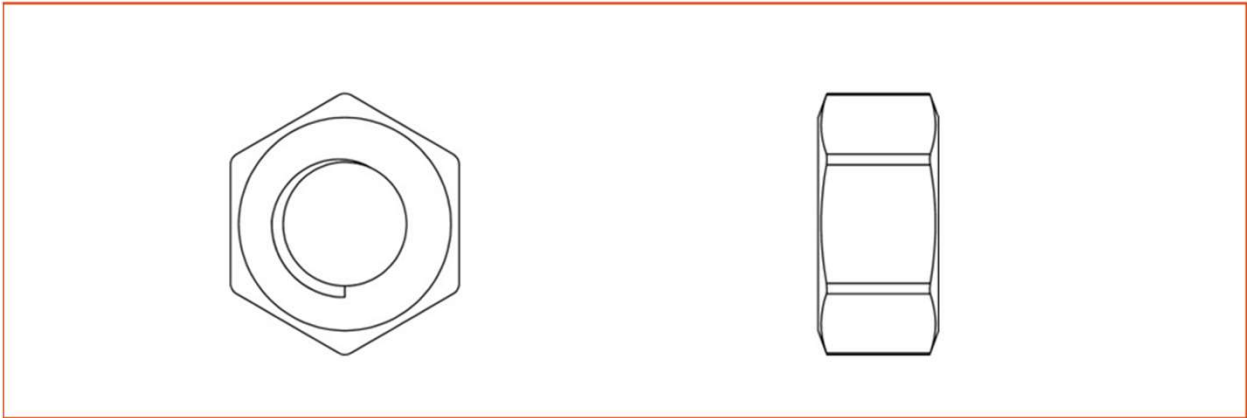
(M8x25) Hex Bolt - Flanged & Sealed (Grade 10.9)



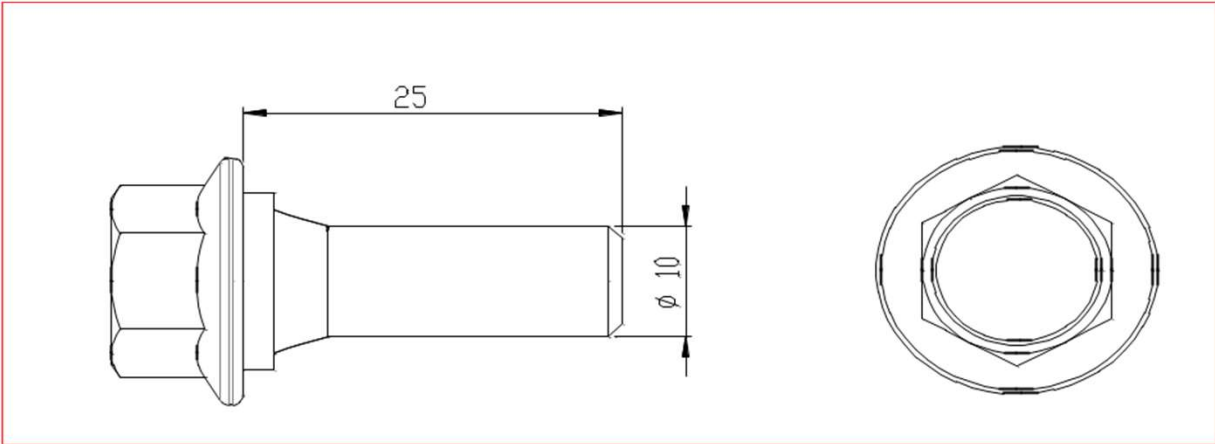
(M8) Hex Nut - Flanged (Grade 10)



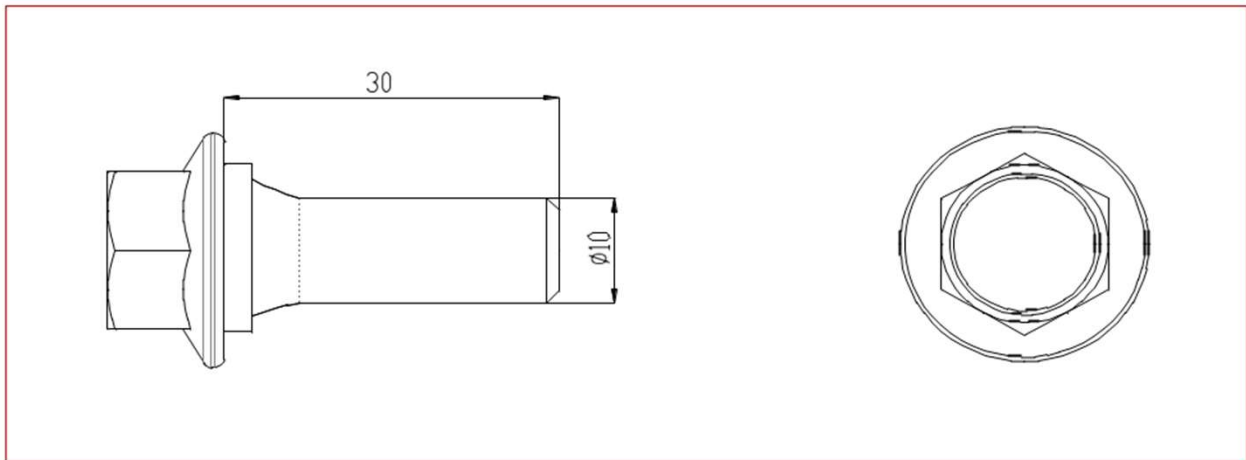
(M8) Hex Nut (Grade 10)



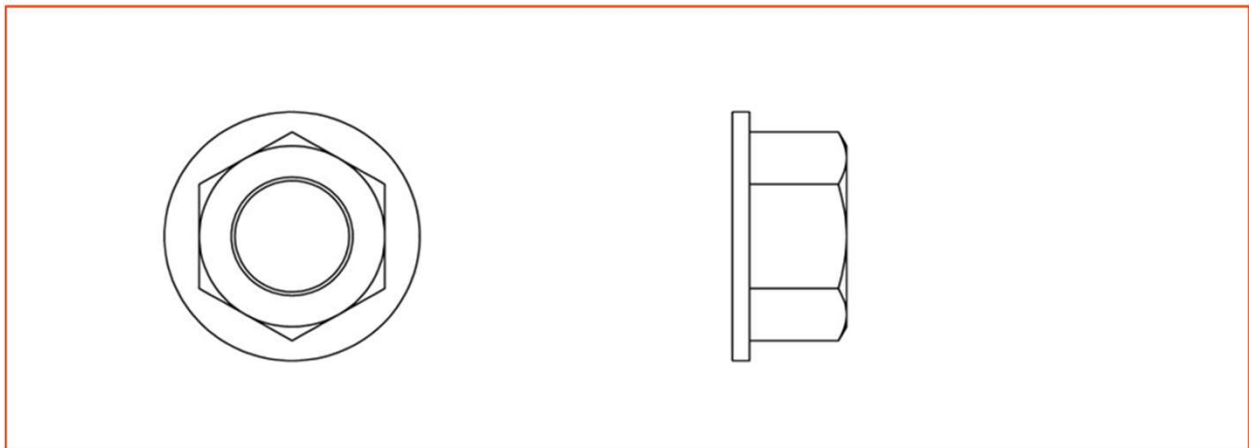
(M10x25) Hex Bolt - Flanged & Sealed (Grade 10.9)



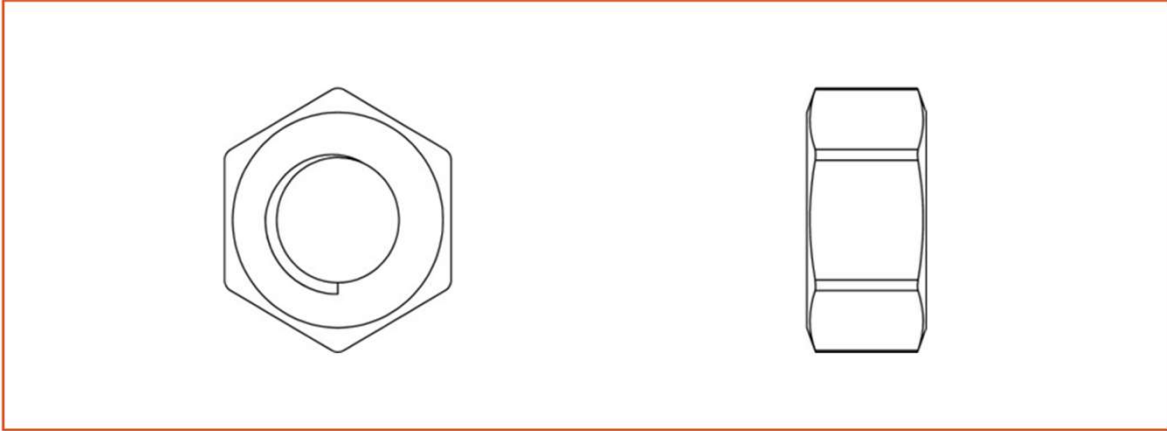
(M10x30) Hex Bolt - Flanged & Sealed (Grade 10.9)



(M10) Hex Nut - Flanged (Grade 10)



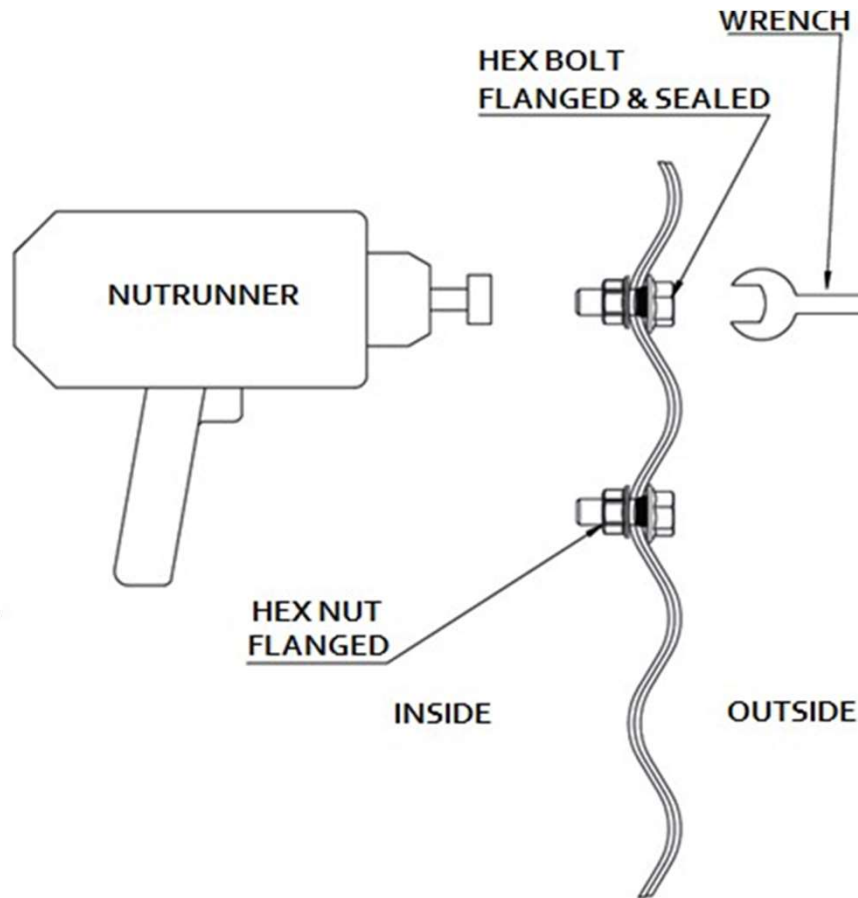
(M10) Hex Nut (Grade 10)



VI. Torque Chart

SIZE	TIGHTENING TORQUE			
	Minimum Torque		Maximum Torque	
M8	15 ft.lb	20 Nm	20 ft.lb	27 Nm
M10	35 ft.lb	47 Nm	42 ft.lb	56 Nm
M12	95 ft.lb	128 Nm	105 ft.lb	142 Nm

Figure 1. Fastening Detail




NOTE ! Tighten only from the nut side to prevent any spinning.
Lambton Conveyor. will not be responsible for any misassembly resulted damages

1- Sidewall

1.1- Thickness and Color Chart

Table 1.1.1 indicates the colors according to each sidewall sheet thickness. Sheets are sorted from the thinnest material to thicker one with color details.

