

April 5, 2016

Mr. Robert Stein
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition No. Petition 1217 - Bloomfield to Windsor Reliability Project

Dear Mr. Stein:

This letter provides the response to requests for the information listed below.

Response to CSC-01 Interrogatories dated 03/24/2016
CSC-001

Very truly yours,

Kathleen Shanley
Manager
Transmission, Siting
As Agent for CL&P
dba Eversource Energy

cc: Service List

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:

What are the pros and cons of direct embedded versus drilled shaft foundations for monopole transmission structures?

Response:

Direct Embedded Structure Pros:

Direct embedded monopole structures are lower cost to procure and construct compared to monopole structures with drilled shaft foundations. The poles are relatively light in weight which reduces the need for large equipment and large construction pads. Embedded poles do not require the use of anchor bolts or anchor bolt base plates. Compacted trap rock is used for the pole foundation in lieu of concrete which eliminates the need for concrete truck access, delivery, curing times, etc.. The overall installation time is faster and total material and labor cost is typically lower when compared to a structure with a drilled shaft foundation.

Direct Embedded Structure Cons:

Because direct embedded poles are designed to be lighter they have a limited load capacity which typically restricts their use to small angle and tangent structure applications.

Drilled Shaft Structure Pros:

Drilled shaft foundations provide the flexibility to be designed to address applications where direct embed structures are not feasible such as; large conductor loading, large angle reactions, challenging underlying soil conditions, or where guying of a structures is not possible.

Drilled Shaft Foundation Cons:

Because drilled shaft foundations utilize concrete and the engineered poles are significantly heavier, large equipment and construction pads are needed. Access for concrete trucks must be established, foundations require installation of rebar cages with anchor bolts, and structures require anchor bolt base plates. As a result the overall installation time is

longer and total material and labor cost is typically higher when compared to a direct embed structure.