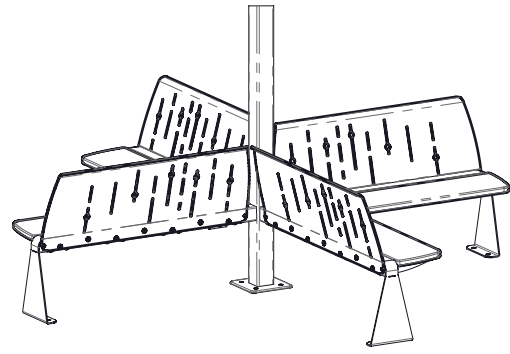
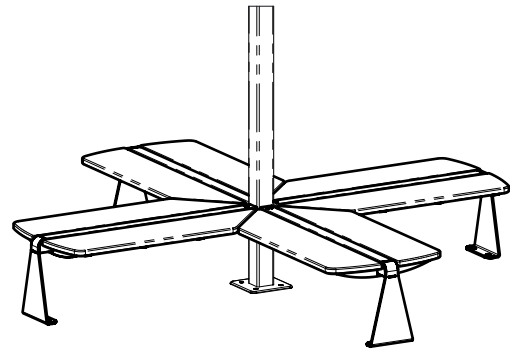


**BENCH OPTIONS**



BENCH BACKREST SEATING



BENCH FLAT SEATING

**POST 1**  
 LENGTH: 114in / 2.9m

**POST 3**  
 LENGTH: 126in / 3.2m

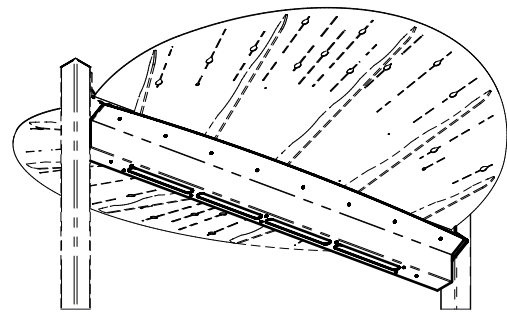
AVAILABLE WITHOUT  
 RIVER MAZE IN (VOR 3504B)



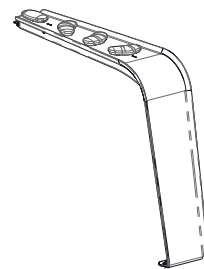
**POST 2**  
 LENGTH: 143in / 3.6m

FOR THE BENCHES,  
 REFER TO THE  
 TWO POSSIBLE OPTIONS

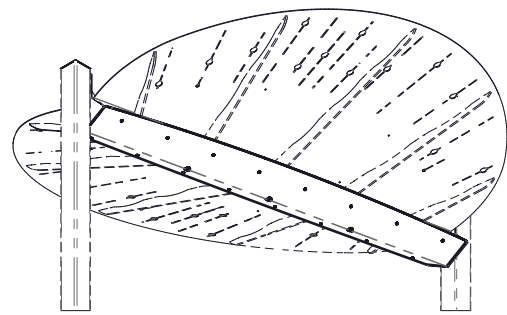
**WATER FEATURE OPTIONS**



SOFT RAIN

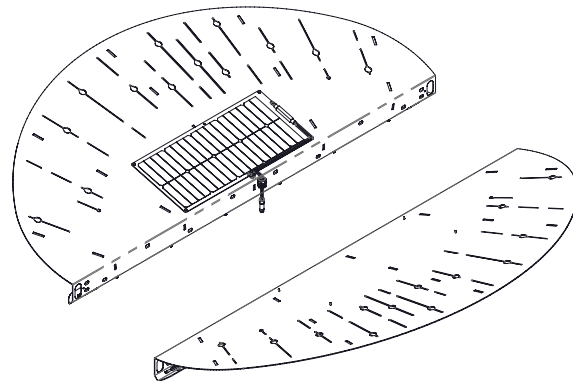


1X RIVER MAZE  
 INCLUDED IN VOR 3504 ONLY

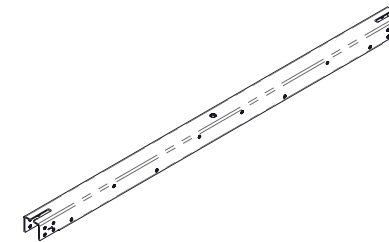


MIST

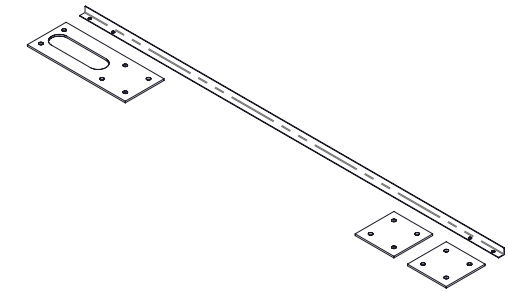
**DEFAULT PARTS**



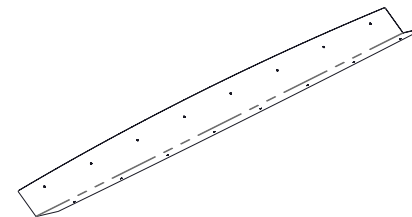
4X CANOPY  
 2X WITH SOLAR PANEL  
 2X WITHOUT SOLAR PANEL



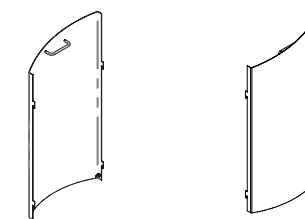
2X BEAMS



1X ANCHORING JIGS KIT



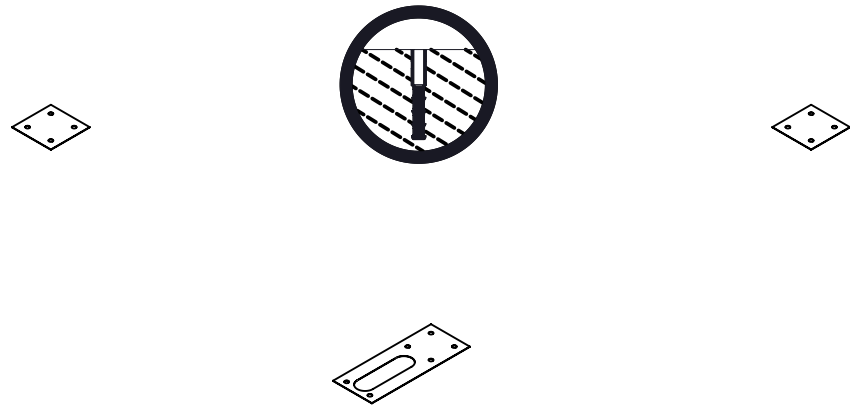
1X CANOPY COVER



1X WMS CASING LEFT SIDE PANEL  
 1X WMS CASING RIGHT SIDE PANEL

**ABRIO 04 - VOR 3504 & 3504B  
 BOM & OPTIONS**

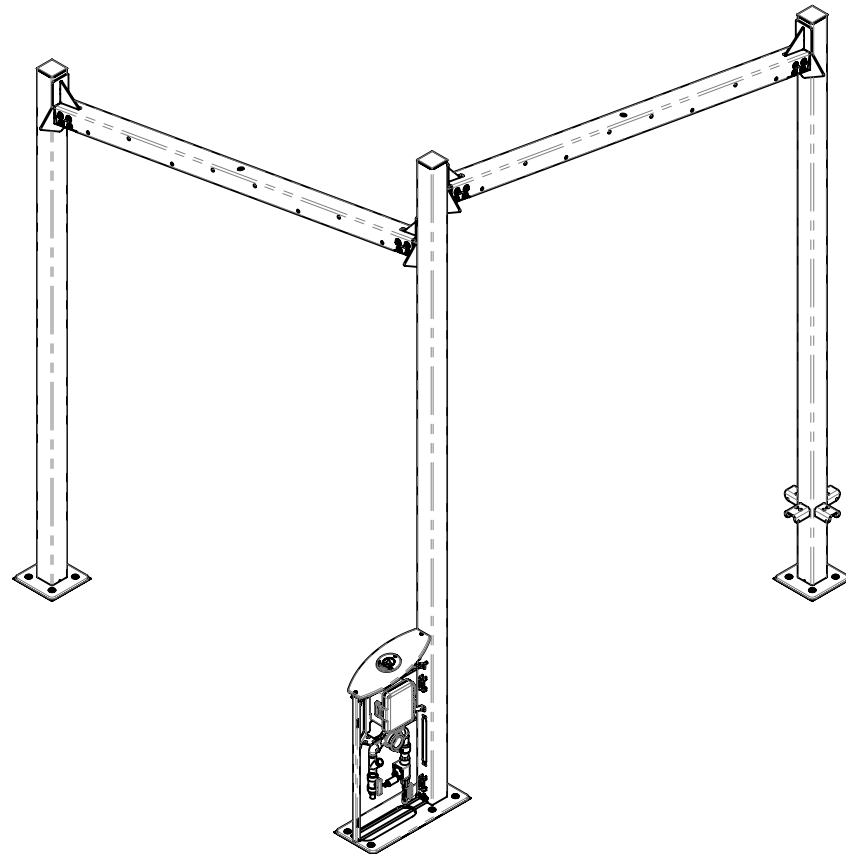
# #1



### POST ANCHORS' INSTALLATION

REFER TO ANCHORING MARKING METHOD ON P. **TYP - 01**  
 REFER TO ANCHOR ASSEMBLY DETAIL ON P. **TYP - 02**  
 USE INSTALLATION DRAWING MEASUREMENTS FOR MORE DETAILS

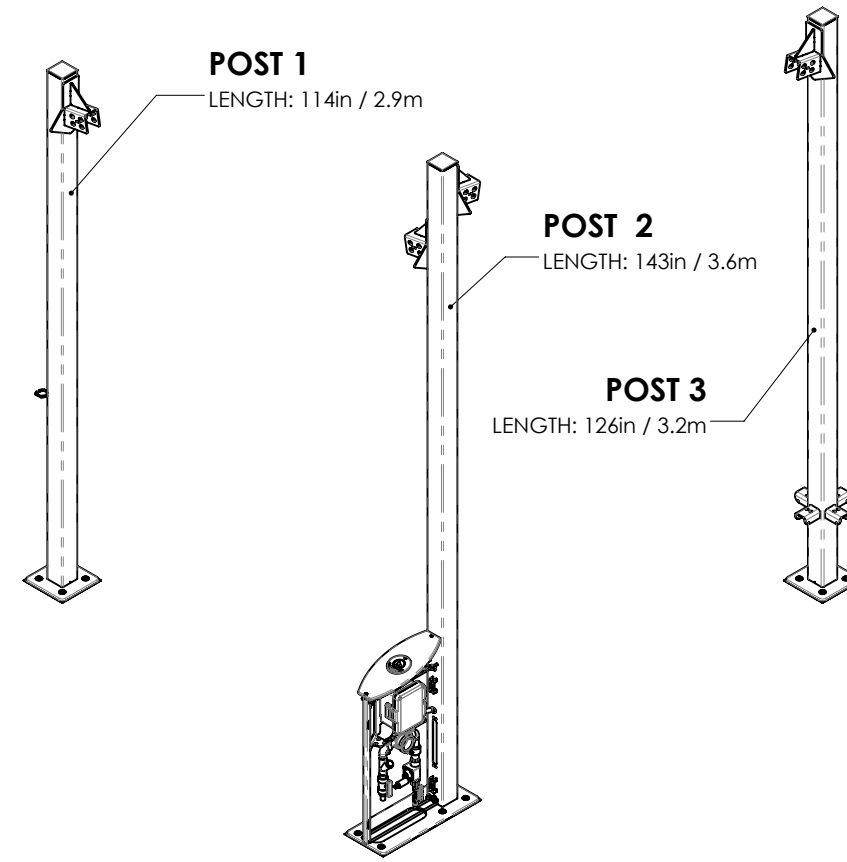
# #3



### BEAMS INSTALLATION

FULLY SECURE THE POSTS WITH TOOLS AFTER ALL BEAMS ARE INSTALLED  
 REFER TO BEAM ASSEMBLY DETAIL ON P. **TYP - 07**

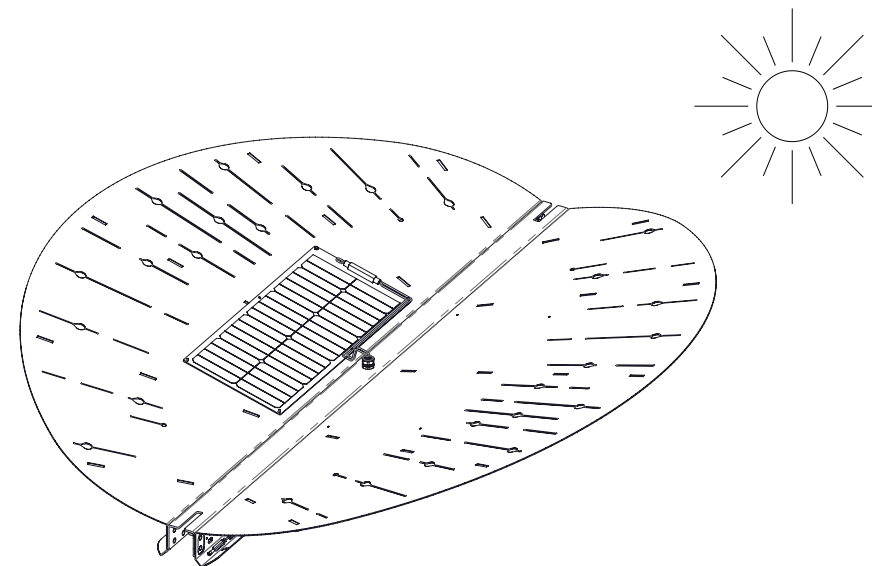
# #2



### POSTS INSTALLATION

HAND-TIGHTEN THE POSTS ON THE GROUND  
 REFER TO WMS POST ASSEMBLY DETAIL ON P. **TYP - 03**  
 REFER TO POST ASSEMBLY DETAIL ON P. **TYP - 06**

# #4.A



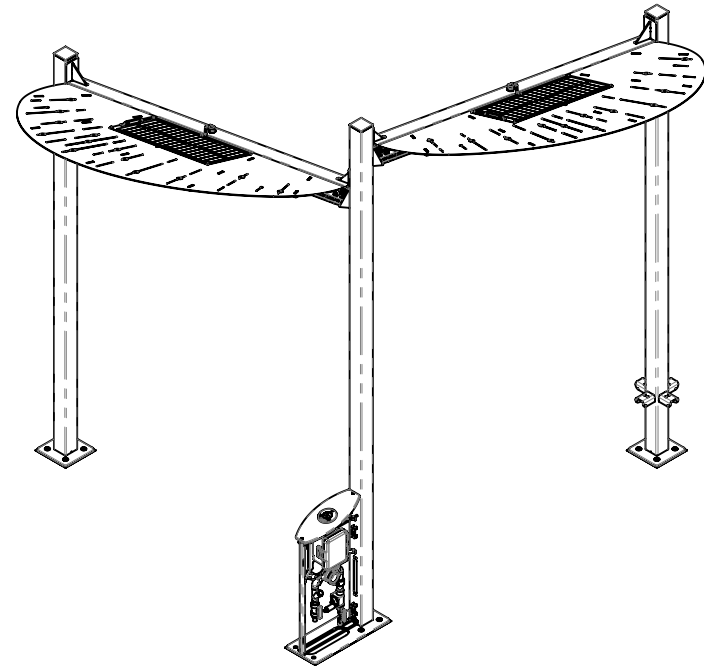
### CANOPIES WITH SOLAR PANEL ORIENTATION

CANOPIES WITH SOLAR PANEL MUST BE INSTALLED TOWARDS THE SUN  
 (SOLAR PANEL FACING SOUTH IN NORTH HEMISPHERE / FACING NORTH IN SOUTH HEMISPHERE) AVOID  
 SHADOW AND OBSTRUCTED AREAS  
 REFER TO CANOPY ASSEMBLY DETAIL ON P. **TYP - 09**

IF YOU HAD SEVERAL DAYS WITHOUT SUN (3 OR MORE), THE SYSTEM WILL GO TO A  
 SLEEP MODE, WHICH WILL SHUTDOWN THE SYSTEM TO PROTECT THE CONTROLLER AND  
 THE BATTERY UNTIL IT'S RECHARGED TO 20% (3-5 SUNNY HOURS).

# ABRIO 04 - VOR 3504 & 3504B ASSEMBLY STEPS

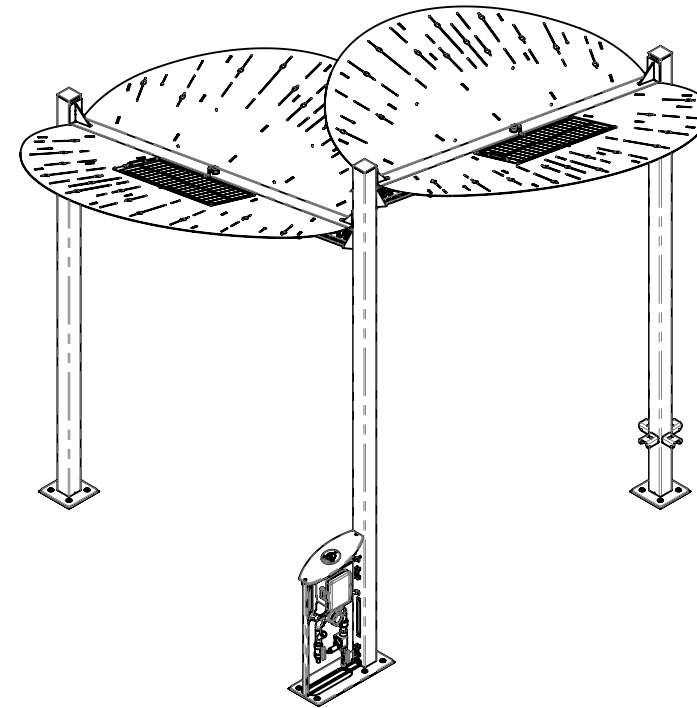
# #4.B



## CANOPIES WITH SOLAR PANEL INSTALLATION

FROM THE HIGHEST CANOPY TO THE LOWEST (REFER TO SEQ. ORDER AS DESCRIBE ABOVE)  
REFER TO CANOPY ASSEMBLY DETAIL ON P. **TYP - 08**

# #4.C

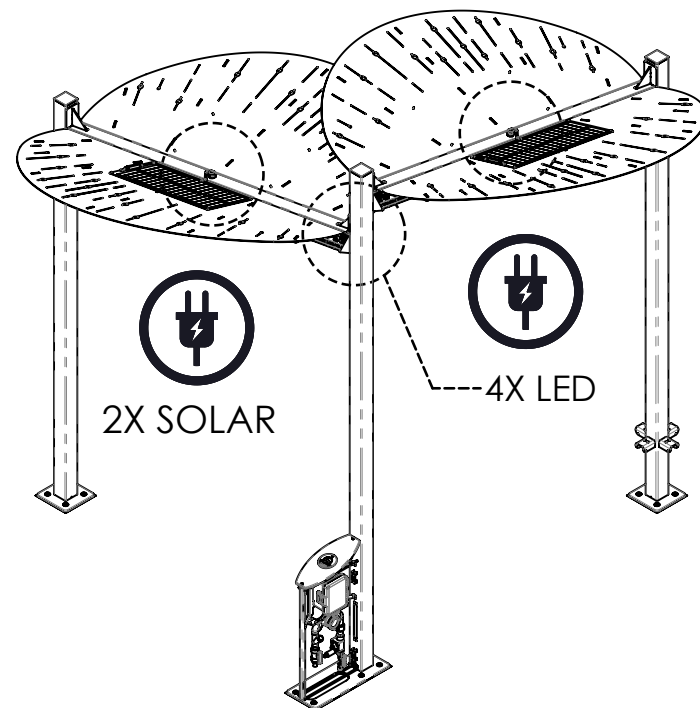


## CANOPIES INSTALLATION

FROM THE HIGHEST CANOPY TO THE LOWEST (REFER TO SEQ. ORDER AS DESCRIBE ABOVE)  
REFER TO CANOPY ASSEMBLY DETAIL ON P. **TYP - 08**

# #5

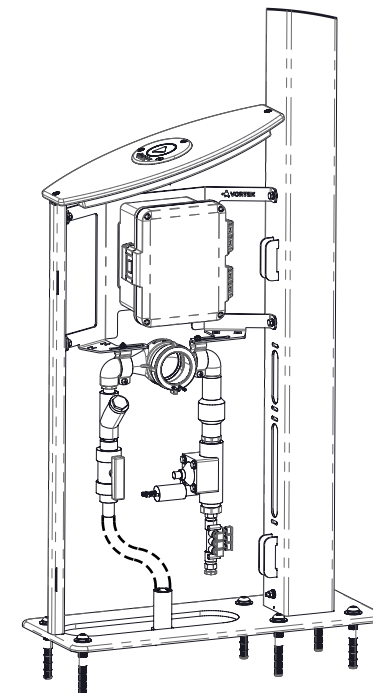
**CRITICAL STEP**  
**MAKE SURE ALL CABLES ARE CONNECTED**



## ELECTRIC CONNECTION OF LEDS

REFER TO CANOPY ASSEMBLY DETAIL ON P. **TYP - 10 & P. TYP - 14**  
REFER TO ABRIO 04 ELECTRICAL CABLE MANAGEMENT

# #6



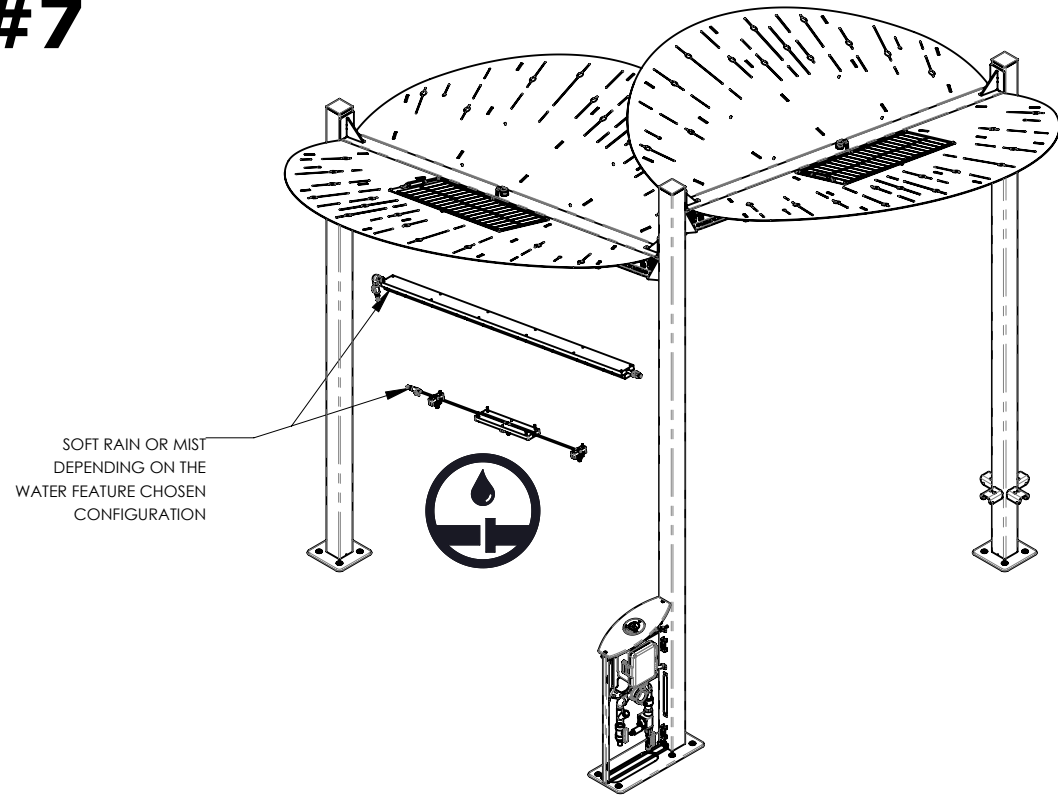
## TESTING STEPS:

- 1- CONNECT WATER LINE INLET TO WATER MANAGEMENT SYSTEM
- 2- CONNECT TUBINGS TO THE MANIFOLDS
- 3- OPEN MAIN VALVE
- 4- PRESS THE PLAYSTART ACTIVATOR
- 5- LET WATER FLOW FROM THE OTHER ENDS OF THE TUBINGS DURING 4 MIN SEQUENCE

## WATER TESTING

TEST IF WATER FLOW THROUGH THE MANIFOLD

#7

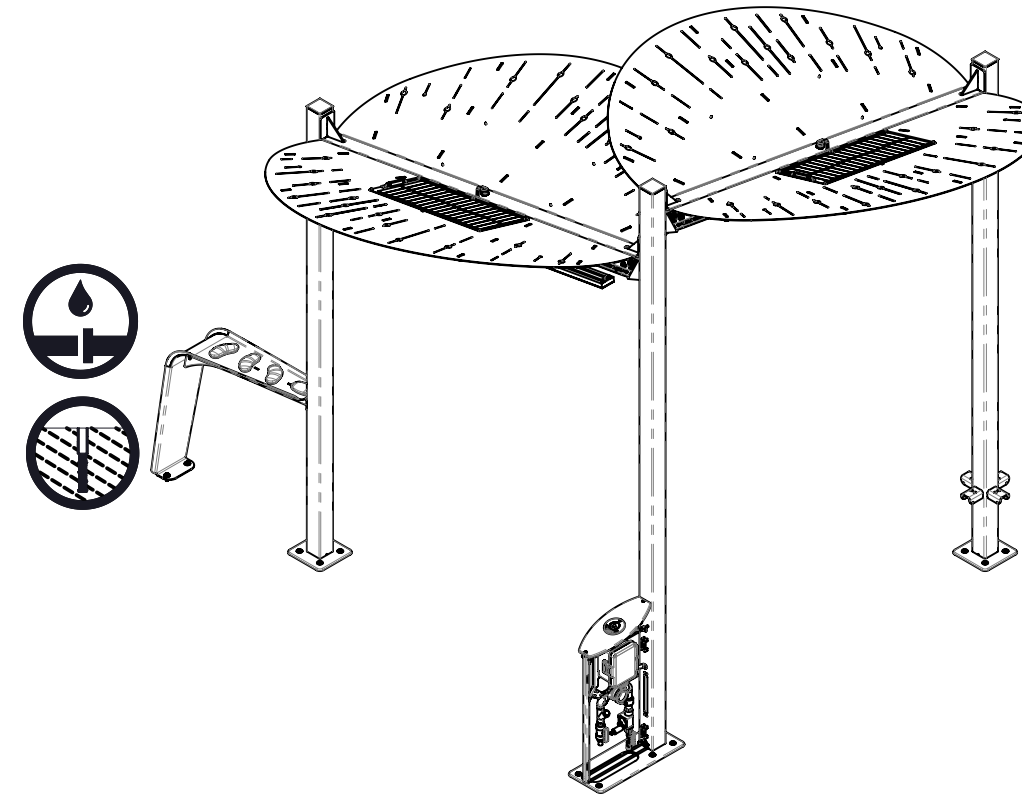


**SOFT RAIN OR MIST INSTALLATION**

WATER FEATURE TYPES MAY VARY

REFER TO MIST ASSEMBLY DETAIL ON P. **TYP - 15** / REFER TO SOFT RAIN ASSEMBLY DETAIL ON P. **TYP - 17**  
REFER TO ABRIO 04 WATER TUBING MANAGEMENT

