

ELECTRICAL SPECIFICATIONS (DIVISION 16)

- 1.0 GENERAL
- 1.1 General Requirements
- Comply with the requirements of the current edition of the Canadian Electrical Code (CSA 22.1) and amendments thereto, the Alberta Building Code, and the regulations of the Electrical Inspection Authorities.
 - Obtain necessary permits, pay all applicable fees. On completion, obtain Certificate of Approval from the local Inspection Department, turn over all certificates to Engineer.
 - Supply all necessary labour, material and equipment for complete electrical installation per drawings and specifications.
 - Examine the site and local conditions affecting trade before submitting tender.
 - Examine architectural drawings and those of other sections for complete information and co-ordination.
 - Unless otherwise noted, all material to be new, best quality, and bear CSA approval.
 - Substitution of materials, equivalent to those specified, may be made only after written approval has been obtained from the Engineer before closing of tenders.
 - Guarantee all work and equipment installed for twelve (12) months after completion. Replace without charge any defective items, provided that failure is not due to improper usage by others.
 - Shop Drawings: 7 copies required to show details of main equipment items, including distribution equipment and lighting fixtures.
 - Maintenance Manuals: 3 required, 3 ring minimum 2" binders, indexed, include equipment brochures, shop drawings, names and addresses of suppliers.
 - Record Drawings: during construction, on a set of white prints, mark any changes from the original contract documents caused by site conditions and changes ordered after tender. Submit approved marked prints to consultant on completion of project.
- 2.0 PRODUCTS
- 2.1 Materials and Equipment
- Raceways and Conductors
 - Raceways: electrical metallic tubing and/or rigid galvanized steel conduit if indicated. Use AC-90 armoured cable for end runs only. Sizing: per Canadian Electrical Code. Motor connections: minimum 600 mm of PVC jacketed flexible steel conduit with liquid tight fittings. Exterior: rigid galvanized steel with threaded fittings. Underground DB2 or as indicated.
 - Conductors: copper, minimum #12 for branch circuits, R90 X-link insulation. Control wires: minimum #14 for 120 volts. Service conductors: RW90 insulation suitable for -40 deg. C. Low voltage control wiring, up to 50 volts, by Division 15.
 - Receptacles and Switches
 - Parallel blade receptacles: rated 15 amps, 125 volts, specification grade. Isolated ground receptacles: Hubbell #10-5262 or equal. SPST toggle switch: rated 15 amps, 125 volts, medium specification grade. Special receptacles and connections as indicated.
 - Outlet Boxes
 - For lighting fixtures: formed metal boxes 100 mm round or square. For surface mounted switches and/or receptacles: cast boxes with threaded hubs. Outdoor outlet boxes and where indicated WP: cast metal with threaded hubs.
 - Branch Circuit Panels
 - 600/347 or 208/120 volts, 3 phase, 4 wire branch panels, 42 cct, unless otherwise shown and as required complete with full size breakers as required. Typewritten directory inside door to have correct circuit information.
 - Branch Circuit Breakers: Full size breakers to match panel manufacturer and interrupting capacity.
 - Provide plywood backing behind panels, 1200x2400x19mm (4'x8'x3/4").
 - Motor Starters
 - Manual motor overload protection switches: single or double pole, complete with pilot light and suitable "heaters".
 - Automatic Magnetic Starters: 1, 2 or 3 pole, minimum EEMAC 0, in EEMAC 1 enclosure, c/w control transformer and auxiliary contacts as required, manual reset button, overload relay, with one pole per phase wire HOA selector and red running light.
 - Motor starters may be in separate enclosures or may be mounted in modular starter assemblies as Westinghouse 4-Plex units or similar.
 - Main Service and Distribution
 - Incoming main distribution to come from Mall Distribution system.
 - Main Service to tenancy: 200 amps, 600/347 volts, 3 phase 4-wire. Fused main switch and splitter as shown.
 - Provide a 1200 x 2400 x 19mm (4' x 8' x 3/4") plywood backing for main distribution equipment.
 - Service Ground
 - Ground conductor from mall distribution.
 - Telephone Distribution System
 - Service raceway: 100mm conduit from mall telephone distribution to a GIS plywood backboard 1200mm x 2400mm x 19mm (4' x 8' x 3/4"). Provide pull rope in raceway.
 - Supply and install the conduit system where shown.
 - Lighting System
 - Lighting fixtures: as shown on drawings complete with lamps and all necessary accessories for complete and proper installation. CSA approved, fluorescent: minimum 20 gauge steel unless otherwise indicated. Fluorescent ballasts to be energy saving type, and lamps to be T-8 energy saving type.
 - HID fixtures to be as indicated. Ballasts for exterior fixtures to be -30°C. Photo cell controlled exterior HID fixtures.
 - Plastic Lenses: 100% virgin acrylic, minimum 3/16" thick configuration as per schedule.
 - Exit Lights: Complete with LED lamps, metal housing, 6" high letters, 120V and 12V operation.
 - Battery Operated Emergency Lighting - Combination Emergency/Exit Lighting: Full automatic operation on power failure for (12) volt operation with minimum operating time of one half hour with all (9) watts sealed beams on. Units complete with battery rated at minimum 36 watts, fully automatic charger with automatic high and low rates, built-in test switch, remote and local 9w tungsten mini-lights (white) high rate charge indicator, battery state indicator, mounting bracket, automatic disconnection at low-charge condition and 5 year guarantee.
 - Disconnect Switches: non-fused, for motor driven equipment, EEMAC 3 for exterior.