TABLE 1.1.1. SIDEWALL SHEET THICKNESS AND COLOR CHART			
THICKNESS (mm)	COLOR	APPEARANCE	RAL CODE(S)
1	TURQUOISE		RAL 5012
1.2	PINK		RAL 4003
1.35	ORANGE		RAL 2009
1.5	RED		RAL 2002
1.8	PURPLE		RAL 4007
2.2	GREEN		RAL 6001
2.5	DARK BLUE		RAL 5013
3	BLACK+TURQUOISE		RAL 8022+RAL 5012
3.5	BLACK+PINK		RAL 8022+RAL 4003
3.8	BLACK+ORANGE		RAL 8022+RAL 2009
4.2	BLACK+RED		RAL 8022+RAL 2002
4.5	BLACK+PURPLE		RAL 8022+RAL 4007
5.2	BLACK+GREEN		RAL 8022+RAL 6001
6.35	BLACK+DARK BLUE		RAL 8022+RAL 5013

Laminated sheets are painted with the colors of sheets which are bolted together. Contact the Manufacturer for assembly sequence before the installation.



Figure 1.1.1- Sidewall Sheet Assembly Direction

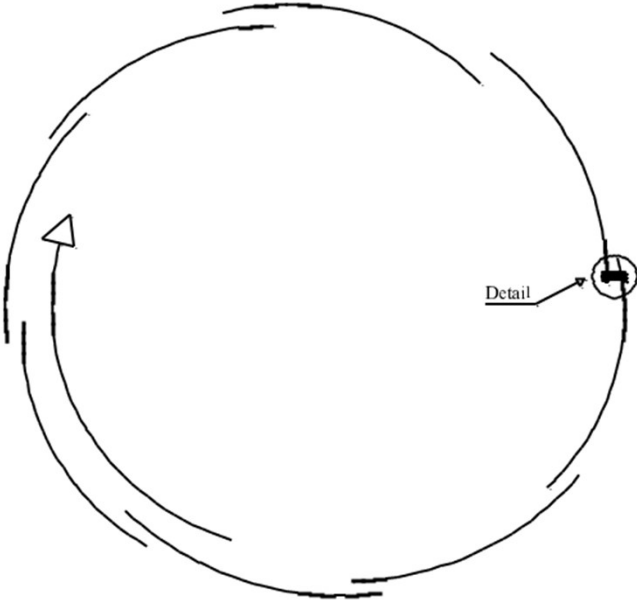
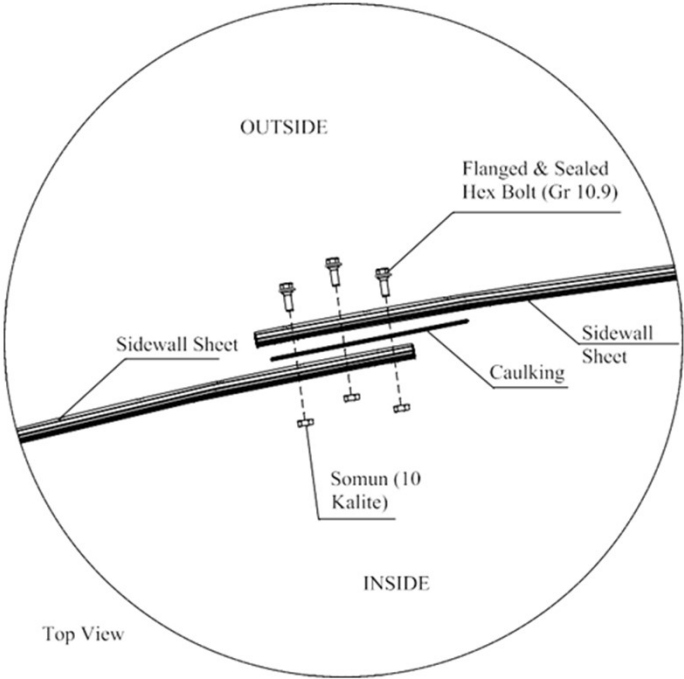


Figure 1.1.2- Assembly Detail



1.2- Caulking

It is vital to keep applying caulking between sidewall sheets in order to prevent any leakage and potential hazards due to the moisture and spoilage of your crop. Apply caulking as it is shown below.

Figure 1.2.1- Caulking Detail

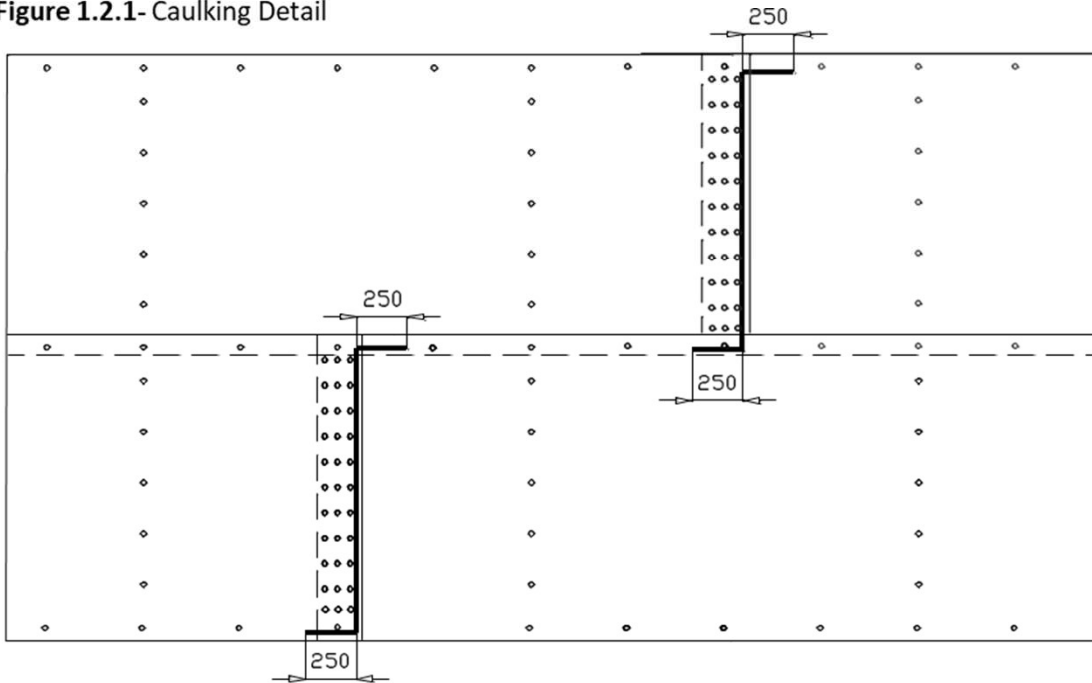


Figure 1.2.2- Sidewall View (Isometric)

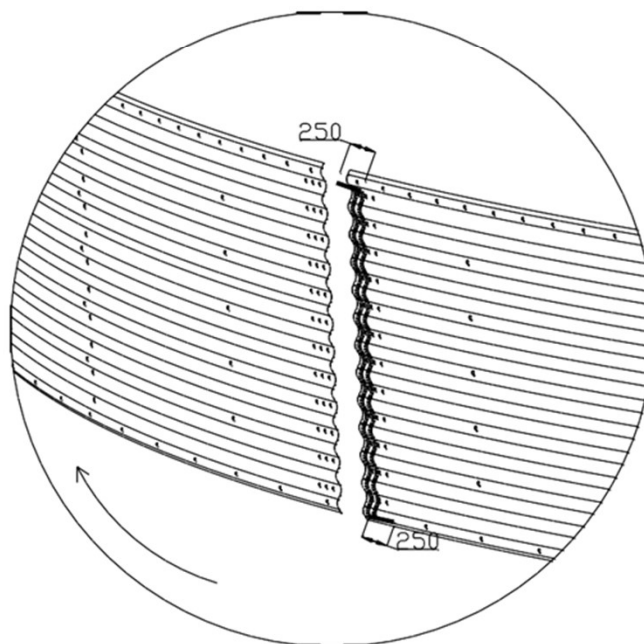




Figure 1.3.1- Caulking detail

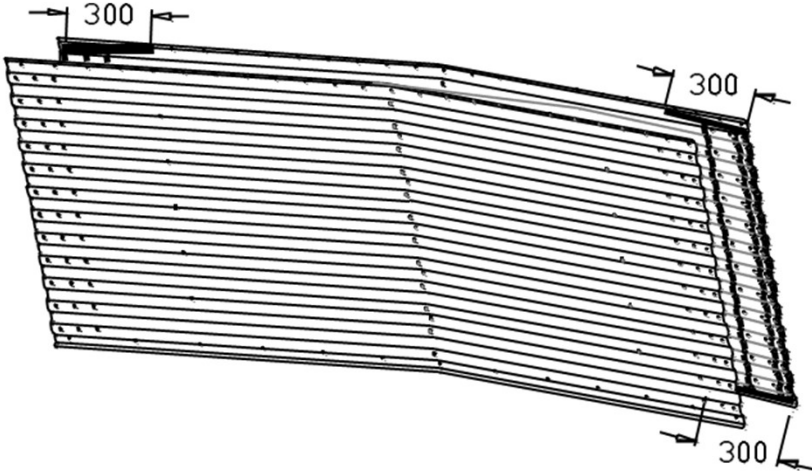


Figure 1.3.2- Caulking Detail – 2

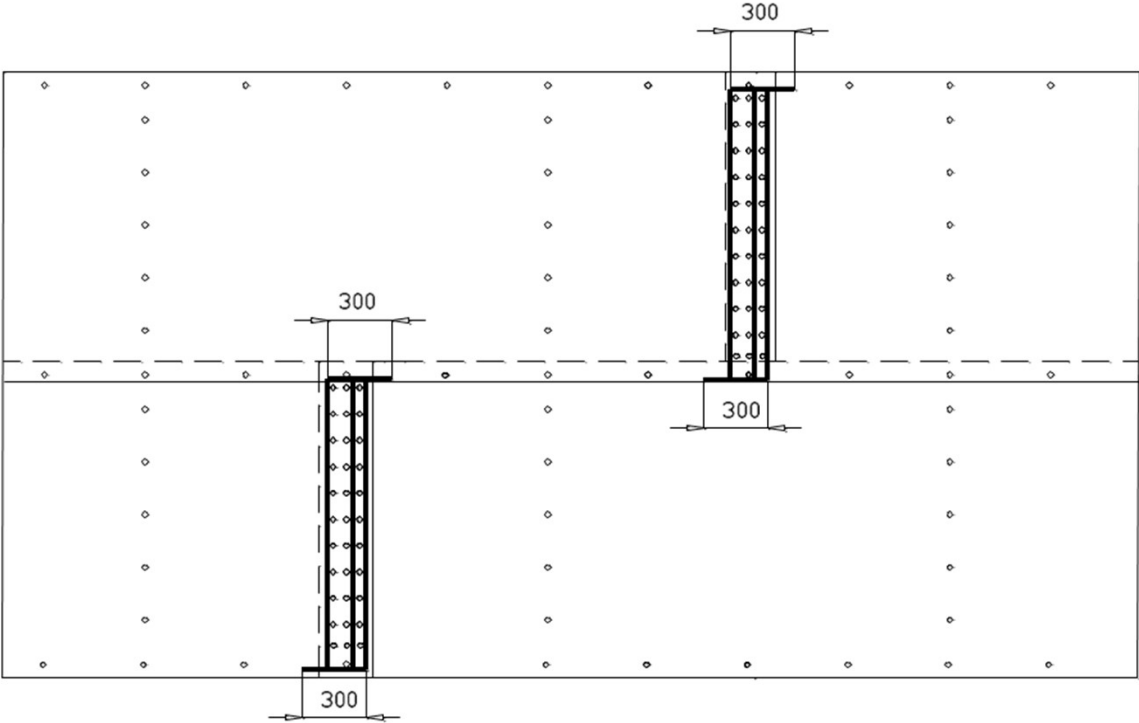
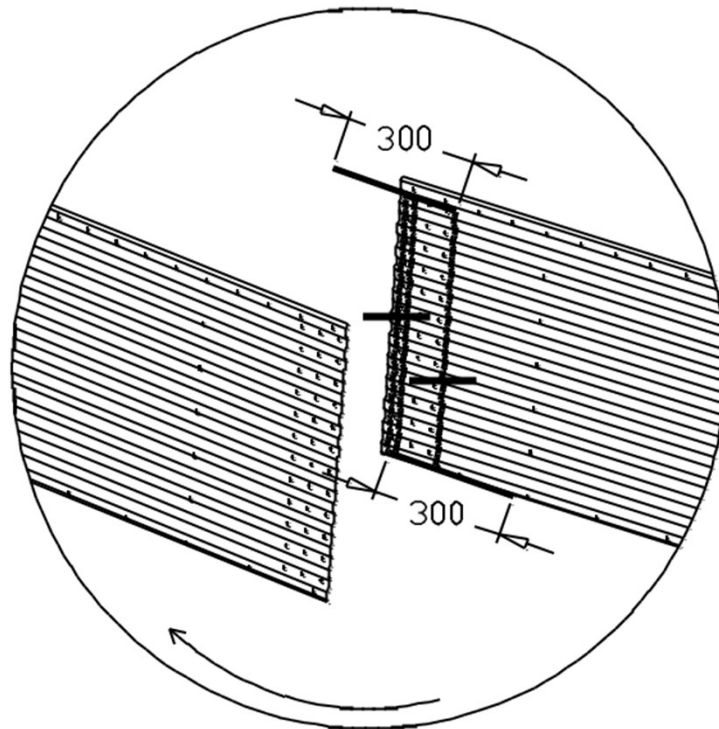




