CASE STUDY

STRUCTURAL REINFORCEMENT SOLUTIONS

CARBON FIBER BEAM STRENGTHENING

PUEBLO, COLORADO

The use of Carbon Fiber Reinforced Polymer, CFRP, in construction is on the rise. With the condition of the aging infrastructure around the country and the rising cost of building materials, it is typically more economical to repair or re-purpose structures rather than building new ones. CFRP can be used to make repairs to damaged structural components or to strengthen existing components. In addition to the cost benefits of these type of repairs, strengthening with CFRP can typically be accomplished in a fraction of the time when compared to traditional strengthening or repair methods.

Straight Line Construction was awarded the contract to rehab an existing two-story commercial building which was initially constructed as a retail space in Pueblo, Colorado. The structure was being modified and converted into an assisted living complex which required additional HVAC equipment to be placed on the roof of the structure.

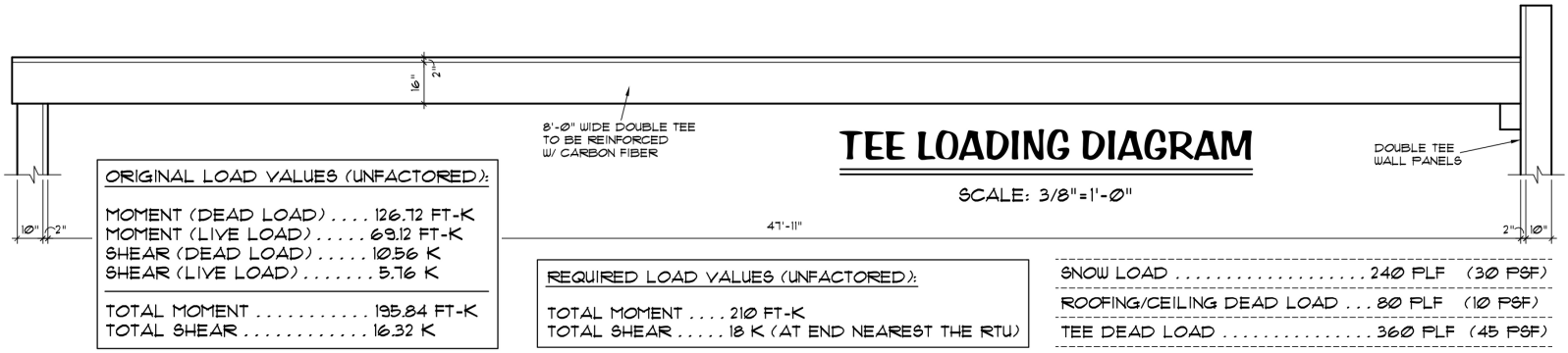
Due to the added loading from the HVAC equipment, the precast double T beams which supported the roof required flexural strengthening along with a minor increase in the provided shear strength.

Prior to reaching out to SRS, the CFRP strengthening for this application had already been designed with a 300 gsm Carbon Fiber. This represents the ariel weight of the fabric, 300 grams of carbon fiber per square meter of fabric. This is a common way of representing the weight of the fabric component in composites.

CARBON FIBER STRENGTHENING SYSTEMS

SRS worked with the Straight Line Construction and Printz Engineering Service to modify and verify the design using the SRS-600UNI. Due to the fact that the SRS product was roughly 2x stronger, the amount of material required on the project was able to be reduced. With 44 beams at 48' in length, this decrease in material required resulted in considerable savings to the contractor on the surface preparation and installation cost of the CFRP.

Due to the extensive inventory of carbon fiber carried by SRS and the immediate access to engineering support, the CFRP design was finalized and the material was shipped within two days of initial contact.



If you have a project where CFRP or conventional methods of strengthening have been specified, reach out to SRS for assistance in coming up with the best possible solution for you project. With a network of Structural Engineers across the US & internationally, SRS can provide PE stamped designs for virtually any application.

Learn more at Structuralrs.com

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