

## **BARTLETT HIGH SCHOOL DIVING BOARD INSTALLATION-DESIGN REVIEW**

After continued inquiry from both private swim clubs, as well as local government officials and departments, there seems to be some level of misunderstanding as to the installation of the diving boards at Bartlett high school. This design review and synopsis is written to address the concerns raised that the installing contractor has to has been repeatedly asked to answer. This report and synopsis should be shared with all decision-making officials, and to whom questions are being raised to. This report is designed to be a comprehensive and provide a background of analysis that was performed during the remodel design.

### **Design practice and involvement:**

We were selected as a design/build contractor to perform the initial design work for the rebuilding of the diving boards. This allows the fund manager to receive an accurate estimate of the actual work that needs to be done, while controlling the design process to conform to their budgetary, timeline and overall needs.

We were selected not only of our incredible record with our clients to value engineer, and bring projects in on time, but because of our staff's aquatics background. The senior project manager was a previous NCAA Division 1 diver that competed all over the west coast and holds 3 Mountain West Conference Championship Team wins. His intrinsic knowledge, and use of these facilities, along with an extensive coach experience, along with a Construction Management degree, and over 15 years of design/build contracting made This installing contractor an easy choice to perform a basic diving board upgrade project across the greater anchorage area.

Our project Engineer was a local state champion diver, and a competitive swimmer in the past 5 years, and is focusing on a civil engineering degree at UAA.

### **Design Narrative & Goals:**

#### **1 meter boards:**

While the installation of new 1 meter boards was pretty straight forward, the reason these had to be funded directly from the state was simple. A complete lack of maintenance, standard upgrades, or care given to this equipment over the last 20 years was apparent, and obvious. The diving board stands used at Bartlett were not even Duraflex's brand, which is the

manufactured standard for all diving competition equipment. It barely met the standards for local NHFS standards, and fulcrum was incompatible with upgraded board designs. Review of the diving boards themselves, some featured serial numbers that were over 20 years old. In review of the stands the following was decided as a design for the 1 meters.

- 1.) Mounting the fulcrum mounts on concrete blocks is consistent with new Duraflex equipment standards and is the preferred mounting method.
- 2.) A concrete stand allowed for the following:
  - a. Less required maintenance by any operating entity, and less overall cost in any parts replacement. This also lifted the anchor bolts off of the pool deck to reduce any corrosion over time.
  - b. A custom handrail design, that is adaptable to each pool, and step access. This also means that the handrail can be replaced with local resources (standard galvanized pipe, and fittings), vs. custom proprietary railing systems that are difficult to order, and ship from the lower 48.
  - c. The custom handrail system allows for a portion of the railing system to be removable, thus allowing better access swim blocks than previous stands to interfere with swim starts. This was a design improvement after receiving feedback from the Chugiak Aquatics Club.
  - d. The custom handrail system also allows for the boards to be “stood up” and locked into place for maintenance, and as required for other activities on the pool deck, including swimming. This a design improvement that improved safety risks when storing the boards.

### 3 Meter boards:

Over the years, Anchorage had lost over 50% of its installed 3-meter diving boards. Various reasons were given, but primarily “they no longer met code” was the reason given. Service High, Dimond High and West High pools all had 3 meter diving boards installed. We were asked to evaluate the pools and reinstall the assets at these pools if it was code allowable. Upon review of the code:

- Dimond High School- The 3-meter was removed during a remodel 10+ years ago, and deck revisions did not allow for the installation of a 3 meter board.
- Service High School- The 3 meter could have been left in place and used, but not all 3 diving boards at the same time. The 2 low boards could have been used for competition without issue with the high board in place. Any public swim use could have used 1x 3-meter and 1 low board at the same time. Arguably, the issue was not with the 3-meter, it was with

the placement of the inside low board. Removal of this low board would have cured all issues, however 2 low boards were chosen and the 3 meter board was removed

- West high school – No code issues were present, and the high dive was simply removed. The reasoning given by local officials was that it was a code issue.

