FCS-2011-001 Shared Facility Study for Transmission Facilities

Glass Mountain – Cleo Corner 138kV Transmission Line

(OKGE)

SPP Tariff Studies

(#FCS-2011-001)

February 2012

Summary

Oklahoma Gas and Electric (OKGE) provided Facility Studies at the request of the Southwest Power Pool (SPP) for generation interconnection requests included in FCS-2011-001 Facilities Clustered Study. The requests for generation interconnection were placed with SPP in accordance with SPP's Open Access Transmission Tariff which covers new generation interconnections on the SPP transmission system.

Pursuant to the tariff, OKGE was requested to provide costs for required network upgrades to satisfy the Facility Study Agreement executed by the requesting customer and SPP. The OKGE original facility study request reflecting the DIS-2011-001 study results included the need to rebuild from Glass Mountain to Cleo Corner to Meno Tap. **However the Cleo Corner to Meno Tap section is not required under the DIS-2011-001-1 restudy. The cost of the Cleo Corner to Meno Tap section from the OG&E study is not included in the summary costs below.**

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Generation Interconnection Customers

The generation interconnection requests covered in this document are as follows:

GEN-2011-019
GEN-2011-020

These interconnection customers are included in the DISIS-2011-001-1 Impact Re-Study which identified the required network upgrades for each customer in order to interconnect to the transmission system.

Shared Interconnection Upgrade Facilities Costs

The OKGE cost to rebuild the 138kV transmission line from Glass Mountain to Cleo Corner is $15,163,471. The Interconnection Customers' total shared upgrade costs are broken down as follows for each project:

Project	Shared Upgrade Cost
GEN-2011-019	$7,581,735.50
GEN-2011-020	$7,581,735.50

This cost allocation is subject to change for restudies conducted by the Transmission Provider in response to the higher queued customers or other customers in the DISIS-2011-001-1 Impact Study that withdraw their interconnection request or suspend, terminate, or request unexecuted filings of their GIAs.

FACILITY STUDY

For

Facility Request DISIS-2011-001

Rebuild 138kV Transmission Line
From Meno Tap Substation
Near
Meno, Oklahoma
To
Cleo Corner Substation
Near
Cleo, Oklahoma
To
Glass Mountain Substation
Near
Mooreland, Oklahoma

February 02, 2012

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Summary

Pursuant to the tariff and at the request of the Southwest Power Pool (SPP), Oklahoma Gas and Electric (OG&E) performed the following Facility Study to satisfy the request by the SPP for Facility request DISIS-2011-001. The SPP request consists of rebuilding the 138kV transmission line from OG&E Meno Tap substation to Cleo Corner substation to Glass Mountain substation to 2000A capacity as well as the work necessary at Meno Tap, Cleo Corner and Glass Mountain substations to accommodate 2000A. It will be necessary to completely reconstruct approximately 41.06 miles of 138kv transmission line and install a new transmission line with 2-795ACSR conductors per phase to accommodate 2000A under emergency conditions. The distance from Meno Tap to Cleo Corner is approximately 15.03 miles and from Cleo Corner to Glass Mountain is approximately 26.03 miles. The cost to rebuild approximately 41.06 miles of 138kV transmission line with bundled 795ACSR is estimated to be $19,936,059.

In order for Meno Tap, Cleo Corner and Glass Mountain substations to accommodate 2000A it will be necessary to replace the dead-end structure, replace 3-1200A switches with 2000A switches, and rebuild the bus work to 2000A capacity at Meno Tap. At Cleo Corner Substation it will be necessary to replace the dead-end structures, replace 2-1200A switches with 2000A switches, and rebuild the bus work to 2000A capacity. It will be necessary to completely rebuild Glass Mountain substation on a new substation site to the north of the existing site all at a total cost for all substation work of $2,650,000.

The proposed time line for construction would be approximately forty-two months after an NTC is received by OG&E to allow for right of way procurement, engineering, construction and completion.

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Introduction

The Southwest Power Pool has requested a Facility Study for the purpose of rebuilding a 138kV transmission line within the service territory of OG&E Electric Services (OKGE) in Canadian County Oklahoma. The SPP request is for the work necessary for the Meno Tap to Cleo Corner to Glass Mountain 138kV transmission line to accommodate 2000A capacity as well as the work necessary at each substation to accommodate 2000A capacity.

