

2-TUBE LIGHT FIXTURE (FAIL SAFE MODEL No. SCT-232...XXX) 2-TUBE LIGHT FIXTURE (PHILLIPS DAY-BRITE MODEL No. SLCW-232-120) ELECTRIC BASEBOARD HEATER WATTAGE AS COMMERCIAL GRADE SWITCH C/W CAST BOX STAINLESS STEEL COVER PLATE MOTION SENSOR (LEVITON No. OSC05-MOW/OSP POWER PACK) ELECTROMECHANICAL TIME CLOCK WITH ASTRONOMIC FEATURE AUTOMATIC DOOR OPENER DUPLEX RECEPTACLE (5-15R UNLESS OTHERWISE NOTED) SOFFIT MOUNTED LIGHT FIXTURE (PHILLIPS DAY-BRITE CAPRI SERIES MODEL No. CM8/F226/32/420/H85C /BH3) UNIT HEATER EXHAUST FAN MAGNETIC DOOR LOCK MODEL No. RU 831028

LEGEND

LIGHT LEVELS 20 fc PER ROOM



# DMD & Associates Ltd.

604/589-9010

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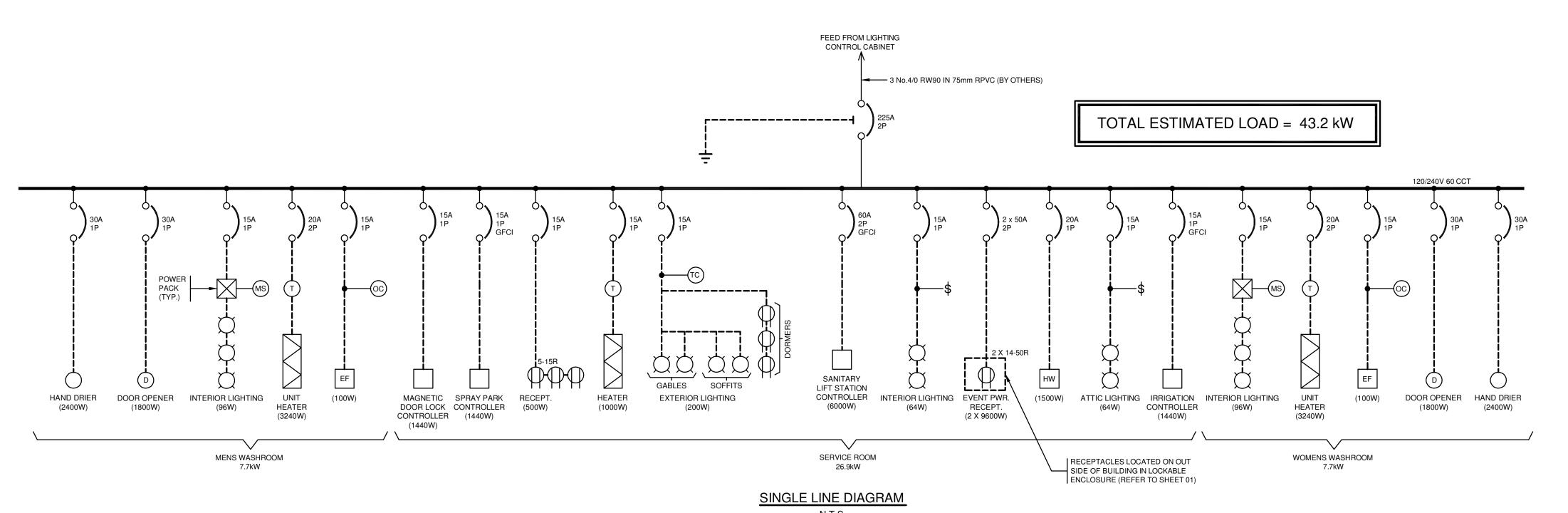
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DESIGNED	DONATO SPEIDEL
DRAWN	BOB KELLIE
CHECKED	DANIEL J. WONG
DATE	2012-02-01
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SCALE: **AS SHOWN** 

SEAL

	DATE	BY	CHK'D	REVISION		van der Zalm + associates inc.		
	2012-04-11	DMS	DJW	ISSUED FOR BUILDING PERMIT		Suite 1 - 8938 192 Street, Surrey, BC V4N 3W8		
	2012-06-22	DMS	DJW	ISSUED FOR TENDER	WASHROOM BUILDING ELECTRICAL			
	2012-07-05	DMS	DJW	ISSUED FOR CONSTRUCTION		MACKIN PARK		
	2013-05-28	SH	DJW	RECORD DRAWING				
					BRUNETTE AVENUE			
				COQUITLAM, B.C.				
					PROJECT No.		SHEET No.	REVISION
	DRAWING REFERENCE			DRAWING REFERENCE		3687a-12-01 of 03	1 of 3	4