In review of the anchorage area, 3 of the 5 – 3-meter diving boards have been lost at local anchorage aquatics facilities. Since the construction of these pools, the sport of diving has grown to include synchronized diving on 3-meter. This even extends into junior athletics, and NCAA events have been reviewing adding it to collegiate events. This means that 3-meter boards would be needed at the same facility, side by side. It was determined the best space to do this was at the larger pools, this meant Bartlett High School, and East High School. This also allowed the highest public access to 3-meter diving boards, by location while providing facilities that would allow the sport of diving to be practiced in its fullest capacity. This also would allow local clubs to host events in Alaska for both national and international competition with compliant pool decks that meet event facilities requirements. This also means that competitive Colleges would look at these facilities for rental during training trips and camps and make them a market viable option for revenue streams, as colleges must travel as a team and these teams feature both swimming and diving.

### Facilities Operational Review and Design:

**There are multiple installations nationwide at similar pools that use this exact same set up and has been a standard at aquatics facilities for more than 40 years.**

Codes and Operation guidelines reviewed for compliance included:

- Fina Facility Rules (this is the international standard for all Class “A” swimming pools) that host national level events.
- Current USA Swimming Rulebook
- Current USA Diving Rulebook
- Current NHFS- swimming officials’ guidebook

During the Design phase, Coho adamantly reviewed different options for the upgrades, and replacement of these diving boards. Through the use of extensive resources, and knowledge of

other facilities that feature swimming and diving, many renditions of the locations. Ultimately, with budgetary constraint, a standard 3 meter Duraflex stand was chosen for all high board installations. Review of other facilities was a primary action to ensure that both code, and operational standards could be met. **The 95% design plans were reviewed with Parks and Recreation officials at a meeting on 8/24/2023.** To which their added input was that they wanted the blocks painted to match the corresponding school colors. Their reaction to the design was extremely positive and met with no contention. Direction and freedom to continue to pursue permits and order equipment was given by parks and recreation.

### **General Anchorage Area Building Requirements & Code Compliance:**

Before any construction project begins within the municipality, engineered and stamped drawings MUST be provided to the department of building safety that are required for permit review, and signoff. This project required the following reviews:

- 1.) Architectural
- 2.) Structural
- 3.) Electrical (for grounding purposes only)
- 4.) Fire

Throughout that review process, The Municipality of Anchorage goes through a multistep process of “comment & response” to where any issues, questions, or concerns are asked by the building officials, and responses or corrections to the plans, must be made by the submitting architects and professional engineers before a permit is issued. This process is mandated by municipal law and ensures public safety through standard building code governance. This process was strictly adhered to throughout the entire diving board project.

These plans were drawn and approved in accordance with the following governing anchorage codes:

- 2018- International Building Code
- 2018 International Fire Code
- 2009- ICC/ ANSI A117.1 codes
- 2021-2025 FINA Facility Rules
- NHFS (National Federation of High Schools) Facility rules

All codes listed were strictly followed, with Municipal Building Safety required inspection and signoff at all pool locations. There are no other governing or applicable codes. East is currently waiting for some backordered parts from the manufacturer to complete the second 3 meter but does not effect the use and completion of the other 3-meter, and 2 x 1 meter diving boards.

### Swim Club interactions, Parks and Recreation, and Questions raised:

During the placement of the 3 meter boards at Bartlett, Coho worked with the local swim club, Chugach Aquatics Club to place the 3 meter boards where they currently stand. There was some left to right freedom as to the placement of the diving boards, and in order to place them at an optimal location as to not interfere with the swim blocks as much as possible, their final location was chosen. An onsite meeting with Matt McDaniels, Patt (swim coach) and Coho's senior project management concluded the location, and a younger coach tested the location of the vertical leg stand location with possible ability to interfere with a "swim start" by standing on the block, and doing a practice start. It was concluded that the stands were adequately out of the way of the vertical posts.

As soon as the 3-meter boards were installed at Bartlett High School, almost instantly, questions began to arise from within the swim community, and then Parks and Recreation regarding "code compliance". After an onsite meeting with, Matt Mcdaniels & Don Winchester, The installing contractor, and parks and rec remedial code compliance questions began being asked. After showing and reviewing with them the stamped and approved plans from the municipality, they requested a few days (4 working days) to review code and engage directly with building safety. The questions raised were as follows:

- 1.) Egress- for fire safety and exiting
- 2.) Egress at the rear of the 1-meter boards, with regards to ADA access
- 3.) "Safety concerns" with access to the 3-meter board ladders.