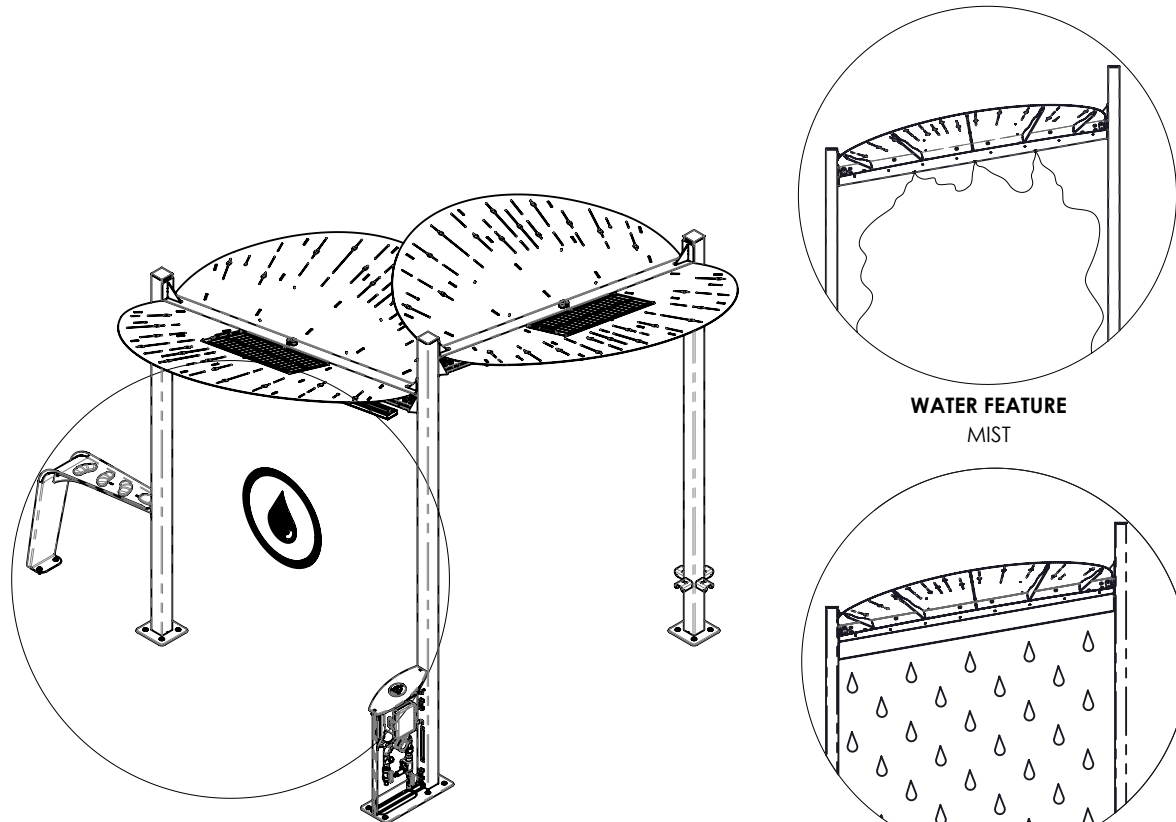
#8



**RIVER MAZES INSTALLATION**

REFER TO RIVER MAZE ASSEMBLY DETAIL ON P. **TYP - 19**  
REFER TO ABRIO 04 WATER TUBING MANAGEMENT

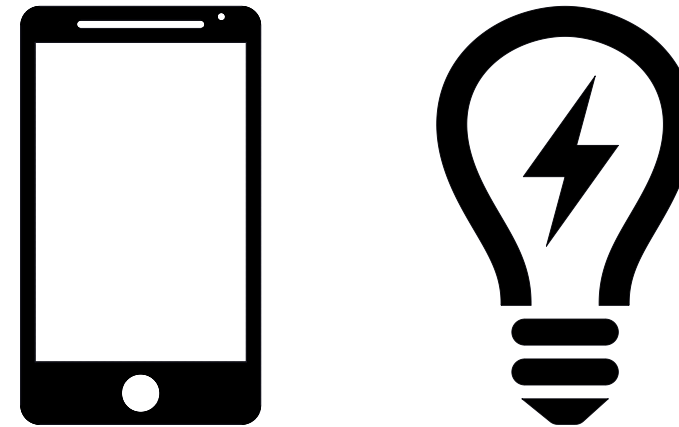
#9



**WATER FEATURES TESTING**

TEST IF WATER FLOW THROUGH ALL WATER FEATURES  
BY PRESSING THE ACTIVATOR

#10

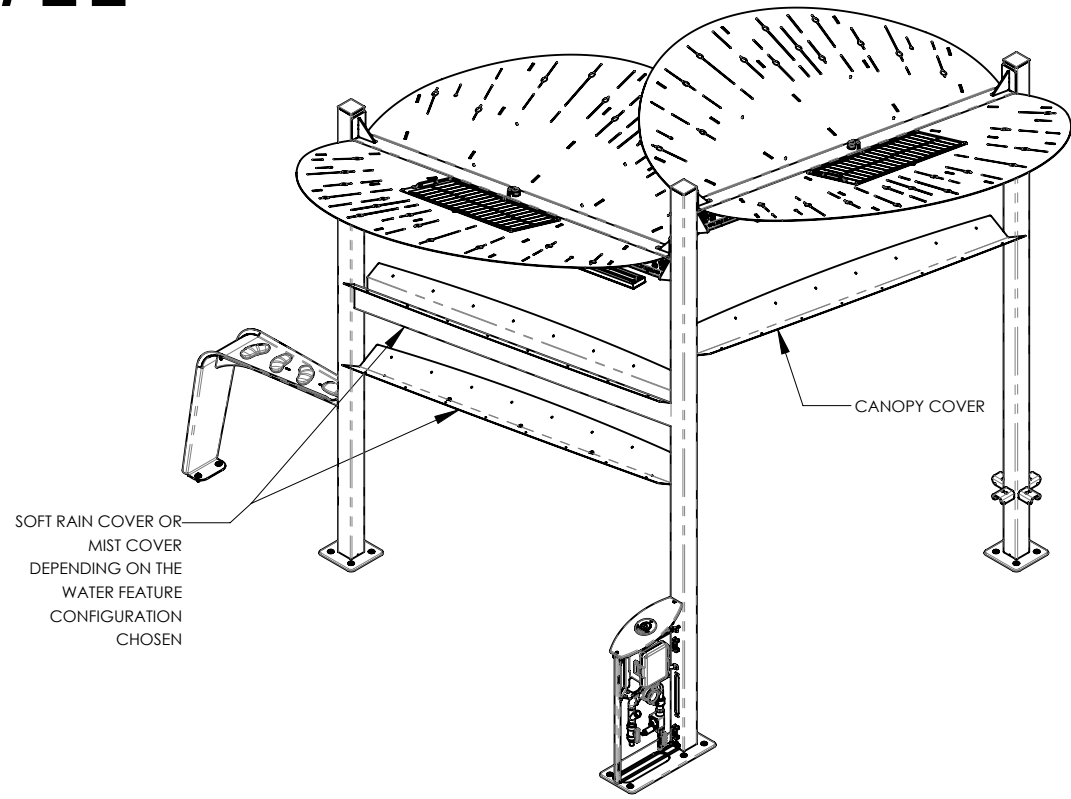


**APPLICATION TESTING**

CONNECT THE ABRIO WITH THE CELLPHONE APPLICATION'S  
AND DO LIGHTNING TESTING FROM THE APPLICATION



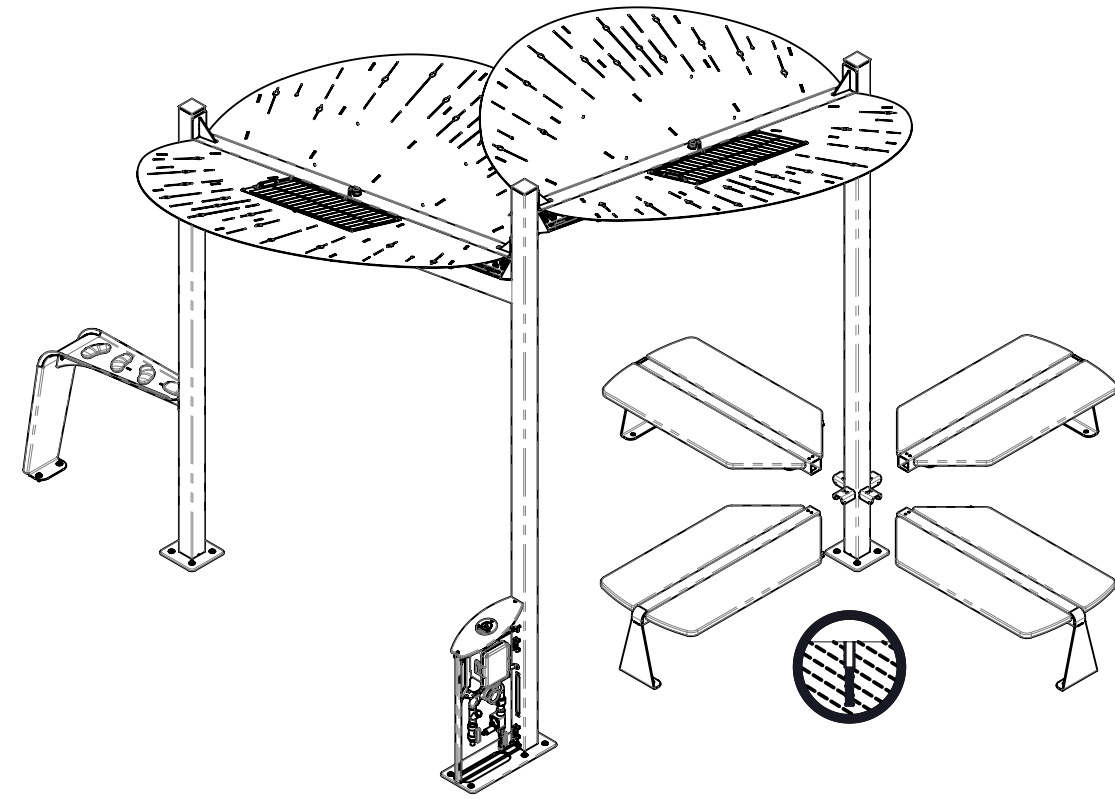
# #11



## COVERS INSTALLATION

COVER TYPE MAY VARY DEPENDING ON WATER FEATURE  
REFER TO COVER ASSEMBLY DETAIL ON P. **TYP - 23**

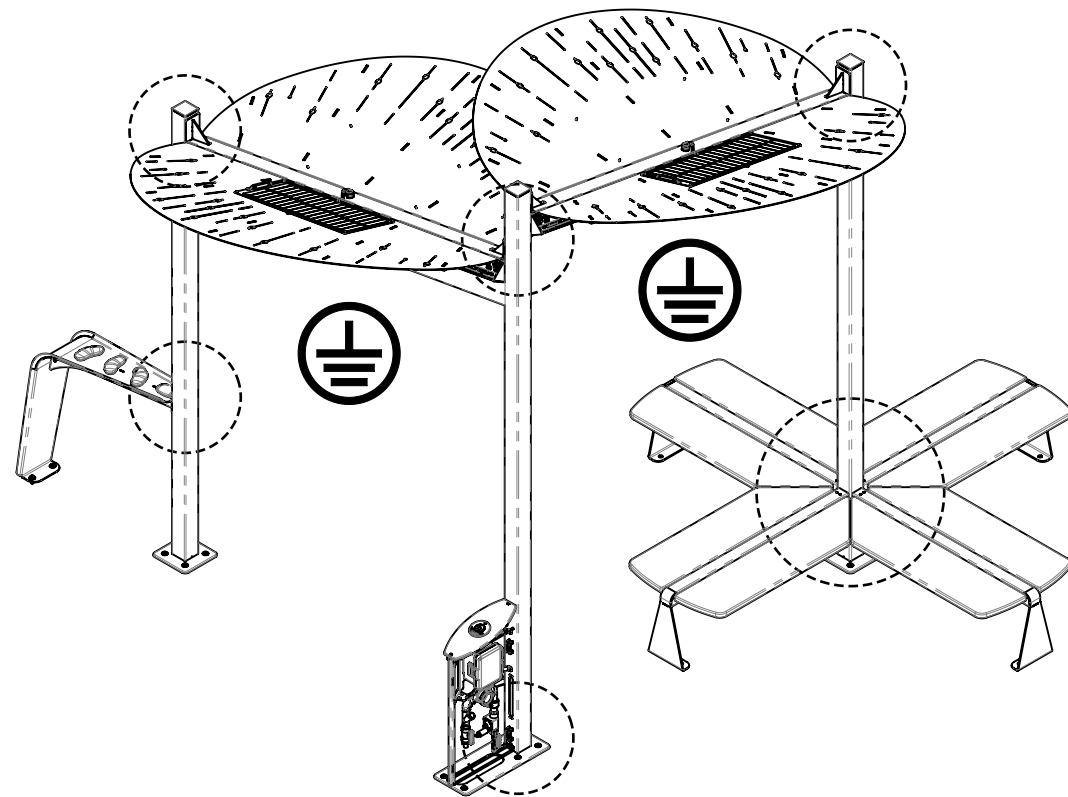
# #12



## BENCHES INSTALLATION

REFER TO BENCH WITH BACKREST SEATING ASSEMBLY DETAIL ON P. **TYP - 24**  
REFER TO BENCH FLAT SEATING ASSEMBLY DETAIL P. **TYP - 28**

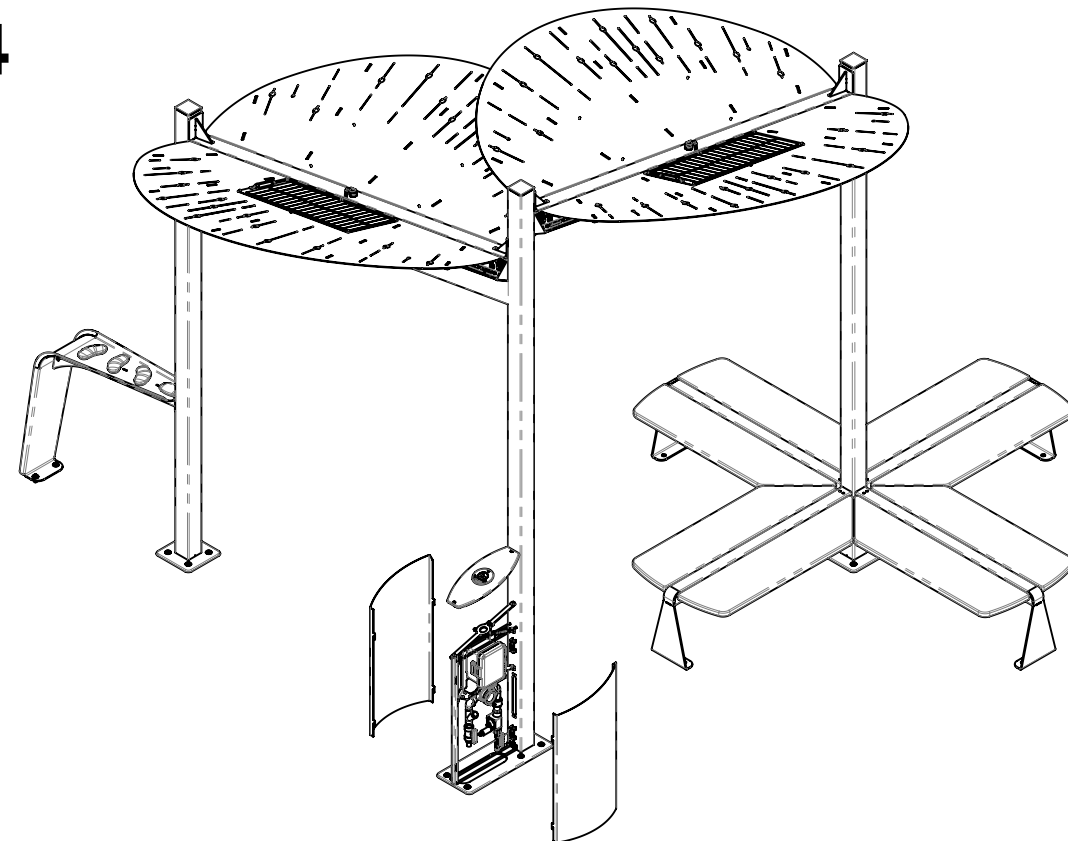
# #13



## GROUND AND BONDING VERIFICATION

4X ON BENCHES / 4X ON CANOPIES / 1X ON RIVER MAZES / 1X ON WMS POST / 2X ON WMS SIDE PANELS

# #14

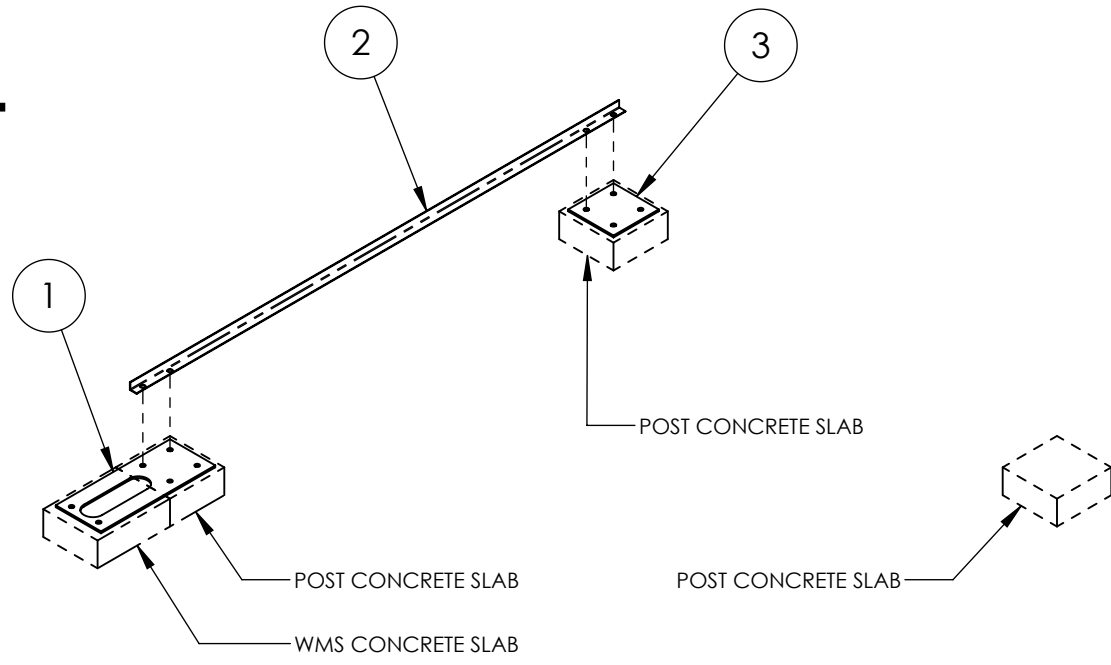


## WMS SIDE PANELS INSTALLATION

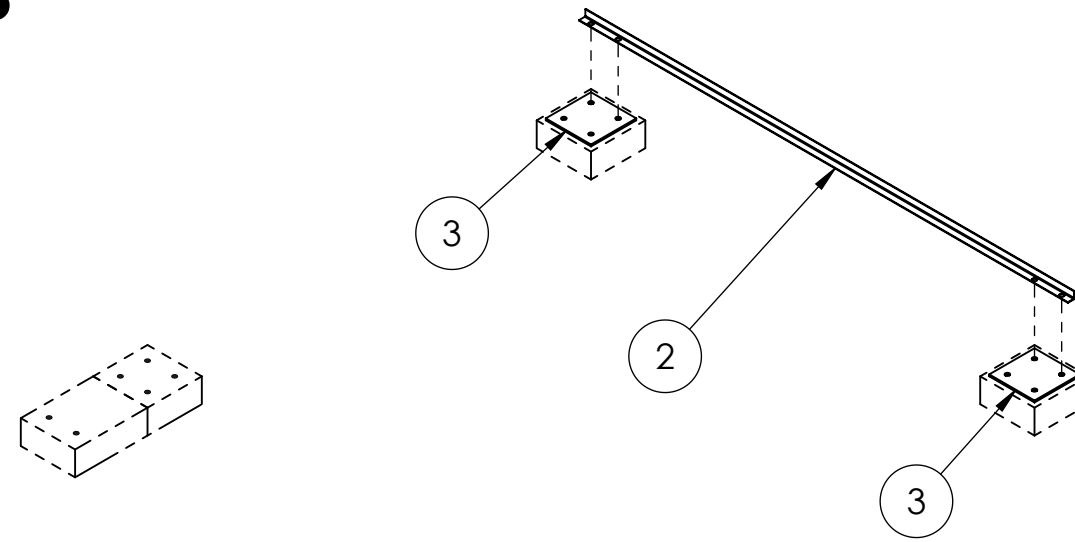
REMOVE ACTIVATOR PLATE TO INSTALL THE WMS SIDE PANELS  
REFER TO WMS POST ASSEMBLY DETAIL ON P. **TYP - 05**

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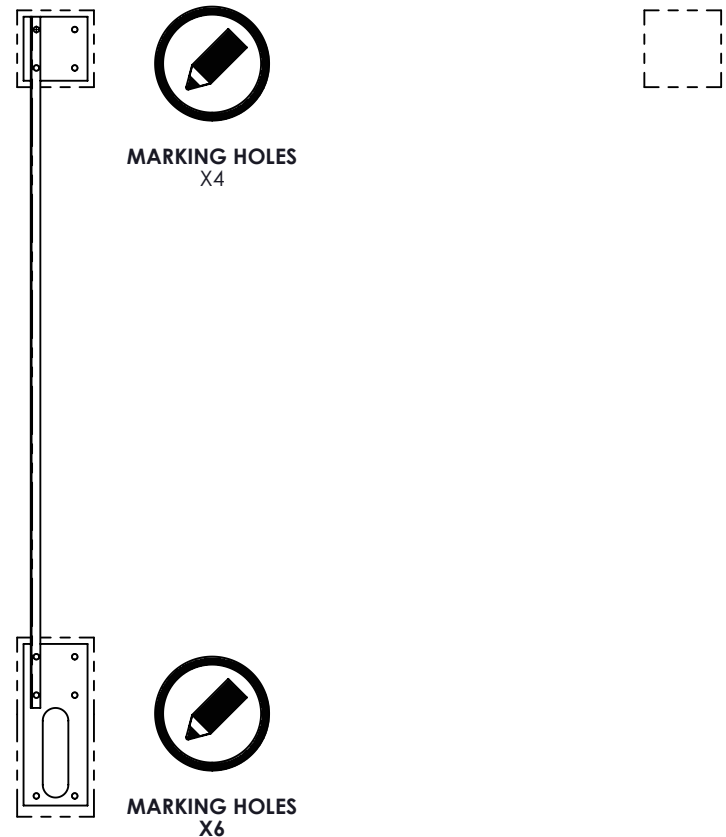
# #1



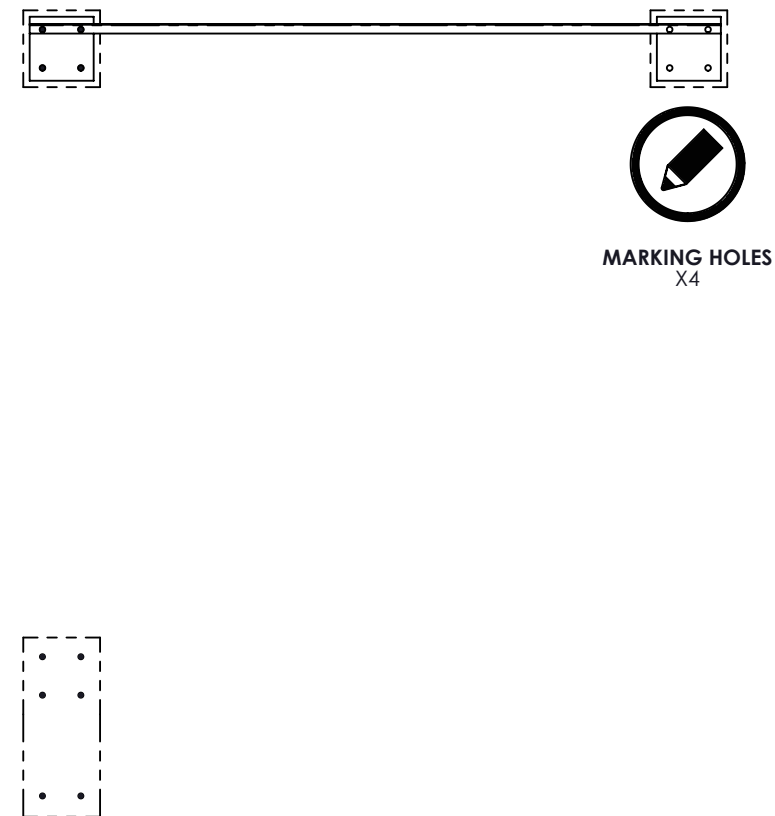
# #3



# #2



# #4



ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	135991	ABRIO_WMS ANCHOR PLATE JIG
2	1	134893	ABRIO_ANCHOR PLATE POSITIONING JIG
3	2	135998	ABRIO_ANCHOR PLATE JIG

**NOTES:**

CENTER THE PLATE JIGS AS PRECISELY AS POSSIBLE. IF THE ANCHORING IS ON A CONCRETE SLAB, YOU MUST TAKE MEASUREMENT, REFER TO INSTALLATION DRAWING; YOU MAY USE THE PLATE JIGS AS GUIDE FOR DRILLING THE ANCHOR HOLES

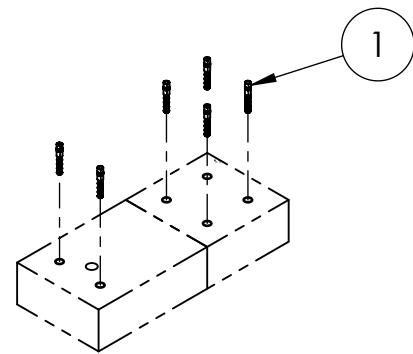
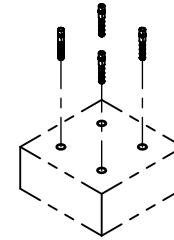
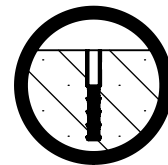
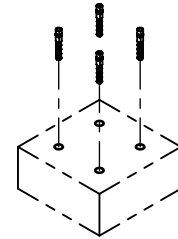
# ANCHORING MARKING METHOD

# #5

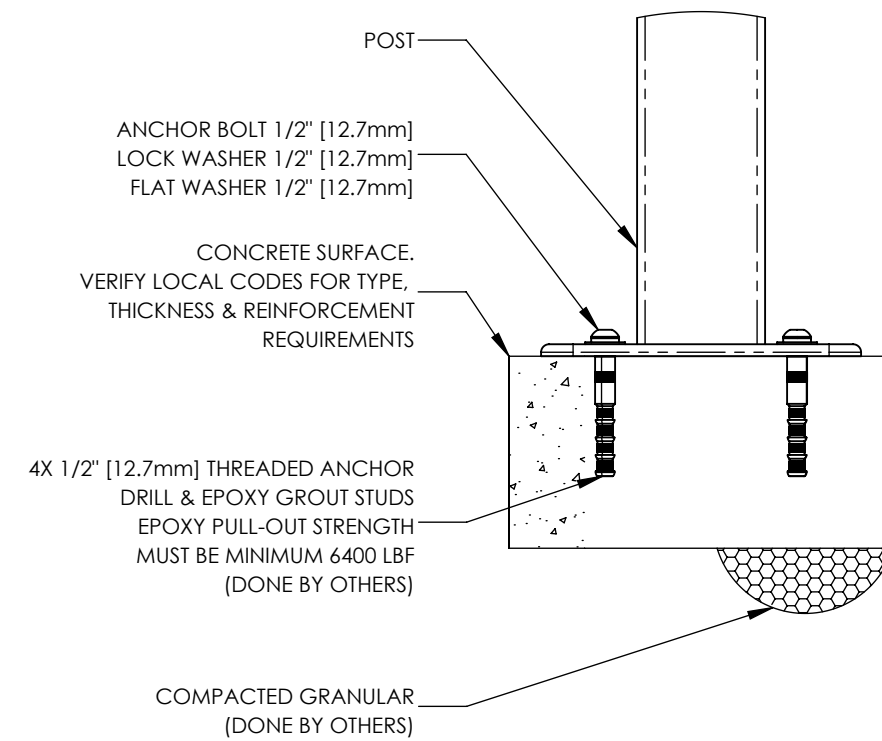
## POSTS TYPICAL ANCHORING STEPS (DONE BY OTHERS)

\*REFER TO ANCHORING POSITIONS PAGE

1. PLACE ANCHORING JIGS AS DETAILED IN THE VORTEX' ASSEMBLY GUIDE
2. MARK ON CONCRETE FOOTING OR SLAB, THE POST'S ANCHORING HOLES' POSITIONS.
3. DRILL ON HOLES' MARKINGS WITH 3/4" DRILL BIT SIZE.
4. CLEAN THE DRILLED HOLES.
5. PUT ANCHORS IN HOLES WITH EPOXY (EPOXY ANCHORING ADHESIVE PULL-OUT STRENGTH MUST BE MINIMUM 6400 LBF).
6. WAIT FOR EPOXY'S CURING TIME
7. ASSEMBLE THE POSTS AS PER VORTEX' ASSEMBLY GUIDE.

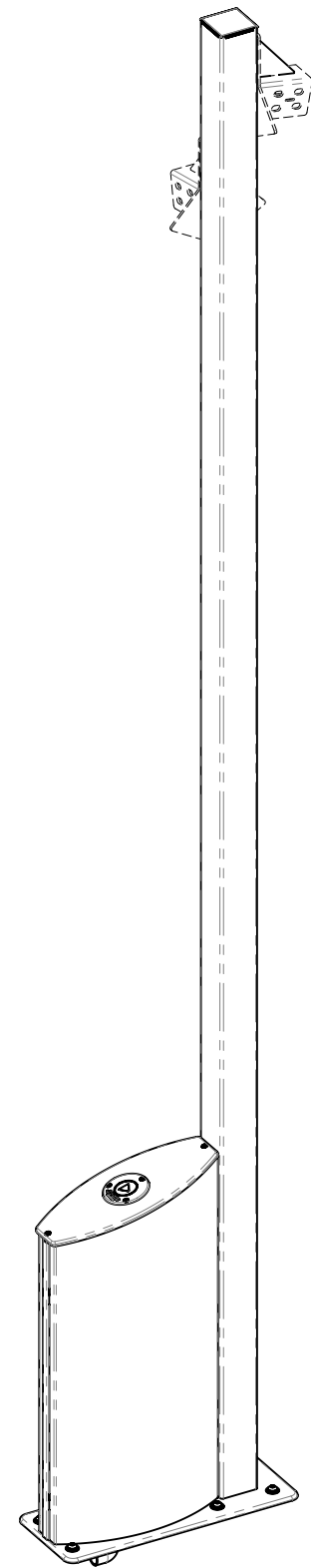


## POST TYPICAL ANCHORING DETAIL

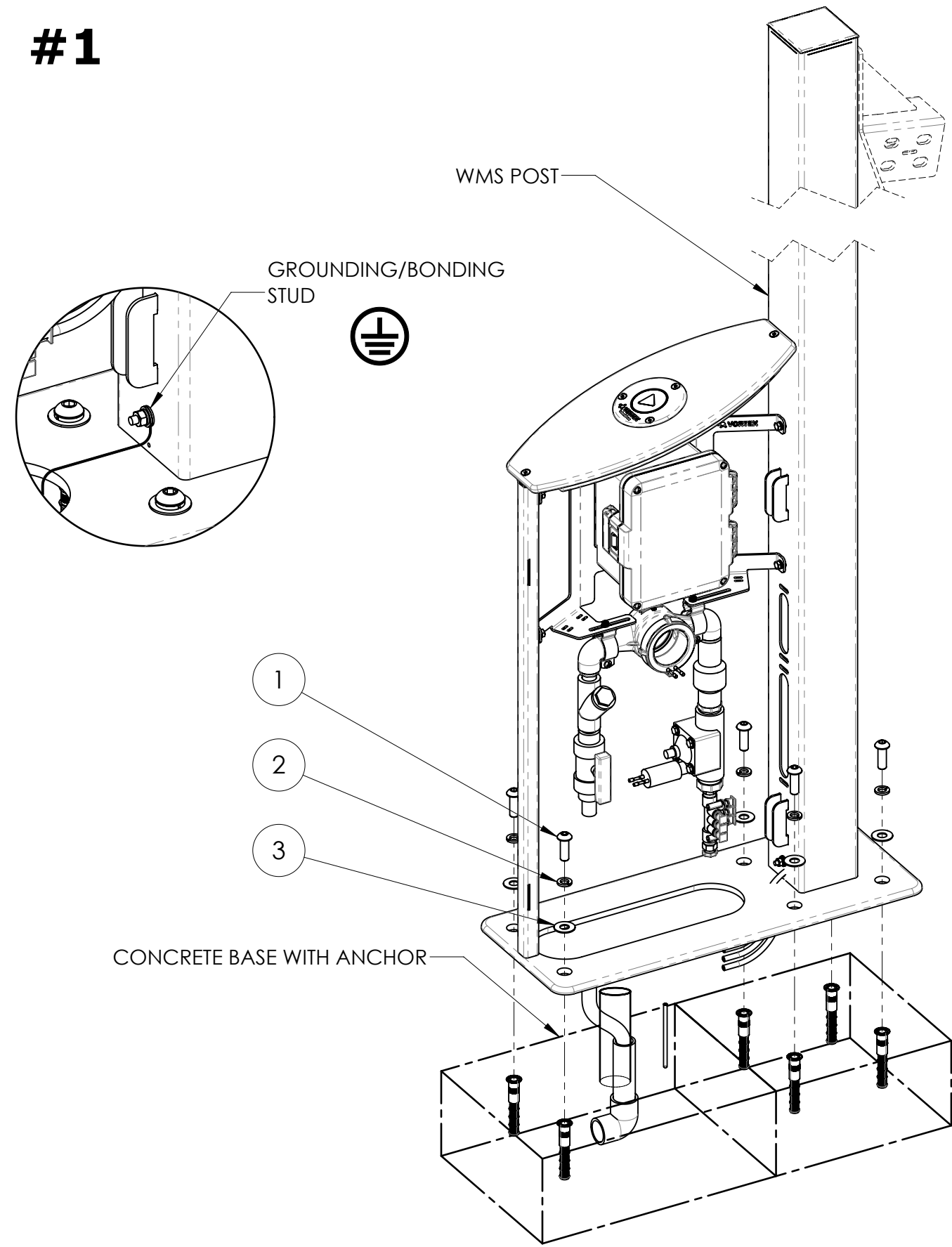


# ANCHOR ASSEMBLY DETAIL

ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	4X PER POST 6X PER WMS POST	134450	ADHESIVE-GRIP CONCRETE ANCHOR, 1/2"-13 FNPT, ZINC PLATED STEEL



**#1**



**WMS POST ASSEMBLY DETAIL**

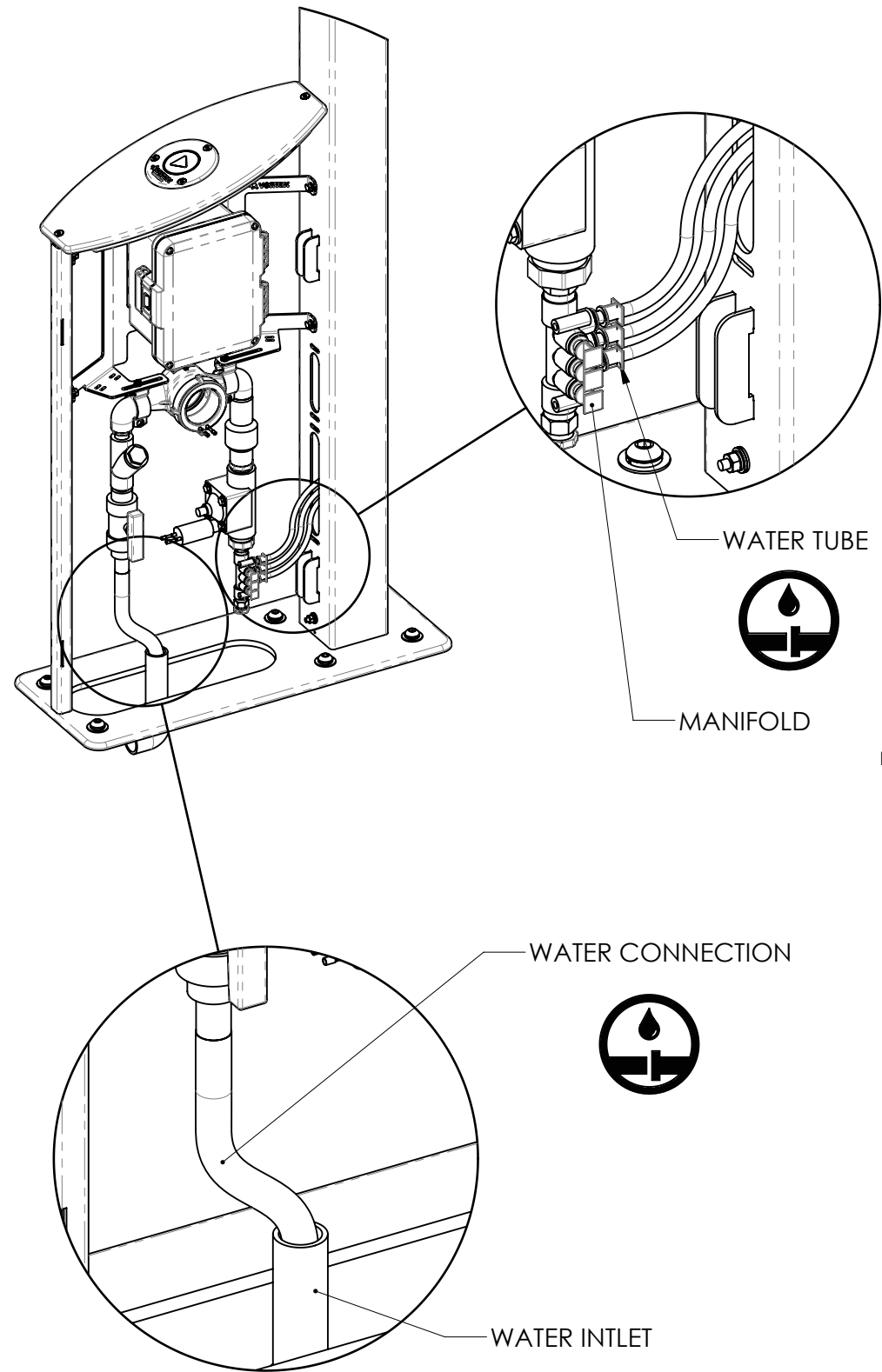
ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	6	134671	BUTTON SOCKET CAP SCREW 1/2"-13 X 1 1/2" FULL THREAD ZINC PLATED
2	6	103394	SPLIT LOCK WASHER 1/2"
3	6	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
4	1	134204	ABRIO_WMS CASING_LEFT SIDE PANEL_ASSEMBLY
5	1	134200	ABRIO_WMS CASING_RIGHT SIDE PANEL_ASSEMBLY