Figure 1.3.3- Isometric View



NOTE: Always assemble sidewall sheets to each other from inside, consider the location of access door. (see Section 3.4)



2- Stiffeners and Bracing

2.1- Stiffener Thicknesses and Colors

Table 2.1.1 indicates stiffener thicknesses and colors from thinner to thick material with their RAL codes.

TABLE 2.1.1 STIFFENER THICKNESS AND COLOR CHART			
THICKNESS (mm)	COLOR	APPEARANCE	RAL CODE(S)
TOP	WHITE		RAL 9016
1,5	RED		RAL 2002
1,8	PURPLE		RAL 4007
2,2	GREEN		RAL 6001
2,5	DARK BLUE		RAL 5013
3	BLACK+TURQUOISE		RAL 5012+RAL 8022
3,5	BLACK+PINK		RAL 4003+RAL 8022
3,8	BLACK+ORANGE		RAL 2009+RAL 8022
4,2	BLACK+RED		RAL 2002+RAL 8022
4,5	BLACK+PURPLE		RAL 4007+RAL 8022
5,2	BLACK+GREEN		RAL 6001+RAL 8022
6,35	BLACK+DARK BLUE		RAL 5013+RAL 8022
8	RED+ORANGE		RAL 2002+RAL 2009
9	YELLOW+PURPLE		RAL 1021+RAL 4007
10	GREEN+DARK BLUE		RAL 6001+RAL 5013
12	PINK+ TURQUOISE		RAL 4003+RAL 5012

CHANGING THE PUNCHING PATTERN FROM SPARSE TO CLOSER HOLES [BROWN {RAL 8016}]



Figure 2.1.1- Various Dimensions

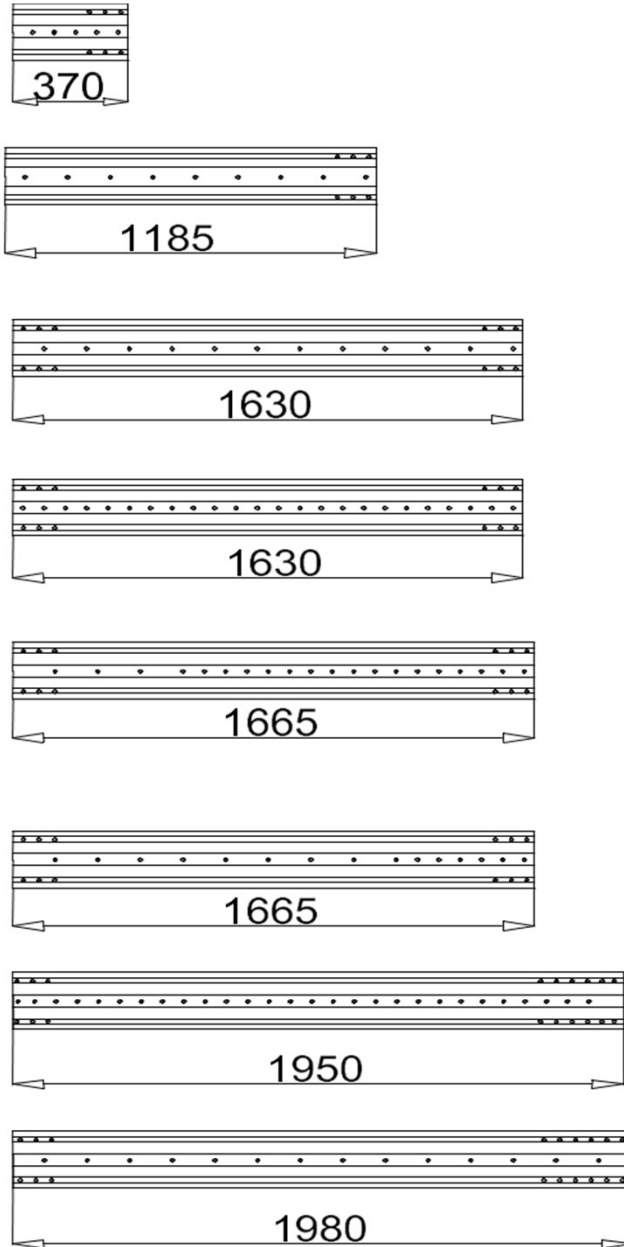


Figure 2.1.1 shows stiffener lengths in detail. The shortest two stiffeners; 370 mm & 1185 mm are for the top location which will be mounted first. Which one to be used for your silo, depends on the number of rings in your silo. The shorter one shall be mounted if the silo has odd rings. Otherwise, 1185 mm stiffener will be top stiffener of your silo.

Standard intermediate stiffeners are 1630 mm & 1665 mm. Those are assorted according to punching pattern; closer or sparse. The longest stiffeners; 1950 mm & 1980 mm are for bottom of your silo.

2.2- Top Sidewall Sheet and Top Stiffener

Start assembly by mounting top stiffener onto the stiffener bracing hole of sidewall sheet which is on the third corrugation of top sidewall sheet.

