

CMGT 235 – Electrical and Mechanical Systems

Discussion No. 21

Unit 3 - Electrical Systems

Fall 2019

ONE-LINE DIAGRAM - IN-CLASS EXAMPLE

Complete Table 1 – Meter Base and Main Disconnect Switch, Table 2 – Panelboards, and Table 3 – Transformers

Project: Waste Management Hauling Facility

Drawing: E3 Panelboards One-Line Diagrams

- List all TRIP/POLES (BRKR) as largest to smallest
- List FEEDERS (conductors) as smallest to largest [see NEC Article 310, Table 310.15(B)(16)]

Table 1 – Meter Base and Main Disconnect Switch

Equipment	AMPS	VOLTAGE	Ø WIRES	NEMA	FEEDERS - QTY
Meter Base					
Main Disconnect Switch					

Table 2 - Panelboards

Panel	AMPS	VOLTAGE	Ø WIRES	MLO/MCB	CKTS	TRIP/POLES-QTY	FEEDERS - QTY
MDP							
PNL H1							
PNL H2							
PNL L1							
PNL L2							

Table 3 - Transformers

Equipment	Specifications	Feeders - QTY
Transformer (XFMR)		

ANSWERS

Table 1 – Meter Base and Main Disconnect Switch

EQUIPMENT	AMPS	VOLTAGE	Ø WIRES	NEMA	FEEDERS-QTY
Meter Base	600A	277/480V	3Ø 4W	N3R	#350 – 8
Disconnect Switch	600A	277/480V	3Ø 4W	N3R	#1 – 1 #350 – 8

Table 2 - Panelboards

Panel	AMPS	VOLTAGE	Ø WIRES	MLO/MCB	CKTS	TRIP/POLES-QTY	FEEDERS - QTY
MDP	600A	277/480V	3Ø 4W	MCB	18	400/3 – 1 200/3 – 1	#6 – 1 #1 – 1 #1/0 – 1 #3/0 - 4 #350 – 8 #600 – 4
PNL H1	400A	277/480V	3Ø 4W	MCB	42	125/3 – 1 60/3 – 2 30/3 – 2 20/3 – 1 20/1 - 8	#8 – 1 #1/0 – 1 #3 – 4 #600 – 4
PNL H2	200A	277/480V	3Ø 4W	MCB	42	20/2 – 1	#6 – 1 #3/0 – 4
PNL L1	400A	120/208V	3Ø 4W	MCB	42	120/3 – 1 60/2 – 2 45/2 – 1 20/2 – 1 15/2 – 1 20/1 - 26	#6 – 2 #3/0 – 8
PNL L2	150A	120/208V	3Ø 4W	MLO	42	15/3 – 3 30/2 – 1 15/2 -1 20/1 – 17	#6 – 1 #3/0 – 4

Table 3 - Transformers

EQUIPMENT	SPECIFICATIONS	Feeders-QTY
Transformer (XFMR)	112.5 KVA 480 – 120/208V 3Ø 4W	#8 – 1 #6 – 1 #3 – 4 #3/0 – 4