

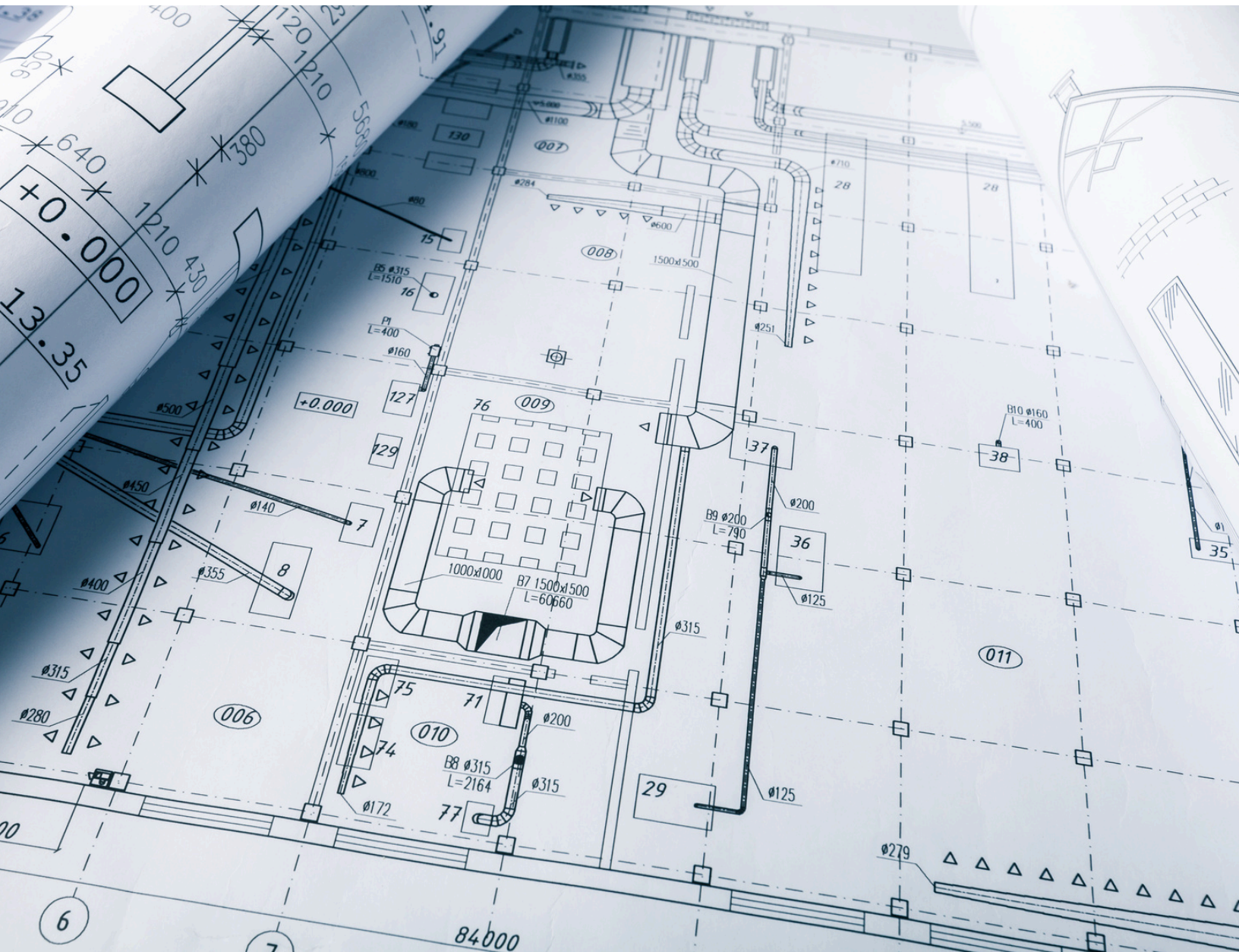


QUEBEC  
ENGINEERING GAMES<sup>2025</sup>

V1.2 - September 2024

# Construction Booklet

United for the Games | 34th Engineering Games  
From January 3 to 7, 2025 | École de technologie supérieure



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# 1 Introduction

This document aims to present to the teams the various elements necessary to create a course similar to the one that will be used during the public demonstration.

## Equipment used for the course

Plywood 3/8"	4	<a href="#">3/8 inch 4 ftx8 ft Select Spruce Plywood 1000436139   The Home Depot Canada</a>
2"x2"x8'	11	<a href="#">2x2x8 Spruce Pine Framing Lumber 1000173732   The Home Depot Canada</a>
Dowel 1/4 In. x 48 In	5	<a href="#">Alexandria Moulding Hardwood Dowel 1/4 In. x 48 In. Blue   The Home Depot Canada</a>
L Braket 1in	12	<a href="#">Everbilt 3/4 Inch Zinc Furniture Brace (4-Pack)   The Home Depot Canada</a>
Wood screws 1 1/2" (100x)	1	<a href="#">Paulin #8 x 1-1/2-in Flat Head Square Drive Steel Wood Screws, Zinc-Plated, 100pcs   The Home Depot Canada</a>
Wood screws 3/4" (100x)	1	<a href="#">Paulin #8 x 3/4-in Flat Head Square Drive Steel Wood Screws, Zinc-Plated, 100pcs   The Home Depot Canada</a>
Wood glue	1	<a href="#">LePage Express Wood Glue Adhesive, Quick Dry, Interior, Dries Translucent, 400ml   The Home Depot Canada</a>
Sand	3	<a href="#">S. Boudrias Inc. All Purpose Sand 30KG   The Home Depot Canada</a>
Clamping latch	1	<a href="#">Lot de 4 loquets de serrage   Amazon</a>

## Cutting list

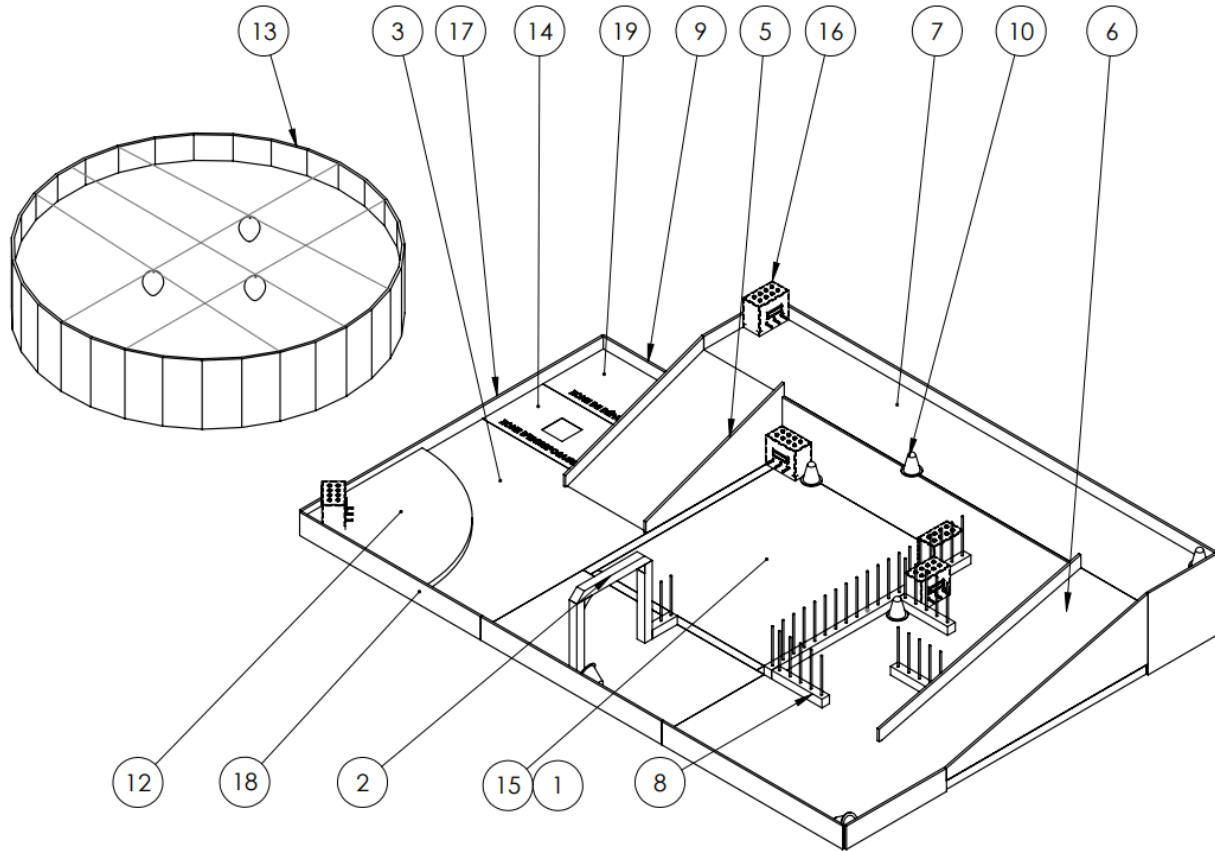
The cuts required for the panels:

36x40 x1 \ 36x20 x1 \ 36x60 x2 \ 28.88x15.63 x1 \ 27.5x12.13 x2 \ 40.11x12.13 x2 \ 41.34x13 x1 \ 88x14 x1 \ 58.63x10 x1 \ 88x13.63 x1 \ 14x14 x2 \ 60x4 x1 \ 36x4 x3 \ 19.9x4 x2

The cuts required for 2x2:

33 x7 \ 40 x4 \ 5 x5 \ 1.5 x2 \ 13.5 x2 \ 15 x1 \ 20 x2 \ 60 x2 \ 9.47 x2 \ 9.48 x2 \ 10.63 x3 \ 9.87 x 6 \ 88 x 2 \ 10 x 3 \ 39.63 x 1

## 2 Course elements

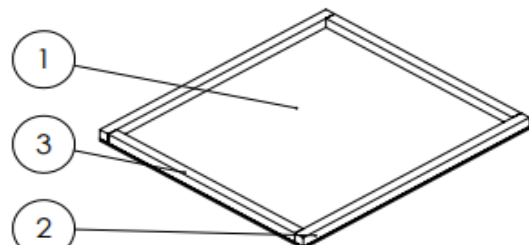


No.	TERRAIN ELEMENT	QTE
1	STRUCTURE INONDÉ / FLOODED STRUCTURE	1
2	STRUCTURE TUNNEL / TUNNEL STRUCTURE	1
3	PLATEFORME / PLATFORM	2
5	RAMPE 20DEG / 20DEG RAMP	1
6	RAMPE 14DEG / 14DEG RAMP	1
7	STRUCTURE PONT / BRIDGE STRUCTURE	1
8	CENTRE-VILLE / DOWNTOWN	1
9	BORDURE COURTE / SHORT EDGE	2
10	CONE	6
12	ZONE DE RÉGÉNÉRATION / REGENERATION ZONE	1
13	ÉTANG / POND	1
14	ZONE D'ENTREPOSAGE / STORAGE AREA	1
15	SABLE / SAND	1
16	STATION	5
17	BORDURE LONGUE / LONG EDGE	1
18	BORDURE MOYENNE / MEDIUM EDGE	3
19	ZONE DE DÉPART / STARTING AREA	1

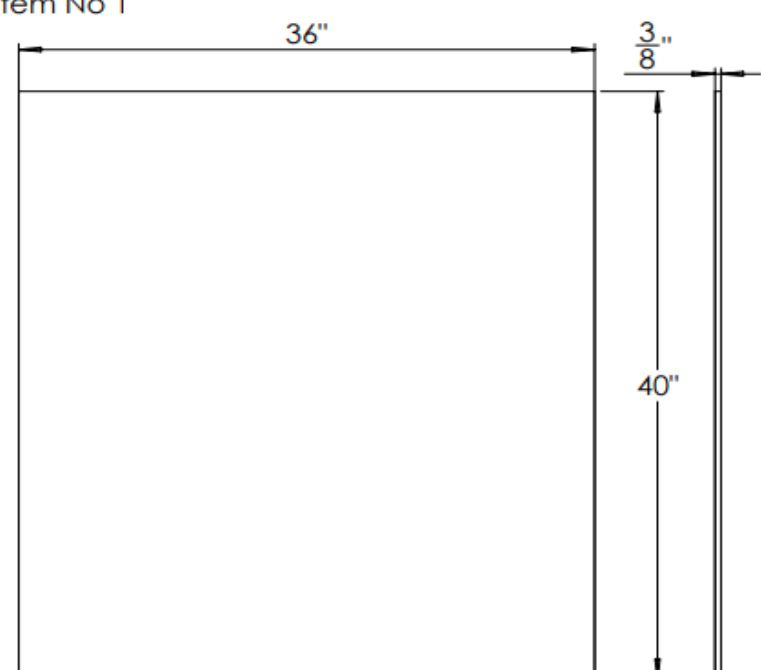
# 3 Construction of the course elements

## 3.1 Flooded structure

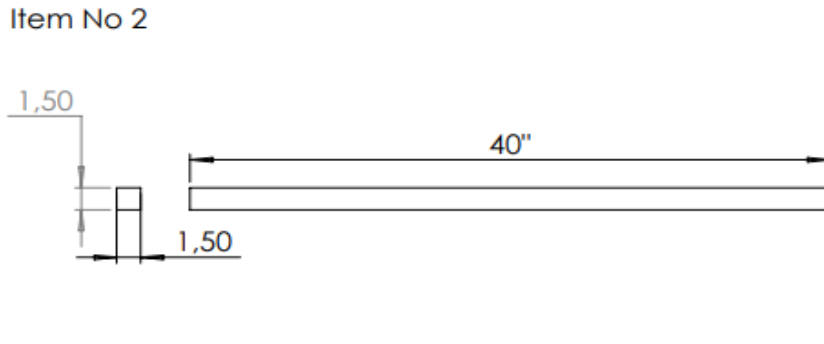
No. Item	DESCRIPTION	QTE
1	PLANCHE DU FOND/ BOTTOM BOARD	1
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 40	2
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 33	2



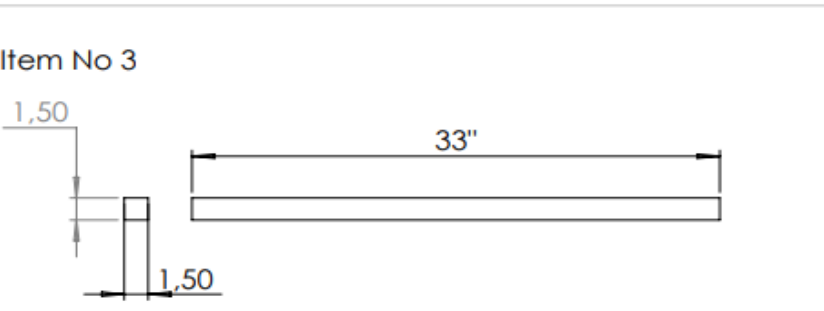
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**Item No 2**



