

# Anchor Replacement Program Part 1 Training



# **Anchor Replacement Program (ARP)**

The BCC has been involved in bolt replacement since 2013 and replaced over 1,000 bolts to date! We have worked at numerous crags in Boulder Canyon, Clear Creek, North Table, Eldo SP, Flatirons, and even areas like Shelf Road.

We rely heavily on volunteer rebolters to increase our impact and work with many experienced climbers to accomplish our goals. Rebolting work is quite technical from a rope access and tools standpoint. A quality training program is necessary to build key competencies for aspiring volunteers.

# ARP Training and Assessment

- Three part training program focused on base knowledge and hands on practice
- Ongoing assessment to check understanding of core principles and proficiency
- Once trained and assessed volunteers are eligible to come out for official BCC rebolt events and receive further mentorship
- **Successful volunteers are also expected to apply for and complete a hardware grant when comfortable**
- BCC does not teach climbing or rope access skills. These are outside of our scope and must be acquired elsewhere.

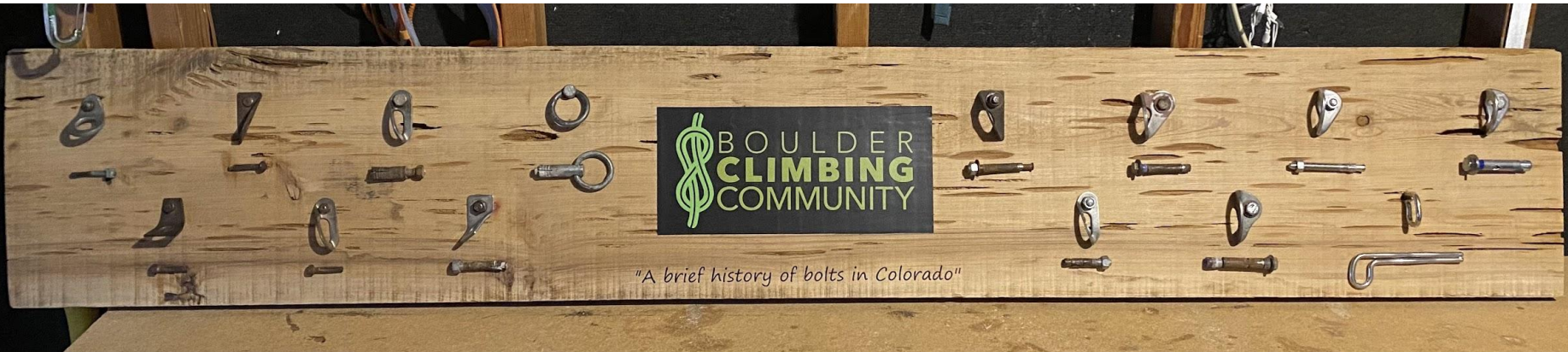
# ARP Training and Assessment

- This is part one.
  - After viewing the recording, [please complete the quiz](#), which will prompt BCC Staff to schedule a part-two training
- Part Two
  - Hands on training with skills and self-assessment
- Part Three
  - Shadowing experienced rebolter for real life experience and problem solving
- All ARP Volunteers are strongly encouraged to seek independent instruction on rope work and to be confident ascending fixed lines, transitioning from ascending to descending, and using backups when possible. .

# Training Part 1 Objectives

- Knowledge of the state of fixed hardware in the Front Range
- Understanding of national and local policies around fixed anchor maintenance
- Importance of hardware replacement and key ethics
- Understanding of BCC's ARP policies
- Basic Bolt ID and assessment skills

You must [complete the part 1 quiz](#) to move on to part 2



Questions?

# State of Fixed Hardware in the FRange

First, a little history...

- First successful use of expansion bolts in the Boulder area on the East Ridge of the Maiden (Do you know what year the FA happened in?)(What route was the first attempted use??)
- Early climbing and bolting wasn't concerned with long term sustainability. Climbers used any and all hardware for day of protection and to reach the summit.
- Led to a wide variety of hardware with varying degrees of strength

Boulder Climbing Community  
www.boulderclimbers.org

Which would

Route: Trail of Tears, Eldorado, CO  
Type: 3/8"x2-1/4" sleeve bolt w/HME  
hanger  
Installed: 1988 - Replaced: 2015

Type: 1/4"x1-1/4" Rawl threaded split-  
shank w/Gen-1 (thin) Leeper hanger  
(note the smaller diameter hole size in  
the hanger - beware!)