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SEE SHEET 3 FOR NOTES AND

SPECIFICATIONS

CANCEL PRINTS BEARING PREVIOUS LETTER

## **ELECTRICAL - GENERAL REQUIREMENTS**

1. THE GENERAL CONDITIONS SHALL APPLY TO AND GOVERN THIS SECTION OF THE SPECIFICATION.

- 2. PROVIDE ALL ITEMS, MATERIAL, EQUIPMENT AND LABOUR REQUIRED TO COMPLETE THE WORK OR OPERATIONS MENTIONED OR INFERRED HEREIN, OR INDICATED ON THE DRAWINGS, MATERIALS SHALL BE NEW AND THE BEST AVAILABLE OF THEIR KIND. 3. SHOULD ANY WORK OR MATERIAL BE NEEDED WHICH IS NOT SPECIFIED OR SHOWN ON THE DRAWINGS AND IS NEVERTHELESS
- NECESSARY FOR PROPERLY CARRYING OUT THE OBVIOUS INTENT, SUCH WORK OR MATERIALS SHALL BE PROVIDED WITHOUT 4. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL DRAWINGS INCLUDING THOSE OF ALL SUBTRADES AND SHALL
- ARRANGE HIS EQUIPMENT WITH DUE REGARD TO ALL ARCHITECTURAL AND MECHANICAL FEATURES. THE ARCHITECTURAL DRAWINGS SHALL BE CONSULTED FOR FINAL LOCATIONS AND TYPES OF WALLS, DOORS, EQUIPMENT, ETC. 5. THE DRAWINGS SHOW APPROXIMATE LOCATIONS OF OUTLETS AND APPARATUS. THE RIGHT IS RESERVED TO MAKE CHANGES
- IN LOCATION AS MAY BE NECESSARY TO CENTRE LIGHTS OR MEET THE EXIGENCIES OF CONSTRUCTION IN ANY WAY. NO EXTRA WILL BE ALLOWED FOR SUCH CHANGES UNLESS THE DISTANCE MOVED EXCEEDS 3000mm(120"). 6. SHOULD ANY DISCREPANCY BETWEEN THE SPECIFICATION AND DRAWINGS LEAVE THE CONTRACTOR IN DOUBT AS TO THE
- TRUE INTENT AND MEANING, A RULING SHALL BE OBTAINED FROM THE CONSULTANT BEFORE THE TENDER IS SUBMITTED. IF THIS IS NOT DONE IT WILL BE ASSUMED THAT THE MORE EXPENSIVE ALTERNATE HAS BEEN INCLUDED
- 7. THE RESPONSIBILITY AS TO WHICH SUBTRADE PROVIDES REQUIRED ARTICLES OR MATERIALS TO BE BUILT IN OR PROVIDED RESTS SOLELY WITH THE CONTRACTOR.
- 8. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN OPERATIONS, SPECIALTIES OR MATERIALS.
- 9. CHECK FOR ANY ADDENDA TO THE ORIGINAL DRAWINGS AND SPECIFICATIONS AND ALLOW FOR RESULTING ADJUSTMENTS IN TENDER QUOTATIONS.

### 1. THE DRAWINGS AND SPECIFICATIONS CALL FOR SPECIFIC EQUIPMENT.

- 2. IF CIRCUMSTANCES, ARISE AFTER THE WORK HAS BEEN LINDER CONSTRUCTION, FOR SOME TIME, SUCH THAT THE SPECIFIED MATERIALS OR EQUIPMENT CANNOT OR SHOULD NOT BE INSTALLED, OBTAIN APPROVAL FROM THE CONSULTANT BEFORE SUBSTITUTIONS ARE MADE.
- 3. ANY SUBSTITUTIONS MADE WITHOUT APPROVAL RENDER THE MATERIAL OR EQUIPMENT LIABLE TO REJECTION AFTER INSTALLATION.
- 4. ALL MATERIALS FURNISHED SHALL BE NEW AND AS SPECIFIED. OR AN APPROVED ALTERNATE, ALL ELECTRICAL EQUIPMENT
- AND MATERIALS SHALL BE CSA APPROVED AND BEAR APPROVAL MARKING. 5. ALL EQUIPMENT SHALL BE FURNISHED, DELIVERED, ERECTED, CONNECTED AND FINISHED IN EVERY DETAIL
- 6. WHERE TWO OR MORE UNITS OF THE SAME CLASS ARE REQUIRED, THESE UNITS SHALL BE THE PRODUCTS OF A SINGLE
- 7. WHERE OTHER THAN THE SPECIFIED MANUFACTURER IS USED, ANY REDESIGN OF ASSOCIATED SERVICES OR STRUCTURE REQUIRED TO UTILIZE OTHER MANUFACTURERS EQUIPMENT OR MATERIALS. SHALL BE CARRIED OUT WITHOUT ADDITIONAL COST TO THE OWNER.

1. THE CONSULTANT OR HIS AUTHORIZED REPRESENTATIVE, SHALL HAVE THE RIGHT TO REJECT ANY ITEM THAT, IN HIS OPINION, DOES NOT CONFORM TO AN ACCEPTABLE APPEARANCE AND PERFORMANCE; AND THE CONTRACTOR MUST RECTIFY UNACCEPTABLE MATERIAL AND/OR WORKMANSHIP TO THE APPROVAL OF THE CONSULTANT

2. EQUIPMENT SHALL BE LEFT IN CLEAN CONDITION.

1. UPON COMPLETION OF DAILY WORK, CLEAN UP AND REMOVE ALL UNUSED MATERIAL, DEBRIS, ETC. FROM THE SITE.

### 16105 GUARANTEE

- 1. THE CONTRACTOR, IN ACCEPTING THIS CONTRACT, BINDS HIMSELF TO REPLACE OR REPAIR, AT HIS OWN EXPENSE, ANY DEFECT IN WORKMANSHIP OR MATERIAL WHICH MAY APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK, AND TO PAY FOR ALL RESULTING DAMAGE WHICH SHALL APPEAR WITHIN THE SAID PERIOD; PROVIDED ALWAYS THAT THE CONTRACTOR SHALL NOT BE HELD RESPONSIBLE FOR ANYTHING ATTRIBUTABLE TO THE ACTS OF THE SERVANTS AND AGENTS FOR THE OWNERS.
- THE OWNER SHALL PROMPTLY NOTIFY THE CONTRACTOR OF DEFECTS AS THEY APPEAR. ALSO, EVEN THOUGH THE WORK PERFORMED BY THE CONTRACTOR BE ACCEPTED AS COMPLETE, HE SHALL AGREE TO CORRECT ANY DEFICIENCIES OR OMISSIONS IN RESPECT OF THE DRAWINGS OR SPECIFICATIONS WHICH MAY APPEAR IN THE AFOREMENTIONED TWELVE MONTH PERIOD.

