**Specific Deviations/ Exceptions/ Assumptions**

* Prime Engineering has not completed an analysis of switching transients induced by transformers, switching devices or the system component interactions overall. Devices and/or system operations can produce oscillatory transient waveforms based on the specific component inductance, capacitance and resistance, as well as the current chopping characteristics from Vacuum or SF6 interrupting devices. Prime Engineering does not warrant and is not liable for, in whole or in part, damage caused by oscillatory transients from the system configuration or switching operations either on equipment supplied as part of this proposal or supplied by others or existing on site or as part of the overall electrical system or connected infrastructure. Please contact us for pricing on mitigating measures to help alleviate possible oscillatory transients.
* Complete specifications were not available at the time of quotation. Any change to the proposal will result in a change of price.
* 25kV breaker is vacuum type.
* Loadbreak switch is NAL type.
* Shunt trip and relay power are 24VDC, not 125VDC.
* MV CTs are on load side of the breaker. Load side CTs are acceptable to BC Hydro.
* Unit Sub transformer is NOT included.
* Utility study and site wide power systems studies (short circuit, coordination, and arc flash), if required, are NOT included. An adder is available upon request.

## Item 1. 25kV Switchgear

## 25kV Switch over Vacuum Breaker Switchgear details:

The live front standard is approved through the Primary Guide 2017 – Requirements for Customer-Owned Primary Services Supplied at 4kV to 35kV’

|  |  |
| --- | --- |
| ***Item*** | ***Detail*** |
| Switchgear Type | Metal enclosed MBFE – Modular Bolted Frame Enclosure |
| Enclosure rating | NEMA 1 |
| Enclosure coating | ANSI 61 Grey, Powder Coated |
| Switch | Manually Operated 3 Phase 25kV NAL 27 switch |
| Breaker | 25kV 600A Rated Breaker |
| Protection Relay | Externally Powered, requires 120VAC Emergency Circuit to be provided by others Overcurrent Phase Relay 50/51  *24VDC UPS included for backup of protection relays for minimum 8hr. duration. UPS requires dedicated 120VAC, 15A circuit from METERED SOURCE supplied and connected by others.  UPS is equipped with status contacts from monitoring of backup power, also wired by others.* |
| Bus bar | Tin plated aluminum for all phases and tin plated copper for ground |
| Insulators | 125KV BIL Epoxy Solid Post Style |
| Ground balls | Included. 4 total |
| Surge arrestors | Distribution Class Lightning Arresters |
| Insulation and interrupting Medium | Air & Vacuum |
| Labels | As per CSA C22.2 #31 |
| CSA Inspection | SPE-1000 Labeled. Built to CSA C22.2 #31  SPE-1000 of the complete unit substation is NOT included.  An adder for SPE-1000 of the complete unit sub is available |
| Key Interlocks | Kirk Key interlocks   * K1 between switch and breaker * K2 between switch and transformer |
| Standard testing | Standard Production testing as per CSA C22.2 #31 |
| Cable entrance location | Bottom, rear, cable and lugs not included |
| Outgoing bus details | Right side exit, close coupled to unit sub xfmr,   * Flex braids are not included * Bus coordination by transformer supplier |
| Dimensions: | 48”W x 70”D x 91.5”H |
| Crating/Shipping | No Crating has been included for. Optional heat-shrink wrap or wood crating available |
| ***Switchgear Unit Ratings*** |  |
| Voltage | 25kV |
| BIL | 125kV |
| Rated current | 600A |
| Fault Bracing | 12kA RMS Sym. |

## Equipment Testing

### Switchgear:

The standard factory acceptance testing (FAT) procedures to comply with CSA C22.2 #31 will be completed on the equipment before it leaves the factory. Any additional testing, or witness testing has not been included for.