NAC
ARCHITECTURE

Patty Hayes, Board Chair
Washington State Board of Health
PO Box 47990
Olympia, WA 98504-7990

CHENEY AQUATIC CENTER Variance Letter Date: 2024.06.25

PROJECT IDENTIFICATION: Lap Pool #: SR009200 Leisure Pool #: SR009201

On Behalf of:
Cheney Aquatic Center, City of Cheney

Owner Contact:	Dan Curley	Phone: 509-498-9293
Owner Address:	609 2nd Street	Cheney, WA 99004
Facility Address:	115 North 8th Street (formerly 711 Cedar Street), Cheney, WA 99004	

Owner Representative: Brooke Hanley (NAC Architecture) 509-838-8240

Variance Request Contact:
NAC Architecture: Brooke Hanley Phone: 509-838-8240 Email: bhanley@nacarchitecture.com

Facility Information:
Cheney Aquatic Center - Project includes an outdoor 6-lane 25-yard lap pool & separate leisure pool with zero-entry, spray features, & lazy river. The pool building with locker rooms, lifeguard offices, party room, and mechanical spaces is about 5000sf. The entire facility is lifeguarded and enclosed securely.

Plan Submittal: Drawing Plans have been submitted for review.

Variance Request Citation:
WAC 246-262-160 states *the board may grant a variance from requirements of chapter* ***246-262*** *WAC if, in the sole discretion of the board, data and/or research provides sufficient evidence that the RWCF (attraction, device, equipment, procedure, etc.), will adequately protect public health and safety, as well as water quality.*

Variance Request: Code language related to Diving Envelope (WAC 246-262-010(21) & WAC 246-262-060(5)(vi)) for the **AquaZip'N Rope Swing** attraction.

Items noted in review letter include:

- **Aqua Zip'N Rope swing** attraction receiving pool shall conform to the CNCA or FINA standards (depth application and setbacks)

In the Spokane Regional Health District review response issued by Steve Main dated May 24, 2024, Steve requests NAC Architecture (NAC) and WaterTechnology, Inc. (WTI) address important concerns regarding public safety related to the receiving pool for the proposed **AquaZip'N Rope Swing** attraction in Pool B.

The concern is to address the minimum depth of the pool to be compliant with the WAC 246-262-010(21) & WAC 246-262-060(5)(c)(vi) regarding diving envelopes for features where users enter the water from above the water surface.

On behalf of the City of Cheney; NAC & WTI respectfully requests your consideration of the current pool depth design at the **rope swing** for the future Aquatic Center. To support this request we provide the attached information, engineering exhibits, and following commentary:

- The review letter states that the "diving envelope" from WAC 246-262-010(21) applies to **all attractions** where users enter above pool water level and therefore requires the CNCA (enter less than 20" above the water surface) or FINA (enter 20" or greater above the water surface) water depths. We submit that the attached engineering calculations for the **AquaZip'N Rope Swing** product will demonstrate that the manufacturer's required water depths and the designed water depths provided at the Cheney Aquatic Center are more than sufficient to protect the safety of the users allowed to participate in this attraction. Calculations were completed for a 72" tall, 250lbs person, any body size smaller than the max would perform better, not worse. The manufacturer's minimum depth requirement is 4 feet. The current Cheney receiving pool water depths exceed the manufacturer's recommendations as it is located in an area that ranges from 6'-8" to 10'-6" deep. Please review the attached data in support of using the manufacturer's depth requirements in lieu of the CNCA diving envelope dimensions.

- WAC 246-262-060(5)(c)(vi) appears to apply specifically to "diving envelopes in pools or areas of pools designated for diving activities". The applicant submits that diving activities are generally defined as plunging into the water headfirst. Diving headfirst into water results in the need for deeper water to avoid a head & neck collision with the pool floor which is different than a feet-first or tucked entry plunge where the body is significantly slowed in the first two feet of water. The **rope swing** safety guidelines (provided in the exhibits) will note that users are required to enter the water in a feet-first manner. Diving from the unit is prohibited. The engineering calculations completed also assume a feet-first plummet into the water.

- The Model Aquatic Health Code also addresses the complexity of "other aquatic features" like this and would suggest that the manufacturer recommendations for design and operation would be adequate to install the feature.

  4.12.10A Other Aquatic Features Other AQUATIC FEATURES not otherwise addressed in the CODE, including but not limited to climbing walls, inflatables, and play structures, shall not be installed unless designed and operated in accordance with all manufacturer's installation and operations recommendations.

- 'A-frame' signs with all written safety guidelines will be publicly displayed near the rope swing (see page 12 for example) to meet the criteria of WAC 246-262-070(10). Participants will be screened by lifeguards to ensure they are within the minimum and maximum size requirements.

- See attached rope swing diagrams to understand how the hand holds are provided on the rope at even intervals between 57” and 87” above the deck. The relatively low height of the hand holds does not allow the users to gain much elevation above the water as they slide out over the surface.

- Safety padding rated for falls from 6ft or less are provided around the base of the rope swing structure and down the face of the pool wall to prevent injuries at the corner of the gutter. The rope swing itself has a safety catch, so when the user swings out over the water, they are prevented from sliding back toward the wall. Once the user drops into the pool, the rope self-retracts so the next user does not need to reach out over the water to grab the rope.

- This pool will be lifeguarded at all times while in operation and the lifeguard staff will be the first line of defense to screen bathers to make sure they are experienced swimmers, instruct swimmers on proper use of the attraction, and direct proper swimmer circulation to and from the activity within the pool to avoid congestion or collisions. The **rope swing** will have a dedicated lifeguard to closely supervise the safety of swimmers when the attraction is open for use. Cheney is dedicated to making this facility fun while also as safe as possible for their community members and patrons.

- The **AquaZip’n** has been designed and engineered to meet the following standards:
    - ASTM F2291-18 Amusement Rides and Devices
    - ASTM F2461-18 Aquatic Play Equipment
    - AISC Manual of Steel Construction
    - Other industry standards listed in the product data attached

- NAC submits that the design as described above and substantiated in the attached documentation meets the intent of providing a safe receiving pool for the **AquaZip’N Rope Swing** feature. NAC, WTI, and the City of Cheney respectfully requests a variance accordingly. If the State Board of Health has any follow-up conditions or actions required of the owner/operator, we are committed to reviewing them for implementation.

NAC Architecture (NAC) has teamed with Water Technology (WTI) on numerous aquatic projects and so we have a history of producing these projects successfully. WTI has been designing Aquatic venues for over 40 years. WTI is widely known in the industry as one of the leading aquatic design firms in North America. As one of the industry’s leaders, WTI has represented the waterpark industry during CPSC meetings on review of VGB rules and has also been involved in reviewing/editing sections of the MAHC. They are also represented in the Washington DOH committee to update the existing administrative code to adopt a more comprehensive aquatic code like the MAHC. The NAC and WTI commitment to safe aquatic facilities is proven. The design of the receiving pool at the **AquaZip’n Rope Swing** for the Cheney Aquatic Center will not put the health and safety of the public at risk. The City of Cheney, having operated a public pool for many years is experienced and committed to the safety and the welfare of their patrons. On behalf of the City of Cheney, NAC Architecture would like to thank you for your consideration of this Variance Request. Please feel free to contact me with any questions you may have regarding this request.

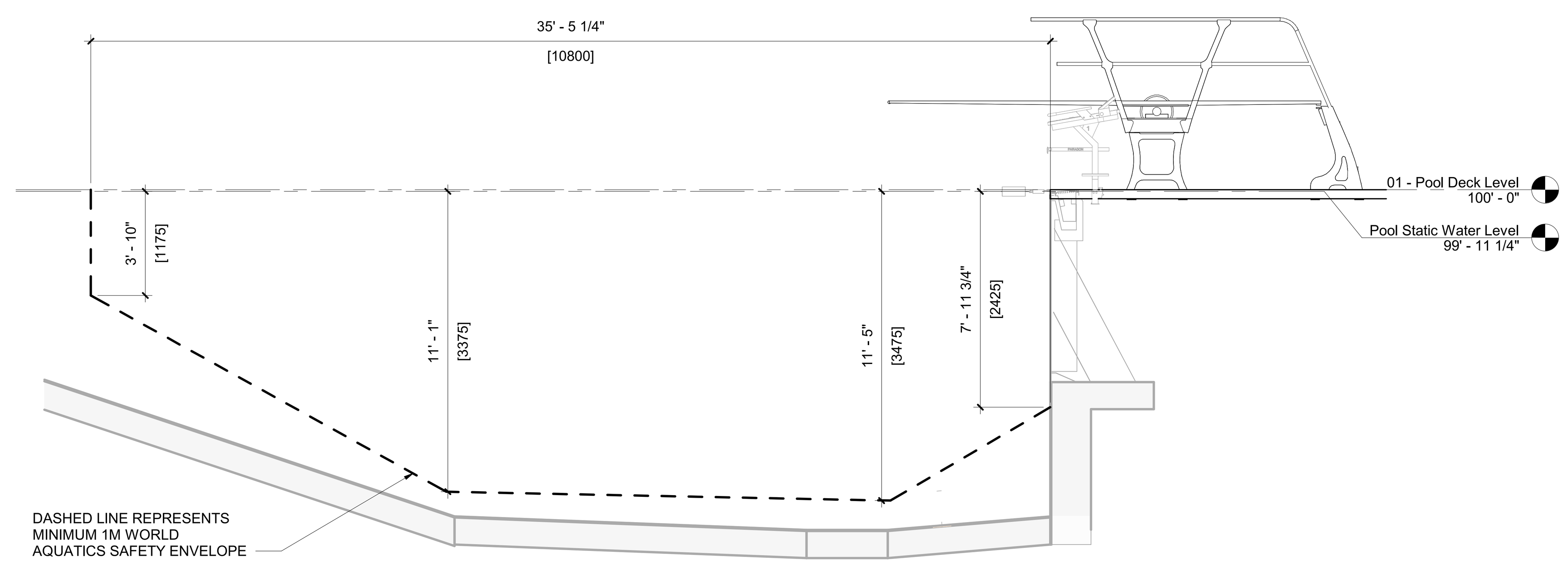
Thank you,

Brooke Hanley

Brooke Hanley, AIA, Principal Architect, NAC Architecture

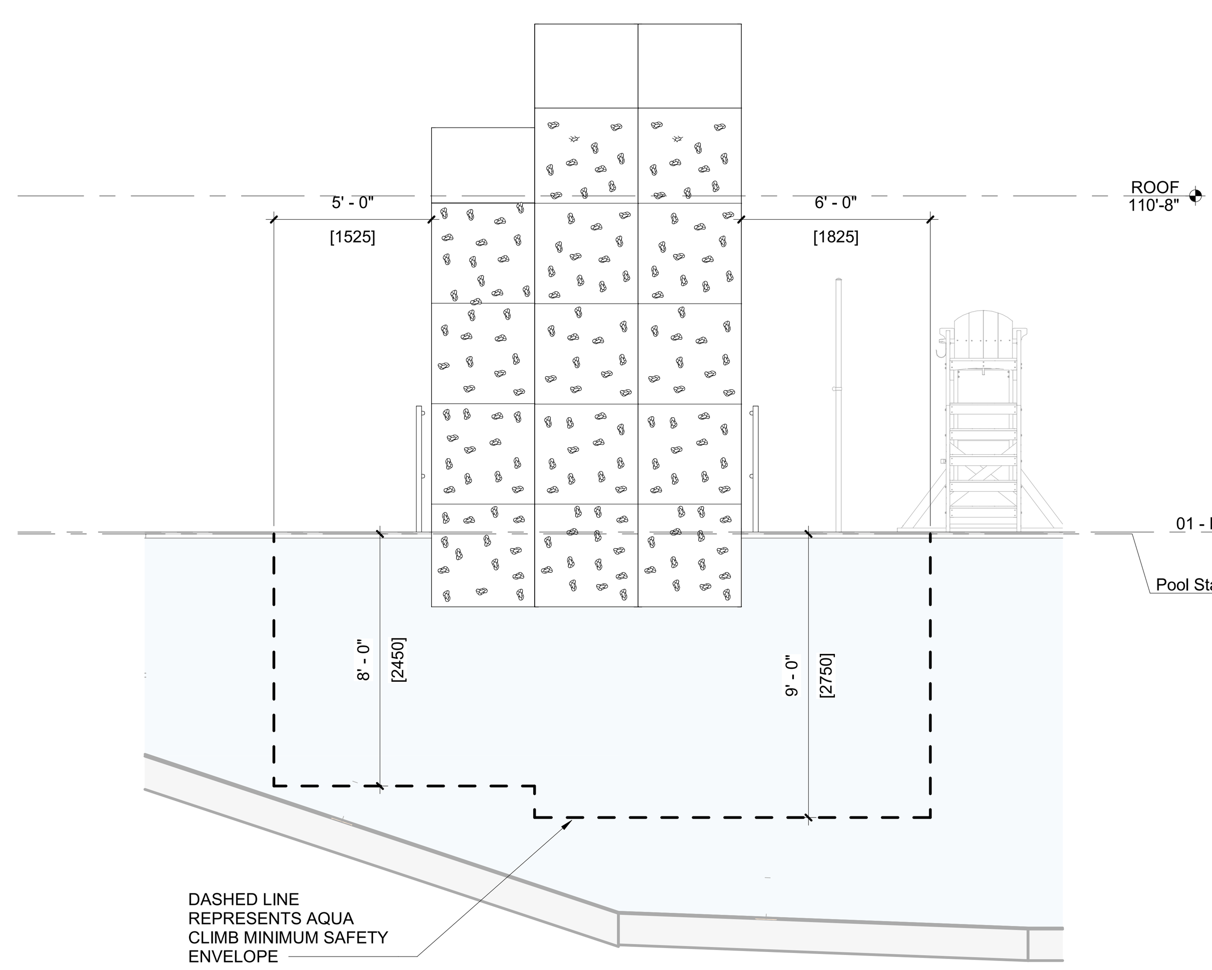
Attachments:
- AquaZip'n Safety Information and Fall Zone Engineering, including a floor plan and section of the receiving pool for the Cheney Aquatic Center.