Connection Facilities

The primary objective of this study is to identify attachment facilities. The requirements for connection consist of replacing dead-end structures, replacing 1200A switches with 2000A switches and rebuilding bus work at Meno Tap and Cleo Corner substations and completely rebuilding Glass Mountain substation. This 138kV replacement will be constructed and maintained by OKGE.

The total cost for OKGE to replace dead-end structures, replacing 1200A switches with 2000A switches, and rebuilding bus work at Meno Tap and Cleo Corner substations and to rebuild Glass Mountain substation is $2,650,000.

The costs of replacements at Meno Tap, Cleo Corner and Glass Mountain substations and rebuilding the 138kV transmission line in the OKGE transmission system are listed in Table 1.

Short Circuit Fault Duty Evaluation

It is standard practice for OG&E to recommend replacing a circuit breaker when the current through the breaker for a fault exceeds 100% of its interrupting rating with recloser de-rating applied, as determined by the ANSI/IEEE C37.5-1979, C37.010-1979 & C37.04-1979 breaker rating methods.

For this interconnection, no breakers were found to exceed their interrupting capability after the addition of the related facilities. OG&E found no breakers that exceeded their interrupting capabilities on their system. Therefore, there is no short circuit upgrade costs associated with the DISIS-2011-001 interconnection.

Table 1: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2012 DOLLARS)
OKGE – **Network Upgrades** at Meno Tap substation, Replace 3-1200A switches with 3-2000A switches, replace dead-end structure and rebuild bus work.	**$125,000**
OKGE – **Network Upgrades** at Cleo Corner substation, Replace a 2-1200A switches with a 2-2000A switches, replace dead-end structures and rebuild bus work, replace 1200A CTs with 2000A CTs	**$225,000**
OKGE – **Network Upgrades** at Glass Mountain substation, rebuild substation on a new site directly north of existing site	**$2,300,000**
OKGE – **Transmission line** H Frame, bundled 795ACSR, 2000A, steel shield wire, 41.06 miles	**$19,936,059**
Total	**$22,586,059**