**NOTES:**

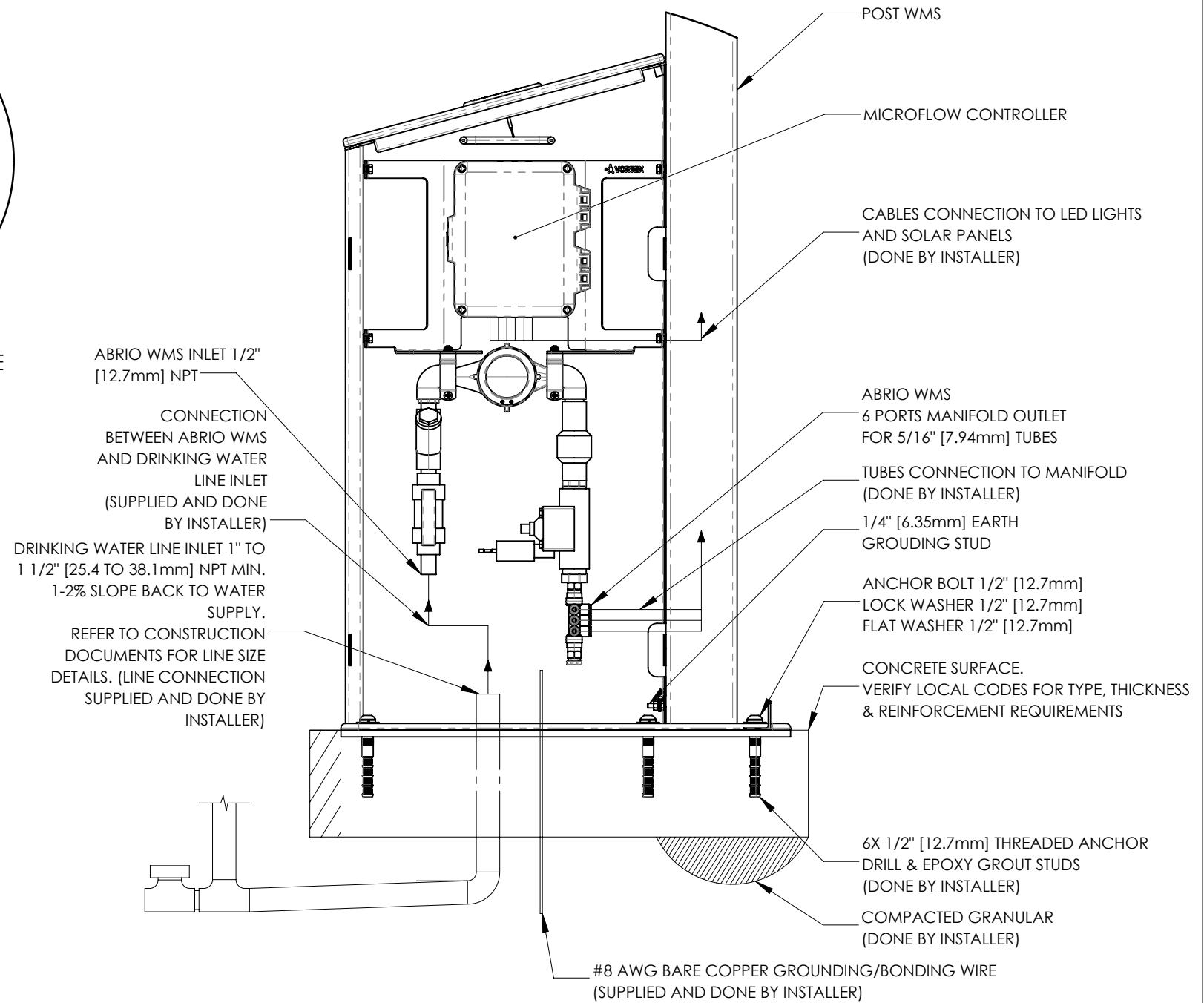
HAND TIGHT THE ANCHOR HARDWARE UNTIL POSTS AND BEAMS ARE ASSEMBLED;  
 THE GROUNDING MUST BE DONE BY THE INSTALLER WITH THE GROUNDING/BONDING STUD;  
 WMS SIDE PANELS INSTALLATION IS THE LAST STEP OF THE ABRIO ASSEMBLY

# #2

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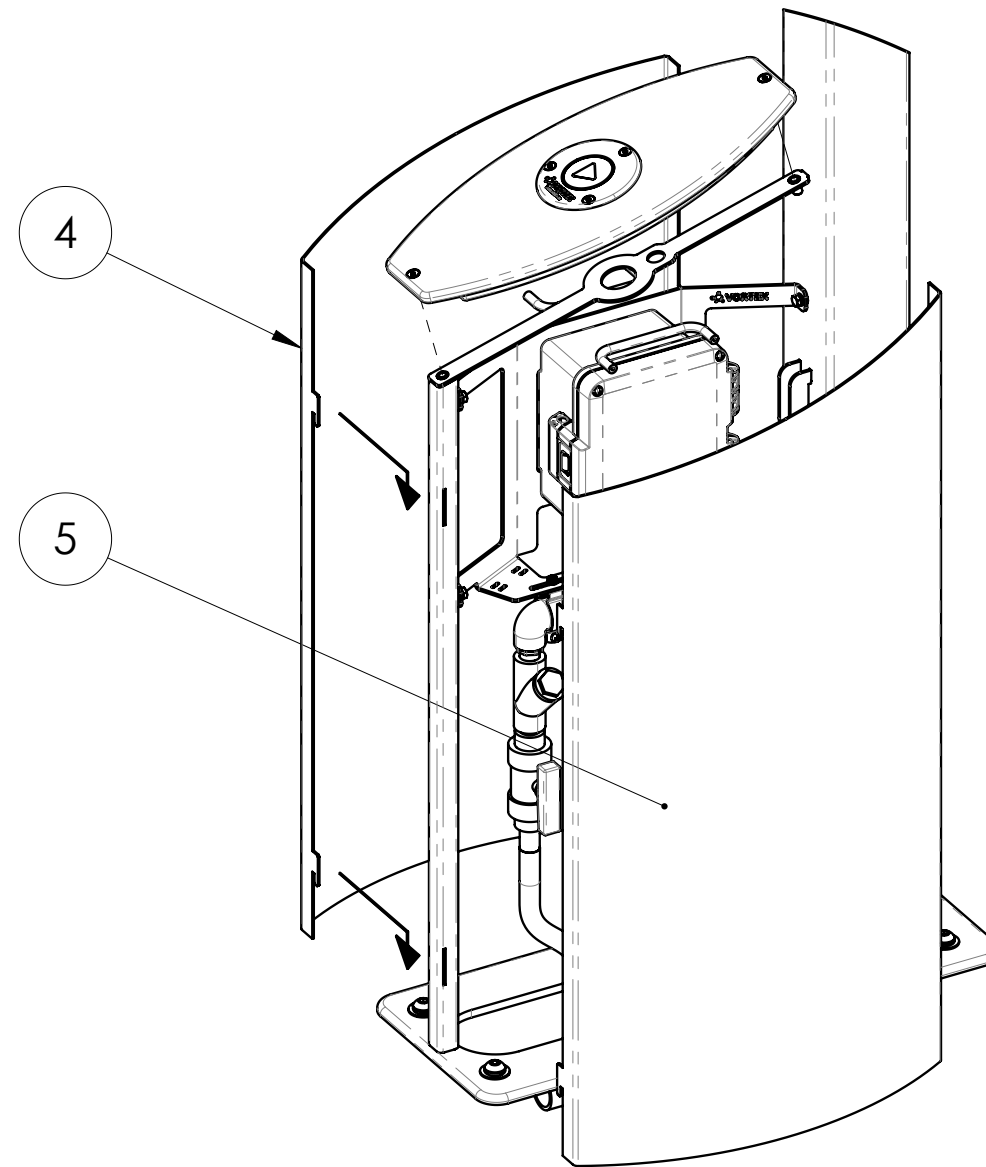
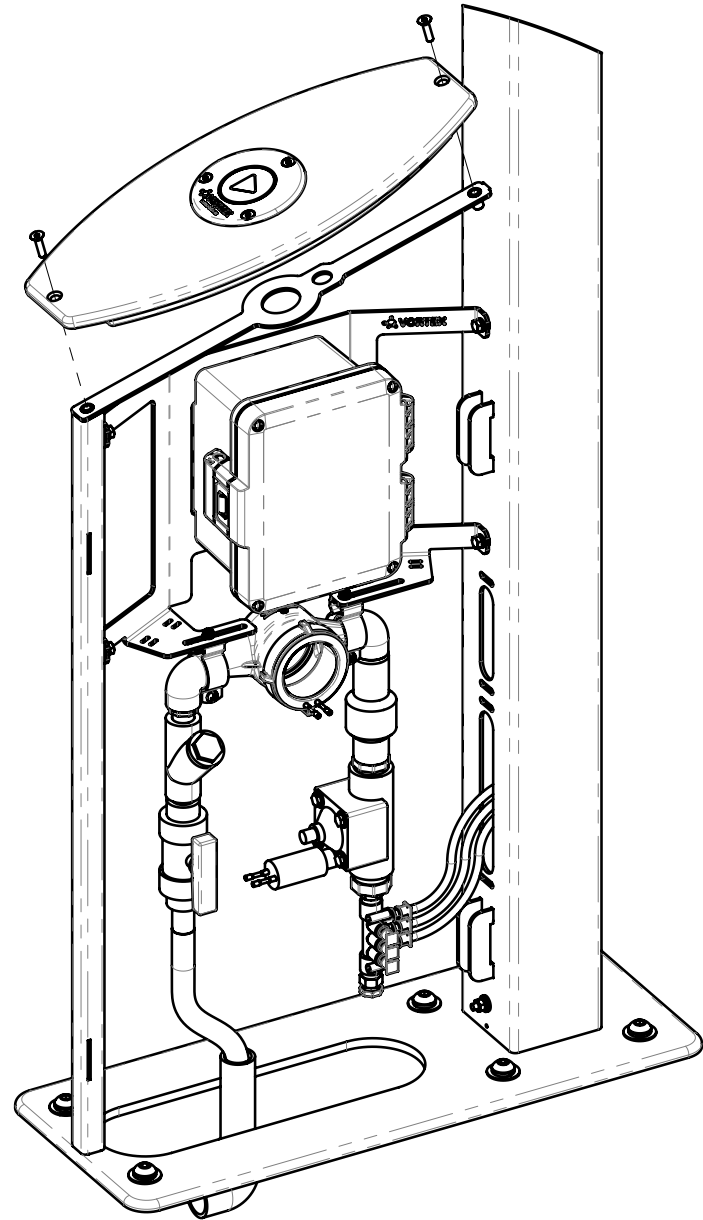
## POST WMS TYPICAL ANCHORING DETAIL



# WMS POST ASSEMBLY DETAIL

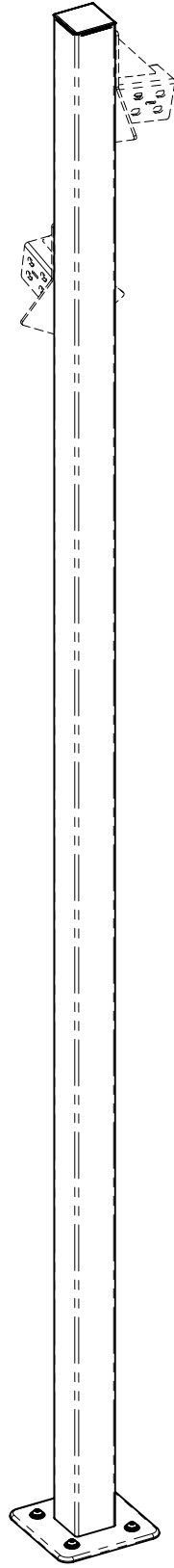


# #3 WMS SIDE PANELS INSTALLATION IS THE LAST STEP OF THE ABRIO ASSEMBLY

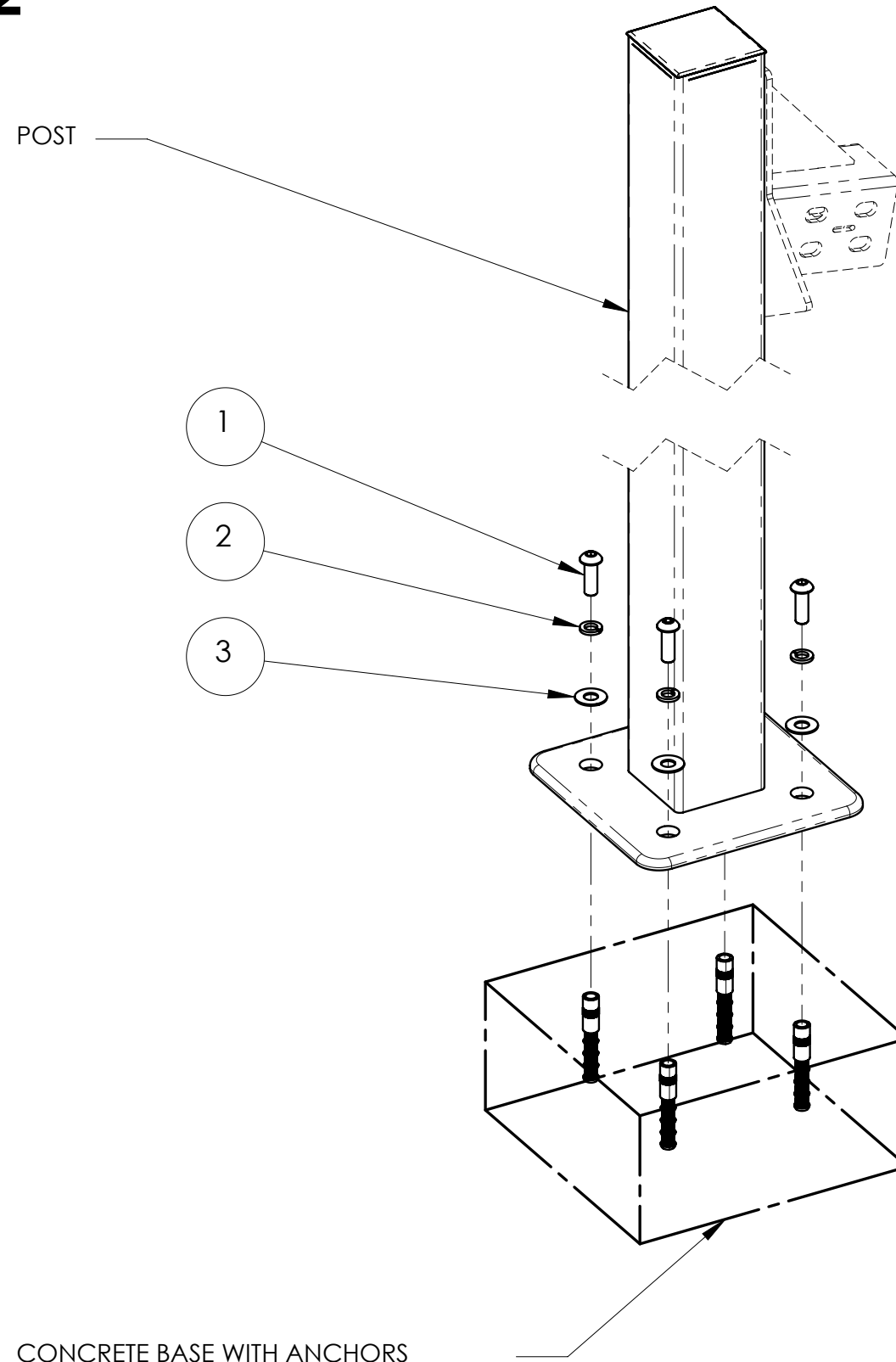


## WMS POST ASSEMBLY DETAIL

# #1



# #2

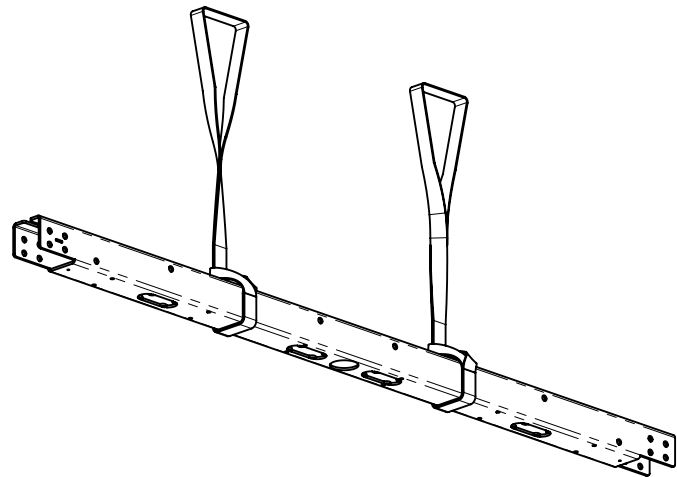


## BEAM ASSEMBLY DETAIL

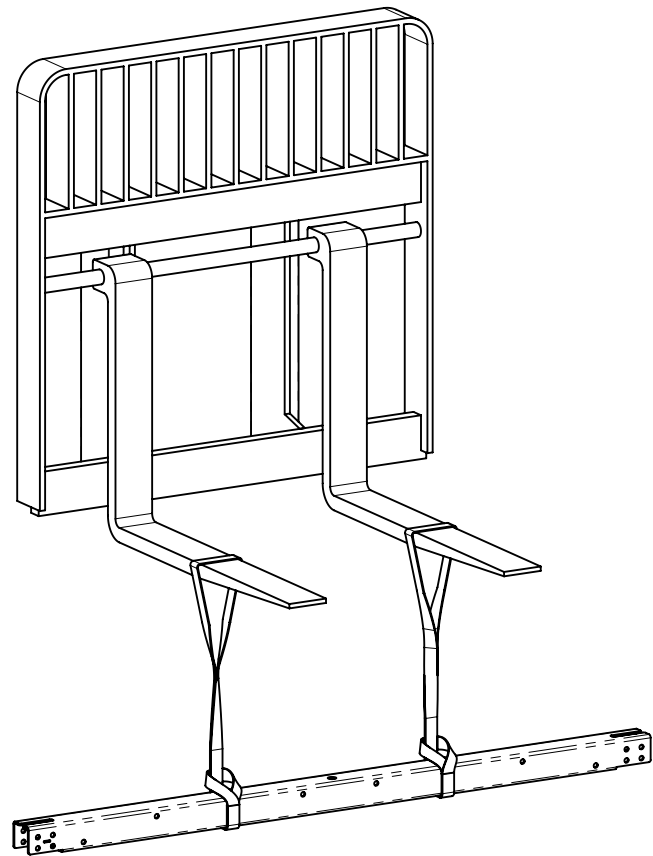
ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	4	134671	BUTTON SOCKET CAP SCREW 1/2"-13 X 1 1/2" FULL THREAD ZINC PLATED
2	4	103394	SPLIT LOCK WASHER 1/2"
3	4	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD

**NOTES:**  
 HAND TIGHT THE ANCHOR HARDWARE UNTIL POSTS AND BEAMS ARE ASSEMBLED

# LIFTING METHOD

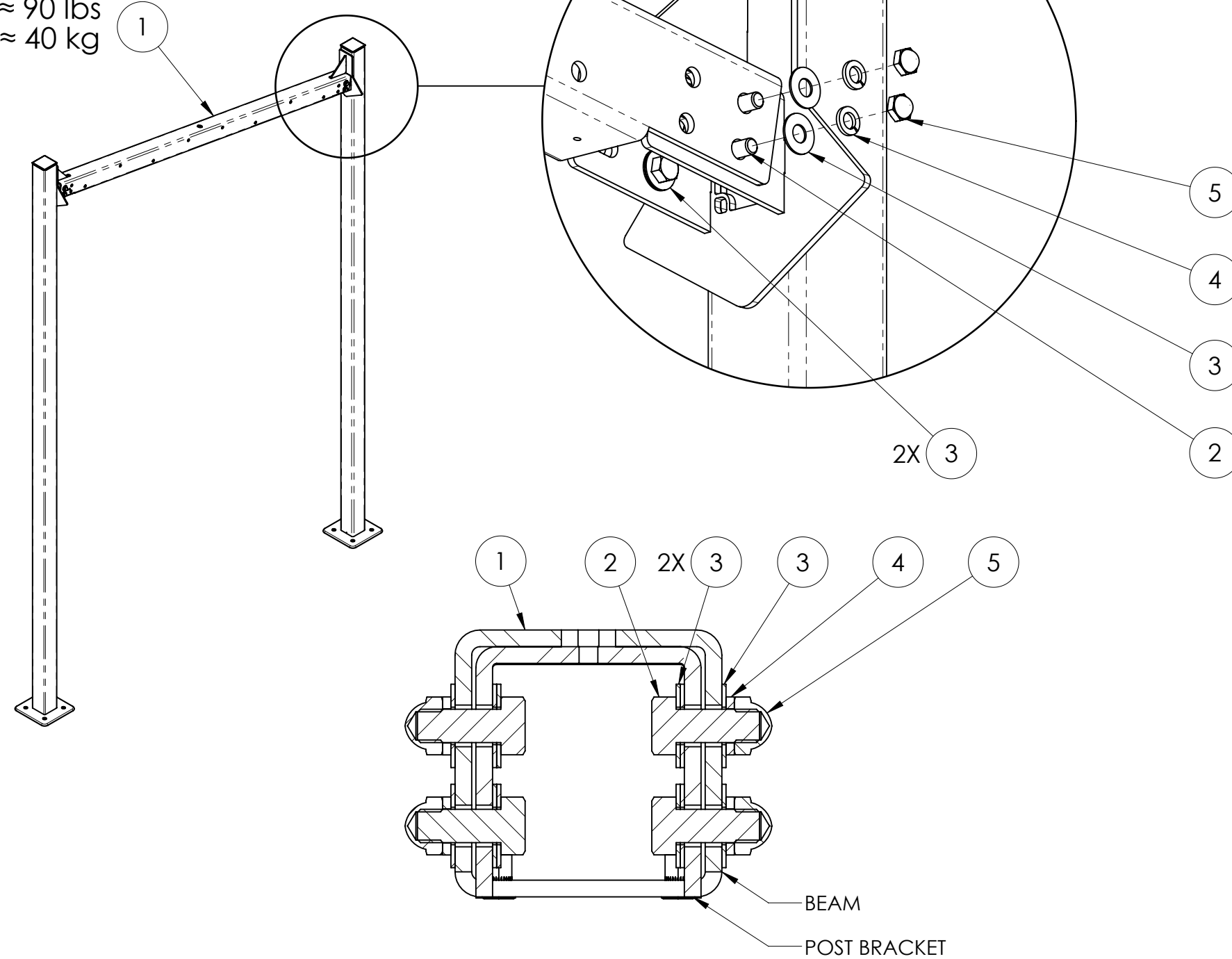


LIFT THE BEAM WITH STRAPS RATED FOR MINIMUM 200 LBS BY PASSING IT AROUND THE BEAM (AS SHOWN ABOVE)



USE FORKLIFT AND STRAPS TO LIFT THE BEAM (STRAP NOT INCLUDED)

≈ 90 lbs  
≈ 40 kg

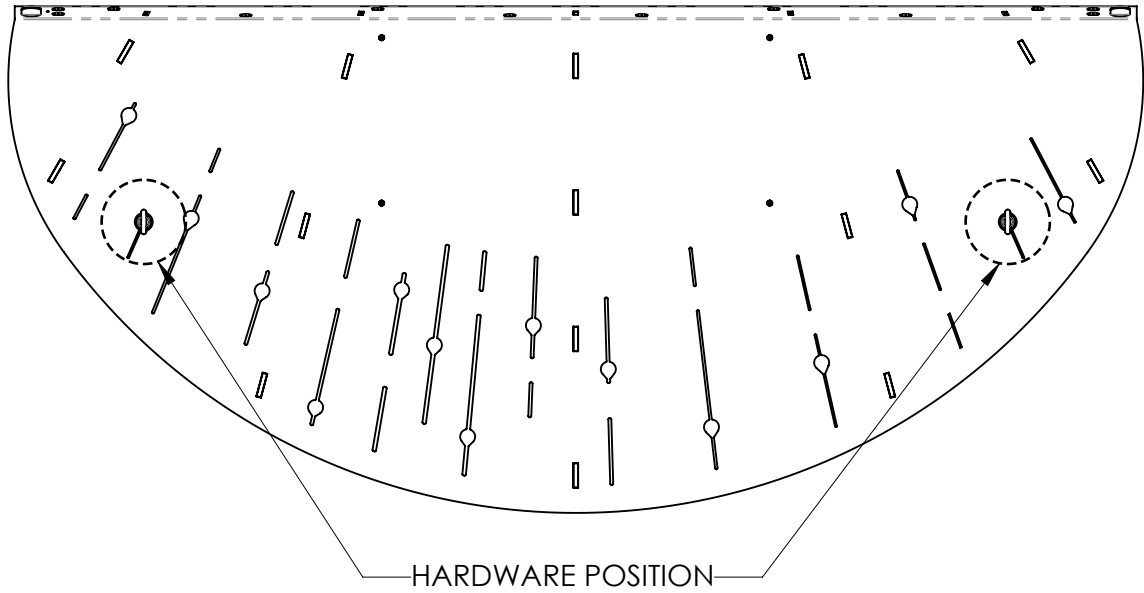
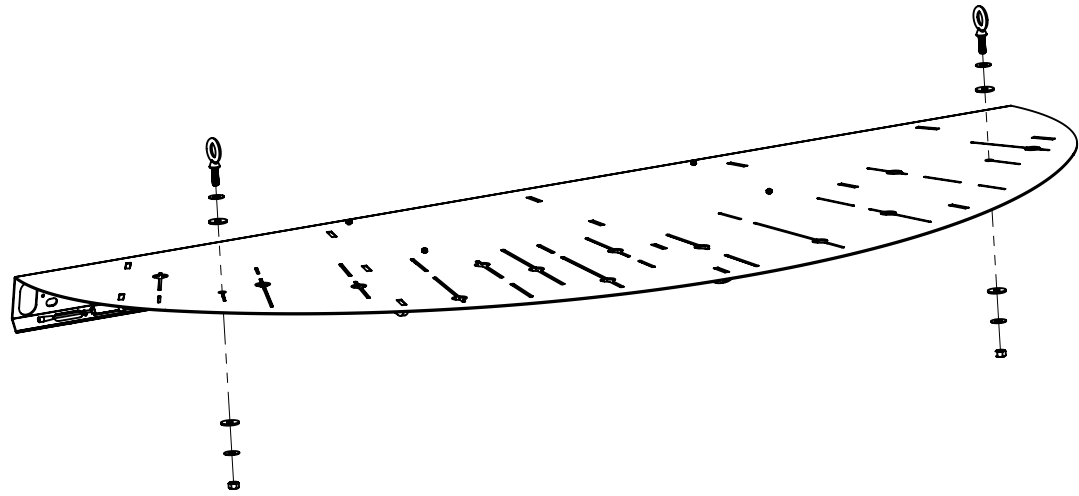


**CRITICAL NOTE**  
USE ANTI-SEIZE ON ALL STAINLESS STEEL THREADS.

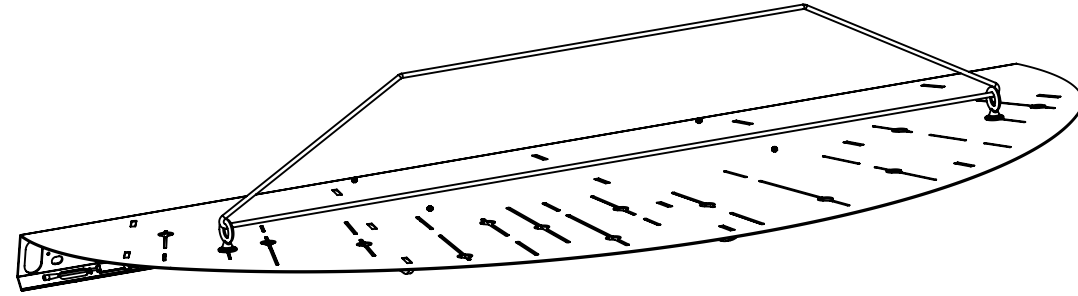
# BEAM ASSEMBLY DETAIL

ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	134231	ABRIO_CANOPY_BEAM_ASSEMBLY
2	8	104788	HEX BOLT 1/2"-13 X 1 1/4" FULL THREAD
3	24	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
4	8	103394	SPLIT LOCK WASHER 1/2"
5	8	134530	CAP NUT 1/2"-13 LOW PROFILE

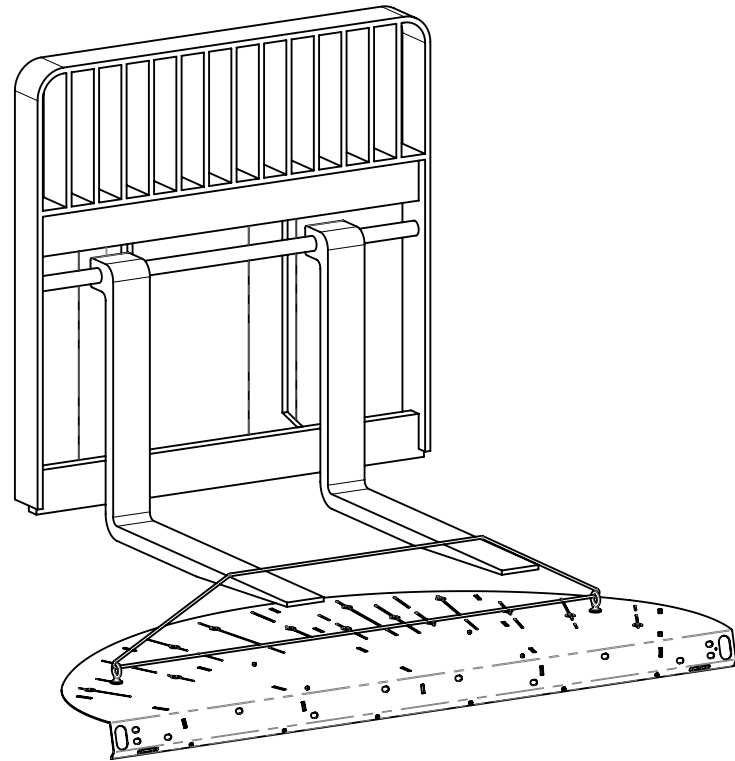
# #1



# #2



STRAP THE CANOPY WITH CABLE RATED FOR MIN 200 LBS BY PASSING IT THROUGH THE EYEBOLT ON THE CANOPY (STRAP NOT INCLUDED)