NOTE:
ALL LANE DIVIDERS AND BACKSTROKE FLAGS MUST
BE REMOVED WHILE DIVING BOARD IS IN USE.



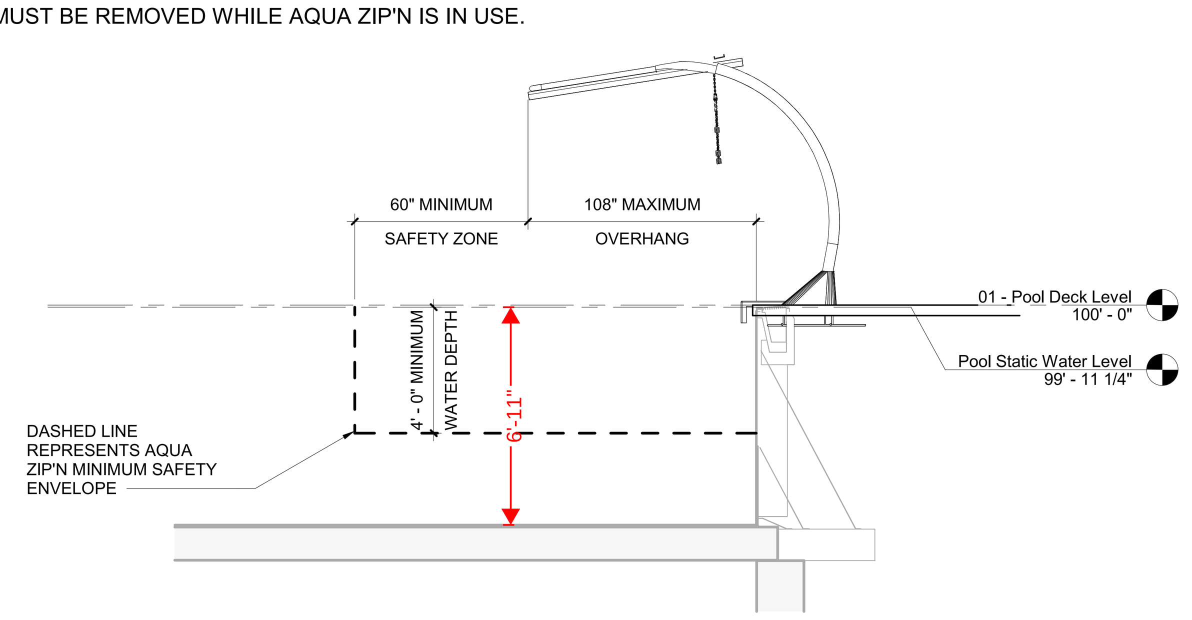
2 PL115 POOL A - LAP POOL DIVING SAFETY ENVELOPE
SECTION VIEW
1/4" = 1'-0"

NOTE:
ALL LANE DIVIDERS AND BACKSTROKE FLAGS MUST
BE REMOVED WHILE CLIMBING WALLS ARE IN USE.



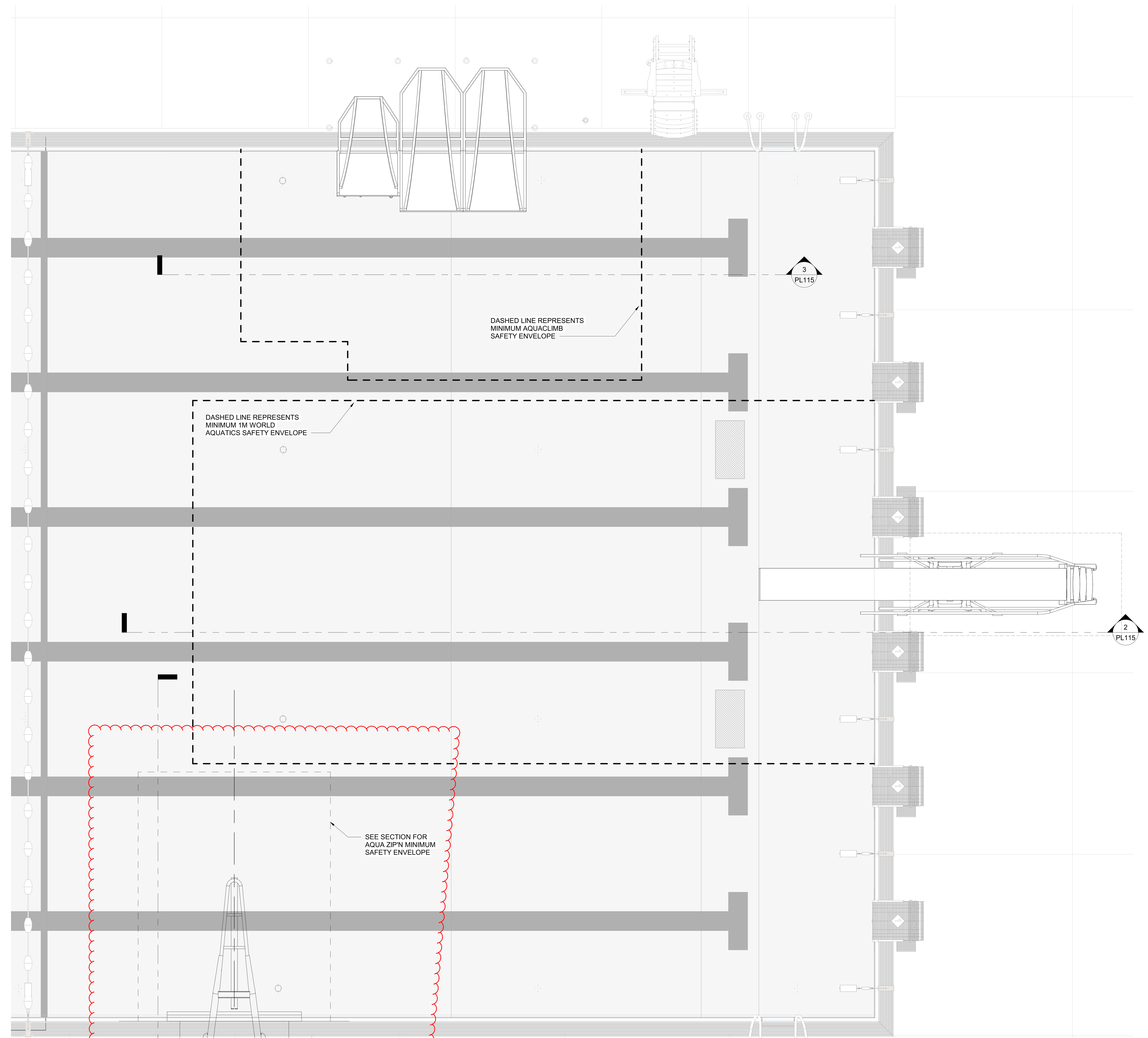
3 PL115 POOL A - LAP POOL CLIMBING WALL SAFETY ENVELOPE
SECTION VIEW
1/4" = 1'-0"

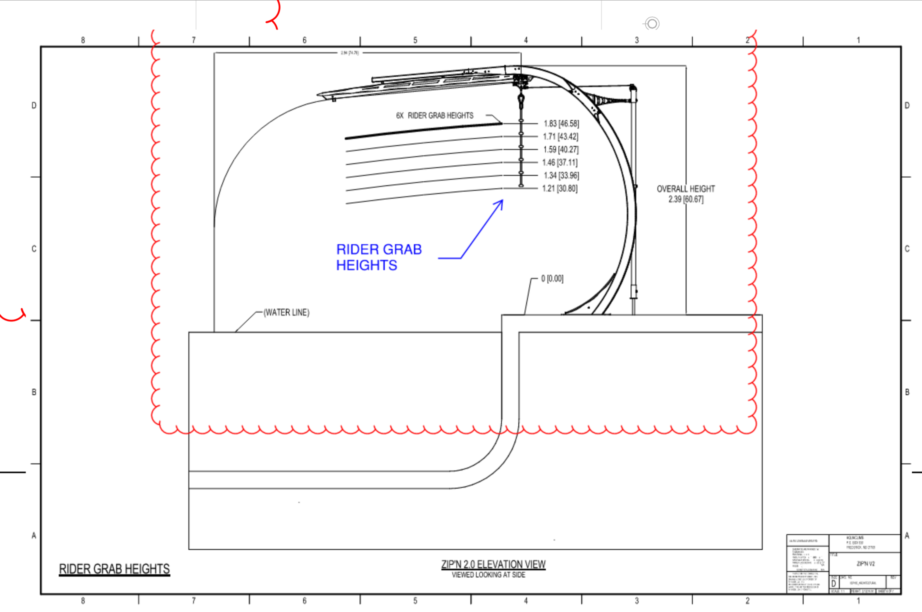
NOTE:
ALL LANE DIVIDERS AND BACKSTROKE FLAGS
MUST BE REMOVED WHILE AQUA ZIP'N IS IN USE.



4 PL115 POOL A - LAP POOL AQUA ZIP'N SAFETY ENVELOPE
SECTION VIEW
1/4" = 1'-0"

NOTE:
ALL LANE DIVIDERS AND BACKSTROKE FLAGS MUST BE
REMOVED WHILE CLIMBING WALLS, DIVING BOARD AND
AQUA ZIP'N ARE IN USE.





1 PL115 POOL A - LAP POOL SAFETY ENVELOPES
PLAN VIEW
3/8" = 1'-0"

REVISIONS

BID SET

WTI WATER TECHNOLOGY INC
World Leaders in Aquatic Planning, Design and Engineering
100 Park Avenue | Beaver Dam, WI 53916

CITY OF CHENEY
CHENEY AQUATIC CENTER
711 CEDAR ST. CHENEY, WA 99004

REGISTERED ARCHITECT
MATTHEW W. FRERBY
STATE OF WASHINGTON
4/16/2024

NAC ARCHITECTURE
nacarchitecture.com
1203 WEST RIVERSIDE AVE
SPOKANE WA 99201
P:509.838.8240

