## ELECTRICAL SPECIFICATIONS (DIVISION 16)

complete information and co-ordination.

6 Unless otherwise noted, all material to be new, best quality, and bear CSA approval.

7 Substitution of materials, equivalent to those specified, may be made only after written approval has been obtained from the Engineer before closing of tenders.

8 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.

9 Shop Drawings: 7 copies required to show details of main equipment items, including distribution equipment and lighting fixtures.

10 Maintenance Manuals: 3 required, 3 ring minimum 2" binders, indexed, include equipment brochures, shop drawings, names and addresses of suppliers.

11 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.

PRODUCTS

2.1 Materials and Equipment

1 Page 3 and Conductors all Requirements

nply with the requirements of the current edition of the Canadian

ctrical Code (CSA 22.1) and amendments thereto, the Alberta Building Cod

d the regulations of the Electrical Inspection Authorities.

ain necessarty permits, pay all applicable fees. On completion,

tain Certificate of Approval from the local Inspection Department,

n over all certificates to Engineer.

ply all necessary labour, material and equipment for complete

ctrical installation per drawings and specifications.

mine the site and local conditions affecting trade before

pmitting tender.

mine architectural drawings and those of other sections for

mplete information and co-ordination.

Materials and Equipment

1.1 Raceways and Conductors

1.1 Raceways: electrical metallic tubing and/or rigid galvanized steel conduit if indicated. Use AC-90 armoured cable for end runs only. Sized: 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.

1.2 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.

2. Receptacles and Switches

Parallel blade receptacles: rated 15 amps, 125 volts, specification grade. Isolated ground receptacles: Hubbell #1G-5262 or equal. SPST toggle switch: rated 15 amps, 125 volts, medium specification grade. Special receptacles and connections as indicated.

3. 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.

hubs.

4 Branch Circuit Panels

1 600/347 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.

2 Branch Circuit Breakers: Full size breakers to match panel manufacturer and interrupting capacity.

3 Provide plywood backing behind panels, 1200x2400x19mm (4'x8'x3/4").

5 Motor Starters

1 Manual motor overload protection switches: single or double pole, complete with pilot light and suitable "heaters".

2 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.

3 Motor starters may be in separate enclosures or may be mounted in modular starter assemblies as Westinghouse 4-Plex units or similar.

6 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.

œ Service Ground Ground conductor from mall distribution

Telephone Distribution System
.1 Service receway: 100mm conduit from mall telephone distribution
to a GIS plywood backboard 1200mm × 2400mm × 19mm (4' × 8' × 3/4").
Provide pull rope in raceway.
.2 Supply and install the conduit system where shown.

Lighting System

1.1 Lighting fixtures: as shown on drawings complete with lamps and all necessary accessories for complete and proper installation. CSA approved, flourescent: minimum 20 gauge steel unless otherwise indicated. Flourescent ballasts to be energy saving type, and lamps to be T-5 energy saving type.

2.2 HID fixtures to be as indicated. Ballasts for exterior fixtures to be -30°C.

Photo cell controlled exterior HID fixtures.

3.3 Plastic Lenses:

100% virgin acrylic, minimum 3/16" thick configuration as per schedule.

4.4 Exit Lights:

Complete with LED lamps, metal housing, 6" high letters, 120V and 12V operation.

.5 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.

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## 3.0 EXECUTION 3.1 Installation .1 All work portion

k to be of high quality. Clean up all debris from electrical on of the project. The installation to meet the latest irements of the Canadian Electrical Code, Provincial, Municipal and I Codes, and Local Inspection Department.

By branch circuit wiring for all lighting and power circuits.

For a variation of 3000 mm from locations shown for outlets equipment without extra cost. Confirm final location prior to all lightion.

2 Provide branch circuit without extra cost. Confirm final location prior and equipment without extra cost. Confirm final location prior installation.
4 Identification
1 Identify the following electrical equipment with 3mm thick plastic, engraved black faced lamacoid nameplates with mechanical fixings:
1 Panels: Identify breaker panels, as indicated on drawings and indicated on drawings and indicated on drawings. 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.

to all outlets, switches, controllers, notors, F.A. devices, etc.