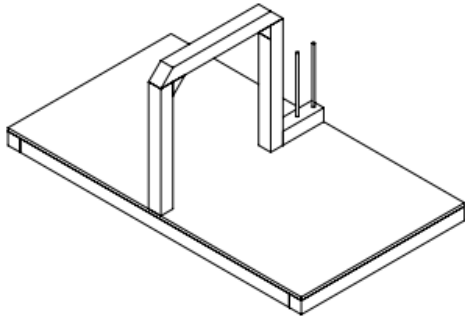
**Item No 3**

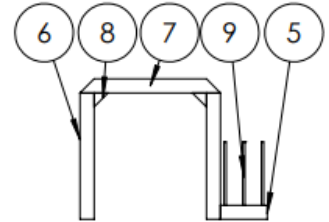


<b>MACHINE</b>	<b>MATÉRIAU:</b> FINITION:	CONÇU PAR: Comité organisateur de la machine / machine organizing committee 2024-08-25 DESSINÉ PAR: Mathurin A. 2024-08-25	<b>TITRE</b> STRUCTURE INONDÉ - FLOODED STRUCTURE
 <b>JEUX DE GÉNIE</b> 2025	TOLÉRANCES LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	UNITÉS po    X    X.X    X.XX    X.XXX    Ang. -    -    -    -    -	<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINNE
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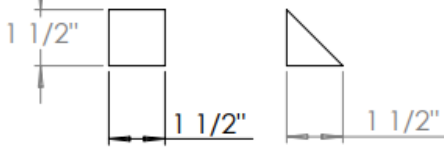
### 3.2 Tunnel structure

No. Item	DESCRIPTION	QTE
1	PLANCHE DU HAUT / TOP BOARD 20 X 36	1
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 33	2
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 20	2
5	SUPPORT DE MUR / WALL SUPPORT	1
6	CÔTÉ DE L'ARCHE / SIDE OF THE ARCH 2 X 2 X 13 1/2	2
7	HAUT DE L'ARCHE / TOP OF THE ARCH	1
8	ÉQUERRE DE L'ARCHE / ARCH BRACKET	2
9	MUR / WALL	3

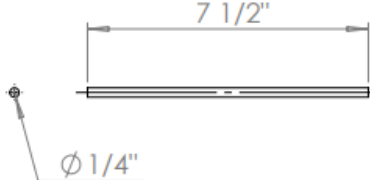




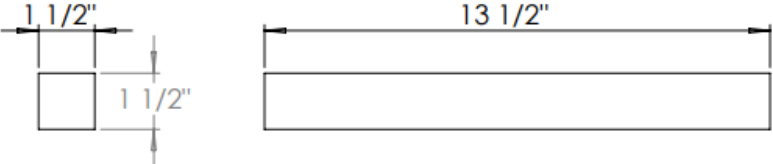
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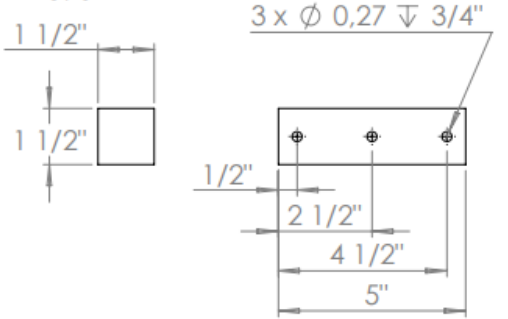
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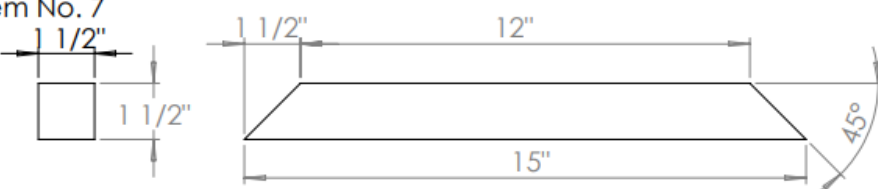
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Item No. 5

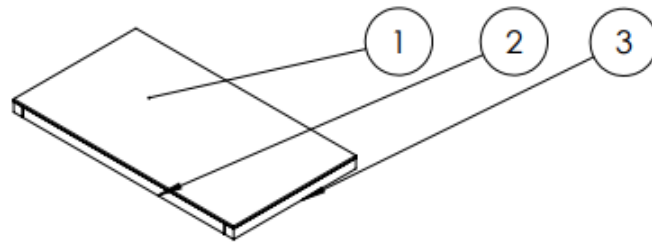
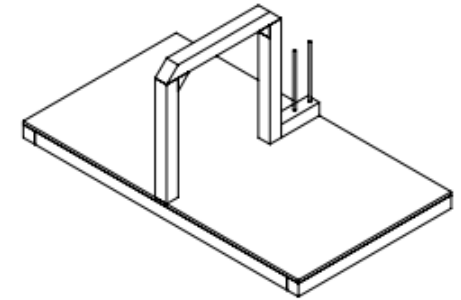


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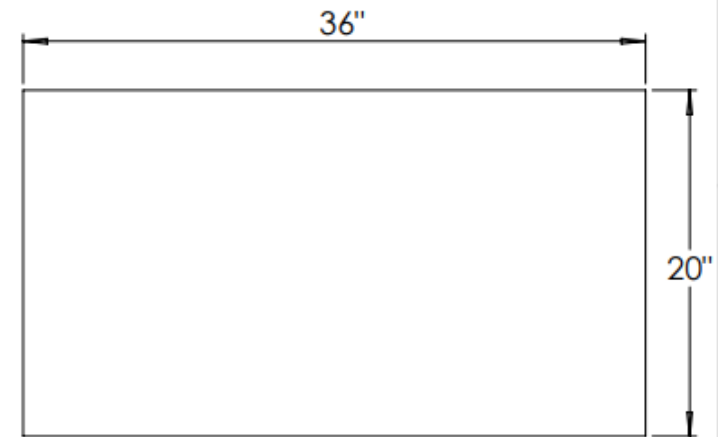


<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	<b>CONÇU PAR:</b> Comité organisateur de la machine / machine organizing committee <b>DESSINÉ PAR:</b> Mathurin A.	2024-08-25 2024-08-25	<b>TITRE</b> STRUCTURE TUNNEL - TUNNEL STRUCTURE												
 <b>JEUX DE GÉNIE</b>	<b>TOLÉRANCES</b> LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	<table border="1" style="font-size: small;"> <tr> <th>UNITÉS</th> <th>X</th> <th>X.X</th> <th>X.XX</th> <th>X.XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	UNITÉS	X	X.X	X.XX	X.XXX	Ang.	po						<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE	A ÉCHELLE: 1:10 NE PAS MESURER SUR LE DESSIN PAGE: 1 DE 2
UNITÉS	X	X.X	X.XX	X.XXX	Ang.											
po																

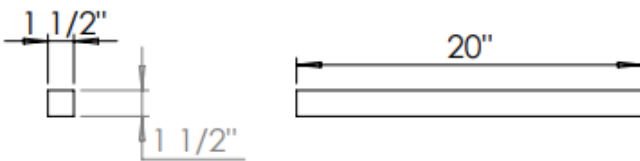
No. Item	DESCRIPTION	QTE
1	PLANCHE DU HAUT / TOP BOARD 20 X 36	1
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 33	2
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 20	2
5	SUPPORT DE MUR / WALL SUPPORT	1
6	CÔTÉ DE L'ARCHE / SIDE OF THE ARCH 2 X 2 X 13 1/2	2
7	HAUT DE L'ARCHE / TOP OF THE ARCH	1
8	ÉQUERRE DE L'ARCHE / ARCH BRACKET	2
9	MUR / WALL	3



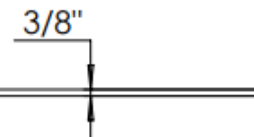
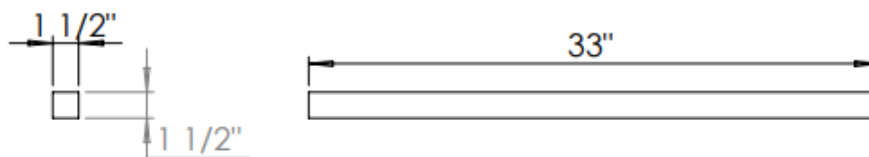
Item No. 1