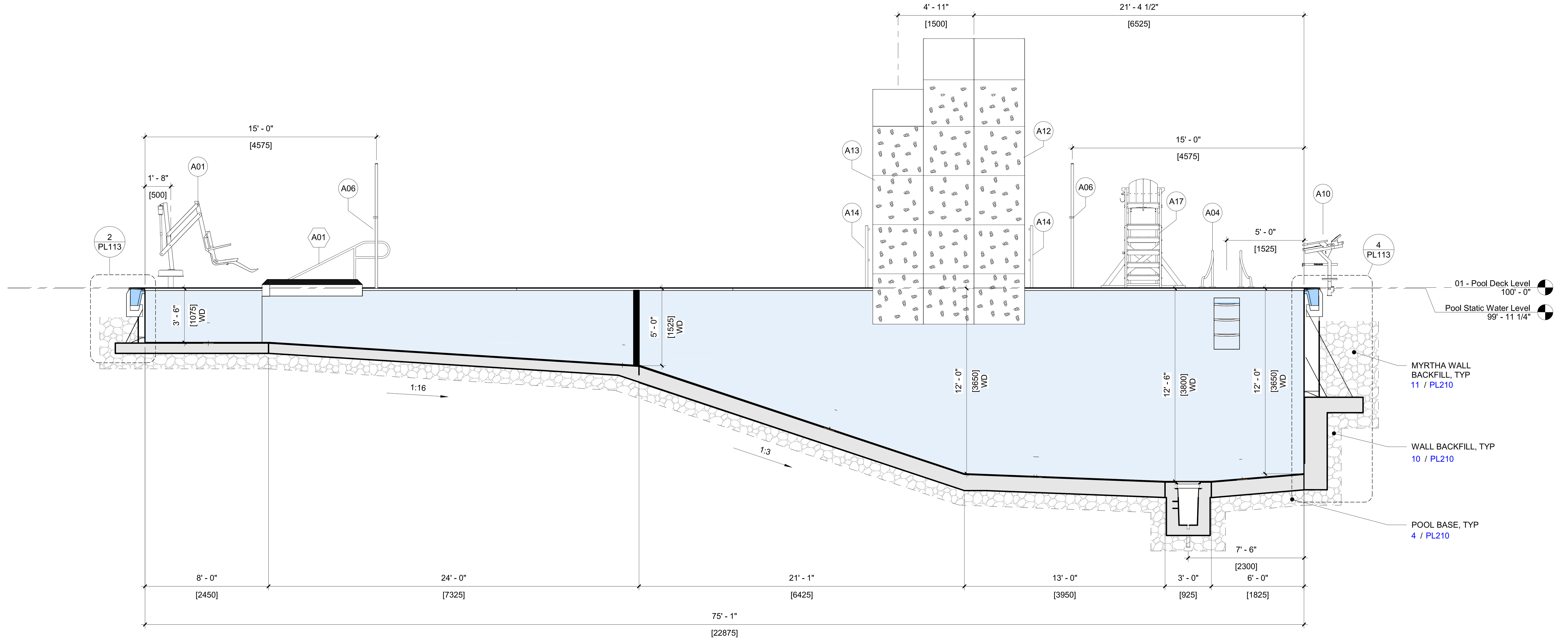
NAC NO	23458
DRAWN	MJC
CHECKED	GGA
DATE	04/16/2024

POOL A - LAP POOL SAFETY ENVELOPES

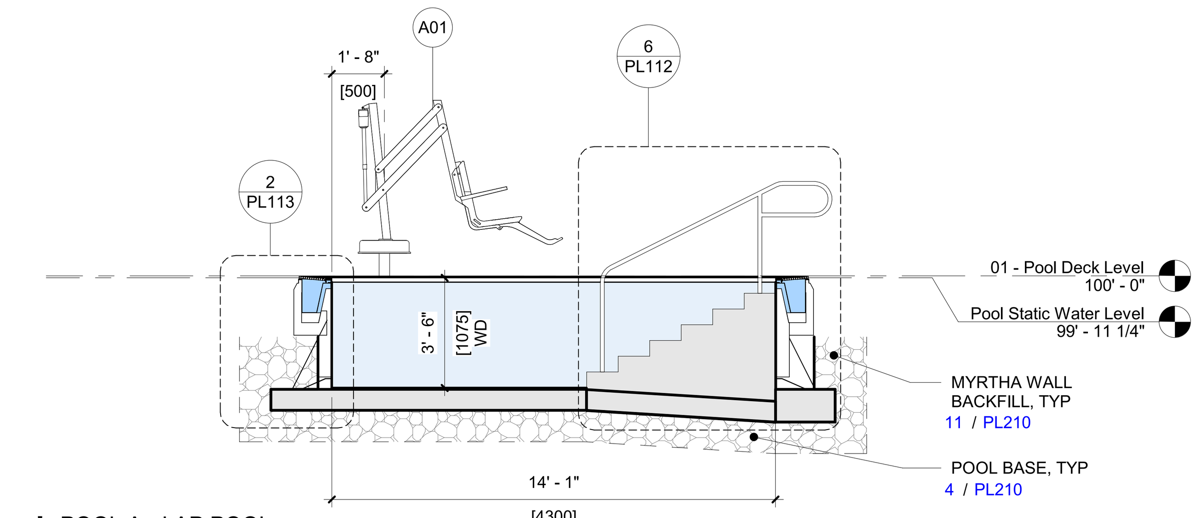
PL115

REVISIONS

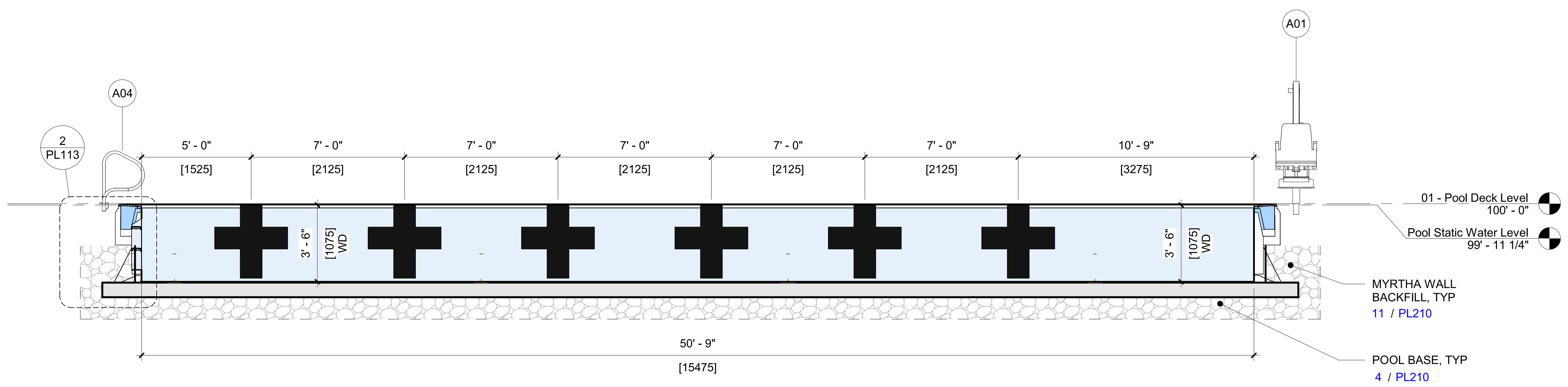
BID SET



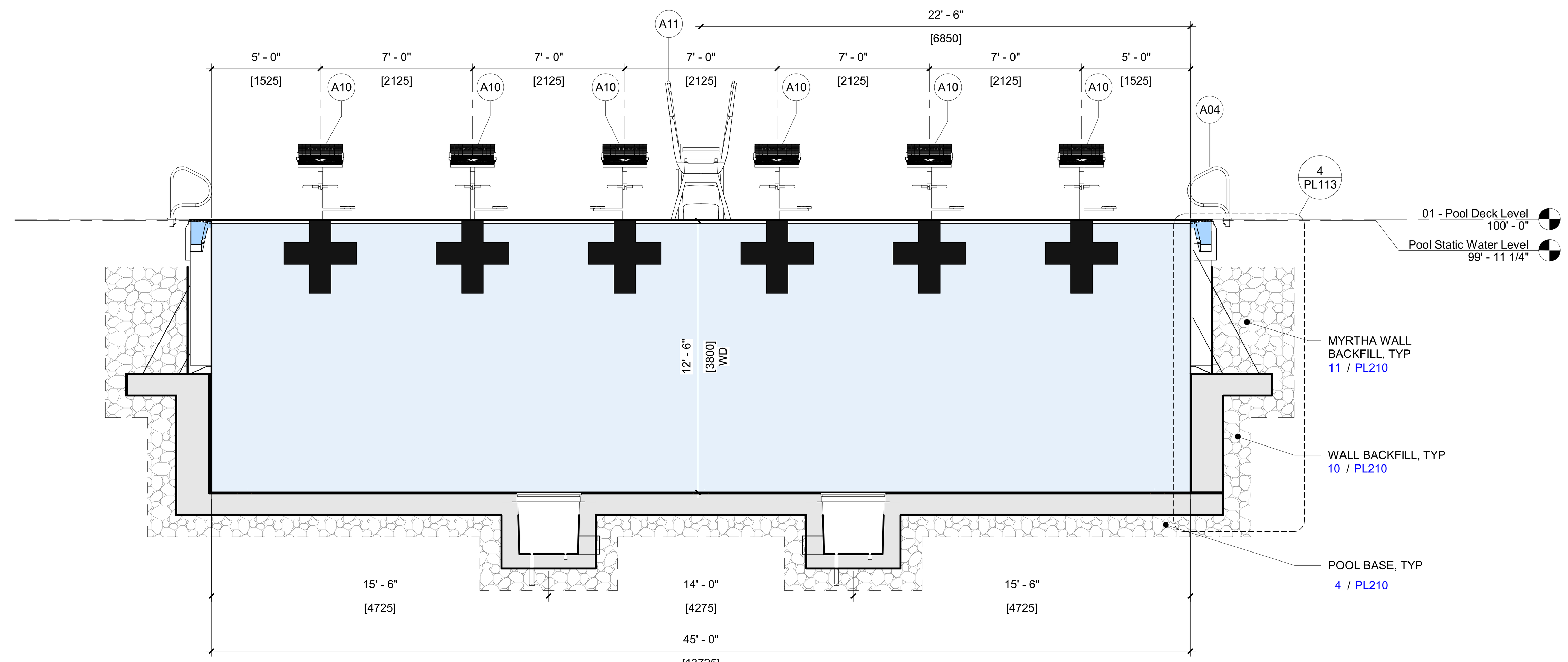
1 POOL A - LAP POOL SECTION VIEW
1/4" = 1'-0"



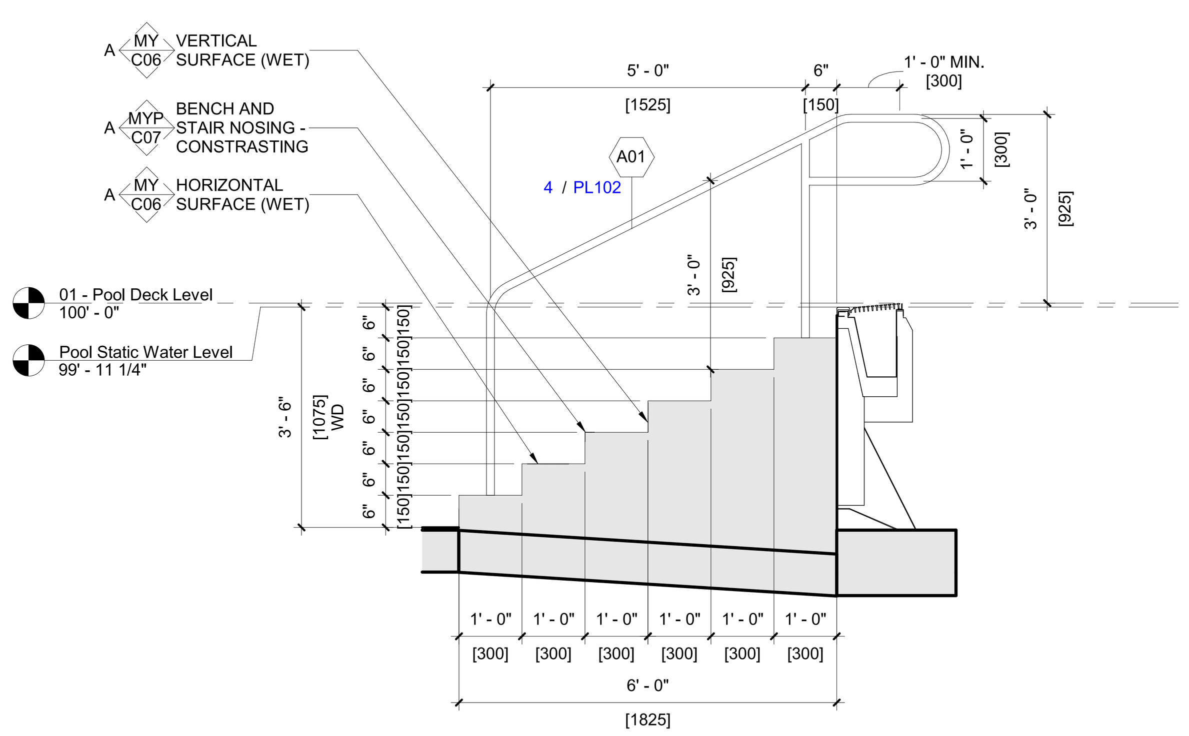
4 POOL A - LAP POOL SECTION VIEW
1/4" = 1'-0"