### 16106. FEES AND PERMITS

1. PAY ALL FEES AND OBTAIN ALL PERMITS AND LICENSES IN CONNECTION WITH THIS WORK. SUBMIT ALL DRAWINGS REQUIRED BY THE INSPECTION AUTHORITY, FOR APPROVAL PRIOR TO START OF CONSTRUCTION AND PROMPTLY REPORT ANY COMMENTS TO THE CONSULTANT.

### 16107, CODES AND BY-LAWS

1. ALL WORK DONE UNDER THIS SECTION OF THE SPECIFICATION SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE BRITISH COLUMBIA BOILER INSPECTION DEPARTMENT, LOCAL FIRE MARSHAL, THE WORKERS' COMPENSATION BOARD, THE B.C. BUILDING CODE AND THE CANADIAN ELECTRICAL CODE, AND ALL LOCAL BUILDING CODES AND LOCAL ELECTRICAL BY LAWS.

2. AT THE CONCLUSION OF THE WORK SUBMIT TO THE CONSULTANT A CERTIFICATE OF APPROVAL FROM THE INSPECTION

DEPARTMENTS SHOWING ALL WORK HAS BEEN PROPERLY INSTALLED AND ACCEPTED.

- 1. COMPLETE AND DETAILED SHOP DRAWINGS OF EACH ELECTRICAL COMPONENT AND SYSTEM SHALL BE SUBMITTED TO THE CONSULTANT FOR APPROVAL. PHOTO-COPIED CATALOGUE SALES ILLUSTRATIONS ARE NOT ACCEPTABLE. BEFORE FABRICATION OF MATERIALS OR EQUIPMENT, SUBMIT 1 REPRODUCABLE SEPIA AND 1 WHITE PRINT THEROF AS DRAWINGS TO THE CONSULTANT, FOR REVIEW FOR ALL ITEMS AS REQUIRED IN THIS SPECIFICATION.
- 2. SHOP DRAWINGS SHALL BE DETAILED, EQUAL TO OR BETTER THAN THOSE USED FOR MANUFACTURING, AND INCLUDE ALL INFORMATION NECESSARY TO INDICATE DIMENSIONAL DATA FOR ROUGHING-IN AND INSTALLATION, AND TECHNICAL DATA TO ENABLE UNDERSTANDING THAT THE EQUIPMENT MEETS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.
- 3. SHOP DRAWINGS SUBMITTED SHALL BE CERTIFIED BY THE MANUFACTURER, BE CHECKED BY THE CONTRACTOR AND SHALL BEAR HIS APPROVAL STAMP AND SIGNATURE. DRAWINGS NOT PREVIOUSLY CHECKED BY THE CONTRACTOR WILL NOT BE
- 4. THE REVIEW OF SHOP DRAWINGS BY THE CONSULTANT IS FOR SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT THE CONSULTANT APPROVES THE DETAIL INHERENT IN THE SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING SAME, AND SUCH REVIEW SHALL NOT RELIEVE THETO RE REJECT CONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS OR OMISSIONS IN THE SHOP DRAWINGS OR OF HIS RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT THE JOB SITE. FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR CO-ORDINATION OF WORK OF ALL SUBTRADES.
- 5. IF THE DRAWINGS ARE REVIEWED, PDF COPIES SHALL BE MARKED AND RETURNED TO THE CONTRACTOR. INCOMPLETE DRAWINGS WILL BE RETURNED TO CONTRACTOR WITH "NOT REVIEWED" INDICATED.
- 6. DRAWINGS SHALL BEAR RELEVANT C.S.A. STANDARD APPROVALS.

# 16109. AS-INSTALLED DRAWINGS

- 1. OBTAIN ONE SET OF WHITE PRINTS OF THE ELECTRICAL DRAWINGS, FOR THE SOLE PURPOSE OF RECORDING ANY CHANGES MADE TO THESE ORIGINAL DRAWINGS INCLUDING.
- 2. THESE PRINTS SHALL BE KEPT CURRENT, WITH THE ALTERATIONS BEING MARKED IN RED, AS THEY OCCUR. 3. ALL BRANCH CIRCUIT RACEWAYS AND OUTLETS, INCLUDING FLEXIBLE CONDUIT DROPS, INDICATING THE CIRCUITRY CONTAINED THEREIN, SHALL FORM PART OF THE AS-INSTALLED DRAWINGS WHETHER OR NOT SHOWN ON THE ORIGINAL
- 4. ON COMPLETION OF THE JOB, OBTAIN ONE (1) COMPLETE SET OF PRINTS WHICH SHALL BE PROVIDED TO THE CONSULTANT.