6 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.

7 Lighting System

1 Install all fixtures per the schedule and as indicated, conduit system, manners, and all necessary items required for a complete 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, contractors, etc) Run 120 volt AC and 12 volt DC power into exit lights.

Sooperate 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

NOTE; THE BASE BUILDING FIRE ALARM COMPANY SHALL BE USED FOR SUPPLY AND INSTALLATION ON ALL COMPONENTS AND WORK UNDER THIS PHASE OF THE PROJECT. Alarm Syster

.1 Re-install existing fire alarm system, and reconfigure to the new floor plan
.2 Provide continuous ground to all device outlet boxes.
.3 System verification per CAN4—S537. Provide all personnel,
equipment including 2—way radios, and materials for verification after
installation is 100% complete.
.4 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.
.5 Provide an alarm circuit to the telephone terminal board for
remote alarm monitoring.
.6 Separate trouble and supervisory trouble signal only for
tamper swithces (Supervisory requires a panel re-set). N/A

zone per sprinkler flow switches. N/A and supervisory trouble signal only for s (Supervisory requires a panel re—set). N/invoice Visions Electronics Ltd. for the fire

Company ó provice for ground

## **DEVICES** Ш CTRICAL SYMBOL RECEPTACLES LEGEND FIRE ALARM **DEVICES**

MOTOR
DISCONNECT, NON-FUSED
DISCONNECT, FUSED
COMBINATION MOTOR STARTER
THERMOSTAT OUTLET, OUTLET, SPEAKER OUTLET, OUTLET, MISC. ELECTRICAL PANEL COMMUNICATIONS MICROPHONE SATELLITE TELEPHONE DATA TELEVISION \$ \$ \$ \$ \$ \$ \$ | SINGLE
3-WAY
4-WAY
DIMMER
VARIABLE SPEED
MANUAL MOTOR
PROTECTION SWITCH SIMPLEX DUPLEX DUPLEX DUPLEX **SWITCHES** DENOTE DEVICE TO BE INSTALLED ABOVE COUNTER CEILING MOUNTED J.B. FLOOR MOUNTED J.B. FOURPLEX, GFI WEATHERPROOF DEDICATED WALL MOUNTED SMOKE DETECTOR
SMOKE DETECTOR, DUCT
HEAT DETECTOR, FIXED TEMP.
HEAT DETECTOR, RATE OF RISE
SMOKE ALARM STROBE HORN/STROBE EMERGENCY LIGHTING, C/W 2 LAMPS EMERGENCY LIGHTING, PACK EMERGENCY LIGHTING, EXIT/EMERGENCY CONTROL PANEL EMERGENCY LIGHTING EXIT SIGN MANUAL PULL STATION EXIT SIGN COMBO BATTERY PACK LIGHTING REMOTE

NOTE: ELECTRICAL CONTRACTOR SHALL REVIEW DIVISION 15 PLANS AND SPECIFICATIONS TO DETERMINE THE COMPLETE SCOPE OF WORK REQUIRED TO CONNECT ALL MECHANICAL COMPONENTS TO THE BUILDING ELECTRICAL SYSTEM.

ALL ELECTRICAL OUTLET PLUG SHALL BE LOCATED AT 12" A.F.F. UNLESS NOTE OTHERWISE. MAXIMUM OF FOUR (4) PLUGS PER 15 AMP BREAKER UNLESS NOTED OTHERWISE.

ALBERTA FIRE CODE — LATEST EDITION

CANADIAN ELECTRICAL CODE — LATEST EDITION

NATIONAL BUILDING CODE — LATEST EDITION

NATIONAL FIRE CODE — LATEST EDITION

NFPA—13 & ALL OTHER APPLICALBE NFPA SECTIONS

CANADIAN PLUMBING CODE — LATEST EDITION

NATURAL GAS INSTALLATION CODE CGA—B149

SMACNA

DESIGN & INSTALL ALL CODES AND STANDARDS.

