

**Preface****010.00) General**

These requirements are applicable to all customer owned substation facilities at which We Energies supply lines are terminated.

010.00.10) The requirements contained herein are exclusively those of We Energies. However, additional requirements applicable to customer substations are set forth in the Wisconsin and Michigan State Electrical Code, IEEE Standards and other codes and ordinances. We Energies should be consulted only on matters relative to its specific requirements. Customers and Consultants are advised to communicate directly with appropriate code enforcement authorities for matters which pertain to requirements of the Wisconsin and Michigan State Electrical Codes, and other local codes or ordinances.

010.00.20) The We Energies general requirements which follow have been divided into specific sections as an aid to indexing the material covered for reference purposes. The division of the first two parts has been made on the basis of whether the listed characteristic primarily involves electrical or physical design criteria. These parts are Part 1 and Part 2, respectively. Control circuit requirements for service circuit breakers and electrically operated interrupter switches are specified in Part 3.

010.00.30) The general requirements contained herein relative to supply conductor terminations, grounding provisions, service disconnecting means, overcurrent protective devices, surge protection and metering facilities are those deemed necessary to insure the reliability of the We Energies system and the safety of We Energies personnel engaged in the We Energies normal operations as the supplying utility; therefore, all customer substation installations must comply and are reviewed and inspected accordingly.

010.00.40) We Energies, in its review and inspection, may specify additional requirements relative to the equipment and general design of the substation, as We Energies in an emergency situation may be requested to act as the Customer's contractor and operate the substation equipment.

010.00.50) The Customer shall obtain the acceptance of We Energies before making any additions or modifications to any existing customer-owned substation.



Preface

010.10) Information Required for the Review of New Customer Substations

Prior to designing or ordering equipment for a customer substation, the Customer or their Contractor should request that the We Energies local office furnish **Section 010.30 “We Energies Electrical System Information: Voltage and Fault Duty”** for the proposed installation (located near the front of this manual). The Customer shall provide the following:

- The street address for the proposed installation.
- The number, type and size of the transformer(s);
- The anticipated load (present and future);
- The requested service date;
- The preferred service location;
- The type of service (switchgear line up, rack in breaker style, overhead);
- And any other pertinent data.

On completion of the substation design, the Customer shall submit quantity three (3) sets of engineering documents to the We Energies appropriate service center. ***This submittal shall occur prior to ordering any equipment.*** The prints will be reviewed for acceptance by a We Energies representative. The prints submitted for acceptance shall be details of the actual proposed installation, not typical drawings of a similar installation. These prints shall contain:

Item	Received	Require	Description
1			A one line diagram showing switches, fuses, transformers, surge arresters, interlock schemes, relaying and control schematics, etc.
2			A drawing showing the location and arrangement of the proposed installation with respect to adjacent facilities.
3			The type of equipment with reference to manufacturer and catalog number, electrical ratings, clearances between live parts and to ground, complete dimensions, etc.
4			A drawing showing the location and size of equipment foundations and ducts.
5			A drawing showing the location and provisions for metering equipment – the locations for instrument transformers, the transformer rated meter socket, the cell phone enclosure, the associated conduit runs, etc. See Section 220.
6			A drawing showing the design of the electrical ground system and the provisions for protective grounding. See Section 180.
7			The provisions for warning signs and informational signs. See Section 240.

Notes:



Preface

010.20) New Customer Substation Project Information Sheet

Today's Date	
Project Title	
Site Address	
City, State, Zip Code	
Quantity and Capacity of Transformers	
Anticipated Demand at Start Up	
Anticipated Demand at Ultimate Size	
Requested Start Up Date	
Preferred Service Location	
Customer Contact	
Phone Number	
E-Mail Address	
Contract/Design Firm	
Contact Name	
Phone Number	
Address	
City, State, Zip Code	
E-Mail	



Preface

010.30) We Energies Electrical System Information: Voltage and Fault Duty

Date:	
Customer Name and Location:	
Prepared by:	

Line 1	Circuit Number		System Description	
	3 Phase (Amps)		Line-Ground (Amps)	
	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
Present				
Future				

Line 2	Circuit Number		System Description	
	3 Phase		Line-Ground	
	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
Present				
Future				