- 3.0 EXECUTION
- 3.1 Installation
- All work to be of high quality. Clean up all debris from electrical portion of the project. The installation to meet the latest requirements of the Canadian Electrical Code, Provincial, Municipal and Local Codes, and Local Inspection Department.
 - Provide branch circuit wiring for all lighting and power circuits.
 - Allow for a variation of 3000 mm from locations shown for outlets and equipment without extra cost. Confirm final location prior to installation.
 - Identification
 - Identify the following electrical equipment with 3mm thick plastic, engraved black faced lamacoid nameplates with mechanical fixings:
 - Panels: Identify breaker panels, as indicated on drawings and indicate main voltages.
 - Enclosed breakers, disconnect switches, starters, contactors: indicate equipment being controlled and voltage.
 - Terminal cabinets and pullboxes: indicate system and voltage.
 - On/Off switches: Indicate areas being served.
 - Grounding:
 - Use solderless type ground connectors. Maintain continuity of ground to all outlets, switches, controllers, notors, F.A. devices, etc.
 - Wiring of Mechanical Equipment: supply and install necessary electrical equipment, power and control wiring for mechanical equipment. This includes breakers, disconnects, starters, conduit, wiring and complete connection. Refer to Mechanical drawings, schedules and specifications. Confirm voltage, phase, and size of mechanical equipment; size breakers and feeders per C.E.C.
 - Lighting System
 - Install all fixtures per the schedule and as indicated, conduit system, wiring, hangers, and all necessary items required for a complete system including control (switches, contactors, etc) Run 120 volt AC and 12 volt DC power into exit lights.
 - Cooperate with personnel of other divisions to determine the proper location of lights, switches, etc., to avoid confliction between the electrical installation and the mechanical ducts, pipes, ceiling layout, etc., determine exact position of lighting outlets in the mechanical area only after all mechanical layouts in these rooms have been finalized; ensure that fixtures suit the type of ceiling in or on
 - Fire Alarm System shall addressable and monitored
 - Re-install existing fire alarm system, and reconfigure to the new floor plan
 - Provide continuous ground to all device outlet boxes.
 - System verification per CAN4-SS37. Provide all personnel, equipment including 2-way radios, and materials for verification after installation is 100% complete.
 - Turn off 120 volt power to the Fire Alarm System for 24 hours before the verification. System to operate on standby battery supply for 24 hours before verification, during verification testing, and for continuous operation of all alarm signal devices before restoration of 120 volt AC power.
 - Provide an alarm circuit to the telephone terminal board for remote alarm monitoring.
 - Separate alarm zone per sprinkler flow switches. N/A
 - Separate trouble and supervisory trouble signal only for tamper switches (Supervisory requires a panel re-set). N/A
 - The Engineer will invoice Visions Electronics Ltd. for the fire alarm verification.
 - Telephone Service
 - Make arrangements with the Telephone Company to provide for the service to the telephone terminal board.
 - Provide the terminal board, 120 volt duplex and no. 6 ground wire from the main ground.

PANEL 'A'	LOCATION	VOLTAGE	PHASE	WIRE	MAIN	TYPE	INT. CAP.(RMS SYS.)	CIRCUITS	FEEDER		
	WHSE	347/600	3	4	100 A		MATCH EXISTING	32	4 - #2		
NOTES:											
DESCRIPTION		POLE	AMP.	CCT. NO.	L1	L2	L3	CCT. NO.	AMP.	POLE	DESCRIPTION
RTU NO. 5		1	15	1	→	→	→	1	15	2	RTU NO. 6
RTU NO. 5		1	15	3	→	→	→	1	15	4	RTU NO. 6
RTU NO. 5		1	15	5	→	→	→	1	15	6	RTU NO. 6
STORE LIGHTS - WEST ROW		1	20	7	→	→	→	1	-	8	
STORE LIGHTS - CENTER ROW		1	20	9	→	→	→	1	-	10	
STORE LIGHTS - EAST ROW		1	20	11	→	→	→	1	-	12	
		1	-	13	→	→	→	1	-	14	
		1	-	15	→	→	→	1	-	16	
		1	-	17	→	→	→	1	-	18	
		1	-	19	→	→	→	1	-	20	
		1	-	21	→	→	→	1	-	22	
		1	-	23	→	→	→	1	-	24	
		1	-	25	→	→	→	1	-	26	
		1	-	27	→	→	→	1	-	28	
		1	-	29	→	→	→	1	-	30	
		1	-	31	→	→	→	1	-	32	

DESIGN & INSTALL ALL MECHANICAL SYSTEMS TO THE FOLLOWING CODES AND STANDARDS.