After building safety did a second review, and the local fire Marshall did a project walk through, the following was determined and communicated to Parks and Recreation in *italics*

- 1.) Egress- for fire safety and exiting: Response: *Fire safety is adequate at the rear exiting door, as only a single operable door is required, and there is adequate exiting and entry*

*through all other means of egress in the facility. The “emergency exit” sign needed to be relocated to the active door leaf.*

- 4.) Egress at the rear of the 1-meter boards, with regards to ADA access  
*ADA access to Bartlett pool has always been to the shallow end of the pool, where the hydraulic wheelchair lift exists. Egress to the rear wall from the new concrete block stands, vs. the old metal stands remains unchanged. There is no dimensional difference from the rear of the old diving board stands to the new concrete stands. There is no physical change in the access to the middle rear of the pool, nor would it be required for any code reason. Furthermore (from basic code understanding Wheelchair access to the deep end of the pool is from the sides of the pool or would be to a swim block in the 4 outside lanes.)*
- 5.) “Safety concerns” with access to the 3-meter board ladders. – *The 3-meter stand is accessible by Duraflex’s standards and is an acceptable installation by all applicable codes, operational standards and access standards as required by competitive governing bodies, and pool standards.*

After clarification from Building safety, concerns from parks and recreation to the installing contractor slowed, and we focused on completing our work at the facility.

Again, it seems that local swim clubs have raised further questions and concerns about the current installation of these 2, 3-meter diving boards. Please note that some of these are repetitive, and not based in fact. Social media posts, youtube video podcasts, and emailed “letters of concern” from swimming groups and officials all seek to undermine the quality and the compliance of these board installations. As these questions and concerns are often being repeated out of turn and based in nothing more than “opinion” and limited understanding of facilities function in regards to competitive pools.

New/Redundant Questions raised from swim clubs with response in *italics*:

- 1.) The pool deck is too small to have these 3 meter boards and we will never be able to run a meet. – *Please reference appendix “A” – This installation is used nationwide with meets run consistently.*
- 2.) access to the blocks is needed from the left, right and behind. *Access to all sides of the blocks still exists.*

- 3.) The existing high dive had a ladder to the high dive that was on the side. And there was only one. *The ladder instead of being in the “egress” walking path, is now located as close to the wall as possible, allowing for more space to walk underneath the diving board.*
- 4.) A walking corridor in the back directed the flow of traffic and emergency exit. (It is now blocked). *There is no issue with the emergency exit, and the flow of foot traffic is simply in front of the ladders.*
- 5.) The solid concrete pour for the 1m. While it may be too late to change this, keeping an open sight around a pool deck and usable space under the board allowed for aiding eyesight and adds to safety for open sight. A lifeguard should be able to see all. Traditional diving boards with open bases allowed for this. – *Again, this is a typical board installation, please reference Appendix “A”. Lifeguards don’t operate from the rear of the pool deck, they watch from the sides. This is an erroneous argument not based in the reality of pool deck functions. Deck management practices per normal lifeguard training an operations will adjust for the remodel.*
- 6.) NHFS (high school competitions) – only have a 1-meter event, no 3 meters are ever needed. *The Bartlett Pool is not only used for high school athletics.*
- 7.) Divers will be able to use the 3 meters at East High at any time. *Per my knowledge, East high school has been closed for 6 years and is now going under usage contract with the YMCA? I don’t have an appropriate response to this statement, nor do I believe it to be a factual statement.*
- 8.) There is a concussion risk for kids to hit there head on the 3 meter boards above the swim blocks. *Again, please reference “Appendix A”- this pool function and set up is a standard pool arrangement. I have never heard of, or seen this risk before and Duraflex has never heard of it either. If kids are afraid of the high board, it can simply be propped up in its handrails, just like a low board.*

Conclusion:

The goal of this report is to simply outline the process that Coho has been through with the installation of these boards, and ultimately protect its work, and Coho's name within the community as a reputable contractor. Coho does not stand for inappropriate arguments against its quality of workmanship, or its design work and capacities. If there are legitimate questions being raised, we are here to answer it. Please feel free to reach out with any questions or concerns.