Figure 2.2.1- Sidewall Sheet and Stiffener Assembly on Top Ring

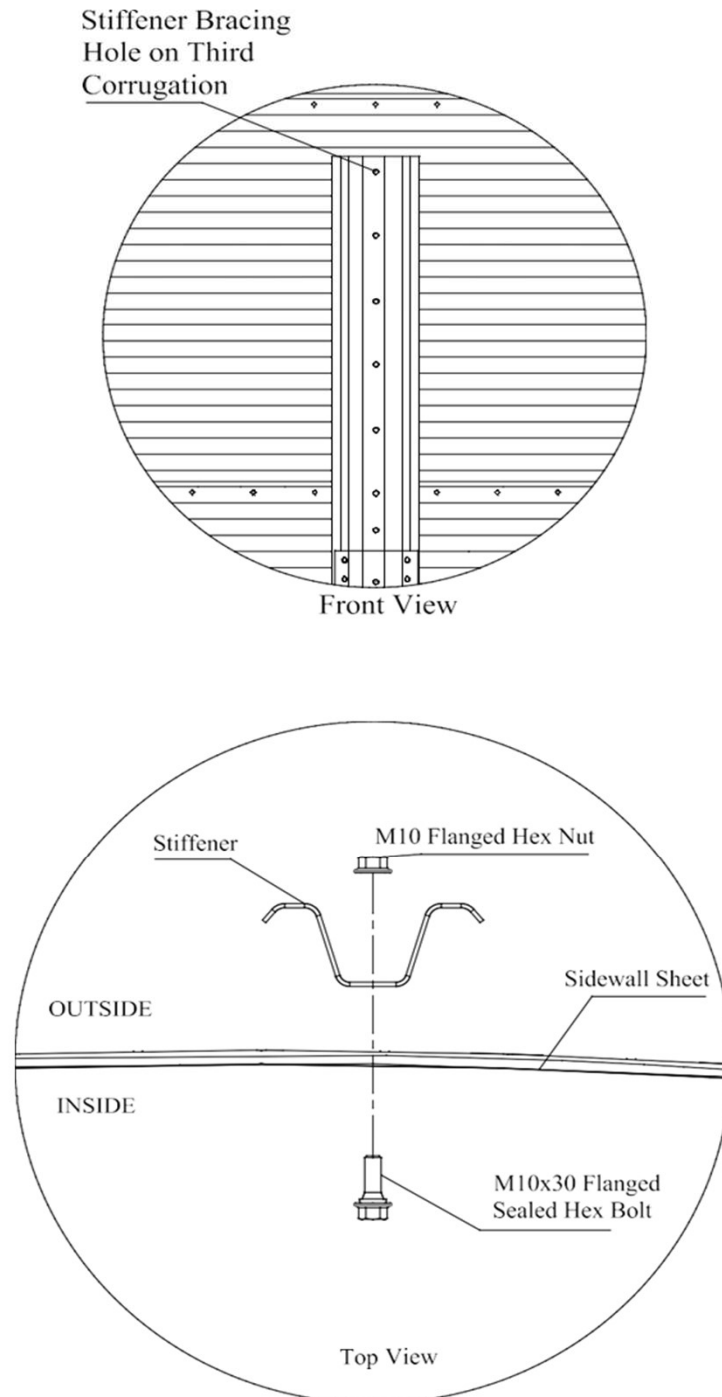




Figure 2.2.2- Odd Ring Silo Top Ring Detail

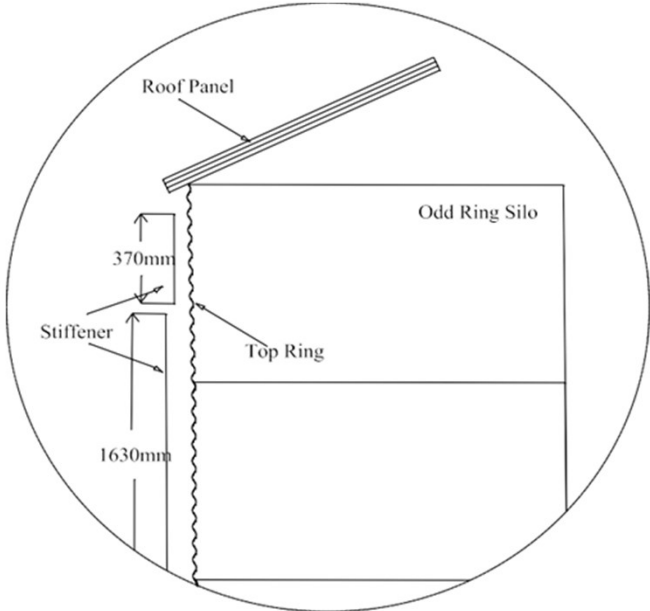
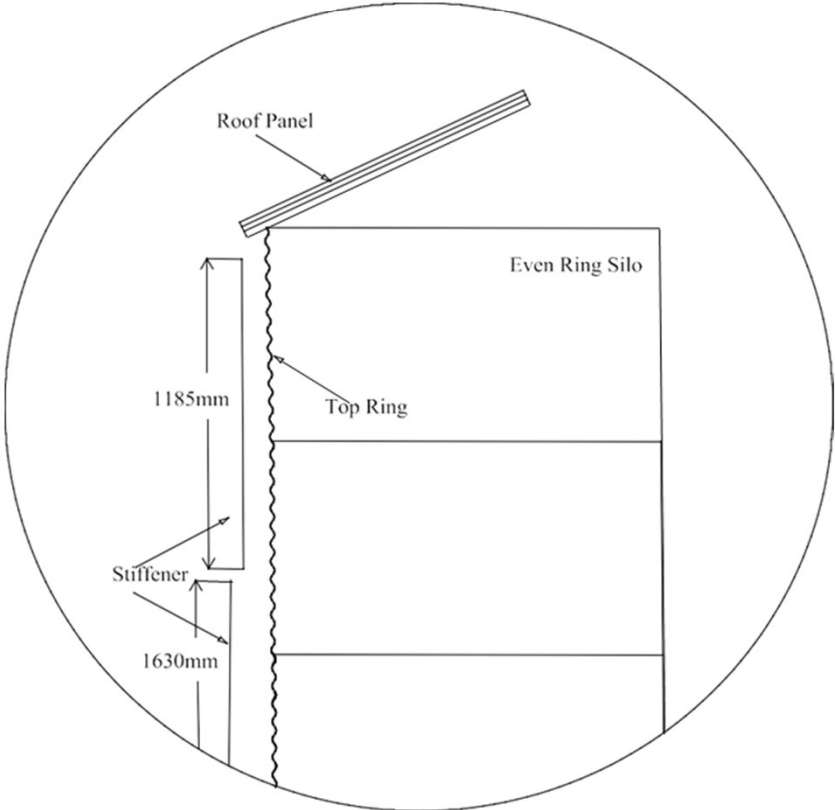


Figure 2.2.3- Even Ring Silo Top Ring Detail



2.3- Stiffener Splice

Assembly details are shown on Figure 2.3.1. Below table shows the thicknesses and symbols with colors . (See the last section; Sample Ring Thickness Table)

Table 2.3.1- Types and Thicknesses

Thickness	Symbol
1.8-2 mm	
2.5 mm	
3.5 mm	
4.5 mm	

Figure 2.3.1- Assembly Details

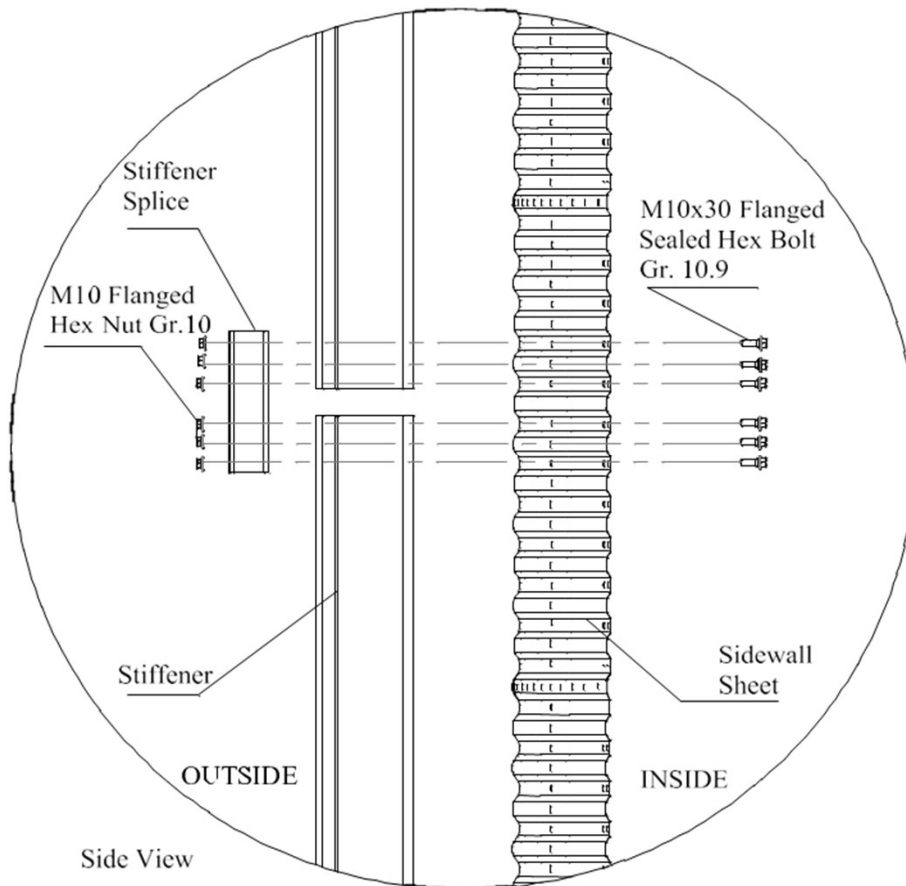
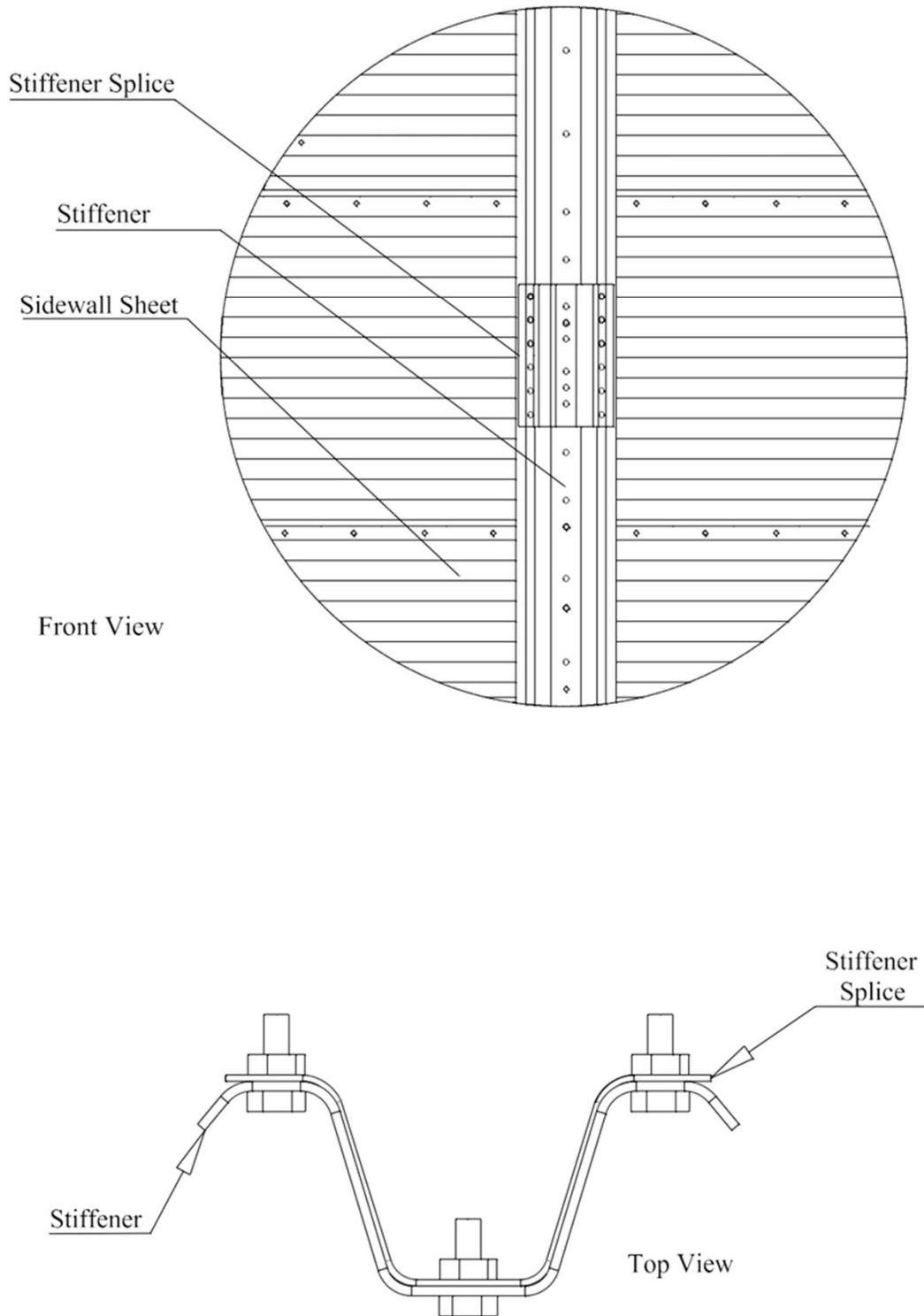


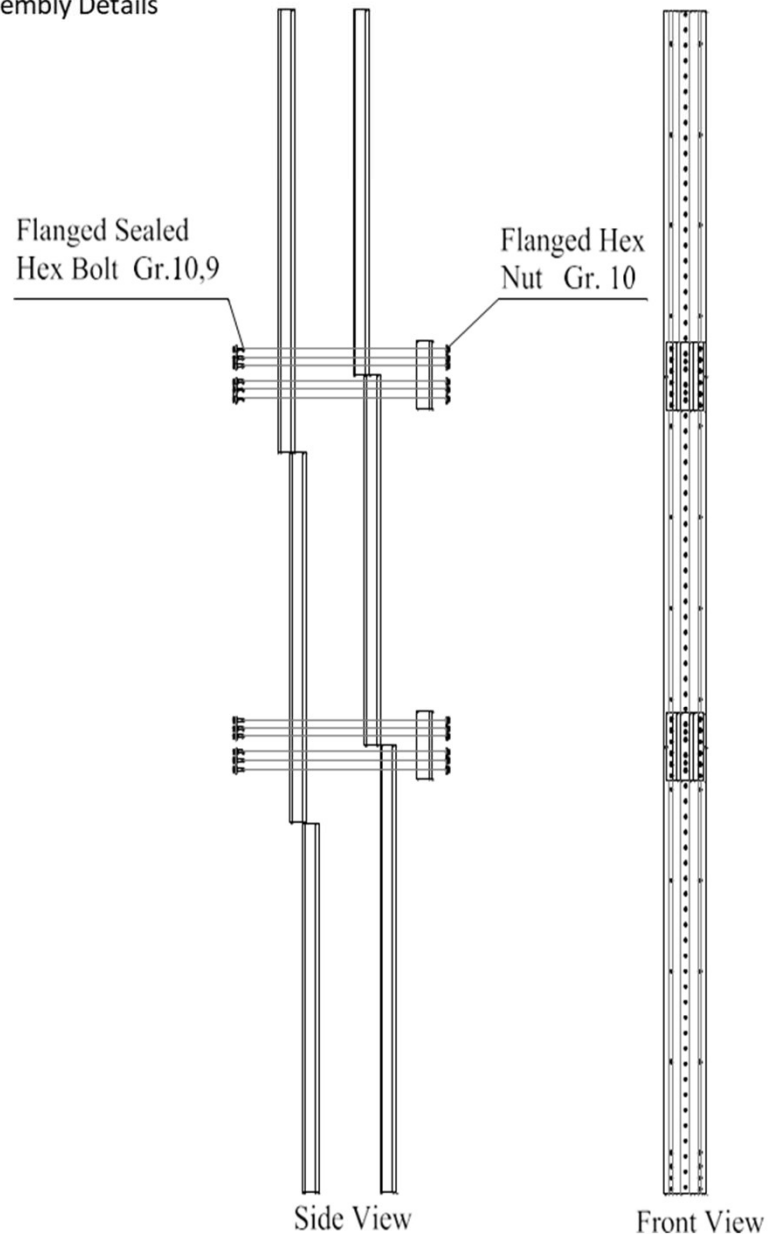
Figure 2.3.2- Stiffener Splice Assembly Details



2.4- Laminated Stiffener

Assembly details are shown on Figure 2.4.1 about laminated stiffeners. Bolt size may vary depending on the sheet thicknesses. Contact manufacturer in case of any requirement that needs bolt size are to be used.