Item No. 3



Item No. 2



<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	CONÇU PAR: Comité organisateur de la machine / machine organizing committee	2024-08-25	<b>TITRE</b> STRUCTURE TUNNEL - TUNNEL STRUCTURE		
		DESSINÉ PAR: Mathurin A.	2024-08-25			
 <b>JEUX DE GÉNIE</b> 2028	TOLÉRANCES LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	UNITÉS po	X X.X X.XX X.XXX Ang.	NOTE: Dessin dans un cadre pédagogique	FORMAT A	DESSIN NUMÉRO
		PROJECTION AMÉRICAIN		ÉCHELLE: 1:10	NE PAS MESURER SUR LE DESSIN	PAGE: 2 DE 2

### 3.3 Platform

No. Item	DESCRIPTION	QTE
1	PLANCHE DU HAUT / TOP BOARD 36 X 60	1
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 60	2
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 33	3

**Item No. 3**

**Item No. 2**

**Item No. 1**

Position des membrures /Structural members position

<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	<b>CONÇU PAR:</b> Comité organisateur de la machine / machine organizing committee 2024-08-25 <b>DESSINÉ PAR:</b> Mathurin A. 2024-08-25	<b>TITRE</b> PLATEFORME / PLATFORM												
<b>JEUX DE GÉNIE 2028</b>	<b>TOLÉRANCES</b> LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	<table border="1" style="font-size: small;"> <tr> <th>UNITÉS</th> <th>X</th> <th>XX</th> <th>X.XX</th> <th>X.XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> </tr> </table>	UNITÉS	X	XX	X.XX	X.XXX	Ang.	po					-	<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE
UNITÉS	X	XX	X.XX	X.XXX	Ang.										
po					-										
		ÉCHELLE: 1:10 NE PAS MESURER SUR LE DESSIN	PAGE: 1 DE 1												



### 3.4 20DEG Ramp

No. Item	DESCRIPTION	QTE	
1	SUPPORT LONG RAMPE 20 DEG / LONG 20 DEG RAMP SUPPORT	2	
2	PETIT SUPPORT RAMPE 20 DEG / SMALL 20-DEGREE RAMP SUPPORT	2	
3	PLANCHE RAMPE 20 DEG / 20 DEG RAMP BOARD	1	
4	BORDURE RAMPE 20 DEG / 20 DEGREE RAMP EDGE	2	

**Item No. 1**

**Item No. 4**

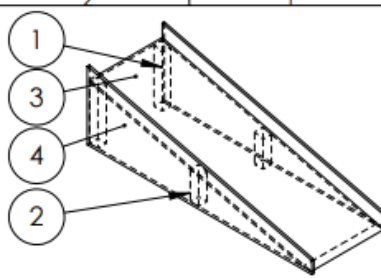
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**Item No. 3**

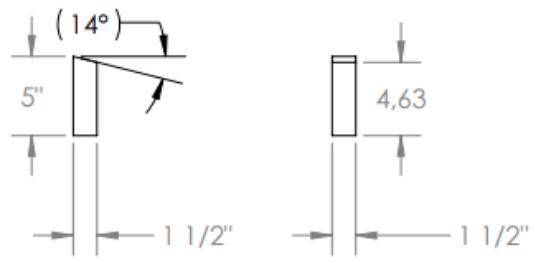
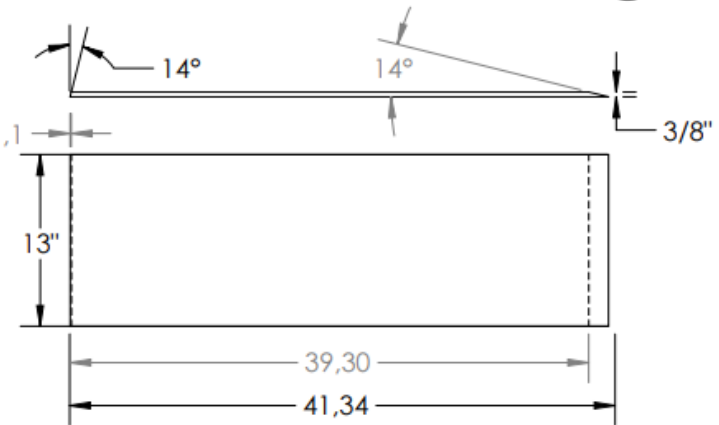
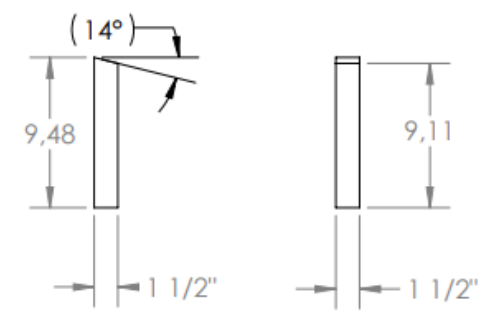
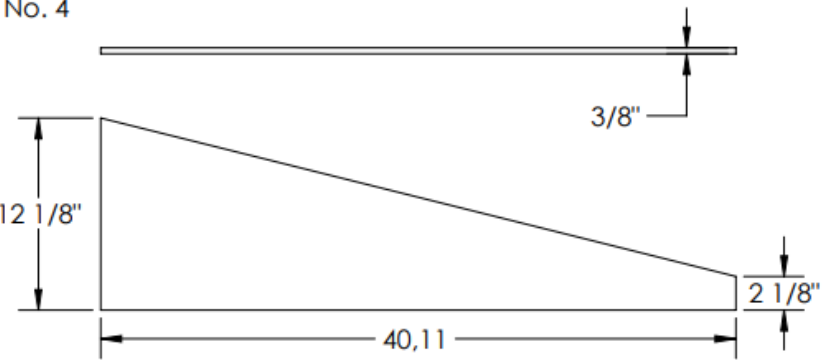
  

<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	<small>CONÇU PAR:</small> Comité organisateur de la machine / machine organizing committee 2024-08-25 <small>DESSINÉ PAR:</small> Mathurin A. 2024-08-25	<b>TITRE</b> RAMPE 20DEG / 20DEG RAMP
<b>JEUX DE GÉNIE 2028</b>	<small>TOLÉRANCES</small> LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	<small>NOTE:</small> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE	<small>DESSIN NUMÉRO</small> A <small>ÉCHELLE:</small> 1:10 <small>NE PAS MESURER SUR LE DESSIN</small> <small>PAGE:</small> 1 DE 1


### 3.5 14DEG Ramp

No. Item	DESCRIPTION	QTE	
1	SUPPORT LONG RAMPE 14 DEG / LONG 14 DEG RAMP SUPPORT	2	
2	SUPPORT COURT RAMPE 14 DEG / SHORTH 14 DEG RAMP SUPPORT	2	
3	PLANCHE RAMPE 14 DEG/ 14 DEG RAMP BOARD	1	
4	BORDURE RAMPE 14 DEG / 14 DEGREE RAMP EDGE	2	

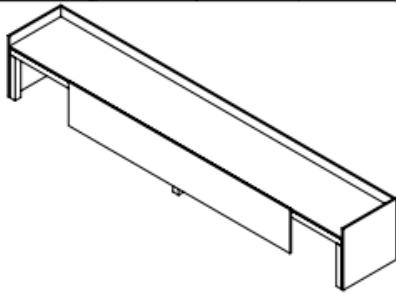
  

<p><b>Item No. 2</b></p> 	<p><b>Item No. 3</b></p> 
<p><b>Item No. 1</b></p> 	<p><b>Item No. 4</b></p> 