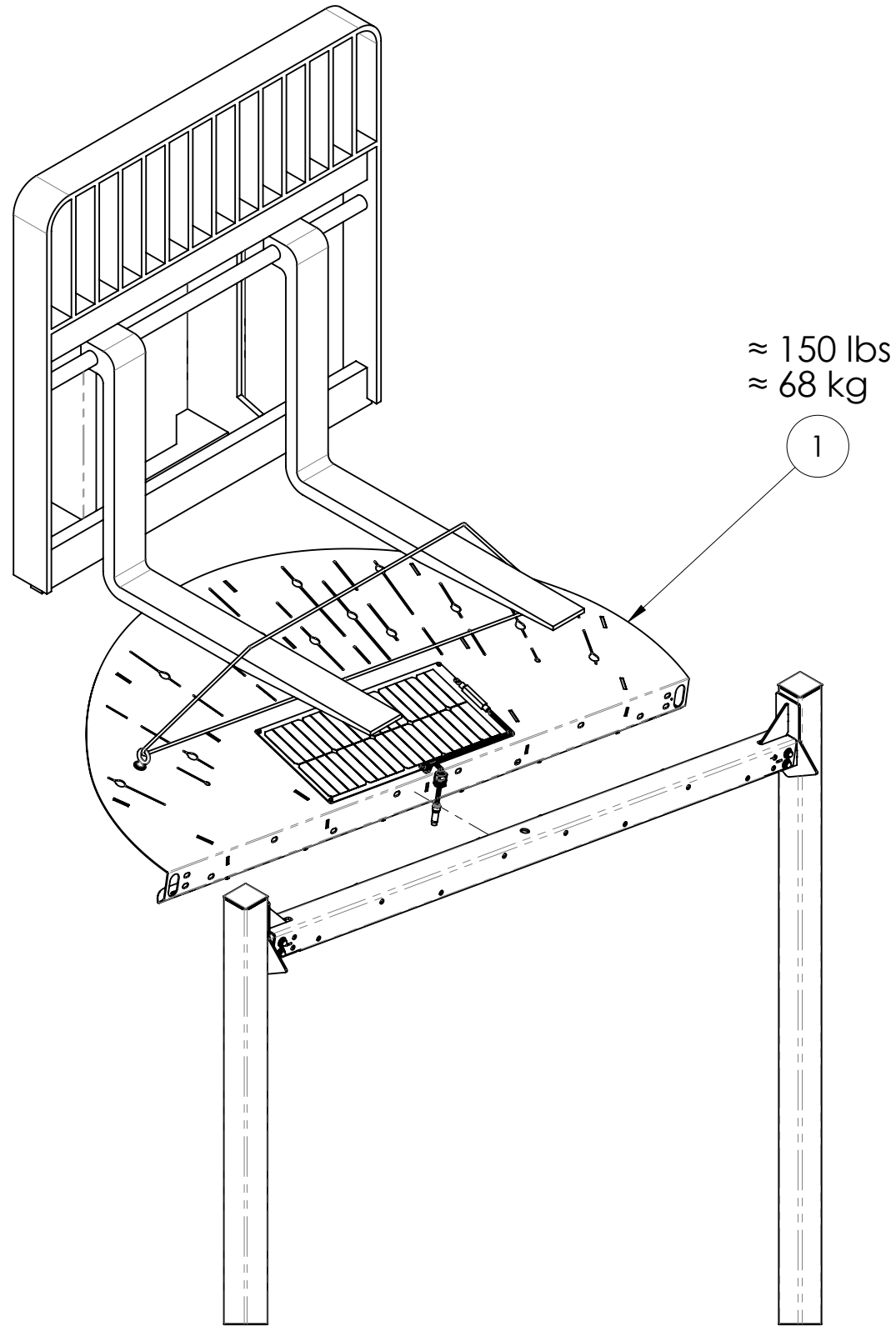
USE FORKLIFT AND STRAP TO LIFT THE CANOPIES

ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
2	4	103739	GASKET 1 1/2"OD X 1/2"ID X 1/8"TH
3	4	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
4	2	102455	STEEL EYEBOLT WITH SHOULDER FOR LIFTING, 1/2"-13 TH
5	2	100957	HEX NUT 1/2"-13

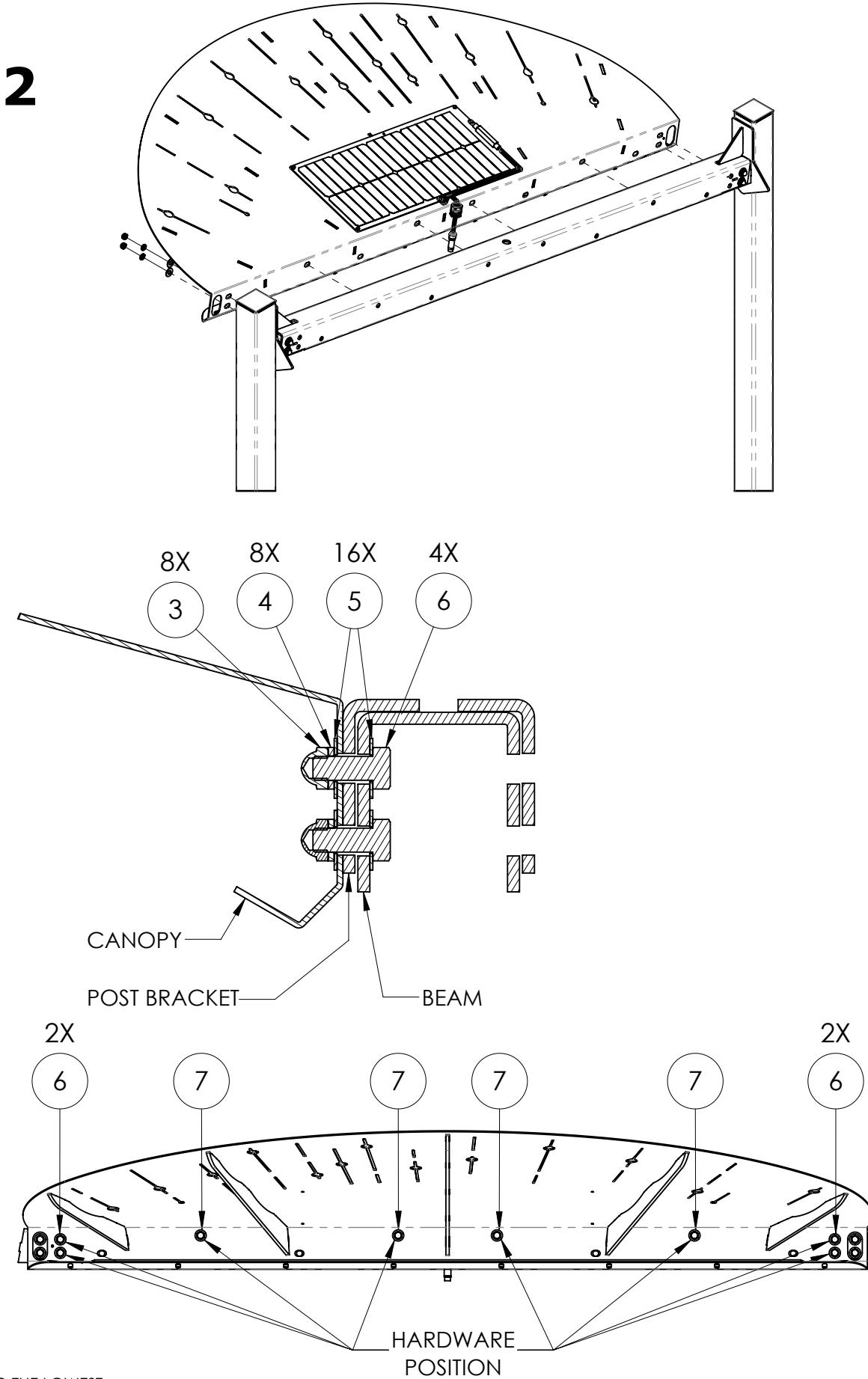
**NOTES:**  
REMOVE LIFTING HARDWARE ONCE THE CANOPY ASSEMBLY IS DONE

## CANOPY LIFTING METHOD

# #1



# #2



ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	135036	ABRIO_CANOPY_DESIGN PATTERN 01_SOLAR & LED ASSEMBLY
2	1	134208	ABRIO_CANOPY_DESIGN PATTERN 01_LED ASSEMBLY
3	20	134530	CAP NUT 1/2"-13 LOW PROFILE
4	20	103394	SPLIT LOCK WASHER 1/2"
5	40	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
6	8	104788	HEX BOLT 1/2"-13 X 1 1/4" FULL THREAD
7	8	135025	HEX BOLT 1/2"-13 X 1" FULL THREAD
8	4	134529	HEX BOLT 1/2"-13 X 4 3/4" PARTIAL THREAD
9	2	130681	HEX HEAD TAPPING SCREW 1/4"-14 X 1" FULL THREAD STAINLESS STEEL 410

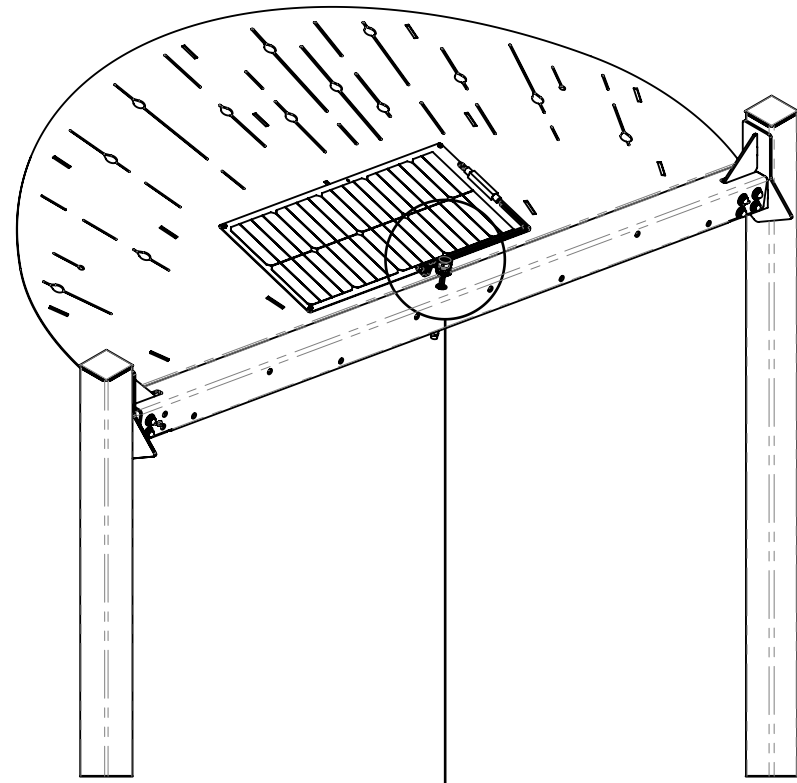
**NOTES:**

ALWAYS START ASSEMBLING THE CANOPY BY THE HIGHEST ONE TO THE LOWEST;  
 USE FORK LIFT TO ASSEMBLE BOTH CANOPIES;  
 CANOPIES WITH SOLAR PANEL MUST BE INSTALLED TOWARDS THE SUN (SOLAR PANEL FACING SOUTH IN NORTH HEMISPHERE / FACING SOUTH IN SOUTH HEMISPHERE);  
 AVOID SHADOW AND OBSTRUCTED AREAS

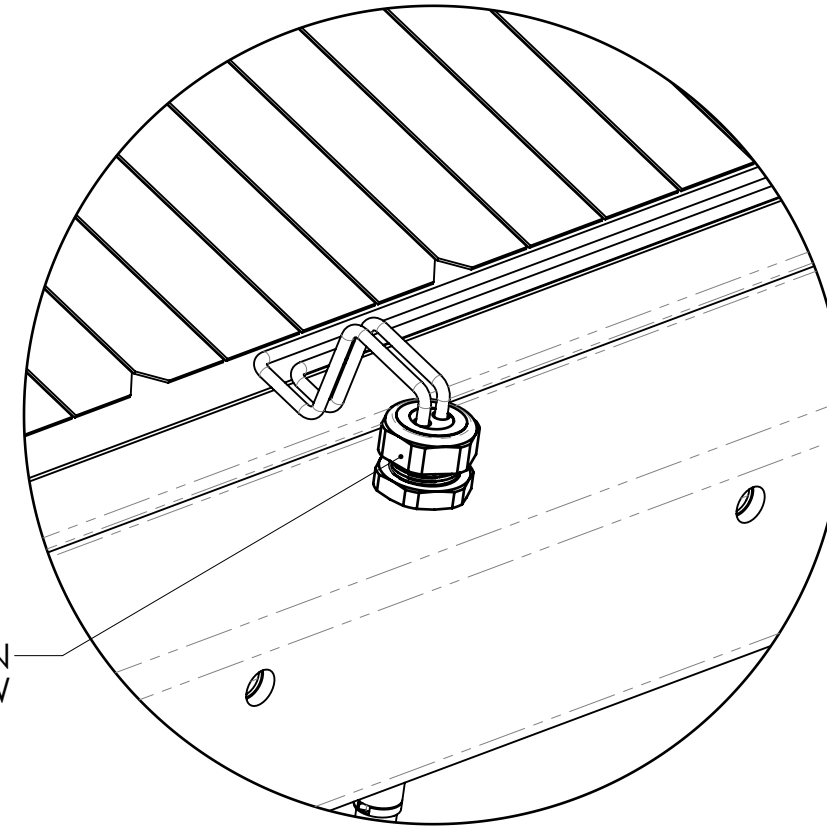
## CANOPY ASSEMBLY DETAIL



#3



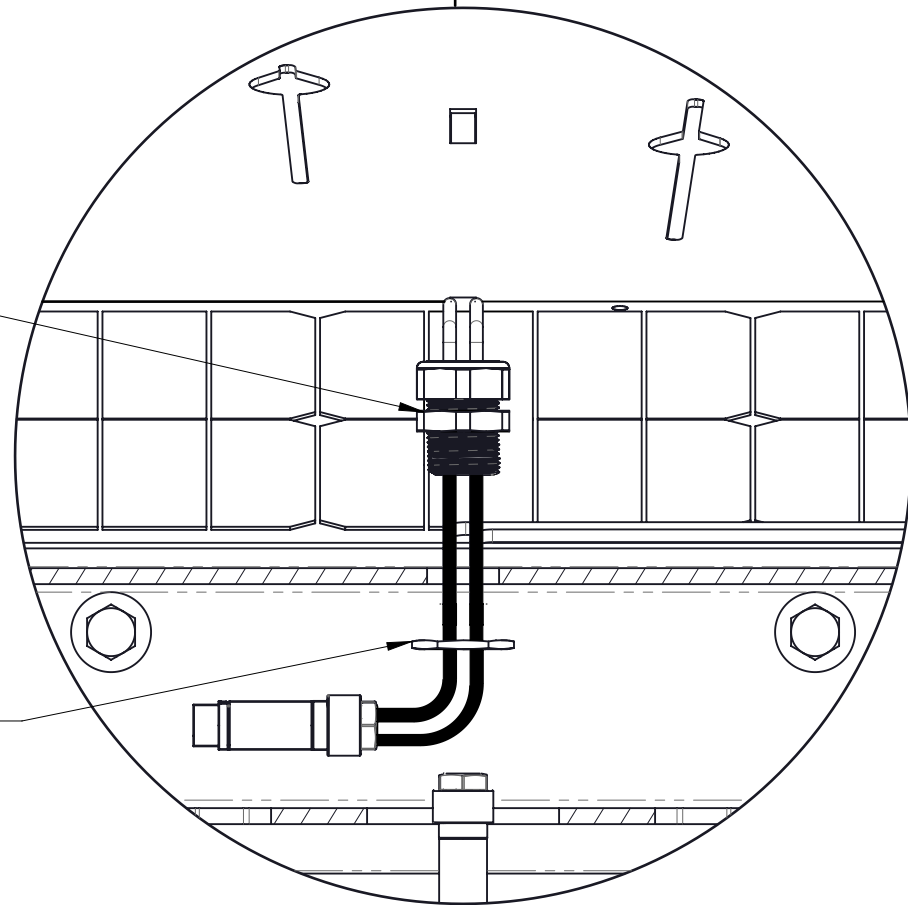
#4



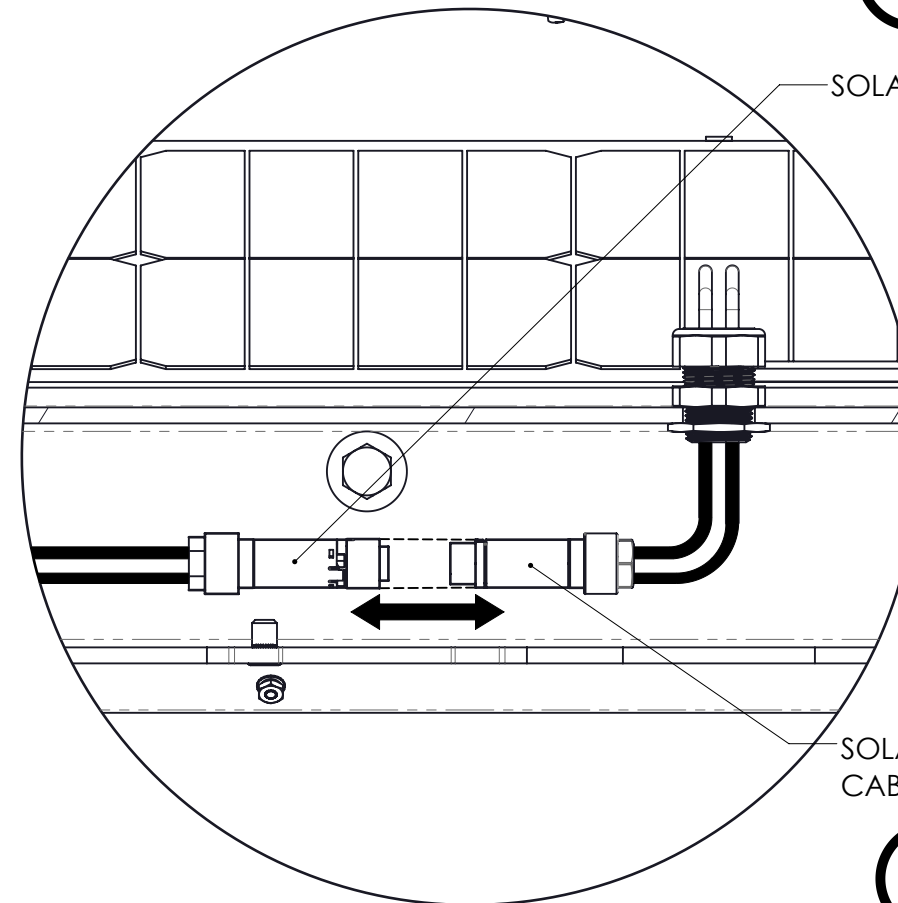
TIGHTEN  
TOP SCREW

SCREW

NUT



#5

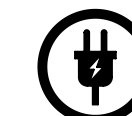


SOLAR PANEL CABLE

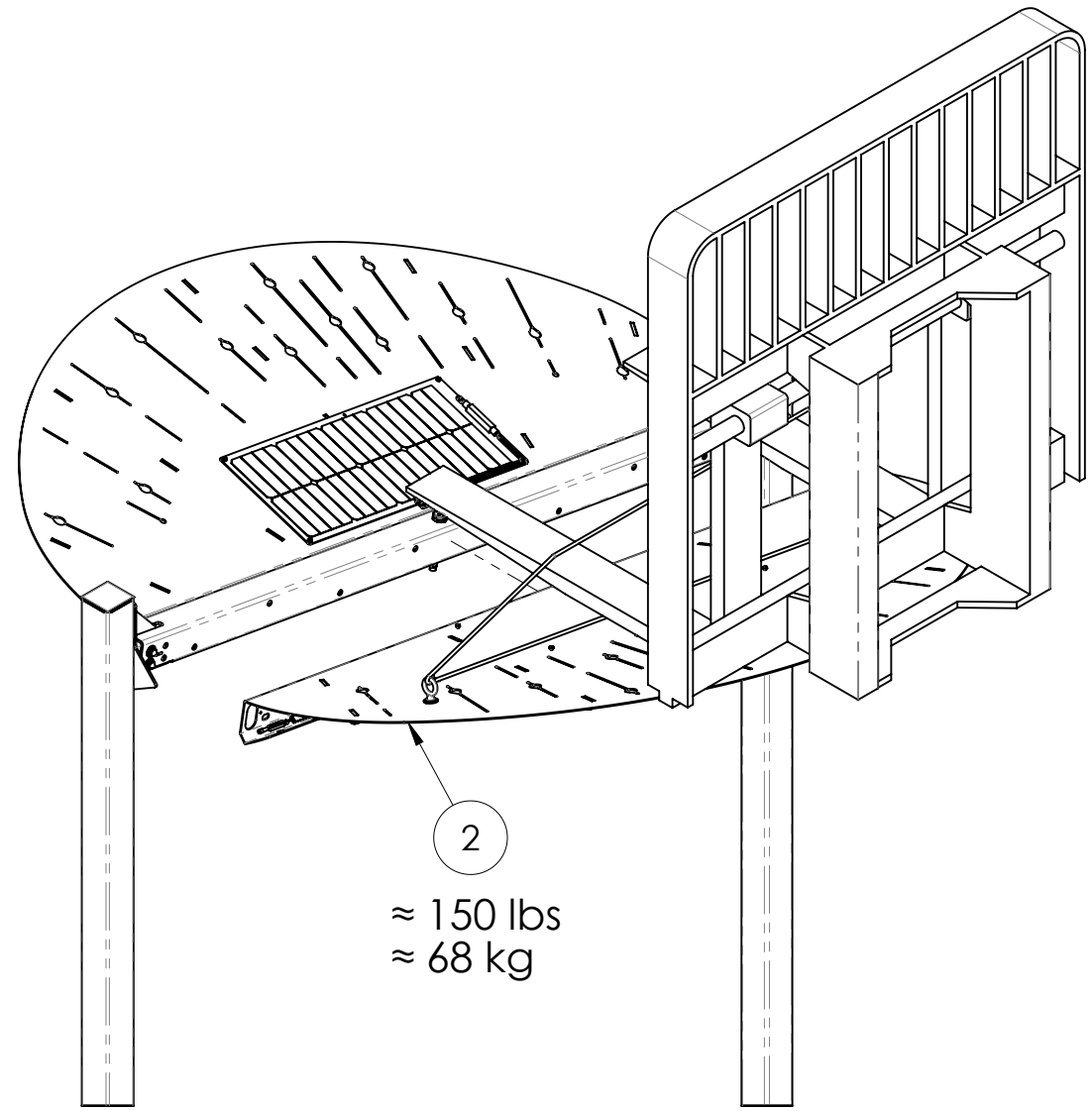
SOLAR PANEL POWER  
CABLE

**CRITICAL STEP**  
MAKE SURE ALL SOLAR PANEL CABLES ARE CONNECTED  
ONE CONNECTION PER CANOPY

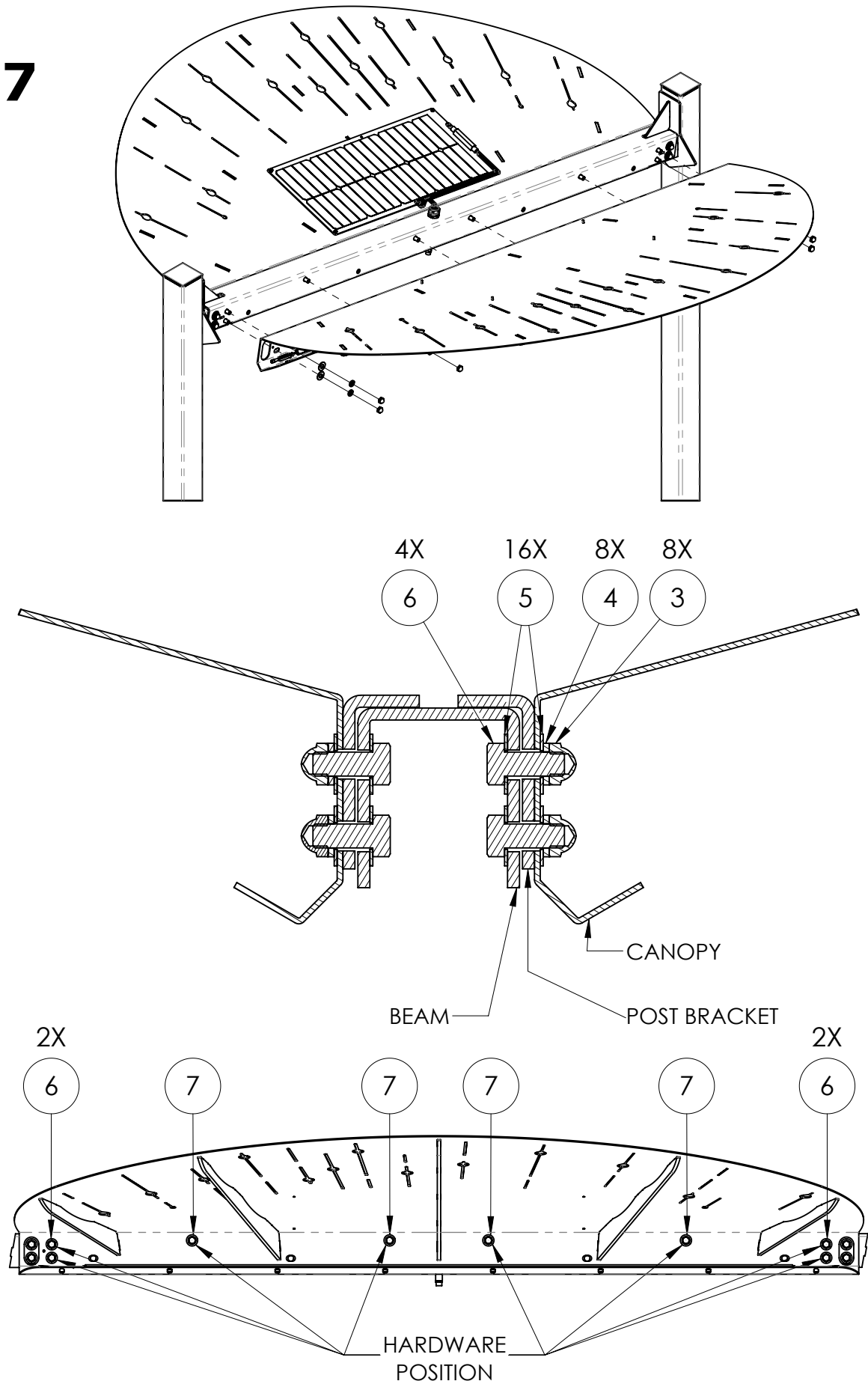
**CANOPY ASSEMBLY DETAIL**



**#6** REPEAT STEPS #1 AND #2 FROM CANOPY LIFTING METHOD TO STRAP NEXT CANOPY

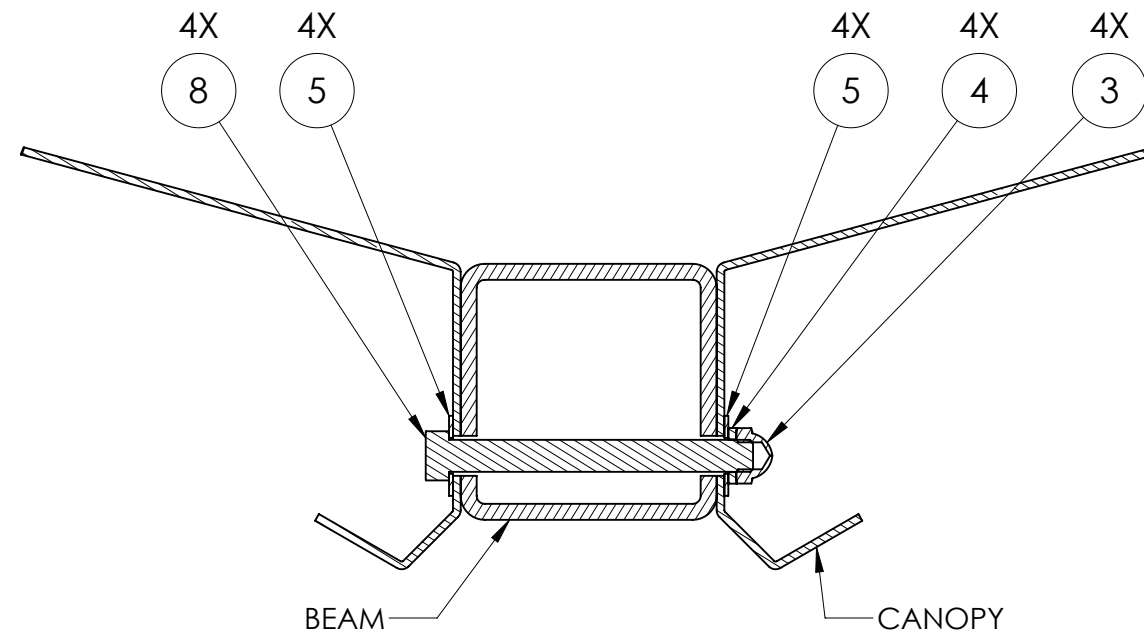
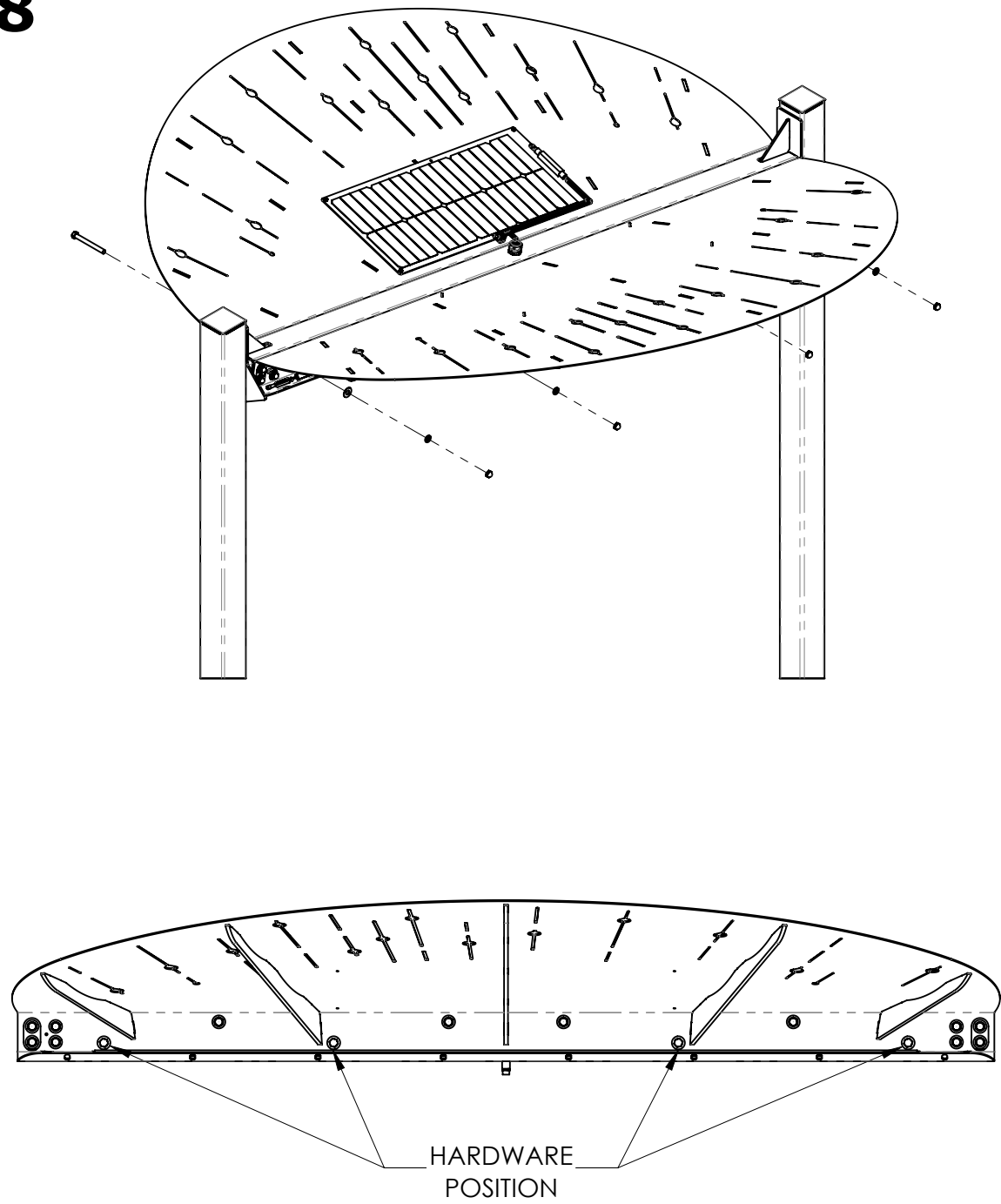


