



ZA-1 230kV XLPE SUBMARINE PROJECT DETAIL DESIGN MODIFICATION TO MARINE LANDINGS

OVERVIEW

The purpose of this report is to explain the design changes of the ZA-1 230kV transmission line project, prior to the completion of final detailed design, in order to inform the CPUC of ongoing design progress. PG&E provided the CPUC a submittal containing a conceptual design of the ZA-1 230kV transmission line. Included in the design is a complete raceway system which consists of Horizontal Directional Drills (HDDs), manholes, transition areas and duct banks. For this report we are specifically addressing the marine landing; which is the HDDs, transitions, and transition manhole(s) connecting to the HDDs.

Multiple considerations have taken place for this marine landing, from the initial CPUC submittal until now. Included in these considerations are engineering, seismic design, public and permitting considerations, recommendations from contractors and manufacturers. In the coordination of these efforts we have found it favorable to modify the North and South Marine HDD Landings. Following describes the design modifications and reasons for these modifications. This report is not intended to be detailed or exhaustive but rather a high level overview of the main issues. Figure A and B below show a high level sketch of what we are continuing with for detail design and provide illustration to the following information.

THE NORTH HDD ALIGNMENT

During the detailed design process, information was investigated regarding the pier depths of the Great Sea Wall, HDD entrance and exit points, and detailed geometric alignment of the HDDs. In addition, constructability reviews were performed from several HDD contractors for the validity of the 60% HDD conceptual design. These considerations require a change to the location of the HDD entrance from that proposed in the conceptual design. The HDD entrance locations set the criteria of the remaining land portion of the raceway to the substation. The original 60% design HDD entrance locations have moved approximately Redacted towards Redacted.



THE NORTH TRANSITION MANHOLE LOCATIONS

The location of the 60% transition manholes design required to be moved to the [Redacted] side of [Redacted], as there was not sufficient room within Harrison to align the HDDs to the transition manholes. This is necessary for submarine cable installation based on the input from submarine cable contractor.

In moving the three single phase manholes (3-manholes) from [Redacted] the [Redacted], we have simplified the design to one three phase manhole (1-manhole). Originally there was not sufficient room to place 1-manhole [Redacted] of [Redacted] and have adequate submarine cables route into that manhole. But now that the 1-manhole is [Redacted], there is enough length to provide adequate radius bends necessary for cable installation between the HDDs entrance points and the transition manhole.

[Redacted]