Route: W Face Matron, Flatirons, CO  
Type: 3/8"x2" wedge bolt w/SMC  
hanger (hangerless when removed)  
Replaced: 2014

Route: W Face Matron, Flatirons, CO  
Type: 1/4"x1-1/4" Rawl threaded split-  
shank w/Leeper (hangerless when rmvd)  
Replaced: 2014

yo

Power-Bolt s  
1/  
Fixe sta





ust to hold

American Safe Climbing Assoc.  
www.safeclimbing.org

all?

Type: 1/4"x1-1/4" Rawl buttonhead  
split-shank w/Leeper hanger

Route: Mammary Pump, Pinnacles, CA  
Type: 3/8"x2-3/4" Rawl threaded split-  
shank w/SMC hanger  
Replaced: 1999

Route: Lazy Squaw Spire, Golden Gate  
Canyon State Park, CO  
Type: Self-drill bolt w/SMC hanger  
Replaced: 2015

Route: Middle Earth, Tuolumne, CA  
Type: Rawl 1/4" w/Gen-2 (thin) SMC  
hanger (note horiz stamp - beware!)  
Installed: 1985 - Replaced: 2015

ve anchor  
hanger





## **Sport Climbing Boom in the late 80s-early 2000s**

With the introduction of modern day sport climbing in the US at Smith rock came a whole lot of bolts... Climbers began to seek out blank face in Flatirons, Eldo and Boulder Canyon that make up many of today's classics.

The bulk of bolts placed in the Front Range came during this time and are generally better than preceding eras, but still have a wide variety of styles, strengths, and lifespans.





do"

## Modern Day Problems

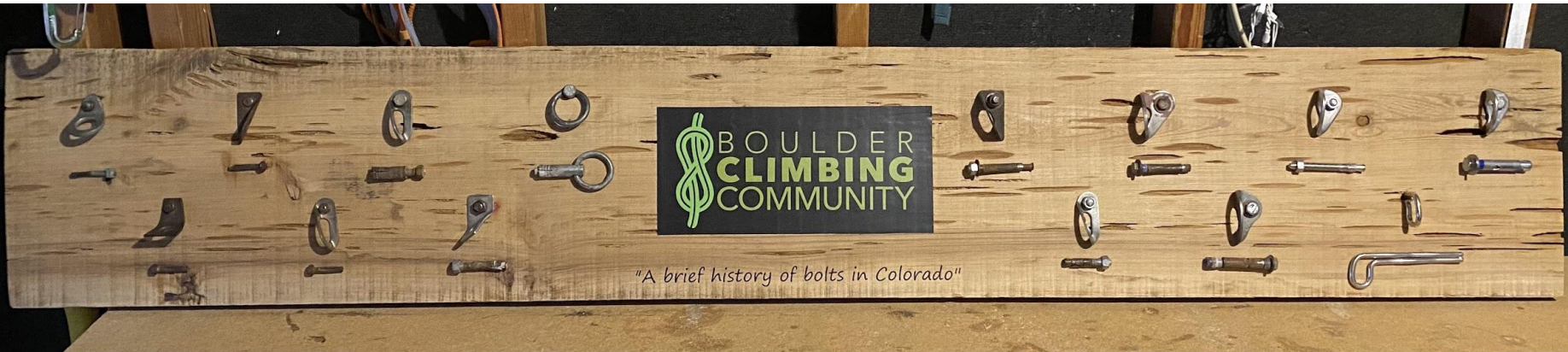
- The days of clipping “dangerous” hardware from the 60s-80s has basically come to an end for popular Front Range climbing areas
- The new problems are substandard bolts (mostly plated mechanical bolts) from the sport climbing boom that are rusty and reaching the end of their lifespan
- If these bolts aren’t replaced in the next decade or so they could become dangerous, just like the tiny buttonheads of yesteryear
- Excessive rusting and age also greatly reduces the chance of clean removal

# Current climbing hardware standards

- [ASCA national standards](#)
- BCC Standards
  - Stainless steel, 1/2in diameter, minimum 2 3/4in length, rated for use in climbing
- Regional flavors and preferences, but in general only modern bolts and anchors should be used







Questions?

# Policies around fixed anchors

Bolts are a sensitive topic for most land managers. In the past (and currently), they were generally placed without knowledge or approval from authorities which can make for an awkward conversation for a rebolter 20 years later...