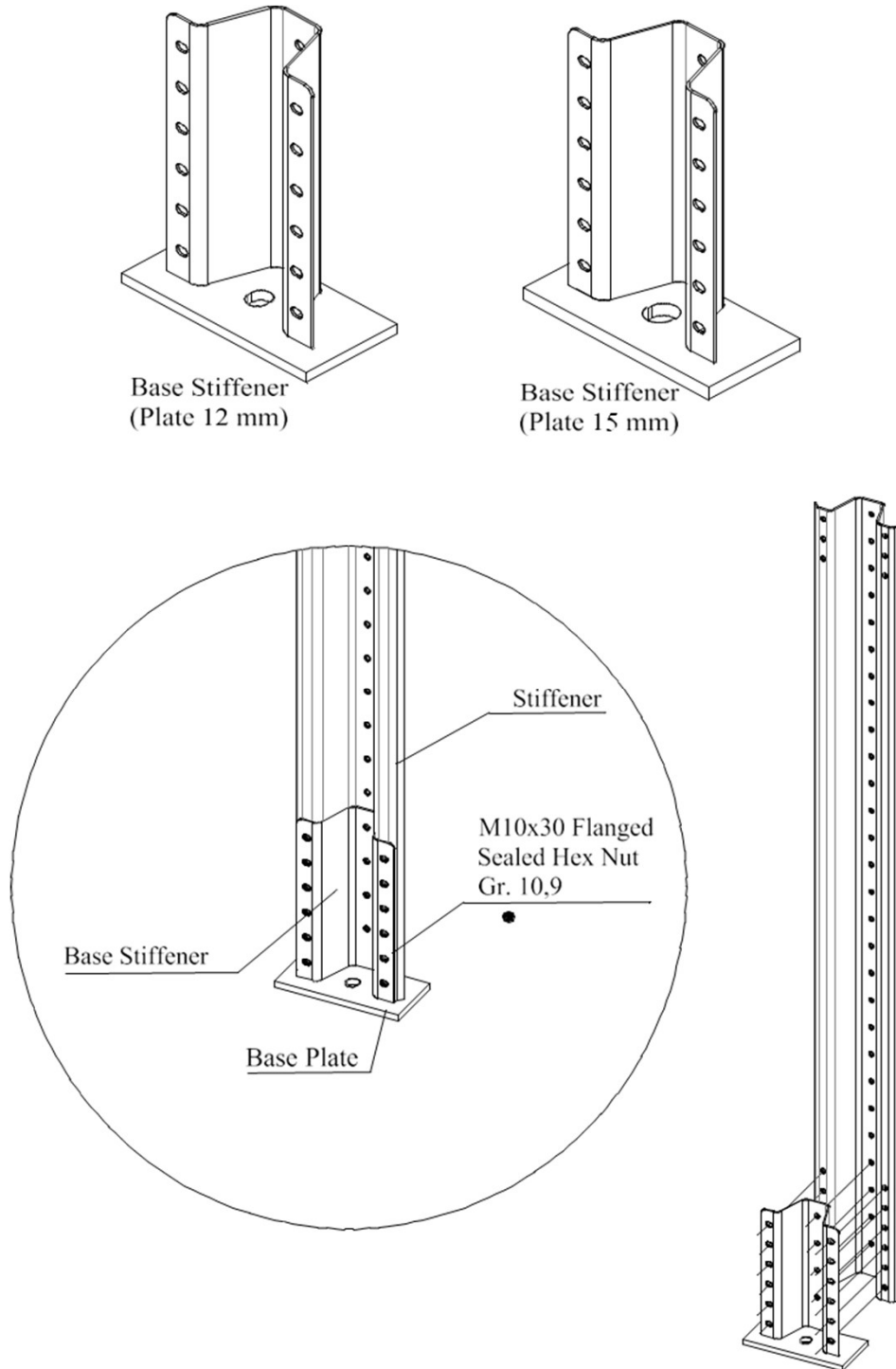
Figure 2.4.1- Assembly Details



2.5- Base Stiffener

Figure 2.5.1 shows the types and assembly details of the base stiffener. Thickness of the base stiffener may vary depending on the thickness of bottom stiffener. Thickness of the base plate and anchor diameter may vary depending on the silo diameter.

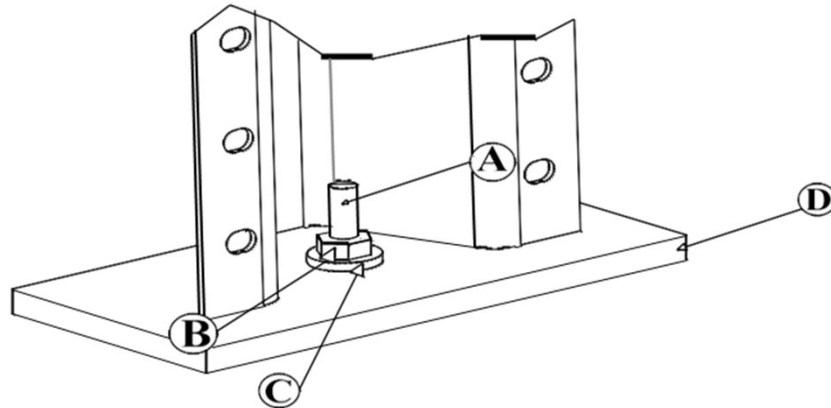
Figure 2.5.1- Base Stiffener Assembly



2.6- Silo Anchorage

Silo anchorage is shown on Figure 2.6.1 with details.

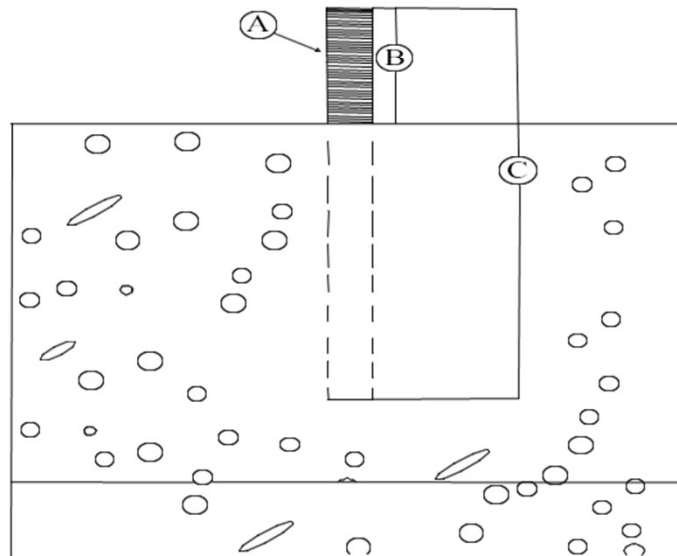
Figure 2.6.1 Anchor Bolt Placement




(A) indicates anchor bolt, (B) indicates hex nut, (C) indicates washer, (D) indicates the plate used.

Figure 2.1.2 shows the anchor positions. For detailed dimensions of (A), (B) and (C) dimensions, contact the manufacturer.

Figure 2.6.2- Anchor Locations

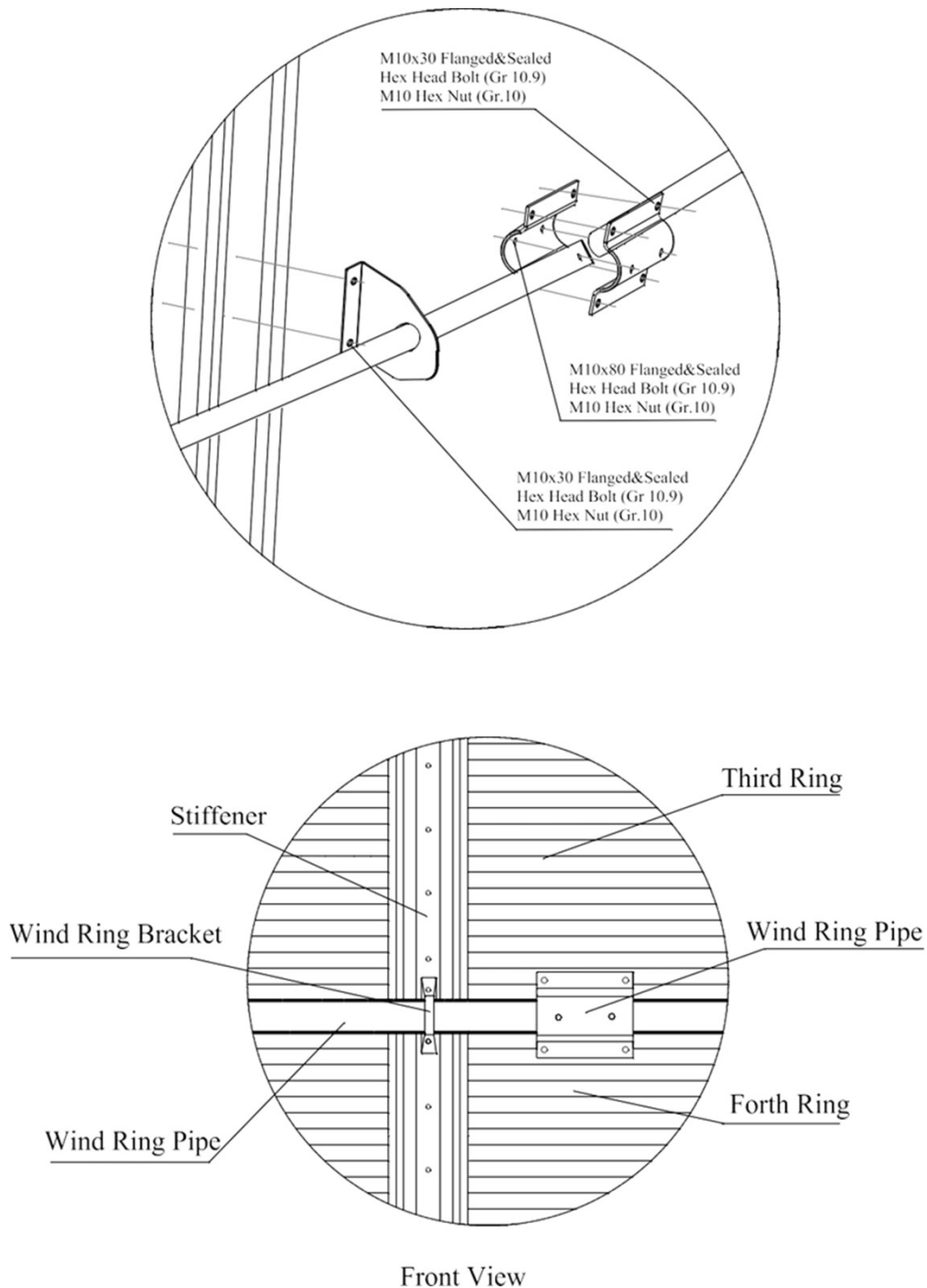


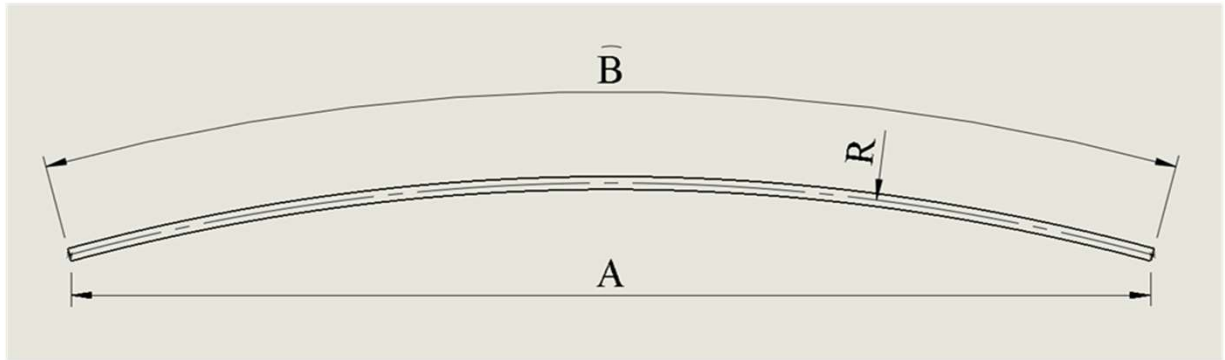
2.7- Wind Ring

Sidewall wind ring assembly is shown on Figure 2.7.1 de below. It is indicated by “”.