MECHANICAL SYSTEMS TO THE FOLLOWING

DRAWING REVIEW:

DRAWINGS MUST NOT BE SCALED. THE CONTRACTOR MUST CROSS-REFERENCE 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. 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 PURPOSE FOR WHICH THEY ARE ISSUED AND ARE NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY THE ENGINEER. Lawow P. Law 7 ENGM

PLANS EXAMINATION:

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 UNFORESEEN AND THEREFORE, ARE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR.

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.

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.

AUGUST 22, 2012

				3*	2	1	NO.		
				DELETE CRAWL SPACE-VISIONS	ISSUED FOR TENDER	ISSUED FOR BUILDING PERMIT	DESCRIPTION	REVISIONS	
				APR 02 13	MAR 26 13	SEP 04 12	DATE		
							CK		

DRAWING E5 ORIGINALLY SHOWED THE ELECTRICAL AND MECHANICAL FOR THIS SPACE, AND HAS BEEN REMOVED FROM THE 'ISSUED FOR TENDER' (IFT) DRAWINGS PRINTED APRIL 02, 2012.

THE CRAWL SPACE UNDER VISIONS STORE HAS BEEN RE-DESIGNED USING A SLAB-ON-GRADE.

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

PROJECT
VISIONS BUILDING 2
ST. ALBERT COMMERCIAL I
525 ST. ALBERT TRAIL
ST. ALBERT, AB DEVELOPMENT

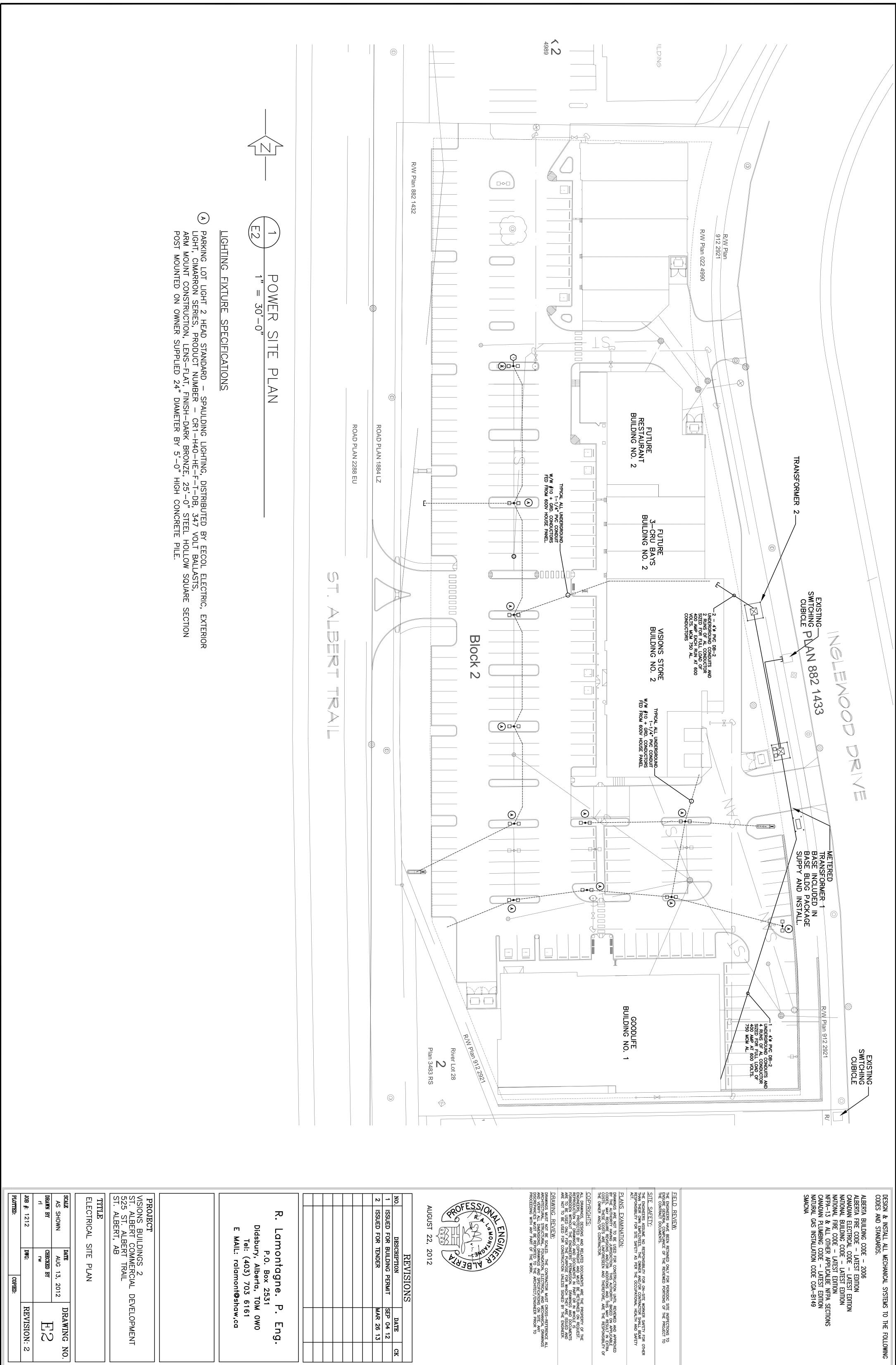
SCALE AS SHOWN SPECIFICATIONS TTAU AUG 13, 2012 DRAWING ON

