

Pei Evaluation Service® is an accredited ISO Standard 17065 Product Certifier, accredited by the IAS. This **Product Evaluation Report** represents a product that **Pei ES** has Evaluated. This product has a Product Evaluation Service Agreement & Follow-up Inspection Service Agreement. This **Product Evaluation Report** in no way implies warranty for this product or relieves **CCL** of their liabilities for this product. This **PER** is an official document if it is within one year of the initial or re-approval date.

Initial Approval
June, 2018

Re-Approved

See all **Pei ES** Listings at: www.p-e-i.com

Report Owner

CCL

8296 Sherwick Court
Jessup, MD 20794

Approved Manufacturing Locations

CCL

8296 Sherwick Court
Jessup, MD 20794

Products

CCL Sheartrack®

Evaluation Report Information

CCL Contact: Carol Hayek - (301) 490-8427

General Details

CCL Sheartrack® is covered under the scope of this **PER**. The manufacturing location listed above has an approved Q.C. Manual to manufacture the products described herein. **CCL** has a Product Evaluation Service Agreement with **Pei Evaluation Service® (Pei ES)** and a Follow-up Inspection Service Agreement with *Progressive Engineering Inc. (Pei)*. The approved manufacturing location shall be audited quarterly by *Pei*.

Product Description

The **CCL Sheartrack®** is approved for shear reinforcement in flat concrete slabs in place of the reinforcement stirrups, drop panels or column capitals. Using the **CCL Sheartrack®** assemblies increases the punching shear resistance of the slabs. The **CCL Sheartrack®** assemblies utilize large-head diameter shear studs, purchased from a supplier and listed in ICC-ES evaluation report ESR-1170. The shear studs are welded to a steel base rail. The steel base rail shall be in compliance with ASTM A36/A529. The stud welding shall conform to AWS D1.1/D1.1M, including the provisions for product control, fabrication and welding verification requirements. The diameter of the studs are 3/8", 1/2", 5/8" and 3/4" diameters. The assembly configurations can be found in Table 1 and Table 2 on Page 3. The number of studs per rail, stud height, stud spacing and rail length are all determined by the project's specific structural design requirements. The **CCL Sheartrack®** assemblies comply with the specifications as defined in ASTM A1044.

The **CCL Sheartrack®** studs are single headed shear studs manufactured to meet ASTM A29, Grades 1010 through 1020 steel and **must** meet the following physical requirements:

Tensile Strength:	65,000 psi (450 Mpa)
Yield Strength:	51,000 psi (350 Mpa)
Elongation in 2" min:	20%
Reduction of Area:	50% Min

The **CCL Sheartrack®** base rails are manufactured from low carbon steel plates conforming to meet the minimum ASTM A36/A529 or equivalent, and **must** meet the following physical and mechanical requirements:

Tensile Strength:	65,000 psi (450 Mpa)
Yield Strength:	44,000 psi (300 Mpa)
Elongation in 8" min:	20%

The **CCL Sheartrack®** studs are welded by CCL factory employees using trained and certified welding operators and welding equipment that is certified by an outside source. CCL has welding procedures in place that follow AWS D1.1 requirements.

CCL Sheartrack® studs may have a galvanized coating that will conform to ASTM A123 and A153. The galvanization should be applied after the welding has been completed.

Design Considerations

The structural design and implementation of the **CCL Sheartrack®** is outside the scope of this evaluation report. The design should be determined by a registered design professional and should consider the following items:

- | | |
|-----------------------------|--|
| a. Stud shank diameter | e. Overall height of the CCL Sheartrack® assembly |
| b. Base rail length | f. Arrangement of headed shear strength reinforcement |
| c. Number of studs per rail | g. Distance between column face and first line of studs. |
| d. Stud spacing | |

Code and Standard Compliance

International Building Code - IBC			
2009 IBC	2012 IBC	2015 IBC	2018 IBC
Chapter 19	Chapter 19	Chapter 19	Chapter 19

American Concrete Institute, ACI 318
Tested to ASTM A1044

The structural design and installation of the **CCL Sheartrack®** used for punching shear reinforcement into concrete slabs must comply with the applicable provisions of the ACI 318-14. Specific provisions for headed stud shear reinforcement detailing including arrangement placement limits are called out in Section 8.7.7.

For General Loading Conditions

Refer to ACI 318-14, Section 22.6.6 for maximum shear with shear reinforcement.

For Earthquake Loading Conditions

Refer to ACI 318-14, Chapter 18 for special provisions related to seismic loading and shear reinforcement.

Per Section 1705.3 of the IBC, a special inspection is required of the **CCL Sheartrack®** reinforcement and installation. The required special inspection is to verify the identification of the **CCL Sheartrack®** system, verification of the **CCL Sheartrack®** assembly, location, positioning, concrete cover and clearances to ensure the assemblies comply with the approved design drawings and all applicable codes.