**#7**



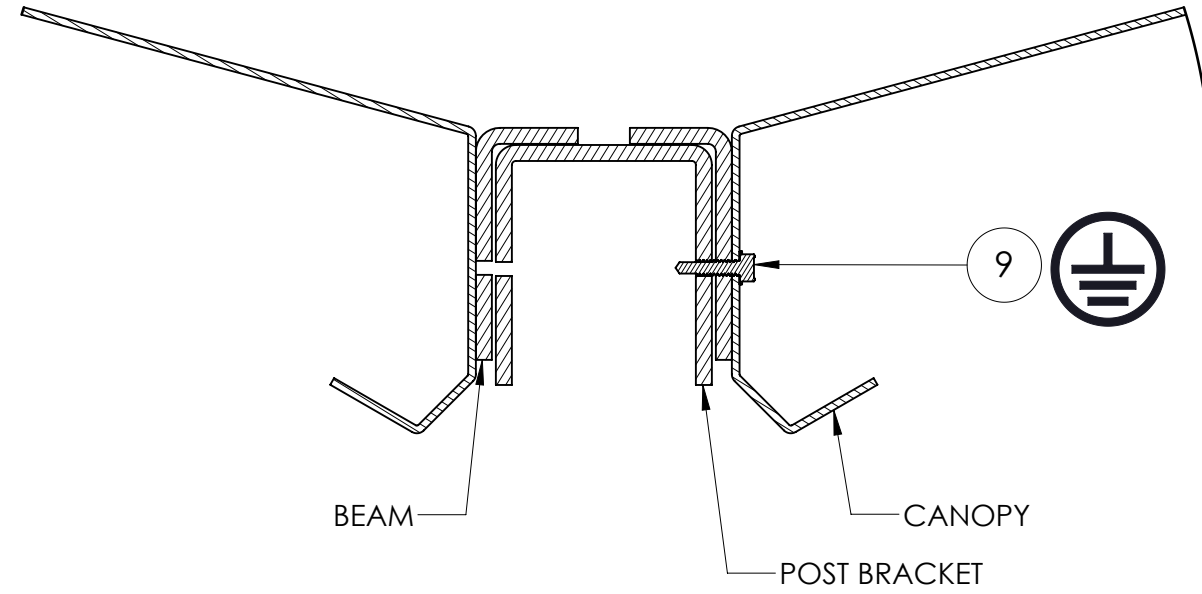
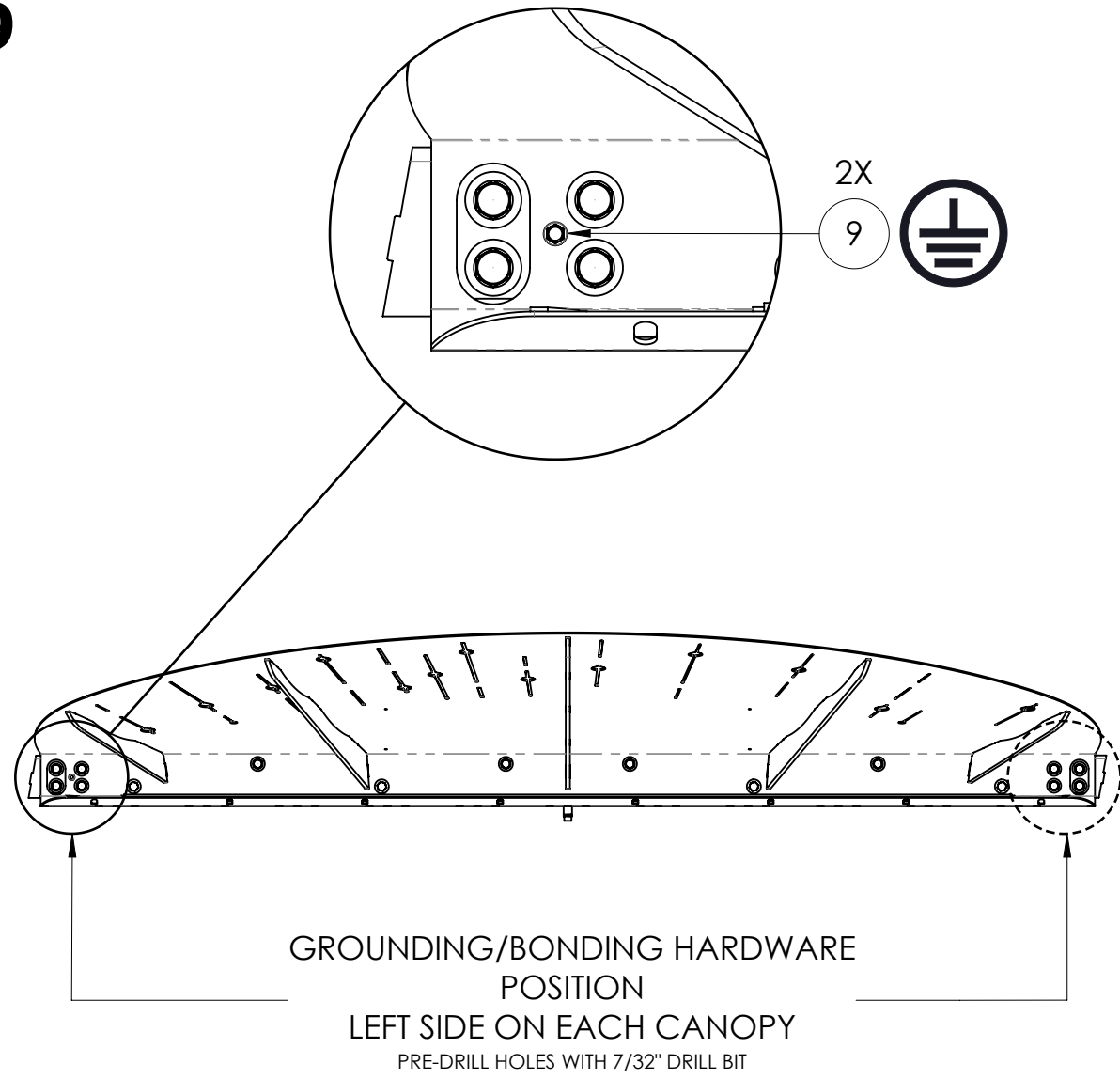
**CANOPY ASSEMBLY DETAIL**

#8



**CANOPY ASSEMBLY DETAIL**

#9



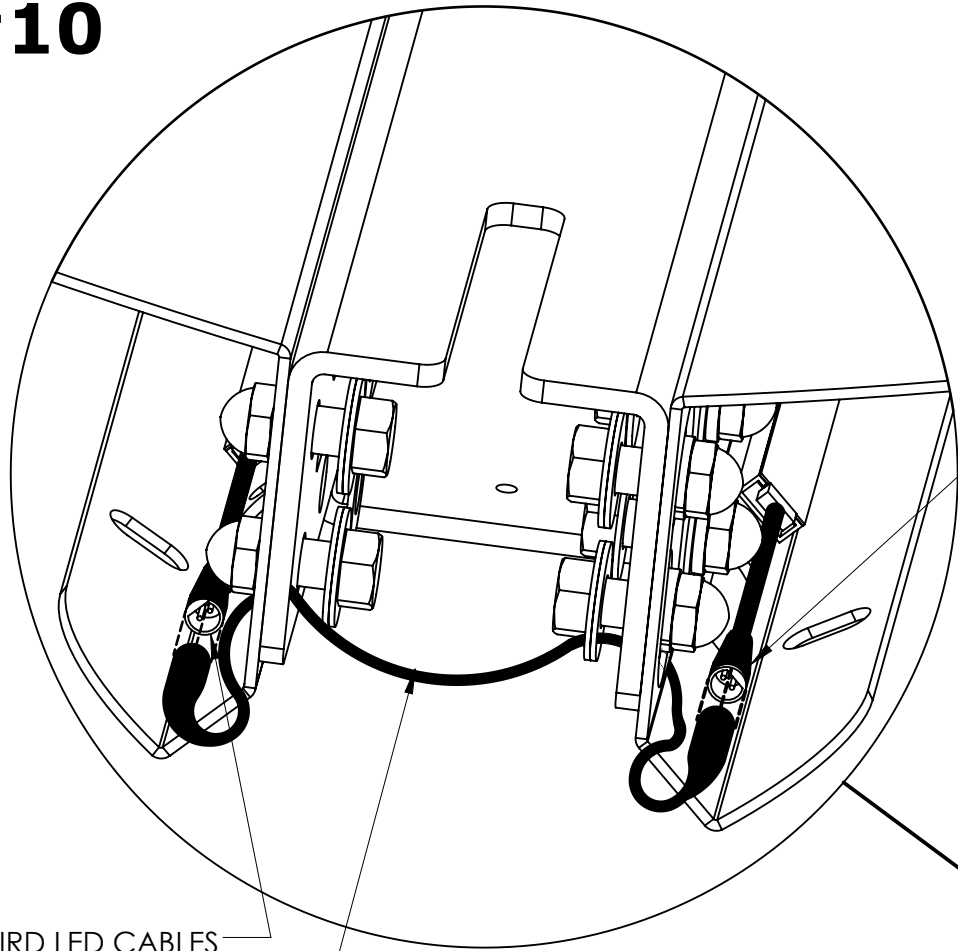
**CANOPY ASSEMBLY DETAIL**

#10



**CRITICAL STEP**  
MAKE SURE PROPER ALL LED CABLES ARE CONNECTED  
REPEAT STEPS FOR EACH CANOPY

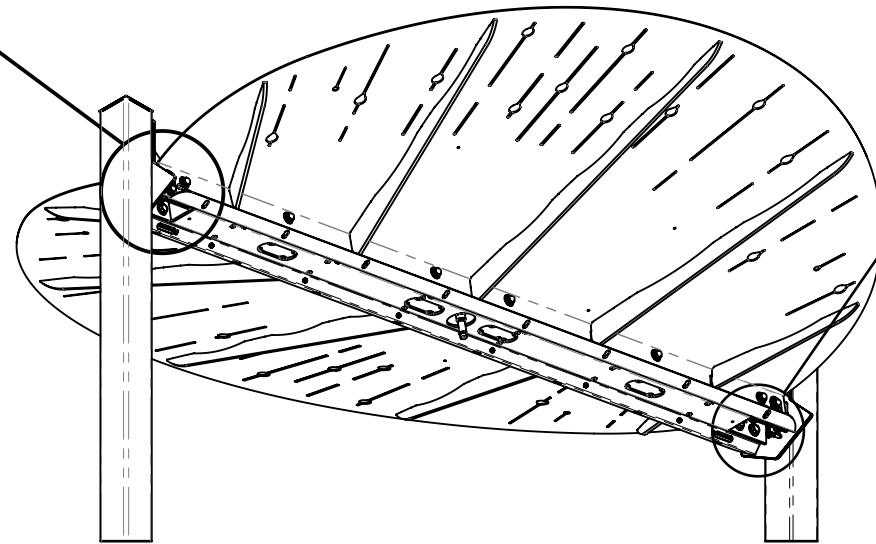
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SECOND LED CABLES  
PASS THROUGH THE OBLONG  
OF THE CANOPY

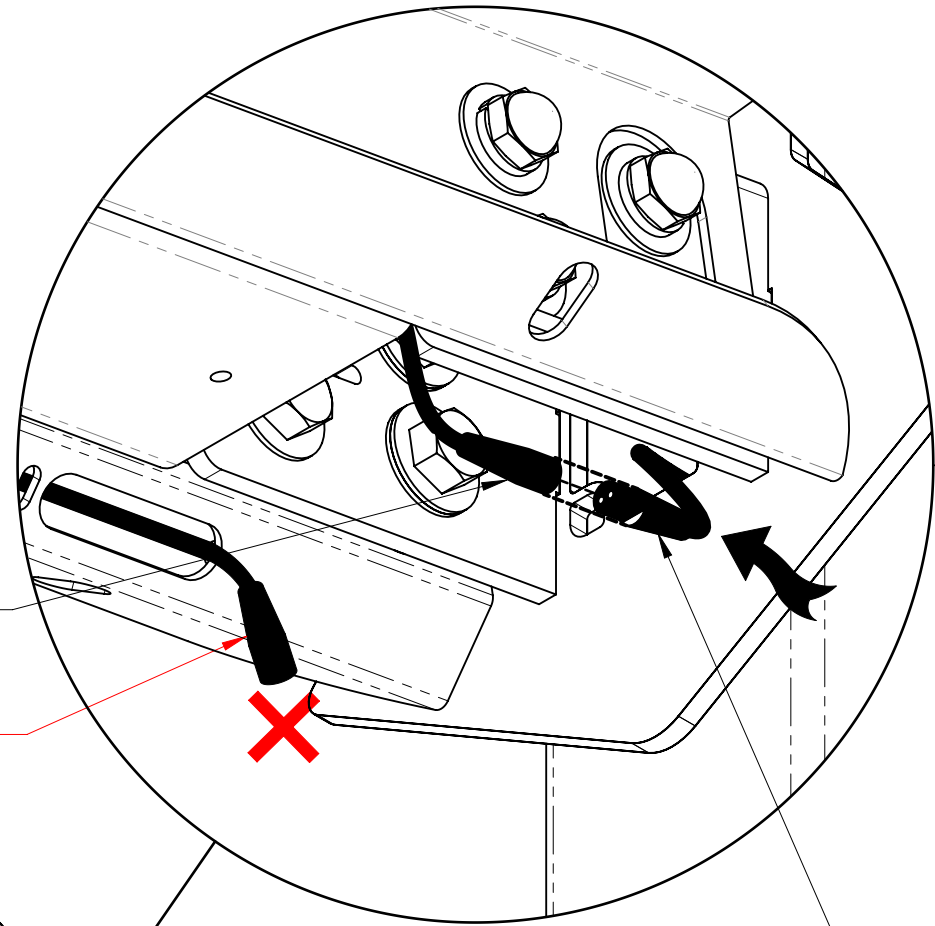
THIRD LED CABLES  
PASS THROUGH THE OBLONG  
OF THE CANOPY

JUMPER CABLE  
PASS THROUGH THE OBLONG  
OF THE CANOPY TO CONNECT  
THE SECOND AND THIRD LED CABLE **140662**  
FLEXIBLE LED STRIP CABLE 24IN WITH  
MALE CONNECTORS AT EACH END



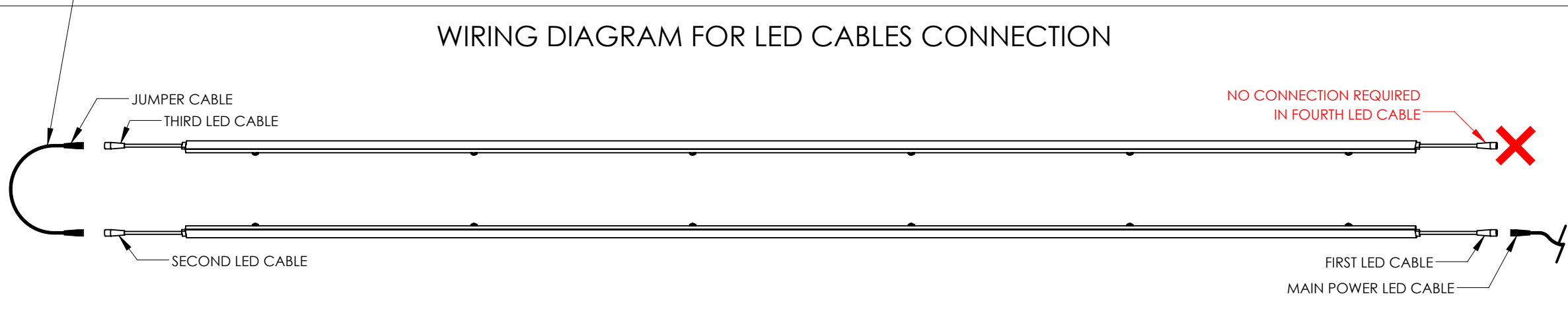
FIRST LED CABLES  
PASS THROUGH THE OBLONG  
OF THE CANOPY

NO CONNECTION REQUIRED  
IN FOURTH LED CABLES



MAIN POWER LED CABLE  
RUNS UP THROUGH THE WMS POST

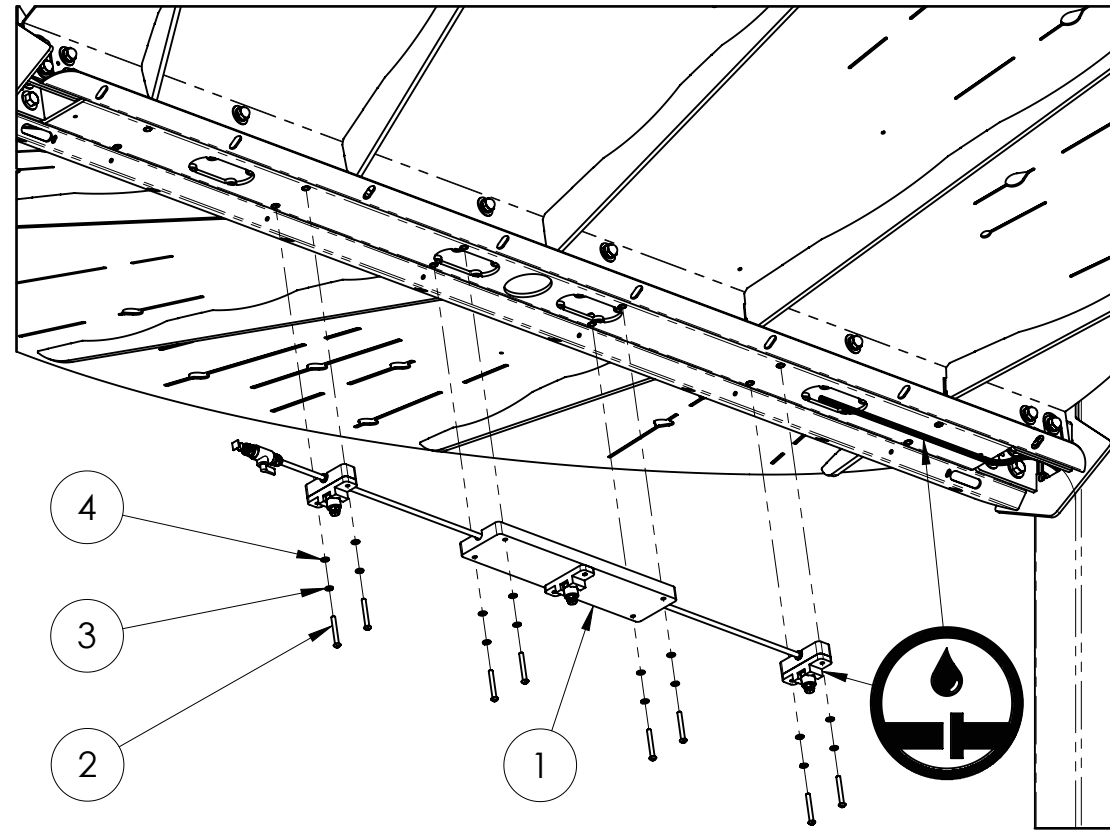
WIRING DIAGRAM FOR LED CABLES CONNECTION



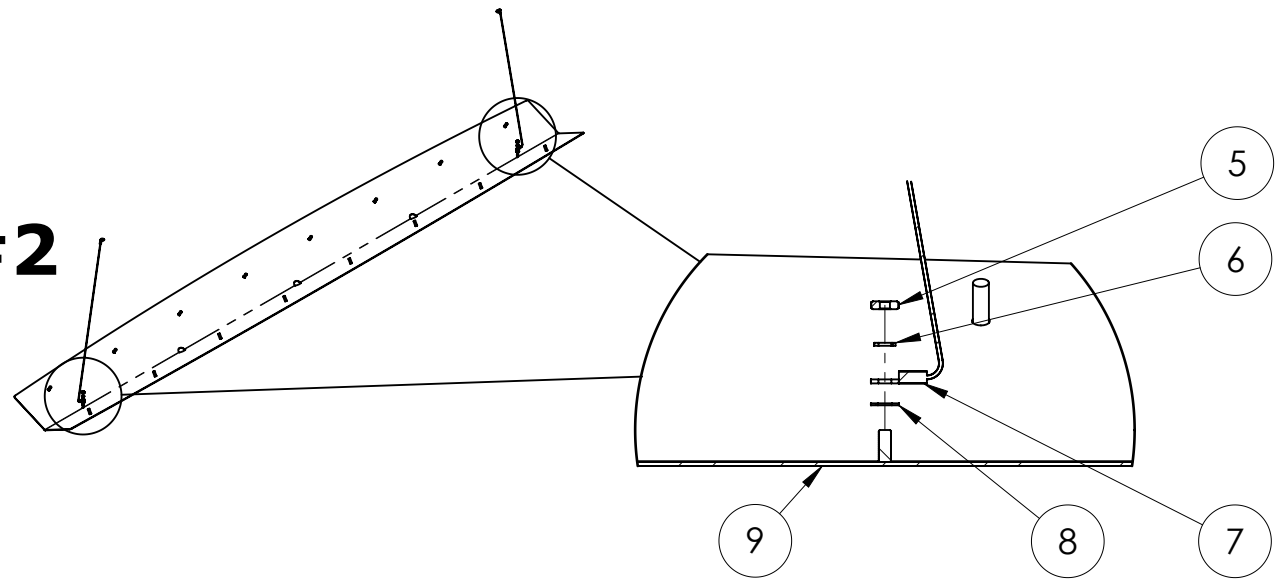
CANOPY ASSEMBLY DETAIL



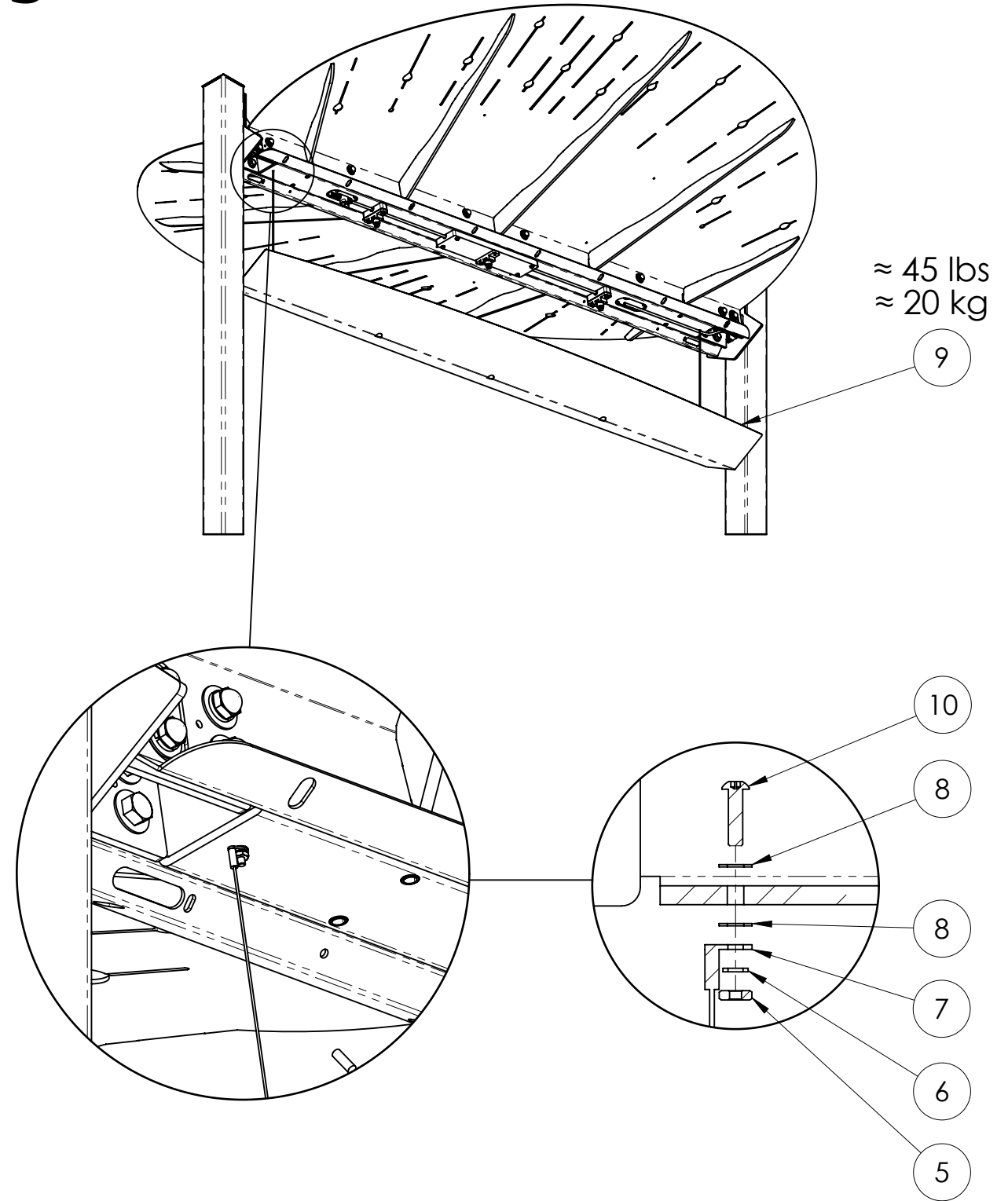
#1



#2



#3



ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	134791	ABRIO_MIST_WMS ASSEMBLY
2	8	104245	BUTTON SOCKET CAP SCREW 1/4"-20 X 2" FULL THREAD
3	8	103395	SPLIT LOCK WASHER 1/4"
4	8	103864	FLAT WASHER 1/4" X 1/2"OD GP SMALL OD
5	4	104943	HEX NUT #10-32
6	4	103398	SPLIT LOCK WASHER #10
7	2	134511	CABLE LANYARD, EYE-TO-90 DEGREE-EYE, 1/16" DIA, 24" LG, NYLON COATING
8	6	104806	FLAT WASHER #10 X 7/16"OD GP SMALL OD
9	1	134812	ABRIO_MIST_COVER_PAINTING
10	2	100610	SECURITY BUTTON CAP SCREW #10-32 X 3/4"

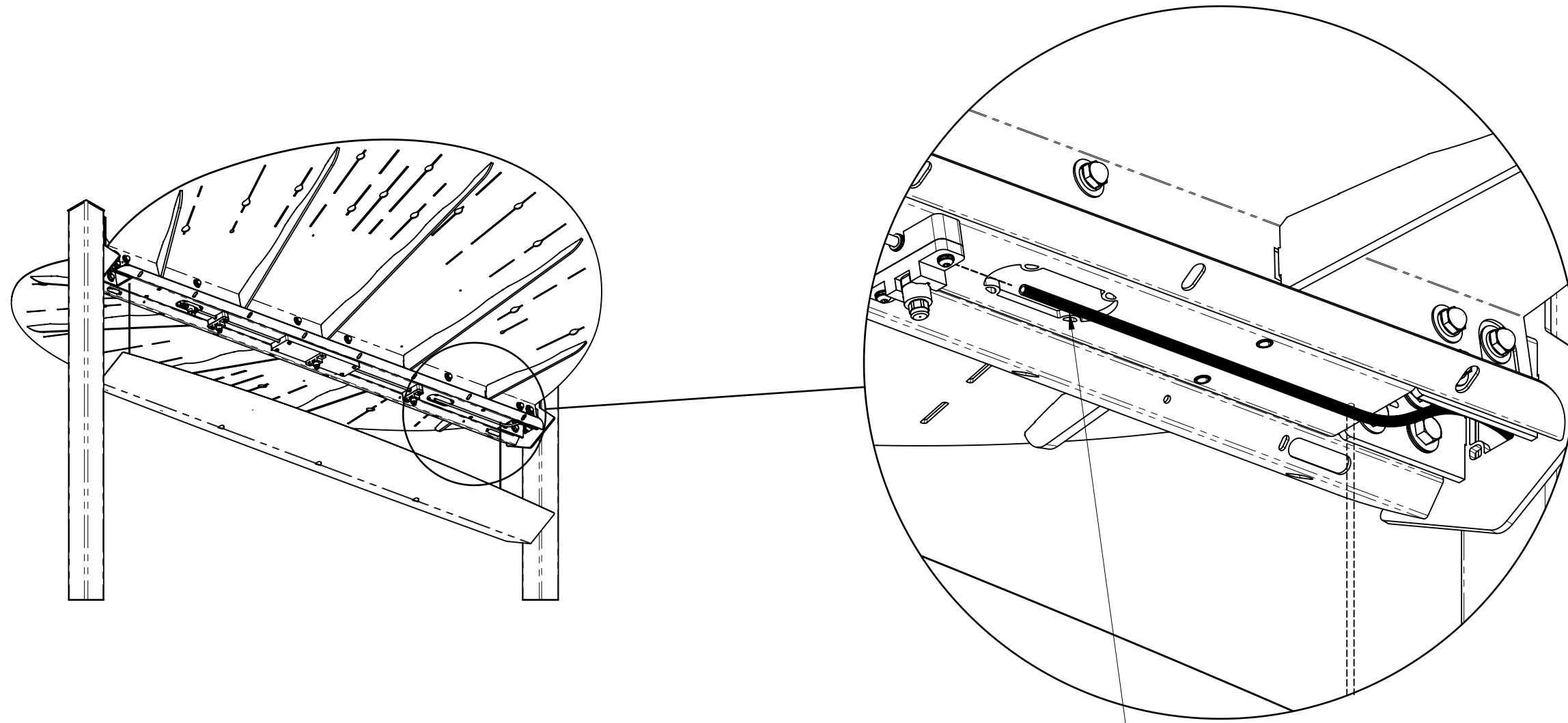
**NOTES:**

MIST WMS (4) MUST ALWAYS BE INSTALL WITH THE ELBOW ON THE LOWER SIDE OF THE BEAM  
 PRE ASSEMBLE THE MIST COVER WITH ITS SECURITY CABLES;  
 REFER TO AQUATIC CONNECTIONS TO PLUG THE FEATURE WITH WATER TUBING

