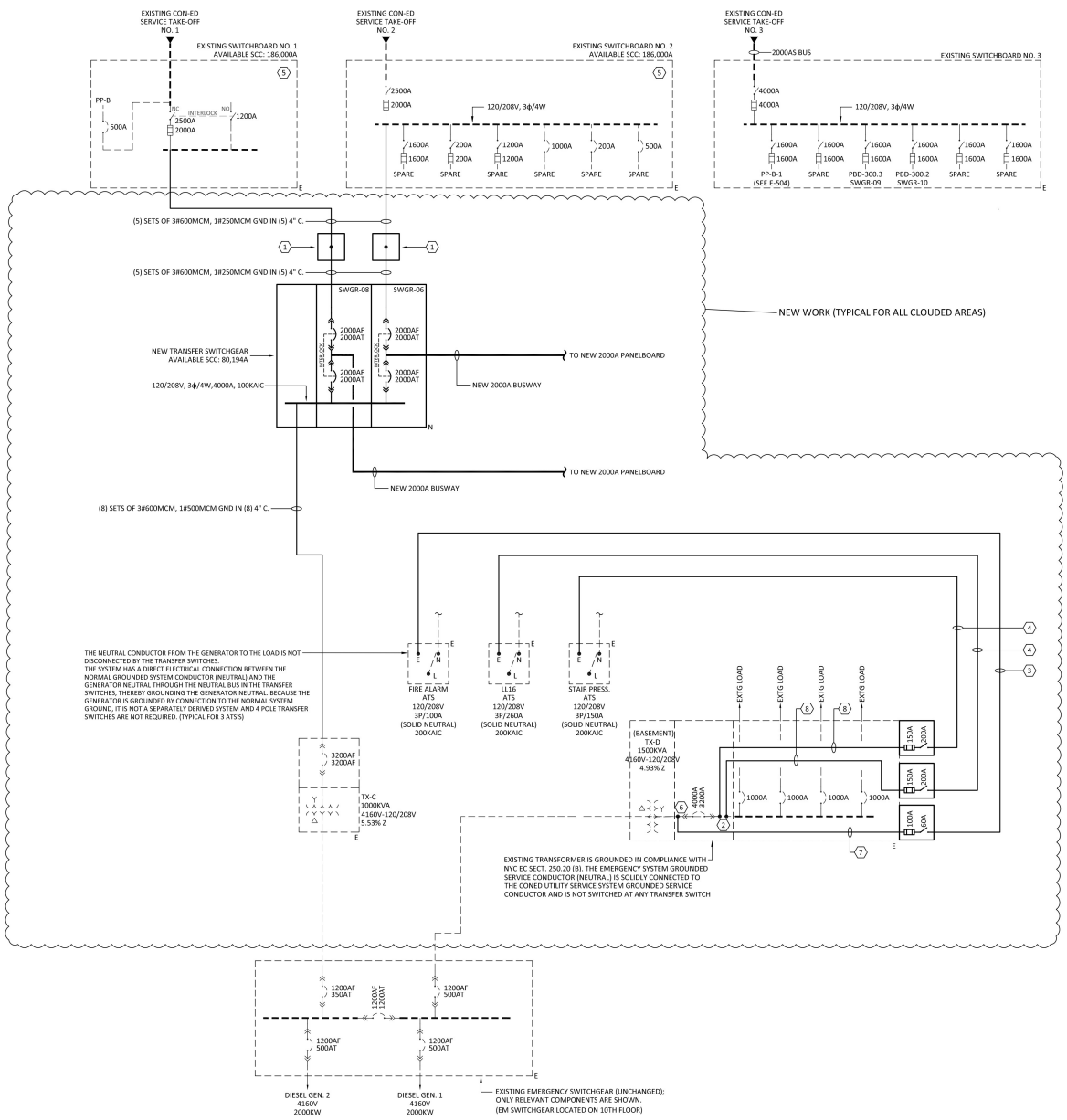

REVISION NARRATIVE

1. ADDED CONDUCTOR SIZES FOR SUBSTATION TAPS AND CONFIRMED TAP LENGTH WILL NOT EXCEED 10'

2. CLARIFIED THAT 4 POLE TRANSFER SWITCHES ARE NOT REQUIRED SINCE THE SYSTEM HAS A DIRECT ELECTRICAL CONNECTION BETWEEN THE NORMAL GROUNDED SYSTEM CUNDUCTOR (NEUTRAL) AND THE GENERATOR NEUTRAL.