Prepared by Steve M. Hardebeck, PE — February 02, 2012
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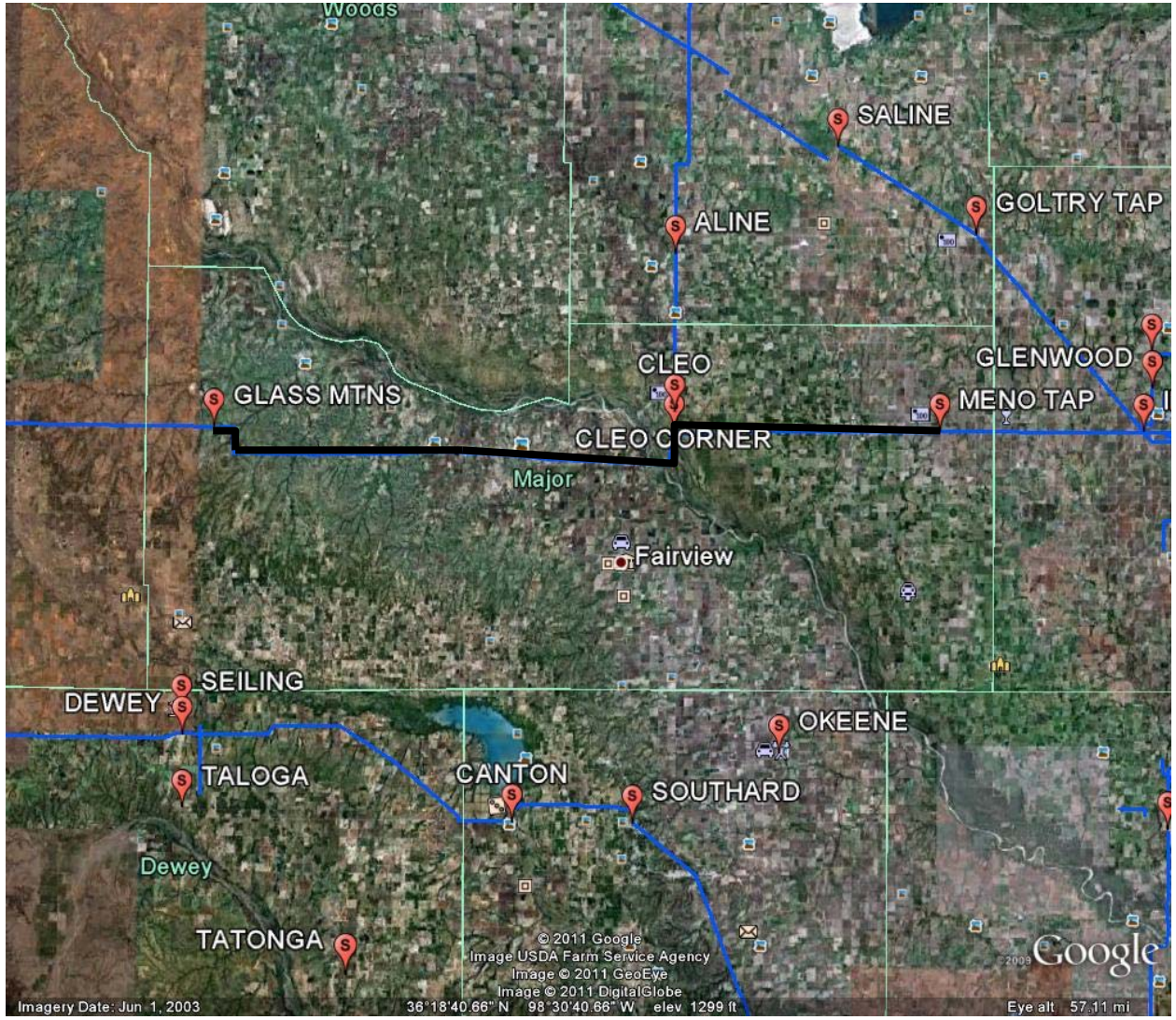