Sincerely,

Vincent English, BSCM  
Senior Project Manager & Design team Lead



## **APPENDIX "A"**

### **OPERATIONAL FACILITIES WITH BARTLETT POOL LAYOUT**

Below are examples given of pool decks across the nation that have these conditions installed for both the 1 meter and 3 meter diving boards. Please note, with special attention to the Buchanan natatorium of Las Vegas NV, as many photos will come from this pool design, as it is identical to Bartlett's pool deck. At each of these facilities, numerous USA swimming sanctioned events are held each year. Some of these pools have histories that span over 40 to 50 years with the same overall layout and design.

List of Facilities & Pools with similar Layouts:

- 1.) Buchanan Natatorium @ UNLV, Las Vegas, Nevada
- 2.) Tarbell Pool, Lewiston Maine
- 3.) Nanaimo Bay Aquatics Center, NB, British Columbia, CA
- 4.) Minnesota State University Pool
- 5.) Deerfield High School Pool , Minnesota
- 6.) Hobart High School Pool, Hobart, Indiana
- 7.) Hampton Aquaplex, Hampton Virginia
- 8.) Kokomo High School Pool, Kokomo, Indiana
- 9.) Buffalo State College Aquatics Center, Buffalo, New York
- 10.) Plymouth State University Pool, Plymouth, New Hampshire
- 11.) Eau Claire YMCA Pool, Eau Clair, WI Virginia
- 12.) Äventyrsbadet Sydpoolen - Södertälje – Sweden

### Buchanan Natatorium @ UNLV, Las Vegas, Nevada

The Buchanan Natatorium Hosts UNLV's NCAA Division 1 swim and dive team. This facility as previously stated is set up almost exactly like Bartlett's pool. The Buchanan Natatorium regularly hosts The Nevada state high school Championships, USA swimming Junior Olympic regionals, USA diving regionals, along with a host of Collegiate meets, including the winter invitational, that has over half of the MWC in attendance. Pictured here is a standard college dual meet, but pictures allow for a good view the diving boards and swim block installations.