# 16110. IDENTIFICATION OF EQUIPMENT

- 1. WITH THE EXCEPTION OF LIGHT SWITCHES AND PANEL BREAKERS, ALL DISCONNECT SWITCHES AND BREAKERS SHALL BE APPROPRIATELY IDENTIFIED
- 2. NOTWITHSTANDING THE ABOVE, WHERE LIGHTING SWITCHES ARE GROUPED OR ARRANGED SO THAT THEIR FUNCTION IS NOT OBVIOUS, THEY SHALL BE IDENTIFIED.
- 3. ALL INDICATING DEVICES, PANELBOARDS, STARTERS, CONTROLLERS, FEEDER SWITCHES, ETC., SHALL BE IDENTIFIED.
- 4. PANELBOARDS SHALL BE PROVIDED WITH A "TYPEWRITTEN" CIRCUIT DIRECTORY CLEARLY INDICATING USAGE OF EACH
- BREAKER. DIRECTORIES SHALL BE REMOVABLE, SUBSTANTIAL CARDS HELD IN A SUITABLE CARD HOLDER ON THE INSIDE OF
- 5. IDENTIFICATION ON PRIMARY SWITCHES, SWITCHBOARDS, PANELBOARDS, HEAVY EQUIPMENT, ETC., SHALL BE WITH

## "LAMICOID" NAMEPLATES. PANELBOARDS SHALL HAVE NAMEPLATES SHOWING DESIGNATION AND SUPPLY SOURCE.

6. EQUIPMENT IN PUBLIC AREAS SHALL HAVE "LAMICOID", OR ENGRAVED IDENTIFICATION.

### 16111. HANGERS AND FASTENINGS

- 1. ELECTRICAL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED WITH HANGERS AND FASTENINGS TO STRUCTURAL BUILDING
- 2. WHERE POSSIBLE, CONCRETE INSERTS SHALL BE CAST IN DURING POURING. OTHERWISE DRILLED METAL INSERTS MAY BE

### 3. WHERE WOOD SCREWS ARE USED, THEY SHALL PENETRATE WOOD AT LEAST 25(1 ").

- 4. EXPLOSIVE SET INSERTS MAY BE USED ONLY WITH SPECIFIC PERMISSION FROM THE CONSULTANT. THEY MAY NOT BE USED IN ANY AREA WITH HIGH VOLTAGE EQUIPMENT.
- 5. PERFORATED PIPE HANGER IRONS SHALL NOT BE USED.
- 6. FEEDERS, CONDUIT, ETC. RUNNING VERTICALLY IN A BUILDING SHALL BE SUPPORTED AT LEAST AT EACH FLOOR.
- 7. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT LIGHTING FIXTURES ARE ADEQUATELY SUPPORTED. ONLY FIRST CLASS METHODS OF SUPPORT WILL BE ACCEPTED. FASTEN FLUORESCENT FIXTURES AT A MINIMUM OF 3 LOCATIONS; INCLUDING NO. 12 FASTENINGS AT EACH END. FASTEN EXTERIOR FIXTURES WITH A MINIMUM OF 4 - 1/4" FASTENINGS
- 8. RECESSED FLUORESCENT FIXTURES SHALL BE SUPPORTED INDEPENDENT FROM T-BAR CEILING BY WIRE TO BUILDING STRUCTURE FROM TWO DIAGONAL ENDS TO MEET EARTHQUAKE REQUIREMENTS OF THE N.B.C.DIMENSIO.
- 9. ALL EQUIPMENT MUST BE SEISMICALLY SECURED TO CODE REQUIREMENTS. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A SEISMIC ENGINEER TO REVIEW/DESIGN ALL SUPPORT METHODS AND PROVIDE A STAMP/SEAL ON ALL SUPPORT SHOP DRAWINGS.

### 16112. PHASE ROTATION LOAD BALANCE AND TESTS

- 1. IDENTIFY ALL CONDUCTORS. ARRANGE A UNIFORM PHASE-TO-MAIN LUG CONNECTION ON ALL THREE-PHASE PANELBOARDS.
- 2. ROTATE MOTORS IN THE DIRECTION DICTATED BY THE EQUIPMENT BEING SERVED.
- 3. MEASURE THE PHASE CURRENT TO ALL PANELBOARDS WITH NORMAL LOADS OPERATING AND RE-ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN THE BEST BALANCE OF CURRENT BETWEEN PHASES.
- 4. TEST CONTROL, POWER, AND LIGHTING CIRCUITS FOR CORRECT OPERATION.
- 5. FURNISH ALL INSTRUMENTS AND LABOUR REQUIRED TO CONDUCT THESE TESTS.

### 16113. OPERATING AND MAINTENANCE MANUALS

- 1. TWO (2) COPIES OF OPERATING AND MAINTENANCE MANUALS SHALL BE PREPARED IN SUITABLY LABELLED HARDBACK POST BINDERS. THESE MANUALS SHALL BE TURNED OVER TO THE OWNER NO LATER THAN THE TIME OF SUBSTANTIAL COMPLETION; AND, SHALL INCLUDE COMPLETE SETS OF MAINTENANCE AND OPERATING INSTRUCTIONS FOR ALL EQUIPMENT PROVIDED UNDER THE CONTRACT, AND SPECIFICALLY AS CALLED FOR BELOW:
- A. MANUFACTURER'S MAINTENANCE INSTRUCTIONS SHALL INCLUDE EQUIPMENT AS DESIGNATED IN
  - THE EQUIPMENT LIST. EQUIPMENT LIST:
  - 1. LIGHTING FIXTURES
  - 2. DISTRIBUTION EQUIPMENT
- 3. DISCONNECT SWITCHES AND STARTERS
- 4. TIME CLOCKS, THERMOSTATS, AND RELAYS
- B. INSTRUCTIONS SHALL BE COMPLETE WITH INSTALLATION, OPERATION AND MAINTENANCE
- DRAWINGS AND SHALL INCLUDE ONE CORRECTED COPY OF ALL SHOP DRAWINGS, CATALOGUE
- DETAILS OF ALL LIGHTING FIXTURES ACTUALLY INSTALLED, INCLUDING LENSES, SCHEMATIC
- DRAWINGS AND MAINTENANCE DATA ON THE; AND EMERGENCY LIGHTING SYSTEMS AS APPLICABLE SHALL BE INCLUDED IN THE MATERIALS NOTED UNDER THE EQUIPMENT LIST SHALL BE INCLUDED IN THE INSTRUCTION MANUAL.