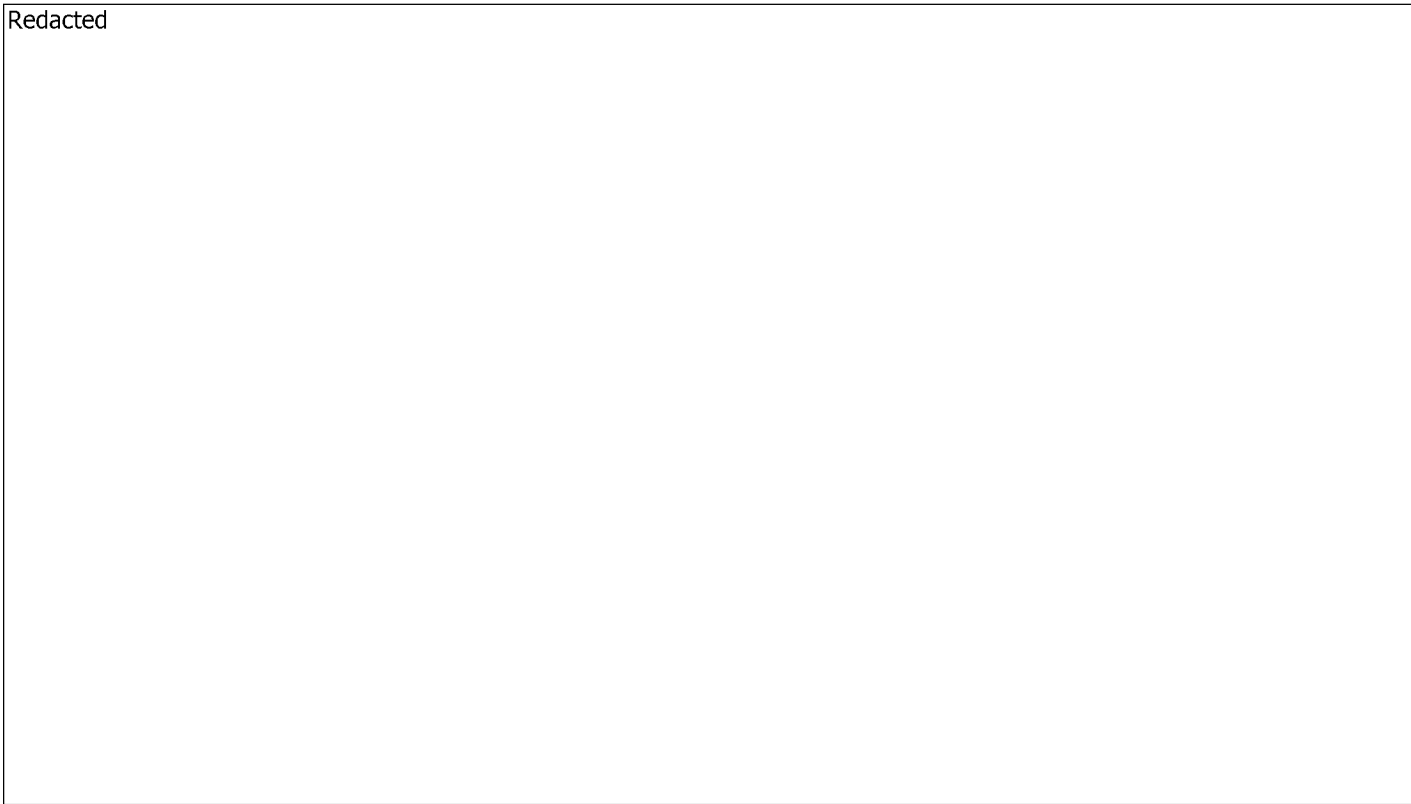


Figure A
North Marine Landing



THE SOUTH TRANSITION MANHOLE LOCATIONS

The 3-manholes configuration design of the South Alignment was mainly set by the design of the North alignment. The South Transition area has different constraints of which none of them affect the change from 3 manholes to 1 manhole. However, the simplification of design by utilizing the similar design of the North alignment behooves the South alignment for several obvious reasons; including, reduced public disturbance during construction and long term maintenance, and also project cost, risk and schedule.

Redacted

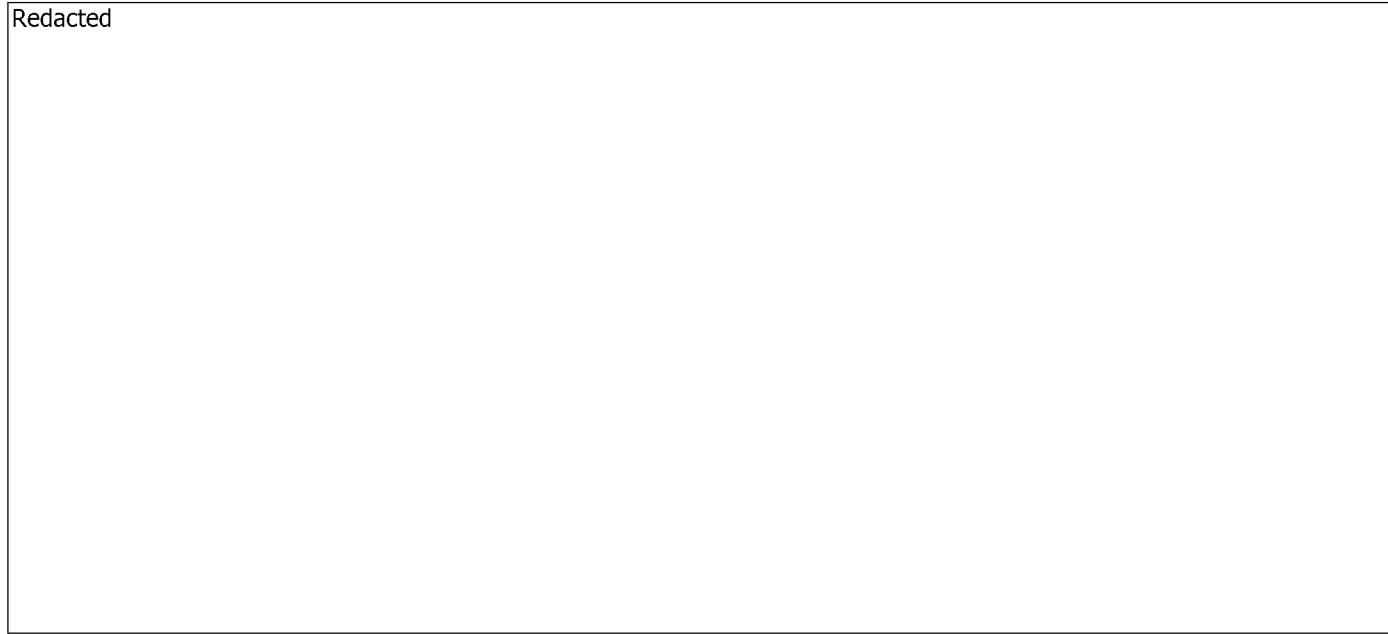


Figure B
South Marine Landing