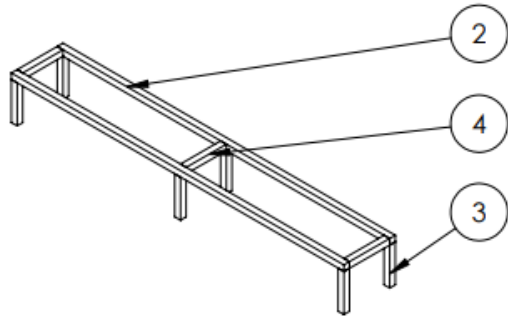
<b>MACHINE</b>	<p><b>MATÉRIAU:</b></p> <p><b>FINITION:</b></p>	<p>CONÇU PAR: Comité organisateur de la machine / machine organizing committee 2024-08-25</p> <p>DESSINÉ PAR: Malhurin A. 2024-08-25</p>	<p><b>TITRE</b></p> <p><b>RAMPE 14DEG / 14DEG RAMP</b></p>												
 <p><b>JEUX DE GÉNIE 2025</b></p>		<p><b>NOTE:</b></p> <p>Desin dans un cadre pédagogique</p>	<p>PROJECTION AMÉRICAINE</p>												
<p><b>TOLÉRANCES</b></p> <p>LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)</p>		<table border="1" style="font-size: small;"> <tr> <th>UNITÉS</th> <th>X</th> <th>X.X</th> <th>X.XX</th> <th>X.XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> </tr> </table>	UNITÉS	X	X.X	X.XX	X.XXX	Ang.	po					-	<p>ÉCHELLE: 1:10</p> <p>NE PAS MESURER SUR LE DESSIN</p>
UNITÉS	X	X.X	X.XX	X.XXX	Ang.										
po					-										

### 3.6 Bridge structure

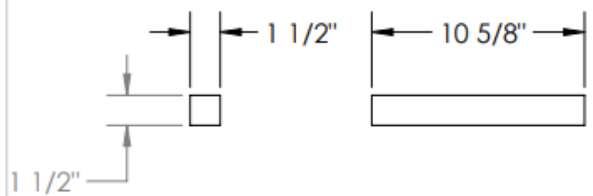
No. Item	DESCRIPTION	QTE	
1	PANNEAU DU DESSUS / TOP PANEL	1	
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 88	2	
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 9.87	6	
4	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 10 5/8	3	
5	PANNEAU DE CÔTÉ / SIDE PANEL	2	
6	PANNEAU AVANT / FRONT PANEL	1	
7	PANNEAU ARRIÈRE / REAR PANEL	1	

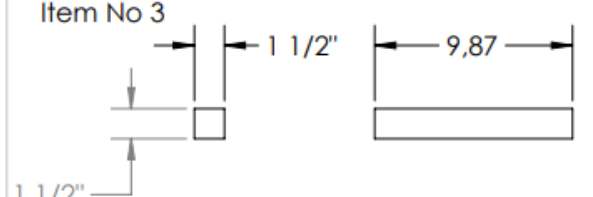
Position des membrures /Structural members position



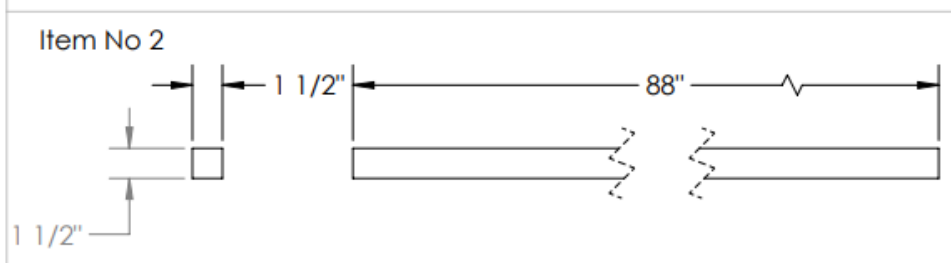
Item No 4




Item No 3

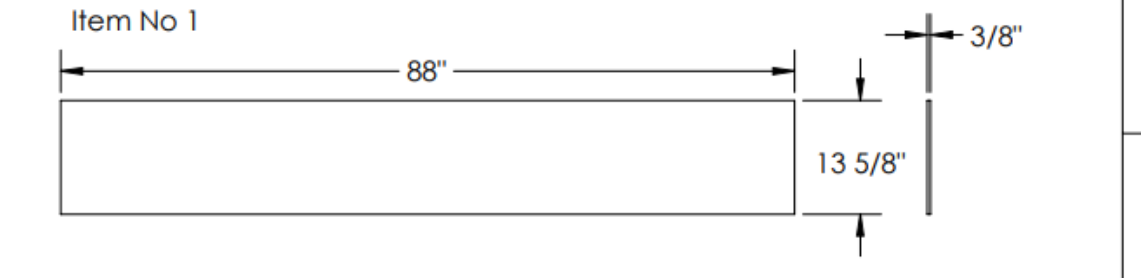
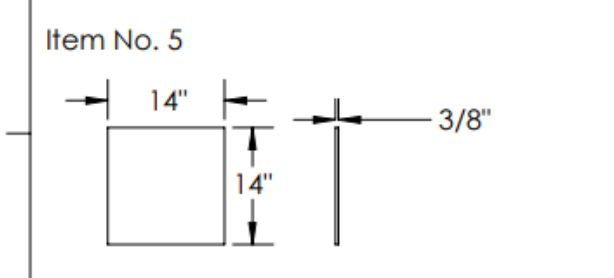
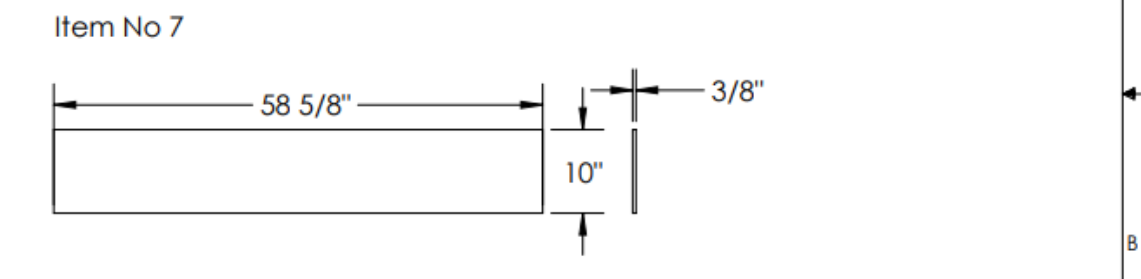
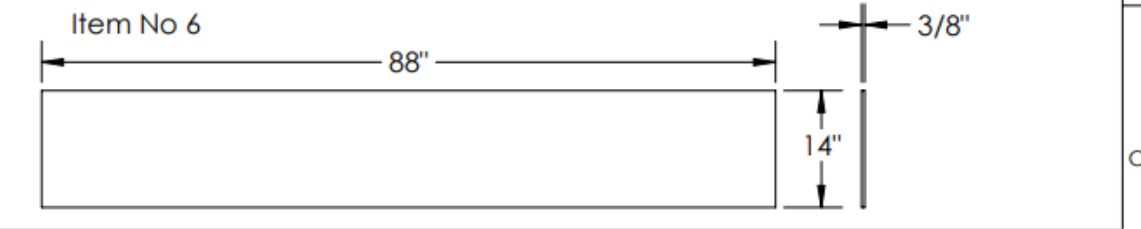
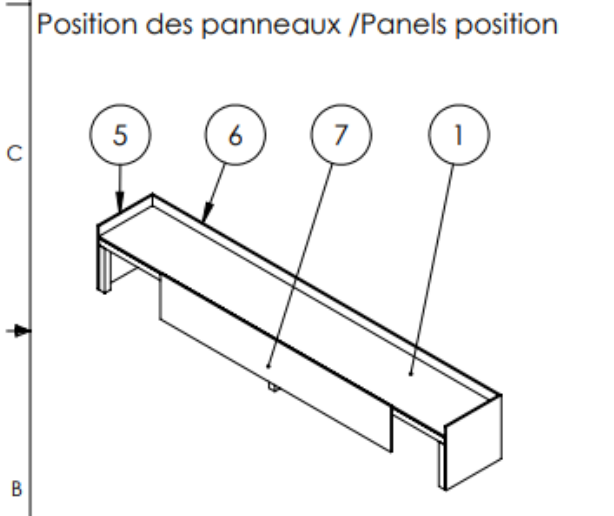
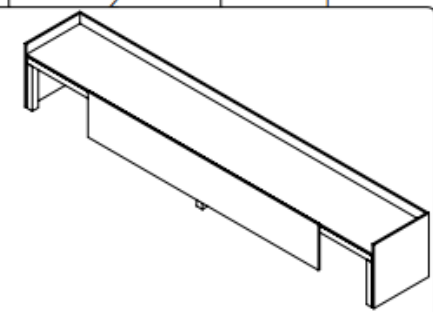


