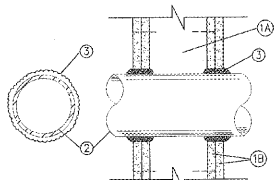


F Ratings --- 1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings --- 0, 1, 2, 3, and 4 Hr (See Item 3)
L Rating At Ambient --- less than 1 CFM/sq ft
L Rating At 400 F --- less than 1 CFM/sq ft



- Wall Assembly The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 - Slud wall framing may consist of either wood sluds (max 2 hour fire rated assemblies) or steel channel studs. Wood sluds to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.
 - Gypsum Board* Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 1 1/2 in.
- Pipe or Conduit Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 hr. Steel pipes or conduits larger than 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
- Fill, Void or Cavity Material* --- Caulk Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam. In.	Annular Space In.	F Rating Hr	T Rating Hr
1	0 to 3/16	1 or 2	0+, for 2
1	1/4 to 1/2	3 or 4	3 or 4
4	0 to 1-1/2	1 or 2	0
6	1/4 to 1/2	3 or 4	0
12	5/16 to 3/8	1 or 2	0

*When copper pipe is used, T Rating is 0 hr.
MINNESOTA MINING & MFG CO -- CP 25WB+.

*Bearing the UL Classification Marking
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2 METALLIC CONDUIT PENETRATION DETAIL
SCALE: NONE

CKT. #	DESCRIPTION	NOTE	BREAKER POLE	LOAD AMP	LOAD (KVA)	A	B	C	LOAD (KVA)	BREAKER AMP	POLE	NOTE	DESCRIPTION	CKT. #
1	LIGHTS UNIT 103		1	20	0.38	0.9			0.54	20	1		GENERAL PURPOSE RECEPTACLE	2
3	LIGHTS UNIT 102		1	20	0.19	0.7			0.50	20	1	1	HOT BOX HEAT TAPE	4
5	LIGHTS UNIT 101		1	20	0.38			0.6	0.20	20	1		TIME CLOCK	6
7	EXTERIOR LIGHTING		1	20	0.52	1.3			0.76	20	1	2,4	SITE LIGHTING	8
9	SITE LIGHTING	2,4	1	20	0.76	1.9			1.13	20	1	2,4	SITE LIGHTING	10
11	PRIME SIGN	3	1	20	1.20			1.2		20	1		SPARE	12
13	SPACE		1			0.0					1		SPACE	14
15	SPACE		1			0.0					1		SPACE	16
17	SPACE		1			0.0					1		SPACE	18
19	SPACE		1			0.0					1		SPACE	20
21	SPACE		1			0.0					1		SPACE	22
23	SPACE		1			0.0					1		SPACE	24
25	SPACE		1			0.0					1		SPACE	26
27	SPACE		1			0.0					1		SPACE	28
29	SPACE		1			0.0					1		SPACE	30
31	SPACE		1			0.0					1		SPACE	32
33	SPACE		1			0.0					1		SPACE	34
35	SPACE		1			0.0					1		SPACE	36
37	SPACE		1			0.0					1		SPACE	38
39	SPACE		1			0.0					1		SPACE	40
41	SPACE		1			0.0					1		SPACE	42
					2.2	2.6	1.8	TOTAL KVA PER PHASE						
					6	7	5	AMPS PER PHASE						

VOLTAGE 208Y/120V
PHASE 3
WIRE 4
MAINS 100 MLO
RATING 100 (AMPS)
NITH T.C. BAR NO.