JOB #: 1212 COPIED:

DWG:

REVISION:

PLOTTED FOR REV. 2013 @ 9:00AM



PLOTTED FOR REV. 2: APR 02,

REVISION: 2

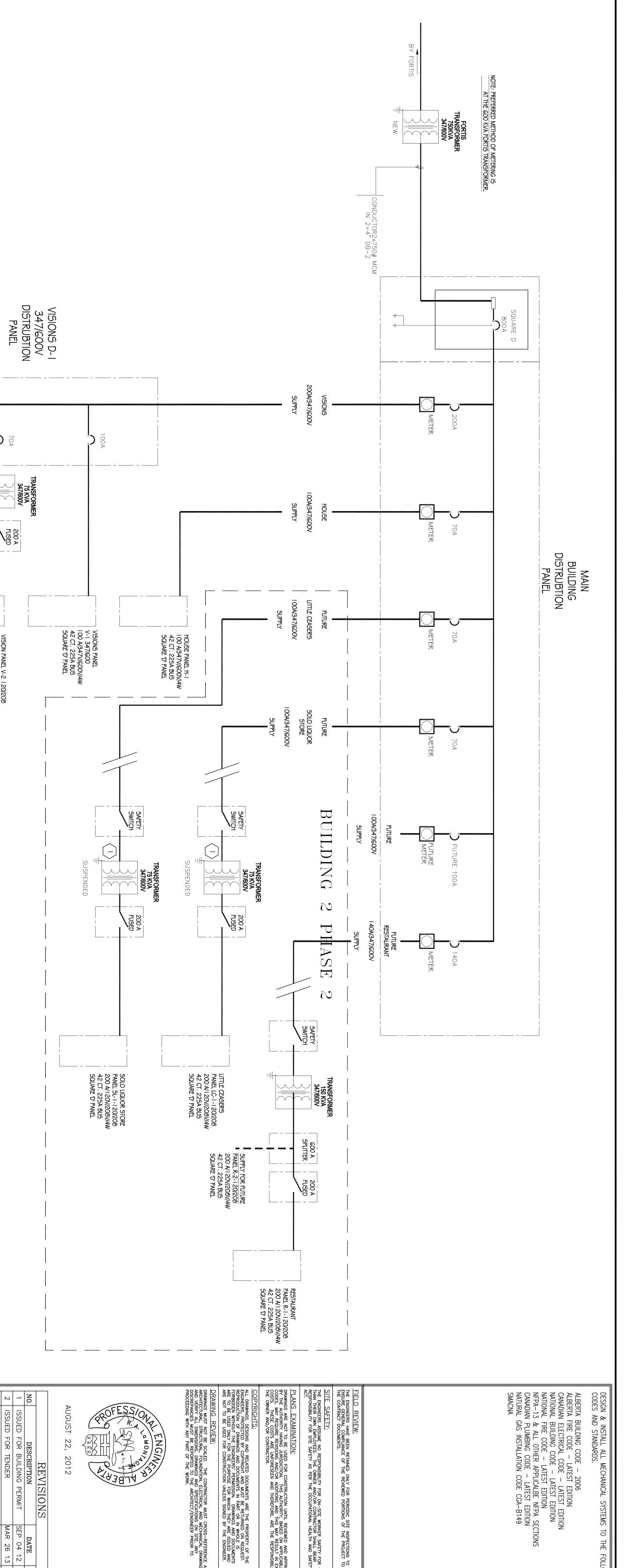
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VISIONS

