

Marshfield Utilities
Rules for Electric Service Installations
Table of Contents Continued

Section	Topic	Page
	Table of Contents.....	I
	Mission and Vision Statements.....	VII
	Introduction and Purpose.....	VIII
	Digger Notification.....	VIII
1.0	SERVICE TERRITORY AND OFFICE.....	1-1
	Contact information.....	1-3
2.0	PROCEDURE TO OBTAIN ELECTRIC SERVICE	
2.1	Permanent Service.....	2-1
2.2	Temporary Service.....	2-1
2.3	Line Extension.....	2-1
2.4	Easements and Right-of-Way.....	2-2
2.5	Site Preparation.....	2-2
2.6	Inspection.....	2-2
2.7	Scheduling of the Job.....	2-2
2.8	Service Extensions – Special Requirements.....	2-3
3.0	SERVICE ENTRANCE REQUIREMENTS	
3.1	Service Requirements.....	3-1
	3.1.1 Grounding.....	3-3
	3.1.2 200 Amp Single Phase Underground.....	3-9
	3.1.3 200 Amp Single Phase Underground w/Main Breaker.....	3-10
	3.1.4 100-200 Amp Single Phase Overhead Entrance.....	3-11
	3.1.5 Temporary Service.....	3-14
	3.1.6 Permanent/Temporary Underground Service.....	3-17
	3.1.7 Mobile Home Services.....	3-19
3.2	Single Phase 120/208 Network (0 to 200 Ampere).....	3-22
3.3	Single Phase Service Installations for 2-4 Meters.....	3-23
3.4	400 Ampere Single Phase Residential Service.....	3-24
3.5	Underground Electric Service guidelines.....	3-25
3.6	Voltage or Phase Conversion (Load Balance).....	3-30
3.7	Pad-mounted Transformers.....	3-30
3.8	Concrete Pads for Padmount Transformers.....	3-32
3.9	Conductor Identification for Three Phase Wiring.....	3-39
3.10	Vertical Space to Terminate in Switchgear and Entrances.....	3-39
3.11	Farm Services.....	3-40
3.12	Termination Enclosures.....	3-41
3.13	Cable Television Power Supplies.....	3-42

**Marshfield Electric and Water Department
Rules for Electric Service Installations
Table of Contents Continued**

Section	Topic	Page
4.0	METERING REQUIREMENTS	
4.0	Multiple Meters	4-3
4.1	Meter Heights	4-4
4.2	Meter sockets	4-5
4.3	Instrument Transformer Metering - General	4-10
4.4	Current Transformer in Padmounted Transformers	4-11
4.5	Current Transformer Cabinets for 400-2000 Ampere Services	4-12
4.6	Metering in Switchgear 1600 through 3000 Amperes	4-15
4.7	Primary Metering.....	4-18
4.8	Meter Ice and Snow Shield	4-20
5.0	CLEARANCES	
5.1	Clearances for Electrical Overhead Services.....	5-1
5.2	Padmounted Transformer Clearances.....	5-2
5.3	Gas Lines	5-7
5.4	Clearance of Lines Near Wells	5-7
5.5	Clearance to Sewers.....	5-7
5.6	Stored Materials	5-8
5.7	Clearance of Lines Near Fuel Storage Tanks.....	5-8
5.8	Antennas	5-8
5.9	Buildings.....	5-8
5.10	Swimming Pools	5-8
5.11	Grain Bins.....	5-9
5.12	Alternate Sources of power	5-9
6.0	MU - POLICIES AND RULES	
6.1	Code Compliance and Inspection	6-1
6.2	Continuity and Quality of Service	6-1
6.3	Service Outages.....	6-2
6.4	Service Utilization	6-2
6.5	Resale of Energy.....	6-3
6.6	Diversion (Theft) of Electricity	6-3
6.7	Meter Socket Access	6-4
6.8	Utility Equipment on Customers Premises	6-4
6.9	Cable Locates	6-4
6.10	Line Extensions on Other Than Private Property.....	6-5
6.11	Line Extensions on Private Property.....	6-5