- 1. THE ELECTRICAL DRAWINGS DO NOT SHOW ALL THE STRUCTURAL DETAILS. INFORMATION INVOLVING ACCURATE DIMENSIONS OF THE BUILDING SHALL BE TAKEN FROM THE FIGURED DIMENSIONS OF THE ARCHITECTURAL DRAWINGS, OR BY MEASUREMENT AT THE BUILDING.
- 2. THE WORK OR MATERIALS CALLED FOR BY THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, SHALL BE FURNISHED AND PERFORMED AS THOUGH FULLY COVERED BY BOTH.
- 3. THE ELECTRICAL DRAWINGS SHOW THE APPROXIMATE LOCATIONS OF PRINCIPAL APPARATUS, EQUIPMENT, DUCTS AND WIRING. THE ARRANGEMENT SHOWN ON THE DRAWINGS IS MORE OR LESS DIAGRAMMATIC AND AS SUCH IS APPROXIMATE ONLY. THE ACTUAL LOCATION OF EQUIPMENT APPARATUS, EQUIPMENT AND WIRING SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE CONSULTANT BEFORE INSTALLATION.
- 4. SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS AND SPECIFICATIONS WHICH LEAVES THE CONTRACTOR IN DOUBT AS TO THE TRUE INTENT AND MEANING OF THE DRAWINGS AND SPECIFICATIONS, A RULING SHALL BE OBTAINED FROM THE CONSULTANT BEFORE SUBMITTING TENDER. IF THIS IS NOT DONE, IT WILL BE ASSUMED THAT THE MORE EXPENSIVE ALTERNATIVE HAS BEEN FIGURED.
- 5. THIS CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL MEASUREMENTS FOR THE ELECTRICAL WORK THROUGHOUT, AND SHALL ARRANGE THE WIRING AND APPARATUS TO CONFORM TO THE ARCHITECTURAL AND STRUCTURAL DETAILS IN AN
- 6. ALL ALTERATIONS NECESSARY TO THE ARRANGEMENT OF APPARATUS, FIXTURES, CONDUITS AND WIRING THAT HAS BEEN INSTALLED WITHOUT PROPER CONSIDERATION AND APPROVAL, EVEN IF IN ACCORDANCE WITH THE ELEC AND ALL ALTERATIONS NECESSARY TO MAKE THE APPARATUS, FIXTURES, CONDUIT AND WIRING COME WITHIN THE FINISHED LINES OF THE ROOMS, SHALL BE UNDERTAKEN WITHOUT COST TO THE OWNER.
- 7. WHERE SPACE IS INDICATED TO BE RESERVED FOR FUTURE EQUIPMENT, LEAVE SUCH SPACE CLEAR, AND INSTALL THE CONDUIT AND OTHER WORK IN A MANNER THAT THE NECESSARY CONNECTIONS CAN BE MADE TO THE FIGURED APPARATUS.

# 16115. CUTTING & PATCHING

- 1. GENERALLY ALL CUTTING AND PATCHING WILL BE DONE BY THE GENERAL CONTRACTOR, BUT THIS CONTRACTOR MUST CONFER WITH THE GENERAL CONTRACTOR IN REGARD TO THIS WORK BEFORE WALLS ARE REMOVED OR BUILT. AND MUST GIVE LOCATIONS FOR ALL HOLES FOR CONDUITS, DUCTS. OUTLETS, PANELBOARDS, ETC., INCLUDED IN THIS CONTRACT.
- 2. HOLES NOT LOCATED BY THE CONTRACTOR IN ACCORDANCE WITH THE ABOVE PROVISIONS ARE TO BE CUT AT THIS CONTRACTOR'S EXPENSE.
- 3. ALL CONCRETE WORK WILL BE PERFORMED BY THE GENERAL CONTRACTOR.

# 16117, SCHEDULING

- 1. WORK SHALL BE SCHEDULED AND PERFORMED CONTINUOUSLY AND EXPEDITIOUSLY SO THAT THE PROJECT IS COMPLETED
- 2. CHANGES TO THE SCHEDULING OF WORK REQUIRED BY THE OWNER TO EXPEDITE ANY PART OF THE WORK, SHALL BE CARRIED OUT WITH ADDITIONAL FORCES TO PERFORM SAME.

# ELECTRICAL

- 1. FEEDERS SHALL BE SIZED ON THE DRAWINGS AND/OR TABULATED IN THE SPECIFICATION. THE DOCUMENTS INDICATE
- CONDUIT AND WIRE; EQUIVALENT TECK MULTI-CONDUCTOR CABLE WILL BE DEEMED ACCEPTABLE.
- 2. CONDUITS RUN EXPOSED INDOORS AND SUPPORTED INDIVIDUALLY OR ON RACKS MAY BE RIGID GALVANIZED STEEL, RIGID
- 3. ALL CONDUIT SHALL BE INSTALLED IN THE WOOD FRAMING OF THE BUILDING STRUCTURE AND IN THE UPPER SPACES OF THE ROOF DECKING. CONDUIT SHALL BE CONCEALED IN ALL PUBLIC AREAS.
- 4. CONDUIT OR CABLE RUN THROUGH FLOORS OR WALLS SHALL BE "CANNED" WHERE POSSIBLE.
- 5. CONDUIT RUN IN CONCRETE OR SUBJECT TO MECHANICAL INJURY ON SURFACE SHALL BE RIGID GALVANIZED STEEL.