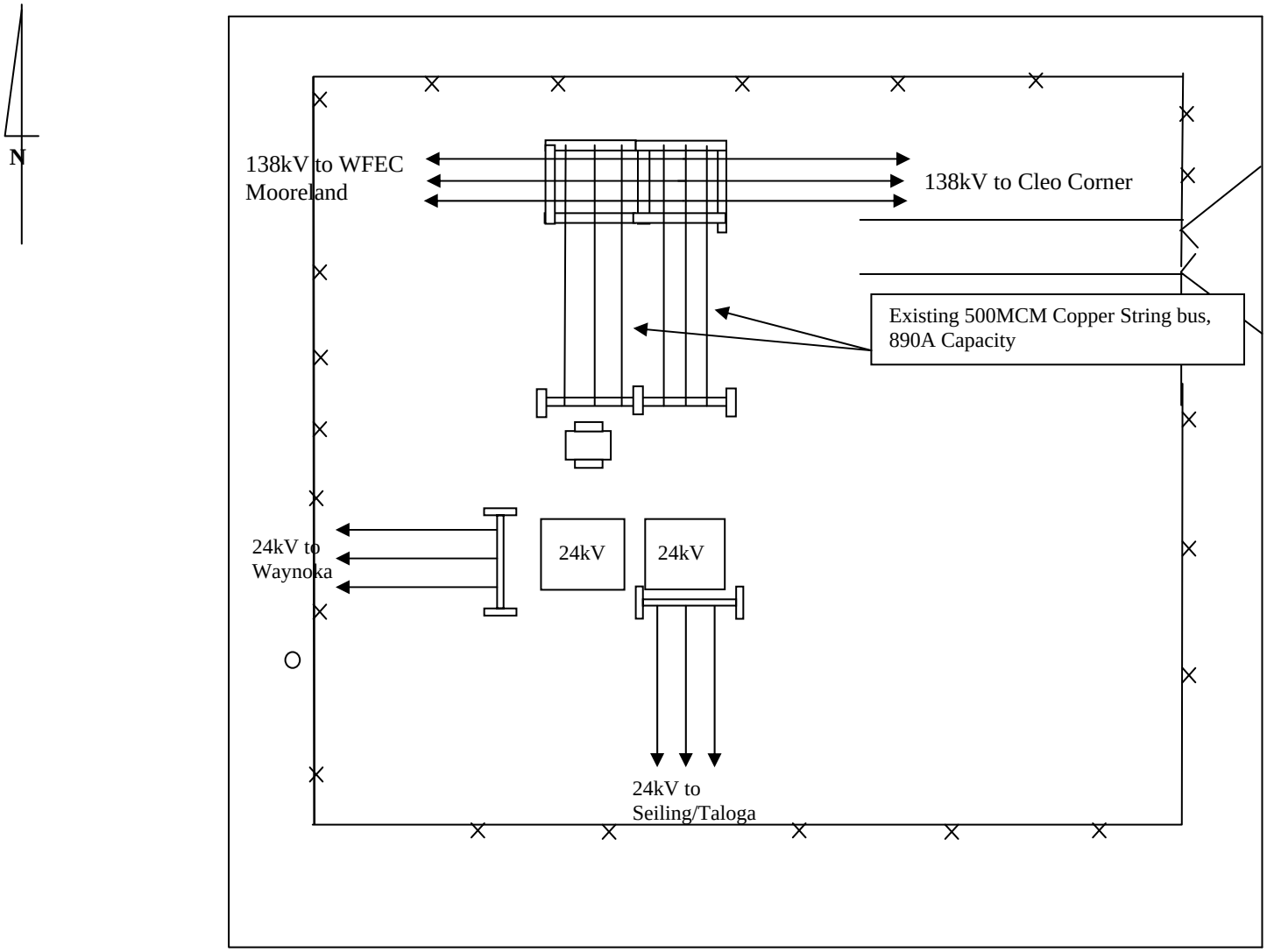
Reviewed by:
Travis D. Hyde
Travis D. Hyde
Director T&D Planning & Control