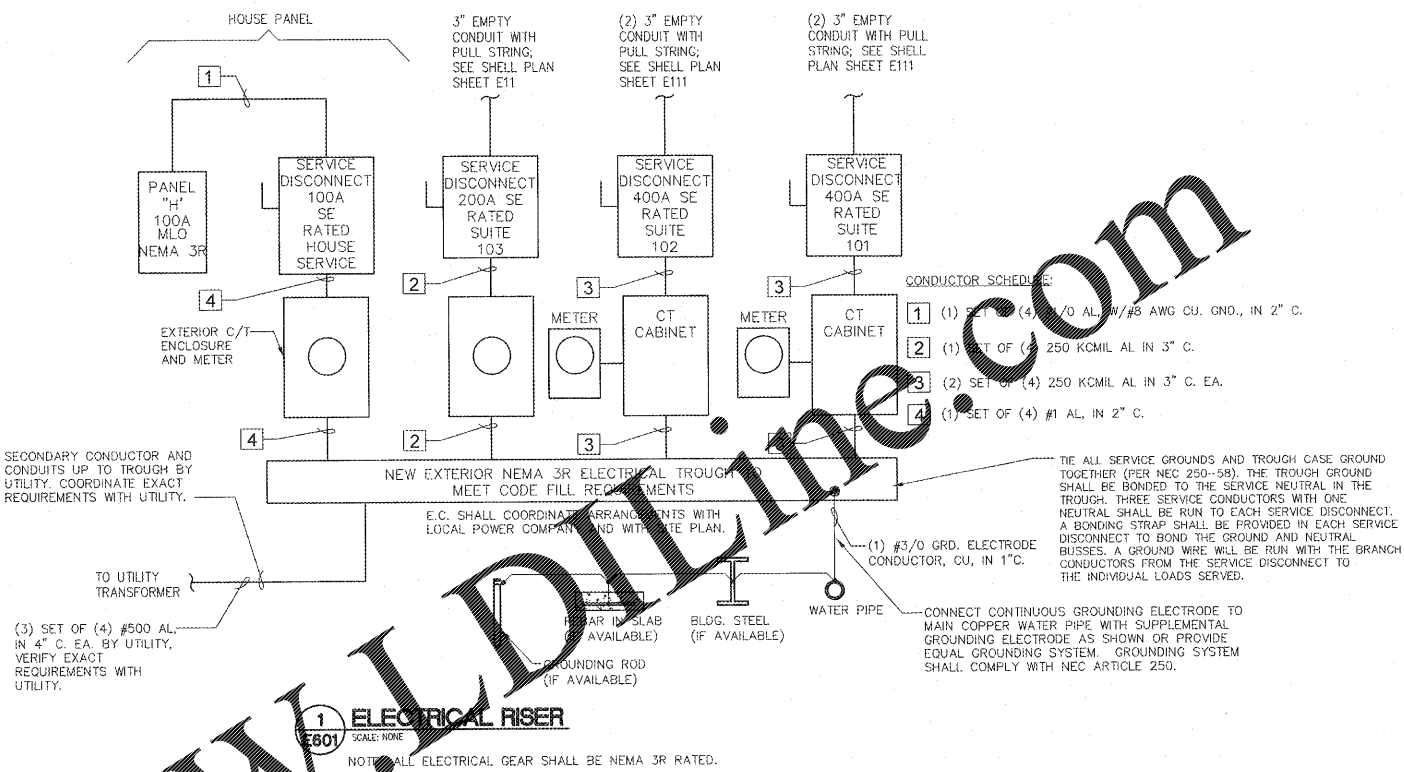
LOCATION SEE PLAN
MOUNTING SHIRFACE
FEEDER SEE RISER
MIN AIC SEE FAULT CALC

ITEMS CON. % DEM.
RECEPTACLES 0.5 code 0.5
KITCHEN 0.0 0.5% 0.0
HVAC 0.0 100% 0.0
LIGHTS (INT.) 1.0 125% 1.2
LIGHTS (EXT.) 4.4 125% 5.5
MISC. 1.0 100% 1.0
TOTAL KVA 6.6
TOTAL AMPS 18

NOTES:
1) WIDE LOADS PER ILLUMINANCE CODE PER NEC 422.31
2) 2" 1#120 TH (1) 3/4" C.
3) 2" 1#120 TH (1) 3/4" C.
4) 2" 1#120 TH (1) 3/4" C.