**Marshfield Electric and Water Department
Rules for Electric Service Installations
Table of Contents Continued**

<i>Section</i>	<i>Topic</i>	<i>Page</i>
6.12	Attachments on MU Poles	6-6
6.13	Service Days	6-6
6.14	Service Location	6-6
6.15	Address Posted.....	6-7
6.16	Cut-off Time	6-7
6.17	Service Entrance Wiring.....	6-8
6.18	Meter on Utility Poles.....	6-8
6.19	Temporary Services	6-8
6.20	Motors and Associated Equipment	6-9
6.21	Electric Water Heating.....	6-11
6.22	Electric Space Heating.....	6-11
6.23	Lighting.....	6-11
6.24	Electric Welders and Furnaces.....	6-12
6.25	Harmonics and High Frequency Equipment.....	6-12
6.26	Air Conditioners.....	6-12
6.27	Standby Generators.....	6-13
6.28	Parallel Generation.....	6-13
6.29	Marker Balls.....	6-13
6.30	Rebates.....	6-13
7.0	CODE INFORMATION	
7.1	State of Wisconsin Codes	7-1
7.2	NEC 230.2 Number of Services.....	7-1
7.3	Wisconsin Administrative Code Modifications to the NEC	7-2
7.4	Grounding Electrode System Addition to NEC 250.53 (SPS 316.250)	7-3
7.5	Wisconsin Administrative Code PSC 113	7-5
7.6	Harmonics of 60 Hertz Voltage Waves PSC 113.0704	7-6
7.7	Radio and Television Interference PSC 113.0707	7-6
7.8	Measuring Customer Service PSC 113.0802.....	7-7

Marshfield Utilities
Rules for Electric Service Installations
List of Tables

TABLES

3-1	Service Entrance Size Requirements for a 120/240 3-wire (single phase) Residential Dwelling Unit	3-1
3-2	Grounding Electrode Conductor for Alternating Current Systems.....	3-4
3-3	Service Drop Clearance Requirements	3-13
3-4	Acceptable Underground/Overhead Service Lateral Configurations ..	3-29
3-5	Three Phase Load Balance Requirements.....	3-30
3-6	Three Phase Transformer Pad Construction Notes	3-38
3-7	Color Coding for Three Phase Conductors	3-39
3-8	Minimum Required “Vertical” Spacing to Terminate Utility Service Conductors in Switchgear	3-39
3-9	Pre-approved Termination Enclosures.....	3-41
4-1	Multiple Metering Requirements	4-3
4-2	Meter Height Clearance Requirements	4-4
4-3	Example 200 Amp Overhead Meter Sockets Without Main Breaker	4-5
4-4	Approved 200 Amp Overhead Meter Sockets with Main Breaker.....	4-5
4-5	Approved 200 Amp Service Pedestals without Main Breaker.	4-5
4-6	Approved 200 Amp Service Pedestals with Main Breaker.	4-6
4-7	Approved Mobile Home Pedestals.	4-6
4-8	Approved Multi-Meter Socket Arrangements without Main Breaker 200 Amp Rated	4-7
4-9	Approved Multi-Meter Socket Arrangements with Main Breaker 200 Amp Rated	4-7
4-10	Approved 320/400 Amp Service Pedestals Without Main Breaker. ..	4-8
4-11	Approved 320/400 Amp Service Pedestals With Main Breaker.	4-8
4-12	Approved 320/400 Amp Overhead Meter Sockets.....	4-8
4-13	Approved 320/400 Amp Overhead Meter Sockets with Main Breaker	4-8
4-14	Approved Single Phase Instrument Rated Meter Socket for 400 and 600 Amp Services.	4-8
4-15	Approved Meter Sockets for Self-Contained 200 Amp Three Phase Four Wire Services.	4-9
4-16	Approved Three Phase Transformer Rated Meter Socket with Test Switch and Pre-Wired.	4-9
5-1	Clearances for Electrical Overhead Services.....	5-1
6-1	Motor Starting Table.....	6-10
6-2	Air Conditioner Locked Rotor Current Limits	6-12