138kV transmission Line Route from Meno Tap to Cleo Corner to Glass Mountain

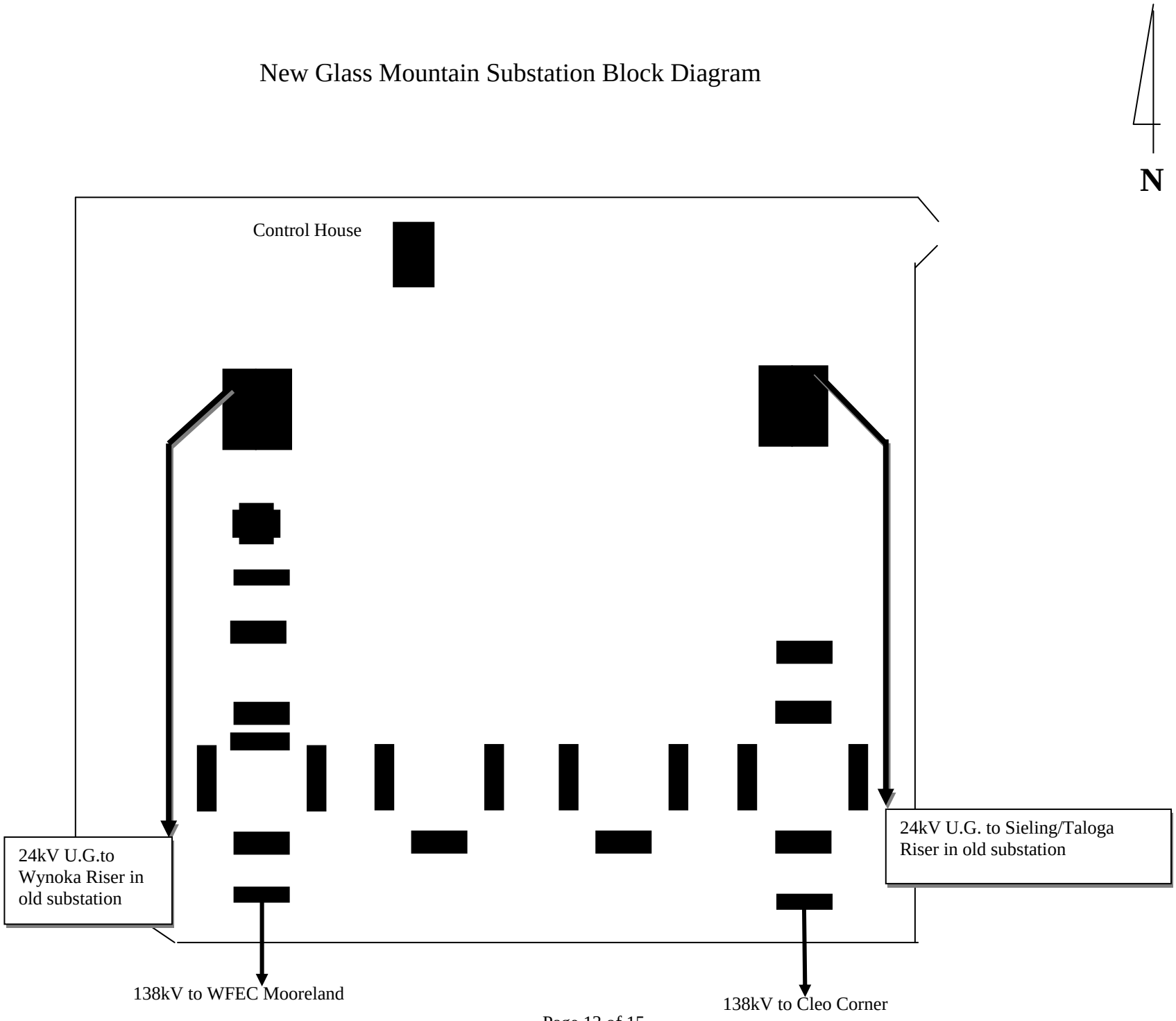


Existing Glass Mountain
SUBSTATION
BLOCK DIAGRAM

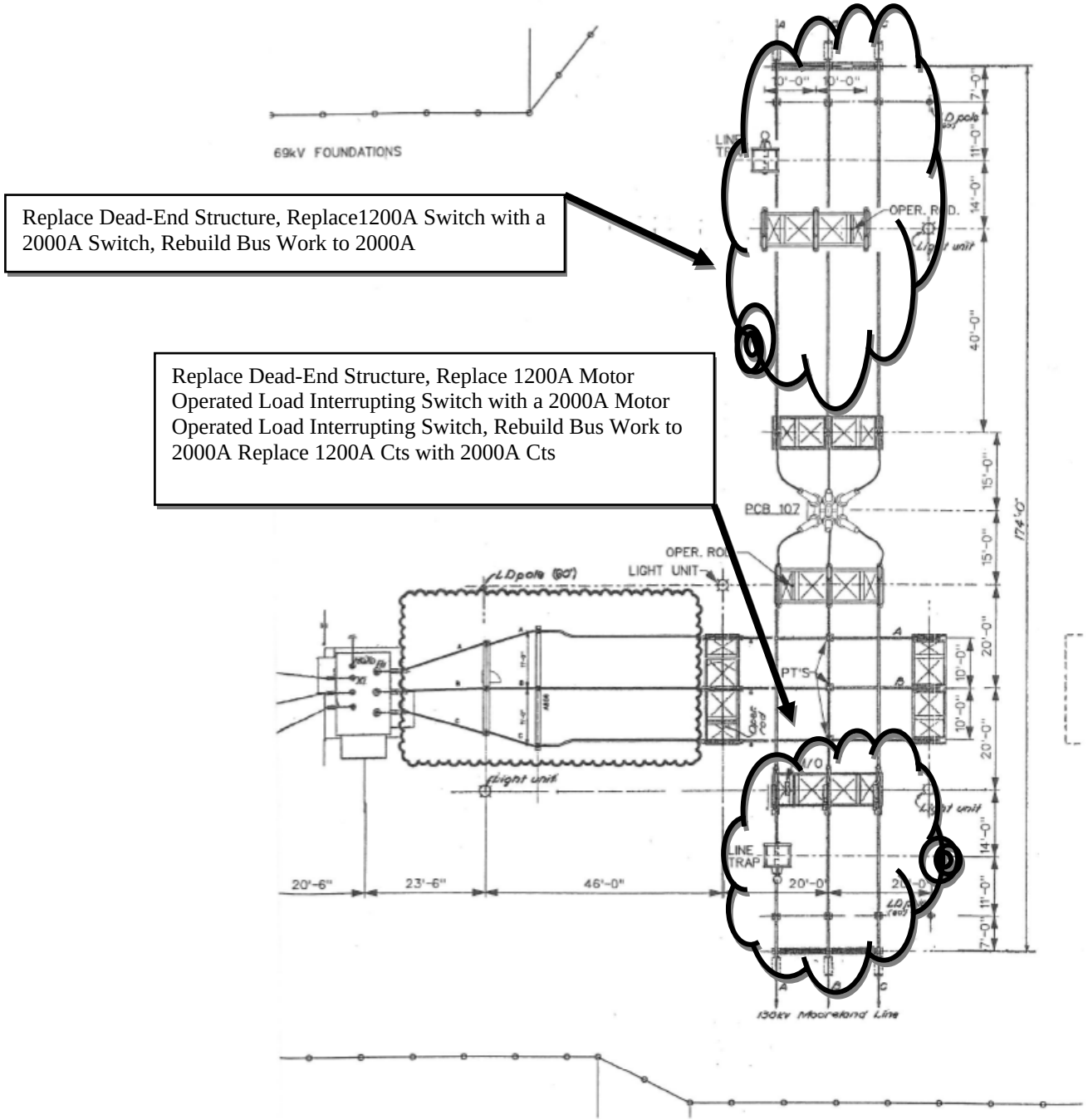


Possible New Glass Mountain Substation Site

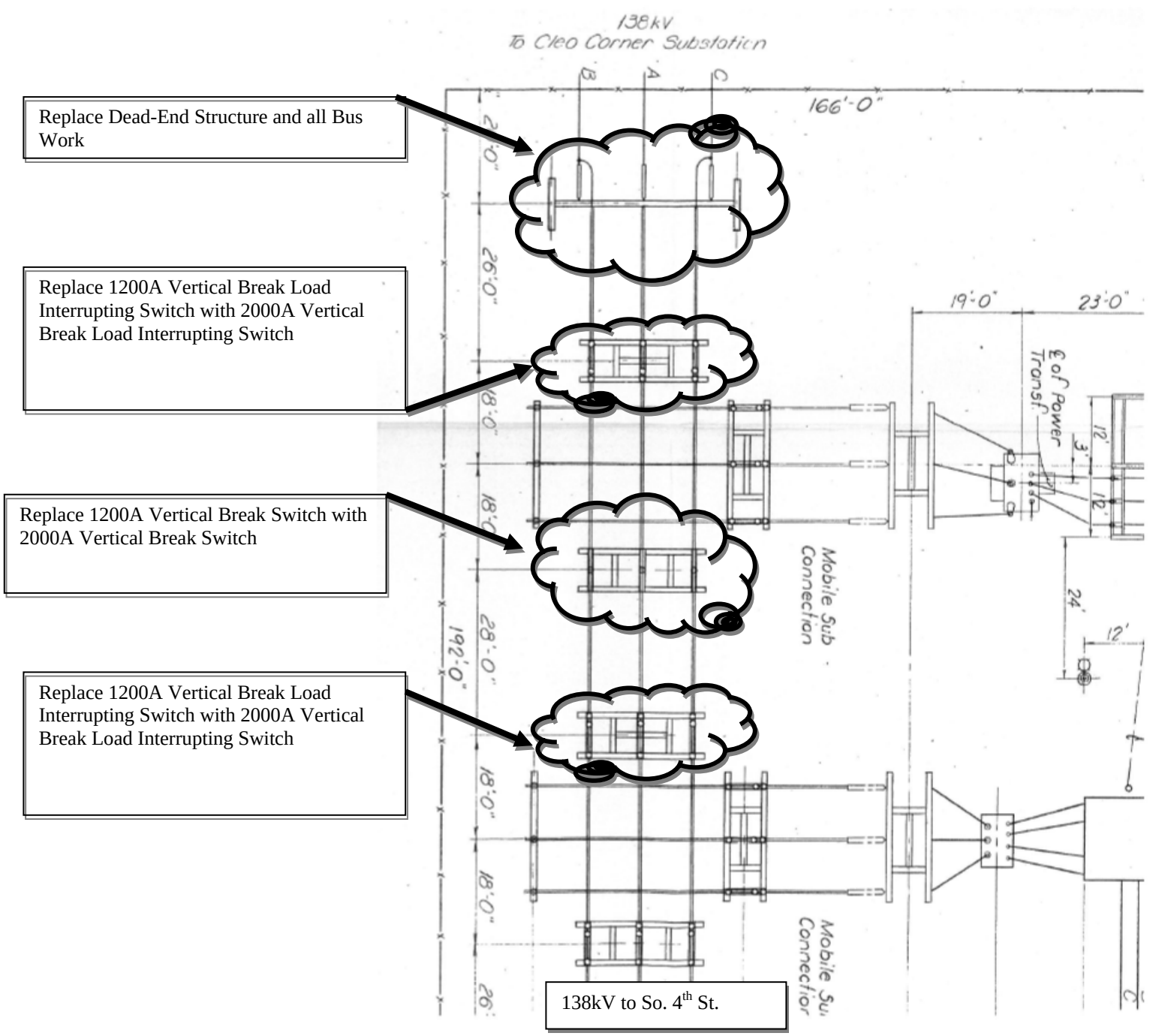
New Glass Mountain Substation Block Diagram



Cleo Corner Substation



Meno Tap Substation



Replace Dead-End Structure and all Bus Work

Replace 1200A Vertical Break Load Interrupting Switch with 2000A Vertical Break Load Interrupting Switch

Replace 1200A Vertical Break Switch with 2000A Vertical Break Switch

Replace 1200A Vertical Break Load Interrupting Switch with 2000A Vertical Break Load Interrupting Switch