- ALBERTA BUILDING CODE - 2006
- ALBERTA FIRE CODE - LATEST EDITION
- CANADIAN ELECTRICAL CODE - LATEST EDITION
- NATIONAL BUILDING CODE - LATEST EDITION
- NATIONAL FIRE CODE - LATEST EDITION
- NFPA-13 & ALL OTHER APPLICABLE NFPA SECTIONS
- CANADIAN PLUMBING CODE - LATEST EDITION
- NATURAL GAS INSTALLATION CODE CCA-B149
- SMACNA

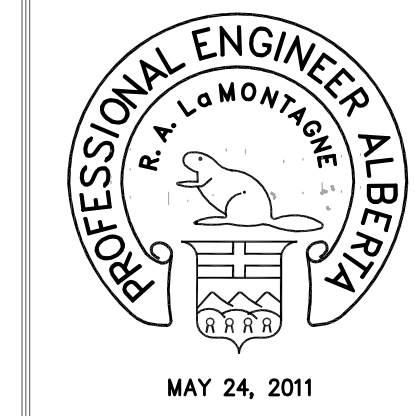
FIELD REVIEW:
THE ENGINEERS HAVE BEEN RETAINED ONLY FOR PERIODIC SITE INSPECTIONS TO ENSURE GENERAL COMPLIANCE OF THE REVIEWED PORTIONS OF THE PROJECT TO THE CONTRACT DOCUMENTS.

SITE SAFETY:
THE ENGINEERS ASSUME NO RESPONSIBILITY FOR ON-SITE WORKER SAFETY FOR OTHER THAN THEIR OWN EMPLOYEES. THE OWNER AND/OR CONTRACTOR SHALL BEAR RESPONSIBILITY FOR SITE SAFETY AS PER THE OCCUPATIONAL HEALTH AND SAFETY ACT.

PLANS EXAMINATION:
DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNTIL REVIEWED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION. THIS AUTHORITY BASED ON APPLICABLE CODES, MAY REQUIRE REVISIONS AND/OR ADDITIONS AND THIS MAY RESULT IN EXTRA COSTS. THESE COSTS ARE UNFORSEEN AND THEREFORE, ARE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR.

COPYRIGHTS:
ALL DRAWINGS, DESIGNS AND RELATED DOCUMENTS ARE THE PROPERTY OF THE ENGINEERS, PROTECTED BY COPYRIGHT AND MUST BE RETURNED ON REQUEST. REPRODUCTION OF DRAWINGS AND DOCUMENTS IN PART OR IN WHOLE IS FORBIDDEN WITHOUT THE ENGINEERS' PERMISSION. DRAWINGS AND DOCUMENTS ARE TO BE USED ONLY FOR THE PURPOSES FOR WHICH THEY ARE ISSUED AND ARE NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY THE ENGINEER.

DRAWING REVIEW:
DRAWINGS MUST NOT BE SCALED. THE CONTRACTOR MUST CROSS-REFERENCED ALL ARCHITECTURAL, STRUCTURAL, FOUNDATION, ELECTRICAL AND MECHANICAL DRAWINGS AND VERIFY ALL DIMENSIONS, DRAWINGS AND SPECIFICATIONS ON SITE. ANY DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK.



REVISIONS			
NO.	DESCRIPTION	DATE	CK
1	ISSUED FOR APPROVAL ONLY	MAY 24, 11	
2	FOR BUILDING PERMIT	JUN 22, 11	

R. Lamontagne. P. Eng.
P.O. Box 2531
Didsbury, Alberta, T0M 0W0
Tel: (403) 703 6161
E MAIL: ralamont@shaw.ca

PROJECT
VALUE VILLAGE ADDITION
10127 - 34 AVENUE NW
EDMONTON, AB
T6E 6J8

TITLE
SPECIFICATIONS

SCALE AS SHOWN	DATE MAY 24, 2011	DRAWING NO. E4
DRAWN BY rl	CHECKED BY fw	
JOB #: 1110	DWG:	REVISION: 2
PLOTTED:	COPIED:	