# 1. UNLESS OTHERWISE INDICATED, NO WIRE SMALLER THAN NO. 14 AWG SHALL BE USED FOR BRANCH CIRCUIT WORK.

- 2. CODED CONDUCTORS SHALL BE USED THROUGHOUT WITH A DIFFERENT COLOURED CONDUCTOR FOR EACH PHASE AND A WHITE WIRE FOR NEUTRAL.
- 3. ALL WIRING FOR ALL SYSTEMS SHALL BE COPPER WITH RW90 X-LINK P.E. INSULATIONS, UNLESS NOTED OTHERWISE. WIRE SIZED NO. 10 AWG OR LARGER SHALL BE STRANDED, SMALLER SHALL BE SOLID.
- 4. WIRE SIZES FOR CONTROL AND LOW VOLTAGE SYSTEMS ARE COVERED IN THEIR RESPECTIVE CLAUSES. 5. CONDUCTORS SHALL BE SIZED TO MAINTAIN VOLTAGE DROP AT LESS THAN 3% FOR FEEDERS AND 2% FOR BRANCH CIRCUIT
- 6. WIRE SIZES AND TYPES FOR CONTROL AND LOW VOLTAGE SYSTEMS ARE COVERED IN THEIR RESPECTIVE CLAUSES.
- 7. ALL CONDUCTORS SHALL BE IDENTIFIED AS FOLLOWS: PHASE A - RED
  - PHASE B BLACK **NEUTRAL - WHITE**
- GROUND GREEN OR BARE SWITCH LEGS - YELLOW, ORANGE, BROWN

- 16207, MOUNTING OF WIRING DEVICES 1. THE PLANS SHOW APPROXIMATE POSITIONS FOR WIRING DEVICES. GENERALLY SPEAKING, WHERE CONTROL DEVICES FOR LIGHTING, ETC. AND OUTLETS FOR DUPLEX RECEPTACLES, ETC. ARE INDICATED ADJACENT TO ONE ANOTHER OR WHERE THEY APPEAR IN THE SAME APPROXIMATE POSITION ON DIFFERENT DRAWING SHEETS, THE INTENT IS TO HAVE THE VARIOUS DEVICES GROUPED TOGETHER AND PROVIDED WITH A COMMON COVER PLATE.
- 2. WHERE IT IS OBVIOUS FROM THE PLANS THAT DEVICES SHOULD NOT BE ADJACENT, THESE DEVICES SHALL BE INSTALLED IN THE LOCATIONS INDICATED.
- 3. ALL THE FOREGOING NOTWITHSTANDING, DEVICES SHALL BE LOCATED TO SUIT THE ARCHITECTURAL DETAILS OF THE AREA
- INVOLVED AND SHALL BE CONFIRMED, AS TO LOCATION, WITH THE OWNER/CONSULTANT PRIOR TO ROUGH-IN. 4. LOCATION OF SWITCHES, THERMOSTATS, ETC. GROUPED INSIDE DOORS SHALL BE POSITIONED IN CO-ORDINATED ORDER, ON VERTICAL OR HORIZONTAL CENTRE LINES. IF FINAL LOCATIONS ARE OBSTRUCTED OR IN NEED OF CLARIFICATION,
- APPROVAL SHALL BE OBTAINED FROM THE CONSULTANT. 5. RECEPTACLES SHALL BE INSTALLED 300mm (12") FROM FINISHED FLOOR TO CENTRE OF OUTLET BOX. WHERE THEY OCCUR OVER COUNTER, WORK TABLES, ETC. THEY SHALL BE INSTALLED VERTICALLY, APPROXIMATELY 150 (6") ABOVE THE TOPS OF SUCH SURFACES, EXCEPT THAT WHERE "SPLASHBACKS" ARE FITTED, RECEPTACLES SHALL BE ENTIRELY WITHIN OR WITHOUT THESE BACKS. WHERE DEFINITE ELEVATIONS ARE INDICATED, RECEPTACLES SHALL BE INSTALLED AT THESE
- HEIGHTS ABOVE THE FINISHED FLOOR. 6. SWITCHES SHALL BE MOUNTED AT 1300 (52") ABOVE THE FINISHED FLOOR EXCEPT WHERE REQUIRED TO SUIT SPECIAL ARCHITECTURAL FEATURES. REFER TO THE ARCHITECTURAL DRAWINGS FOR FINAL LOCATION OF DOOR FRAMES, HINGES ETC. AND SWITCHES SHALL GENERALLY BE LOCATED ON THE STRIKE SIDE OF THE DOOR.

### 16208. PLATES

1. ALL OUTLETS SHALL BE FITTED WITH SUITABLE PLATES. 2. PLATES FOR SPECIAL AMPERE RECEPTACLES SHALL BE STAINLESS STEEL AS REQUIRED TO SUIT THE RECEPTACLES.