— OR —

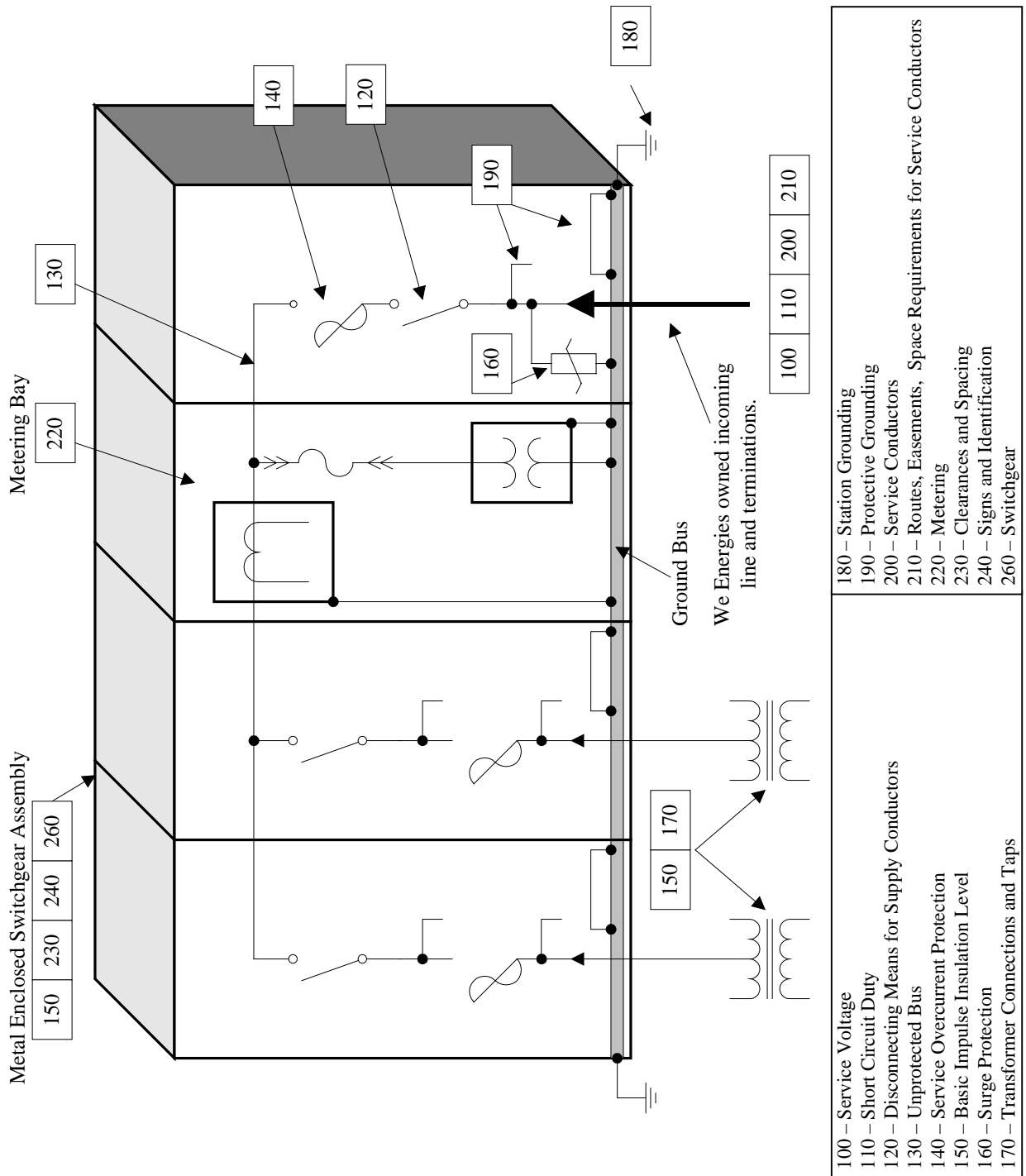
Line 1	Circuit Number		System Description	
	3 Phase		Line-Ground	
	Duty (Amps)	X/R	Duty (Amps)	X/R
Present				
Future				

Line 2	Circuit Number		System Description	
	3 Phase		Line-Ground	
	Duty (Amps)	X/R	Duty (Amps)	X/R
Present				
Future				