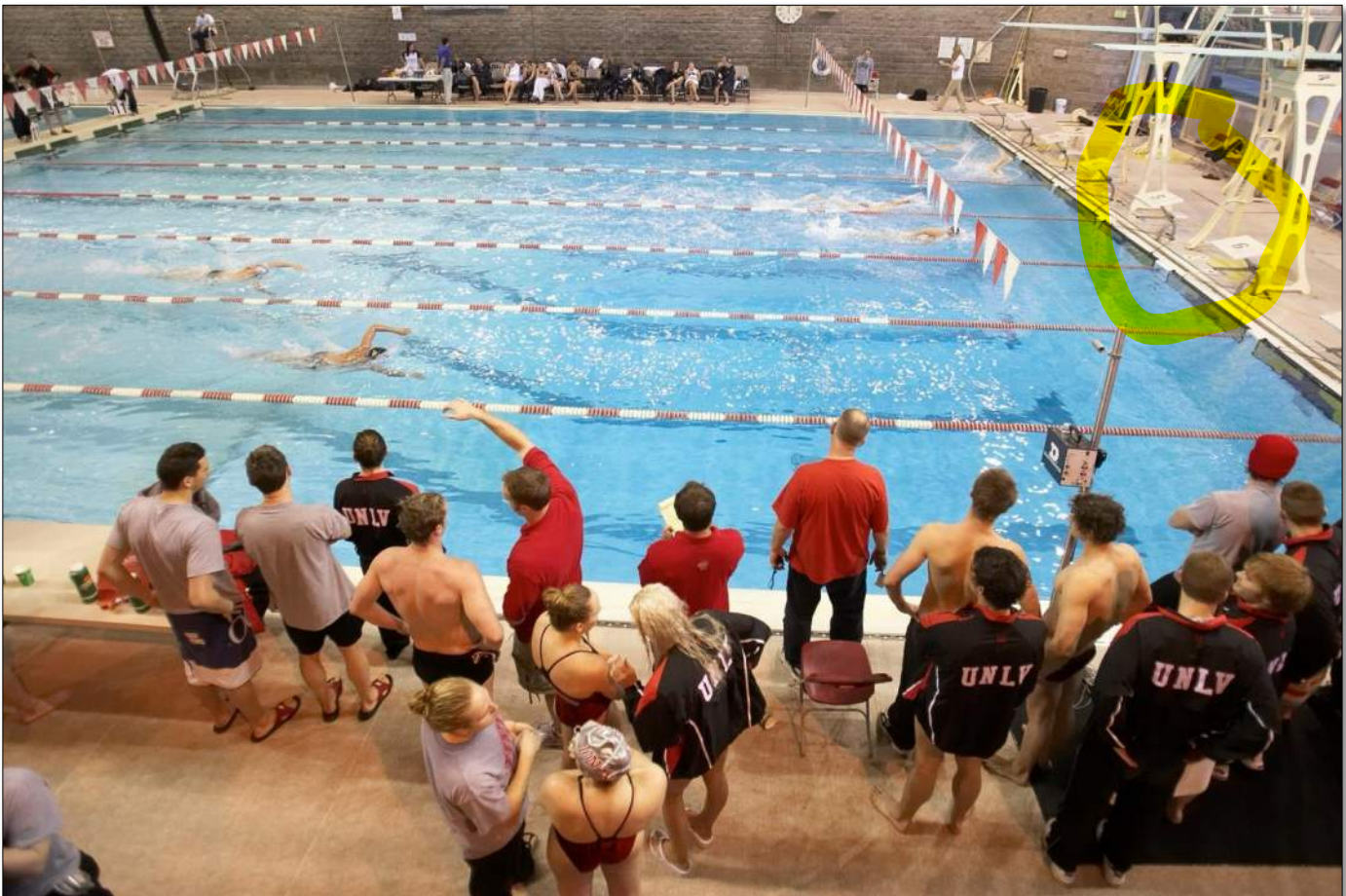


Figure1- The pool deck is space on all sides of the same, 8 lane Olympic swimming pool is almost identical. This metal walled, and fabric lined pool was a design standard for pools across the nation for 20+ years, and is still used today. Note the closeness of the 3-meter boards to the wall.