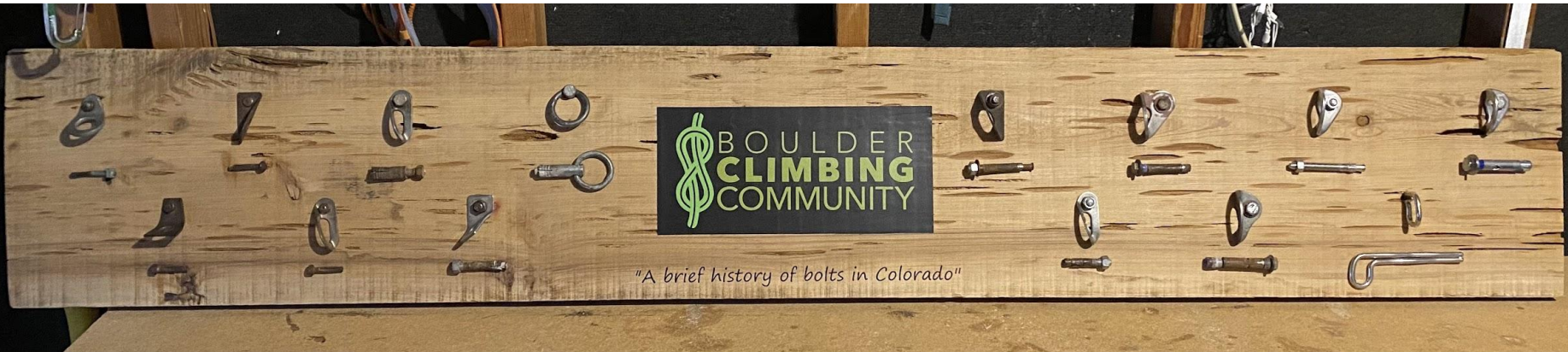
## [Access Fund and American Alpine Club policy](#)

- Targeted at federal land managers
- Distinction between wilderness and front country sites

## Local climbing area policies on fixed anchors

- [RMNP](#) (NPS)
- USFS (Boulder Canyon)
- [Boulder County](#) (Castle Rock)
- [Jefferson County](#) (Clear Creek)
- [OSMP](#) (Flatirons, FCC)
- [Eldo SP](#) (ACE)
- [Staunton SP](#)
- Confused yet??

Rebolting (and route development) must be performed with the utmost care. Local problems can become national issues quickly.



Questions?

# Importance of bolt replacement and ethics

- Fixed hardware requires maintenance and replacement
- All bolts (even the new, modern ones) have lifespans
- Lowering hardware gets worn out quickly with the thousands of climber in the Front Range

Making sure fixed anchors are functional and safe is a collective responsibility for all climbers.

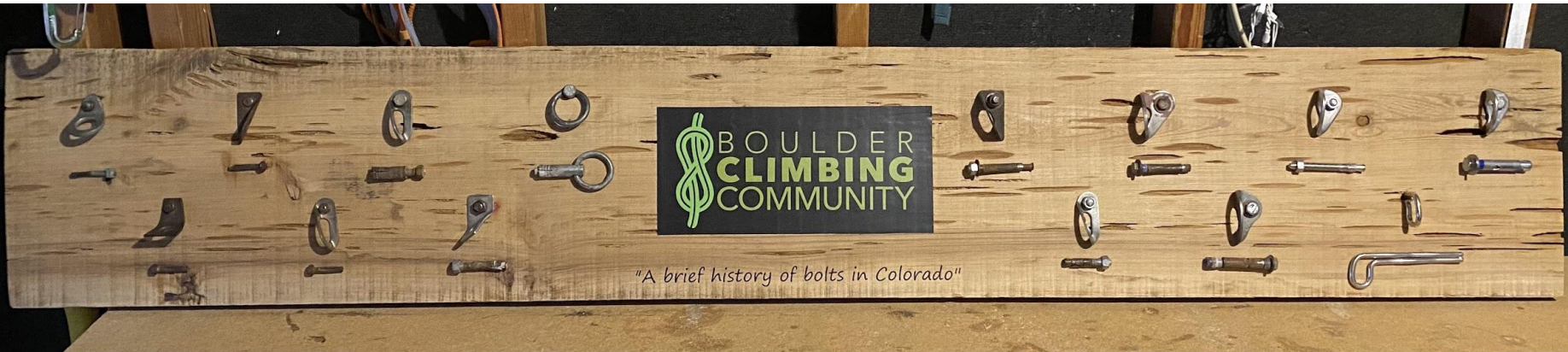




# Key ethics for bolt replacement

- Reusing the existing hole
  - Climbable rock is a finite resource, we don't want our cliffs looking like swiss cheese for the next generation
- New hardware should be of the highest quality
  - Hardware that follows ASCA standards should last 50-100 years
- First ascensionist/community involvement
  - In general, unilateral decisions in the climbing community don't end well. If replacement work involves classic route or route alteration (bolt relocation, retrobolt, activity that changes the character of the climb) get more consensus.
  - [Shelf Road example](#).
- Safety of rebolters and climbers
  - Accidents involving fixed anchors can cause major issues with land managers





Questions?