The first wind ring shall be mounted to the seam between third and fourth ring from the top. Any extra wind rings may also be mounted to fifth, sixth and eighth if there is. See the “Sample Thickness Chart for Sidewall on Page 36.

Figure 2.7.1- Assembly Details





Silo Model	Diameter (mm)	Sidewall Ring Diameter (R) (mm)	6m Pipe Quantity	Extension Pipe (B) (mm)	6m Pipe Twisted Length (A) (mm)	Extension Pipe Twisted Length (A) (mm)
5	4568	4898	2	3264	4593	3012
6	5481	5811	3	73	4974	58
7	6395	6725	3	2943	5220	2835
8	7308	7638	3	5813	5387	5253
9	8222	8552	4	2622	5505	2566
10	9135	9465	4	5492	5591	5174
11	10049	10379	5	2301	5656	2267
12	10963	11293	5	5171	5707	4977
13	11876	12206	6	1980	5746	1956
14	12790	13120	6	4850	5778	4725
15	13703	14033	7	1659	5804	1640
16	14617	14947	7	4529	5825	4445
17	15530	15860	8	1338	5843	1321
18	16444	16774	8	4208	5858	4149
19	17357	17687	9	1017	5871	1001
20	18271	18601	9	3887	5881	3844
21	19185	19515	10	696	5891	681
22	20098	20428	10	3566	5899	3533
23	21012	21342	11	375	5906	360
24	21925	22255	11	3245	5913	3218
25	22839	23169	12	54	5918	39
26	23752	24082	12	2924	5923	2902
27	24666	24996	12	5794	5928	5727
28	25579	25909	13	2603	5932	2583
29	26493	26823	13	5473	5935	5420
30	27406	27736	14	2282	5938	2264

WIND RING DIMENSION

3- Access Door

3.1- 05-14 Model Silo Doors

05-14 Model Silo access door assembly is shown on Figure 3.1.1 below. Access door is shipped as pre-assembled onto second sidewall sheet from the bottom. See details on page 35.

Figure 3.1.1- Round Door Parts

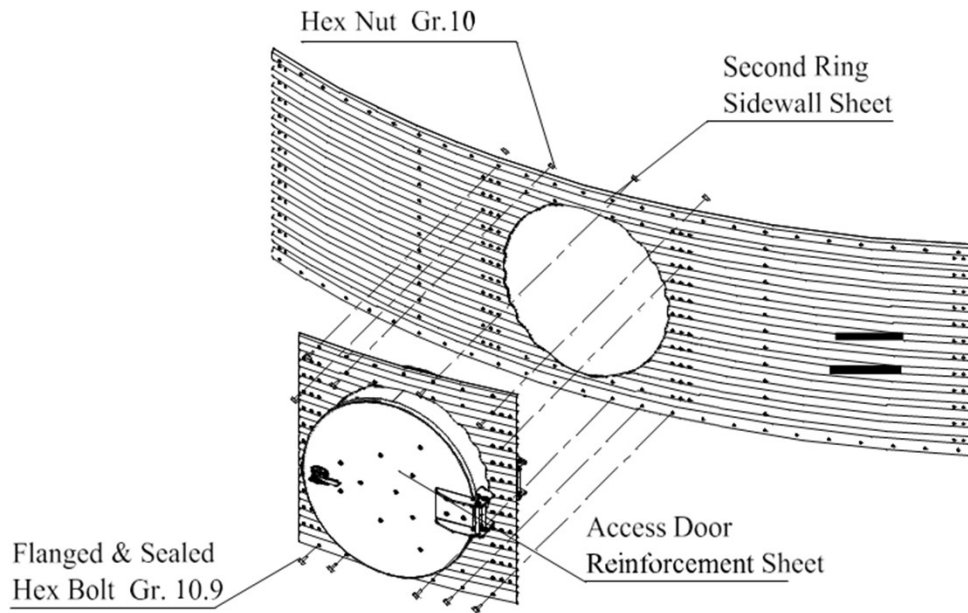
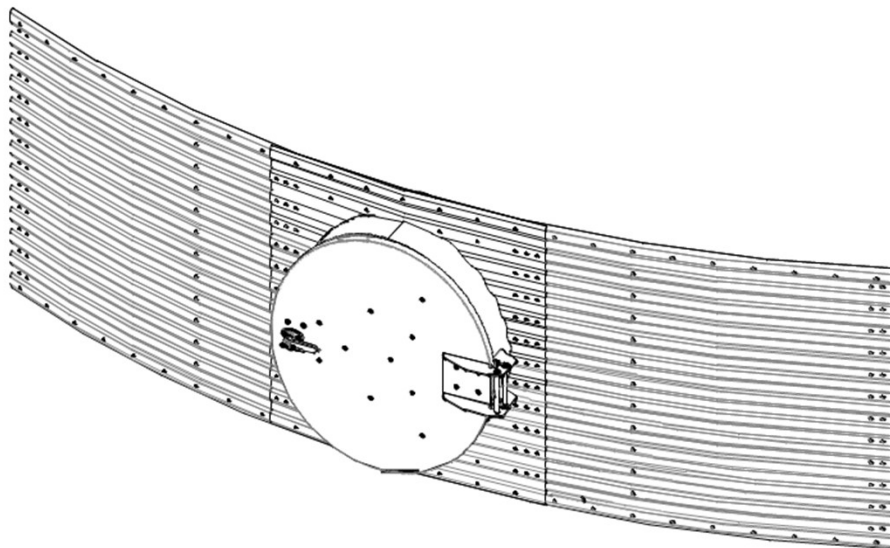


Figure 3.1.2- Round Access Door Pre-Assembled View



3.2- Square Door (Double Stiffened)

Assembly detail is shown below on Figure 3.2.1. Apply caulking carefully during the assembly. The assembly procedure can be defined from two steps. Door inner and outer covers shall be mounted to the sidewall sheet at first. (See Figure 3.2.1) Secondly, door stands are braced to the upper and bottom ring sidewall sheets. (See Figure 3.2.2) Caulking application is a MUST between stands.

Figure 3.2.1- Assembly Details

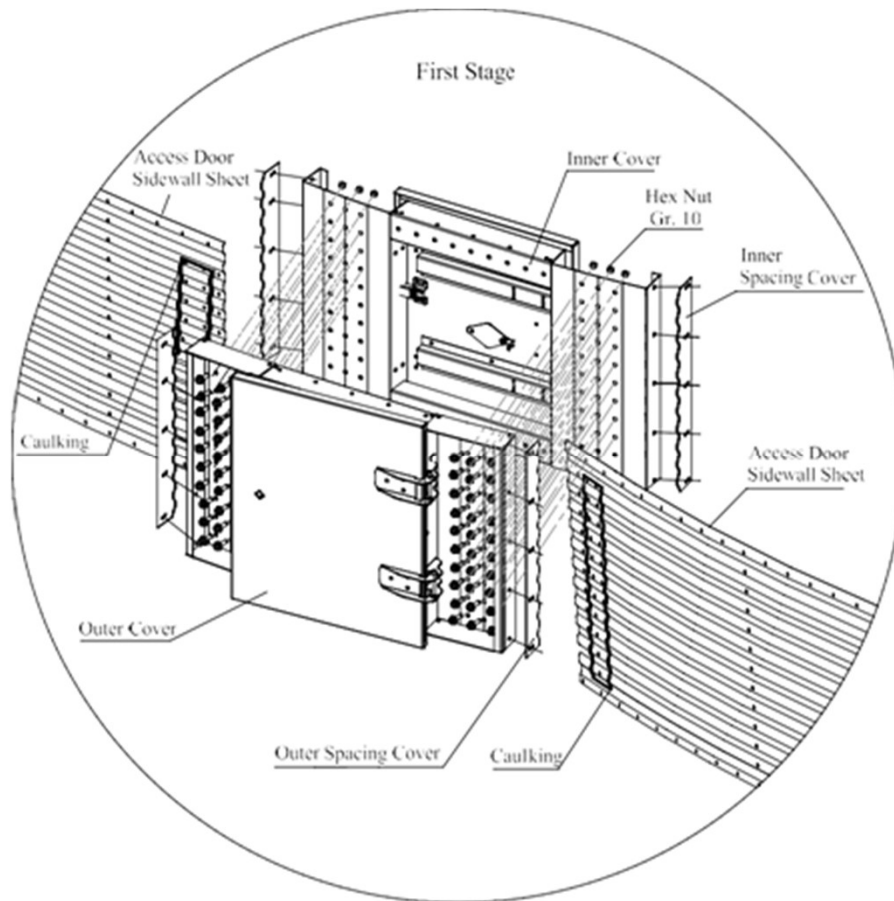




Figure 3.2.2- Assembly Details

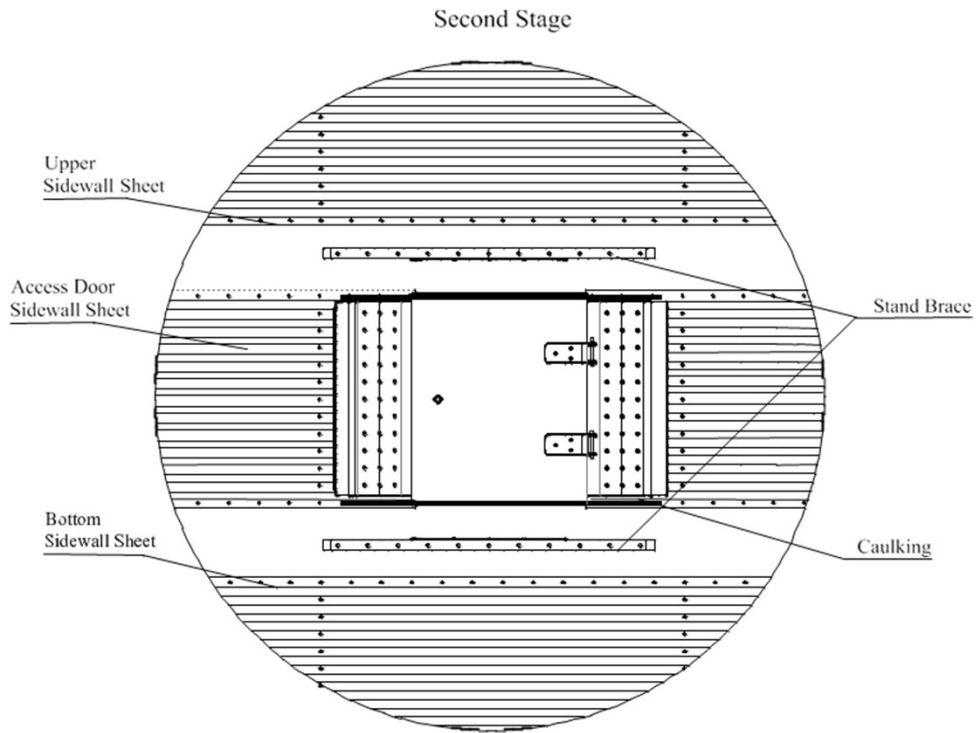
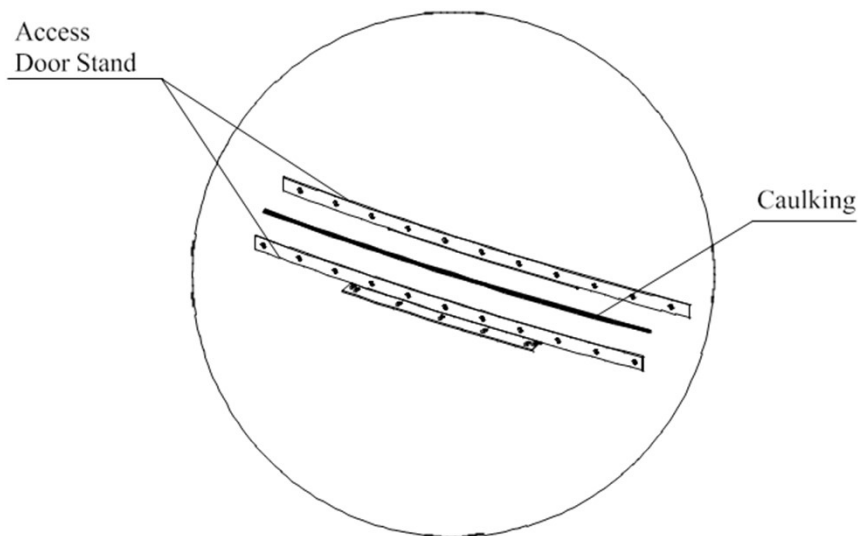


Figure 3.2.3- Stand Bracing Detail



3.3- Square Door (Triple Stiffened)

Assembly detail is shown below on Figure 3.3.1. Apply caulking carefully during the assembly. The assembly procedure can be defined from two steps. Door inner and outer covers shall be mounted to the sidewall sheet at first. (See Figure 3.3.1) Secondly, door stands are braced to the upper and bottom ring sidewall sheets. (See Figure 3.3.2) Caulking application is a MUST between stands.