ELECTRONICS

NOTE:

AND

HOUSE

PANEL

BUILDING

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PHASE

CAR INSTALL ELECTRICAL ROOM

AIN ELECTRICA ROOM

TRANSFORMER 75 KVA 347/600V

VISION PANEL V-2 | 20/208 200 A/| 20V/208V/4W 42 CT. 225A BUS SQUARE 'D' PANEL

BUILDING

PH A

(S)

AZU

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TRICAL

DISTRIBUTION

 $\geq$ 

LOCATION OF DETERMINED F THIS SHALL IN F SIGNAGE JUNCTION BOXES AND EXTERIOR BUILDING LIGHTING FROM THE ARCHITECTURAL PLANS, AND NOT FROM THE ELECTION CLUDED LOCATIONS ON EXTERIOR WALLS AND HEIGHT ABOVE

TING SHALL BE DE LECTRICAL PLANS, BOVE GRADE.

DETERMINED

TRANSFORMER

**SPECIFICATIONS** 

5 - TRANSFORMER DRY TYPE 75 KVA 600D208/120 D=20", HT=37", AND W=30", WT.=576 LBS. ALL PANELS ANS SWITCH GEAR SHALL BE SQUARE 'D' PRODUCT. SQUARE Ď, MODEL EE75T65H,

ALL ELECTRICAL OUTLET PLUG SHALL BE LOCATED AT 12" A.F.F. UNLESS NOTE OTHERWISE. MAXIMUM OF FOUR (4) PLUGS PER 15 AMP BREAKER UNLESS NOTED OTHERWISE.

DIVISION 16 SHALL BE RESPONSIBLE FOR THE POWER SUPPLY TO ALL DIVISION 15 EQUIPMENT REQUIRING POWER CONNECTIONS. THE DIVISION 16 CONTRACTOR SHALL REVIEW THE DIVISION 15 PLANS TO DETERMINE THE POWER REQUIREMENTS FOR ALL DIVISION 15 EQUIPMENT, AND PROVIDE POWER AS SPECIFIED IN THE DIVISION 15 PLANS.