Part 1: Electrical Requirements



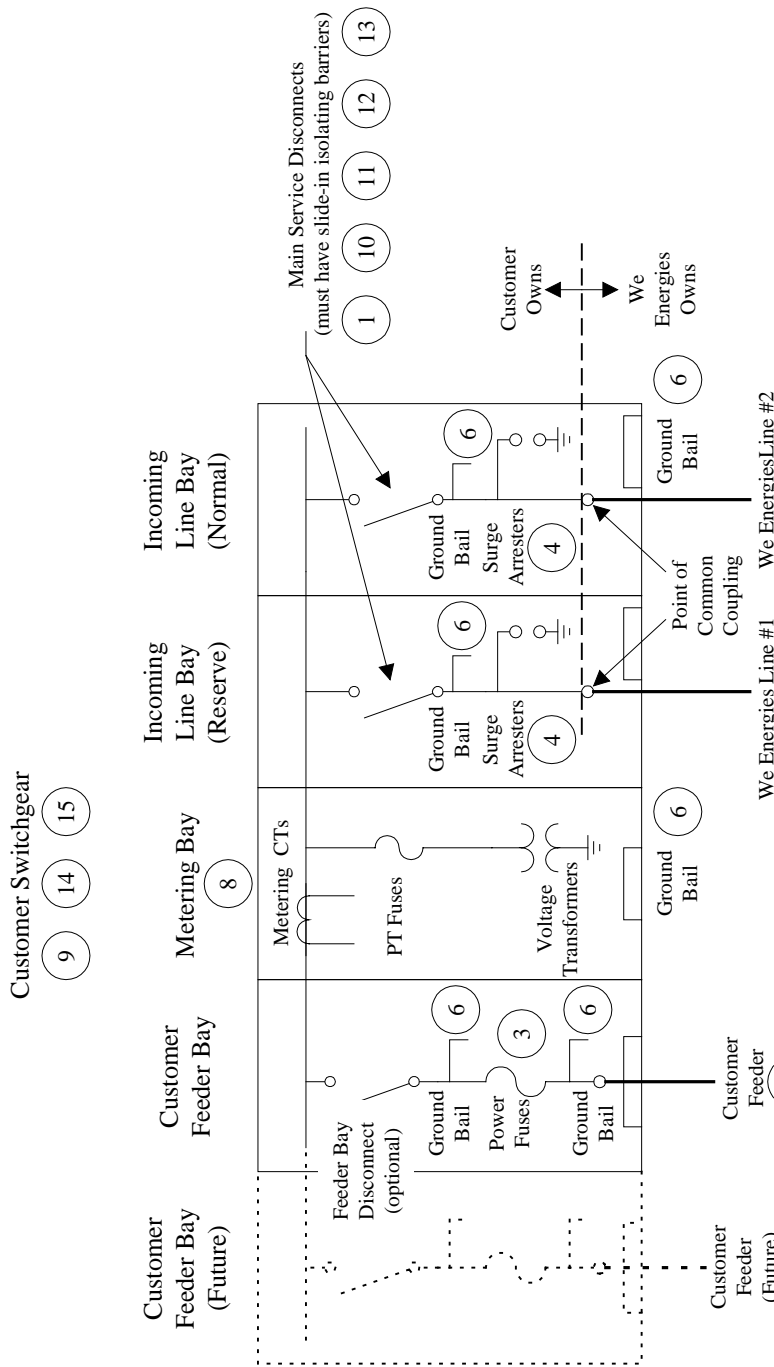
010.40) Schematic Index for a Typical Substation
Metal Enclosed Gear with Single Line Feed



<p>100 – Service Voltage 110 – Short Circuit Duty 120 – Disconnecting Means for Supply Conductors 130 – Unprotected Bus 140 – Service Overcurrent Protection 150 – Basic Impulse Insulation Level 160 – Surge Protection 170 – Transformer Connections and Taps</p>	<p>180 – Station Grounding 190 – Protective Grounding 200 – Service Conductors 210 – Routes, Easements, Space Requirements for Service Conductors 220 – Metering 230 – Clearances and Spacing 240 – Signs and Identification 260 – Switchgear</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Part 1: Electrical Requirements

010.50) Schematic Index for a Typical Substation Metal Enclosed Gear with Two Line Feed