- 1. SWITCHES FOR 120 VOLT CIRCUITS SHALL BE SINGLE POLE, OR THREE WAY; RATED 15 AMPERES, 125 VOLTS A.C.
- 2. UNLESS OTHERWISE NOTED, HANDLES SHALL BE .WHITE.
- 3. ALL SWITCHES SHALL BE MOUNTED WITH THE "ON" POSITION IN THE UPWARDS DIRECTION. 4. SWITCHES SHALL BE LOCATED TO SUIT DOOR SWINGS AND SHALL ALWAYS BE PLACED AT THE LOCK SIDE OF THE DOOR

UNLESS OTHERWISE SHOWN. CONFIRM ALL DOOR SWINGS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION OF

SWITCHES. 5. UNUSED OUTLETS SHALL ALL BE SUITABLY BLANKED OFF.

## 16210. RECEPTACLES

ALL SUCH FIXTURES.

1. DUPLEX RECEPTACLES SHALL BE RATED 125 VOLTS, 15 AMPERES, WITH MATCHING COVER PLATE.

## 16301. LIGHTING FIXTURES

## 1. FIXTURES SHALL BE AS DESCRIBED ON DRAWINGS.

- 2. FIXTURES ARE SHOWN ON THE DRAWINGS SYMBOLICALLY WITH A TYPE LETTER WHICH CORRESPONDS TO THE TYPE DESCRIPTIONS IN THE FIXTURE SCHEDULE.
- 3. IF A TYPE LETTER HAS BEEN MISSED FROM THE DRAWINGS, IT SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTANT BEFORE TENDERS CLOSE. OTHERWISE A SUITABLE FIXTURE SHALL NEVERTHELESS BE INSTALLED ON THE LIGHT OUTLETS. 4. UNLESS OTHERWISE NOTED, SUPPLY AND INSTALL ALL LIGHTING FIXTURES SHOWN ON THE DRAWINGS AND NOTED IN THE DOCUMENTS. FIXTURES SHALL BE COMPLETE WITH THE NECESSARY ACCESSORIES AND COMPONENTS AS REQUIRED TO INSTALL THEM WHERE INTENDED. CONFIRM FINAL CEILING FINISHES WITH GENERAL CONTRACTOR PRIOR TO ORDERING AND ADJUST TYPES TO SUIT QUANTITIES REQUIRED. FINAL TRIM COLOUR FINISHES TO MATCH ADJACENT SURFACES AS
- DIRECTED BY THE ARCHITECT/CONSULTANT. 5. RECESSED OR SEMI-RECESSED FIXTURES SHALL BE REMOVABLE. THEY SHALL BE CONNECTED TO OUTLET BOXES WITH AT
- LEAST 1200 (4') OF NUMBER18 WIRE. OUTLET BOXES SHALL BE ACCESSIBLE WHEN FIXTURES ARE REMOVED. 6. REFER TO CLAUSE "HANGERS AND FASTENINGS"
- 7. NON-CURRENT-CARRYING METAL PARTS SHALL BE GROUNDED.
- 8. WHERE REQUIRED, ALL FIXTURES SHALL BE COMPLETE WITH A SUITABLE BALLAST. UNLESS OTHERWISE NOTED, FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS. REFER TO "BALLASTS" CLAUSE.
- 9. FIXTURES ARE LOCATED CLOSELY TO SCALE. HOWEVER, THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR ON SITE.

# 10. FIXTURES AHD/OR THEIR HANGERS SHALL CENTRE EITHER ON THE CEILING AREAS.

# 16302. LAMPS AND BALLASTS

- 1. FLUORESCENT LAMPS, GENERALLY, SHALL BE T-8, 32 WATT 3000-3500K. 2. BALLASTS SHALL BE HIGH POWER FACTOR CONSTANT WATTAGE DESIGN WITH AUTOMATIC RESET THERMAL PROTECTION.
- THEY SHALL CONFORM TO CSA SPECIFICATIONS AND SHALL BE OF ELECTRONIC TYPE. 3. CHECK THE DRAWINGS TO DETERMINE THE DISTRIBUTION VOLTAGE APPLIED TO ALL BALLASTS. THE FIXTURE SCHEDULE INDICATES WHERE THE VOLTAGE IS OTHER THAN 120 VOLTS CHECK THE DRAWINGS TO DETERMINE WHERE FIXTURES ARE MOUNTED OUTDOORS OR AFFECTED BY OUTDOOR TEMPERATURES AND SUPPLY SUITABLE COLD WEATHER BILLASTS FOR

4. BALLASTS SHALL HAVE SOUND RATING A. THEY SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AND NOISY BALLASTS SHALL BE REPLACED WITHOUT COST TO THE OWNER.

