

CIT #3 – Hardhats to Helmets Information

Hard Hat History (Wikipedia)

1919: E.W. Bullard (E.D. Bullard Company) patented the “hard-hard boiled hat” made of steamed canvas, glue, and black paint.

Not long after, Bullard developed an internal suspension to provide a more effective hat.

Early designs bore a resemblance to the steel M1917 “Brodie” military helmet.

1930: MSA introduced the new non-conductive thermoplastic, reinforced Bakelite-based “Skull Guard” helmet. **Today, the Skullgard hard hat is still manufactured in nearly 2 dozen models. Many of our own field supervisors wear this style of hard hat.**



1931: Six Companies, Inc. mandated the use of hard hats on the Hoover Dam Project.

1933: The Golden Gate Bridge Project required workers to wear hard hats.

1938: Lighter affordable aluminum hard hats became popular.

1940s: Fiberglass came into use.

1950s: Injection molded thermoplastic appeared.

1952: MSA offered the Shockgard Helmet to protect linemen from electrical shock of up to 10,000 volts.

1961: MSA released the Topgard Helmet, the first polycarbonate hard hat.

1962: V-Gard Helmet was released. **Today, the V-Gard Helmet is the most widely used hardhat in the United States. Most of our projects provide the V-Gard full brim style to all new employees.**



1997: ANSI allowed the development of a ventilated hard hat to keep wearers cooler.

In summary, the construction industry is using hard hat technology that is anywhere from 61 to 93 years old. **Please take a moment and think about that – the technology protecting my head has not seen a significant safety advancement in decades.**

What protections are provided with current hard hat technology?

OSHA regulations require construction workers to wear hard hats when they are exposed to:

- Object may fall from overhead;
- Potential head contact with electrical hazards; and
- Stationary objects like exposed beams and pipes risk head collision

Current ANSI Type I (ANSI Z89.1) hard hats meet the OSHA requirements by cushioning blows to the crown or top of the head. ANSI Z89.1 hard hats deliver assurance that you're protected from tools, small parts, or similar items falling from a reasonable height – or if you stand up under an obstruction and whack your head.

Where is the construction industry headed?

The National Institute for Occupational Safety and Health (NIOSH) looked at construction fatalities between 2003 to 2010 and found that 25% of all construction fatalities resulted from a **Traumatic Brain Injury (TBI)** which correlates to roughly 2,200 deaths.

During this seven-year study, the American Journal of Industrial Medicine found 2.6 fatal TBIs per 100,000 construction workers every year – more than triple the average rate across all other industries. That represents 1 in 4 construction-related deaths and nearly 1 in 4 of all occupational TBI fatalities.

Between 2011 – 2015 the Bureau of Labor Statistics recognized an additional 992 deaths resulting from a TBI.

The construction industry has recognized that there is a need to protect construction workers from TBIs.

- ANSI has provided Type II (ANSI Z89.2) hard hat requirements that reduce the impact from top of the head blows and protects wearers from front, back, and side impacts.
- EN12492 (European) Performance Standards
 - 4.2.1.2 (front energy absorption); 4.2.1.3 (side energy absorption); 4.2.1.4 (rear energy absorption); 4.2.3 (retention system strength); and 4.2.4 (retention system effectiveness)

After coming to an understanding of what current hard hat technology provides in protecting the head and brain of the construction worker and based on the data developed from recent studies, our CREW360 Continuous Improvement Team (CIT) #3 is in complete support of the construction industry moving away from current hard hat technology to the new helmet technology.

CIT #3 Research – Transitioning from hardhats to helmets.

CIT #3 supports the following requirements as we transition from hard hats to helmets based on their research and assessment:

Use of a Class E helmet with an integrated four-point chin strap meeting ANSI Z89

(Type I or Type II) AND EN12492 performance standards 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.3 and 4.2.4.

CIT #3 members looked at several helmets thought to meet the above requirements from 3M, JSP, KASK, Milwaukee, MSA and Petzl.

The following are the **Top 3 Suppliers** meeting those requirements:

- Petzl Vertex and Strato Series (Class E Rated*)
- KASK Zenith X (Class E Rated*) and Superplasma
- JSP EVO (6151 Ascend, 6161 Ascend, Vistalens Ascend, Vista Shield Ascend)

*Note: some helmet types have a vented and non-vented version. Only non-vented helmets meet the Class E standard. Class E helmets withstand 20,000 volts of electrical current and protect a user's head from arc flashes and electrical shock.

For the CIT #3 members, **Petzl** was the clear favorite.

Petzl has provided helmets to our MAX Red Line, R200, L200 and MRS Brightline East projects to support CIT #3 members as they introduce the helmets to a crew and receive feedback. Petzl has also offered our company the opportunity to purchase helmets directly from them and will provide a 40% discount off retail prices.

Petzl Vertex (comfortable):



Petzl Strato (lightweight):



Thank you to the following CIT #3 members for their time and effort on this important topic:

Keith Tarkalson
Bess Fisher
Cory Randall
Devin Salbaza-Comacho
Juan Lona
Tony Loreda
Jack Taylor
Omar Lara

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Re: Helmets Rollout Clarification 2.0

To reiterate our announcement last July 2023, effective September 1, 2023, all SW/MRS employees on new projects will be provided and required to wear a Class E Non-Vented helmet meeting ANSI Z89 (Type I or Type II) and EN12492 performance standards 4.2.1.2 (front energy absorption), 4.2.1.3 (side energy absorption), 4.2.1.4 (rear energy absorption), 4.2.3 (retention system strength) and 4.2.4 (retention system effectiveness). All employees on existing projects will be provided with a helmet if they want to wear one.

Based on further employee feedback over the last several months, project teams can now choose to purchase the following brands and models:

1. Studson SHK-1 Full Brim Type II, Class E Non-Vented (\$120 each, no need to purchase brand specific attachments)
 - Craft Employee Color: White; Supervisor Color: Grey or Carbon
2. Studson SHK-1 Type II, Class E Non-Vented (\$120 each, eye/face attachments ~ \$55 each)
 - Craft Employee Color: White; Supervisor Color: Grey or Carbon
3. Petzl Vertex Type I, Class E Non-Vented (\$60 each, eye/face attachments ~ \$45 each)
 - Craft Employee & Supervisor Color: White

If an employee prefers a different brand, they can purchase their own helmet, but it must meet the standards listed above. The following brands/models meet those requirements:

1. KASK Zenith X (Type I, Class E Non-Vented)
2. Milwaukee BOLT Front Brim Safety Helmet (Type II, Class E Non-Vented)
3. Milwaukee BOLT Safety Helmet (Type II, Class E Non-Vented)
4. WaveCel T2+ Pro Full Brim (Type II, Class E Non-Vented)

Just like other employee-purchased PPE (i.e., fall protection equipment), employees are required to verify with their safety manager that their helmet meets our standards.

For the time being, please request all helmet purchases through Katie Nance at knance@stacywitbeck.com and contact her with any questions.