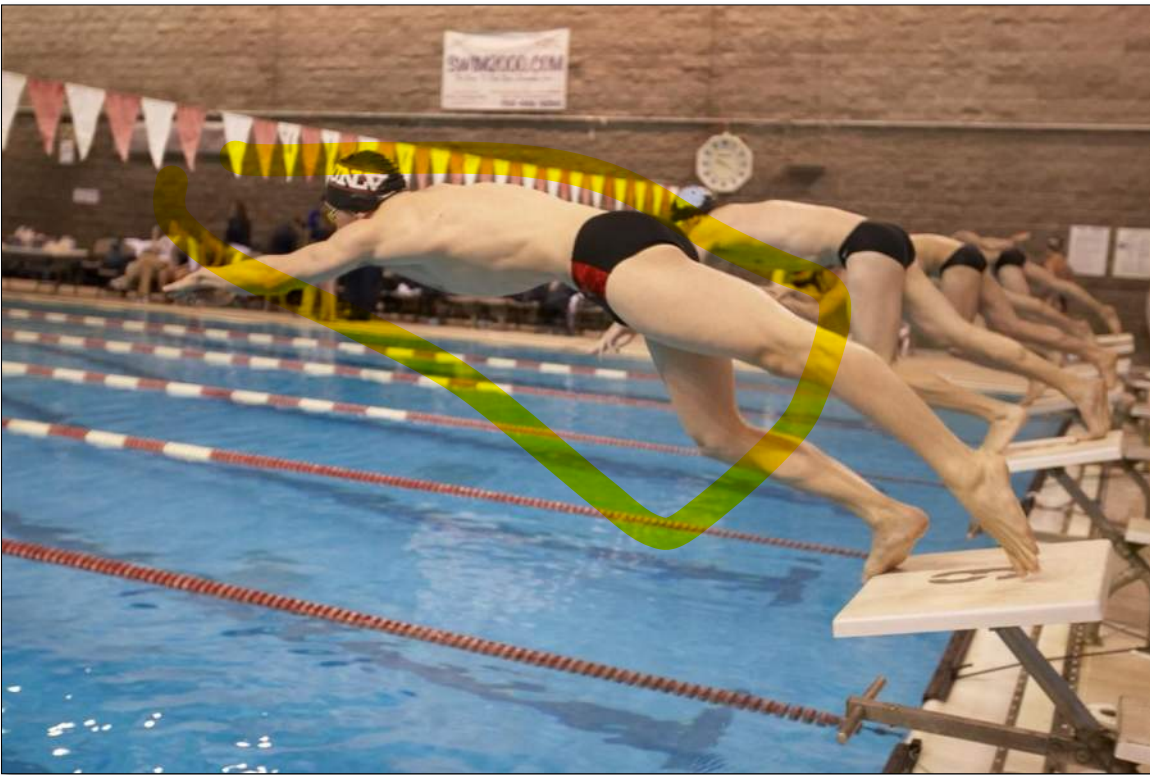


Figure2- pictured here are D1 college athletes, many over 6' in height beginning a swim start. The 3 meters are no-where near their head height during takeoff and are off picture. The boards are not even lifted.



Figure3 (left)- The board is over the swim block, as a full height adult begins their swim start.

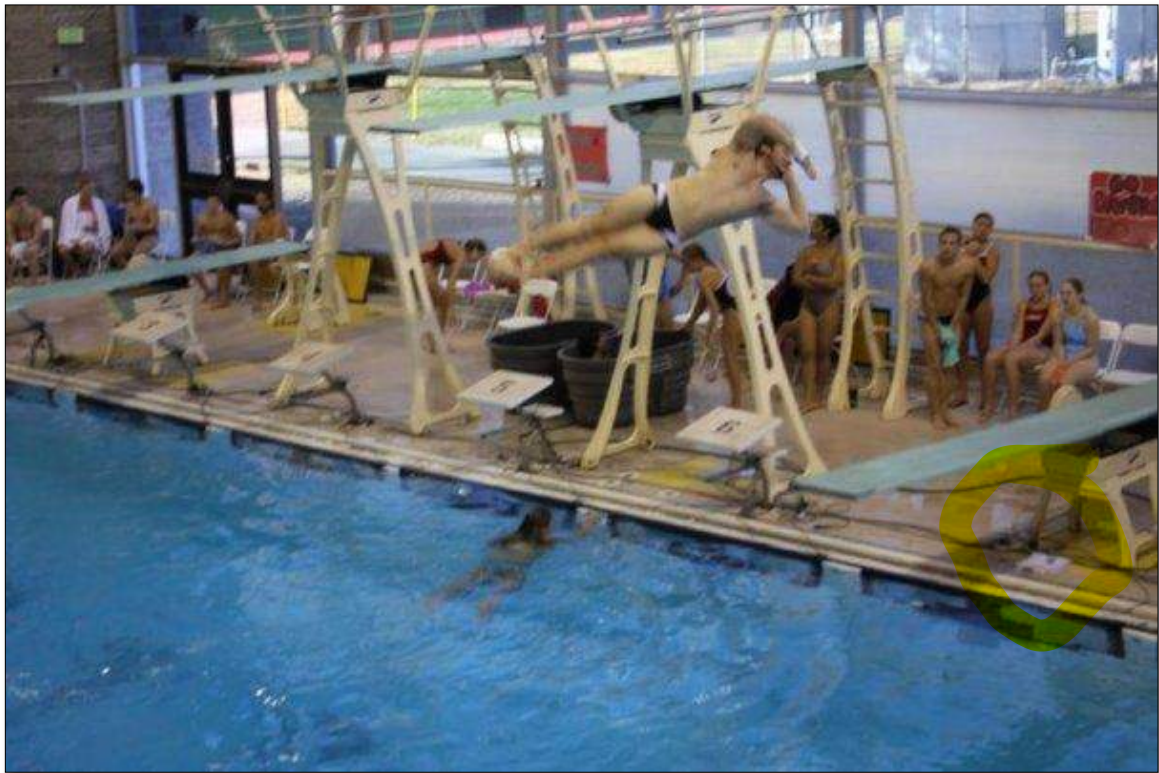
Figure 4- Jonas Andersson, an Olympic swimmer for Sweden in Beijing stands next to the diving stand, waiting to begin his start.



