



FULLER PILE SPECIALTY AND RESIDENTIAL HEAD DETAILS

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Introduction

Fuller Pile Technical Note 2-22 covers head fixity details and code requirements for Fuller Pile applications where the pile terminates in a traditional reinforced concrete pile cap. Both free and fixed head conditions are discussed in that publication. This publication provides engineers and contractors with other commonly used applications where Fuller Piles serve as deep foundation elements that support specialty structures including, but not limited to, pedestrian walkways, mezzanines, and residential buildings. This document is applicable to both new and existing construction. It should be noted that Fuller Pile head connection details are custom designed as part of a delegated design for all structures and that this document is meant to simply present the overall design approach with a brief discussion of conceptual details as needed to explain how Fuller Piles are commonly used in these applications. The Fuller Pile engineering team is always ready to work with the engineer and contractor for any project to create specific details that work best for the structure being designed and built. Please note that the details presented in Figure 1 (a) through (f) are not limited to the structural examples discussed in the following sections.

Cantilevered Above Grade Fuller Pile Extensions

Some new structures like pedestrian walkways and existing residential structures needing to be elevated out of the floodplain require their support to begin above grade. Figure 1(a) presents a commonly used detail where the Fuller Pile simply extends, or continues, above grade and a custom designed U shaped pile head support adjustable bracket is included to catch the existing structure at the appropriate elevation and plan location. The pile is designed for any eccentricity needed on site, and, when required, the top of the pile is protected from the elements by galvanization or concrete encasement as preferred by the contractor/engineer.

Direct Support of Steel Column Supporting Mezzanine

Whether new or existing industrial buildings needing a new mezzanine structure are the subject, contractors and engineers prefer the simple direct column support options when using Fuller Piles. For existing structures, the demolition area is minimal. Figure 1(b) shows an existing slab and soil removal area as dotted lines and a custom stiffened cap with reasonable vertical and lateral tolerance capability. The pile is designed for any eccentricity needed on site.

Direct Support of Wood Column Supporting Residential Structure

Existing residential structures that are elevated above grade sometimes need additional new wood columns to support additions to the structure and deep foundation support is difficult to achieve so close to the existing structure. Fuller Piles are ideal for this situation and Figure 1(c) presents a commonly used detail where the Fuller Pile terminates at or near grade and a custom designed box shaped pile head support is included to catch the existing column at the appropriate elevation and plan location. The pile is designed for any eccentricity needed on site, and, when required, the top of the pile is protected from the elements by galvanization or concrete encasement as preferred by the contractor/engineer.

Direct Support of CMU or Cast-In-Place Columns

New and Existing residential structures elevated above grade often utilize continuous piles that extend above grade or CMU columns built directly on pile caps connected together with grade beams. The advantage of the continuous piles is that pile caps and grade beams are not required. The advantage of the CMU columns is architectural, tolerance, and connection related. Fuller Piles offer an economical solution that is the best of both worlds. As shown in Figures 1(d) and 1(e), our custom designed pile heads provide the continuous support of the pile without the need for pile caps and grade beams and also provide the flexibility of CMU/concrete column construction above grade. In these applications and as shown in Figures 1(d) and 1(e), the Fuller Pile typically stops at grade but it can continue into the structure for more strength above grade when needed.

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Figure 1(f) presents another residential option sometimes preferred by engineers or contractors where CMU or concrete construction is not desired. In this case, and similar to braced timber pile construction on the beach, Fuller Piles extend above grade to the bottom of the residential structure and are braced using traditional bracing as shown.

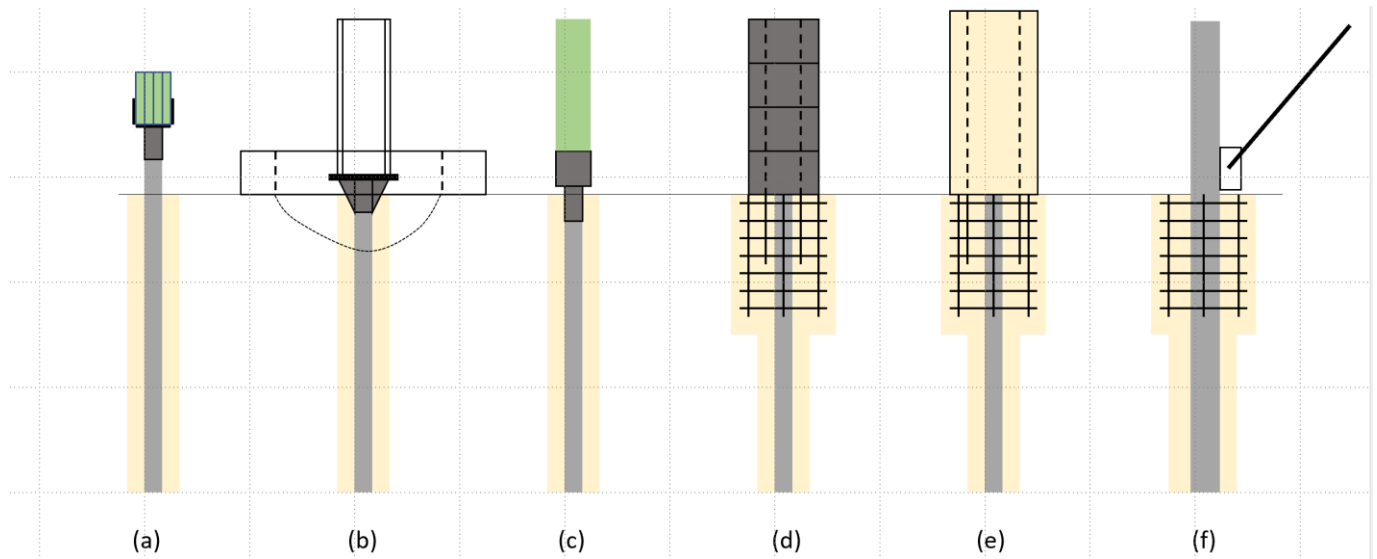


Figure 1. Various Fuller Pile head details used in practice.