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

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DESCRIPTION

FOR BUILDING PERMIT

FOR TENDER REVISIONS DATE SEP 04 12 MAR 26 13 CK

70 P.O. Box 2531 Didsbury, Alberta, TOM 0V Tel: (403) 703 6161 Lamontagne. ." 0W0 Eng.

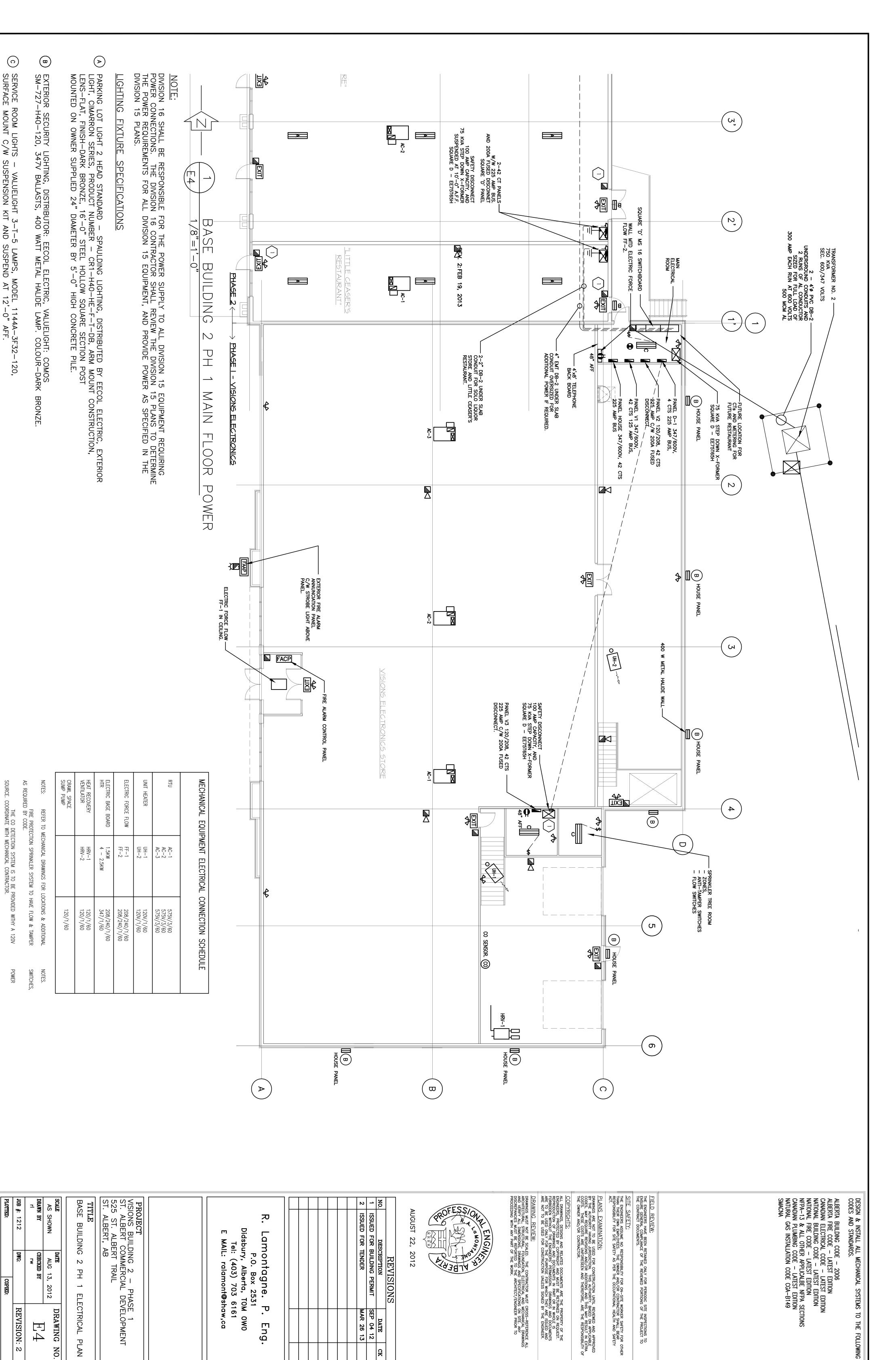
MAIL: ralamont@shaw,ca

PROJECT
BUILDING 2
ST. ALBERT
ST. ALBERT
ST. ALBERT, COMMERCIAL TRAIL , AB DEVELOPMENT

ELECTRICAL SERVICE ENTRY PLAN BLDG  $\sim$ 

JOB #: 1212 SHOWN DATE CHECKED DWG: 13, 2012 REVISION: 2 DRAWING NO.