Marshfield Utilities
Rules for Electric Service Installations
List of Figures

FIGURES

1-1	Marshfield Electric Service Territory	1-1
1-2	MU Local Office Location.....	1-2
3-1	Overhead Service	3-5
3-2	Underground Single-Family without Service Disconnect in Meter Pedestal.....	3-6
3-3	Underground-Single Family With Service Disconnect in Meter Pedestal.....	3-7
3-4	Underground-Two Family Residential	3-8
3-5	200 Amp Single Phase Underground Service.....	3-9
3-6	200 Amp Single Phase Underground Service with Main Breaker	3-10
3-7 (a)	100-200 Amp Single Phase Overhead Service	3-11
3-7 (b)	100-200 Amp Single Phase Overhead Service	3-12
3-8 (a)	Temporary Overhead Service Options.....	3-15
3-8 (b)	Temporary Overhead Service Options	3-16
3-8 (c)	Temporary Overhead Service Options	3-16
3-8 (d)	Temporary Underground Service Options	3-17
3-9	Temporary/Permanent Underground Service Option	3-18
3-10	Typical Overhead Mobile Home Service Arrangement	3-20
3-11	Free Standing Pedestal Options	3-21
3-12	Single Phase 120/208 Network Meter Socket	3-22
3-13	Typical Two Meter Pedestal Installation	3-23
3-14(a)	400 Amp Single Phase Underground Service With Main Breaker....	3-24
3-14(b)	400 Amp Single Phase Underground Service Conduit Location at Utility Pole	3-25
3-15	Protective Posts for Padmounted Transformer	3-31
3-16	Protective Posts for Current Transformer Cabinets and Meter Sockets.....	3-31
3-17	Three Phase Transformer Pad (75 - 750 kVA) Without Metering	3-32
3-18	Three Phase Transformer Pad (75 - 750 kVA) with Metering on Secondary Side.....	3-33
3-19	Three Phase Transformer Pad (75 – 750 kVA with Metering on Primary Side.....	3-34
3-20	Three Phase Transformer Pad (1000 – 2500 KVA) Without Metering.....	3-35
3-21	Three Phase Transformer Pad (1000 – 2500 KVA) With Metering on Secondary Side.....	3-36
3-22	Three Phase Transformer Pad (1000 – 2500 KVA) With Metering on Primary Side.....	3-37
3-23	Typical Termination Enclosure Arrangements	3-41
3-24	Typical Cable Television Power Supply Arrangement	3-43
4-1	Indoor Meter Clearance Requirements	4-4

Marshfield Electric and Water Department
Rules for Electric Service Installations
List of Figures Continued

4-2	Three Phase Four Wire Meter Socket Connections.....	4-9
4-3	Three Phase Transformer Metering Arrangement	4-11
4-4(a)	Three Phase Current Transformer Cabinet Arrangements.....	4-13
4-4(b)	Three Phase Current Transformer Cabinet Arrangements.....	4-13
4-4(c)	Three Phase Current Transformer Cabinet Arrangements.....	4-14
4-4(d)	Three Phase Current Transformer Cabinet Arrangements.....	4-14
4-5	Three Phase Metering in Switchgear with Bar-type Current Transformers.....	4-16
4-6	Three Phase Metering in Switchgear with Window-type Current Transformers.....	4-17
4-7	Primary Metering Options	4-19
4-8	Meter Ice and Snow Shield.....	4-20
5-1	Pad Mount Transformer Door Clearance.....	5-2
5-2	Pad Mount Transformer Air Intake Clearance.....	5-3
5-3	Pad Mount Transformer First Story Opening Clearance	5-3
5-4	Pad Mount Transformer Second Story Window Clearance.....	5-4
5-5	Pad Mount Transformer Non-Combustible Wall Clearance	5-5
5-6	Pad Mount Transformer Combustible Wall Clearance.....	5-6
5-7	Pad Mount Transformer Fire Escape Clearance	5-6
5-8	Underground Cable Pool Clearance.....	5-9
6-1	Service Location Requirements	6-7