Figure 3.3.1- Assembly Details

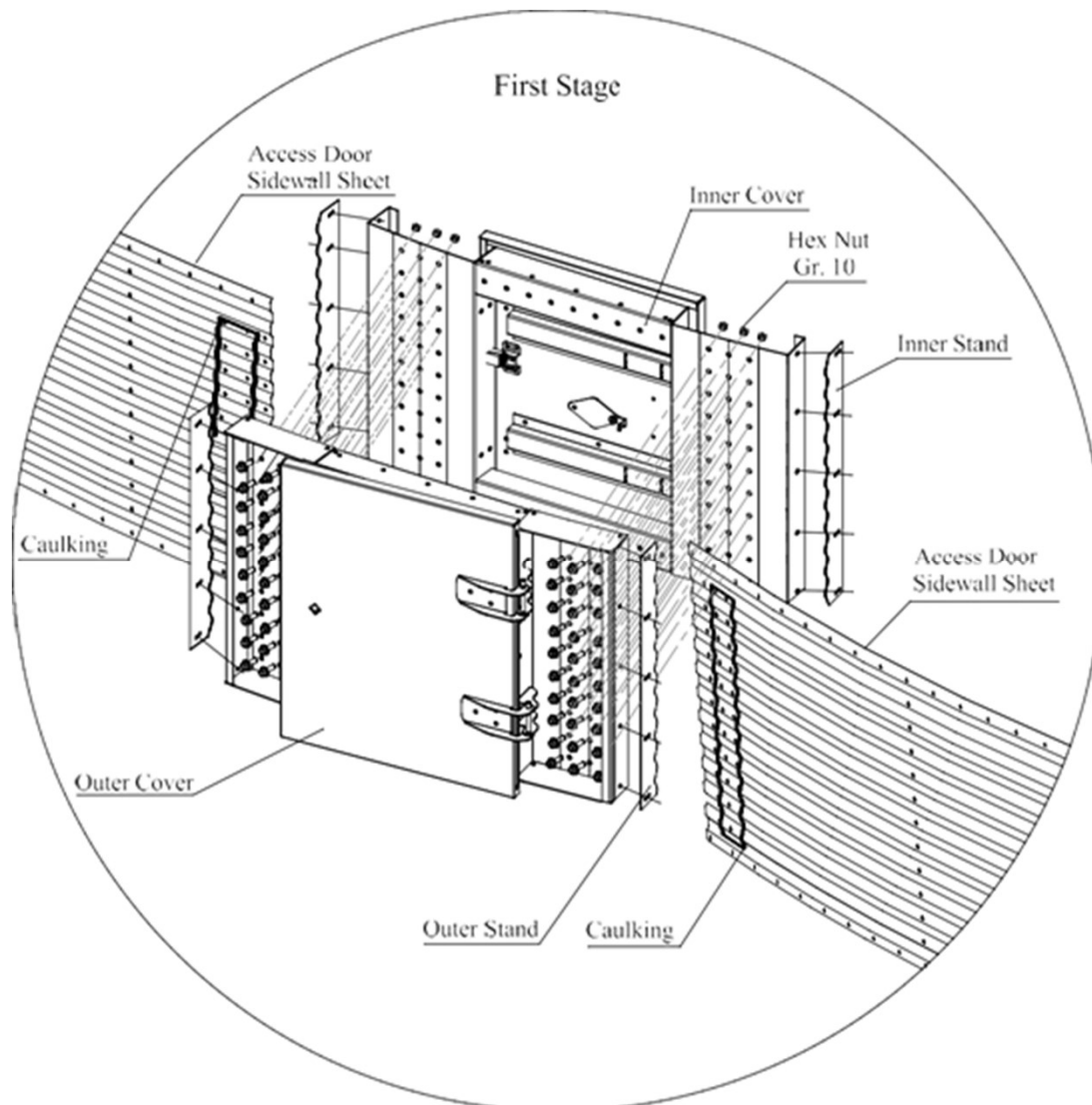


Figure 3.3.2- Assembly Details

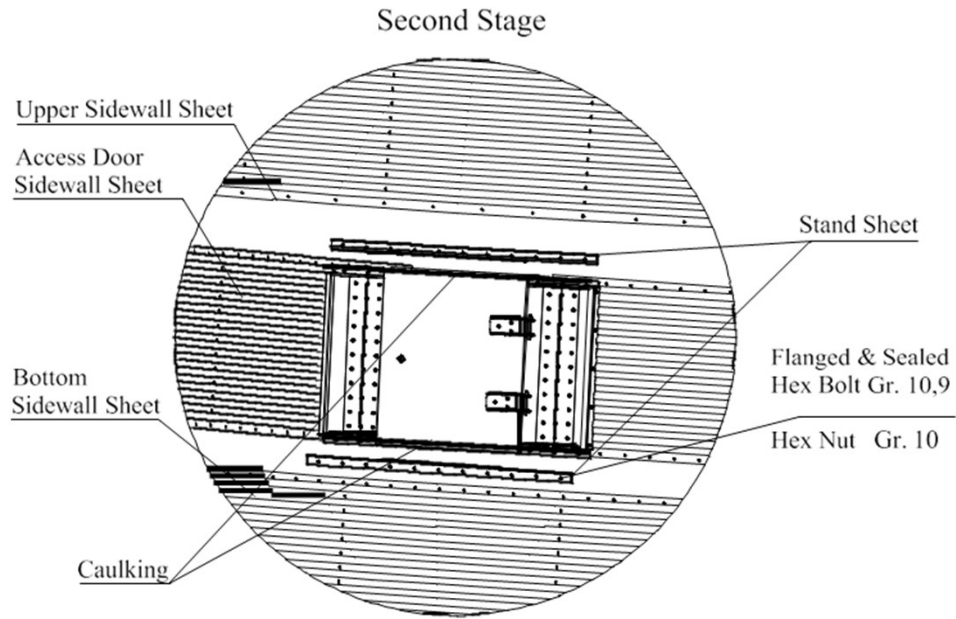
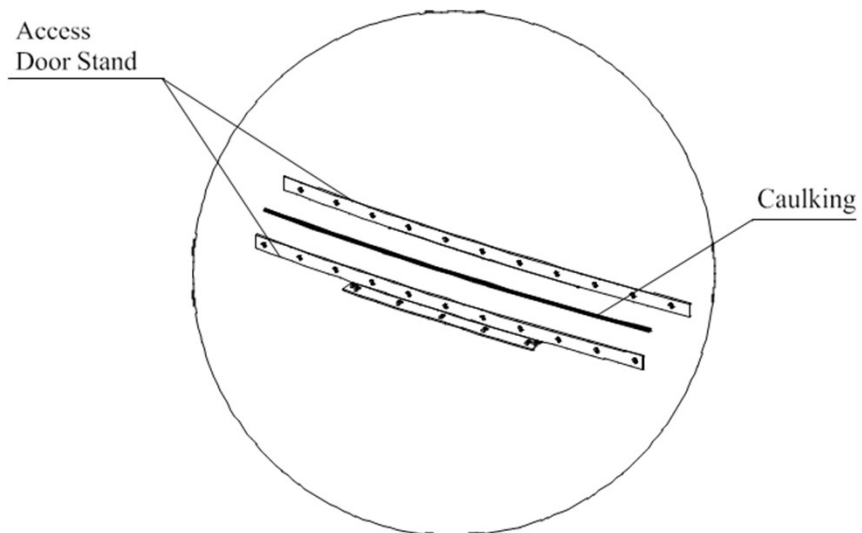
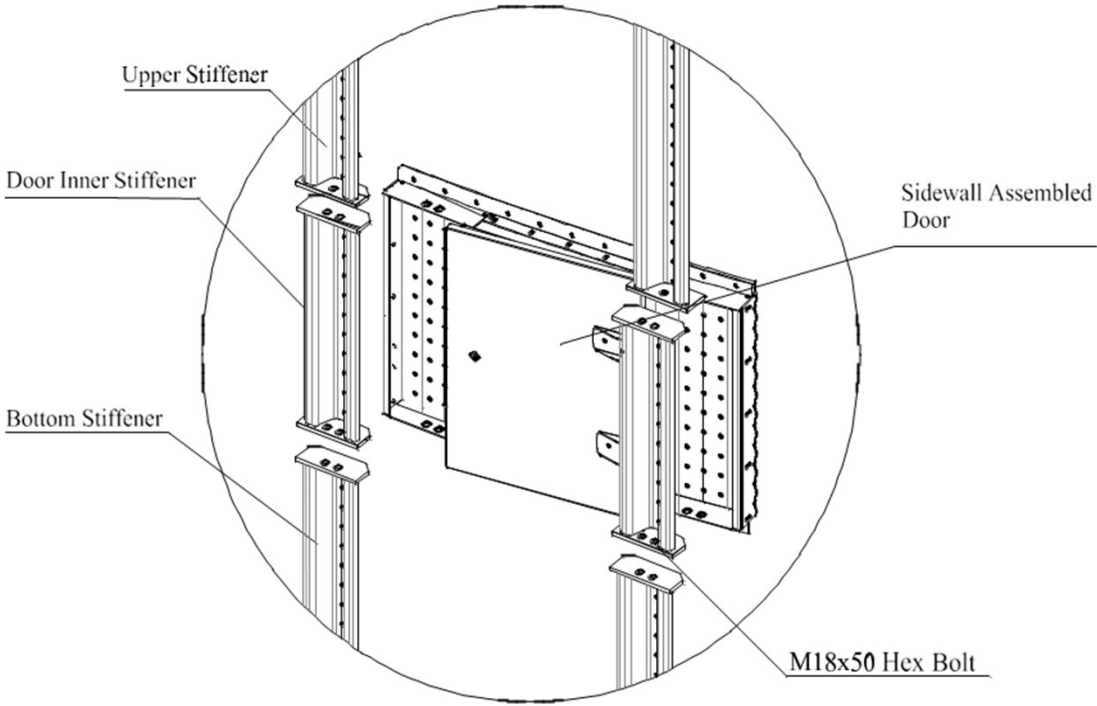


Figure 3.3.3- Stand Bracing Detail



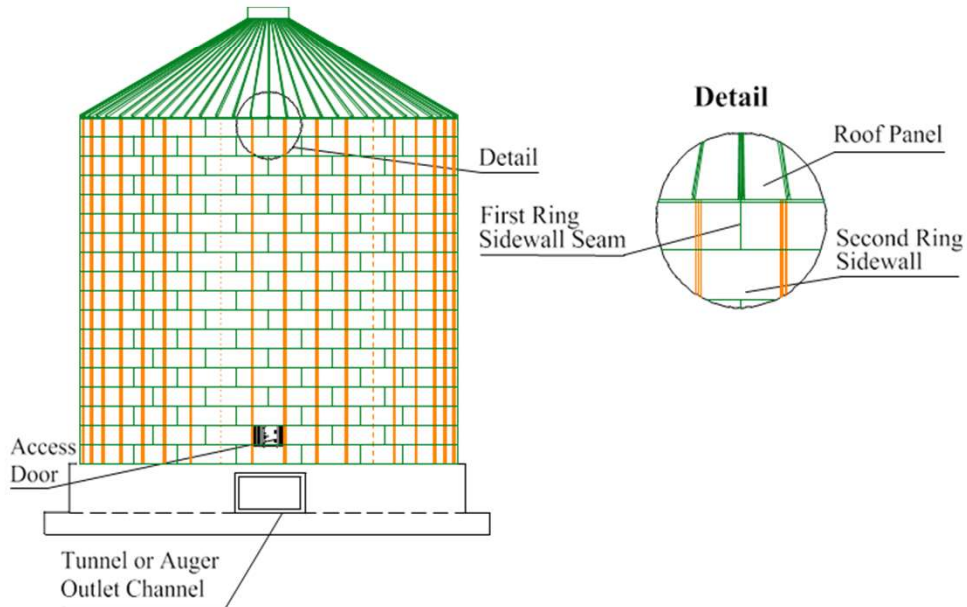


3.4- Access Door Placement

3.4.1- Even Ring Silo Door Placement

Sidewall sheet vertical seam on the **TOP RING** shall be in the same alignment with **TUNNEL** under the silo.

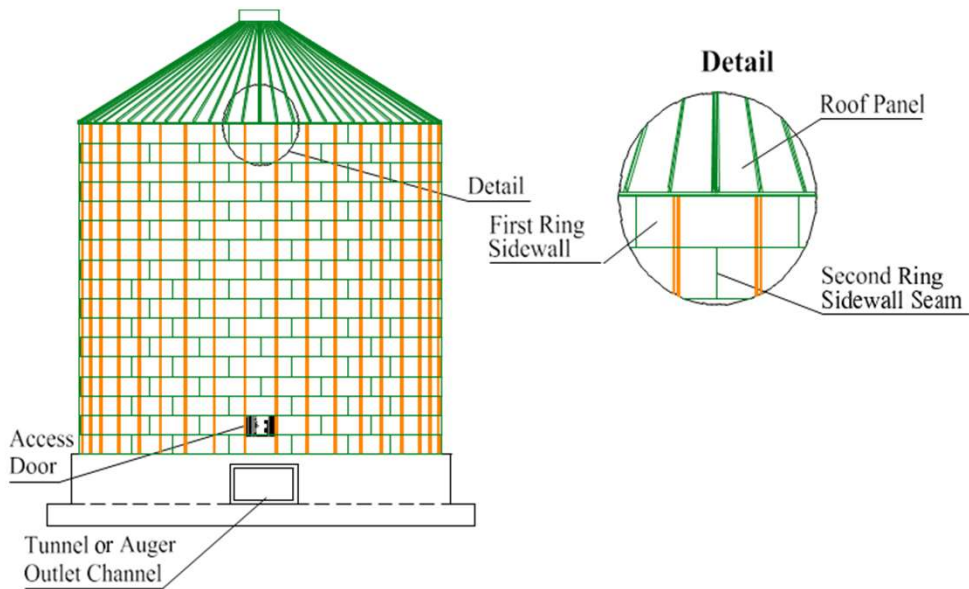
Figure 3.4.1.1- Even Ring Silo Door Placement



3.4.2- Odd Ring Silo Door Placement

Sidewall sheet vertical seam on the **SECOND RING** shall be in the same alignment with **TUNNEL** under the silo.

Figure 3.4.2.1- Odd Ring Silo Door Placement



Sample Silo Model Thickness Chart

Figure 1- Even Ring Silo Sidewall Thicknesses (ATD-1818-Z2B)

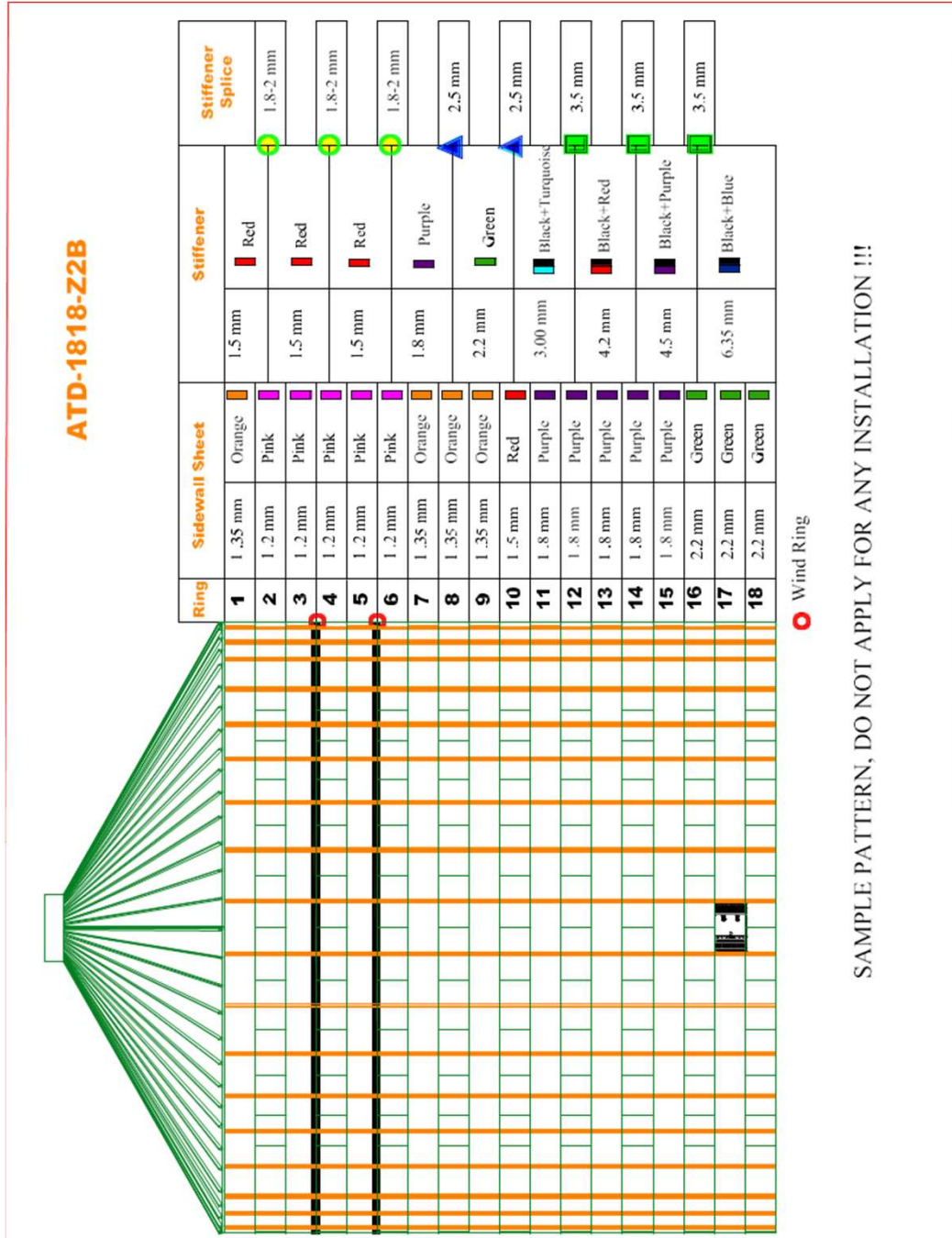




Figure 2- Even Ring Silo Sidewall Thicknesses (ATD-2216-Z2A)

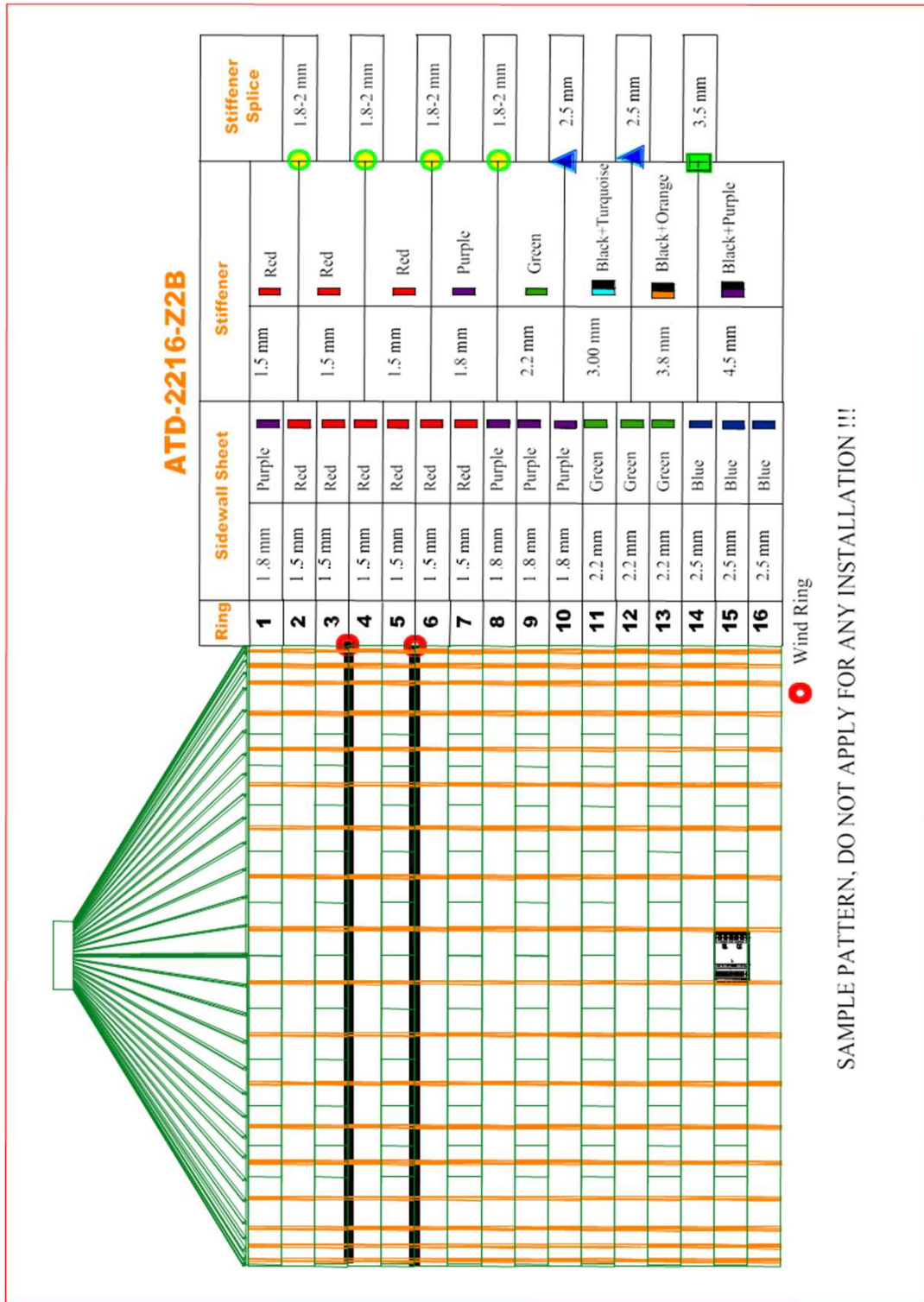




Figure 3- Odd Ring Silo Sidewall Thicknesses (ATD-1815-Z4)