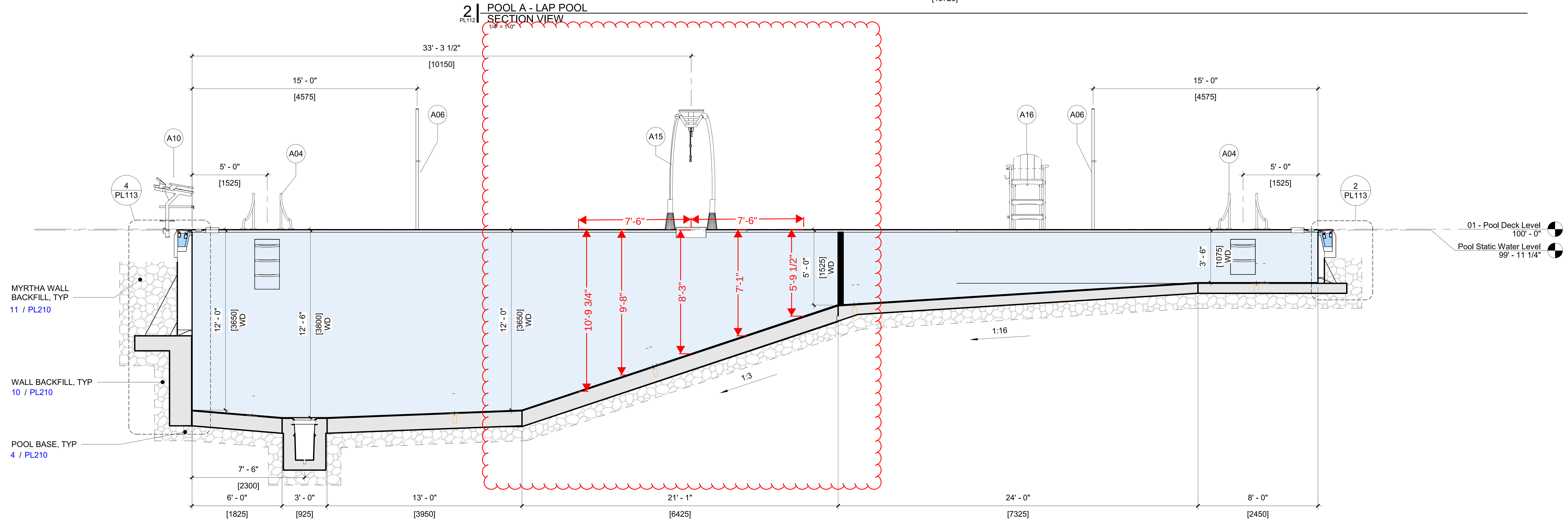
5 POOL A - LAP POOL SECTION VIEW
1/4" = 1'-0"



2 POOL A - LAP POOL SECTION VIEW
1/4" = 1'-0"



6 POOL A - LAP POOL STAIRS SECTION VIEW
1/2" = 1'-0"



3 POOL A - LAP POOL SECTION VIEW
1/4" = 1'-0"

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World Leaders in Aquatic Planning, Design and Engineering
100 Park Avenue | Beaver Dam, WI 53916
920.887.7375 | #23458

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NAC NO	23458
DRAWN	MJC
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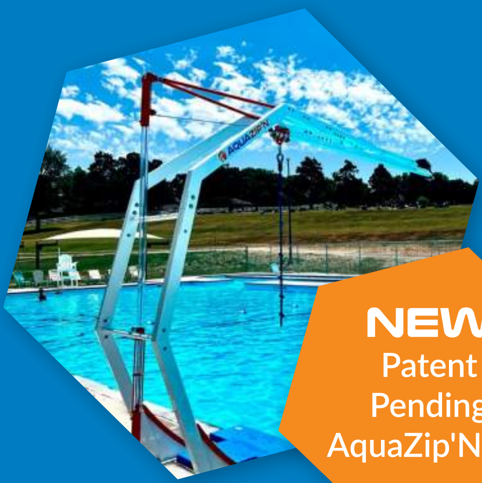
POOL A - LAP POOL SECTIONS

PL112

AQUAZIP'N®

Combining the thrill of a zip line with the fun of a rope swing



NEW
Patent Pending
AquaZip'N V3

With only 4 feet of depth required, AquaZip'N® can easily be added as an exciting poolside adventure at:

- Camps
- Country Club
- Colleges/Universities
- Swim Clubs
- Recreation/Aquatic Facilities
- Health/Fitness Centers
- Military Wellness & Recreation
- Private Residences

POOLSIDE ADVENTURES™

PoolsideAdventures.com
800.956.6692
info@poolsideadventures.com

AquaZip'N®: A UNIQUE Poolside Adventure

With nothing like it on the market, AquaZip'N delivers poolside fun and excitement in a fresh new way. With this easy addition to your pool, you will drive demand from guests of all ages and increase your facility's programming capabilities on top of these benefits:

High Throughput

Launching riders into the water quickly, AquaZip'N keeps the line moving with a proprietary self-retracting trolley so kids can experience it again and again.

Position Anywhere

With a minimum water depth requirement of 4 feet, AquaZip'N can be added easily for thrilling poolside adventures in the shallow or deep end.

Minimal Footprint

AquaZip'N requires little deck space with its sleek frame that hangs out over the water and doesn't interfere with normal lap swimming. And with no water source required, it is an easy amenity to add.

Activates the Deep End

As a safer alternative or enhancement to diving boards, AquaZip'N attracts tweens and teens to those under-utilized, deep areas of a pool.

Easy to Install

The AquaZip'N 3-piece system comes pre-fabricated for quick assembly and installation at your facility on any pool gutter configuration.

100% Made in America

AquaZip'N is designed, engineered and manufactured in the USA to conform to all industry standards.

To learn how you can bring the adventure of AquaZip'N® to your facility, contact us today:

POOLSIDE ADVENTURES™

PoolsideAdventures.com | 800.956.6692 | info@PoolsideAdventures.com

Building Courageous Kids for Life's Great Adventure

AQUAZIP'N® SPECIFICATIONS

System Description

Deck mounted, overhead self-retracting pool rope swing. Components consist of Steel support structure, self retracting trolley system with handline. Manufactured off site. Designed to withstand chlorinated environments.

Components

Rope System

Rope system consists of a ⅝", 3-Strand Twisted, High Tenacity Polyester, Plied Yarn. High tenacity for durability, low stretch, superior UV resistance, excellent resistance to acids/chlorines. Attached to the Trolley using high density plastic connector and 3" stainless steel carabiner. See manufacturer's full specification for details.

Support Frame

The support frame shall be fabricated of 304 stainless steel sections powder coated in Glacier White, consisting of multiple bolt-together assemblies. The Frame height is 115" and maximum width of 39" with an overall length of 147" from back of structure to end of track.

Anchors

Anchors are to include either Hilti Chemical Anchors using Hilti HIT-HY 200 Adhesive—⅝" diameter or HAS-R stainless steel wedge anchor (or approved equivalent) with a 3-⅛" minimum embedment, (5qty anchors) per leg. Install anchors per manufacturer instruction.

Fasteners

All fixed connections: Bolts, Flat Washers, Nuts, are attached by grade 18-8 stainless steel or higher. Anchors will be 18-8 Stainless Steel or higher grade.

Trolley Cable Retraction Assembly

3⁄16" Dyneema 12-strand Cable

Warranty

AquaZip'N® is warrantied to the original purchaser to be free from defects in material and workmanship from the date of installation, during normal use and installation, with exclusions of cosmetic defects through wear and tear: Limited 2-Year Warranty

Design Recommendations

Deck & Gutter

The pool deck in the AquaZip'N® installation area should be as level as possible. If the pool has a coping greater than 1-½", or does not meet the standard base concrete requirements below, additional hardware components may be required. Please complete the Poolside Adventures™ Gutter Configuration Worksheet available on our website and contact a Poolside Adventures™ representative to determine the proper installation hardware and anchoring required.

Concrete Requirements

Standard length anchoring system requires a minimum concrete depth of 4" (with 6x6 W2.0 welded wire mesh ASTM A185) with 3000 psi rating or greater, embedded to a minimum depth of 3-⅛". See Hilti anchor requirements for further details. Further concrete requirements for proper installation includes a 4" thick, 6' wide (away from pool edge) of uninterrupted, un-cracked concrete slab section. Length (parallel with pool edge) of concrete slab can vary based on desired maximum rider weight:

- 8' long for 250 lbs rider load rating
- 7' long for 200 lbs rider load rating
- 6' long for 150 lbs rider load rating

Clearances & Safety Recommendations

Please contact a Poolside Adventures™ representative for current product information regarding pool depth and clearance zone recommendations based on the deck and configuration to be installed.

State certified engineered drawings and/or drawings specific to actual site installation details may be required for approval of AquaZip'N® installation. Standard structural engineering drawings are available at no charge. State or site-specific engineered drawings may be an additional cost. Please contact the appropriate local governing department for more information.

Poolside Adventures™ product guides, installation instructions, owner's maintenance guide and other resources are available at www.poolsideadventures.com or can be requested by calling 800-956-6692.

Operations Manual AquaZip'N

The new AquaZip'N design allows for minimal maintenance and high throughput. The following is the inspection checklist.

Daily Checklist:

- Ensure proper trolley retraction by rolling trolley out over water, letting go and watching to see that trolley returns to original starting location.
- Check trolley wheels and bearings visually to ensure trolley is secure within its track.
- Visibly check retraction cable for wear & tear.
- Cable stretch is normal. However, if you notice the weight is contacting the bottom of the baseplate it is time to replace your retraction cable. Call Poolside Adventures at 800-956-6692 to order a replacement.
- Visibly check the rubber bumpers on the front and back of the track to ensure they are firmly in place and there is no visible cracking or imperfections.
- Spray silicone-based lubricant onto all wheel bearings to increase the smoothness and longevity of your trolley system.

Monthly Checklist:

- Inspect trolley to ensure secure attachments of retraction cable to trolley.
- Inspect hand rope for wear & tear.
- Inspect rubber bumpers on the front and back of the track for any cracks or imperfections. If any are found, please call Poolside Adventures at 800-959-6692 to order replacements.
- Check retraction cable for wear & tear.
    - Cable stretch and wear is normal. If you notice any significant wear on your retraction cable or if the weight is contacting the bottom of the baseplate when in operation it is time to replace your retraction cable. Call Poolside Adventures at 800-956-6692 to order a replacement.
- Check all bolts on the AquaZip'N structure to ensure they are firm & tight.
- Be sure acorn nuts are firmly secure on all threads able to be reached from the ground.
- Anchor bolts shall be taught to specifications.
- Inspect safety pad for visible signs of wear including cracks and gouges.

Seasonal/Annual Checklist:

- Remove trolley from track to complete thorough trolley inspection, ensuring all bolts are firm and all wheels and bearings are in good shape.
- Over time the wheels and bearings will need to be replaced. Call Poolside Adventures at 800-956-6692 to order replacement wheels.
- Store trolley indoors, in a cool dry location, during the off-season.
- Inspect concrete surface for cracking and weathering to which the PSI of concrete could become compromised.

"A" FRAME SIGN TO BE DISPLAYED AT ALL TIME THE AQUAZIP'N IS IN USE

Calculation Report

Hand Calculation on Projectile Analysis & Forces on the user

PROJECT INFO.

Change History:

Version Number	Date	Prepared by	Reviewed by	Contact
V 1.0	5/3/2024	Bill Bin	Frank Wang	Frank.Wang@feamax.com

CFD Requestor Info.:

Contact name:	Alex Salzman
Email:	Alex@PoolsideAdventures.com
Company name:	PYRAMIDE USA INC.
Address:	PO Box 530. Frederick, MD 21705