# BCC ARP policies

The ARP will provide assistance for the following actions. Note: for all actions land manager/owner approval must be obtained if required:

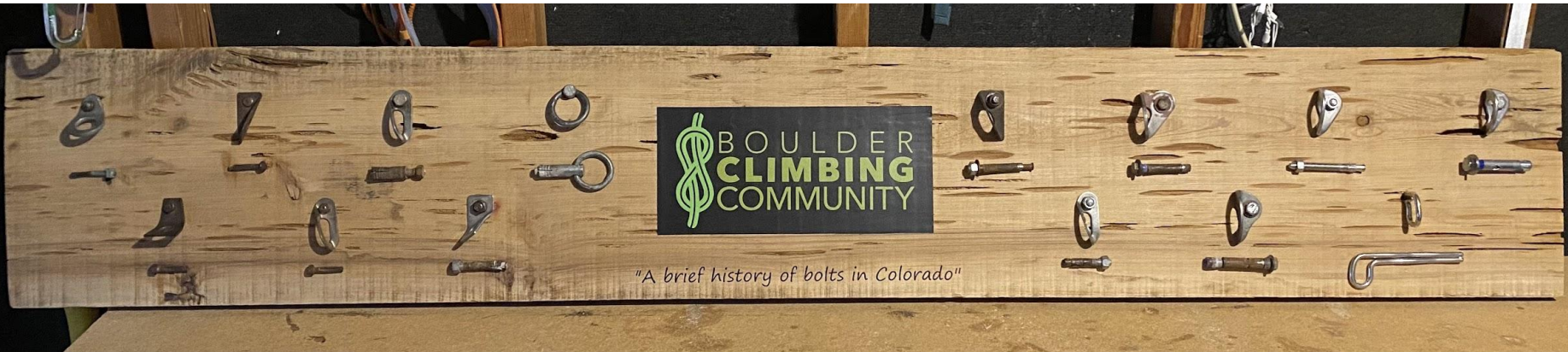
- Replacing substandard bolts, preferably reusing the same hole
- Adding or removing anchor materials such as chain, quicklinks, rappel rings, mussy hooks, etc. when necessary
- Moving bolt location due to hole not being reusable or original location objectively poor ie. too close to edge, in fractured rock, too close to other fixed hardware, etc.
- Adding and updating information about fixed hardware to public databases (Mountain Project)
- Patch and/or repair aesthetic issues associated with replacement work
- Provide educational clinics for community members and volunteers

Actions that the ARP will not engage in:

- Replacing non-bolt fixed hardware with bolt or non-bolt fixed hardware
- Funding and/or placing fixed hardware for new route development
- Funding and/or placing new fixed hardware on already existing climbs ie. retro-bolting
- Moving the location of bolts for aesthetic or practical reasons
- Providing or replacing fixed quickdraws ie. permadraws

# Rebolting guidelines

- All bolts, hangers and quicklinks will be stainless steel and rated for use in climbing applications
- All manufacturer guidelines will be followed during installation.
- Bolts provided by BCC will have a minimum diameter of ½ in and minimum length of 2 ¾ in
  - Existing bolts will be allowed to stay if stainless steel, 3/8 in diameter, and textbook placement/installation
- Quicklinks and chains will have minimum diameter of 5/16th in
- For glue-in bolts, appropriate adhesive will be used (Dewalt AC100+ Gold, Redhead A7+, etc.)
- Replacement should be one for one and reuse existing holes as much as possible
- If existing placement cannot be used, old hardware should be removed and patched. Proper consideration should be taken in new placement to not affect the character of the climb
- Fixed hardware should be camouflaged to match rock using suitable spray paint
- All land manager guidelines regarding fixed anchors will be followed



Questions?



5/16" Rawl  
Button Head



1/4" Rawl  
Button Heads



1/4" Rawl Threaded  
Compression Bolt



Original Warren Harding  
bolt from *The Nose* with  
home-made hanger

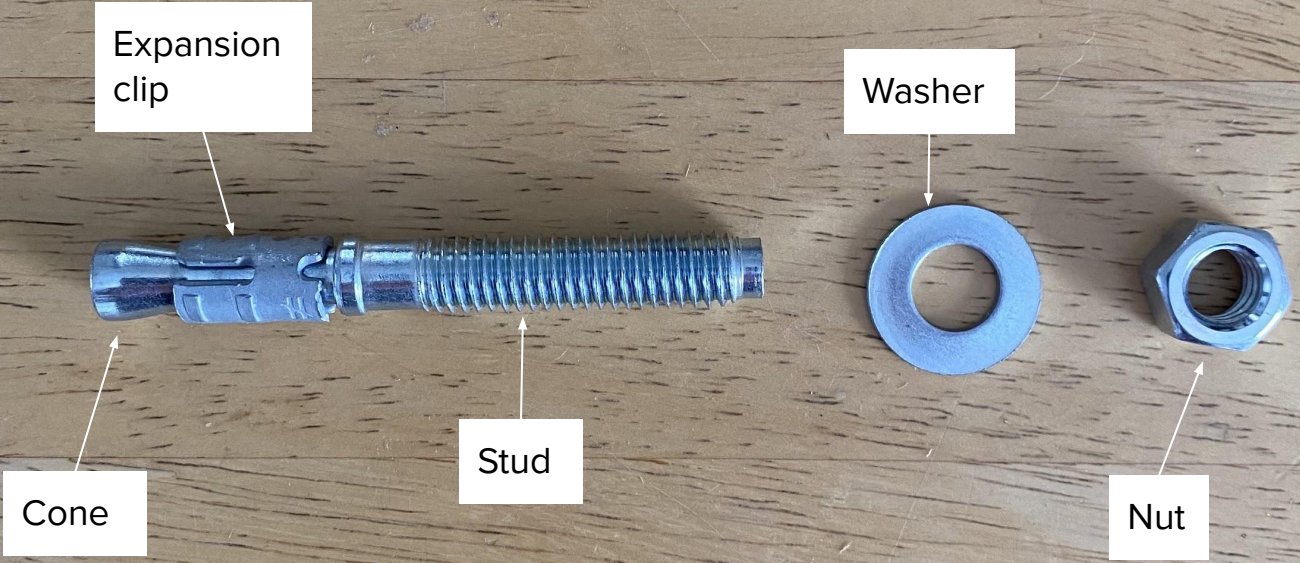


Unplaced Star-Dryvin  
with Leeper hanger









Expansion clip

Cone

Stud

Washer

Nut



## Stainless Steel Five Piece Powers Sleeve Bolts



## Rusted Plated Five Piece Bolts





Cone



Plastic collar



Washer



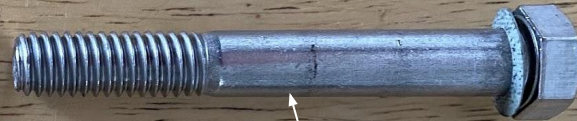
Expansion sleeve



Metal spacer



3/8th in Stud





Staple Type



Petzl Collinox  
(10mm)



Petzl Batinox  
(14mm)



Titanium  
*discontinued*

Fixe  
10mm x 6"



Fixe  
12mm x 3"



Fixe  
10mm x 3"



Climbtech Wave bolt



Climbtech  
3/8" prototype

Bolt Product Bolts

10mm  
solid leg



12mm  
solid leg



12mm  
twisted leg



16mm  
twisted leg













# Assessing bolts/hangers & lowering hardware

1. ID the hardware
2. Check the rock
3. Think of the age
4. Look for rust
5. Check any movement
6. Look for wear







# Key takeaways

- Bolt replacement in the Front Range primarily on substandard\* bolts
  - Substandard if any of the following criteria is met: non stainless steel, less than 3/8th diameter, and/or not a textbook placement
- There are various land managers with different policies around fixed anchor management plans in our area. Always do your due diligence
- Fixed anchors and hardware have a lifespan. Up to collective community to maintain
- High level BCC policies
- Basic ID and assessment



# Next Steps

- Part 2 hands on training!
  - Learn how to place and remove bolts with BCC tools
- Study additional resources
- Get out and use your new ID & Assessment skills
  - Don't forget about the bad bolt tracker!

# Additional Resources

- Access Fund [Best Practices for Bolt Replacement](#)
- [ASCA website](#)
- [BCC Bad Bolt Tracker](#)

# **Complete Part-1 Quiz**