General Product Usage and Limitations

1. The **CCL Sheartrack®** described in this report must comply with the requirements of this evaluation report along with the applicable code and related sections along with the approved engineering plans.
2. Approved installation drawings shall be easily available at all times during construction on the job site.
3. Provided **CCL Sheartrack®** quantity and installation drawings shall conform to the specified reinforcement shown on the approved structural engineering drawings.
4. The **CCL Sheartrack®** assemblies must be accurately placed and adequately supported as specified in the construction documents and the limitations of ACI 318.
5. The top and bottom concrete cover shall be in accordance with ACI 318.
6. Chairs must be positioned a minimum of 2" from the rail ends or as shown on the approved installation drawings.
7. Spacer chairs must be securely fastened to framework to avoid movement during pour.
8. To prevent the **CCL Sheartrack®** from sliding within the chairs, fasten using wire ties at-least 1 chair to the rail or 1 stud to the reinforcing bar.
9. Rails shall be placed at a set distance from column face, openings and edges as shown on the approved installation drawings.
10. Rails shall be positioned around the columns as shown on the approved installation drawings.
11. The **CCL Sheartrack®** shall be stored on the job site so as to prevent physical damage and to minimize the effects of corrosion.
12. The **CCL Sheartrack®** shall be free from mud, oil, excessive rust or other non-metallic coatings that decrease bond.
13. Installation of the **CCL Sheartrack®** must comply with current applicable code and approved installation drawings.

Product Labeling

The **CCL Sheartrack®** Stud Rails described in this evaluation report will have the following information on the their product packaging:

1. **CCL Sheartrack®** part designation
2. Manufacturer's Address and Logo
3. This **PER** number and **Pei ES** Name or Logo
4. Required color coding indicating base rail length, overall height, stud diameter, number of studs per rail and rail quantity.

Product Documentation

A Product Evaluation Service Agreement between **Pei Evaluation Service** and **CCL**

A Follow-Up Inspection Service Agreement between **Progressive Engineering Inc.** and **CCL**

CCL Quality Assurance Manual - Dated: April, 2018

A **Pei** Test Report No. 2016-0258(B) - ASTM A1044 Tensile Testing on 3/8", 1/2", 5/8" and 3/4" Single-Headed Shear Studs welded to a Base Rail - Dated: March 2, 2016

Acceptable Evaluation Marks



Table 1 - CCL Sheartrack® Stud Minimum Dimensions

Shank Diameter "D" (in / mm)	Head Diameter "H" (in / mm)	H/D Ratio	Shank Area "S _A " (.in ² / mm ²)	Head Area "H _A " (in ² / mm ²)	H _A /S _A Ratio	Head Thickness (in / mm)
3/8" (9.5)	1.19 (30.1)	3.17	0.110 (71)	1.112 (712)	10.1	0.24 (6.1)
1/2" (12.7)	1.58 (40.2)	3.16	0.196 (127)	1.961 (1,269)	10.0	0.33 (8.4)
5/8" (15.9)	1.98 (50.2)	3.17	0.307 (199)	3.079 (1,979)	10.0	0.40 (10.2)
3/4" (19.1)	2.37 (60.2)	3.16	0.442 (287)	4.412 (2,846)	10.0	0.47 (12.0)

Table 2 - Base Rail Minimum Dimensions

Stud Shank Diameter (in./mm)	Steel Rail Width (in./mm)	Steel Rail Thickness (in./mm)	Steel Rail Length
3/8 (9.5)	1.25 (31.8)	0.25 (6.4)	Determined by the licensed design professional
1/2 (12.7)	1.25 (31.8)	0.25 (6.4)	
5/8 (15.9)	1.75 (44.5)	0.375 (9.5)	
3/4 (19.1)	2.00 (50.8)	0.375 (9.5)	

Note:

- See Figure 2 for stud profile.

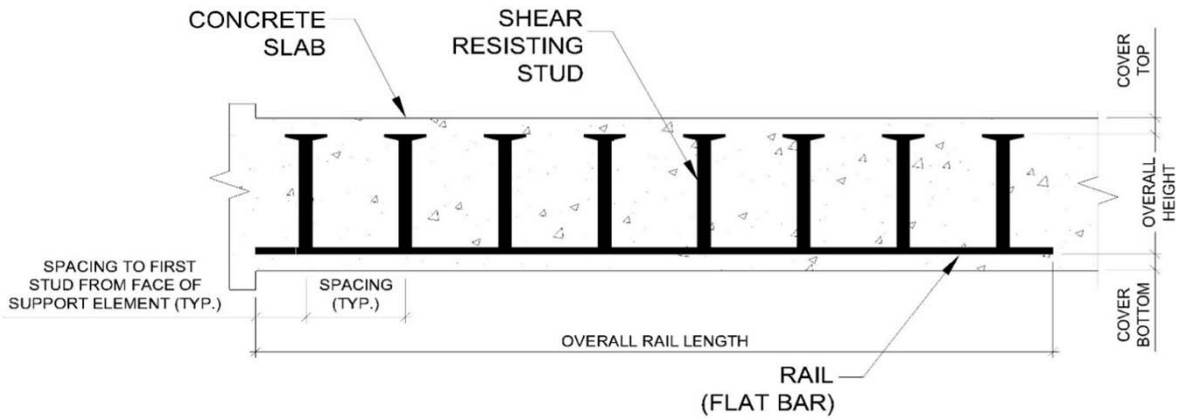


Figure 1 - CCL Sheartrack® Assembly Details

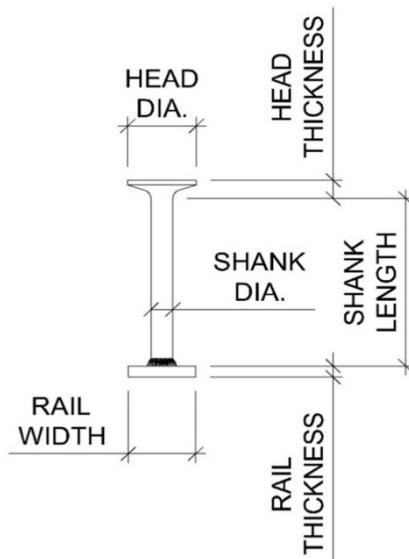


Figure 2 - Dimensional Details