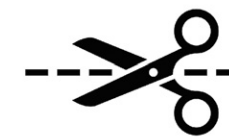
**MIST ASSEMBLY DETAIL**

#4

**CRITICAL STEP**  
MAKE SURE WATER TUBE IS FERMLY CONNECTED

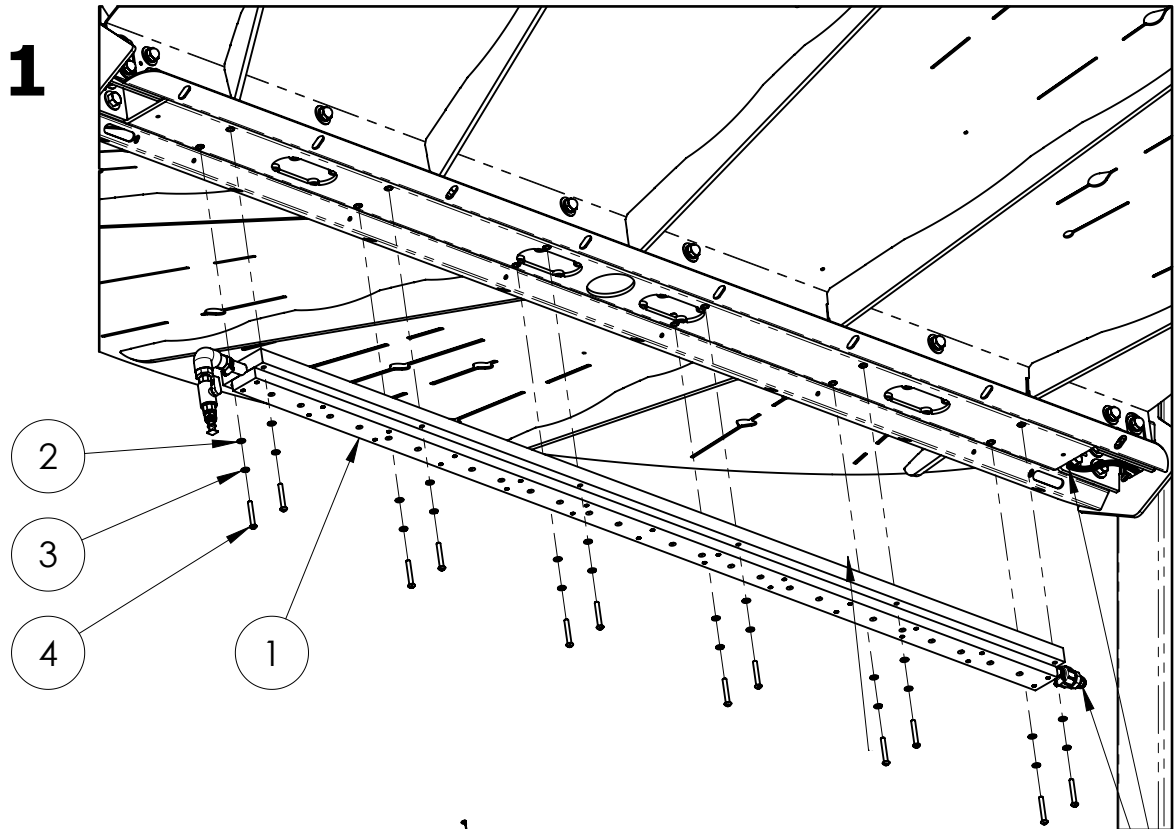


WATER CONNECTION  
CUT EXCESS TUBING IF NEEDED

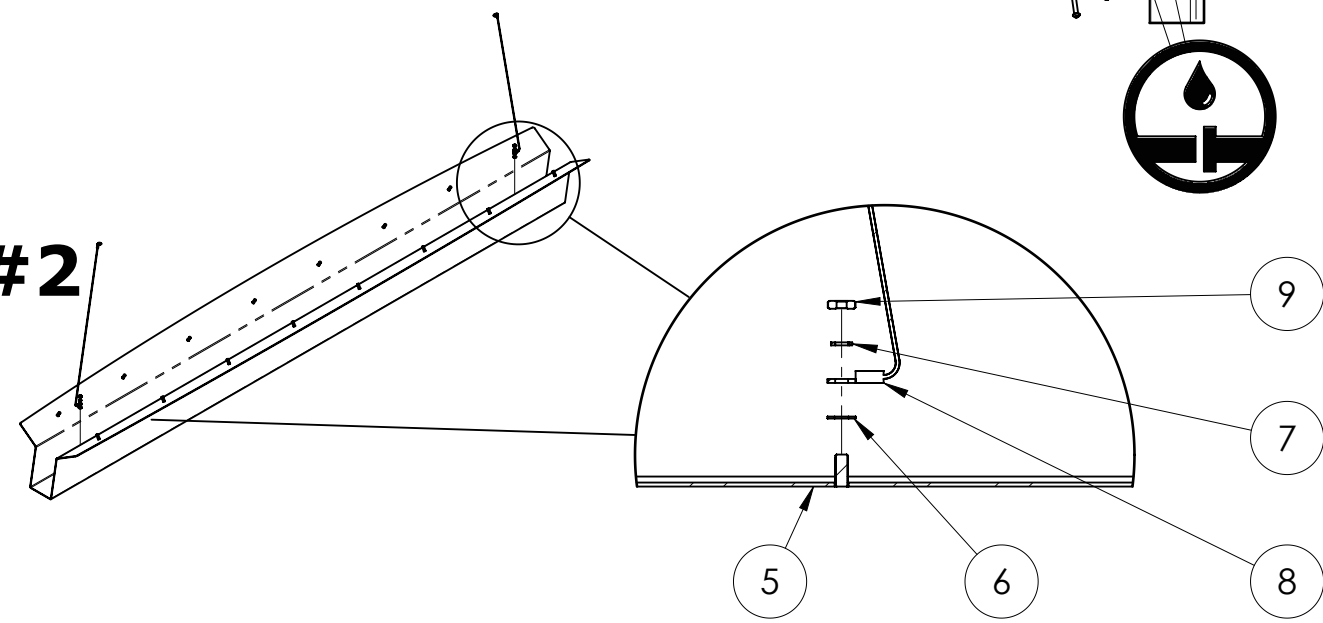


**MIST ASSEMBLY DETAIL**

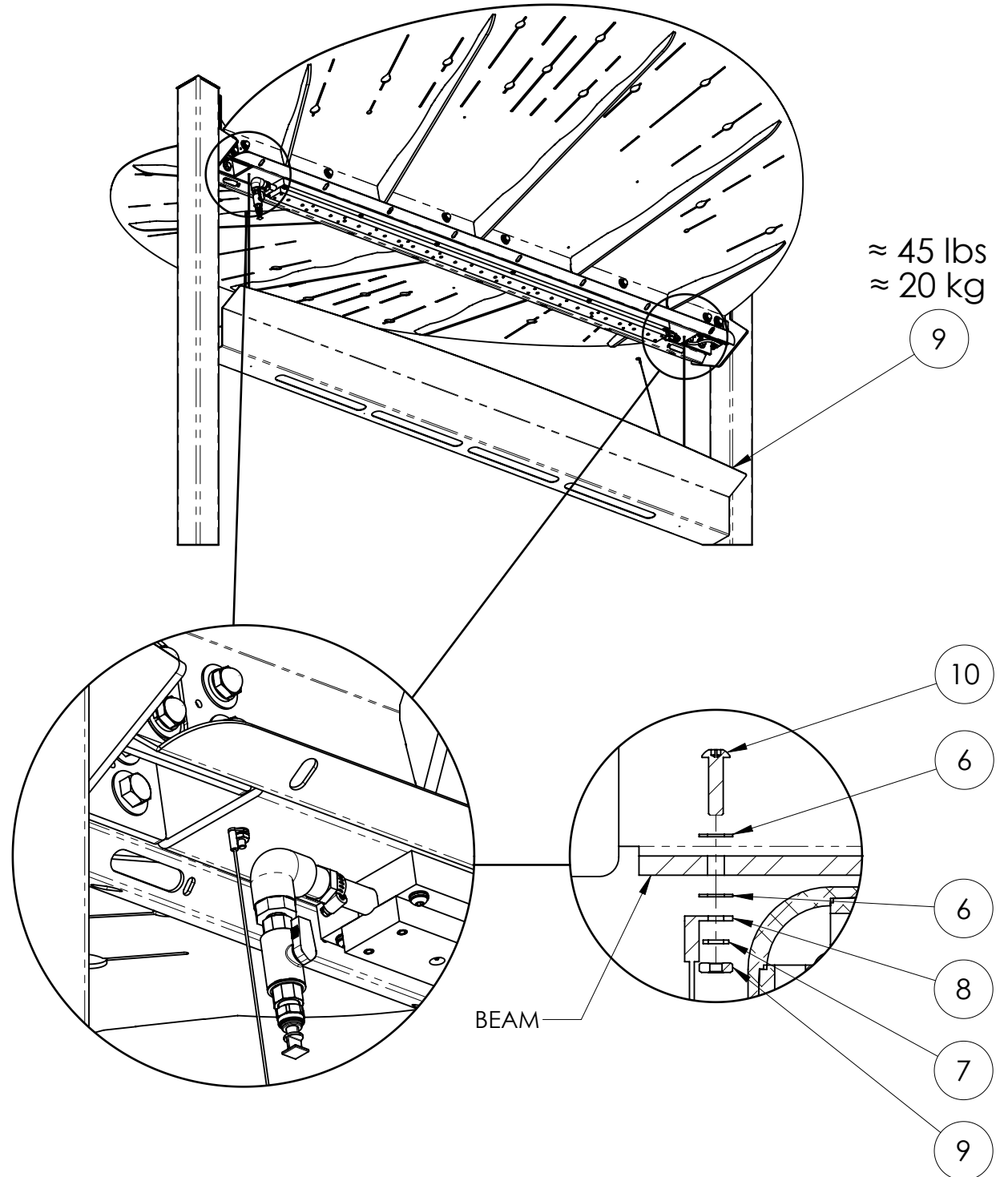
**#1**



**#2**



**#3**



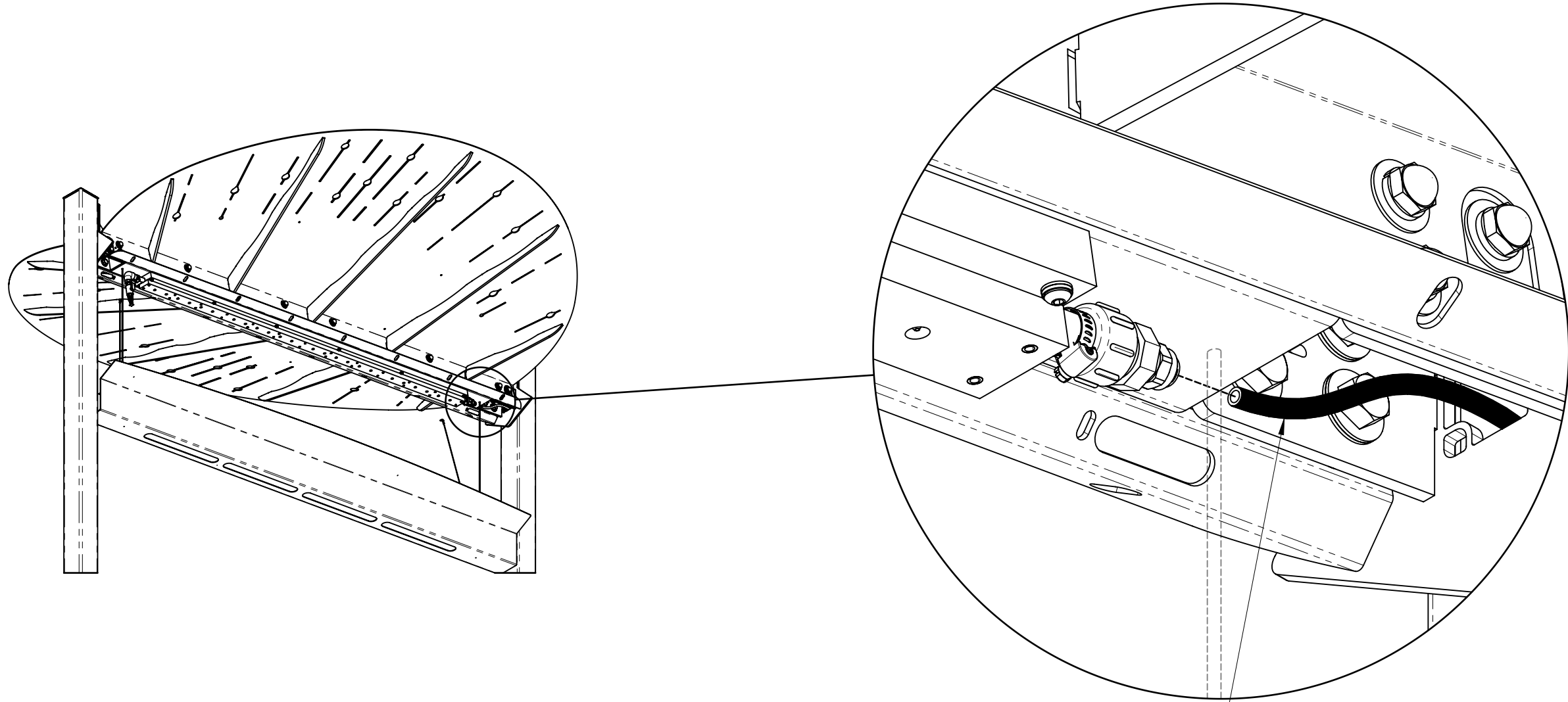
ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	134813	ABRIO_SOFT RAIN_WMS ASSEMBLY
2	12	103864	FLAT WASHER 1/4" X 1/2"OD GP SMALL OD
3	12	103395	SPLIT LOCK WASHER 1/4"
4	12	107423	BUTTON SOCKET CAP SCREW 1/4"-20 X 1 3/4" FULL THREAD
5	1	134866	ABRIO_SOFT RAIN_COVER_ASSEMBLY
6	8	104806	FLAT WASHER #10 X 7/16"OD GP SMALL OD
7	4	103398	SPLIT LOCK WASHER #10
8	2	134511	CABLE LANYARD, EYE-TO-90 DEGREE-EYE, 1/16" DIA, 24" LG, NYLON COATING
9	4	104943	HEX NUT #10-32
10	2	100610	SECURITY BUTTON CAP SCREW #10-32 X 3/4"

**NOTES:**  
 SOFT RAIN WMS ④ MUST ALWAYS BE INSTALL WITH THE ELBOW ON THE LOWER SIDE OF THE BEAM;  
 PRE-ASSEMBLE THE SOFT RAIN COVER WITH ITS SECURITY CABLES;  
 CUT THE EXTRA LENGTH OF WATER TUBING WHILE CONNECTING THE WMS SOFT RAIN

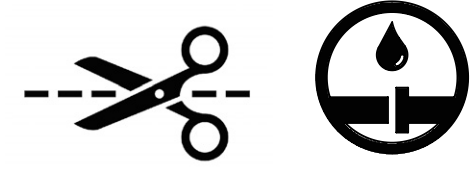
**SOFT RAIN ASSEMBLY DETAIL**

#4

**CRITICAL STEP**  
MAKE SURE WATER TUBE IS FERMLY CONNECTED

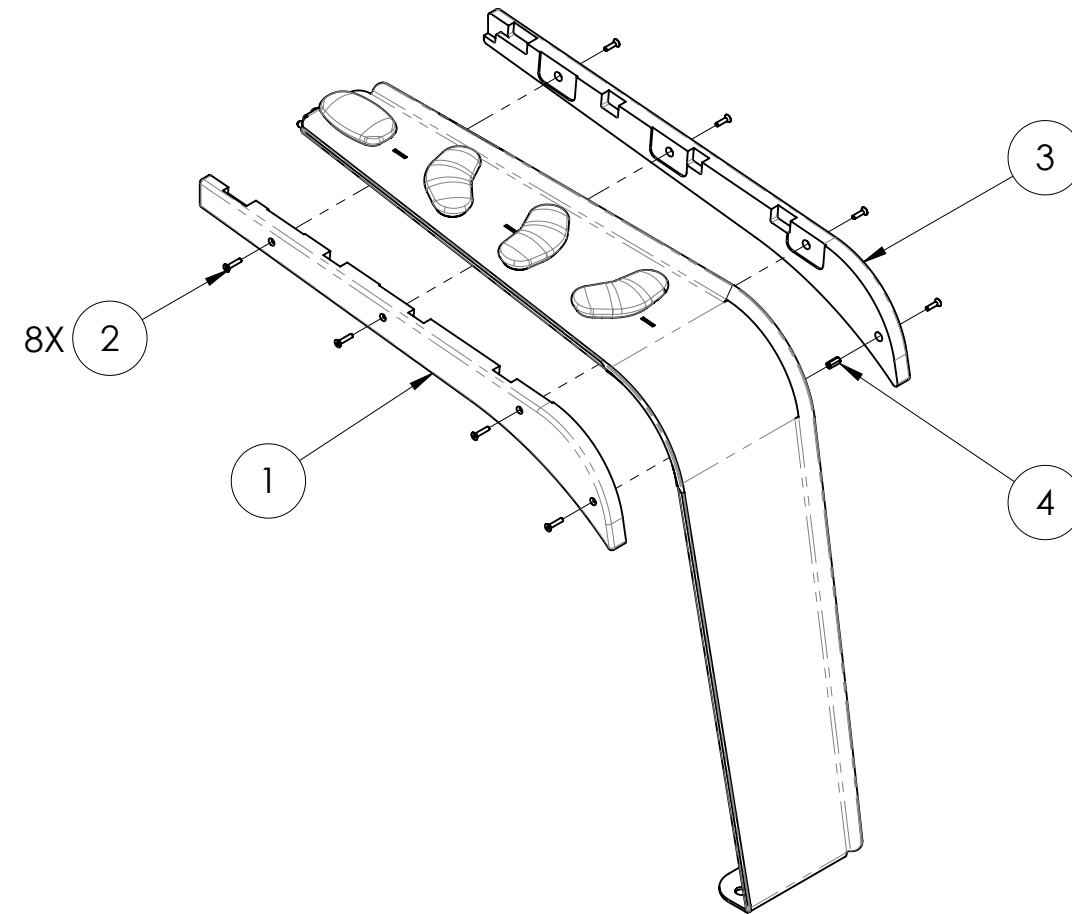
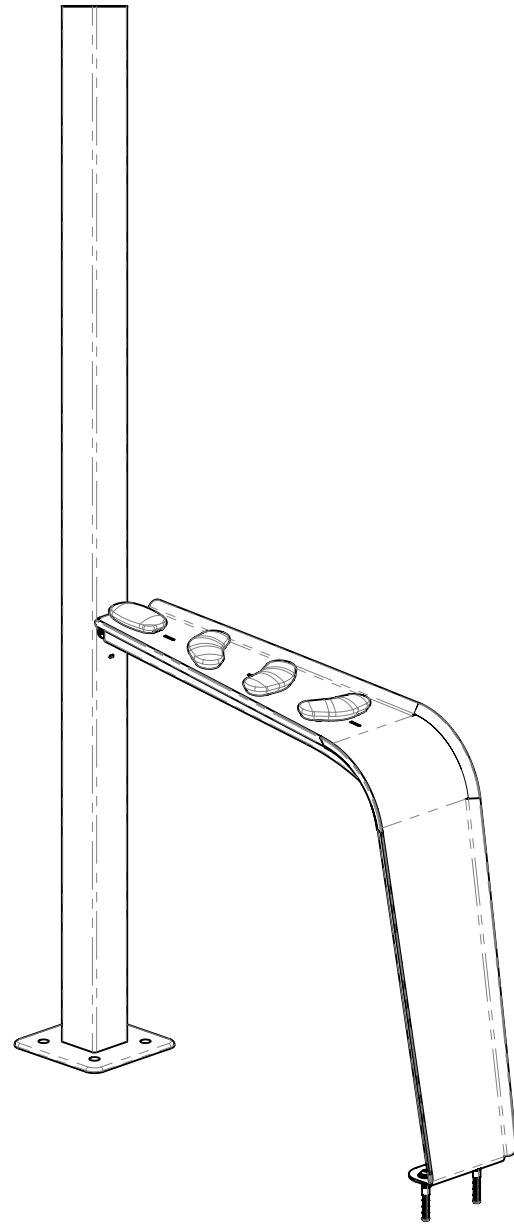


WATER CONNECTION  
CUT EXCESS TUBING IF NEEDED



**SOFT RAIN ASSEMBLY DETAIL**

# #1



DISASSEMBLE SIDE PANELS WITH ITS HARDWARE

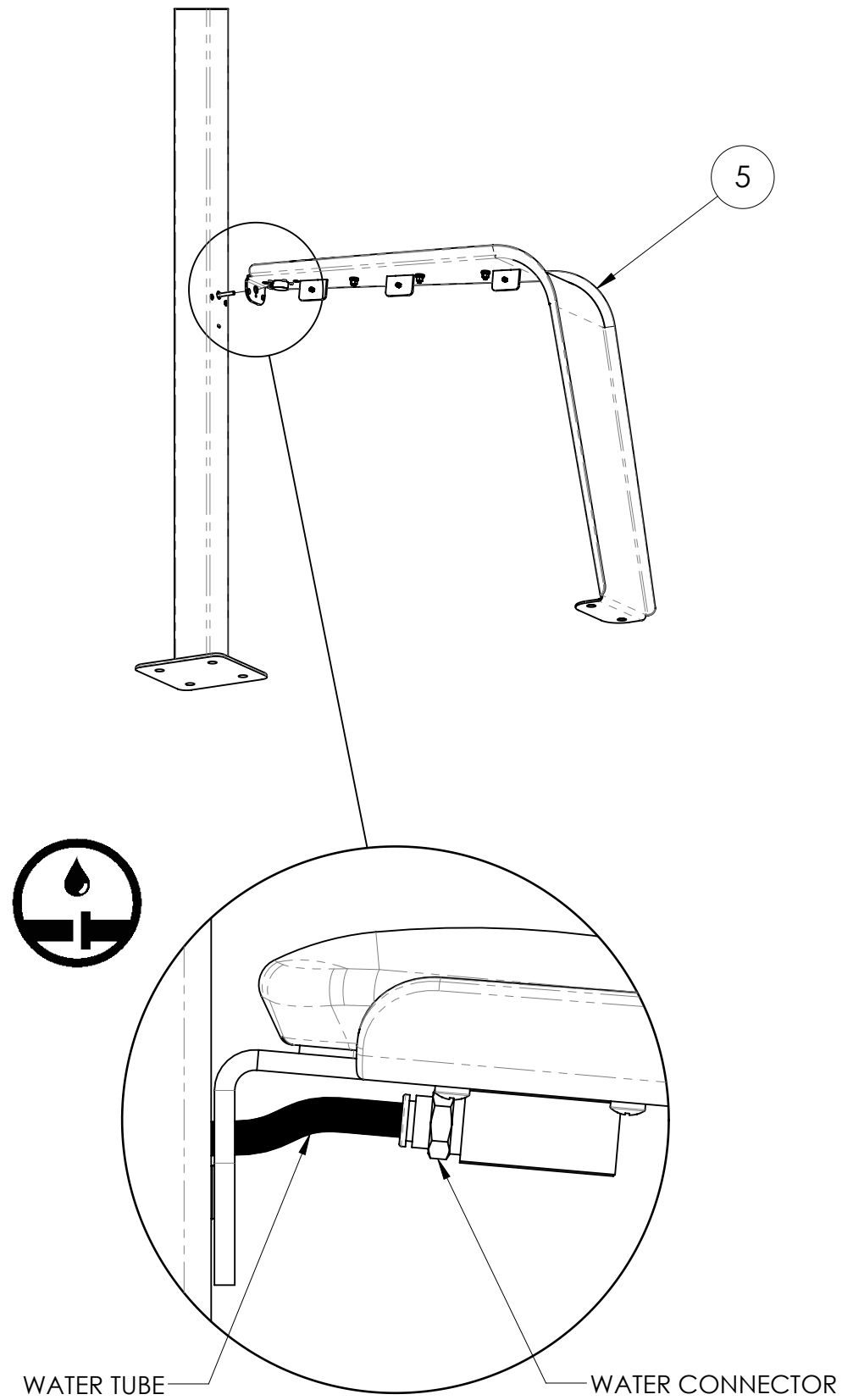
ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	1	134403	RIVER MAIN BODY PANEL LEFT
2	10	100604	SECURITY FLAT CAP SCREW 1/4"-20 X 1"
3	1	134404	RIVER MAIN BODY PANEL RIGHT
4	1	108153	COUPLING NUT 1/4"-20 X 7/8"
5	1	134352	RIVER MAIN BODY
6	1	130681	HEX HEAD TAPPING SCREW 1/4"-14 X 1" FULL THREAD STAINLESS STEEL 410
7	2	134671	BUTTON SOCKET CAP SCREW 1/2"-13 X 1 1/2" FULL THREAD ZINC PLATED
8	2	103394	SPLIT LOCK WASHER 1/2"
9	2	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
10	2	134450	ADHESIVE-GRIP CONCRETE ANCHOR, 1/2"-13 FNPT, ZINC PLATED STEEL

**NOTES:**  
 REINSTALL SIDE PANELS AFTER TEST;  
 USE LEG'S HOLES TO POSITIONATE AND DRILL THE ANCHOR'S HOLES;  
 PROTECT LEG WITH MASKING TAPE DURING DRILLING AND EPOXY

**RIVER MAZE ASSEMBLY DETAIL**

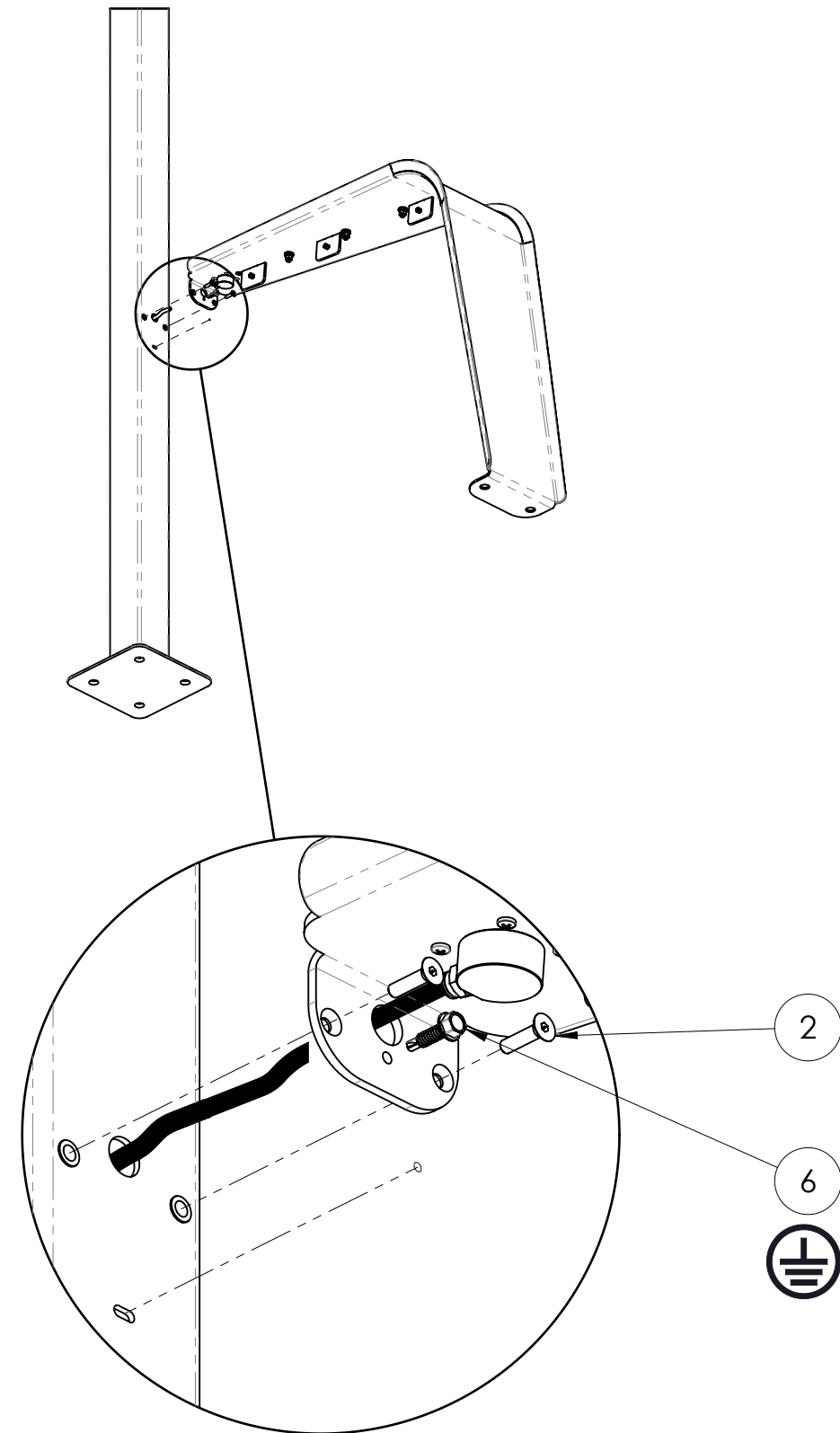


# #2



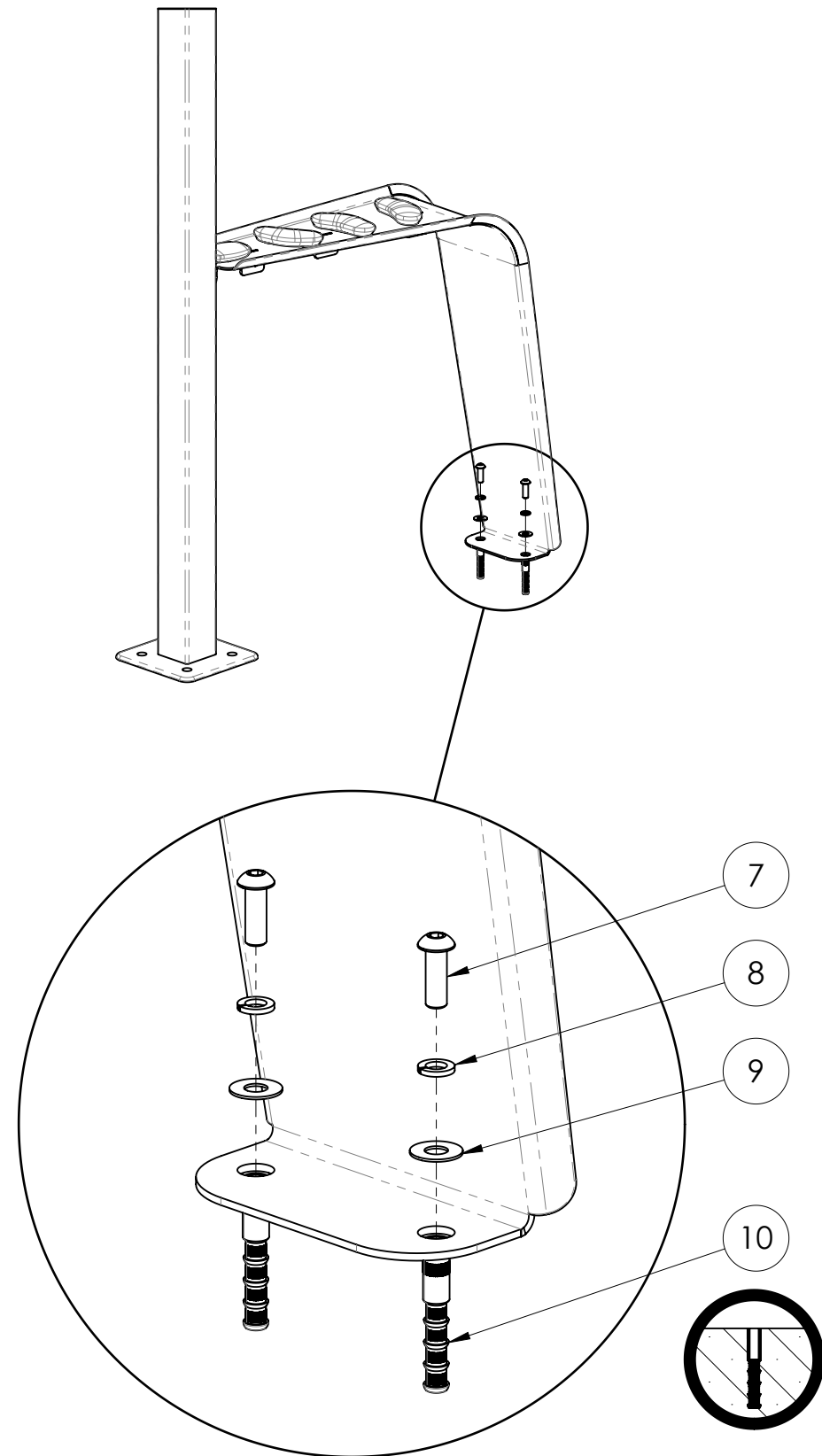
**CRITICAL STEP**  
 MAKE SURE WATER TUBE IS FERMLY CONNECTED

# #3



## RIVER MAZE ASSEMBLY DETAIL

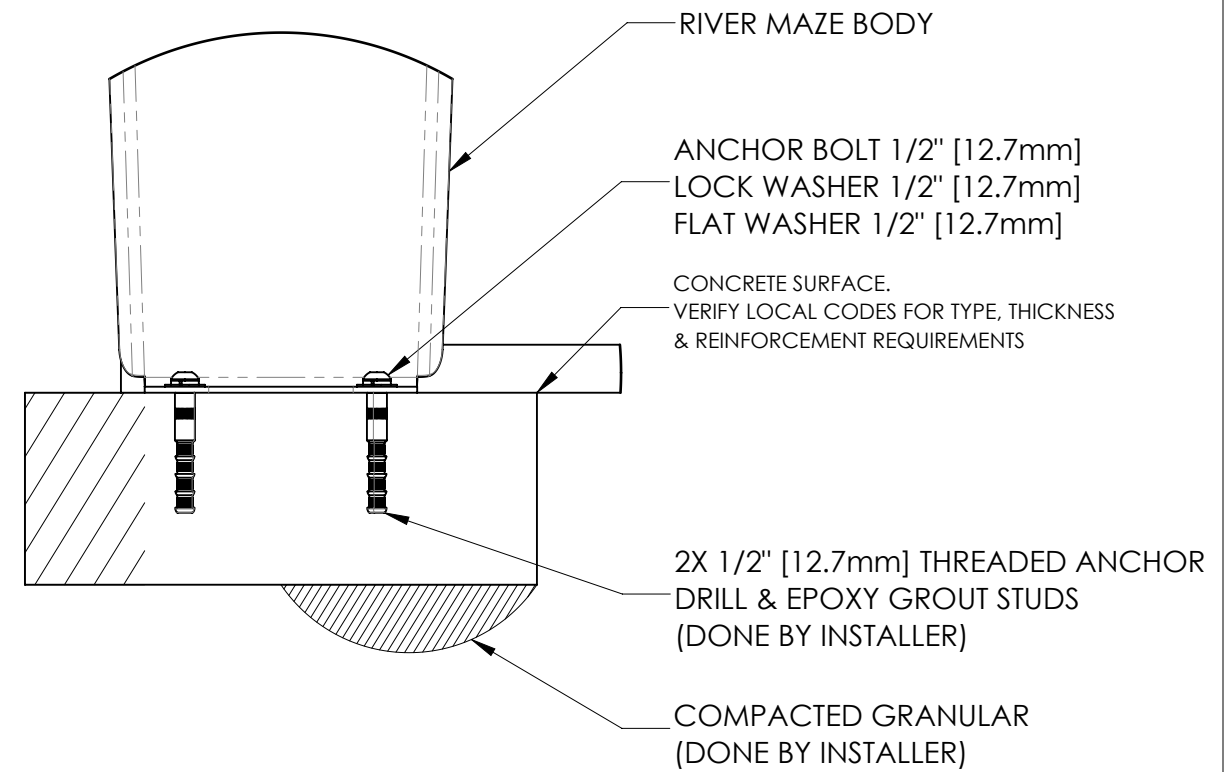
# #4



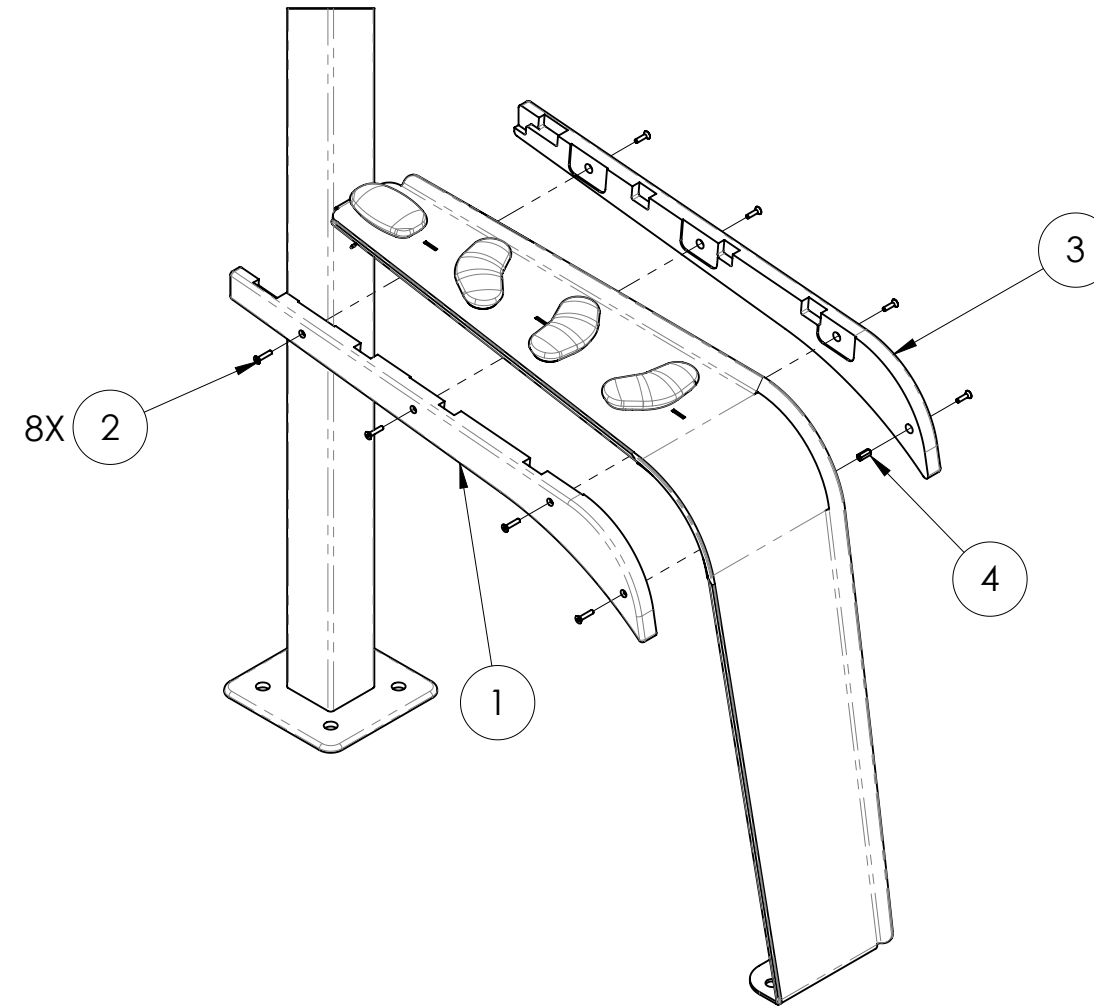
## RIVER MAZE TYPICAL ANCHORING STEPS (DONE BY OTHERS):

1. ASSEMBLE RIVER MAZE ON POST, USING SUPPLIED HARDWARE.
2. MARK ON CONCRETE FOOTING OR SLAB, THE RIVER MAZE LEG ANCHORING HOLES' POSITIONS.
3. REMOVE RIVER MAZE.
4. DRILL ON HOLES' MARKINGS WITH 3/4" DRILL BIT SIZE.
5. CLEAN THE DRILLED HOLES.
6. PUT ANCHORS IN HOLES WITH EPOXY (EPOXY ANCHORING ADHESIVE PULL-OUT STRENGTH MUST BE MINIMUM 6400 LBF).
7. WAIT FOR EPOXY'S CURING TIME.
8. ASSEMBLE THE RIVER MAZE AS PER VORTEX' ASSEMBLY GUIDE.