Item No 2



<h2>MACHINE</h2>	<p><b>MATÉRIAU:</b></p> <p><b>FINITION:</b></p>	<p>CONÇU PAR: Comité organisateur de la machine / machine organizing committee 2024-08-25</p> <p>DESSINÉ PAR: Mathurin A. 2024-08-25</p>	<p><b>TITRE</b></p> <p><b>STRUCTURE PONT / BRIDGE STRUCTURE</b></p>
 <p><b>JEUX DE GÉNIE</b></p>	<p><b>TOLÉRANCES</b></p> <p>LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)</p>	<p><b>NOTE:</b></p> <p>Desin dans un cadre pédagogique</p> <p>PROJECTION AMÉRICAIN</p>	<p>FORMAT: <b>A</b></p> <p>DESSIN NUMÉRO</p> <p>ÉCHELLE: 1:10</p> <p>NE PAS MESURER SUR LE DESSIN</p> <p>PAGE: 1 DE 2</p>

No. Item	DESCRIPTION	QTE
1	PANNEAU DU DESSUS / TOP PANEL	1
2	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 88	2
3	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 9.87	6
4	MEMBRURE/ STRUCTURAL MEMBER 2 X 2 X 10 5/8	3
5	PANNEAU DE CÔTÉ / SIDE PANEL	2
6	PANNEAU AVANT / FRONT PANEL	1
7	PANNEAU ARRIÈRE / REAR PANEL	1



<b>MACHINE</b> 	<b>MATÉRIAU:</b> <b>FINITION:</b>	<b>CONÇU PAR:</b> Comité organisateur de la machine / machine organizing committee	2024-08-25	<b>TITRE</b> STRUCTURE PONT / BRIDGE STRUCTURE		
		<b>DESSINÉ PAR:</b> Mathurin A.	2024-08-25			
<b>TOLÉRANCES</b> LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)		<b>UNITÉS</b> X X.X X.XX X.XXX Ang.	po	<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE	<b>FORMAT</b> A	<b>DESSIN NUMÉRO</b>
				ÉCHELLE: 1:10	NE PAS MESURER SUR LE DESSIN	PAGE: 2 DE 2

### 3.7 Downtown

No. Item	DESCRIPTION	QTE	
1	SUPPORT DE MUR LONG / LONG WALL SUPPORT	1	
2	MUR / WALL	34	
3	SUPPORT DE MUR COURT / WALL SUPPORT SHORT	3	

Position des murs du labyrinthe sur le terrain  
Maze wall positions on the field

**Item No. 3**

**Item No. 1**

**Item No. 2**

<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	<small>CONÇU PAR:</small> Comité organisateur de la machine / machine organizing committee <small>DESSINÉ PAR:</small> Mathurin A.	2024-08-25 2024-08-25	<b>TITRE</b> CENTRE-VILLE / DOWNTOWN												
<b>JEUX DE GÉNIE 2020</b>	<small>TOLÉRANCES</small> <small>LES DIMENSIONS SONT EN : po</small> <small>(sauf si contre-indiqué)</small>	<table border="1" style="font-size: 8px;"> <tr> <th>UNITÉS</th> <th>X</th> <th>XX</th> <th>XXX</th> <th>X,XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	UNITÉS	X	XX	XXX	X,XXX	Ang.	po						<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE	<small>FORMAT:</small> A <small>DESSIN NUMÉRO</small> A
UNITÉS	X	XX	XXX	X,XXX	Ang.											
po																
		<small>ÉCHELLE:</small> NE PAS MESURER SUR LE DESSIN	PAGE: 1 DE 1													

### 3.8 Edge

No. Item	DESCRIPTION	QTE
1	BORDURE COURTE / SHORT EDGE	2
2	BORDURE LONGUE / LONG EDGE	1
3	BORDURE MOYENNE / MEDIUM EDGE	3

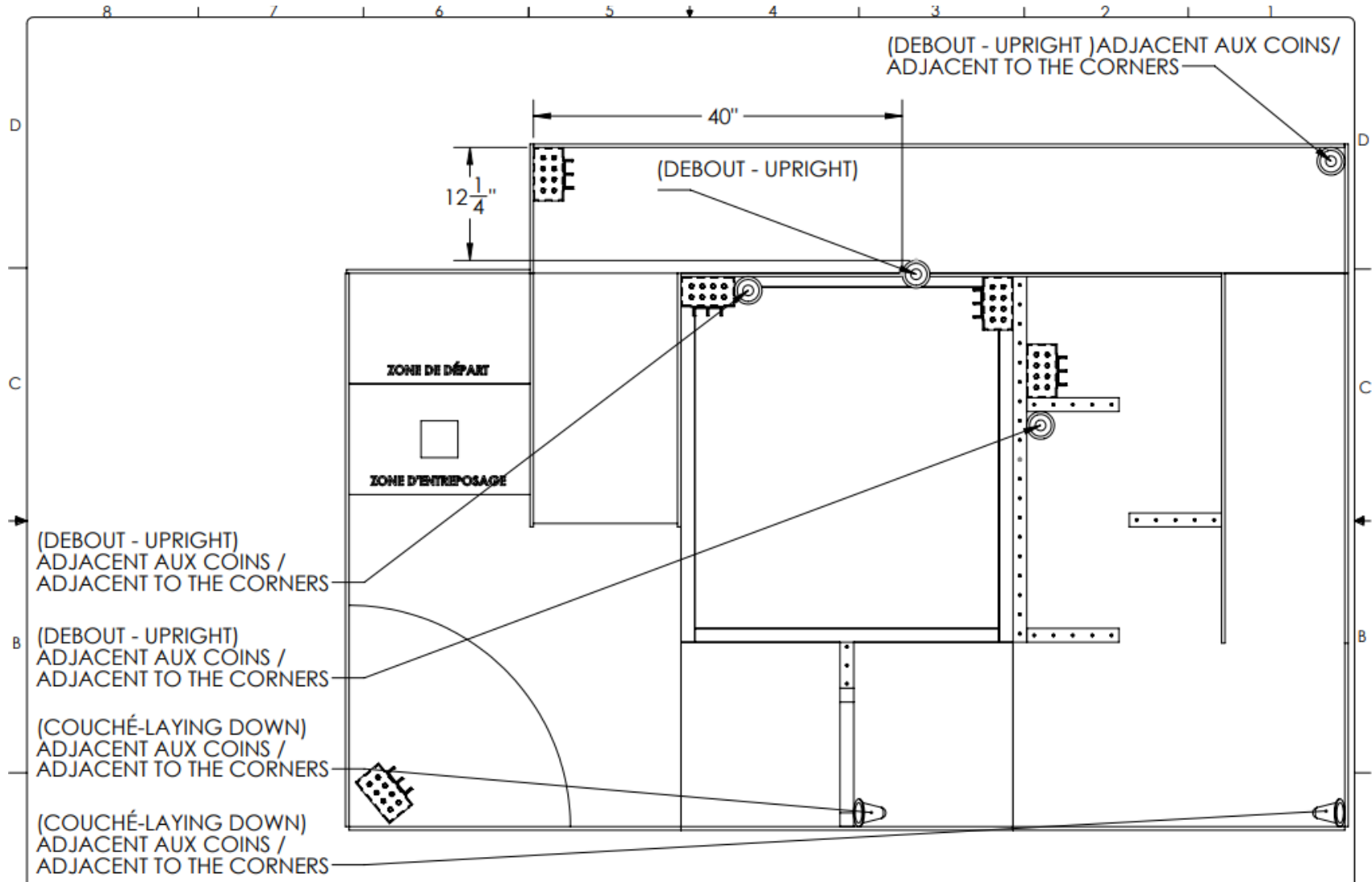
**Item No. 1**

**Item No. 3**

**Item No. 2**

<b>MACHINE</b>	<b>MATÉRIAU:</b> <b>FINITION:</b>	<small>CONÇU PAR:</small> Comité organisateur de la machine / machine organizing committee <small>DESSINÉ PAR:</small> Mathurin A.	2024-08-25 2024-08-25	<b>TITRE</b> BORDURE/ EDGE												
	<small>TOLÉRANCES</small> LES DIMENSIONS SONT EN : po (sauf si contre-indiqué)	<table border="1" style="font-size: 8px;"> <tr> <th>UNITÉS</th> <th>X</th> <th>X.X</th> <th>X.XX</th> <th>X.XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> </tr> </table>	UNITÉS	X	X.X	X.XX	X.XXX	Ang.	po					-	<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE	<small>DESSIN NUMÉRO</small> A
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po					-											
		ÉCHELLE:	NE PAS MESURER SUR LE DESSIN	PAGE: 1 DE 1												

### 3.9 Cone



**MACHINE**

**MATÉRIAU:**  
**FINITION:**

CONÇU PAR: Comité organisateur de la machine / machine organizing committee 2024-08-25  
 DESSINÉ PAR: Mathurin A. 2024-08-25

**TITRE**  
POSITION DES CÔNES /  
CONE POSITIONS



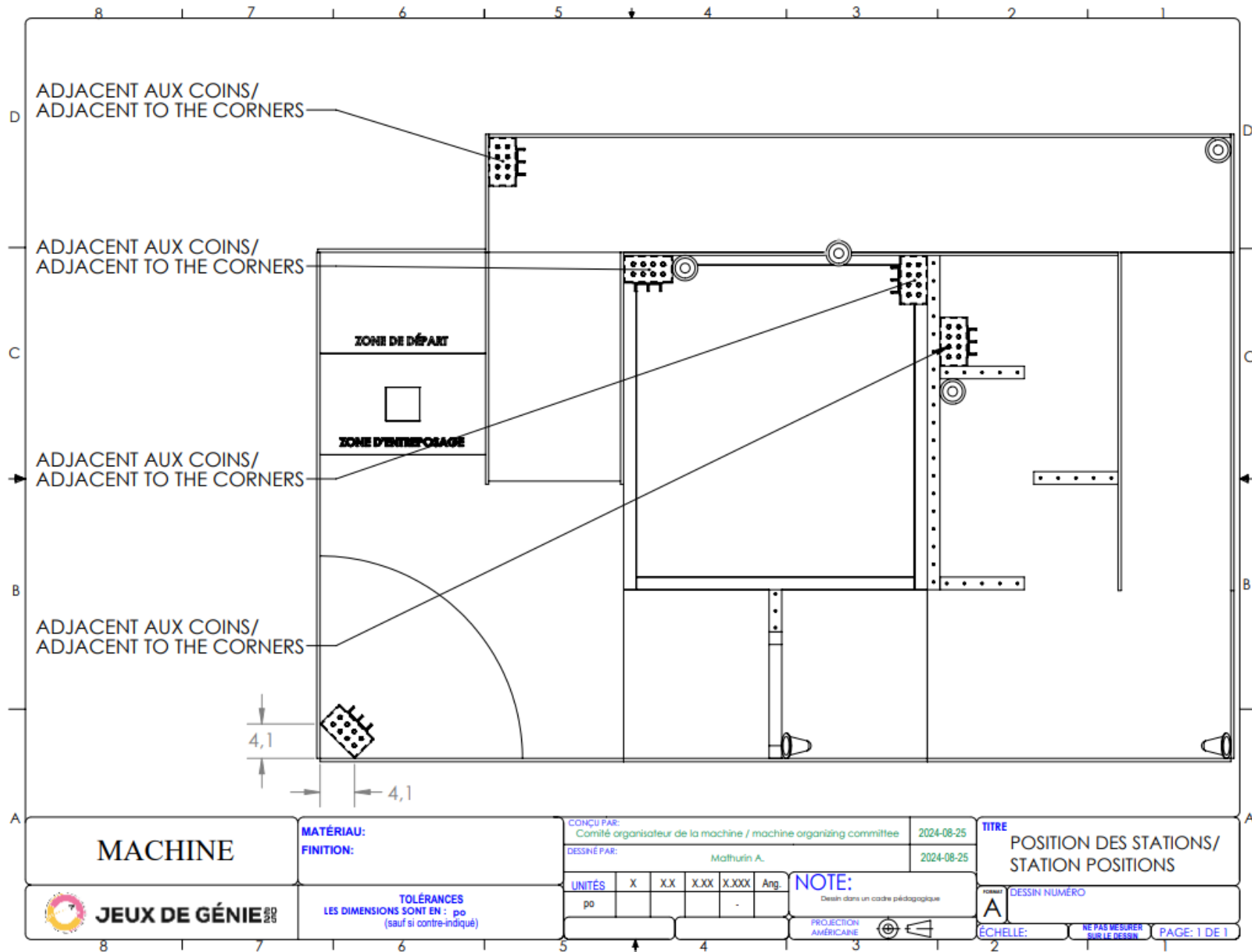
**TOLÉRANCES**  
LES DIMENSIONS SONT EN : po  
(sauf si contre-indiqué)

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**NOTE:**  
Desain dans un cadre pédagogique  
 PROJECTION AMÉRICAINE

FORMAT: **A**  
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 DESSIN NUMÉRO: PAGE: 1 DE 1

### 3.10 Station





### Fixing the stations to the ground:

To secure the stations to the ground, pre-drilled holes have been added to the base of each station. Your kit includes brackets and screws for this purpose. Here are the holes to use for the different stations on the ground:

For the yellow, purple, red, and green stations:

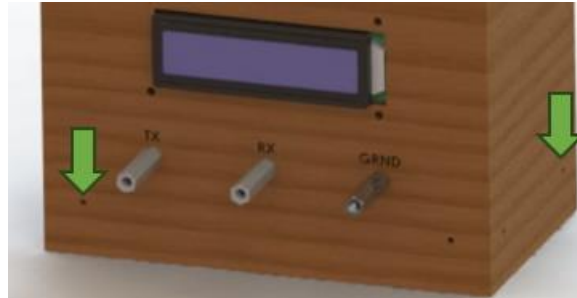


Figure 1 Bracket Positioning for the Yellow, Green, Purple, and Red Stations

For the blue station:

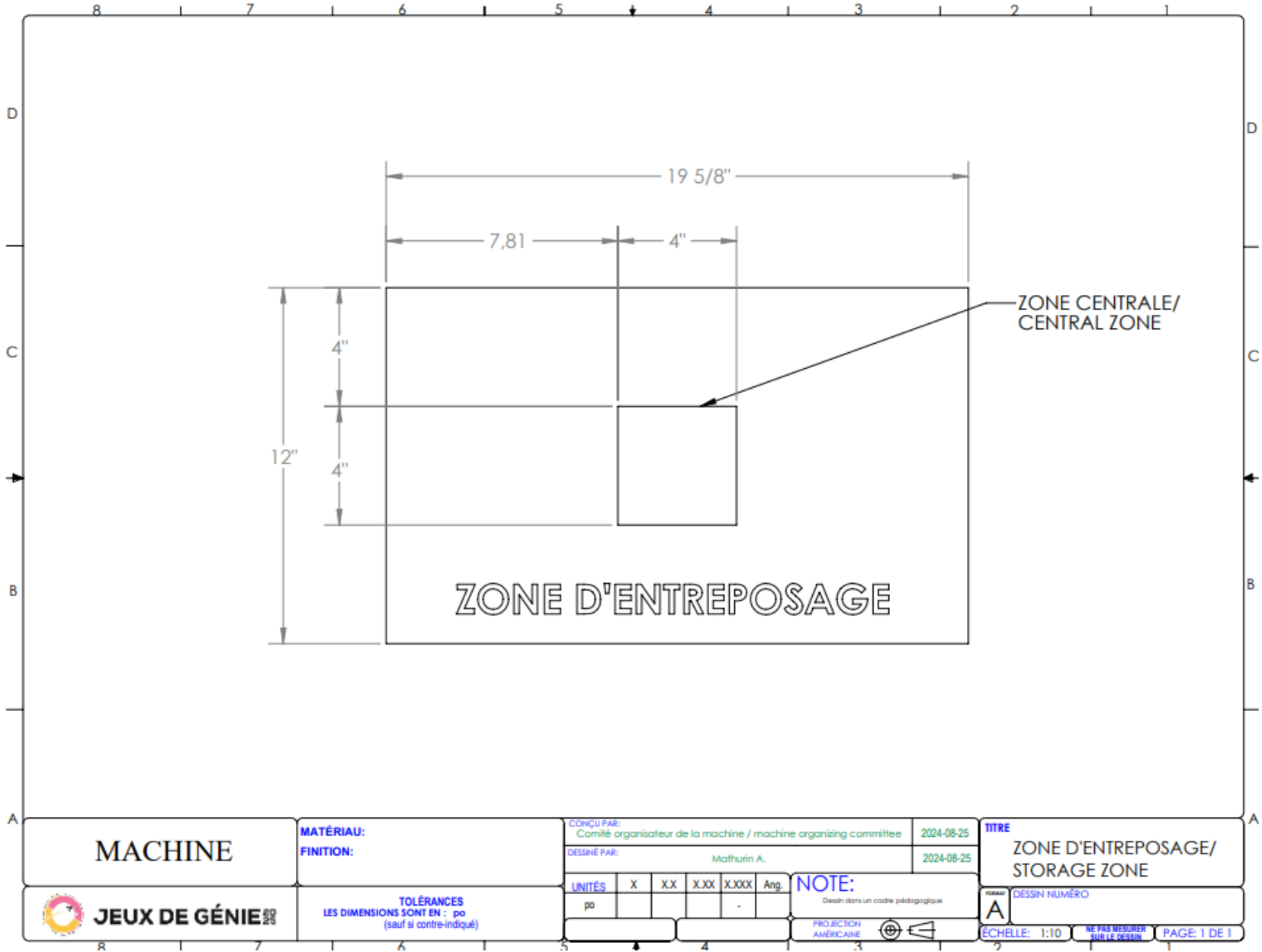


Figure 2 Bracket Positioning for the Blue Station

## 3.11 Regeneration Area

In your kit, you received a mat. On the official field, the mat will be fixed with double-sided tape on all the contours under the mat. Here's the link to the one used on the official field: [Ruban de montage double face Gorilla Tough & Clear, résistant aux intempéries, peut supporter 38 lb, 1 x 150 po | Canadian Tire](#)

3.12 Storage Area



<b>MACHINE</b> 	<b>MATÉRIAU:</b> <b>FINITION:</b>	<small>CONÇU PAR:</small> Comité organisateur de la machine / machine organizing committee <small>2024-08-25</small> <small>DESSINÉ PAR:</small> Mathurin A. <small>2024-08-25</small>	<b>TITRE</b> ZONE D'ENTREPOSAGE/ STORAGE ZONE												
	<small>TOLÉRANCES                  LES DIMENSIONS SONT EN : po                  (sauf si contre-indiqué)</small>	<table border="1"> <tr> <th>UNITÉS</th> <th>X</th> <th>X.X</th> <th>X.XX</th> <th>X.XXX</th> <th>Ang.</th> </tr> <tr> <td>po</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> </tr> </table>	UNITÉS	X	X.X	X.XX	X.XXX	Ang.	po				-		<b>NOTE:</b> Dessin dans un cadre pédagogique PROJECTION AMÉRICAINE
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po				-											

### 3.13 Pond

In your kit, you'll find a pool, balloons and ropes. You'll need to weight the obstacles at the appropriate positions in the pond.

Construction steps:

1. Pool installation: Choose a flat, stable surface on which to install the pool. Make sure there are no sharp objects that could pierce the pool.
2. Dock placement: Identify three consecutive panels inside the pool. These three panels will serve as the dock and as a reference for the placement of obstacles.
3. Obstacle placement:
  - Line 1: At each end of the dock, count 6 consecutive panels and draw a straight line to connect these two points..
  - Line 2: At each end of the dock, count 8 consecutive panels and draw a straight line connecting these two points.
  - Line 3: From one end of the platform, count 12 consecutive panels and draw a straight line to the other end of the platform.
  - Line 4: Repeat from the other end of the dock, counting 12 consecutive panels to draw a straight line to the opposite end.
  - Line 5: From the center of the dock, count 15 consecutive panels and draw a straight line to the center of the dock.

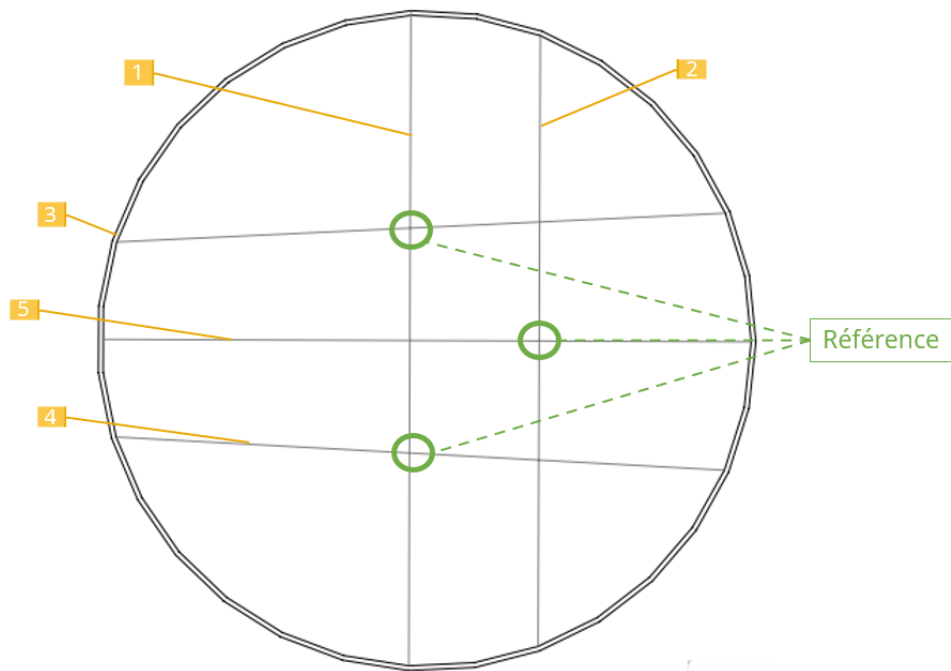


Figure 3 Pond assembly

The intersections of lines 1-3, 1-4 and 2-5 become the reference points for weighing your balloons.

1. Ballast obstacles: Use weights or waterproof adhesive to ballast obstacles at reference points.
2. Balloon attachment: Use about 5 inches of rope to hold the balloons. Make sure the balloon knot and about 1/2" of the balloon are submerged.
3. Fill the pool: Fill the pool to a height of 7".

# 4 Electrical System

To supply your field, follow the steps below:

