Construction Sequence

PROJECT: **STATION DINGLE RIDGE**

Report

UNIT:

ID.: **N11DIN-2-01HA-FM-ECDEE-09904** REV.: **0-0** DATE: **09/17/2020**

ID 2:

DESIGN VERIFICATION Level 1 ☐ Level 2 ☐ Not apply ☐

R E V I S I O N C O N T R O L

REV.	DATE	REASON	MODIFIED PAGES
0-0A	03/08/2019	Initial Edition	NA
0-0	09/17/2020	Issued for Construction	

Prepared	Reviewed	Approved
LaBella Associates, D.P.C.	Raquel García	Thomas Kennedy

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1. SUMMARY

The intent of this project is the modernization and upgrading of existing NYSEG Station Dingle Rigde, located at Branch Road, in Brewster, NY. The work associated with this project considers:

A. Upgrade the current 3-1167kVA Bank #1 to two (2) 1-3PH 12/16/20(22.4)MVA 46/13.2kV with LTC, although initially only one (1) will be installed.

B. Upgrade and convert the current 4.8kV circuits #540, #541, #542 and #543 to 13.2kV.

C. Replace the existing control house with a new medium concrete control/power house to house new 15kV (GIS) gas insulated switchgear. The new control/power house will incorporate a HVAC system, as well as a fire and intrusion alarm system. The control room will be larger enough to install the new control system, battery system room and AC/DC distribution panels.

2. CONSTRUCTION SEQUENCE

NYSEG will relocate temporary the 46kV transmission line 813 and 4.8kV distribution circuit 277 (future 543) to free up space in the area to be occupied by the new substation, which will replace the existing.

NYSEG will relocate 46 kV transmission line 815 and 4.8kV distribution circuit 278 (future 542) to keep the connection of current 4.8kV distribution circuit and make possible the future connection of 46 kV transmission line 815 to the new substation, sharing route and poles.

NYSEG will upgrade and convert the existing 4.8 kV distribution circuits 277 (future 543) and 278 (future 542) to 13.2kV level, prior to the new substation being energized. These will become in underground circuits from dead end poles to switchgear cabinets installed inside the new control building.

2.1 Phase 1 (Demolitions)

- Remove the existing East perimeter fence and provide temporary site security barriers during construction.

Estimated Construction Duration: 1 week.

2.2 Phase 2 (Site Rebuild)

- Perform civil site work to final subgrade elevation in extension area.
- Install retaining wall.
- Install a new perimeter fence and vehicle gate (for temporary access during construction).
- Install a temporary adequate access road as needed for construction.
- Install a new internal road.

- Install foundations for 46kV: three box structures, circuit breakers (B1-12, 81512, T1-12, B2-12 & 81312), voltage transformer (P1 & P2).
- Install foundation for 13.2kV: station service transformer (S1 & S2).
- Install foundation for communication mast.
- Install foundations for lightning masts.
- Install foundations for lighting poles.
- Install 3 PH Δ/Y 46/13.2kV 12/16/20(22.4)MVA LTC transformer foundation and oil containment (Bank #1 & Bank #2).
- Install control building (for switchgears and new control equipment) foundation.
- Install main ground grid conductors.
- Install the stormwater drainage system for power transformer oil containment and power cable trenches.
- Install cable trench for low-voltage control from control house to the yard equipment and power cable from control house to power transformers Bank #1 and Bank #2.
- Install SPCC liner and manhole.
- Install manhole for distribution lines #543 (former 277), #542 (former 278) and direct buried conduits from this manhole to control building.
- Install direct buried conduits from equipment (Power transformers Bank #1 & Bank #2, Circuit breakers B1-12, 81512, T1-12, B2-12 & 81312, motorized operated disconnect switches B1-18, 81518, 81515, T1-18, T1-14, B2-14, 81314 & 81315 and voltage transformer P1 & P2) to cable trenches.
- Install Control Building for switchgears and control equipment.
- Install 46 kV structures: three box structures, circuit breakers (B1-12, 81512, T1-12, B2-12 & 81312), voltage transformer (P1 & P2).
- Install the lightning protection material necessaries.
- Install 46kV and 13.2kV yard equipment: Power transformer (Bank #1 &Bank #2), circuit breakers (B1-12, 81512, T1-12, B2-12 & 81312), disconnect switches (B1-18, 81518, 81515, T1-18, T1-14, B2-14, 81314 & 81315), voltage transformer (P1 & P2), station service transformer (S1 & S2) and surge arresters.
- Install GIS switchgear equipment in the control building.
- Install ground grid pigtails.
- Install 46kV and 13.2 kV bus insulators, conductor and fittings.
- Install Communication WiMAX Mast (100 ft).
- Install Lightning Masts (60ft).
- Install lighting poles.

- Install low voltage control and power cables (including distribution power cables from existing STR 95 and new STR 93-1B to GIS switchgear basement, passing through the manholes).
- Perform testing and commissioning of yard equipment, protective relaying, RTU, and station service systems.

Estimated Construction Duration: 16 weeks.

2.3 Phase 3 (Outage to connect 46kV transmission line 815 and 13.2kV distribution feeders to GIS and energize new substation)

- Outage on 46kV transmission line 815 and 13.2kV distribution line 543 (former 277) to perform the following activities:
    - Remove 46kV transmission line 815 conductors from existing pole STR 95 to existing box structure.
    - Remove 13.2kV distribution line 543 (former 277) conductors from new pole STR 93-4 to existing box structure passing through new pole STR 93-3 and existing NYSEG 27A-4.
    - Install conductors from existing pole STR 95 to new steel pole STR 93-4.
    - Connect 46kV transmission line 815 to box structure from new steel pole STR 93-2.
    - Connect 13.2kV distribution line 543 (former 277) power cable.
    - Energize 46kV transmission line 815.
    - Perform unloaded voltage test, “soak test”, on new power transformer Bank #1 and power cables.
    - Energize 13.2kV bus section #8 in GIS switchgear.

Estimated Duration: 1 week.

2.4 Phase 4 (Outage to connect 46kV transmission line 813 and 13.2kV distribution feeders to GIS and energize new substation)

- Outage on 46kV transmission line 813 and 13.2kV distribution line 542 (former 278) to perform the following activities:
    - Remove 46kV transmission line 813 conductors from new steel pole STR 93-1 to existing box structure passing through new steel poles STR 93-1A, STR 93-1B and existing STR 94-5.
    - Remove 13.2kV distribution line 542 (former 278) conductors from new steel pole STR 93-1B to existing box structure passing through new wood poles STR 93-1A, STR 93-1, existing NYSEG 2195 28-4, new steel pole STR 93-2 and existing NYSEG 27A-3.
    - Connect 46kV transmission line 813 to box structure from new steel pole STR 93-1.

- Connect 13.2kV distribution line 542 (former 278) power cable.
- Energize 46kV transmission line 813.
- Perform unloaded voltage test, “soak test”, on new power transformer Bank #2 and power cables.
- Energize 13.2kV bus section #4 in GIS switchgear.

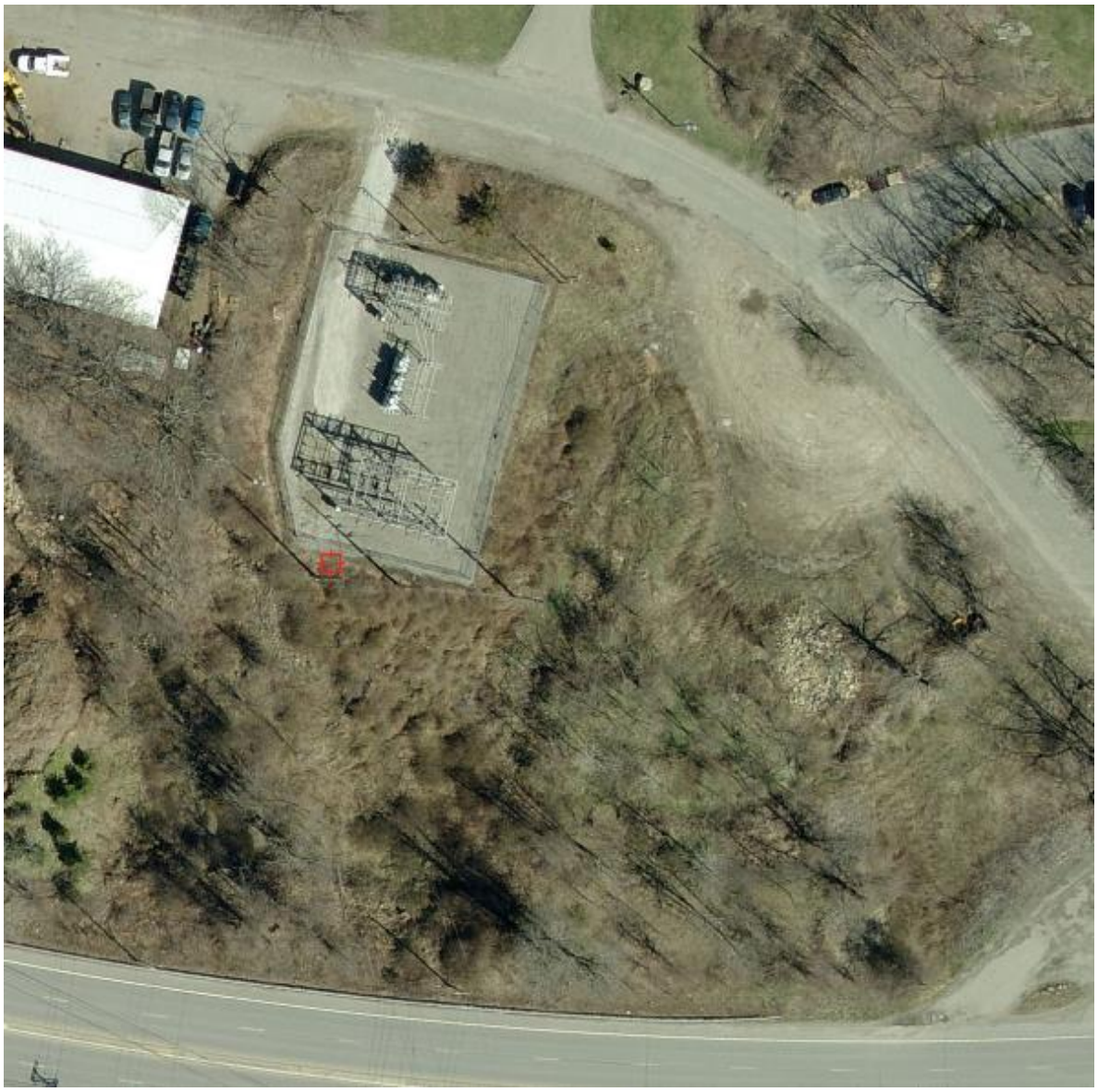
Estimated Duration: 1 week.

2.5 Phase 5 (Removal of existing substation)

- Remove existing 46kV box structures and associated electrical bus, insulators, disconnect fuses (P1-13 & B1-13), voltage transformer (P1, P3 & P4) and disconnect switches (81316, 81319, T1-14, B1-15).
- Remove existing 46/4.8kV, 3-1 phase, Power Transformers (Bank #1), oil filled and associated structures, electrical bus and insulators.
- Remove existing 4.8kV box structures and associated electrical bus, insulators, surge arresters, fuses (P2-13 & S1-33), voltage transformer (P2), current transformers, auxiliary transformer and disconnect switches (1B-14, 1MT-14, 27714, 27715, 27718, 27814, 27815 & 27818).
- Remove existing 4.8kV feeder circuit breaker (27712 & 27812).
- Remove existing 4.8kV Voltage regulators, oil filled.
- Remove existing masonry and steel framed building.
- Remove existing concrete foundations, buried conduit, cable trenches and cable and buried ground grid conductor, associated to equipment and structures disassembled previously.

Estimated Duration: 4 weeks.

3. PHOTOS



4. SIGNATURE/REVISIONS

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Prepared by Date
(LaBella)

Prepared by Date
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Prepared by Date
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Reviewed by Date
(RG&E/NYSEG Engineer or Owners Engineer)

Reviewed and Released by Date
(RG&E/NYSEG Substation Supervisor)

Revision	Date	Description
0-0A	03/08/2019	Issued for Client Review
0-0	09/17/2020	Issued for Construction