## RIVER MAZE TYPICAL ANCHORING DETAIL



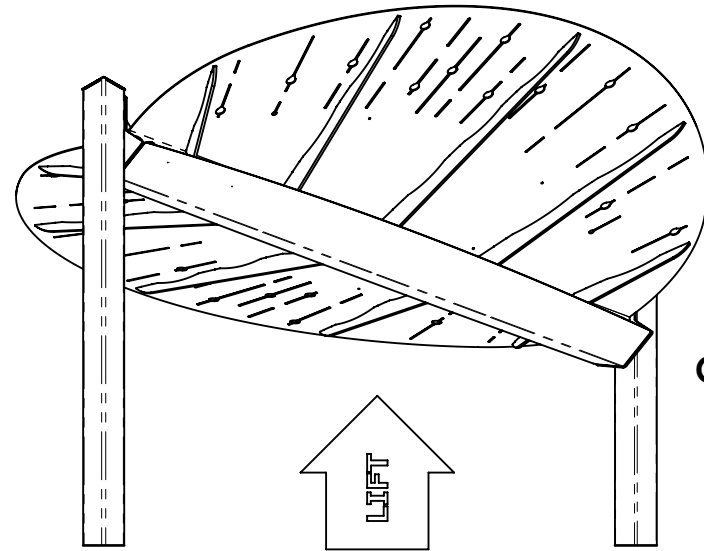
#5



ASSEMBLE SIDE PANELS WITH ITS HARDWARE

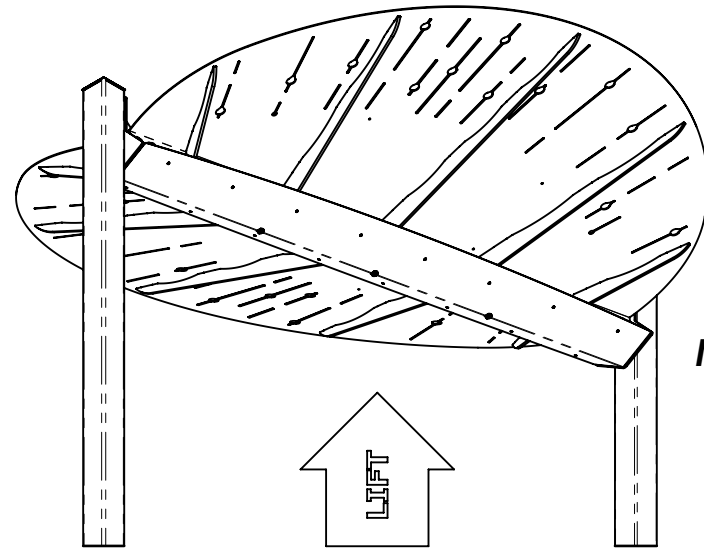
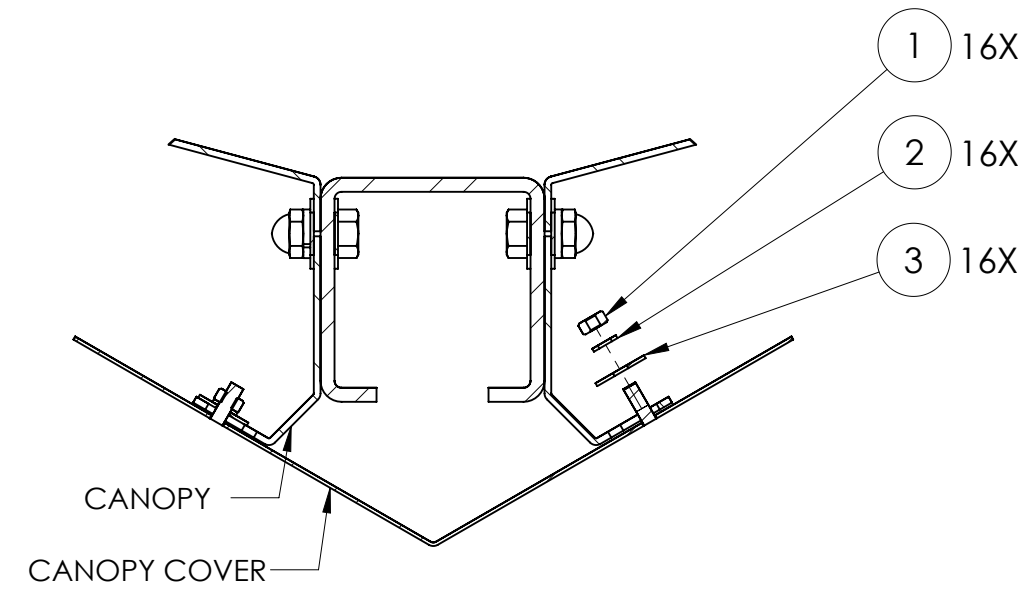
**RIVER MAZE ASSEMBLY DETAIL**

**#1**  
PER COVER

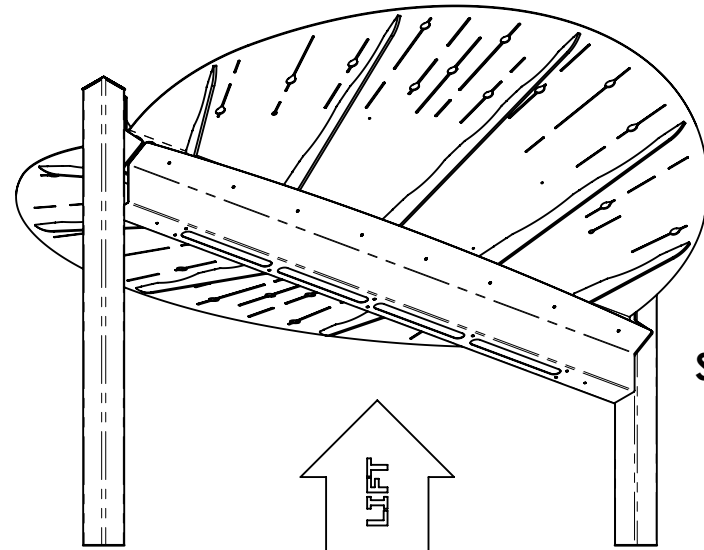
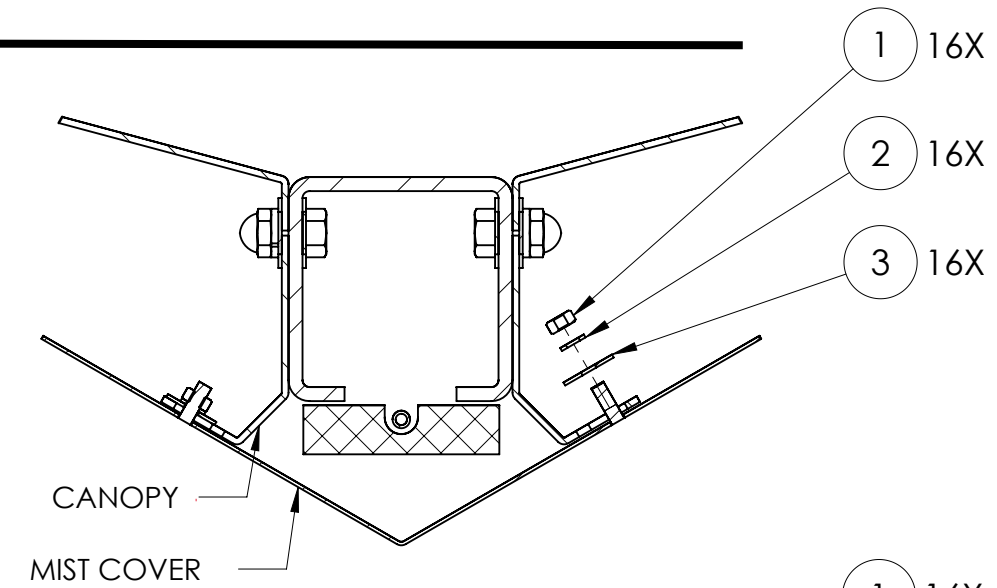


**CANOPY COVER**

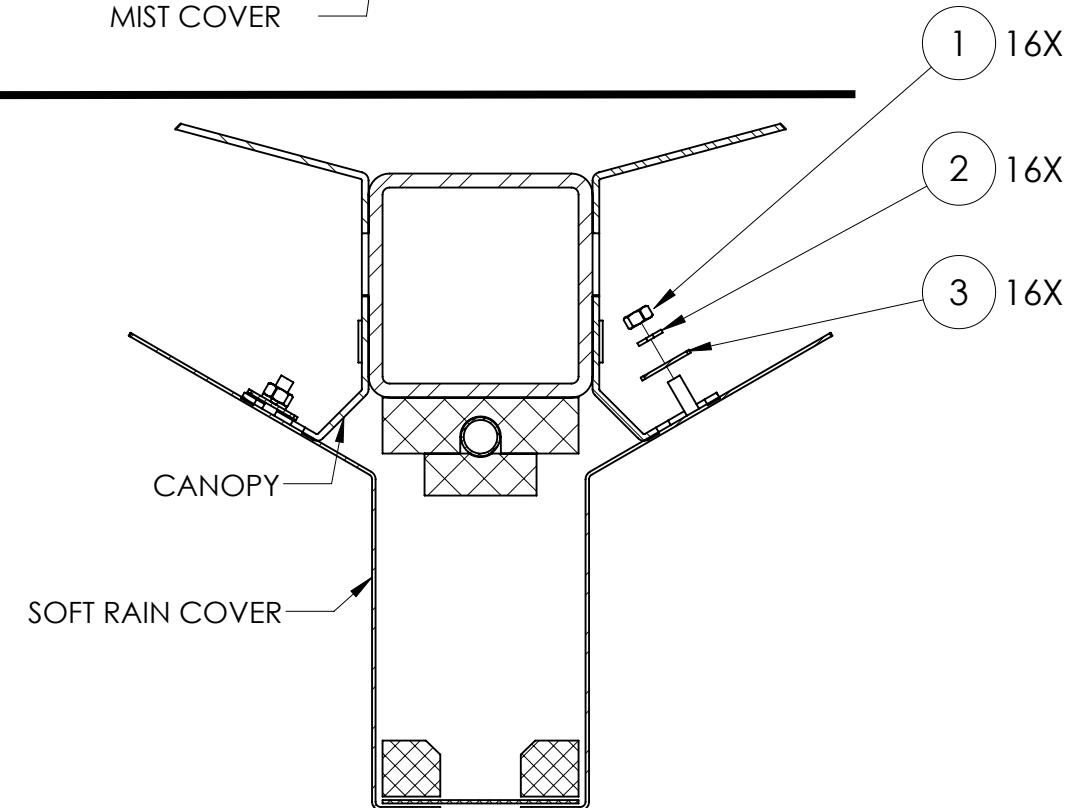
**#2**  
PER COVER



**MIST COVER**



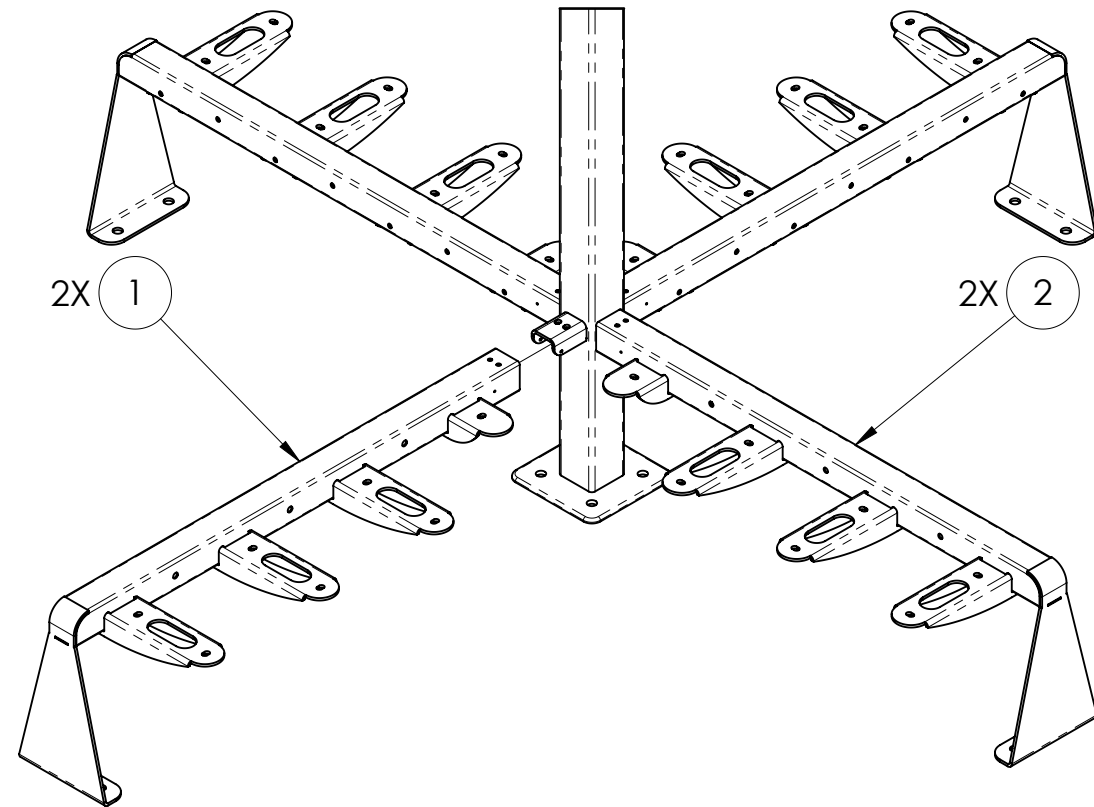
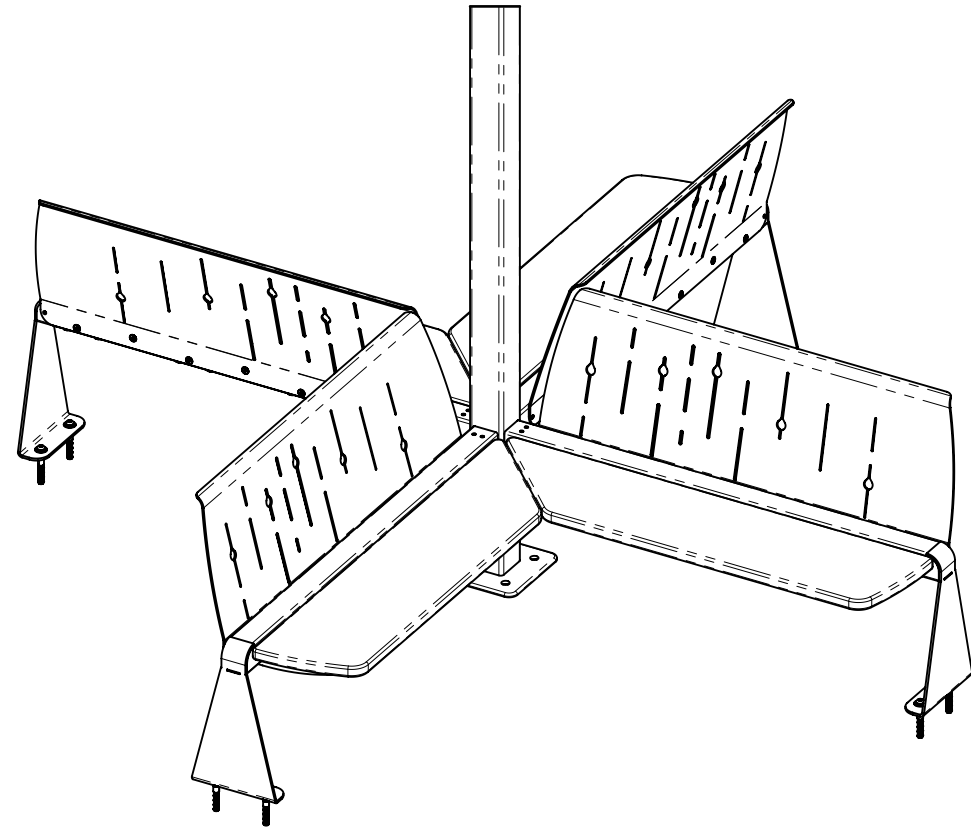
**SOFT RAIN COVER**



**COVER ASSEMBLY DETAIL**

ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	16	103267	HEX NUT 1/4"-20
2	16	103395	SPLIT LOCK WASHER 1/4"
3	16	103865	FLAT WASHER 1/4" X 1"OD FENDER WASHER

# #1

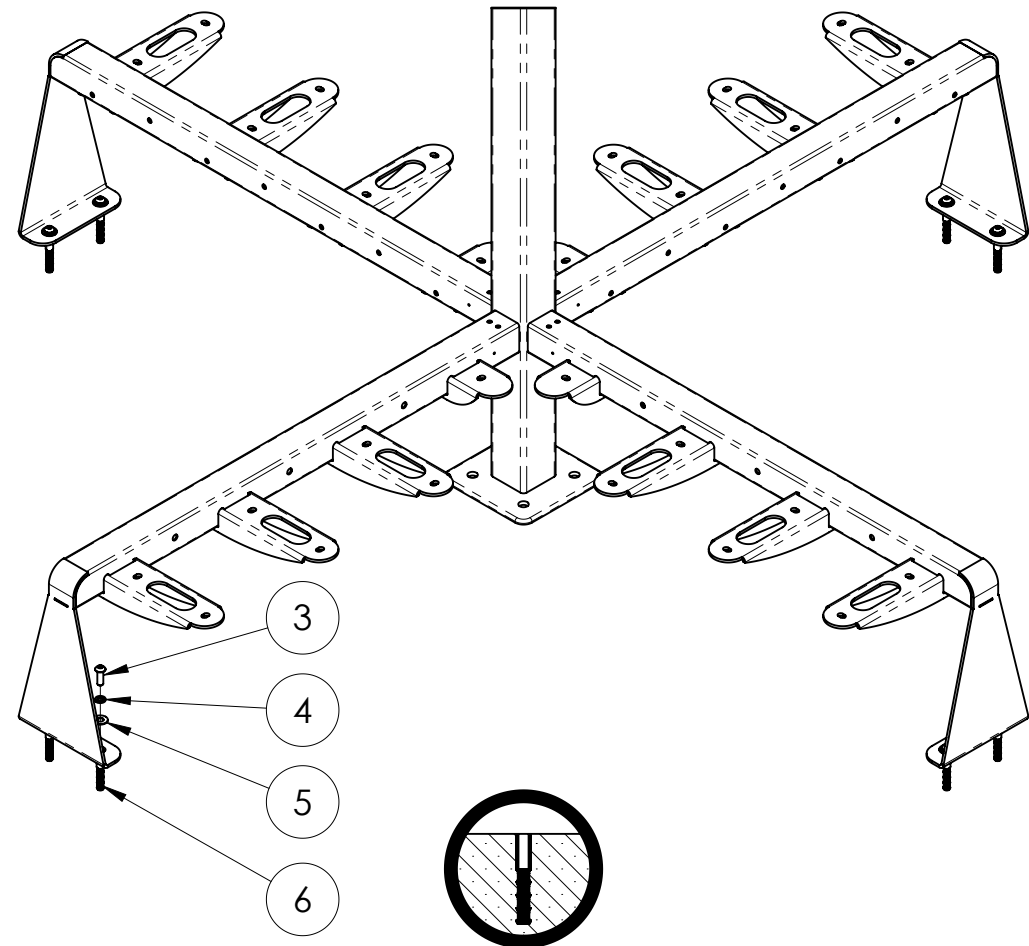


ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	2	134556	ABRIO_BENCH_LEFT BACKREST SEATING FRAME_PAINTING
2	2	134588	ABRIO_BENCH_RIGHT BACKREST SEATING FRAME_PAINTING
3	14	134671	BUTTON SOCKET CAP SCREW 1/2"-13 X 1 1/2" FULL THREAD ZINC PLATED
4	14	103394	SPLIT LOCK WASHER 1/2"
5	14	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
6	14	134450	ADHESIVE-GRIP CONCRETE ANCHOR, 1/2"-13 FNPT, ZINC PLATED STEEL
7	8	103858	FLAT WASHER 3/8" X 7/8"OD GP SMALL OD
8	8	103390	SPLIT LOCK WASHER 3/8"
9	8	103266	HEX NUT 3/8"-16
10	4	135002	ABRIO_BENCH BACKREST_PAINTING
11	28	103874	FLAT SOCKET CAP SCREW 3/8"-16 X 3" FULL THREAD
12	28	102753	SECURITY BARREL NUT 3/8"-16 X 5/8"
13	2	134280	ABRIO_BENCH_RIGHT SEATING TOP_ASSEMBLY
14	2	134273	ABRIO_BENCH_LEFT SEATING TOP_ASSEMBLY
15	28	103860	FLAT WASHER 3/8 X 1"OD GP LARGE OD
16	28	103390	SPLIT LOCK WASHER 3/8"
17	28	100600	SECURITY BUTTON CAP SCREW 3/8"-16 X 7/8"
18	4	136375	FLAT HEAD TAPPING SCREW #10-16 X 1" FULL THREAD STAINLESS STEEL 410

**NOTES:**  
 USE LEG'S HOLES TO POSITIONATE AND DRILL THE ANCHOR'S HOLE;  
 PROTECT LEG WITH MASKING TAPE DURING DRILLING AND EPOXY;  
 HAND TIGHT THE BENCH SEATINGS UNTIL ALL BENCH SEATINGS ARE ASSEMBLED

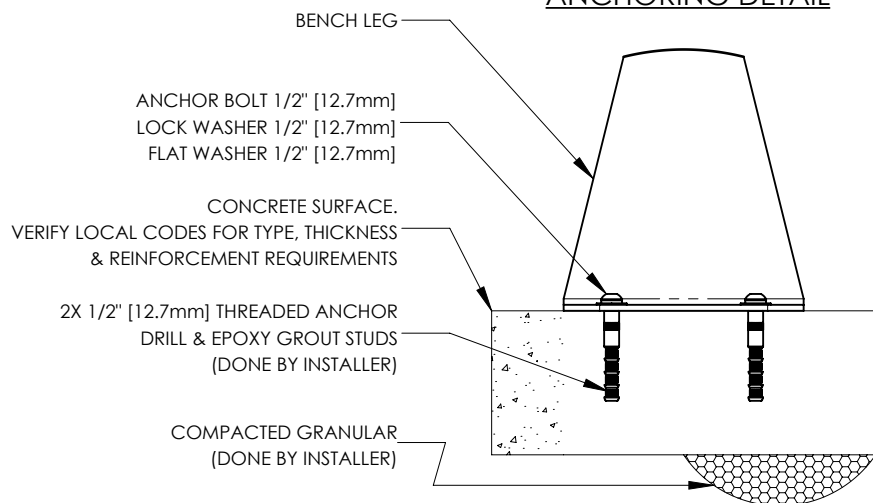
## BENCH BACKREST SEATING ASSEMBLY DETAIL

# #2



**MAKE SURE ALL BENCH STRUCTURES ARE LEVELED**

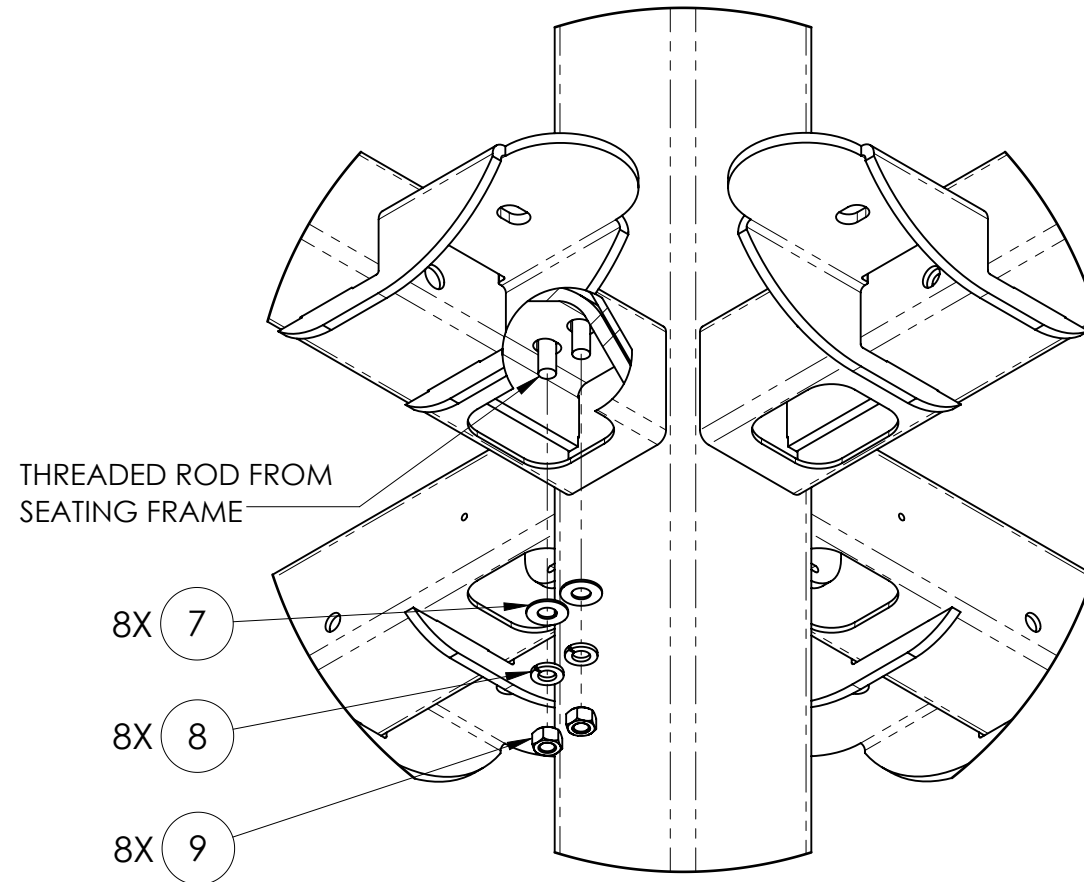
**BENCH TYPICAL ANCHORING DETAIL**



**BENCH TYPICAL ANCHORING STEPS (DONE BY OTHERS):**

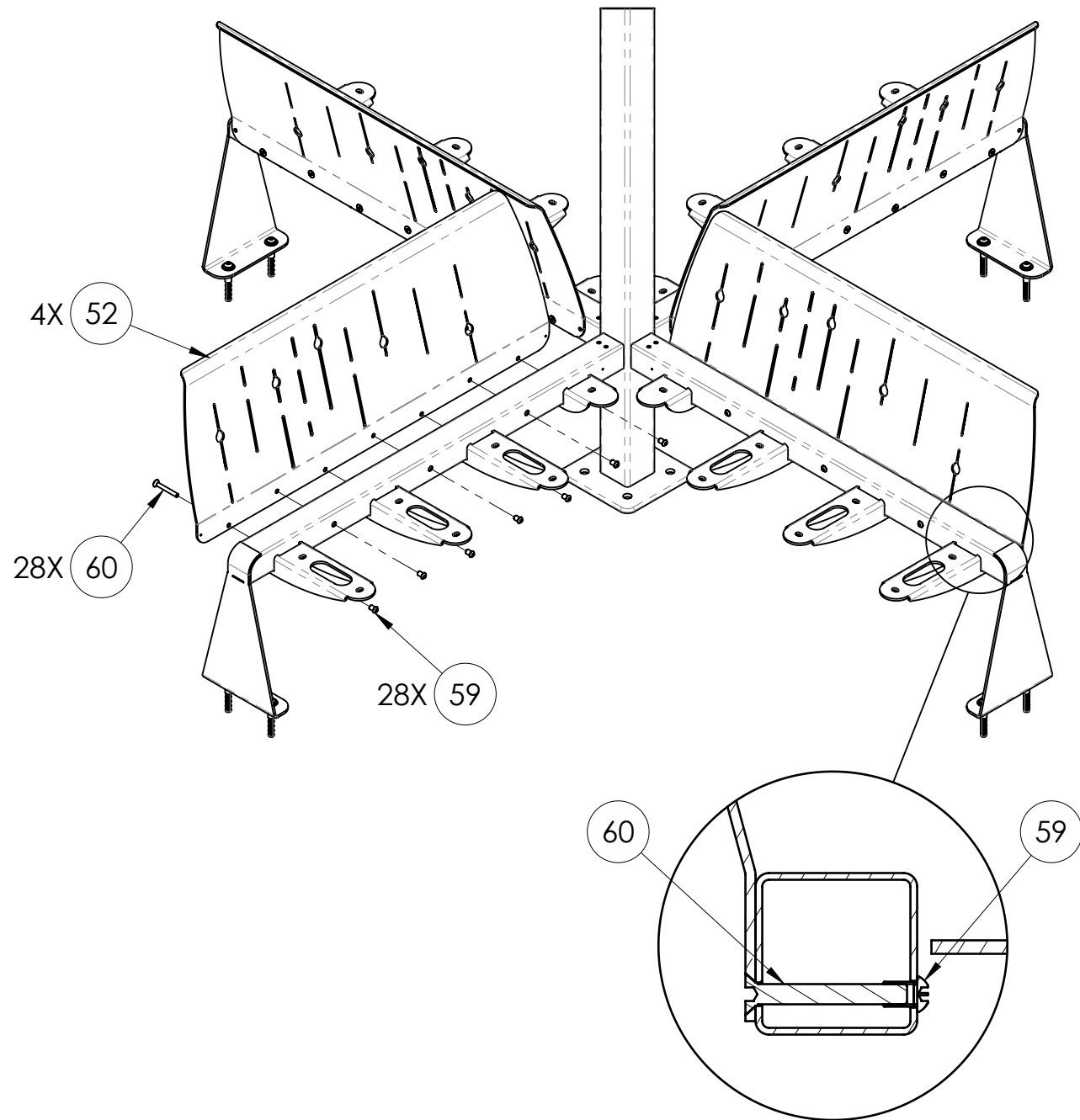
1. PLACE BENCH ON POST BRACKET.
2. MARK ON CONCRETE FOOTING OR SLAB, THE BENCH LEG ANCHORING HOLES' POSITIONS.
3. REMOVE BENCH.
4. DRILL ON HOLES' MARKINGS WITH 3/4" DRILL BIT SIZE.
5. CLEAN THE DRILLED HOLES.
6. PUT ANCHORS IN HOLES WITH EPOXY (EPOXY ANCHORING ADHESIVE PULL-OUT STRENGTH MUST BE MINIMUM 6400 LBF).
7. WAIT FOR EPOXY'S CURING TIME.
8. ASSEMBLE THE BENCH AS PER VORTEX' ASSEMBLY GUIDE.