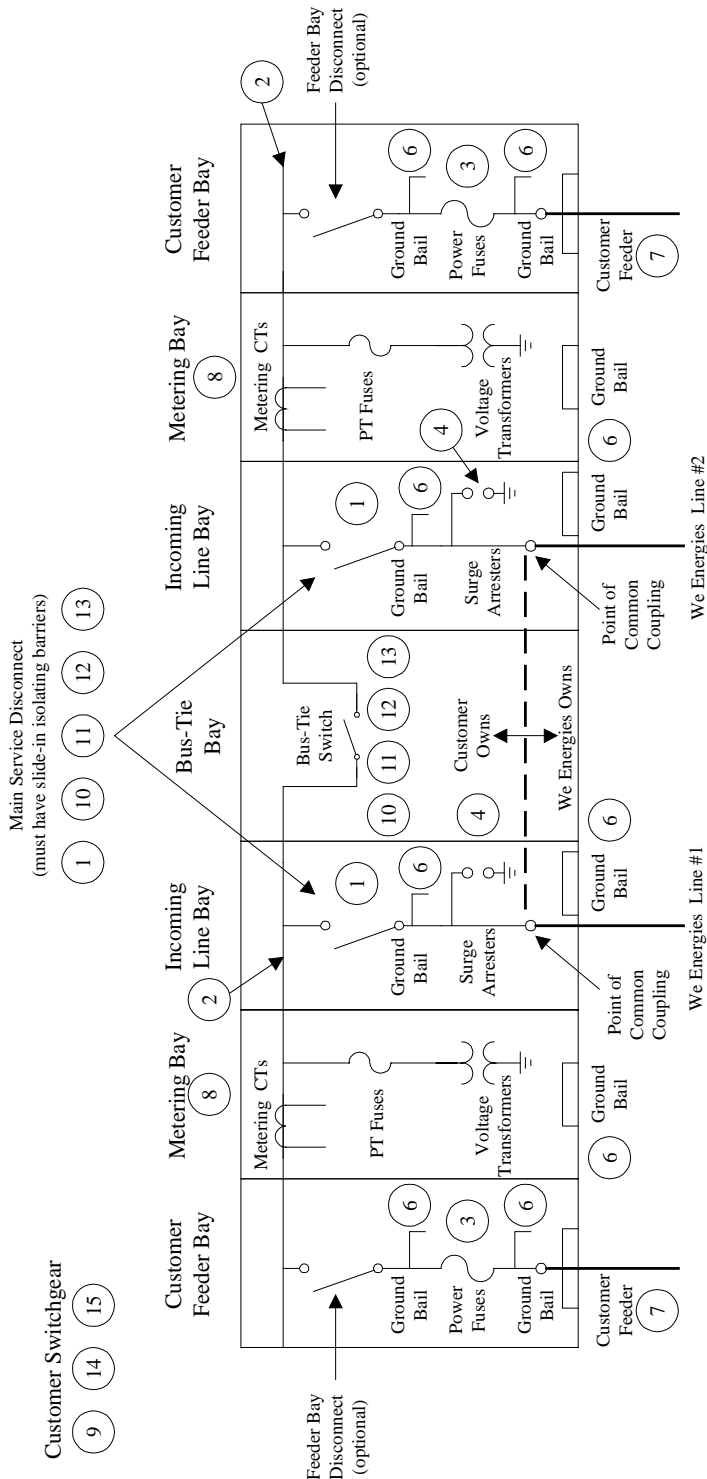


5 Station Grounding Requirements: See Section 180. All noncurrent-carrying metallic parts which may become energized or statically charged (ie: switchgear enclosures) shall be connected to the ground grid in a minimum of two locations by conductors of adequate capacity and mechanical ruggedness.

1. Main Service Disconnect	Section 120	9. Switchgear	Section 260
2. Unprotected Bus	Section 130	10. Interlock Systems	Section 280
3. Fuses, Fuse Mountings	Section 140	11. Control Circuit Practices	Section 310
4. Surge Protection	Section 160	12. Automatic Transfer Control	Section 320
5. Station Grounding	Section 180	13. Manual Transfer	Section 330
6. Protective Grounding	Section 190	GENERAL:	
7. Service Conductors	Section 200	14. Clearance and Spacing	Section 230
8. Metering	Section 220	15. Signs and Identification	Section 240

Part 1: Electrical Requirements

010.60) Schematic Index for a Typical Substation Metal Enclosed Gear with Two Line Feed and a Bus Tie Switch



5) Station Grounding Requirements: See Section 180. All noncurrent-carrying metallic parts which may become energized or statically charged (ie: switchgear enclosures) shall be connected to the ground grid in a minimum of two locations by conductors of adequate capacity and mechanical ruggedness.

1. Main Service Disconnect	Section 120	10. Interlock Systems	Section 280
2. Unprotected Bus	Section 130	11. Control Circuit Practices	Section 310
3. Fuses, Fuse Mountings	Section 140	12. Automatic Transfer Control	Section 320
4. Surge Protection	Section 160	13. Manual Transfer	Section 330
5. Station Grounding	Section 180	GENERAL:	
6. Protective Grounding	Section 190	14. Clearance and Spacing	Section 230
7. Service Conductors	Section 200	15. Signs and Identification	Section 240
8. Metering	Section 220		