ONE-LINE DIAGRAM KEY NOTES

1	PROVIDE SPLICE BOX WITH 2000A COPPER DETAIL. LINE AND LOAD SIDE LUGS SHALL ACCOMMODATE (5) SETS OF 600MCM CONDUCTORS. DETAIL SHALL INCLUDE ADDITIONAL LUGS FOR FUTURE TEMPORARY CONNECTION.
2	TAP BUS ON THE LOAD SIDE OF TX-D TRANSFORMER SECONDARY CIRCUIT BREAKER FOR LL16, AND STAIR PRESSURIZATION LOAD TRANSFORMER SWITCHES. TAP CONDUCTORS SHALL NOT LEAVE THE TRANSFORMER SUB-STATION ENCLOSURE
3	3#4AWG, 1#10AWG GROUND IN 1" C
4	4#1/0, 1#6AWG GROUND IN 1/2" C
5	SERVICE SWITCHES ON SWITCHBOARDS 1 AND 2 WILL DIRECTLY FEED TRANSFER SWITCHGEAR. ALL ADDITIONAL OVERCURRENT PROTECTIVE DEVICES IN SWITCHBOARDS WILL BE REMOVED AS REQUIRED TO ACCOMMODATE THIS WORK. THOSE THAT REMAIN WILL BE SPARE.
6	TAP BUS ON THE LINE SIDE OF TX-D TRANSFORMER SECONDARY CIRCUIT BREAKER FOR FIRE ALARM LOAD TRANSFORMER SWITCH. TAP CONDUCTORS SHALL NOT LEAVE THE TRANSFORMER SUB-STATION ENCLOSURE
7	3#4AWG, 1#10AWG GROUND RUN WITHIN SUBSTATION ENCLOSURE. FEEDER LENGTH SHALL BE LESS THAN 10'.
8	4#1/0, 1#6AWG GROUND RUN WITHIN SUBSTATION ENCLOSURE. FEEDER LENGTH SHALL BE LESS THAN 10'.

TRANSFER SWITCHGEAR OPERATION SEQUENCE

- TRANSFER SWITCHGEAR CONTAIN TWO SOURCE BUSES (UTILITY AND EMERGENCY) AND CONNECTING "TRANSFER PAIRS" OF CIRCUIT BREAKERS. TRANSFER PAIRS ARE ELECTRONICALLY INTERLOCKED TO PREVENT CONNECTION OF THE BUILDING'S UTILITY POWER TO THE BUILDING'S EMERGENCY GENERATOR.
- IN ORDER TO CLOSE THE UTILITY CIRCUIT BREAKER EITHER MANUALLY OR AUTOMATICALLY, THE EMERGENCY CIRCUIT BREAKER MUST BE OPEN. EMERGENCY CIRCUIT BREAKER AUXILIARY CONTACT IS CLOSED IN THE CLOSING PATH FOR UTILITY CIRCUIT BREAKER ALLOWING THE UTILITY CIRCUIT BREAKER TO BE CLOSED, PROVIDED THAT THERE HAS NOT BEEN A PROTECTIVE RELAY AND LOCK-OUT RELAY TRIP. IF THE EMERGENCY CIRCUIT BREAKER WERE TO BE CLOSED, ITS AUXILIARY CONTACT WOULD BE OPEN PREVENTING THE CLOSING SIGNAL FROM RELEASING THE CLOSING SPRINGS OF THE UTILITY CIRCUIT BREAKER.
- IN ORDER TO CLOSE THE EMERGENCY CIRCUIT BREAKER EITHER MANUALLY OR AUTOMATICALLY, THE UTILITY CIRCUIT BREAKER MUST BE OPEN. UTILITY CIRCUIT BREAKER AUXILIARY CONTACT IS CLOSED IN THE CLOSING PATH FOR EMERGENCY CIRCUIT BREAKER ALLOWING THE EMERGENCY CIRCUIT BREAKER TO BE CLOSED, PROVIDED THAT THERE HAS NOT BEEN A PROTECTIVE RELAY AND LOCK-OUT RELAY TRIP. IF THE UTILITY CIRCUIT BREAKER WERE TO BE CLOSED, ITS AUXILIARY CONTACT WOULD BE OPEN PREVENTING THE CLOSING SIGNAL FROM RELEASING THE CLOSING SPRINGS OF THE EMERGENCY CIRCUIT BREAKER.
- WHEN IT IS REQUIRED TO SWITCH FROM UTILITY SOURCE (OR DURING A UTILITY POWER OUTAGE), THE CONTROL CIRCUITRY WILL FIRST SIGNAL THE UTILITY CIRCUIT BREAKER TO OPEN, RELEASING THE AUXILIARY INTERLOCKS AS DESCRIBED ABOVE. TIME DELAY TIMERS INCORPORATED IN THE AUTOMATIC OPERATING CONTROLS PROVIDE FOR A NULL PERIOD DELAY, ASSURING THAT VOLTAGE OF THE COMMON HAS DECAYED BEFORE THE COMMAND IS GIVEN TO CLOSE THE EMERGENCY CIRCUIT BREAKER.
- WHEN SWITCHING FROM EMERGENCY GENERATOR POWER TO UTILITY POWER ONCE UTILITY POWER HAS RETURNED, THE CONTROL CIRCUITRY WILL FIST SIGNAL THE EMERGENCY CIRCUIT BREAKER TO OPEN. THIS RELEASES THE AUXILIARY INTER LOCKS. THE SAME TIME DELAY TIMERS INCORPORATED IN THE AUTOMATIC OPERATING CONTROLS PROVIDE FOR THE SAME NULL PERIOD ON THE TRANSFORMERS BEFORE THE CLOSE COMMAND IS GIVEN TO THE UTILITY CIRCUIT BREAKER.
- TRANSFER FEEDER PAIRS OF CIRCUIT BREAKERS ADDITIONALLY HAVE CONTROL LOGIC INTERLOCK PROVIDED IN THE FORM OF A GO-NO GO RELAY ON THE COMMON OUTPUT BUS OF THE PAIR. THE LOGIC IS ARRANGED SUCH THAT AFTER OPENING EITHER CIRCUIT BREAKER OF THE TRANSFER PAIR, THE COMBINED OUTPUT LOAD BUS VOLTAGE MUST DECAY TO NEAR ZERO BEFORE EITHER CIRCUIT BREAKER OF THE PAIR CAN BE RE-CLOSED.

GENERAL NOTES

1. PROJECT DESIGN IS IN COMPLIANCE WITH THE 2011 NEW YORK CITY ELECTRICAL CODE.
2. ALL NEW EQUIPMENT IS ADEQUATELY RATED FOR THE MAXIMUM AVAILABLE CALCULATED FAULT CURRENT.
3. ALL NEW EQUIPMENT WILL BE UL LISTED.
4. ALL EQUIPMENT WILL BE GROUNDED IN ACCORDANCE WITH NEC SECT. 250 CODE.
5. ALL FUSES AND CIRCUIT BREAKERS HAVE BEEN SELECTIVELY COORDINATED FOR SELECTIVE SHORT CIRCUIT OVERCURRENT PROTECTION.

TYPICAL SYMBOL ANNOTATIONS AND LINE TYPES

SYMBOL	DESCRIPTION
N	NEW DEVICE
E	EXISTING DEVICE TO REMAIN
ER	EXISTING DEVICE TO BE RELOCATED
RE	RELOCATED DEVICE (NEW LOCATION)
X	EXISTING DEVICE TO BE REMOVED
— x — x — x — x —	EQUIPMENT OR WIRING TO BE REMOVED
———	NEW EQUIPMENT OR WIRING
— — — — —	EXISTING EQUIPMENT OR WIRING TO REMAIN
—— T —— T ——	TEMPORARY FEEDER (DLO CABLE)

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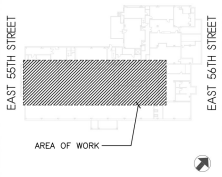
NO.	DATE	SUBMISSION
1	06/18/2021	ISSUED FOR FILING
2	09/09/2021	REVISED FOR EPR COMMENTS
3	10/12/2021	REVISED PER EPR COMMENTS
4	10/28/2021	REVISED PER EPR COMMENTS
5	11/12/2021	REVISED PER EPR COMMENTS

NO.	DATE	REVISION

KEY PLAN:



verizon

SWITCHGEAR REPLACEMENT

228 EAST 56TH STREET
NEW YORK, NY
CELLAR

TITLE:
ELECTRICAL
ONE-LINE DIAGRAM

DATE:	06/19/20
PROJECT NO:	01WFC.200436
DRAWN BY:	GK
CHECKED BY:	AP
SCALE:	NONE
DRAWING NO:	E-502.00

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