# #3

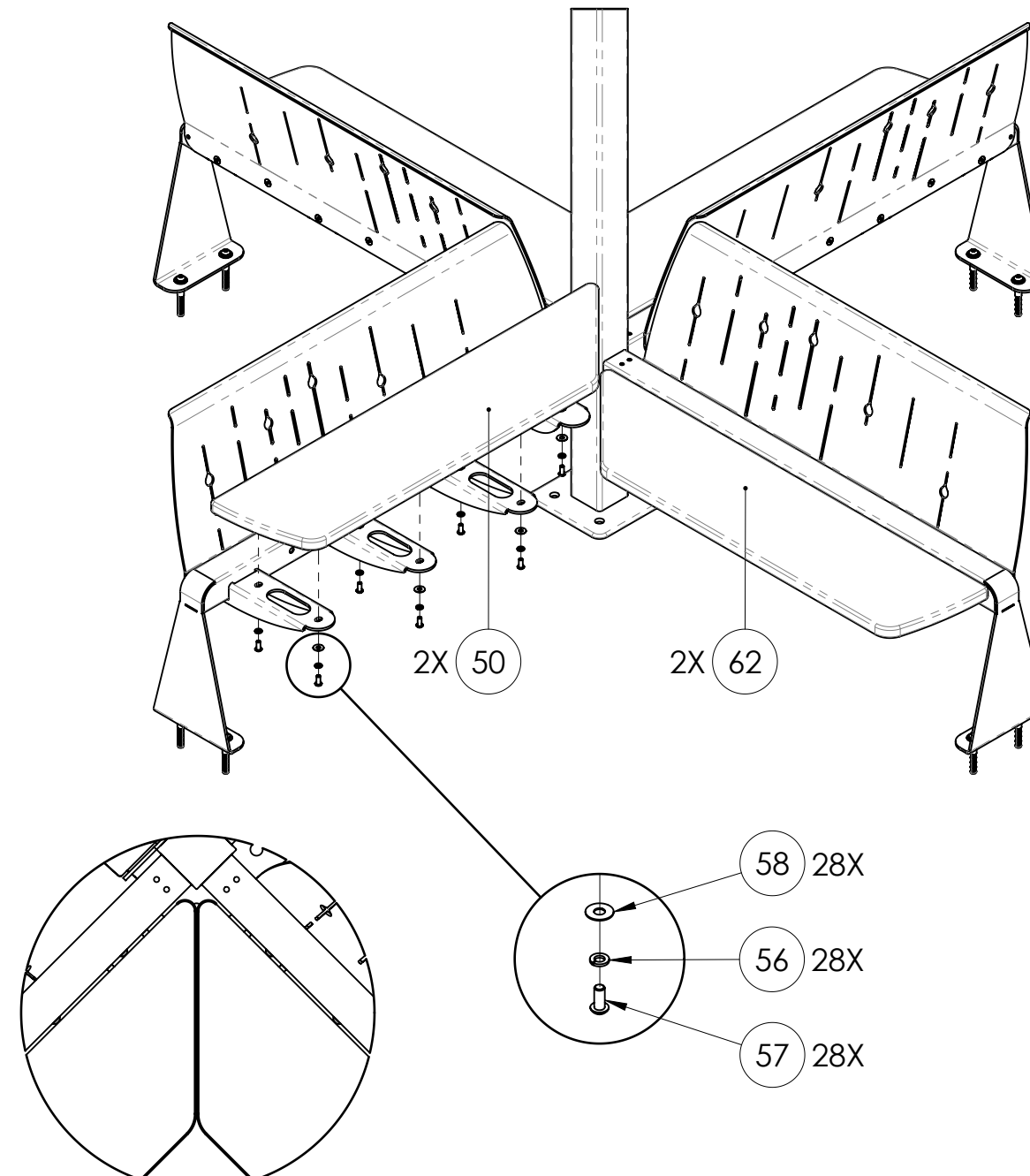


**BENCH BACKREST SEATING ASSEMBLY DETAIL**

# #4



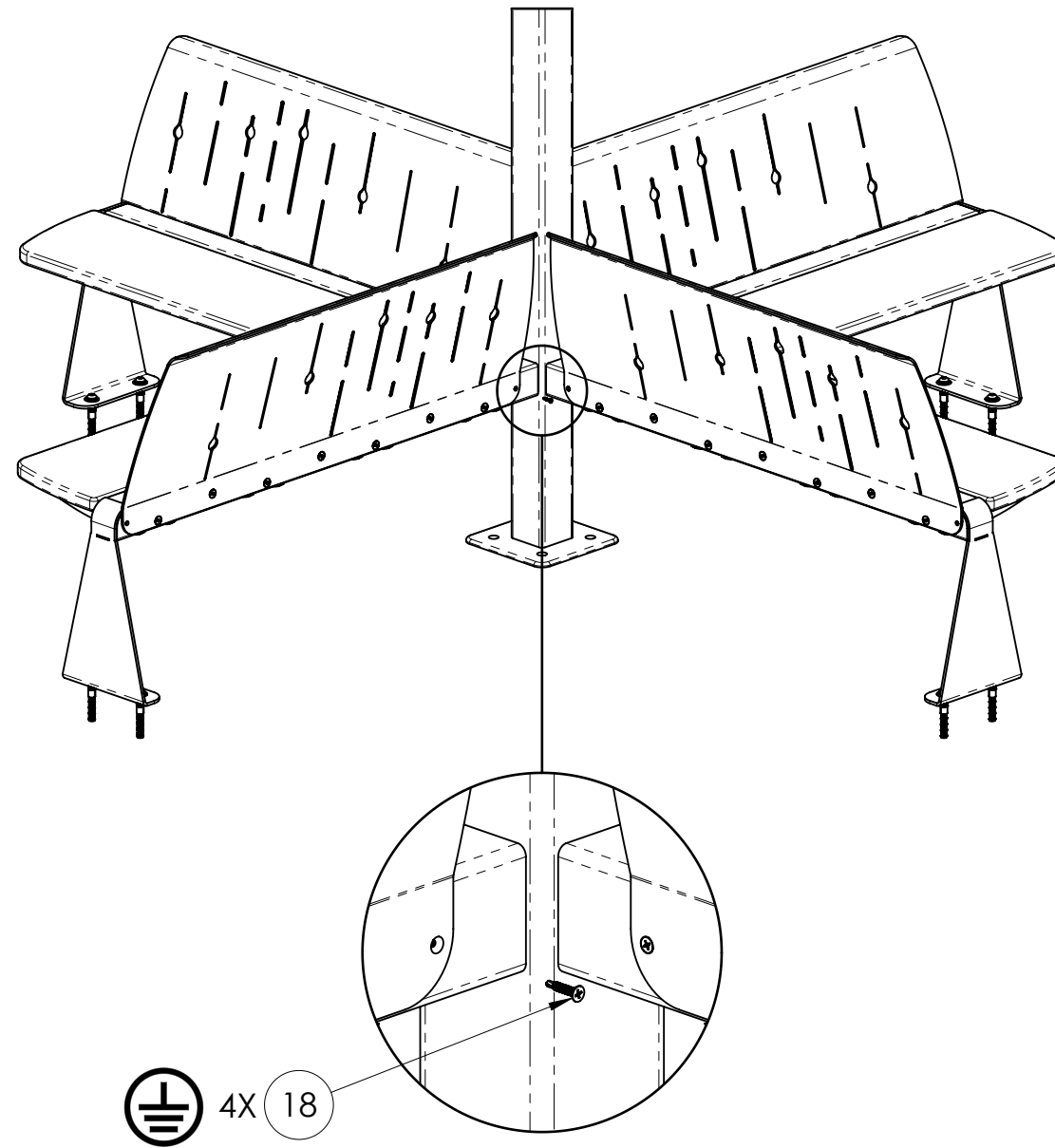
# #5



MAXIMUM OF 0.25in OF GAP  
BETWEEN EACH SEATINGS

## BENCH BACKREST SEATING ASSEMBLY DETAIL

#6



**VORTEX AQUATIC STRUCTURES INTL**  
7800 Autoroute Trans Canadienne  
Pointe Claire (Montreal)  
Québec, Canada H9R 1C6  
Toll-free: 1.877.5VORTEX  
www.vortex-intl.com

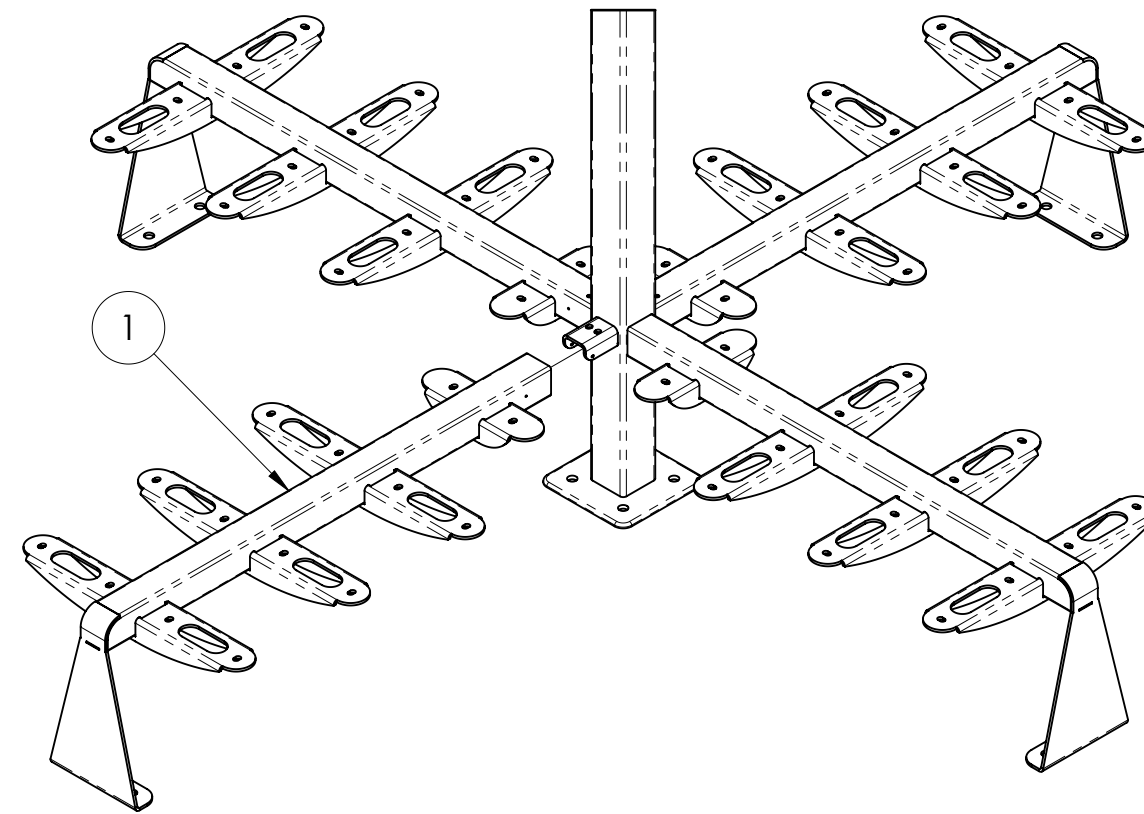
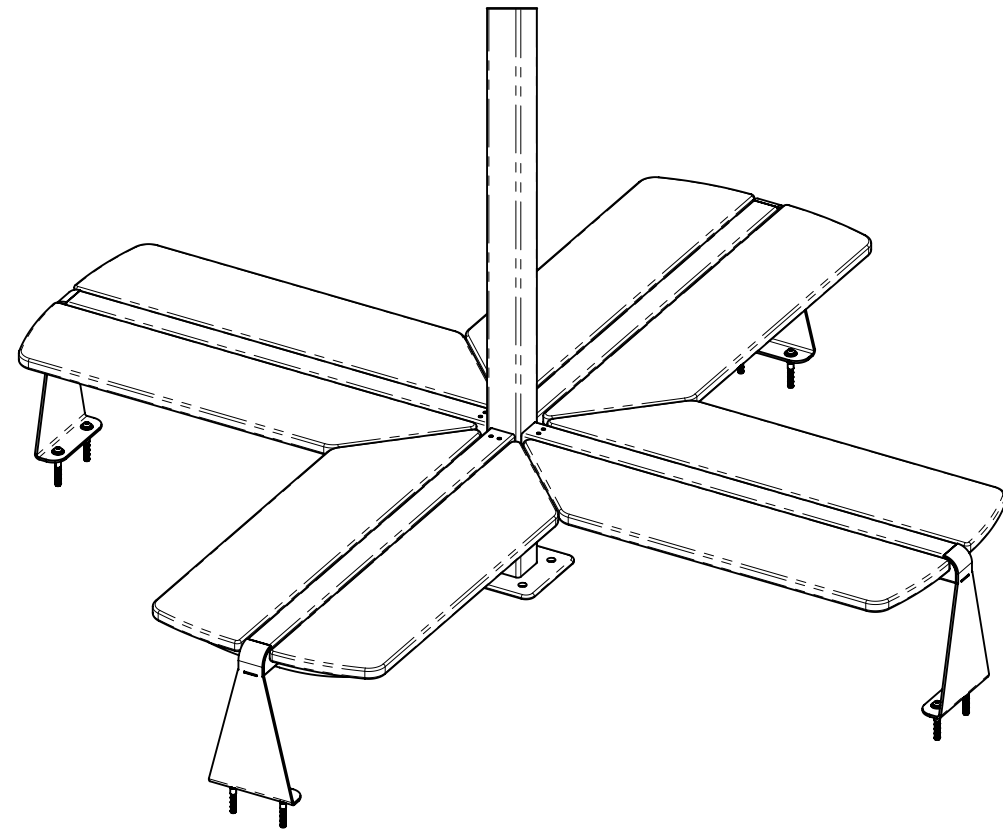
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**BENCH BACKREST SEATING  
ASSEMBLY DETAIL**



# #1



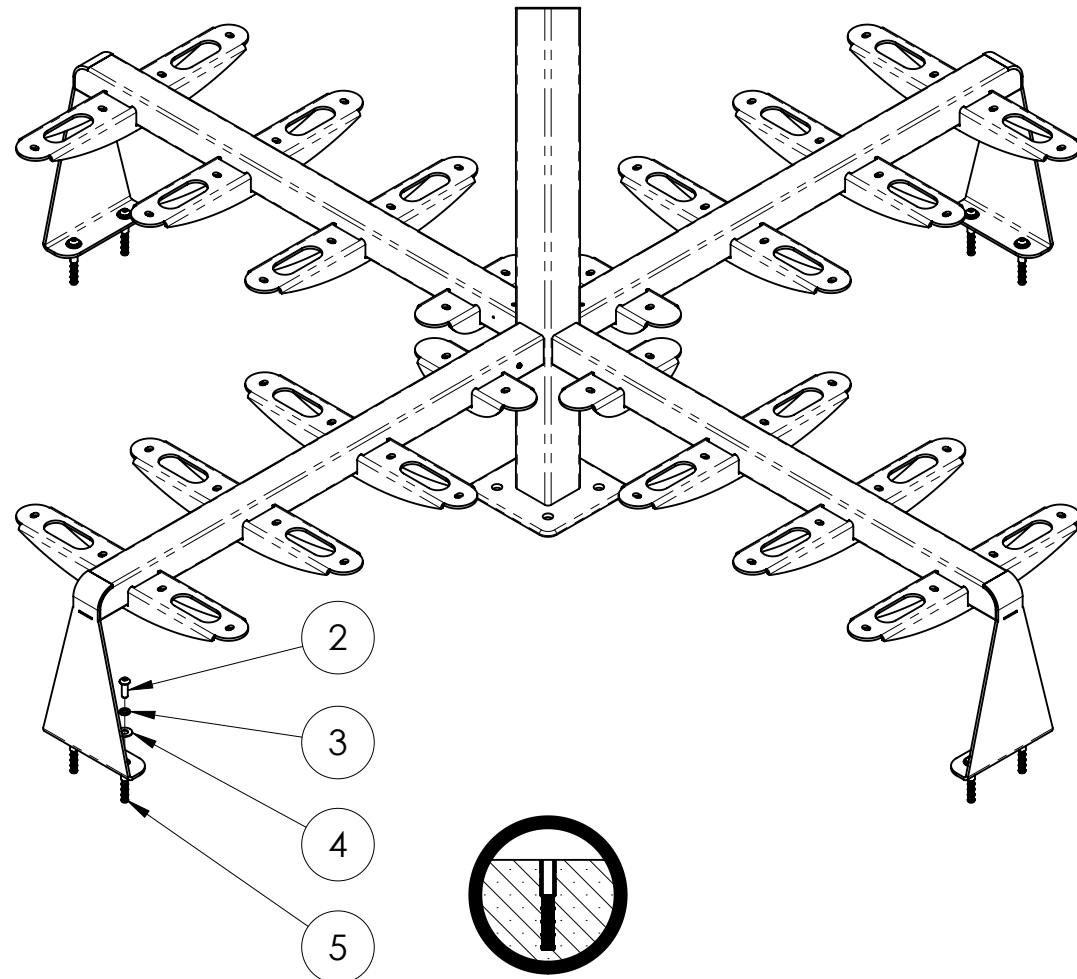
## BENCH FLAT SEATING ASSEMBLY DETAIL

ITEM NO.	QTY.	ITEM NUMBER	DESCRIPTION
1	4	134260	ABRIO_BENCH_FLAT SEATING FRAME_PAINTING
2	16	134671	BUTTON SOCKET CAP SCREW 1/2"-13 X 1 1/2" FULL THREAD ZINC PLATED
3	16	103394	SPLIT LOCK WASHER 1/2"
4	16	103867	FLAT WASHER 1/2" X 1 1/4"OD GP SMALL OD
5	16	134450	ADHESIVE-GRIP CONCRETE ANCHOR, 1/2"-13 FNPT, ZINC PLATED STEEL
6	8	103858	FLAT WASHER 3/8" X 7/8"OD GP SMALL OD
7	8	103390	SPLIT LOCK WASHER 3/8"
8	8	103266	HEX NUT 3/8"-16
9	4	136373	HEX HEAD TAPPING SCREW #10-16 X 3/4" FULL THREAD STAINLESS STEEL 410
10	4	134273	ABRIO_BENCH_LEFT SEATING TOP_ASSEMBLY
11	4	134280	ABRIO_BENCH_RIGHT SEATING TOP_ASSEMBLY
12	56	103860	FLAT WASHER 3/8 X 1"OD GP LARGE OD
13	56	103390	SPLIT LOCK WASHER 3/8"
14	56	100600	SECURITY BUTTON CAP SCREW 3/8"-16 X 7/8"

**NOTES:**

USE LEG'S HOLES TO POSITIONATE AND DRILL THE ANCHOR'S HOLE;  
 PROTECT LEG WITH MASKING TAPE DURING DRILLING AND EPOXY;  
 HAND TIGHT THE BENCH SEATINGS UNTIL ALL BENCH SEATINGS ARE ASSEMBLED

# #2



**MAKE SURE ALL BENCH STRUCTURES ARE LEVELED**

### BENCH TYPICAL ANCHORING DETAIL

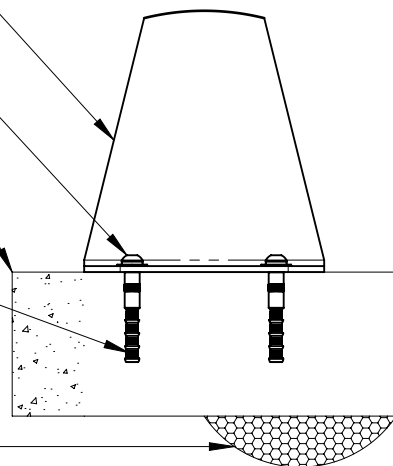
BENCH LEG

ANCHOR BOLT 1/2" [12.7mm]  
LOCK WASHER 1/2" [12.7mm]  
FLAT WASHER 1/2" [12.7mm]

CONCRETE SURFACE.  
VERIFY LOCAL CODES FOR TYPE, THICKNESS  
& REINFORCEMENT REQUIREMENTS

2X 1/2" [12.7mm] THREADED ANCHOR  
DRILL & EPOXY GROUT STUDS  
(DONE BY INSTALLER)

COMPACTED GRANULAR  
(DONE BY INSTALLER)

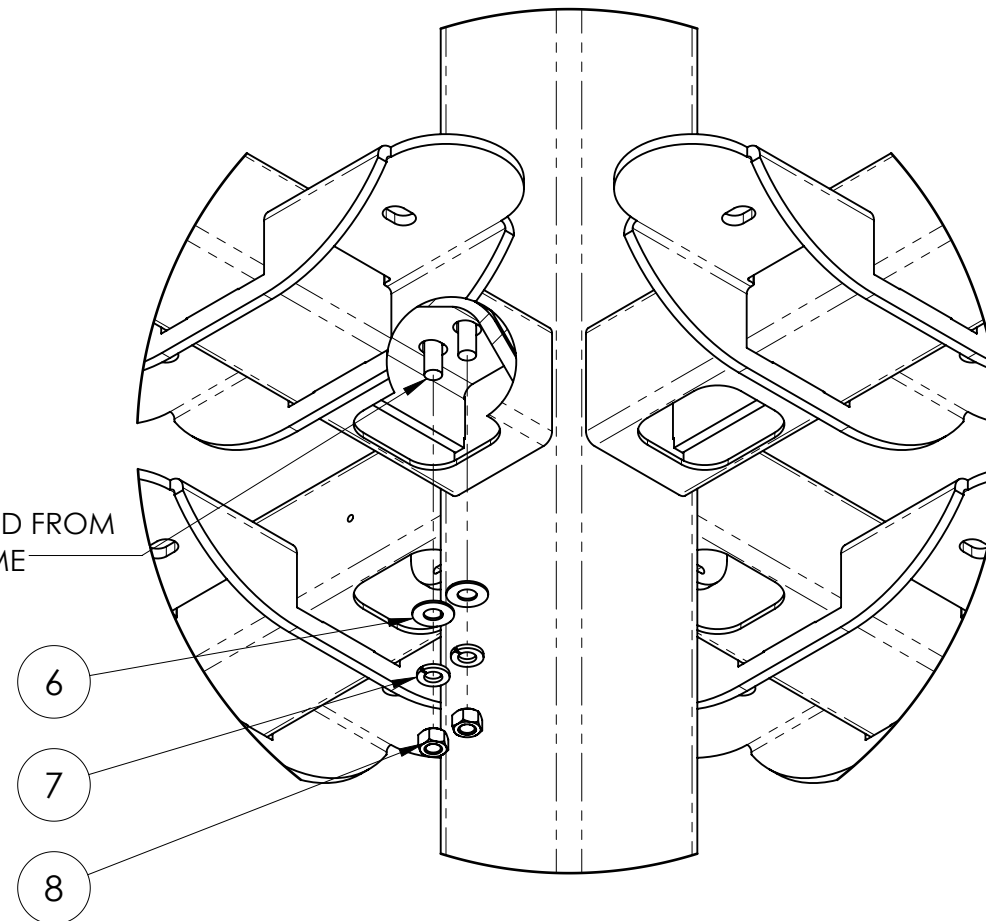


### BENCH TYPICAL ANCHORING STEPS (DONE BY OTHERS):

1. PLACE BENCH ON POST BRACKET.
2. MARK ON CONCRETE FOOTING OR SLAB, THE BENCH LEG ANCHORING HOLES' POSITIONS.
3. REMOVE BENCH.
4. DRILL ON HOLES' MARKINGS WITH 3/4" DRILL BIT SIZE.
5. CLEAN THE DRILLED HOLES.
6. PUT ANCHORS IN HOLES WITH EPOXY (EPOXY ANCHORING ADHESIVE PULL-OUT STRENGTH MUST BE MINIMUM 6400 LBF).
7. WAIT FOR EPOXY'S CURING TIME.
8. ASSEMBLE THE BENCH AS PER VORTEX' ASSEMBLY GUIDE.

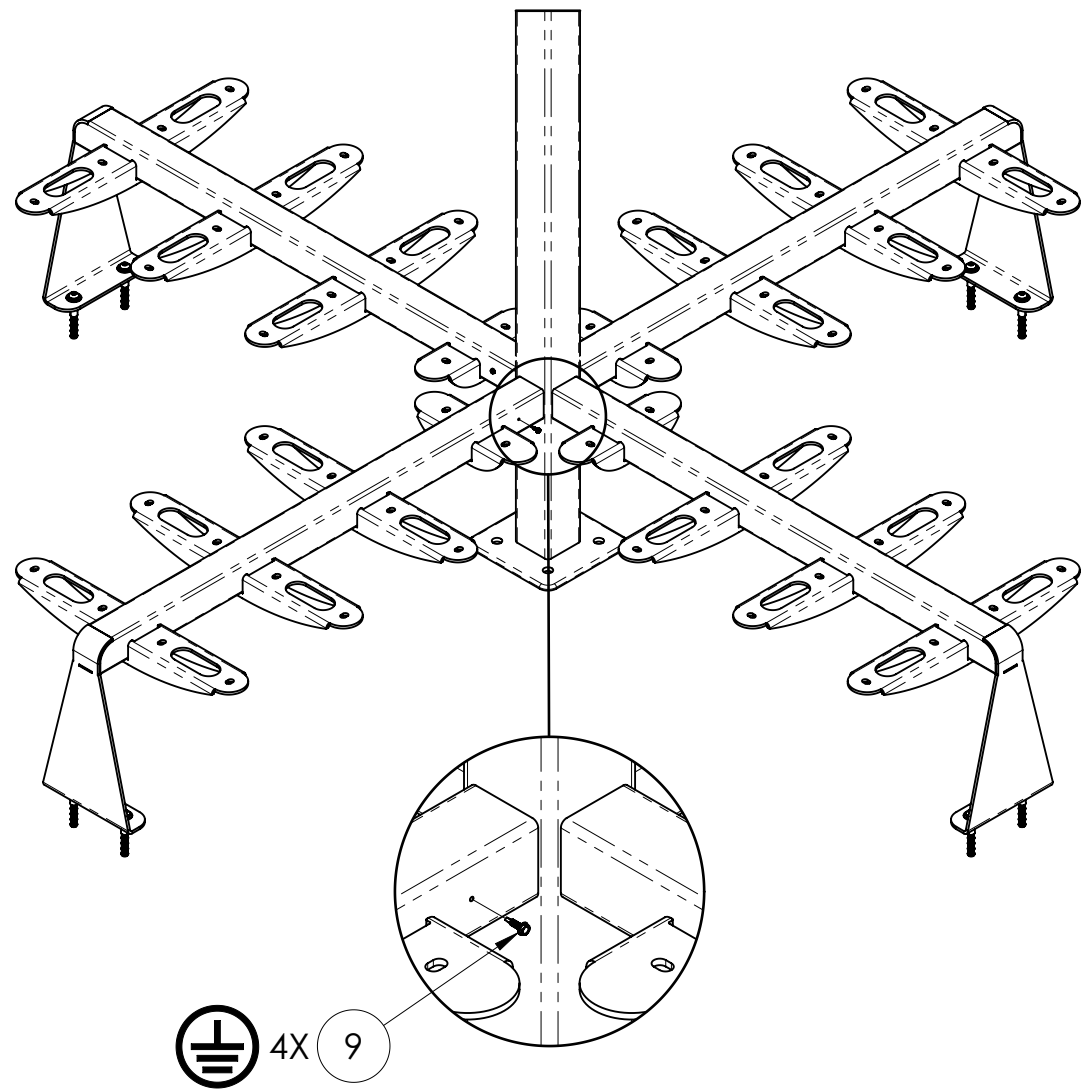
# #3

THREADED ROD FROM SEATING FRAME

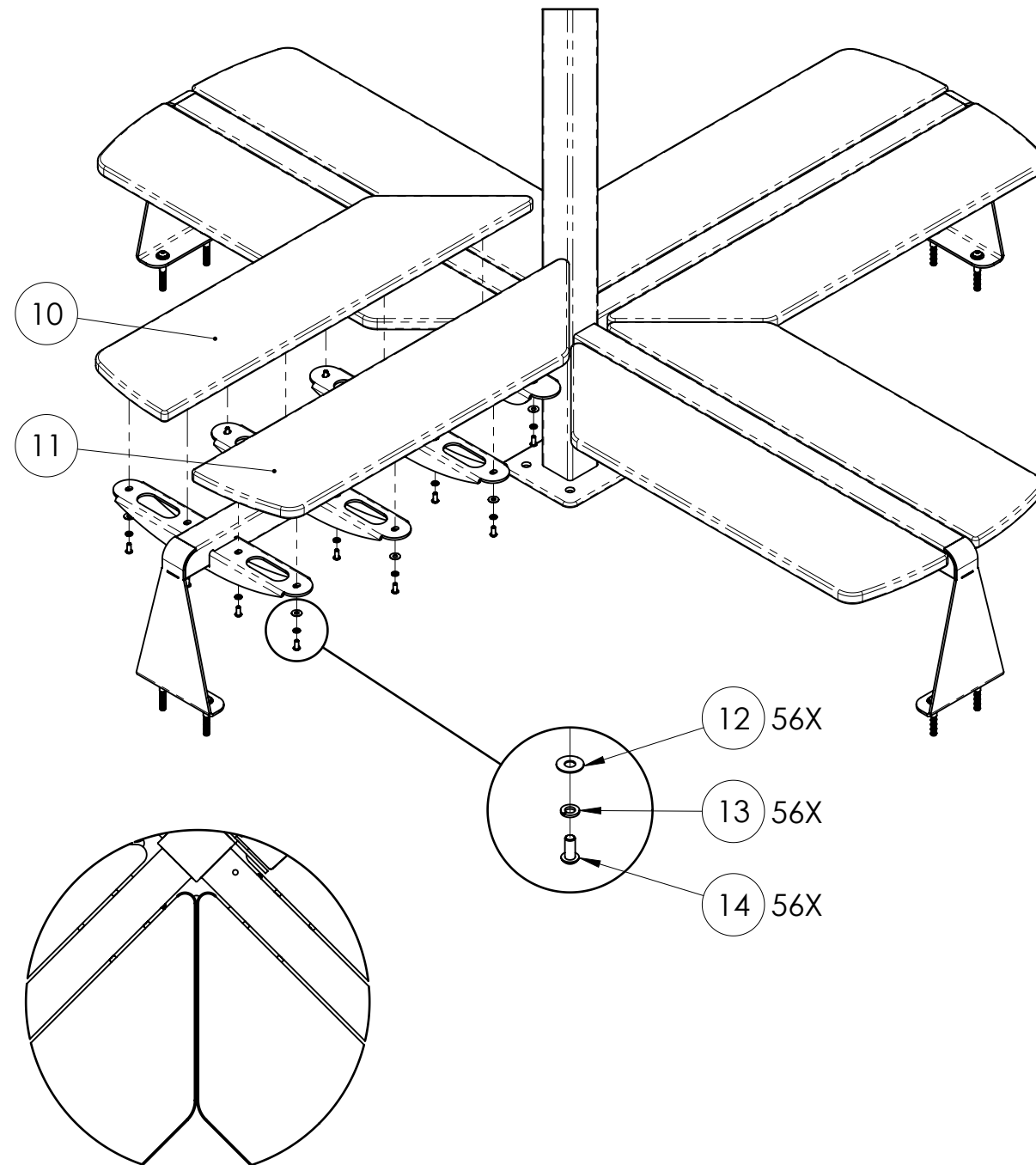


## BENCH FLAT SEATING ASSEMBLY DETAIL

# #4



# #5



MAXIMUM OF 0.25in OF GAP  
BETWEEN EACH SEATINGS

## BENCH FLAT SEATING ASSEMBLY DETAIL