E.C. SHALL VERIFY WITH LAJH AND LOCAL UTILITY CONSTRUCTION GUIDELINES TO ENSURE FULL COMPLIANCE WITH ELECTRICAL SERVICE REQUIREMENTS. E.C. SHALL COORDINATE WITH LAJH AND LOCAL UTILITY AND SHALL BE ASSURED OF LOCAL APPROVAL OF SERVICE DESIGN PRIOR TO PURCHASE OR INSTALLATION OF ANY SERVICE EQUIPMENT. CONTACT THE ENGINEER IMMEDIATELY WITH ANY PROBLEMS OR CHANGES. ANY COSTS ARISING FROM FAILURE TO FULLY COORDINATE SERVICE INSTALLATION AND COMPLY WITH LAJH AND LOCAL UTILITY SHALL BE BORNE BY THE E.C.

- NOTES:
- ALL WIRING AND EQUIPMENT BY E.C. UNLESS NOTED OTHERWISE.
 - PANELBOARD "H" AND SERVICE RATED DISCONNECTS SHALL BE U.L. LISTED.
 - ALL INTERIOR METAL PIPING (WATER AND GAS) SHALL BE BONDED TO THE SERVICE ENTRANCE ENCLOSURE, THE GROUNDED CONDUCTOR AT THE SERVICE, THE GROUNDED ELECTRODE CONDUCTOR OF SUFFICIENT SIZE OR TO ONE OR MORE GROUNDED ELECTRODES USED. THE WATER PIPING BONDING JUMPER SHALL BE SIZED IN ACCORDANCE WITH TABLE 250.66. THE GAS PIPING SHALL BE BONDED WITH A JUMPER SIZED PER TABLE 250.122 USING THE RATING OF THE CIRCUIT THAT MAY ENERGIZE THE PIPING.
 - CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SITE AS DETERMINED BY THE LOCAL ELECTRIC UTILITY. E.C. SHALL COORDINATE WITH LOCAL UTILITY TO DETERMINE MAXIMUM AVAILABLE FAULT CURRENT PRIOR TO PURCHASING CIRCUIT BREAKERS.
 - E.C. SHALL PROVIDE ALL ELECTRICAL PANELS WITH ARC-FLASH WARNING LABELS.
 - E.C. SHALL PROVIDE A TYPED DIRECTORY, WITH TRANSPARENT PROTECTOR FOR EACH PANEL.
 - CIRCUIT BREAKERS FOR MULTI-CONDUCTOR CIRCUITS SHALL HAVE A COMMON TRIP FOR ALL CONDUCTORS.
 - ALL PANELS SHALL BE RATED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT AMPS AS SHOWN IN THE FAULT CURRENT CALCULATIONS TABLE.



FAULT CURRENT CALCULATIONS

Basic Assumptions:
Transformer Utility Type: 300 KV
Secondary: 208 V
Impedance: 2.0%
FA-end: 0.5%

Short circuit current through each cable segment:

From	To	Length	Voltage	Wire Size	Wire Type	Conduit Type	C'	SCA-beg	SCA-end
THRU THROUGH	3 Slots	100 ft	208 V	#600	Al	Nonmetallic	22462	41,837 A	27,484 A
DISCONNECT	1 Slot	2 ft	208 V	#10	Al	Metallic	5827	27,484 A	25,482 A
DISCONNECT	1 Slot	2 ft	208 V	#10	Al	Metallic	5827	26,482 A	23,752 A
DISCONNECT	1 Slot	5 ft	208 V	#10	Al	Metallic	5827	23,752 A	20,309 A

* Calculated as: I divided by square root of impedance times 1,000 (Impedance values from IEEE Std 241-1990 page 420)