### 16401, MOTORS / CONTROLS

1. CONNECT ALL MOTORS SHOWN ON THE PLAN OR MENTIONED IN THE SPECIFICATION

- THE EXACT LOCATION OF MOTORS AND CONTROLS SHALL BE DETERMINED ON SITE. MOTORS SHALL BE GROUNDED USING EITHER A SEPARATE GROUNDING CONDUCTOR IN THE FLEXIBLE CONDUIT OR WITH
- THE BONDING CONDUCTOR IN THE FLEXIBLE CONDUIT USING THE SPECIAL BRASS GLANDS SUPPLIED FOR THE PURPOSE.
- 4. DISCONNECT SWITCHES WHERE REQUIRED BY THE CODE, OR OTHERWISE CALLED FOR, SHALL BE UNFUSED. PROVIDE NEW DISCONNECT SWITCHES FOR ALL NEW MECHANICAL FOLLIPMENT 5. UNLESS OTHERWISE SHOWN, SUPPLY AND INSTALL A MOTOR STARTER FOR EVERY MOTOR. ALL STARTERS SHALL CONTAIN
- SUITABLE OVERLOAD RELAYS IN ALL UNGROUNDED LINES, AND OVER-CURRENT DEVICES, PILOT DEVICES, ETC. AS SHOWN OR SPECIFIED. THE CONTRACTOR IS FULLY RESPONSIBLE FOR DETERMINING THE CORRECT HEATERS FOR THE STARTER AND SHALL BE LIABLE FOR ANY DAMAGE RESULTING FROM IMPROPER HEATER SELECTION.
- ALL STARTERS ON THE JOB SHALL BE OF THE SAME MANUFACTURE.
- WHERE REQUIRED BY OUTDOOR CONDITIONS, SWITCHES AND STARTERS SHALL BE IN WEATHERPROOF ENCLOSURES. 8. UNLESS OTHERWISE INDICATED PROVIDE ALL PUSHBUTTONS, OFF-ON SWITCHES, PILOT LIGHTS OR ANY OTHER CONTROL
- DEVICES OF THIS TYPE 9. THERMOSTATS, SENSORS, ETC. WILL BE SUPPLIED AS DESCRIBED ON THE MECHANICAL DRAWINGS OR BY MECHANICAL
- FNGINFFR. 10. PROVIDE CONTROL WIRING AS INDICATED ON THE DRAWINGS AND OUTLINED IN THE SPECIFICATION.

1. WIRE TO ALL ELECTRIC EQUIPMENT SHOWN ON THE DRAWINGS. THE OUTLETS THEMSELVES SHALL CONSIST OF BOXES SIZED TO ACCOMMODATE THE CONDUCTORS REQUIRED AND THESE BOXES SHALL BE SUPPLIED WITH BLANK COVERS. CONNECTION FROM THE OUTLETS TO THE EQUIPMENT SHALL BE MADE IN FLEXIBLE CONDUIT. DETERMINE THE FINAL AND EXACT LOCATION FOR EACH OUTLET AND CORRECT ORIENTATION OF EQUIPMENT BEFORE CONNECTIONS ARE FINALIZED.

1. EXTEND THE BASE BUILDING GROUNDING SYSTEM TO SUIT THE BRANCH DISTRIBUTION ARRANGEMENT OUTLINED ON THE

DRAWING AND AS CALLED FOR HEREIN. 2. THE GROUNDING SYSTEM IS TO CONFORM TO THE LATEST EDITION OF THE ELECTRICAL CODES AND IS TO MEET THE REQUIREMENTS OF THE LOCAL INSPECTION DEPARTMENT.

4. GROUND CONDUCTORS SHALL BE INSTALLED AS SET OUT BELOW, FROM A NEW COPPER GROUND BUS TO BE LOCATED IN

- 3. PROVIDE GROUNDING TO MAIN WATER SYSTEM PIPING, DRAINAGE PIPING, GAS SYSTEM PIPING, AT THE MAIN DISTRIBUTION. CHECK CONTINUITY OF THE WATER SERVICE.
- ELECTRICAL ROOM AT NEW PANEL TUBS, GROUND BUSSES, EQUIPMENT ETC. THEY SHALL TERMINATE WITH BURNDY TYPE CONNECTORS INSTALLED TO MANUFACTURER'S INSTRUCTIONS: TELEPHONE TERMINALS #6 ISOLATED GRD. PANELBOARDS #6 OR AS INDICATED ON ONE-LINE DIAGRAM. MODEM ROOM TERMINALS #6.

### 5. GROUNDING CONDUCTOR SHALL BE CONCEALED IN CONCRETE FLOORS OR WALLS, OR IN CONDUIT AS REQUIRED BY CODE OR REQUIRED ELSEWHERE IN THE SPECIFICATIONS.

- 1. ALL OPENINGS IN FLOORS AND WALLS FOR ELECTRICAL SYSTEMS CONDUITS, DUCTS, CABLE ETC., SHALL BE SEALED WITH FIRE STOPPING MATERIAL AFTER FINAL INSTALLATION OF THE SYSTEMS.
- 2. FIRE STOPPING SHALL BE THOMAS & BETTS, "FLAME-SAFE" OR DOW CORNING "FIRE STOP" FIRE RETARDANT, DESIGNED AND INSTALLED TO SUIT THE APPLICATION; INSTALLED PER MANUFACTURERS INSTRUCTIONS AND THE FINAL INSTALLATION SHALL BE IN FULL CONFORMANCE TO BUILDING STANDARDS.

### 16503, PANELBOARDS

### 1. PROVIDE PANELBOARDS AS INDICATED ON THE DRAWINGS.

2. PANELBOARDS SHALL BE CIRCUIT BREAKER TYPE 120/240 VOLTS, 1 PHASE, 3 WIRE OPERATION RATED 10 KA. 3. PANELBOARDS SHALL BE COMPLETE WITH TRIM, DOOR, CATCH, LOCK, AND TYPEWRITTEN DIRECTORY CONFORMING TO AS-BUILT-DRAWINGS



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DATE BY CHK'D REVISION van der Zalm + associates inc. Suite 1 - 8938 192 Street, Surrey, BC V4N 3W8 DMS ISSUED FOR BUILDING PERMIT 2012-04-11 2012-06-22 DMS DJW ISSUED FOR TENDER WASHROOM BUILDING ELECTRICAL 2012-07-05 DMS DJW ISSUED FOR CONSTRUCTION MACKIN PARK RECORD DRAWING 2013-05-28 BRUNETTE AVENUE COQUITLAM, B.C. SHEET No. REVISION

DRAWING REFERENCE

CANCEL PRINTS BEARING PREVIOUS LETTER

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