PROJECT DESCRIPTION

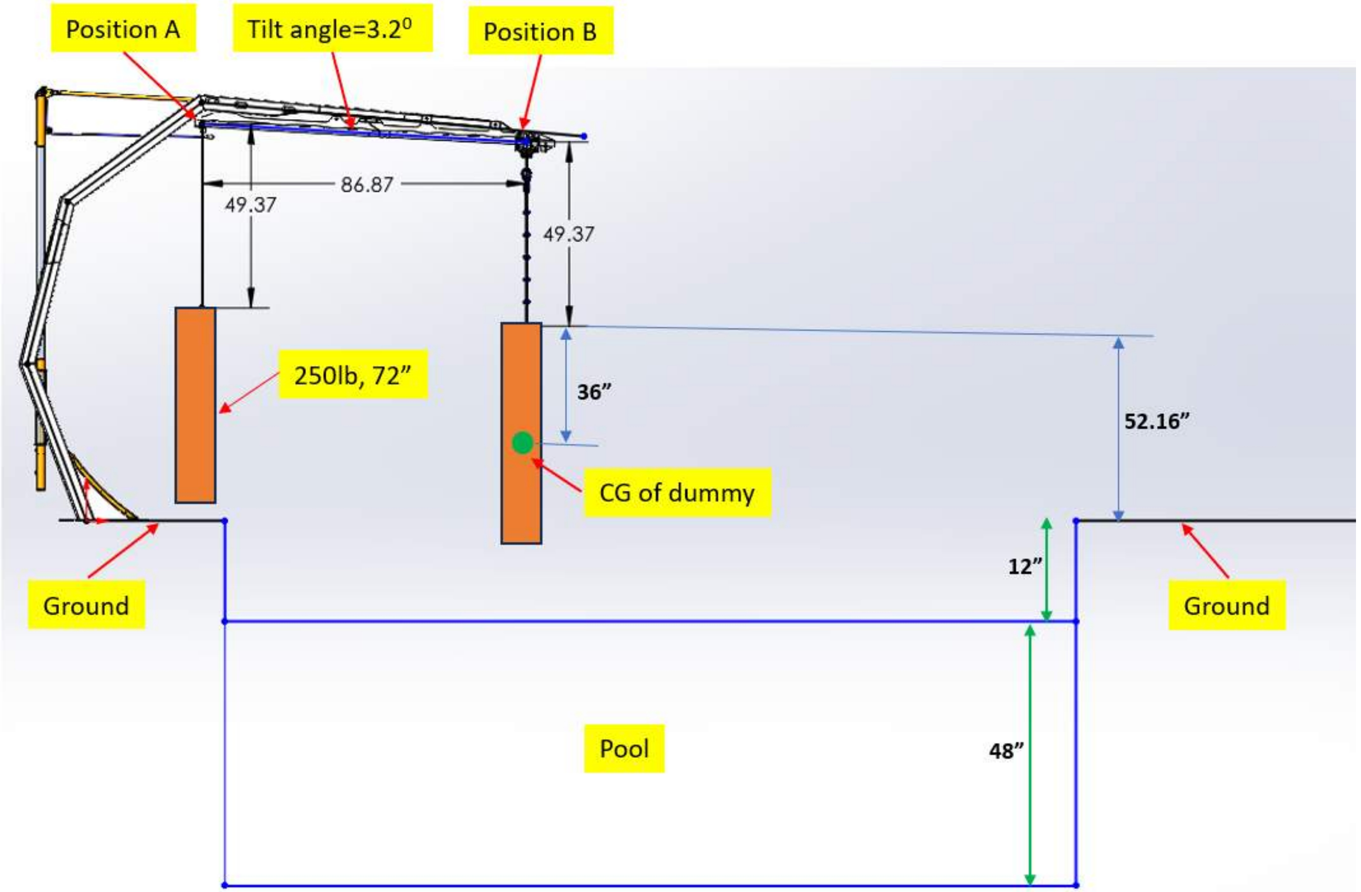
Project Description:

1. Perform hand calculations on the trolley system with the two cases.
2. The case #1 - Projectile Analysis: determine how far and how deep could a user go when launching from starting heights.
3. The case #2 - Forces on the user: determine the force on the user at beginning of ride and the end of ride.
4. The CAD model file for the calculation:
   - *Z0037C_V3.2 Master Assembly.SLDASM*
5. All related documents were received by 4/1/2024

CAD MODEL

CAD Model

1. The CAD model and the dimension information for calculation:



ASSUMPTIONS

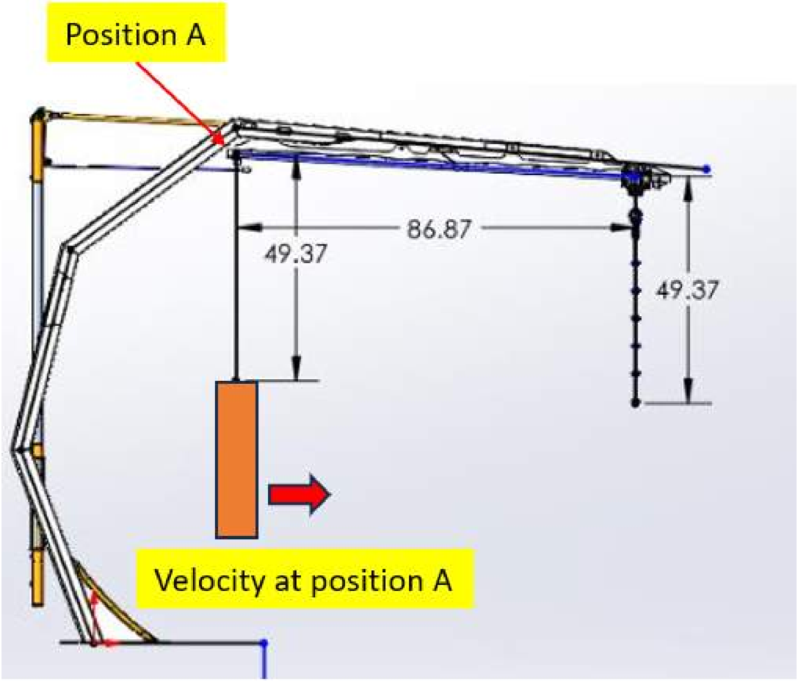
Assumptions:

1. Assume a block/dummy on the rope with 250lbs mass and 6 feet height.
2. Assume the max jump forward distance is about 9.8 feet for a 250lbs adult from a standstill (worst case).
3. Considering the ideal condition, the person jumps at 45 degrees.
4. Assume it is frictionless contact at the top track rail.
5. Assume the 6 feet height dummy as a mass point at the CG (center of gravity).

CALCULATION RESULTS

Calculation of initial velocity

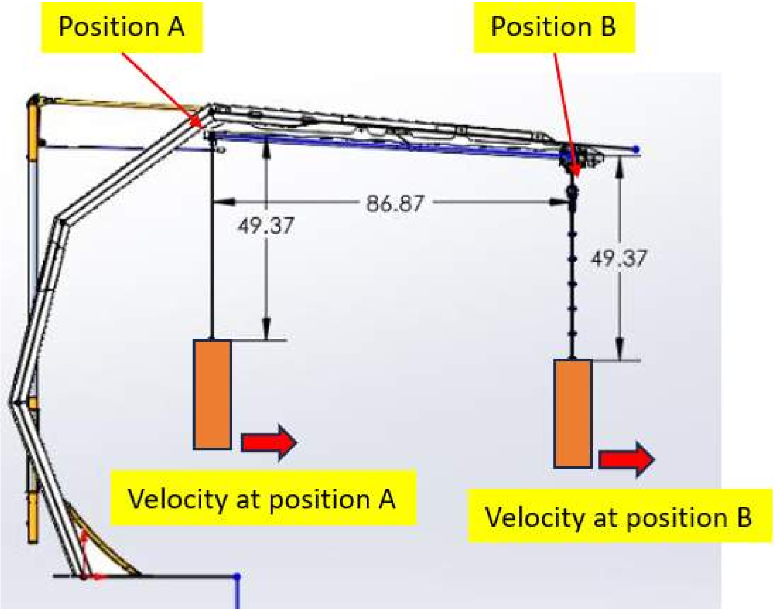
1. Equations:
   - V x T = L
   - V = g x t / 2
   - In which: V is velocity, T is time, L is the length and g is the acceleration.
2. We have V = sqrt(L x g / 2), in which: L= 9.8 ft, g = 32 ft/s2
3. The calculated results:
   - The initial velocity at position A = sqrt(L x g / 2) = 12.56 ft/s



CALCULATION RESULTS

Item#1 – Projectile Analysis

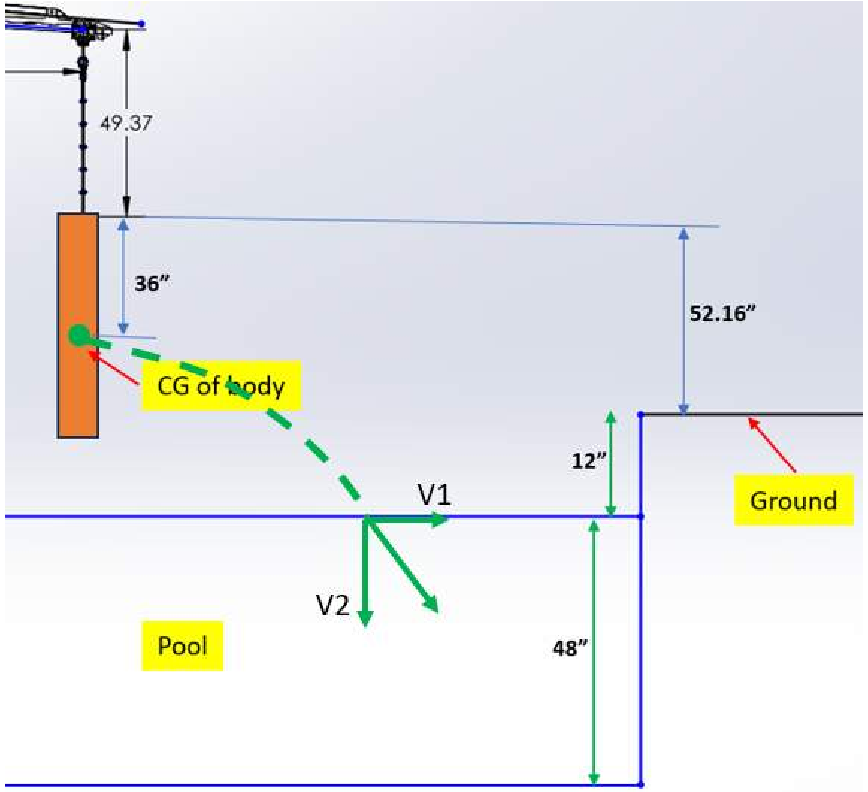
1. Calculation#1 –velocity at position B:
   - Because of the frictionless contact and the tilt angle is only about 3 degrees between position A and B, we could assume the velocity at position B is the same as or very close to position A.
   - The velocity at position B = 12.56 ft/s
2. Calculation#2 – the moving distance before touch the water:
   - The initial horizontal speed V = 12.56 ft/s
   - The height above water (from CG of body to water) = 52.16+12-36 = 28.16 inch
   - The time before touch water t = sqrt(2L /g) = sqrt(2x28.16/32.15) = 0.38 s
   - The vertical velocity V2 = g x t = 12.33 ft/s
   - The horizontal velocity V1 = 12.57 ft/s
   - The moving distance before touch the water L = V1 x t = 4.75 ft



CALCULATION RESULTS

Item#1 – Projectile Analysis

3. Calculation#3 – the moving depth and distance in the water:
   - Equation: $F_d = 1/2 \cdot Cd \cdot \rho \cdot A \cdot v^2$
   - where:
   - F_d is the drag force, C_d is the drag coefficient, ρ is the density of the fluid (water is approximately 1000 kg/m3), A is the cross-sectional area of the object perpendicular to the flow of fluid, v is the velocity of the object relative to the fluid.
   - The drag coefficient (C_d) and the cross-sectional area (A) depend on the shape and orientation of the human body in the water. We'll need to make assumptions to proceed.



Item#1 – Projectile Analysis

4. Calculation#4 – the moving depth and distance in the water:

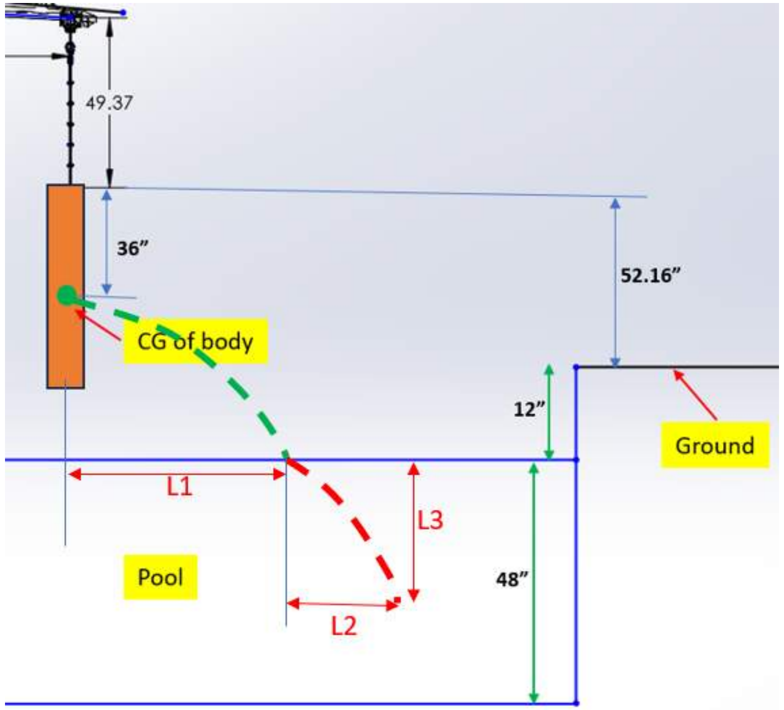
- The depth and horizontal distance can be determined by integrating the motion equations under the influence of gravity and drag. However, the actual calculations can be very complex due to the non-linear drag force that depends on the velocity squared.
- Assume a constant average drag coefficient and ignoring buoyancy for the depth calculation, we can estimate the maximum depth and horizontal distance.
- Assume Cd=1.0 for a body position that is neither perfectly streamlined nor fully perpendicular to the flow. Assume cross-section area A=0.1 m^2, which is a rough estimate for a human body.
- Calculate the maximum depth and horizontal distance by considering the initial kinetic energy and the work done against the drag force. Distance = $\int_{V_i}^{0} \frac{1}{0.5 C d \rho A v} dv$ where v_i is the initial speed in the respective direction.
- The calculated maximum depth and horizontal distance the human can reach in water are approximately 0.84 meters.
- Note: these results are highly simplified. The actual values could differ significantly due to various factors such as the complex nature of drag in fluids, body orientation, and body shape effects.

CALCULATION RESULTS

Item#1 – Projectile Analysis

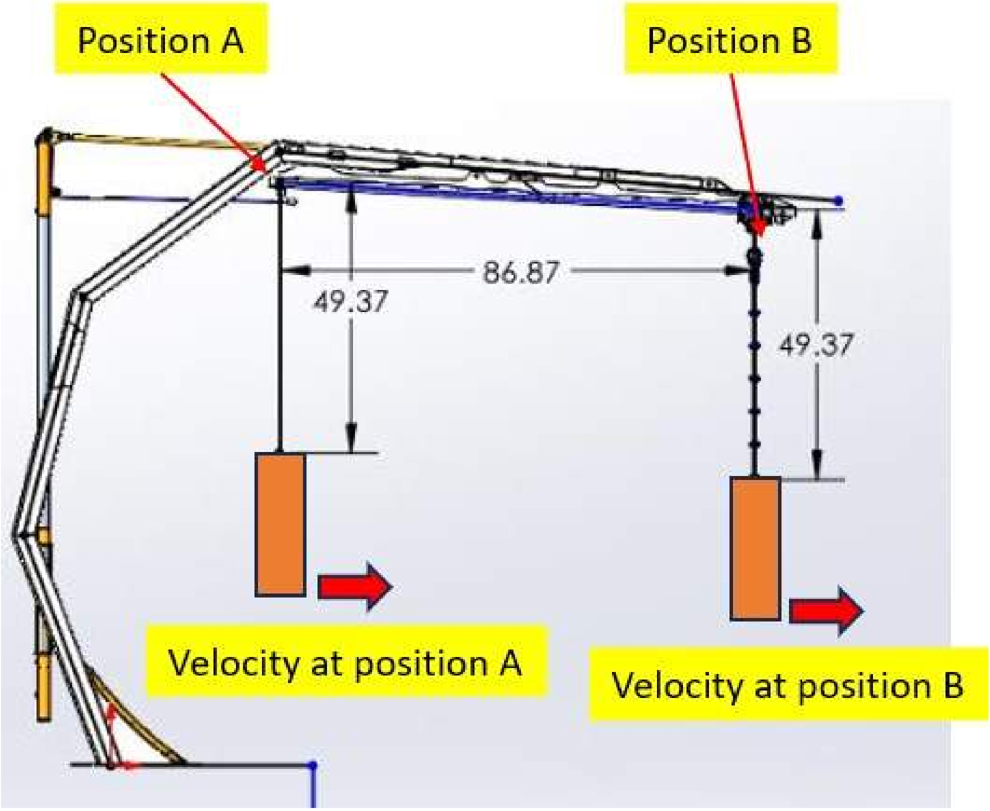
5. Calculation Results:

- Before touching the water, the body can move in horizontal direction L1 = 4.75 ft
- The max moving distance in horizontal direction in the water is about L2= 2.76 ft.
- The max depth in the water is about L3 = 2.76 ft.
- Note: if counting the body heigh 6ft, the max depth in the water would be 5.76 ft.



Item#2 – Forces on the user:

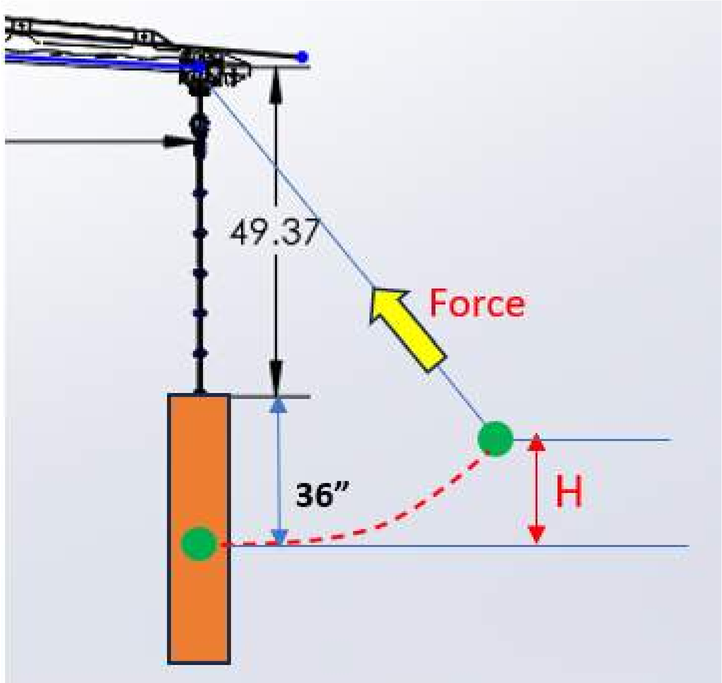
1. Calculation#1 – the max holding force on the user at position A:
    - Assume the body moves in horizontal direction, the initial holding force in vertical direction would be the same as the weight of user.
    - So, the max force on the user from rope at the beginning of ride (position A) is about 250 lbf.



CALCULATION RESULTS

Item#2 – Forces on the user:

2. Calculation#2 – the max holding force on the user at position B:
   - Assume the user would hold the rope without release.
   - The body would swing and cause higher force on the rope.
   - Max force T_{max} = m x g + m x v^2 / r = 422 Lbf.
   - The user swing height is about H = V^2 / 2g = 2.43 ft



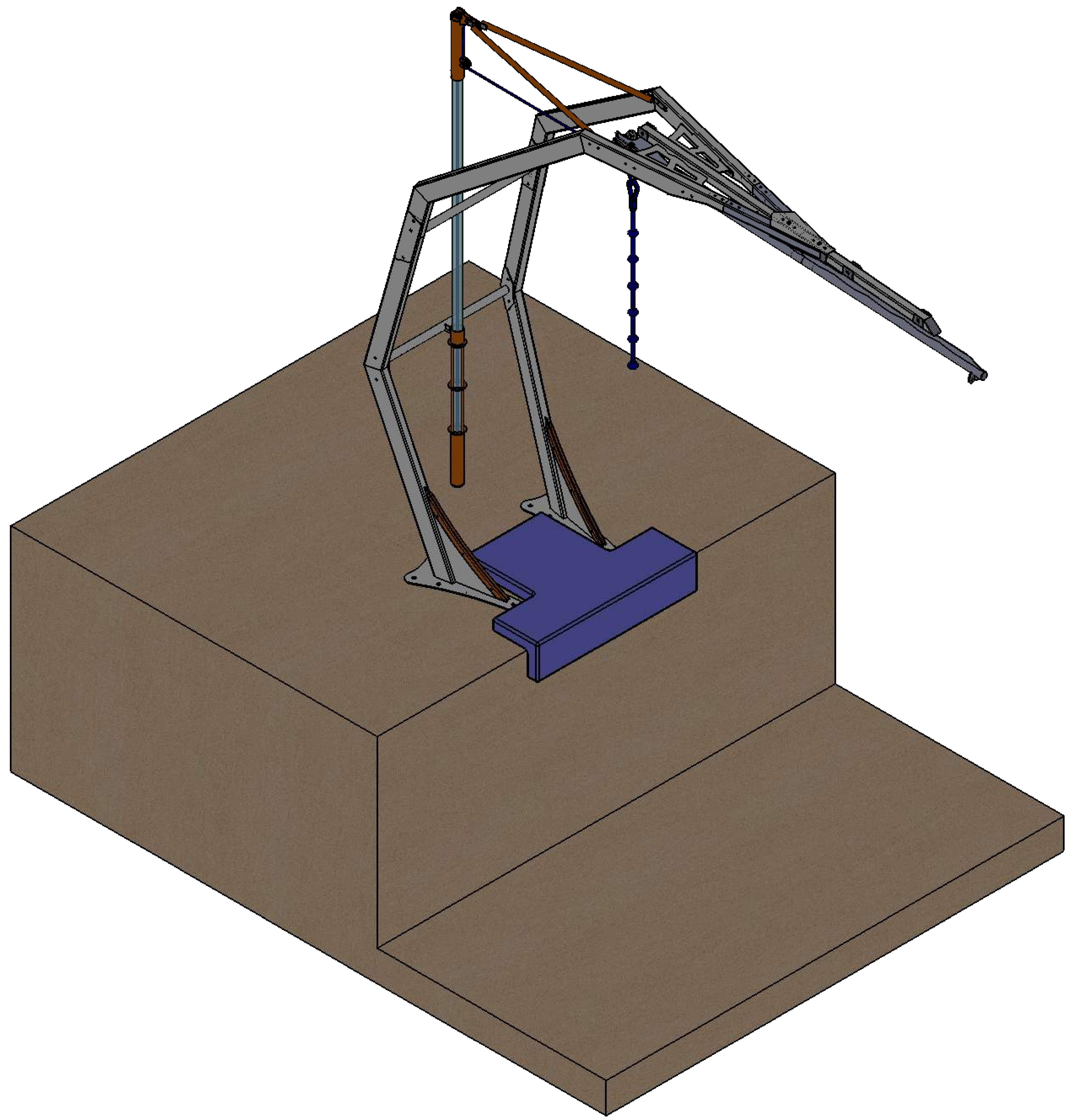
3. Results:
   - The max force on the user (holding force on hands) from rope at the beginning of ride (position A) is about 250 Lbf.
   - The max force on the user (holding force on hands) from rope at the end of ride (position B) is about 422 Lbf.
   - The user can swing upward max height is about 2.43 ft.

REVISIONS			
REV.	DESCRIPTION	DATE	REV'D BY
A	Initial Release	7/27/2023	A. Salzman

<u>Designed and engineered to the following standards:</u>

- ASTM F2291-18 Amusement Rides and Devices
- ASTM F2461-18 Aquatic Play Equipment
- International Building Code (IBC) 2015 and ASCE 7, Minimum Design Loads for Building and Other Structures
- AISC Manual of Steel Contruction, 13th Edition
- ASD and Steel Design Guide 27 - Structural Stainless Steel

***Full structural analysis and stamped fabrication drawings available upon request



DESIGN

POOLSIDE ADVENTURES™

P.O. BOX 530
Frederick, MD 21705

PHONE: +1 800.956.6692
FAX: +1 240.575.6020
EMAIL: info@poolsideadventures.com

AquaZip'n V3.1 Architectural Guide

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Poolside Adventures
P.O. BOX 530
FREDERICK, MD 21705

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES [mm]
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 1 BEND ± 1
TWO PLACE DECIMAL ± .03 [0.76]
THREE PLACE DECIMAL ± .005 [0.127]
DO NOT SCALE DRAWING

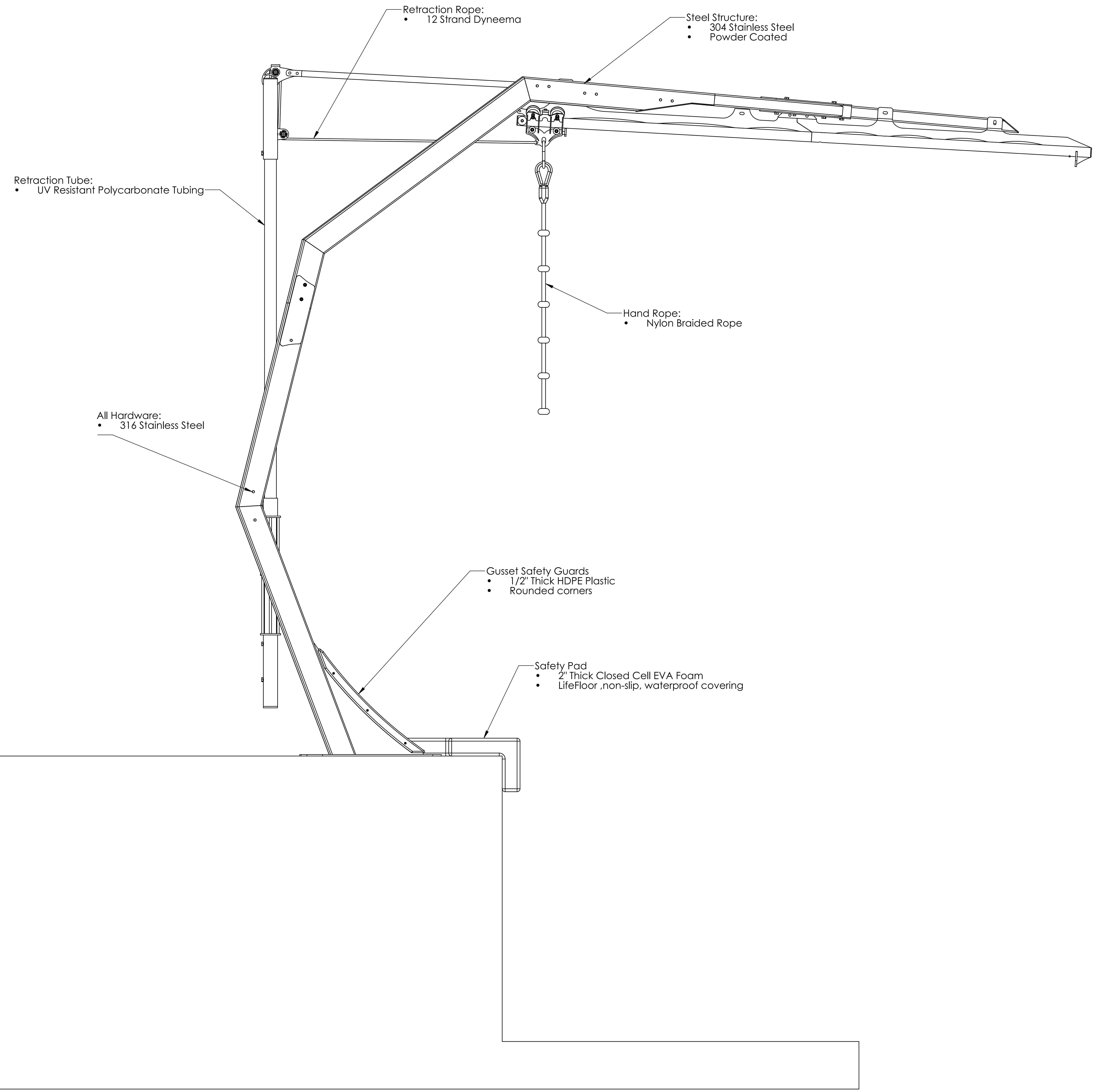
	NAME	DATE
DESIGNED		
DRAWN		
CHECKED		
ENGINEERED		

COMMENTS:
-NONE-

PROJECT:

TITLE:

SIZE	DWG. NO.	REV
D	Z0037C_V3.1 Architectural	
SCALE: 1:24	WEIGHT: 25799.23	SHEET 1 OF 7



Material Specs

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DIMENSIONS ARE IN INCHES [mm]
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH ± 1 BEND ± 1
TWO PLACE DECIMAL ± .02 [0.51]
THREE PLACE DECIMAL ± .005 [0.127]
WELDS: $^{+1/16}_{-0}$

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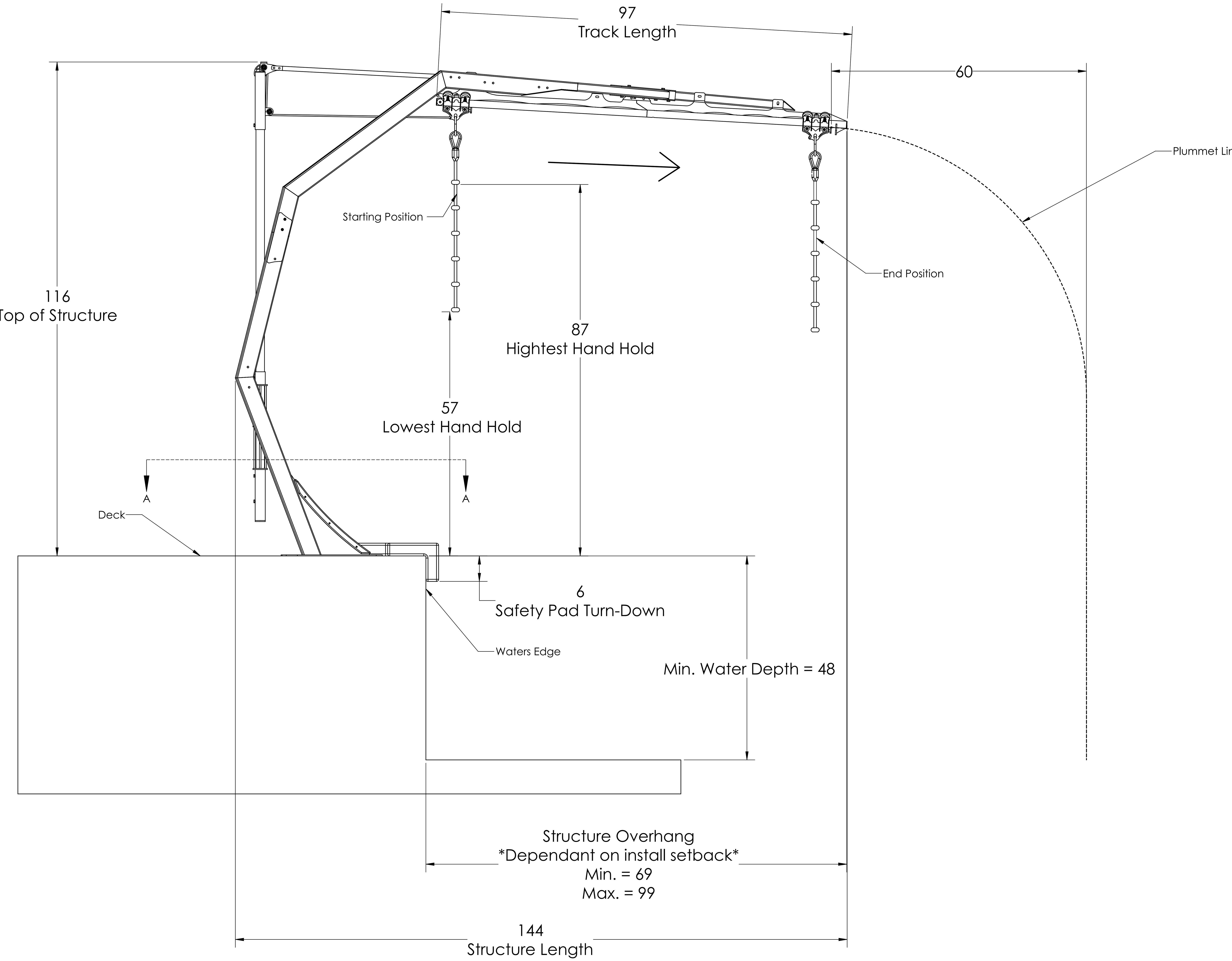
TITLE:

SIZE	DWG. NO.	REV
D	Z0037C_V3.1 Architectural	

SCALE: 1:1 | WEIGHT: 25799.23 | SHEET 2 OF 7



Elevation View/Water Depth Req.

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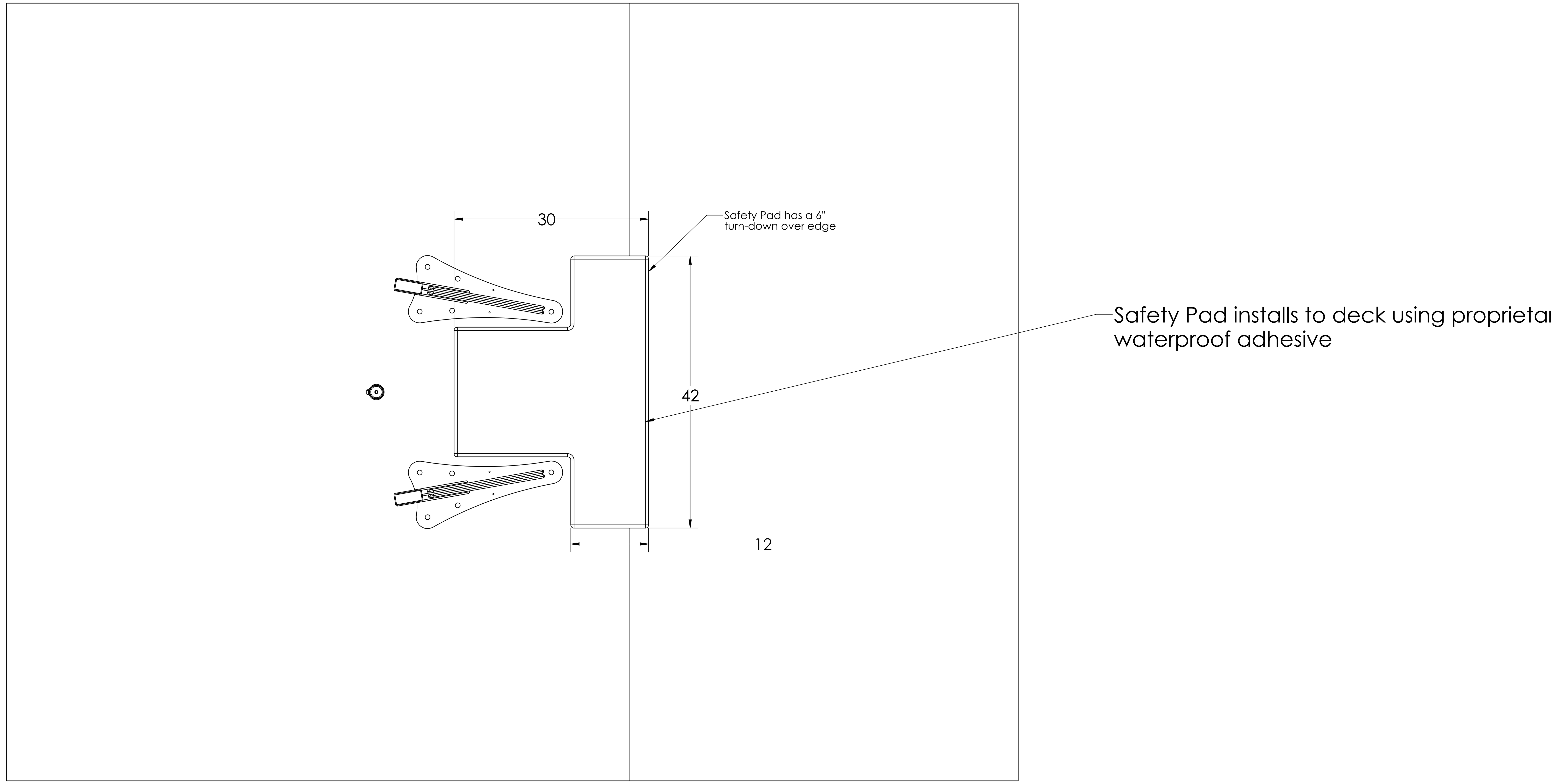
TITLE:		
SIZE D	DWG. NO. Z0037C_V3.1 Architectural	REV
SCALE: 1:1	WEIGHT: 25799.23	SHEET 3 OF 7



SECTION A-A
SCALE 1 : 10

Safety Pad Dimensions

***Custome safety pads available upon request
to work with any gutter system***

Safety Pad Details

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DIMENSIONS ARE IN INCHES [mm] TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1 BEND ± 1 TWO PLACE DECIMAL ± .02 [0.51] THREE PLACE DECIMAL ± .005 [0.127] WELDS: $^{+1/16}_{-0}$ DO NOT SCALE DRAWING	TITLE:
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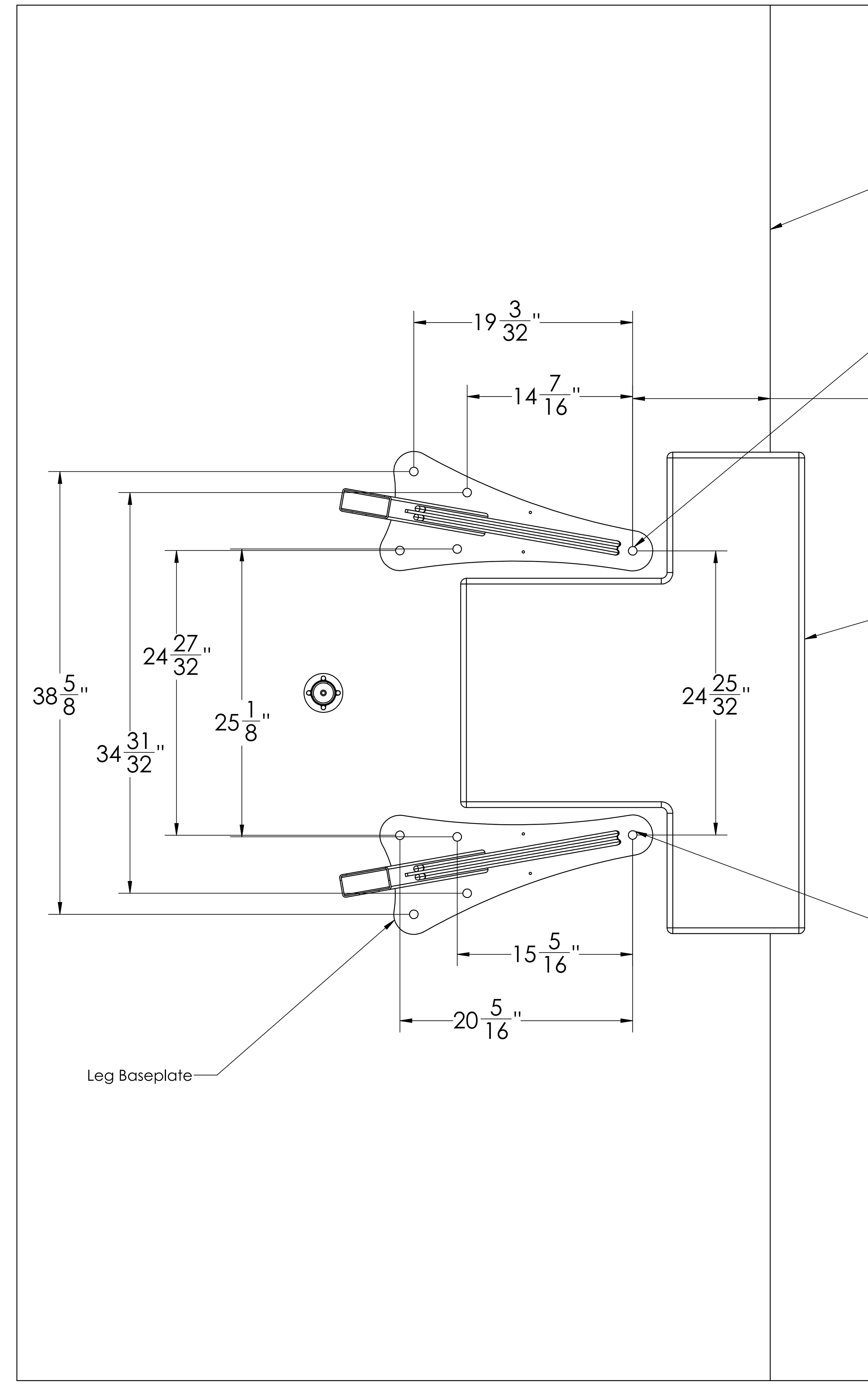