Figure5- Female swimmers take to the starting block with 3 meters pictured in the rear. Access is not an issue.



Figure 6- Note the feet of the Duraflex stand is in line with the rear of the swim blocks. All swimmers pictures here are over 6' with the centered swimmer above 6'3"



*Figure7-Diving takes place Note the 1 meter is directly over a swim block that is removed when required. Note the 3 meters proximity to the wall. The access the the 3 meter ladder is the same, and the deck is still functional.*



*Figure 8- A diver stands at the top of the 3 Meter, Note the exact same proximity to the rear wall at Bartlett High School.*



Figures 9 & 10- The head swim coach gathers the entire swim team at the rear of the pool deck underneath the diving boards for a meeting. Space for an entire collegiate team is a non-issue.



Figure 11- Team meeting with 3 meter board pictured in the background.

**Tarbell Pool Lewiston Maine**

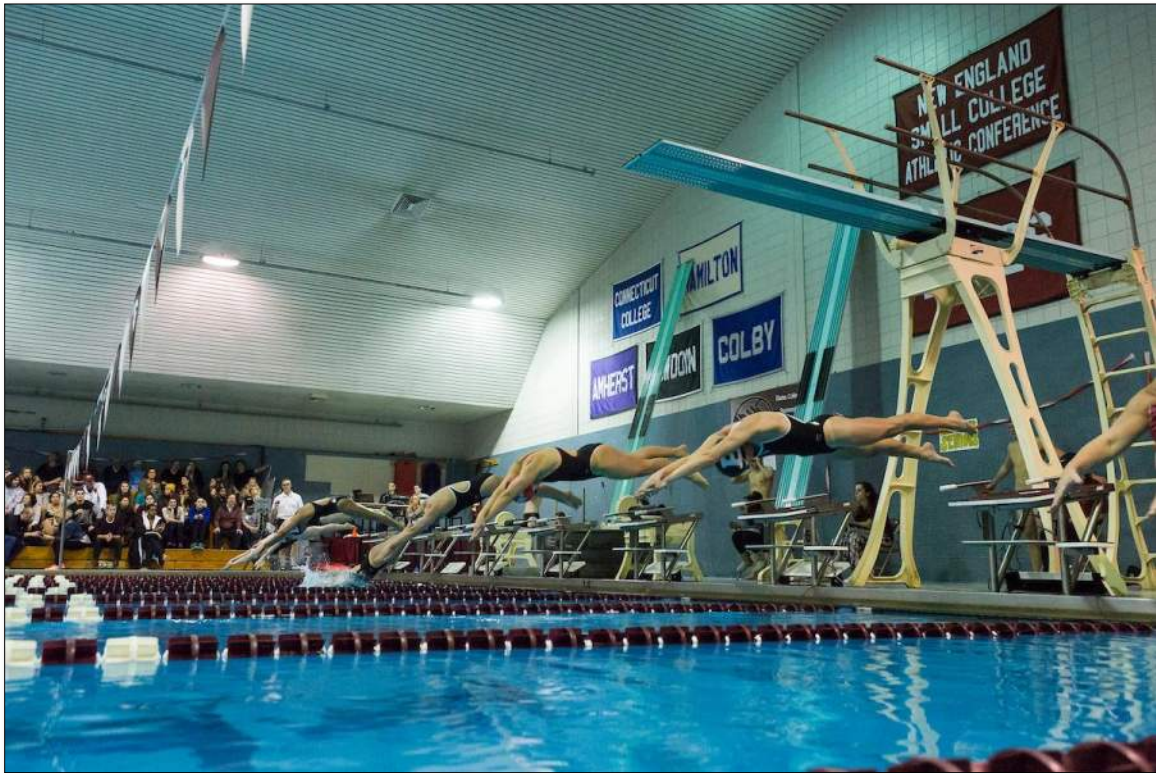


Figure 12- Swimmers compete with Diving boards overhead without issue. An Example of Diving boards and swim blocks withing in unison on the pool deck.



Figure 13- Note the feet of the 3 meter stand directly behind the swim blocks.

**Nanaimo Bay Aquatics Center, NB, British Columbia, CA**

Figure 14- swimmers on blocks, with officials both seated and standing. Note the ladder stand is backed against a wall, a typical installation.

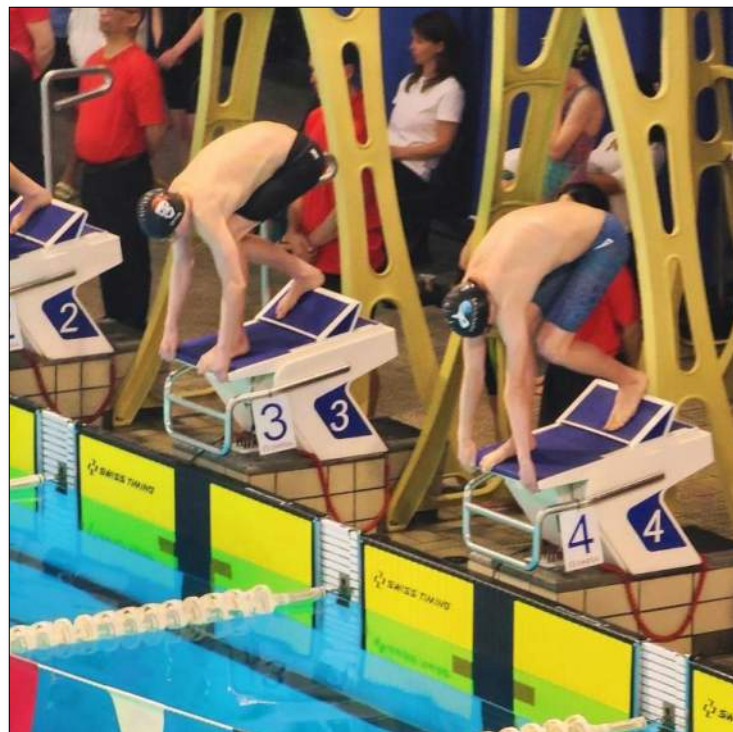


Figure 15- Here, we see swimmers only can access the blocks under the stands for the sides, or from behind. Another example of a typical 3 meter board installation.





Figure 16- A swimming official navigates the pool deck by standing under the 3 meter stands.



Figure 17-The 3 meter stands are mounted with no passable "egress" walkway behind it.

**Minnesota State University Pool**



*Figure 18- A 6 lane pool features a concrete mounted low board, and standard high dive mount.*

**Deerfiled High School Pool , Minnesota**



*Figure 19- Concrete mounted 1 meter stands live next to track style swim blocks.*

**Hobart High School Pool, Hobart, Indiana**



*Figure 20- More stilt stands- note that stilt stands make the hand railings static, and interfere more with swim starts. Yet this installation is still legal and works!*

**Hampton Aquaplex, Hampton Virginia**



*Figure 21- 3 Meter Stilt Stands live both next to, and over the swimming blocks. The placement is arbitrary.*

**Kokomo High School, Kokomo Indiana**



*Figure 22- 3 Meter Stilt Stands live both next to, and over the swimming blocks. The placement is arbitrary.*

**Plymouth University Pool Plymouth, Virginia**



*Figure 24- A concrete 1 meter diving board sits next to a stilt mounted 3 meter. 3 Meter Stilt Stands live both next to, and over the swimming blocks. The placement is arbitrary.*

**Eau Claire YMCA Pool, Eau Clair, WI Virginia**



*Figure 25- a YMCA has a concrete mounted 1 meter stand. Note how the standard hand rails protrude. The bartlett Design allows the front portion of these railings to be removed for added swimmer safety.*



**Äventyrsbadet Sydpoolen - Södertälje – Sweden**

*Figure 25- A concrete 1 meter diving board sits next to dual stilt mounted 3 meters. 3 Meter Stilt Stands live both next to, and over the swimming blocks. The placement is arbitrary. This pool is in Sweden, showing that this is an internationally accepted standard. Again, note the proximity to the rear floor curb. Access across the deck is under the diving board, not behind it*