FAULT CURRENT CALCULATION NOTES:
E.C. SHALL PROVIDE A TESTED SERIES RATED DISTRIBUTION SYSTEM CAPABLE OF WITHSTANDING THE ACTUAL AVAILABLE FAULT CURRENT, AT THE TIME OF DESIGN THE TRANSFORMER SPECIFICATIONS AND LOCATION WERE NOT KNOWN. THESE CALCULATIONS REPRESENT A WORST CASE ESTIMATE BASED ON AN INFINITE BUS DESIGN. E.C. SHALL ONLY USE THESE CALCULATIONS AS A GUIDELINE FOR THE PROPER SELECTION AND COORDINATION OF BREAKERS. ACTUAL VALUES WILL VARY ACCORDING TO NUMEROUS VARIABLES. VALUES ARE VALID ONLY FOR A 300KVA TRANSFORMER WITH AN IMPEDANCE OF 2.00% OR GREATER AND SERVICE LATERALS NOT LESS THAN 104 FEET IN TOTAL LENGTH. E.C. SHALL FIELD VERIFY TRANSFORMER RATINGS AND LOCATION AND ALL CONDUCTOR VARIABLES PRIOR TO PURCHASING BREAKERS. ADJUST AS REQUIRED. CONSULT DESIGN ENGINEER AS NEEDED.

VOLTAGE DROP CALCULATIONS - PANEL 'H'

Circuit #	Load (kW)	Load (A)	Load Type	Sets of Wires	Length	Voltage	Wire Size	Wire Type	Conduit Type	Z (Ω/ft)	% Voltage Drop
H-1	0.38	3.20	Lighting	1	80 ft	120V	#12	Cu	Metallic	2.000	0.9
H-3	0.19	1.60	Lighting	1	90 ft	120V	#12	Cu	Metallic	2.000	0.5
H-5	0.38	3.17	Lighting	1	110 ft	120V	#12	Cu	Metallic	2.000	1.2
H-7	0.52	4.35	Lighting	1	150 ft	120V	#12	Cu	Metallic	2.000	2.2
H-9	0.76	6.29	Lighting	1	80 ft	120V	#10	Cu	Metallic	1.200	1.0
H-11	1.20	10.00	Misc	1	200 ft	120V	#8	Cu	Metallic	0.790	2.6
H-2	0.54	4.50	Receptacle	1	82 ft	120V	#12	Cu	Metallic	2.000	1.2
H-4	0.50	4.17	Misc	1	34 ft	120V	#12	Cu	Metallic	2.000	0.5
H-6	0.20	1.67	Misc	1	5 ft	120V	#12	Cu	Metallic	2.000	0.0
H-8	0.76	6.29	Lighting	1	80 ft	120V	#10	Cu	Metallic	1.200	1.0
H-10	1.13	9.43	Lighting	1	75 ft	120V	#10	Cu	Metallic	1.200	1.4

- GENERAL NOTES**
- ANY CIRCUITS SHOWN ON ELECTRICAL PLANS ARE DIAGRAMMATIC. E.C. SHALL DETERMINE THE MOST EFFICIENT ROUTING OF CONDUIT IN THE FIELD.
 - INSTALLATION SHALL COMPLY WITH NATIONAL ELECTRICAL CODE, STATE BUILDING CODE AND ALL REQUIREMENTS OF THE LOCAL INSPECTOR (FURNISH INSPECTION CERTIFICATE). ALL WORK SHALL BE BY LICENSED ELECTRICAL CONTRACTOR.
 - ALL BRANCH CIRCUITS SHALL BE IN ZINC-COATED EMT OR RIGID CONDUIT AS PERMITTED BY THE NATIONAL ELECTRICAL CODE. SCHEDULE 40 PVC CONDUIT MAY BE USED ONLY FOR THE UNDERGROUND TELEPHONE SERVICE BURIED ON THE EXTERIOR OF THE BUILDING. ALL CONDUIT SHALL BE 1/2" MIN. SIZE. EMT FITTINGS SHALL BE STEEL COMPRESSION TYPE.
 - ALL CONDUCTORS SHALL BE COPPER TYPE THIN/THIN OR THW SOLID FOR #10 AWG OR #12 AWG AND STRANDED FOR ALL LARGER SIZES.
 - ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED SO THAT ALL CODE REQUIRED AND MANUFACTURER RECOMMENDED SERVICING CLEARANCES ARE MAINTAINED.
 - PROVIDE PULL STRING IN ALL EMPTY CONDUIT.
 - PROVIDE CODE SIZED GROUND CONDUCTOR IN ALL CONDUIT RUNS.
 - E.C. SHALL LABEL ALL PANELS AND PROVIDE CIRCUIT DIRECTORY FOR EACH PANEL UPON COMPLETION. THE DIRECTORY SHALL BE A TYPE WRITTEN HARD COPY AND INSERTED IN PLASTIC JACKET AND MOUNTED ON THE INSIDE OF PANEL DOORS.
 - ALL DEVICES REQUIRED TO BE ADA ACCESSIBLE SHALL BE INSTALLED PER ANSI A117.1.
 - E.C. SHALL PROVIDE OWNER/FRANCHISEE WITH COMPLETE SET OF ELECTRICAL AS-BUILT DRAWINGS SHOWING ALL DEVIATIONS FROM ORIGINAL DESIGN WITHIN 30 DAYS OF ACCEPTANCE.
 - E.C. SHALL PROVIDE OWNER/FRANCHISEE WITH OPERATIONS & MAINTENANCE MANUAL(S) FOR ALL ELECTRICAL SYSTEMS AND EQUIPMENT WITHIN 30 DAYS OF ACCEPTANCE.
 - E.C. SHALL TEST ALL LIGHTING SYSTEMS TO ENSURE PROPER CALIBRATION, ADJUSTMENT, PROGRAMMING AND OPERATION.
 - E.C. SHALL PROVIDE CONDUCTORS SUCH THAT MAXIMUM VOLTAGE DROP IN FEEDER CONDUCTORS DOES NOT EXCEED 2% AND IN BRANCH CIRCUIT CONDUCTORS DOES NOT EXCEED 3%.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
→	HOME RUN TO PANEL - SEE PANEL SCHEDULE.
□	DISCONNECT SWITCH
⊙	JUNCTION BOX, SIZE AND USE AS REQUIRED; COVER/PLATE SHALL OVERLAP THE BOX EDGE BY 1/2" WHERE RECESSED IN WALL WITH CONCEALED WIRING.
⊕	QUAD RECEPTACLE, NEMA 5-20R, 120 VAC. MOUNT 16" AFF TO BOTTOM OF BOX UON.
⊕	DUPLEX RECEPTACLE, NEMA 5-20R, 120 VAC. MOUNT 16" AFF TO BOTTOM OF BOX UON.
∇	TELEPHONE-DATA OUTLET
UON	UNLESS OTHERWISE NOTED
GFI	GROUND FAULT INTERRUPTER
IG	ISOLATED GROUND
WP	WEATHERPROOF
NL	NIGHT LIGHT
C.M.	CEILING MOUNTED
TTB	TELEPHONE TERMINAL BOARD
VF	VERIFY IN FIELD. E.C. TO ADJUST AS REQUIRED.
⊕	ASTRONOMIC TIME CLOCK
⊕	1X4 LIGHT FIXTURE
⊕	EXTERIOR CYLINDER
⊕	EXTERIOR EMERGENCY LIGHT
⊕	EMERGENCY LIGHT
⊕	COMBO EXIT SIGN AND LIGHT
\$	SINGLE POLE SWITCH - 20 AMP, 120 VOLT, 48" AFF TO TOP OF BOX UON.
\$3	THREE-WAY SWITCH - 20 AMP, 120 VOLT, 48" AFF TO TOP OF BOX UON.
\$os	OCCUPANCY SENSOR ACTIVATED SWITCH - 20 AMP, 120 VOLT, 48" AFF TO TOP OF BOX UON. PROVIDE DUAL TECHNOLOGY TYPE, PASSIVE INFRARED AND ULTRASONIC.

LMHT Project No. 19120.00

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LMHT ENGINEER LICENSE NUMBER - C-1989

PROJECT: RETAIL SHOPS
4809 COUNTRY CLUB ROAD
WINSTON SALEM, NC

DRAWING: ELECTRICAL PANEL SCHEDULE AND RISER

Revisions

REVISION DATE

PROJECT DATE: 6/19/2019

Drawn By: JP

Checked By: CTT

Sheet No. **E601**