Waters Edge

Front Anchor

Anchoring Setback From Waters Edge
Min. = 12"
Max. = 40"

Safety Pad installs to deck using proprietary waterproof adhesive

<u>Structure Anchoring:</u>
(10x) 5/8" Concrete Wedge Anchors Supplied

***Alternative anchors can be provided upon request:
- flush mount anchors
- chemical anchors

SECTION A-A
SCALE 1 : 8

*****Anchor dimensions are for reference only, not to be used for installation. Anchor installation is done by using the Leg Baseplates themselves as drilling templates.*****

Anchoring Details

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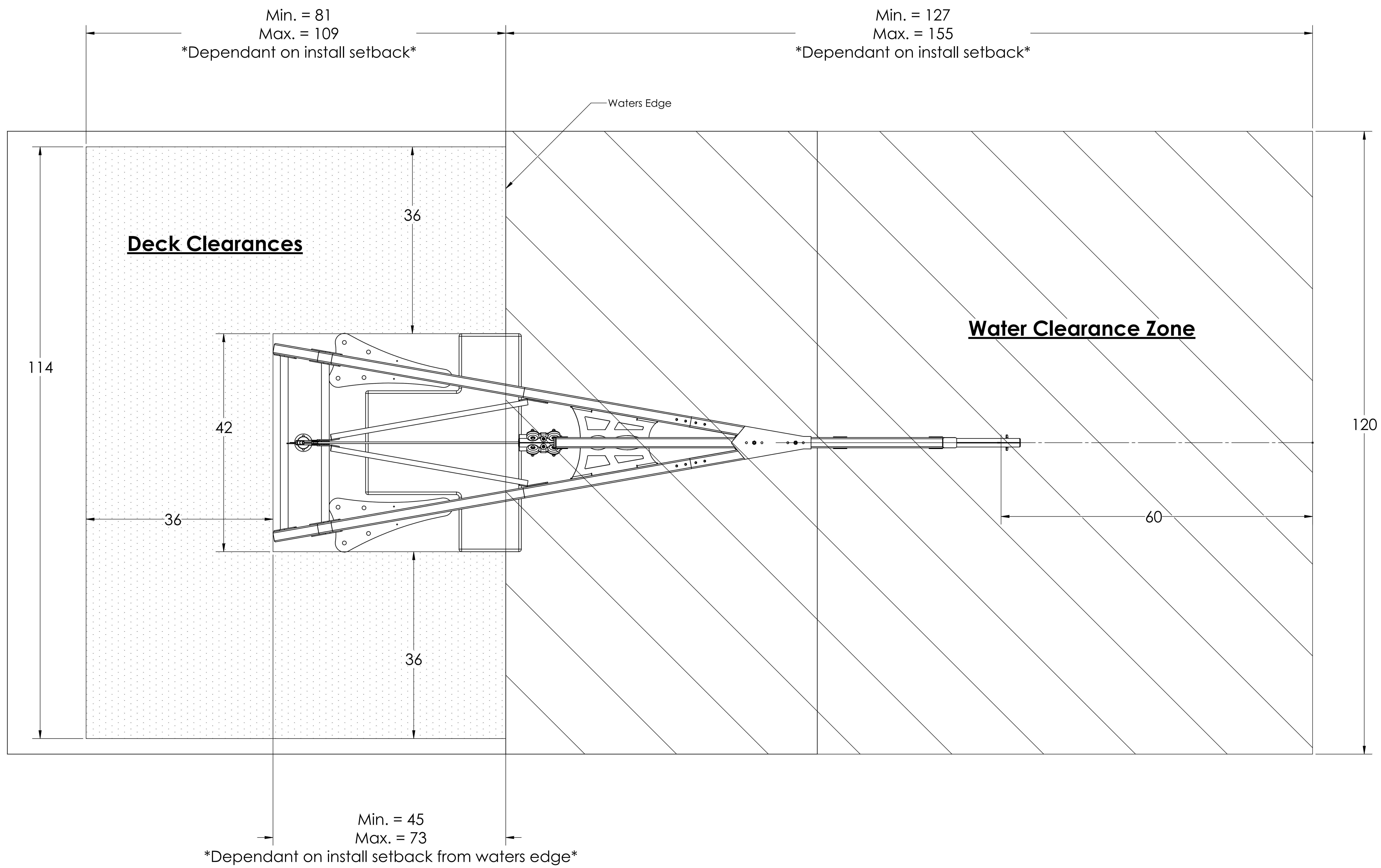
TITLE:

SIZE	DWG. NO.	REV
D	Z0037C_V3.1 Architectural	
SCALE: 1:1	WEIGHT: 25799.23	SHEET 5 OF 7



Water and Deck Clearances

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WELDS: $^{+1/16}_{-0}$

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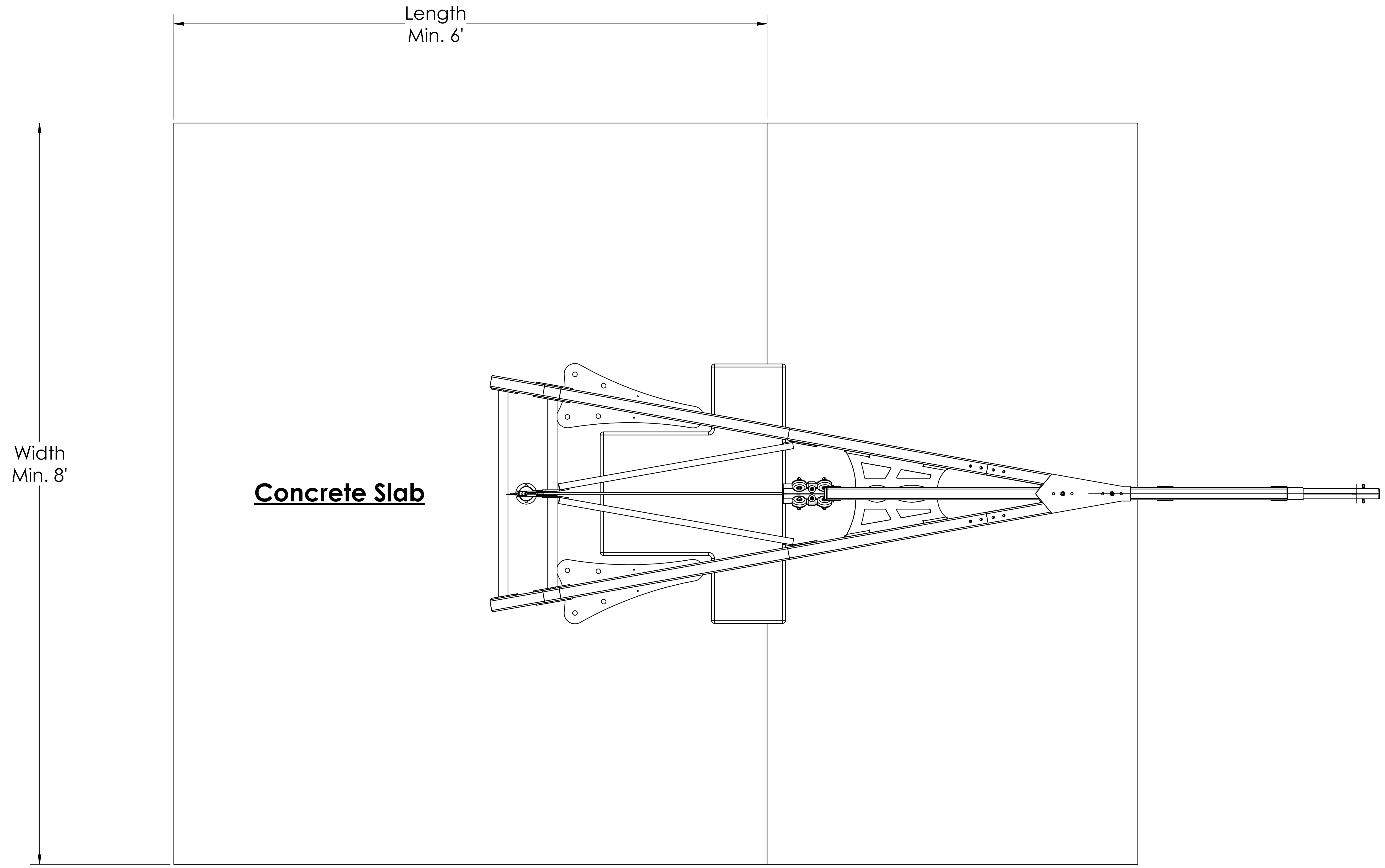
FREDERICK, MD 21705

TITLE:

SIZE: D | DWG. NO.: Z0037C_V3.1 Architectural | REV

SCALE: 1:1 | WEIGHT: 25799.23 | SHEET 6 OF 7



Min. concrete thickness = 4"

Notes:
1. Location of front anchors no closer then 1' to front edge of pad.
2. Concrete dimensions shown are to acheive a min. required square footage. Alternative Lengths and widths can be accepted upon review.
3. Concrete width to be centered on AquaZip'n Frame.
4. Min. concrete thickness of 4" required, with 6x6 W2.0 welded wire mesh ASTM A185.
5. If concrete is new, minimum strength of 3000psi at 28 days is required.

Concrete Slab Requirements

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WELDS: $^{+1/16}_{-0}$

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D	Z0037C_V3.1 Architectural	
SCALE: 1:1	WEIGHT: 25799.23	SHEET 7 OF 7

ASTM F2291-18 & ASTM F2461-18 STAMPED REVIEW

ZIP'N 3.0 PROTOTYPE

FRAMING AND COMPONENT DESIGN

BASE ANCHORS TYPE REVISED

Prepared For:
Pyramide USA, inc.
8 East 2ND Street
Frederick, MD 21701

WBCM PROJECT NO. 23.0171.00
Date: 06/29/2023
REV: 08/03/2023

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SHAWN D. WEBER
ENGINEER
PE042688
8.8.23

WBCM

WHITNEY, BAILEY, COX & MAGNANI, LLC
100 Sterling Parkway – Suite 108 Mechanicsburg, PA 17050
MAIN (717) 691-4708 FAX (717) 691-4749

Zip'N 3.0 PROTOTYPE

Design Criteria:

Loading:

- **Live Load:**
  250 lbs MAX Point Load (based on 1 user/rider)
  Deflection Limit L/360

Material:

- Pipes and plates – A304 Stainless Steel, F_Y=30 ksi, Fu = 75 ksi
  Pipe – ASTM A312 Standard Spec. for Seamless, welded & Heavy Cold worked Austenitic Stainless Steel Pipe
  Tubing – ASTM A554 Standard Spec for Welded Stainless Steel Mechanical Tubing
- Bolts - ASTM F593 Type 304 Stainless steel bolts

References:

- ASTM F2291-18 Amusement Rides and Devices
- ASTM F2461-18 Aquatic Play Equipment
- Applicable provisions of International Building Code (IBC) 2015 and ASCE 7, Minimum Design Loads for Buildings and Other Structures
- AISC Manual of Steel Construction, 13th Edition, ASD and Steel Design Guide 27 – Structural Stainless Steel