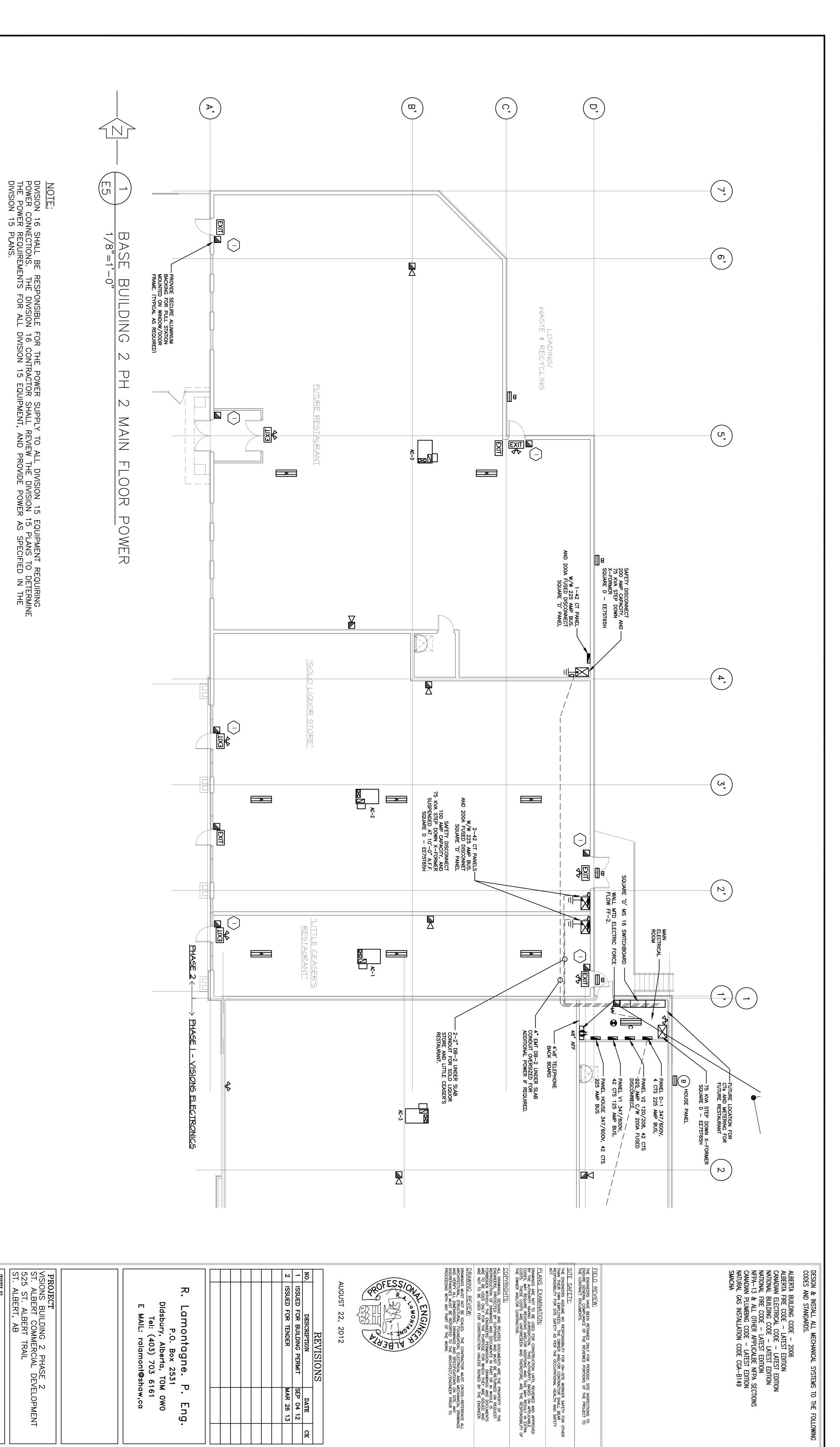
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PLAN

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PLOTTED FOR REV. 2: APR 02, 2013 @ 9:00A

SCALE AS SHOWN

DATE
AUG 13,

2012

DRAWING

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BUILDING

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2

ELECTRICAL PLAN

JOB #: 1212

DWG:

REVISION: 3

COPIED:

PULL STATIONS SHALL BE CONNECTED TO THE MAIN FIRE ALARM PANEL ROOM AT THE NORTH EAST CORNER OF THE VISIONS STORE

LOCATED

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ELECTRICAL

NOTES: