### **GENERAL NOTES**

- 1. THE CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE THE BOUNDARY OF THE WORK AGAINST DAMAGE, SPREAD OF DUST AND DEBRIS THROUGH THE PROVISION OF APPROPRIATE TEMPORARY ENCLOSURES, DUST TIGHT SCREENS OR WEATHER BARRIERS.
- **2.** THE CONTRACTOR SHALL ENSURE THAT ALL PARTITIONS, CEILING AND FLOORS ARE REPAIRED AND FINISHED UPON COMPLETION OF ELECTRICAL ADJUSTMENTS.

### 01.4 - CUTTING, DRILLING AND PATCHING

- 1. NO DRILLING OR TRENCHING IS TO BE PERFORMED WITHOUT THE LANDLORD'S AUTHORIZATION. DRILLING OR TRENCHING OF EXISTING CONCRETE SLABS AS REQUIRED BY THE DESIGN SHALL INCLUDE XRAY OR SCANNING TO CONFIRM ACCEPTABLE LOCATIONS.
- **2.** CUT RIGID MATERIALS WITH A MASONRY SAW OR A CORE DRILL. IT IS FORBIDDEN TO USE PNEUMATIC OR HAMMER TOOLS ON MASONRY OR CEMENT STRUCTURES WITHOUT PRIOR AUTHORIZATION.
- **3.** REPAIR ALL WORK WITH NEW PRODUCTS, PURSUANT TO CONTRACTUAL DOCUMENT REQUIREMENTS.
- **4.** ADJUST THE CONSTRUCTION TIGHTLY AROUND CONDUITS, COUPLERS, AIR AND ELECTRICAL DUCTS AS WELL AS OTHER ELEMENTS PENETRATING WALL, CEILING OR FIRE RATED FLOOR OPENINGS. SEAL COMPLETELY THE SPACES AROUND OPENINGS WITH FIRE STOPPING OR ACOUSTIC MATERIALS, DEPENDING ON THEIR LOCATION, THROUGH THE TOTAL THICKNESS OF THE PIERCED ELEMENT.
- **5.** FINISH SURFACES TO ENSURE UNIFORMITY WITH ADJACENT FINISH COATINGS. FINISH CONTINUOUS SURFACES UP TO THE CLOSEST INTERSECTION BETWEEN TWO ELEMENTS AND REFINISH COMPLETELY WHEN THERE IS A GROUPING OF ELEMENTS.
- **6.** SEAL OPENINGS, INCLUDING CONCEALED SPACE OPENINGS, AND PATCH SURFACES AS PER EXISTING AFTER THE ENTIRETY OF THE WORK, INCLUDING, BUT WITHOUT LIMITATION, DEMOLITION, ELECTRICAL AND MECHANICAL WORK.

### 02.1 - SELECTIVE DEMOLITION

- 1. TAKE ALL PROTECTIVE MEASURES NECESSARY TO KEEP ANY TRACE OF DUST OR DEBRIS INCIDENTAL TO THE WORK FROM AREAS ADJACENT TO THE WORK, INCLUDING STAIRS AND CORRIDORS. PROTECT ALL FINISHES OF ADJACENT AREAS LIKELY TO BE AFFECTED BY THE WORK ALONG WITH FINISHES AND ELEMENTS TO BE PRESERVED WITHIN WORKING AREAS. PATCH ALL SURFACES DAMAGED BY THE DEMOLITION WORK TO PROVIDE A CONTINUOUS SURFACE. OVERALL. PROTECTION METHODS ARE TO BE APPROVED BY THE OWNER.
- 2. LIMIT ACTIVITIES TO WORKING AREAS ONLY.
- **3.** PERFORM WORK IN COMPLIANCE WITH ONTARIO MINISTRY OF LABOUR OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.
- **4.** DISMANTLE AND DELIVER ALL MATERIALS AS REQUIRED TO BE RE-USED OR RETURNED TO THE OWNER OR LANDLORD.
- **5.** DISPOSE OF WASTES AT THE END OF EACH WORKING DAY AND UPON COMPLETION OF THE WORK. THE WORKING AREA IS TO BE KEPT CLEAN AND ORDERLY TO THE OWNER'S SATISFACTION.

### 05.1 - METAL FABRICATIONS

- 1. FABRICATE STEEL SUPPORTS IN ACCORDANCE WITH STRUCTURAL ENGINEER'S RECOMMENDATIONS. INSTALLATION BY QUALIFIED WORKERS WITH MINIMUM 5 YEARS DOCUMENTED EXPERIENCE AND LICENSED IN THE PROVINCE OF ONTARIO.
- **2.** SUBMIT DETAIL DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE PROVINCE OF ONTARIO.

### 06.1 - ROUGH CARPENTRY

- 1. PROVIDE AND INSTALL PLYWOOD BACKING INSIDE NEW PARTITIONS TO SUPPORT MILLWORK, WASHROOM ACCESSORIES, AND VIDEO DISPLAY MONITORS AS IDENTIFIED ON THE DRAWINGS. USE 16 MM PLYWOOD. CANADIAN SOFTWOOD PLYWOOD: IN COMPLIANCE WITH CSA 0151 STANDARD, STANDARD CONSTRUCTION GRADE, FOR INDOOR USE ONLY.
- **2.** PROVIDE AND INSTALL SUBFRAMES AND TRIMS AROUND DOOR AND WINDOW OPENINGS TO ENSURE FRAME SUPPORT, AS INDICATED.

## 07.1 - SEALANTS

- 1. SEALANTS FOR WALLS, OTHER THAN GYPSUM BOARD WALLS, WITHOUT FIRE OR SMOKE RESISTANCE OR ACOUSTIC PROPERTIES, AND AROUNDPERIMETERS OF EXTERIOR OPENINGS WHERE FRAMES MEET EXTERIOR FACADE OF BUILDING: SINGLE-COMPONENT, ELASTOMERIC, CHEMICAL POLYMERISATION, IN COMPLIANCE WITH CAN/CGSB-19.13 STANDARD. REFERENCE PRODUCT: DYMONIC FC BY TREMCO OR APPROVED EQUIVALENT.
- **2.** SEALANTS FOR GYPSUM BOARD SURFACES, WITHOUT FIRE OR SMOKE RESISTANCE OR ACOUSTIC PROPERTIES: SINGLE-COMPONENT, LATEX EMULSION-BASED WITH ACRYLIC RESINS, IN COMPLIANCE WITH CAN/CGSB-19.17 STANDARD. REFERENCE PRODUCT: TREMFLEX 834 BY TREMCO OR APPROVED EQUIVALENT.
- **3.** ROOF SEALANT -"ROOF GOOP": ELASTOMERIC H-BUILD MASTIC, 100% ACRYLIC RESINS, FILLERS USING CERAMIC SPHERES, PRODUCT TO BE PERMANENTLY FLEXIBLE, QUICK DRY AND UV STABLE. PRODUCT PROPERTIES SOLIDS BY VOLUME: 66% (ASTM D5201), TENSILE STRENGTH: 325 PSI (ASTM D412), ELONGATION: 200% (ASTM D412). CONFIRM COMPATIBILITY WITH EXISTING ROOFING MATERIALS PRIOR TO PROCEEDING WITH WORK AND ORDERING OF PRODUCTS. PREPARE ROOF AS PER MANUFACTURER'S RECOMMENDATIONS TO RECEIVE SEALANT.
- 4. HIGH DENSITY FOAM: EXTRUDED POLYOLEFIN FOAM, 32 KG/MU DESNSITY, FOAM BACKER, SIZE AS RECOMMENDED BY MANUFACTURER.

### 07.2 - INSULATION

1. BLANKET INSULATION TO ASTM C 553-02, SPECIFICATION FOR MINERAL FIBRE BLANKET THERMAL INSULATION FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS.

### 07.3 - FIRE STOPPING

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1. FIRE STOPPING AND SMOKE SEAL SYSTEMS: IN ACCORDANCE WITH CAN-ULC-S115.
ASBESTOS-FREE MATERIALS AND SYSTEMS CAPABE OF MAINTAINING EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES IN COMPLIANCE WITH REQURIEMENTS OF CAN-ULC-S115 AND NOT TO EXCEED OPENING SIZES FOR WHICH THEY ARE INTENEDED.

- 2. FOR FIRE STOPPING AND SMOKE SEALS AT OPENINGS AROUND PENETRATIONS FOR CONDUIT AND PIPES: ELASTOMERIC SEAL.
- 3. FOR VERTICAL JOINTS: NON-SAGGING.

### 08.1 - EXTERIOR INSULATED / INTERIOR STEEL DOORS & FRAMES

- 1. MANUFACTURED BASED ON DETAILS PROVIDED AND IN COMPLIANCE WITH THE CANADIAN MANUFACTURING SPECIFICATIONS FOR METAL DOORS AND FRAMES, 2000, DOCUMENT PUBLISHED BY THE CANADIAN STEEL DOOR AND FRAME MANUFACTURERS ASSOCIATION (CSDFMA).
- **2.** CUT, REINFORCE, PUNCH OUT AND TAP FRAMES WHERE REQUIRED TO ACCOMMODATE FOR MORTISE-MOUNTED HARDWARE ITEMS, REINFORCE FRAMES TO ACCOMMODATE FOR SURFACE-MOUNTED HARDWARE ITEMS. MINIMUM STAY PLATE THICKNESS: 3MM.
- **3.** FRAMES, GALVANIZED STEEL, IN COMPLIANCE WITH ASTM A527, ZINC COATING Z001, WITH ACCURATELY WELDED JOINTS WELDED AT THE PLANT AND DELIVERED IN ONE PIECE. CONTINUOUS WELDING, NO WELDING ON SITE. EXTERIOR FRAMES: 1.6MM WELDED THERMALLY BROKEN TYPE CONSTRUCTION. INTERIOR FRAMES: 1.6MM WELDED TYPE CONSTRUCTION.
- 4. RATED DOOR / FRAMES IN ACCORDANCE WITH NFPA 80. STANDARD FOR FIRE DOORS.
- **5.** DOOR CORES -HONEYCOMB CORE CONSTRUCTION WITH STIFFENED FACE, INSULATED CORES TO BE POLYSTYRENE CORE LAMINATED UNDER PRESSURE SHEETS TO BE COMPRISED OF HOT DIPPED GALVANIZED STEEL SHEET TO ASTM A653m, AF75 SATIN FINISH, TO 1.6MM THICKNESS WITH HONEYCOMB CORE LAMINATED UNDER PRESSURE TO FACE SHEETS.

### 6. DOOR THICKNESS: 45MM.

- **7**. THERMALLY BROKEN DOORS AND FRAMES, FABRICATE THERMALLY BROKEN DOORS BY USING INSULATED CORE AND SEPARATING EXTERIOR PARTS FROM INTERIOR PARTS WITH CONTINUOUS INTERLOCKING THERMAL BREAKS. THERMAL BREAKS RIGID POLYVINYLCHLORIDE EXTRUSION CONFORMING TO CGSB 41-GP-19MA.
- 8. CAULK PERIMETER OF FRAMES BETWEEN FRAME AND ADJACENT MATERIAL.
- **9**. COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS OR SPECIFICATIONS FOR HANDLING, STORAGE AND INSTALLATION

### 10. WARRANTY: 3 YEARS

11. REFER TO DOOR HARDWARE AND HARDWARE SCHEDULES ON DWG A-101 AND TO NRC FINISH HARDWARE SPECIFICATION SECTION 08 71 00.

### 09.1 - GYPSUM PARTITIONS

- **1.** REFERENCE STANDARDS: GYPSUM PARTITIONS IN COMPLIANCE WITH CAN/CSA-A82.27 STANDARD, CGC MANUAL AND PLAN DETAILS.
- **2.** STANDARD BOARDS: IN COMPLIANCE WITH CAN/CSA-A82.27 STANDARD, TYPE X, THICKNESS INDICATED, 1,220 MM WIDE AND MAXIMUM PRACTICAL LENGTH.
- **3.** JOINTING PRODUCTS FOR GYPSUM BOARDS: IN COMPLIANCE WITH CAN/CSA-A82.31M STANDARD AND AS PER MANUFACTURER'S RECOMMENDATIONS.
- **4.** NON-LOADBEARING CHANNEL STUD FRAMING TO ASTM C 645, STUD DEPTH AS INDICATED, THICKNESS 20 GAUGE, HOT DIPPED GALVANIZED STEEL SHEET, KNOCKOUT SERVICE HOLES OF 38 MM X 51 MM AND 38MM, AT 460 MM C/C. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR GAUGE OF WALL MOUNTS HIGHER THAN 4,700 MM.
- **5.** LOWER, TOP AND LATERAL TRACKS: SECTION: U, THICKNESS (BARE STEEL ONLY) SAME AS
- **6.** DEFLECTION TRACKS: SECTION: U, WIDTH: 3 MM MORE THAN TOP TRACKS, DEPTH: 50 MM EXCEPT OTHERWISE INDICATED IN DRAWINGS.
- 7. STIFFENERS AND BRIDGINGS: SECTION: U, THICKNESS (BARE STEEL ONLY) OF 1.52 MM, ANGLES FOR BRIDGING INSTALLATION: L-SHAPED, SAME THICKNESS OR SUPERIOR AS BRIDGINGS.
- **8.** FURRING CHANNELS: THICKNESS (BARE STEEL ONLY), EXCEPT OTHERWISE INDICATED, 0.38 MM
- **9.** ACOUSTIC INSULATION: MINERAL FIBER ACOUSTICAL BATT MANUFACTURED EXPRESSLY FOR THIS PURPOSE, IN COMPLIANCE WITH CAN/ULC \$702 STANDARD, THICKNESS INDICATED, FRICTION-FIT TYPE TO FIT STUD SPACINGS, 44 KG/M3 NORMAL DENSITY, REFERENCE PRODUCT: AFB BY ROXUL OR APPROVED EQUIVALENT.
- **10.** ACOUSTIC SEALANTS: REFERENCE PRODUCTS: ACOUSTICAL SEALANT BY TREMCO. APPLY ACOUSTIC SEALANT AROUND PERIMETER OF ALL SPACINGS AND ON INTERFACE BETWEEN WALL AND FLOOR OR CEILING WHEN FIREPROOF SEALANT IS NOT REQUIRED.
- **11.** INSTALL INSULATING STRIPS OR A CONTINUOUS BEAD OF ACOUSTICAL CAULKING UNDER ALL PARTITION BOTTOM TRACKS ON EXISTING CONCRETE SLAB.
- 12. PROVIDE TWO STUDS EXTENDING FROM FLOOR TO CEILING AT EACH SIDE OF OPENINGS WIDER THAN STUD CENTRES SPECIFIED. SECURE STUDS TOGETHER, 50 MM APART USING COLUMN CLIPS OR OTHER APPROVED MEANS OF FASTENING PLACED ALONGSIDE FRAME ANCHOR CLIPS.
- 13. GYPSUM BOARD JOINTS TO BE STAGGERED ON EACH SIDE OF METAL STUDS.
- **14.** ALL EXISTING GYPSUM PARTITIONS, COLUMNS AND BULKHEADS AFFECTED BY RENOVATIONS TO BE PATCHED, MADE GOOD, SANDED AND PRIMED READY TO RECEIVE NEW PAINT FINISH.
- **15.** ALL NEW GYPSUM BOARD PARTITIONS TO BE TAPED, SANDED AND PRIMED READY TO RECEIVE NEW PAINT FINISH.

### 09.2 - PAINT

- 1. REFERENCE STANDARDS: EXCEPT IF INDICATED, USE ONLY PAINT MATERIALS LISTED ON THE CGSB QUALIFIED PRODUCTS LIST, CURRENT EDITION. PAINT MATERIALS FOR EACH COATING FORMULA TO BE PRODUCTS OF A SINGLE MANUFACTURER (I.E. SICO, PRATT & LAMBERT OR APPROVED ALTERNATE).
- 2. SAMPLES: SUBMIT FOR APPROVAL 210 MM X 275 MM SAMPLE FOR EACH COLOUR.

### 3. SURFACE PREPARATION:

- 1. PREPARE WOOD SURFACES IN COMPLIANCE WITH ONGC 850GP-1M STANDARD, APPLY VINYL SEALER IN COMPLIANCE WITH CAN/CSGB-1.126M STANDARD OVER KNOTS AND RESINOUS AREAS. APPLY WOOD FILLER TO NAIL HOLES AND CRACKS;
- 2. PREPARE SHOP PRIMED STEEL SURFACES WITH A PRODUCT IN COMPLIANCE WITH CAN/CGSB-1.40M AND ONGC 85-GP-14M STANDARDS.
- 3. PREPARE GALVANIZED STEEL AND ZINC COATED STEEL SURFACES IN COMPLIANCE WITH ONGC 85-GP-16M STANDARD. WASH WITH TRISODIUM PHOSPHATE SOLUTION AND RINSE THOROUGHLY:
- 4. PREPARE MASONRY, STUCCO AND CONCRETE SURFACES IN COMPLIANCE WITH ONCG 85-GP-31M STANDARD;
- 5. PREPARE GYPSUM BOARD SURFACES IN COMPLIANCE WITH ONGC 85-GP-33M STANDARD. FILL SMALL CRACKS WITH PATCHING COMPOUND.
- 4. CLEAN SURFACES TO BE PAINTED WHERE INDICATED, INCLUDING DUCTWORK AND CONDUITS.
- **5.** SAND AND DUST BETWEEN EACH COAT TO REMOVE DEFECTS VISIBLE FROM A DISTANCE OF 1.5 M.
- **6.** FINISH TOP, BOTTOM, EDGES AND CUT-OUTS OF DOORS AFTER FITTING AS SPECIFIED FOR DOOR SURFACES. DO NOT PAINT OVER ULC LABELS.
- **7.** PAINT EXPOSED CONDUITS, PIPING, HANGERS, DUCTWORK AND ELECTRICAL EQUIPMENT. EXPOSED MECHANICAL AND ELECTRICAL DUCTWORK TO MATCH COLOUR OF ADJACENT WALLS AND CEILINGS. DO NOT PAINT OVER PREPAINTED ELEMENTS, NAMEPLATES AND LABELS.
- **8.** USE PRODUCTS WITH SAME COLOUR AND SAME SHEEN AS EXISTING FINISH TO PATCH EXISTING SURFACES AFFECTED BY WORK. PAINT UP TO NEXT VERTICAL JOINT. USE PRODUCTS COMPATIBLE WITH EXISTING PRODUCTS.
- 9. FORMULA NO. 1 FOR DOORS / FRAMES

SAMPLES FOR REVIEW.

- ONE COAT ACRYLIC LATEX PRIMER-SEALER. REFERENCE PRODUCT: 160-135 BY SICO.
   TWO COATS ACRYLIC LATEX EXTERIOR PAINT, SEMI-GLOSS FINISH. REFERENCE PRODUCT: 817 BY SICO OR EQUIVALENT. COLOUR TO MATCH EXISTING DARK GREEN COLOUR PRESENT ON
- 10. FORMULA NO. 2 FOR INTERIOR WALLS, GYPSUM BOARD

ADJACENT DOORS. SUBMIT SAMPLES FOR REVIEW

- ONE COAT LATEX PRIMER-SEALER. REFERENCE PRODUCT: 870-130 BY SICO, OR EQUIVALENT.
   TWO COATS LATEX INTERIOR PAINT, SEMI-GLOSS FINISH. REFERENCE PRODUCT: 874 BY SICO, OR EQUIVALENT. COLOUR TO MATCH INTERIOR WALLS AT SOUTH BUILDING. SUBMIT
- 11. FORMULA NO. 3 FOR INTERIOR CEILINGS, GYPSUM BOARD
- ONE COAT LATEX PRIMER-SEALER. REFERENCE PRODUCT: 870-130 BY SICO, OR EQUIVALENT.
   TWO COATS LATEX INTERIOR PAINT, MATTE FINISH. REFERENCE PRODUCT: 871-112 BY SICO, OR EQUIVALENT. COLOUR TO MATCH INTERIOR WALLS AT SOUTH BUILDING. SUBMIT SAMPLES
- 12. FORMULA NO. 4 FOR INTERIOR SHOP PRIMED FERROUS METAL SURFACES
- 1. TOUCH UP WITH ANTICORROSIVE PRIMER. REFERENCE PRODUCT: 926-260BY SICO, OR
- 2. PRIME COAT. REFERENCE PRODUCT: 926-260 BY SICO, OR EQUIVALENT.
- 3. TWO COATS ALKYD PAINT, SEMI-GLOSS FINISH. REFERENCE PRODUCT: 886 BY SICO, OR EQUIVALENT.

### PROJECT CLOSE-OUT

- 1. SUBSTANTIAL PERFORMANCE
- a. WHEN THE G.C. CONSIDERS THE WORK TO BE SUBSTANTIALLY PERFORMED, THEY SHALL SUBMIT WRITTEN CERTIFICATION THAT THE CONTRACT DOCUMENTS HAVE BEEN REVIEWED, THAT THE WORK HAS BEEN INSPECTED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CERTIFICATION SHALL FURTHER STATE THAT ALL EQUIPMENT AND SYSTEMS HAVE BEEN TESTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE AND ARE OPERATIONAL. THE CERTIFICATION SHALL STATE THAT THE WORK IS SUBSTANTIALLY PERFORMED AND READY
- b. WITHIN TEN (10) DAYS OF RECEIPT OF THE G.C. CERTIFICATION, THE CONSULTANT WILL INSPECT THE WORK TO VERIFY THE STATUS OF COMPLETION. UPON SUBSTANTIAL PERFORMANCE. THE GC SHALL PREPARE AND SUBMIT PROJECT CLOSE OUT MATERIALS.
- 2. CLOSE-OUT SUBMITTAL AND CERTIFICATE OF OCCUPANCY
- a. SUBMIT EVIDENCE OF COMPLIANCE WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITIES, INCLUDING BUT NOT LIMITED TO SUCH ITEMS AS CERTIFICATES OF INSPECTION FROM THE VARIOUS DIVISIONS OF THE JURISDICTIONS HAVING AUTHORITIES.
- b. IT IS THE RESPONSIBILITY OF THE G.C. TO SCHEDULE AND ATTEND ALL INSPECTIONS BY GOVERNING AUTHORITIES AS REQUIRED FOR A TIMELY COMPLETION OF THE WORK TO MEETING THE PROJECT SCHEDULE.
- c. SUBMIT 3 COPIES OF OPERATING AND MAINTENANCE INSTRUCTIONS, ORGANIZED IN A BINDER INCLUDING, WARRANTIES AND BONDS. SPARE PARTS AND MAINTENANCE MATERIALS ARE TO BE SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VARIOUS SECTIONS OF THE SPECIFICATIONS.
- d. THE G.C. SHALL PROVIDE THE CONSULTANT AT TIME OF PROJECT CLOSE OUT AS-BUILT DRAWINGS, WHICH CONSIST OF RED-LINED DRAWINGS INDICATING ANY ADJUSTMENTS MADE DURING CONSSTRUCTION DUE TO SITE CONDITIONS OR APPROVED CHANGES.

### 3. GUARANTEE

- a. THE GUARANTEE SHALL COVER FAULTY OR IMPERFECT MATERIAL AND WORKMANSHIP, DAMAGE OR UNDUE DETERIORATION RESULTING FROM NORMAL USE AND THE SATISFACTORY OPERATION OF ALL ELECTRICAL AND MECHANICAL EQUIPMENT AND DEVICES.
- b. THE G.C. SHALL COMPLY WITH ALL OTHER GUARANTEES CALLED FOR ELSEWHERE IN THESE SPECIFICATIONS.

### NRC FINISH HARDWARE -SECTION 08 71 00

### PART 1 -GENERAL

### 1.1 REFERENCE STANDARDS

.1 STANDARD HARDWARE LOCATION DIMENSIONS IN ACCORDANCE WITH CANADIAN METRIC GUIDE FOR STEEL DOORS AND FRAMES (MODULAR CONSTRUCTION) PREPARED BY CANADIAN STEEL DOOR AND FRAME MANUFACTURER'S ASSOCIATION.

### 1.2 HARDWARE LIST

- .1 SUBMIT HARDWARE SCHEDULE FOR THE DEPARTMENT REPRESENTATIVE'S APPROVAL
- .2 INDICATE HARDWARE PROPOSED, INCLUDING MAKE, MODEL, MATERIAL, FUNCTION, FINISH AND OTHER PERTINENT INFORMATION.

### 1.3 MAINTENANCE

.1 PROVIDE MAINTENANCE DATEA, PARTS LISTS, AND MANUFACTURER'S INSTRUCTION FOR EACH TYPE DOOR CLOSERS, LOCKSETS, DOOR HOLDERS AND FIRE EXIT HARDWARE FOR INCORPORATION INTO MAINTENANCE MANUAL.

.1 SUPPLY TWO SETS OF WRENCHES FOR DOOR CLOSERS, LOCKSETS AND FIRE EXIT HARDWARE.

### 1.5 HARDWARE REQUIREMENTS

1.4 MAINTENANCE MATERIALS

- .1 HARDWARE STANDARDS LIST IN PARAGRAPH 2.2 CAN BE OBTAINED THROUGH NRC STANDING OFFER PROGRAM.
- .2 NRC HAS BONDED LOCKSMITH FOR OUR KEYING SYSTEMS ON STANDING CONTRACT. SEE CONTRACT CORRDINATOR FOR INFORMATION.
- .3 CONTRACTOR WILL BE RESPONSIBLE TO HAVE ALL CYLINDERS KEYED BY NRC BONDED LOCKSMITH ON STANDING OFFER CONTRACT.
- .4 CONTRACTOR WILL BE RESPONSIBLE TO CARRY ALL ASSOCIATED COSTS FOR CYLINDERS AND KEYING OF THE SAME WITH NRC BONDED STANDING OFFER LOCKSMITH.

### PART 2 PRODUCTS

- 2.1 HARDWARE ITEMS
  - .1 ONLY DOOR CLOSERS, LOCKSETS AND LATCHSETS LIST BELOW.
- .2 USE ONE MANUFACTURER'S PRODUCT ONLY FOR ALL SIMILAR ITEMS.

### 2.2 DOOR HARDWARE STANDARDS

### .1 HINGES:

.1 INTERIOR DOORS: DOREX 114.3mm x 101.6mm x 179 454 NRP X C15.

.2 EXTERIOR DOORS: DOREX  $4\frac{1}{2}$ " X 4" x BB2222 NRP X C15.

.2 LATCHING DEVICES: APPLY TO ALL BUILDINGS OTHER THAN BUILDINGS M-50 AND M-55.

.1 LOCKSETS "YALE" AU-5407-L x 626. .2 LOCKSETS "YALE" AU-5401-L x 626.

.3 CLOSERS: STANDARD DUTY ON:

.1 INTERIOR DOORS "NORTON" 1600BC-REG x AL. PARALLEL ARM.
.2 EXTERIOR DOORS "LCN" 4110 x AL.

.4 ASTRAGAL: PROVIDE  $\frac{3}{16}$ " THICK STAINLESS STEEL ASTRAGAL ON INACTIVE LEAF. .5 DOOR HOLDER: PROVIDE "HAGER" KICK DOWN DOOR HOLDER 270C. S1 SPRAYED

ALUMINUM FINISH.

.6 ABOVE HARDWARE IS STANDARD NRC REQUIREMENTS UNLESS SPECIFIED OR LISTED ON DRAWINGS TO BE OTHERWISE.

2.3 FASTENINGS
.1 SUPPLY SCREWS, BOLTS, EXPANSION SHIELDS AND OTHER FASTENING DEVICES REQUIRED

FOR SATISFACTORY INSTALLATION AND OPERATION OF HARDWARE.

.2 EXPOSED FASTENING DEVICES TO MATCH FINISH OF HARDWARE.
.3 WHERE PULL IS SCHEDULED ON ONE SIDE OF DOOR AN D PUSH ON OTHER SIDE, SUPPLY FASTENING DEVICES, AND INSTALL SO PULL CAN BE SECURED THROUGH DOOR FROM REVERSE

SIDE. INSTALL PUSH PLATE TO COVER FASTENERS.

.4 USE FASTENERS COMPATIBLE WITH MATERIAL THROUGH WHICH THEY PASS.

## PART 3 EXECUTION 3.1 INSTALLATION

- .1 FURNISH DOOR AND FRAME MANUFACTURER WITH COMPLETE INSTRUCTIONS AND TEMPLATES FOR PREPARATION OF THEIR WORK TO RECEIVE HARDWARE.
- .2 FURNISH MANUFACTURER'S INSTRUCTIONS FOR PROPER INSTALLATION OF EACH HARDWARE COMPONENT.
- .3 WHERE DOOR STOP CONTACTS DOOR PULLS, MOUNT STOP TO STRIKE BOTTOM OF PULL.
  .4 WEATHERSTRIPPING AND SURFACE SMOKE SEALS SHALL NOT BE INSTALLED UNTIL FINAL COAT OF PAINT HAS BEEN APPLIED TO DOOR AND FRAME AND IS COMPLETELY DRY.
- .5 ONLY TRADESMEN COMPETENT IN THE INSTALLATION OF FINISH HARDWARE SHALL BE USED FOR THIS PUPOSE. THE INSTALLER SHALL ADJUST, CLEAN, AND MAKE GOOD ALL INSTALLATIONS OF FINISH HARDWARE TO THE SATISFACTION OF THE ENGINEER.

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KEY PLAN / PLAN-REPÉRE N.T.S.

5 REVISIONS 14-10-08
4 REVISIONS 14-09-30
3 REVISIONS TO 100% DOCUMENTS 14-08-26
2 RE-ISSUED FOR 100% CLIENT REVIEW 14-07-08
1 ISSUED FOR 100% CLIENT REVIEW 14-07-08
revisions description date

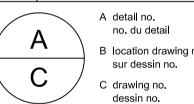
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BC

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Soumission

No. du dessir



BUILDING M51
ROOF MODIFICATION
/ INTERIOR WALL
PROTECTION

**GENERAL NOTES** 

drawing

Tender

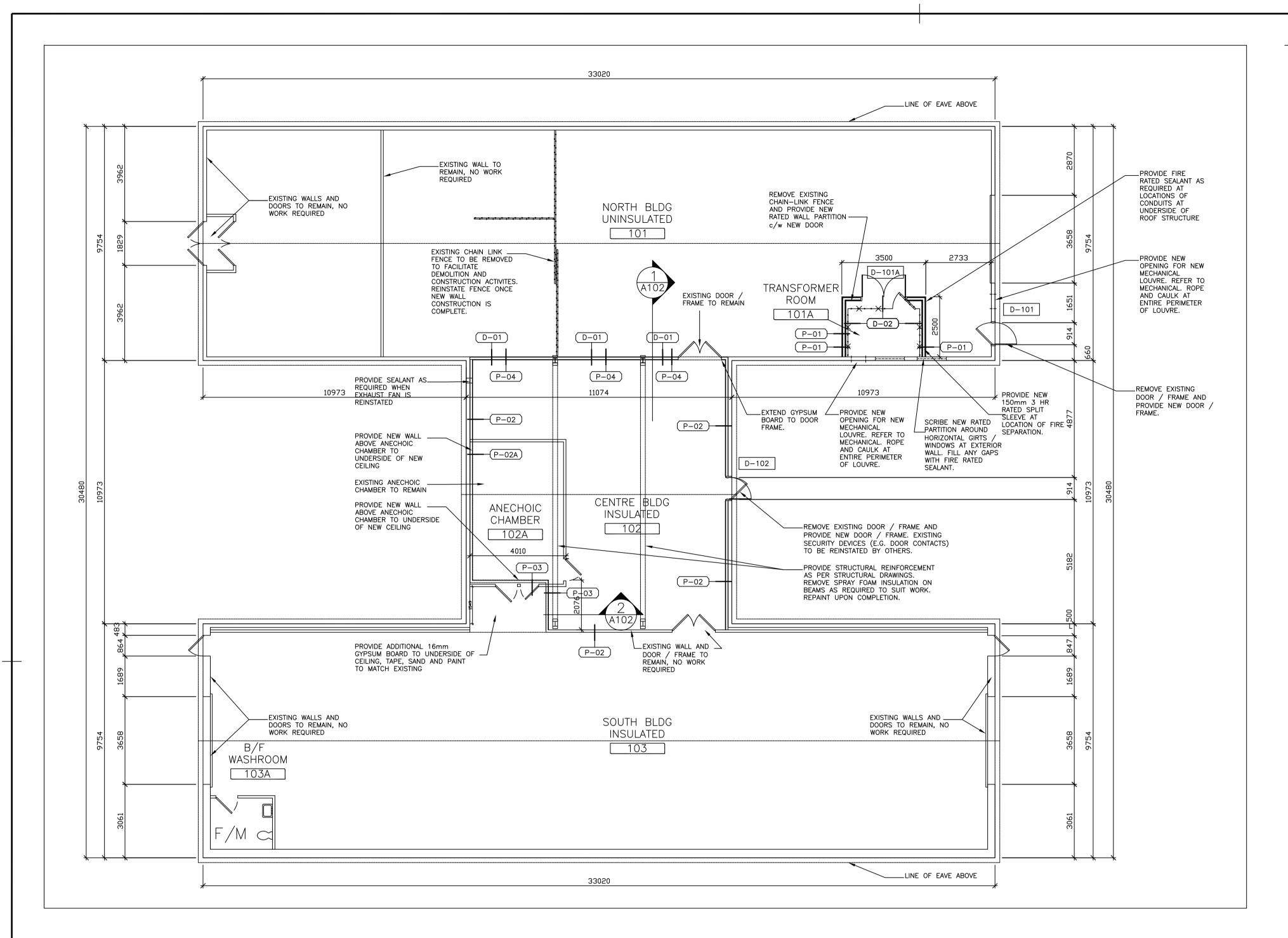
Drawing no.

Designed By Conçu pai RAC 14-03-10 (yyyy/mm/dd Drawn By Dessiné pa Date (yyyy/mm/dd Reviewed By Examiné par EY/RAC 14-03-12 (yyyy/mm/dd) Approved By Approuvé pa (yyyy/mm/dd

Project Manager Administrateur de projets
Project no. No. du proje

A100

0 10 20mm 40 60 80 100 120 140 160 180 200



GROUND FLOOR PLAN (A101) 1:100

DOOR SCHEDULE													
DOOR			OPENING		PANEL			FR	AME			HARDWARE	
NO.	FROM	/T0	SIZE	TYPE	MAT'L	FINISH	ELEV	TYPE	MAT'L	FINISH	F.R.R.	GROUP	COMMENTS
D-101	101	EXTERIOR	914x2032x45	D1	НМІ	P3	E1	F1	PSF	P4	1	HG1	
D-101A	101A	101	2-914x2134x45	D1	НМ	P3	E1	F1	PSF	P4	2.5HR	HG2	HARDWARE TO MEET FRR REQUIREMENTS
D-102	102	EXTERIOR	914x2134x45	D1	нмі	P3	E1	F1	PSF	P4	ı	HG1	

DOOR / FRAME MATERIALS Abbreviations:

HM = HOLLOW METAL

HMI = HOLLOW METAL INSULATED PSF = PRESSED STEEL FRAME

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HARDWARE GROUP:

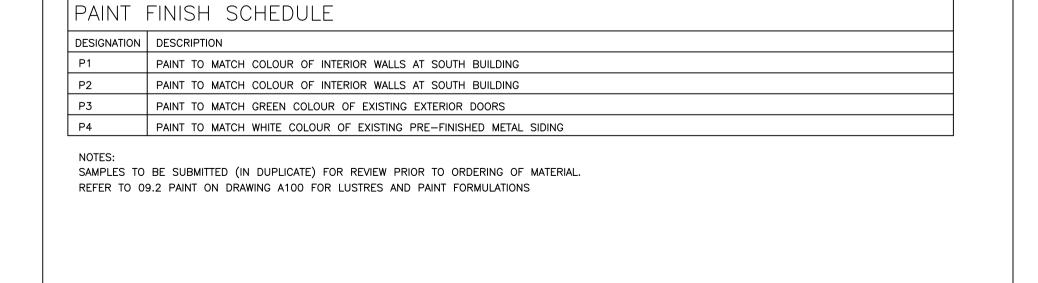
-EXIT DEVICE TO CAN/CGSB-69.19, FINISH TO 626, -STOREROOM WITH LEVER AND KEY LOCK ON EXTERIOR, RIM MOUNTED CYLINDRICAL  $-1\frac{1}{2}$  PAIR BUTT HINGES TO CAN/CGSB-69.18, w/ NOÑ-REMOVABLE PINS, 114 x 101. -DOOR CLOSER TO CAN/CGSB-69.20, SURFACE MOUNTED, FINISHED TO AL.

-KICK PLATE, 1.27 mm THICK STAINLESS STEEL, FINISHED TO 630, 203 X 877 -ALUMINUM THRESHOLD -WEATHERSTRIPPING -DOOR SWEEP

-STOREROOM FUNCTION LOCK TO ANSI F86, GRADE 1 -DUST PROOF STRIKE -4 PAIR HINGES TO CAN/CGSB.18 w/ NON-REMOVABLE PINS, 114 x 101 -2 DOOR CLOSERS TO CAN/CGSB-69.20, SURFACE

MOUNTED, FINISHED TO AL. -1 DOOR CO-ORDINATOR -AUTO FLUSHBOLTS -2 KICK PLATES BOTH DOORS, 1.27mm THICK STAINLESS STEEL, FINISHED TO 630, 203 x 877

DOOR / HARDWARE SCHEDULE ∖A101*/* N.T.S.



PAINT FINISH SCHEDULE ∖A101/ N.T.S.

GENERAL NOTES

- 1. CONTRACTOR TO CONFIRM ALL DIMENSIONS ON SITE AND REPORT DISCREPANCIES TO DEPARTMENTAL REPRESENTATIVE
- 2. CONTRACTOR TO LOCATE MATERIAL WHERE DIRECTED BY DEPARTMENTAL REPRESENTATIVE.
- 3. AT LOCATIONS OF DEMOLITION OR RELOCATION OF SERVICES, FILL ANY GAPS IN SPRAY INSULATION WITH COMPATIBLE MATERIAL, TO ENSURE CONTINUITY OF THERMAL PERFORMANCE.
- 4. PROVIDE 100 HIGH JOHNSONITE RUBBER BASE OF ALL NEW EXISTING GYPSUM BOARD PARTITIONS THAT MEET MEET FLOOR SLABS, COLOUR: 7 STORM CLOUD.
- 5. PROVIDE FIRE SEALANT AS REQUIRED AT ALL RATED LOCATIONS OF CONDUITS AT UNDERSIDE OF ROOF
- 6. PROVIDE HILTI FIRE SEALANTS BETWEEN ROOF DECK AND NEW WALLS TO ENSURE FIRE RATING CONTINUITY.
- 7. PROVIDE SEALAN AS REQUIRED TO SEAL ALL MECHANICAL / ELECTRICAL EQUIPMENT THAT PENETRATES EXTERIOR WALL ASSEMBLIES.

WALL DEMOLITION

D-01 -REMOVE EXISTING GYPSUM BOARD FROM NORTH SIDE OF STEEL STUD WALL.
-REMOVE GLASS FIBRE BATT INSULATION FROM NORTH SIDE OF STEEL STUD WALL. -EXISTING STEEL STUDS TO REMAIN. -REMOVE SPRAY FOAM INSULATION AND GYPSUM BOARD FROM SOUTH SIDE OF STEEL STUD WALL. -REMOVE SPRAY FOAM INSULATION OVER SPRAY FROM ALL REMAIN STEEL.

D-02 -REMOVE EXISTING CHAINLINK FENCE, GATE AND ASSOCIATED POSTS -FILL HOLES IN CONCRETE FLOOR SLAB TO MATCH

WALL ASSEMBLIES

P-01 3 HOUR RATED PARTITION -NEW 2 LAYERS 19.1 TYPE "X" GYPSUM BOARD, TAPE SAND, P1 PAINT FINISH -NEW 92 STEEL STUDS @ 400 O.C. -NEW 2 LAYERS 19.1 TYPE "X" GYPSUM BOARD, TAPE, SAND, P1 PAINT FINISH -PROVIDE NEOPRENE BARRIER UNDER BASE TRACK AND DEFECTION TRACK AT UNDERSIDE OF ROOF DECK. FIRE—STOP ALL OPENINGS WITH HILTI FIRE PROTECTION

P-02 -16 TYPE "X" GYPSUM BOARD, TAPE, SAND, P1 PAINT -92 STEEL STUDS @ 400 O.C., TIE BACK TO STRUCTURE -EXISTING SPRAY FOAM INSULATION -EXISTING STEEL STRUCTURE -EXISTING PREFINISHED STEEL SIDING

P-2A -EXTERIOR WALL ABOVE ANECHOIC CHYAMBER -16 TYPE "X" GYPSUM BOARD, TAPE, SAND, P1 PAINT -92 STEEL STUDS @ 400 O.C., TIE BACK TO STRUCTURE -EXISTING SPRAY FOAM INSULATION TO REMAIN -EXISTING STEEL STRUCTURE TO REMAIN -EXISTING PREFINISHED STEEL SIDING TO REMAIN

P-03 -PROVIDE NEW / EXTEND NEW 16 TYPE "X" GYPSUM BOARD, TOP OF WALL / ANECHOIC CHAMBER TO U/S OF CEILING, TAPE, SAND, P1 PAINT FINISH.

-PROVIDE NEW 16 DENS-GLASS EXTERIOR SHEATHING TO NORTH SIDE OF STEEL STUDS. TAPE ALL JOINTS. -PROVIDE 92mm ROXUL SEMI RIGID INSULATION BETWEEN EXISTING STUD WALL. -PROVIDE 16 MIL AIR VAPOUR BARRIER TO SOUTH SIDE OF EXISTING STEEL STUD WALL.
-PROVIDE 16 GYPSUM BOARD TO SOUTH SIDE OF EXISTING STEEL STUD WALL. TAPE, SAND, P1 PAINT

CEILING ASSEMBLY

CL-01) -NEW 16 TYPE "X" GYPSUM BOARD, TAPE, SAND, P2 PAINT FINISH -NEW 92 STEEL STUDS @ 400 O.C., SECURED TO EXISTING ROOF PURLINS -EXISTING SPRAY FOAM INSULATION -EXISTING ROOF PURLINS -EXISTING STEEL ROOF STRUCTURE, NEW STRUCTURAL REINFORCEMENT AS PER CLELAND JARDINE DETAIL.

-EXISTING GALVANIZED STANDING SEAM ROOF(s)

-EXISTING METAL LINER PANEL

# Canada

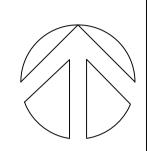
Public Works and Government Services Travaux publics et services gouvernementaux Canada Canada

> **chmie** architects 200 - 109 Bank Street

Ottawa ON K1P5N5

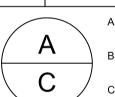
t (613) 234-3585

**f** (613) 234-6224 North/Nord Stamp/Étampe



KEY PLAN / PLAN-REPÉRE

	7	REVISIONS	14-10-0
	6	REVISIONS	14-09-3
	5	REVISIONS TO 100% DOCUMENTS	14-08-2
	4	RE-ISSUED FOR 100% CLIENT REVIEW	14-08-0
	3	ISSUED FOR 100% CLIENT REVIEW	14-07-0
	2	ISSUED FOR CLIENT 99% REVIEW	14-06-1
	1	ISSUED FOR CLIENT REVIEW	14-03-1
re	evisions	description	date



A detail no. no. du detail B location drawing n sur dessin no. drawing no.

**BUILDING M51 ROOF MODIFICATION** / INTERIOR WALL PROTECTION

**GROUND FLOOR PLAN** 

No. du dessir

Α

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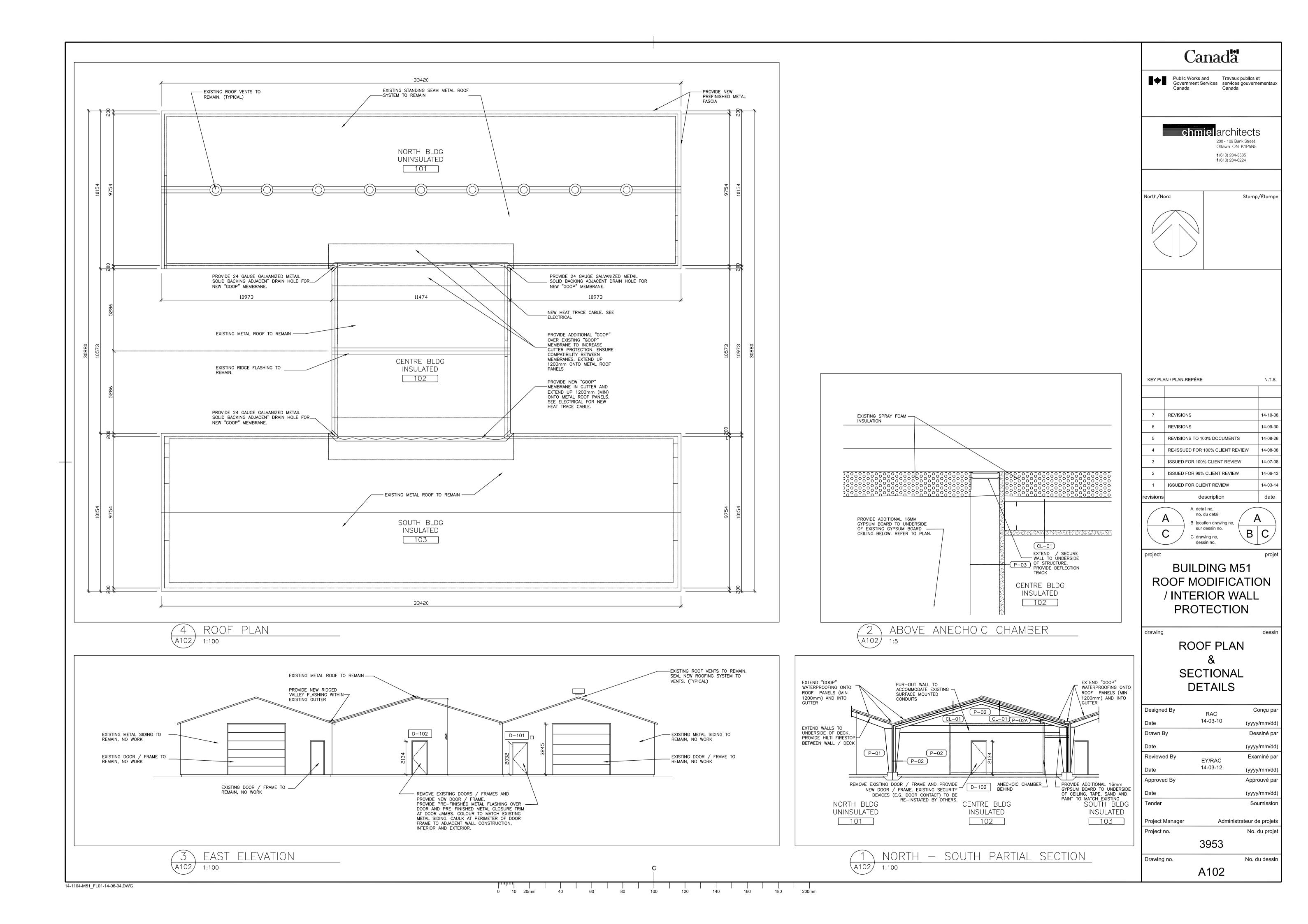
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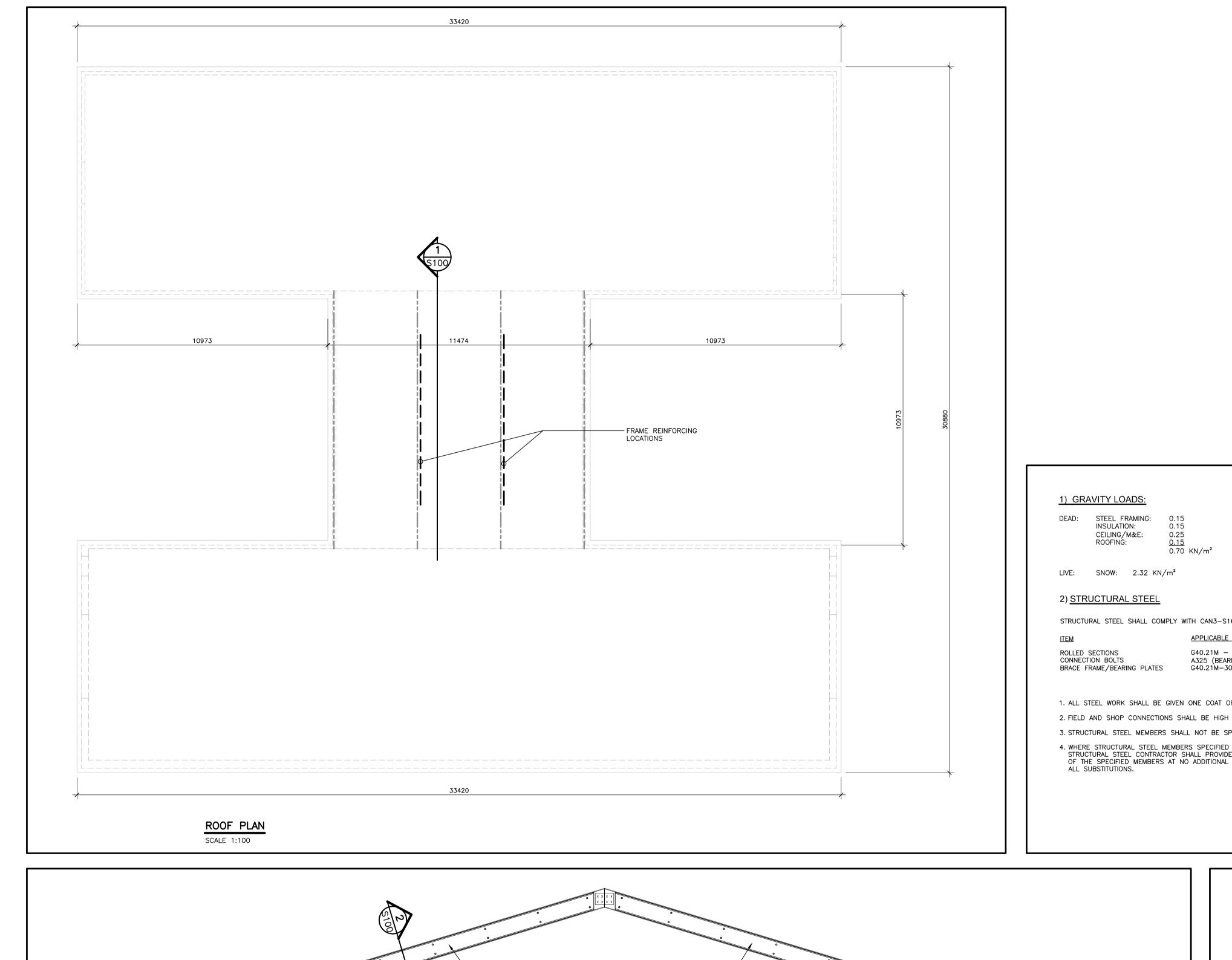
# DOOR / HARDWARE **SCHEDULES**

Designed By	RAC	Conçu par
Date	14-03-10	(yyyy/mm/dd)
Drawn By		Dessiné par
Date		(yyyy/mm/dd)
Reviewed By	EY/RAC	Examiné par
Date	14-03-12	(yyyy/mm/dd)
Approved By		Approuvé par
Date		(yyyy/mm/dd)
Tender		Soumission

Project Manager Administrateur de projets Project no. No. du proje 3953

Drawing no. A101





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CLELAND JARDINE ENGINEERING LIMITED

Stamp/Étampe

N.T.S.

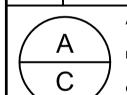
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North/Nord

KEY PLAN / PLAN-REPÉRE

ISSUED FOR 99% REVIEW COMMENTS 14-08-21 1 ISSUED FOR 99% REVIEW 14-07-02



A detail no. no. du detail B location drawing r sur dessin no. C drawing no.

description

**BUILDING M51 ROOF MODIFICATION** / INTERIOR WALL PROTECTION

drawing

**ROOF PLAN DETAILS** 

Designed By	M. CLELAND	Conçu par
Date	14-06-30	(yyyy/mm/dd)
Drawn By	S. HAGEN	Dessiné par
Date	14-06-30	(yyyy/mm/dd)
Reviewed By	M. CLELAND	Examiné par
Date	14-06-30	(yyyy/mm/dd)
Approved By		Approuvé par
Date		(yyyy/mm/dd)
Tender		Soumission

Project Manager Administrateur de projets Project no No. du proje 14-0077

No. du dessin Drawing no.

S100

STRUCTURAL STEEL SHALL COMPLY WITH CAN3-S16.1-01(06) UNLESS OTHERWISE NOTED.

APPLICABLE SPECIFICATION (UNLESS OTHERWISE NOTED) G40.21M - 350W

A325 (BEARING TYPE) G40.21M-300W

1. ALL STEEL WORK SHALL BE GIVEN ONE COAT OF APPROVED PRIMER.

2. FIELD AND SHOP CONNECTIONS SHALL BE HIGH TENSILE BOLTED (ASTM STANDARD A325).

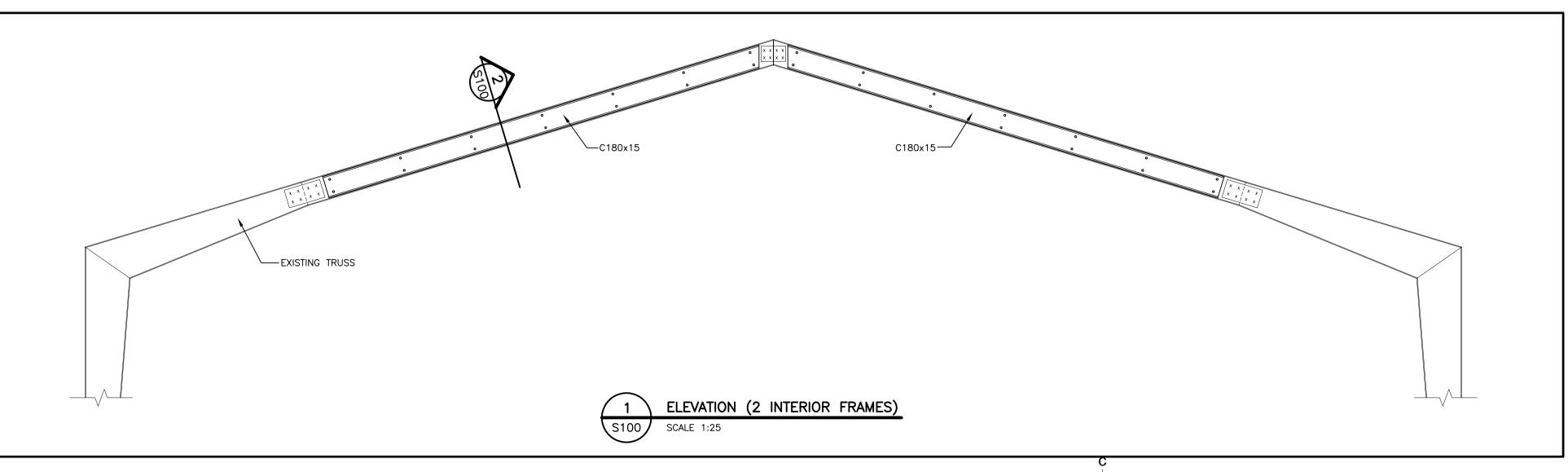
3. STRUCTURAL STEEL MEMBERS SHALL NOT BE SPLICED UNLESS APPROVED BY THE STRUCTURAL ENGINEER IN WRITING.

4. WHERE STRUCTURAL STEEL MEMBERS SPECIFIED ON THE STRUCTURAL DRAWINGS ARE UNAVAILABLE TO THE CONTRACTOR, THE STRUCTURAL STEEL CONTRACTOR SHALL PROVIDE MEMBERS HAVING ALL SECTION PROPERTIES EQUAL TO OR BETTER THAN THAT OF THE SPECIFIED MEMBERS AT NO ADDITIONAL COST. CONTACT DEPARTMENTAL REPRESENTATIVE FOR ACCEPTANCE OF ANY AND ALL SUBSTITUTIONS.

- EXISTING TRUSS

- C180x15

c/w: 2-16mmø BOLTS @ 600o.c.



14-0077 S100.DWG

MECHANICAL SPECIFICATIONS

1.0 VENTILATION

1.1 SCOPE OF WORK

-WORKS INCLUDE ALL LABOUR, PROVISIONS AND INSTALLATION OF ALL MATERIALS AND EQUIPMENT REQUIRED FOR VENTILATION AS SHOWN ON THE DRAWINGS.

-SUPPLY AND INSTALL NEW ELECTRICAL ROOM EXHAUST FAN.

-SUPPLY AND INSTALLATION OF ALL DUCTWORK, THERMOSTATS, MOTORIZED DAMPERS, GRILLS, LOUVERS, AND ACCESSORIES AS SHOWN ON DRAWINGS.

-ALL OPENINGS SHALL BE AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL CO-ORDINATE WITH ALL OTHER SUB-TRADES.

-SUPPLY AND INSTALL ACCESS DOORS FOR ALL FIRE DAMPERS.

-INSTALL ALL EQUPMENT AND PIPING WITH REQUIRED SIESMIC RESTRAINTS TO SUIT APPLICABLE CODES.

-TAKE READINGS AND PROVIDE A BALANCING REPORT ONCE EQUIPMENT HAS BEEN INSTALLED.

-"AS BUILT" DRAWINGS.

1.2 DUCTWORK

-ALL NEW DUCTWORK SHALL BE MANUFACTURED, INSTALLED AND HUNG ACCORDING TO ASHRAE SPECIFICATIONS.

-DUCT SHALL BE OF GALVANIZED STEEL OF THE FOLLOWING GAUGES, LONGEST SIDE: -UP TO 12 INCH: 0.020 IN. -OVER TO 12 INCH: 0.026 IN. -JOINTS SHALL BE PITTSBURGH SEAM, LONGITUDINALLY, AND TDC WITH CLIPS TRANSVERSELY, AND SHALL BE AIR TIGHT.

-DUCT LEAKAGE IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL

-ALL TRANSVERSE JOINTS SHALL BE SEALED USING A PIECE OF BUTYL TAPE (STRIP) BETWEEN THE TWO MATING SURFACES (T-JOINTS) OR USING TUCK TAPE (DRIVE SLIP JOINTS).

-ALL LEAKAGE TO BE SEALED USING OIL RESISTANT POLYMER TYPE DUCT SEALANT.

-ALL SUPPORTING RODS SHALL BE THREADED AND ADJUSTABLE IN LENGTH.

-FLEXIBLE DUCT CONNECTIONS SHALL BE UL LISTED FIRE-RETARDANT NEOPRENE COATED WOVEN GLASS FIBRE FABRIC TO NFPA 90A. APRROXIMATELY 75 mm WIDE, CRIMPED INTO METAL EDGING STRIP.

1.3 DUCTHANGERS AND SUPPORTS:

-STRAP HANGER OF SAME MATERIAL AS DUCT, GAUGE ONE SIZE HEAVIER THAN DUCT GAUGE INSTALLED ACCORDING TO SMACNA. SPECIFICATIONS. DUCTWORK SUPPORTS AND HANGERS TO MEET ALL APPLICABLE SEISMIC REQUIREMENTS.

1.4 THERMAL INSULATION

-DUCT INSULATION TO BE INSTALLED IN UNCONTROLLED SPACE.

-FIBERGLASS INSULATION WITH RFFRK ALUMINUM COATING, 16 KG/M3 (1 LB/FT3) DENSITY AND MAXIMUM THERMAL CONDUCTIVITY OF 0.040 W/M°C (0.27 BTU.IN /H.FT2.F) AT 24°C (75°F), AS PER MANSON ALLEY WRAP WITH FSK COATING.

-SEAL ALL JOINTS (TRANSVERSE AND LONGITUDINAL) USING RFFRK TAPE AND VAPOR PROOF ADHESIVE.

-ALL EXPOSED AND APPARENT INSULATION SHALL BE COVERED WITH CANVAS. CANVAS SHALL BE INSTALLED WITH JOINTS OVERLAPPING

-THICKNESS: ALL SUPPLY AIR DUCTS SHALL BE INSULATED WITH 1" (25mm.) THERMAL INSULATION. RETURN AIR DUCTS SHALL BE INSULATED WITH 1" (25mm.) THERMAL INSULATION FROM THE UNIT DOWN TO 10 FT.INSIDE THE BUILDING.

1.5 MOTORIZED DAMPERS:

-EXTRUDED ALUMINIUM DAMPER FRAME IS NOT LESS THAN .080" (2.03mm) IN THICKNESS. DAMPER FRAME IS 4" (101.6mm) DEEP, BLADES ARE EXTRUDED ALUMINIUM PROFILES, INTERNALLY INSULATED WITH EXPANDED POLYURETHANE FOAM AND THERMALLY BROKEN, INTERMEDIATE OR TUBULAR STEEL STRUCTURAL SUPPORT IS REQUIRED TO RESIST APPLIED PRESSURE LOADS FOR DAMPERS THAT CONSIST OF TWO OR MORE SECTIONS IN BOTH HEIGHT AND WIDTH, CELCON INNER BEARING OR OIL IMPREGNANTED BRONZE. ALL LUBRICATED. PRESSURE DROP DOES NOT EXCEED .03" W.G.

-INSTALL DAMPERS IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

-NEW DAMPER ACTUATORS PROVIDED BY CONTROLS SECTION.

-SYSTEM DAMPERS, TAMCO SERIES 9000 OR EQUIVALENT. TO BE INSTALLED ON FRESH AIR AND

EXHAUST AIR SYSTEMS. 1.6 FIRE DAMPERS:

-IN COMPLIANCE WITH NFPA-90A, NFPA-90B, ULC LISTED, 1-1/2 HOURS RESISTANCE. FUSIBLE LINK LISTED FOR 70 deg C (160 deg F).

1.7 EXHAUST FAN

-DIRECT DRIVE BACKWARD INCLINED CENTRIFUGAL INLINE FAN.

-300 L/s WITH 75Pa OF STATIC PRESSURE.

-120V/60HZ/1PH

-SUCH AS GREENHECK SQ-90 OR APPROVED EQUIVALENT.

-INSTALL FAN WITH VIBRATION ISOLATORS.

1.8 STORM PROOF LOUVERS

-FURNISH AND INSTALL STATIONARY LOUVERS COMPLETE WITH AMCA SEAL. LOUVERS SHALL BE 102mm DEEP. BLADES AND FRAME SHALL BE 2.06mm EXTRUDED ALUMINUM.

-LOUVERS TO BE INSTALLED WITH BIRDSCREEN.

-SUCH AS VENTEX MODEL 2420 OR APPROVED EQUIVALENT.

1.9 GRILLES

-RY TYPE GRILLE: SITE FABRICATED 13mmx13mm GALVANIZED STEEL MESH WELDED TO A GALVANIZED STEEL FRAME.

2.0 CONTROLS

2.1 SCOPE OF WORK:

-WORK INCLUDES ALL LABOUR, EQUIPMENT, INSTALLATION, ADJUSTMENTS, CALIBRATION AND ALL ELECTRICAL AND ELECTRONIC CONNECTIONS REQUIRED FOR CONTROLS SYSTEMS AS SHOWN ON DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS.

-THERE IS AN EXISTING ANDOVER SYSTEM PRESENTLY INSTALLED IN THE COMPLEX. ALL MATERIALS MUST BE SELECTED TO ENSURE FULL COMPATIBILITY WITH THE EXISTING ANDOVER

-THE DESIGNATED CONTRACTOR IS AIRTRON. HIRE THE SERVICES OF AIRTRON OR ITS AUTHORIZED REPRESENTATIVE TO COMPLETE THE WORK RELATED TO ALL EMCS SECTIONS.

-THIS SECTION SHALL INCLUDE, UNLESS OTHERWISE NOTED, ALL CONDUITS AND WIRING REQUIRED FOR ELECTRICAL AND DDC TYPE CONTROLS, AND ALL CONNECTIONS REQUIRED TO CONTROL PANELS.

-WORK INCLUDES, BUT NOT LIMITED TO , THE

FOLLOWING: ALL CONTROLS REQUIRED FOR VENTILATION, AS SHOWN ON CONTROLS

SCHEMATIC - SUPPLY AND INSTALLATION OF DAMPER

ACTUATORS. - NEW RELAY LOGIC, AS SHOWN ON DRAWINGS.

 MODIFICATIONS TO THE EXISTING BUILDING EMCS, INCLUDING THE ADDITION OF ALL NEW CONTROL POINTS TO THE BUILDING MANAGEMENT SYSTEM, PROGRAMMING AND OPERATING SEQUENCES.

 TESTING, VERIFICATION AND COMMISSIONING OF SYSTEM. PROVIDE ALL DOCUMENTATION OF THIS PROCESS. - O&M MANUALS AND AS-BUILT DRAWINGS.

2.2 ELECTRICAL INSTALLATION:

-CONTROLS DIVISION IS RESPONSIBLE FOR THE HIRING OF A QUALIFIED AND LICENSED ELECTRICAL CONTRACTOR FOR THE FOLLOWING WORK: COMPLETE ELECTRICAL INSTALLATION

INCLUDING ALL CONDUITS, CABLES,

JUNCTION BOX, ETC. REQUIRED FOR CONTROLS SYSTEMS. 120 SINGLE PHASE POWER SUPPLIES FOR DDC CONTROLS, LOCAL CONTROL PANELS AND TRANSFORMERS PROVIDED BY THIS

- ALL CONNECTIONS TO STARTERS, INTERLOCK FOR FANS AND OTHER CONTROL COMPONENTS.

THE CONTROLS SECTION IS SOLELY RESPONSIBLE FOR THE PROPER OPERATION OF ITS SYSTEMS AND MUST COORDINATE ALL WIRING AND POWER REQUIREMENTS WITH ELECTRICAL DIVISION.

2.3 SHOP DRAWINGS:

-FOR EACH ITEM, PROVIDE SPECIFICATIONS, TECHNICAL DATA SHEET AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

-PROVIDE CONTROLS SCHEMATICS FOR EACH SYSTEM INCLUDING CONNECTION DIAGRAMS, CONNECTIONS TO CONTROLLERS, EQUIPMENT LISTS, IDENTIFICATION USED, OPERATING SEQUENCES, ETC.

2.4 WIRING:

-ALL CABLES MUST BE RUN IN EMT CONDUIT.

2.5 MATERIALS:

2.5.1 ELECTROMECHANICAL RELAY (R):

-4DPDT, SILVER/NICKEL ALLOY CONTACT, PLUG-IN TYPE WITH TERMINATION BASE AND LED STATUS INDICATORS, COILS RATED FOR 120V AC OR 24V DC. CONTACTS RATED AT 10 AMPS AT 120 V AC, IN APPLICATIONS WHERE RELAY IS SUBJECT TO VIBRATION, PROVIDE HOLD-ON CLIPS, C/W HOUSING WHEN INSTALLED OUTSIDE PANELS.

2.5.2 TRANSFORMER (TR):

-SINGLE PHASE TRANSFORMER, ENCLOSED TYPE C/W HOLDER AND FUSE. TRANSFORMER CAPACITY IN VA TO BE AT LEAST 20% GREATER THAN RATED CHARGE TO BE CONNECTED.

2.5.3 DAMPER ACTUATOR:

-120VAC, ON/OFF, DIRECT MOUNT WITH U-BOLT TYPE CLAMP AND ANTI-ROTATION BRACKET, PROVIDE ALL ADDITIONAL MOUNTING BRACKETS, ACCESSORIES OR ADAPTORS REQUIRED FOR DAMPER SHAFT COUPLING, SPRING RETURN FOR "FAIL SAFE" IN NORMALLY OPEN OR NORMALLY CLOSED POSITION AS INDICATED, SIZE TO CONTROL DAMPERS AGAINST MAXIMUM PRESSURE AND DYNAMIC CLOSING/OPENING PRESSURE, WHICHEVER IS GREATER. TORQUE REQUIREMENTS TO BE 50% GREATER THAN THEORETICAL REQUIREMENTS. MUST HAVE 2 SETS OF AUXILLARY CONTACTS INDICATING OPEN/CLOSE.

2.5.4 DDC CONTROLLER:

-DDC TYPE CONTROLLER, MIN. 2 ANALOG INPUTS (TEMPERATURE, SETPOINT), MIN. 1 DIGITAL OUTPUTS.

2.5.5 ROOM TEMPERATURE SENSOR:

-RESISTIVE TYPE. ACCURACY ±0.2°C. FOR WALL MOUNTING, LED DISPLAY, SETPOINT ADJUSTMENT.

2.5.6 LOCAL CONTROL PANEL - LCP:

-LOCATE TO PROVIDE A MINIMUM CLEARANCE OF 1000 MM (40") IN FRONT OF PANEL. ALL CONTROLS EQUIPMENT INCLUDING RELAYS, SWITCHES, FUSES, TERMINAL BLOCKS, ETC., TO BE INSTALLED INSIDE THE PANEL. CONTROL PANEL AND ALL ITS ASSOCIATED EQUIPMENT, FIELD DEVICES AND WIRING MUST BE IDENTIFIED. ALL JOINTS AND CONNECTIONS INSIDE THE PANEL MUST BE DONE ON SCREW-TYPE TERMINAL BLOCKS. SUPPLY AND INSTALL ON THE INTERIOR OF THE PANEL'S FRONT DOOR, A DETAILED SCHEMATIC DRAWING OF THE SYSTEM'S ARRANGEMENT, INCLUDING ALL WIRING AND DEVICES IDENTIFICATION. SCHEMATIC DRAWING TO BE SEALED IN A TRANSPARENT PLASTIC.

2.6 EMCS POINTS:

-CONFIGURE ALARMS FOR THE FOLLOWING POINTS: 1- ROOM TEMPERATURE (HIGH/LOW)

MD-02 END SWITCH STATUS EXHAUST FAN STATUS EXHAUST FAN ALARM (UNAUTHORIZED ON/OFF)

2.7 SEQUENCE OF OPERATION

2.7.1 ELECTRICAL ROOM VENTILATION

2.7.1.1 AT SHUTDOWN: -EXHAUST FAN EF-01 IS OFF -MD-01 AND MD-02 ARE CLOSED BY INTERLOCK

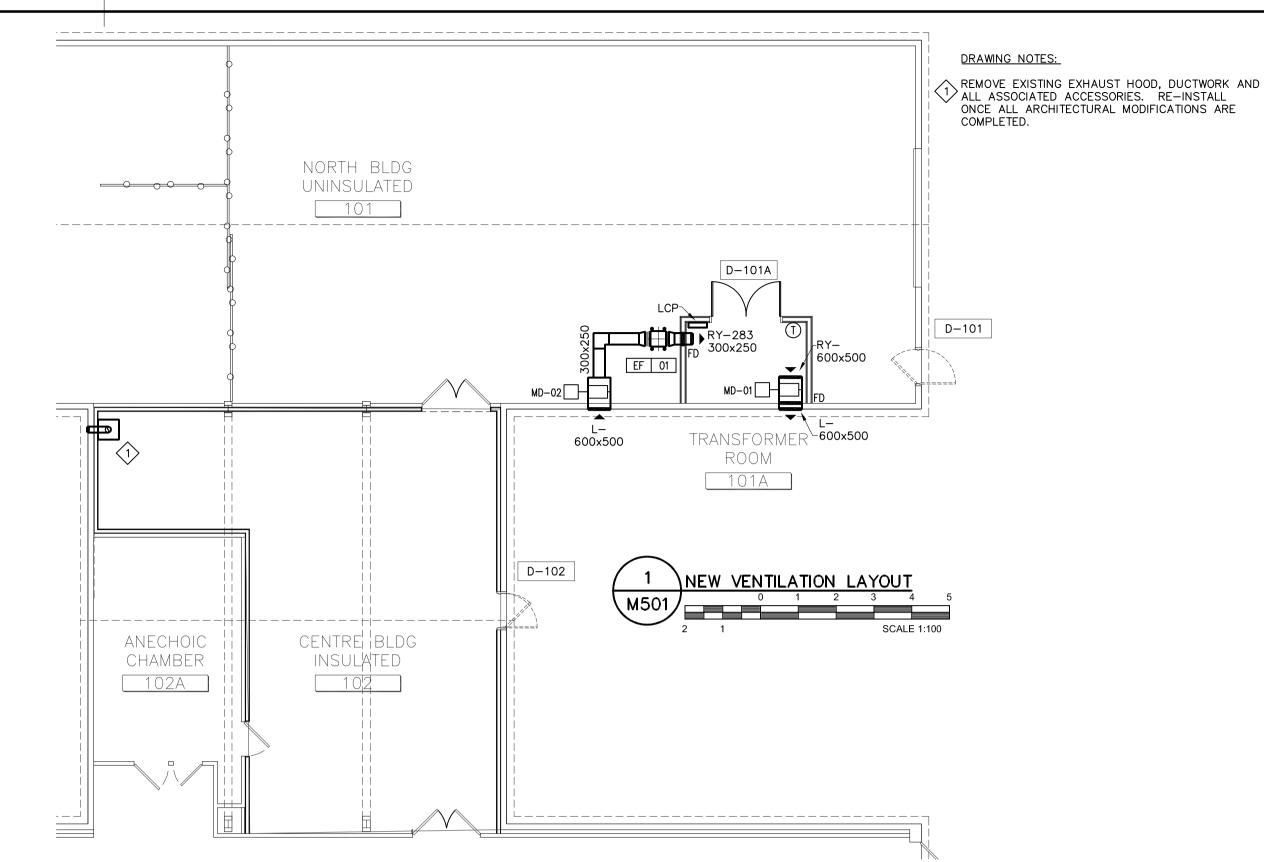
2.7.1.2 AT START-UP:

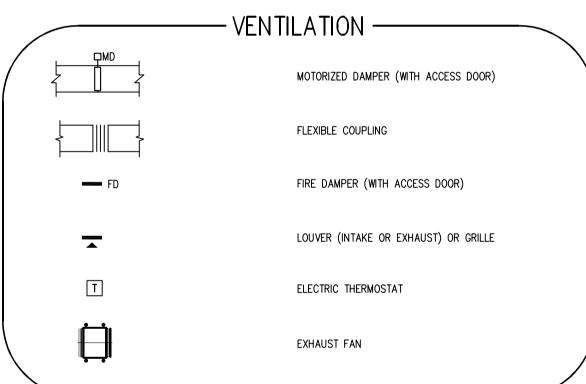
-EXHAUST FAN EF-01 IS ENABLED -MD-01 AND MD-02 OPEN BY INTERLOCK -WHEN MD-02 IS PROVED OPEN (VIA LIMIT SWITCH LS-02), EF-01 STARTS

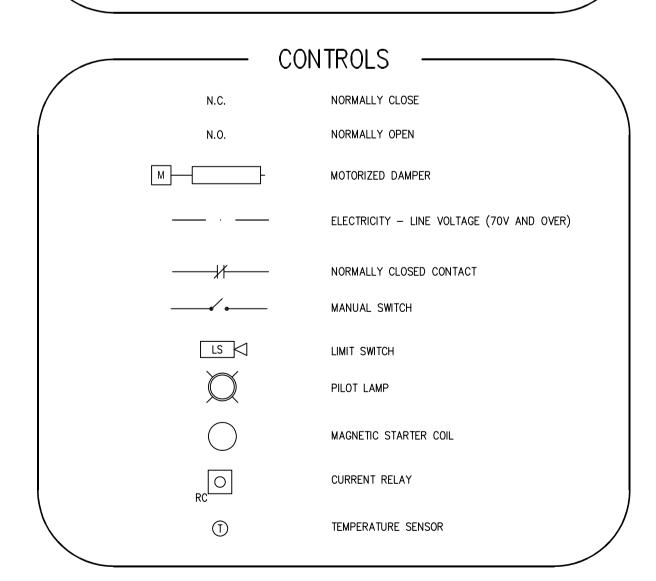
2.7.1.3 NORMAL OPERATION: -WHEN TEMPERATURE IN THE ROOM EXCEEDS THE SET POINT (24°C) -THE SYSTEM REMAINS OPERATIONAL FOR A MINIMUM DELAY (15 MINUTES), AND UNTIL THE ROOM TEMPERATURE IS BELOW 22°C

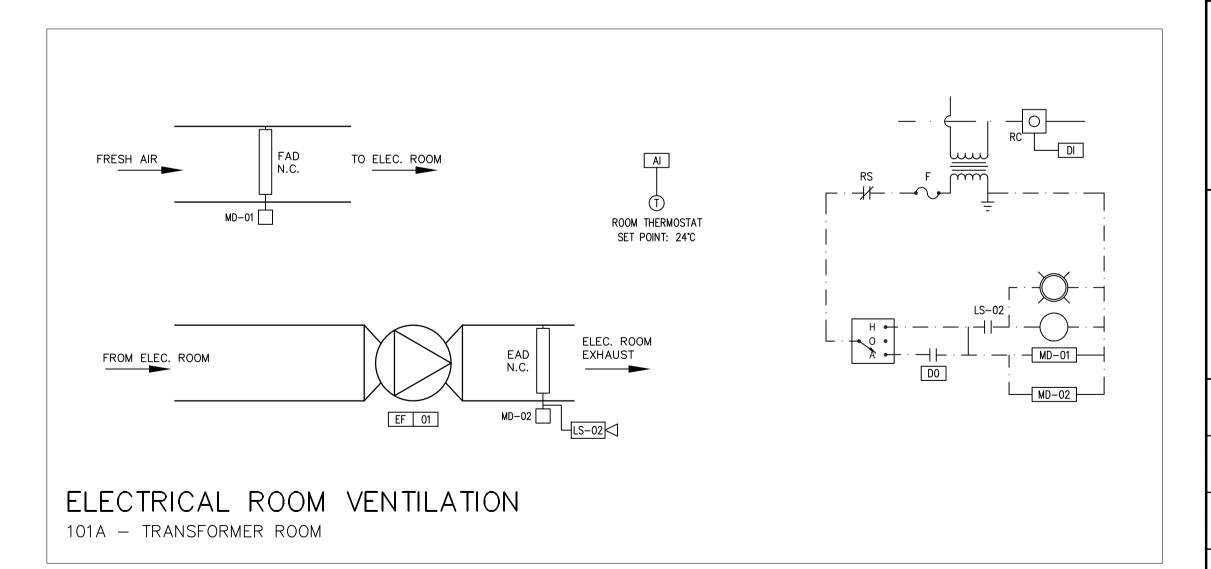
2.7.1.4 PROTECTIONS:

-THE CONTROLLER OVERRIDES THE TIME DELAY AND STOPS THE SYSTEM IF THE ROOM TEMPERATURE FALLS BELOW 13°C









# Canadä

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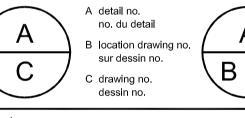
lorth/Nord Stamp/Étamp

100-1960 Robertson Road, Suite 100, K2H 5B9

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SEPT. 2 ISSUED FOR TENDER date description



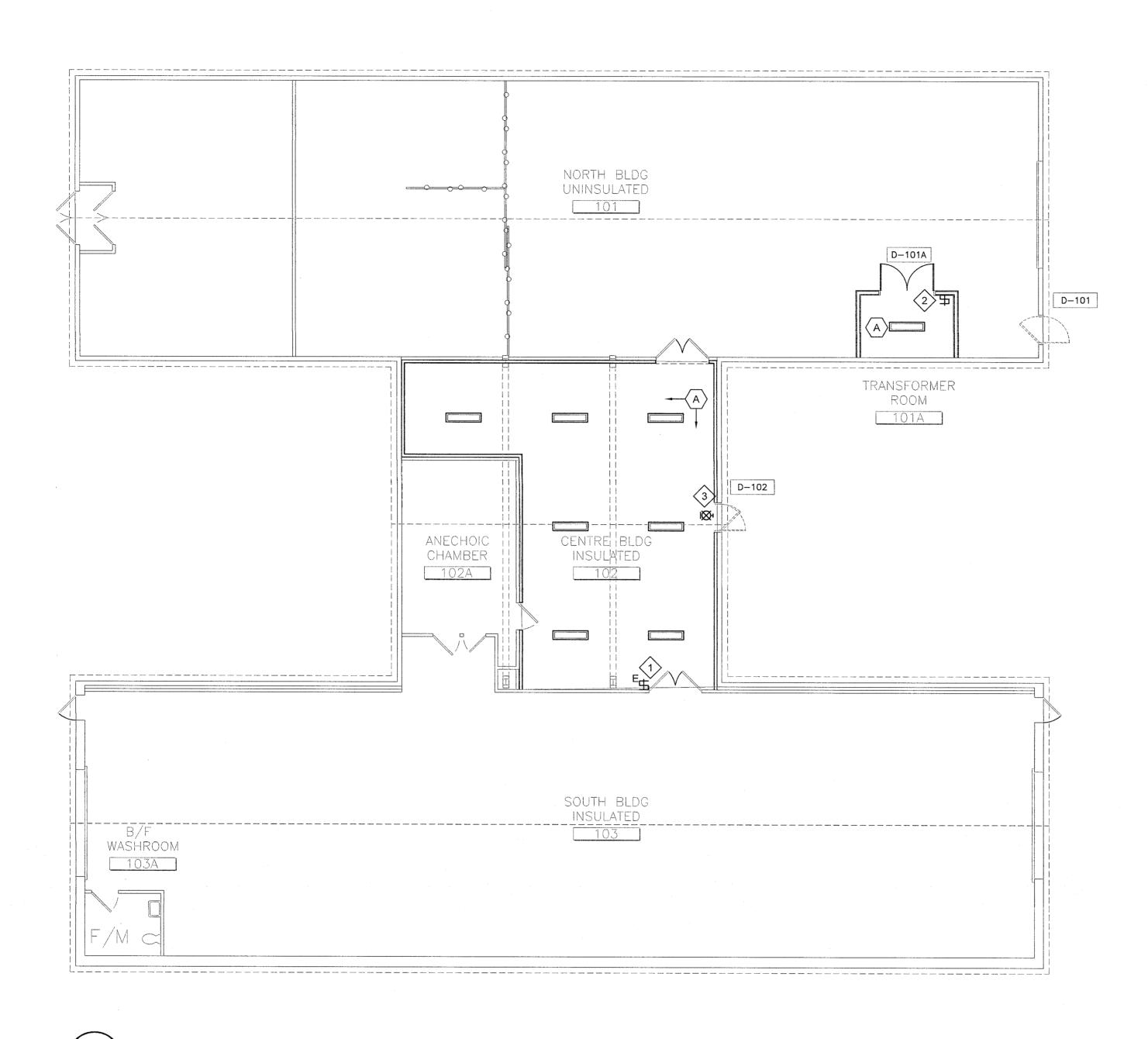
**BUILDING M51** ROOF MODIFICATION / INTERIOR WALL **PROTECTION** 

dessin MECHANICAL SPECIFICATION, LEGEND, AND **VENTILATION PLAN** 

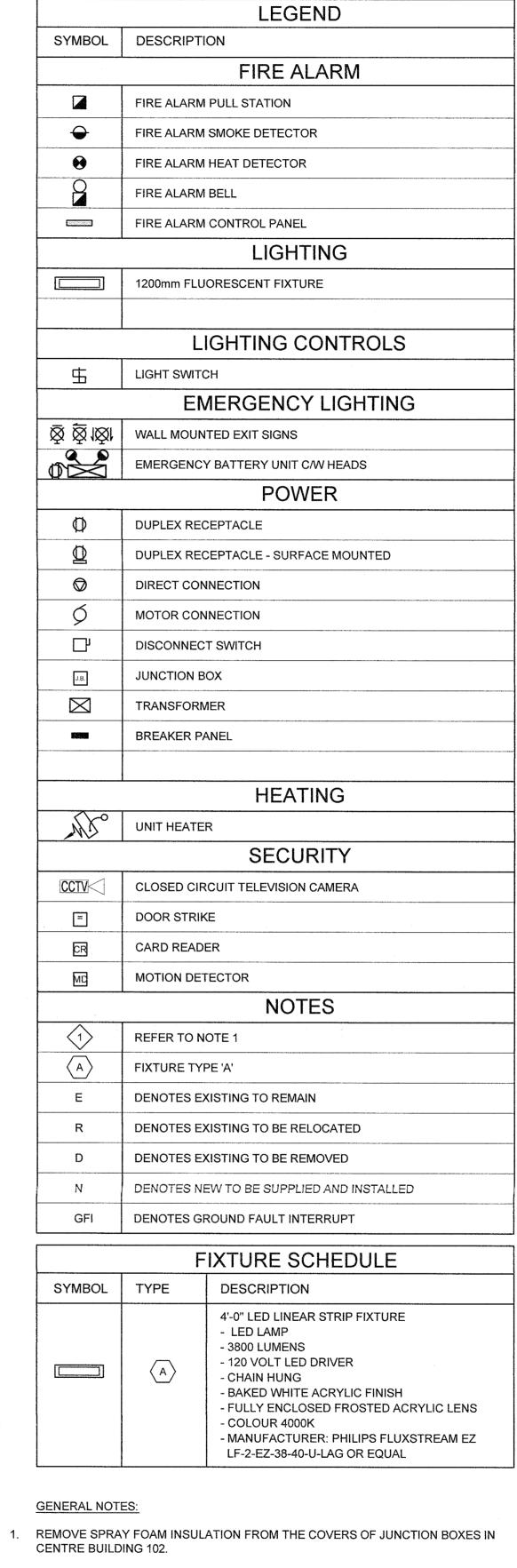
Designed By Conçu par J.F. 2014-08-07 (yyyy/mm/dd) Drawn By Dessiné par 2014-08-07 Date (yyyy/mm/dd) Reviewed By Examiné par P.S.O. 2014-08-07 (yyyy/mm/dd) Approved By Approuvé par P.S.O. 2014-08-07 Date (yyyy/mm/dd) Tender Soumission

Administrateur de projets Project Manager Project no. No. du projet 8014-061 Drawing no. No. du dessir

M501



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- ALL FIXTURES IN ROOM TO BE CONNECTED THROUGH EXISTING LIGHT SWITCH. EXTEND CONDUIT AND WIRING TO SUIT.
- 2 ALL FIXTURES IN ROOM TO BE CONNECTED THROUGH NEW LIGHT SWITCH. CONNECT THROUGH LOCAL LIGHT CIRCUITING. EXTEND CONDUIT AND WIRING TO
- REINSTATE EXISTING EXIT LIGHT REMOVED DURING DEMOLITION. EXTEND CONDUIT AND WIRING TO SUIT.

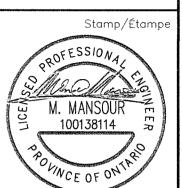
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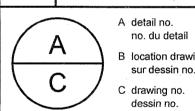
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Consulting Engineers

date description A detail no.



B location drawing no sur dessin no. C drawing no.

**BUILDING M51 ROOF MODIFICATION** / INTERIOR WALL

drawing

Drawing no.

ELECTRICAL LEGEND & **GROUND FLOOR PLAN** LIGHTING

PROTECTION

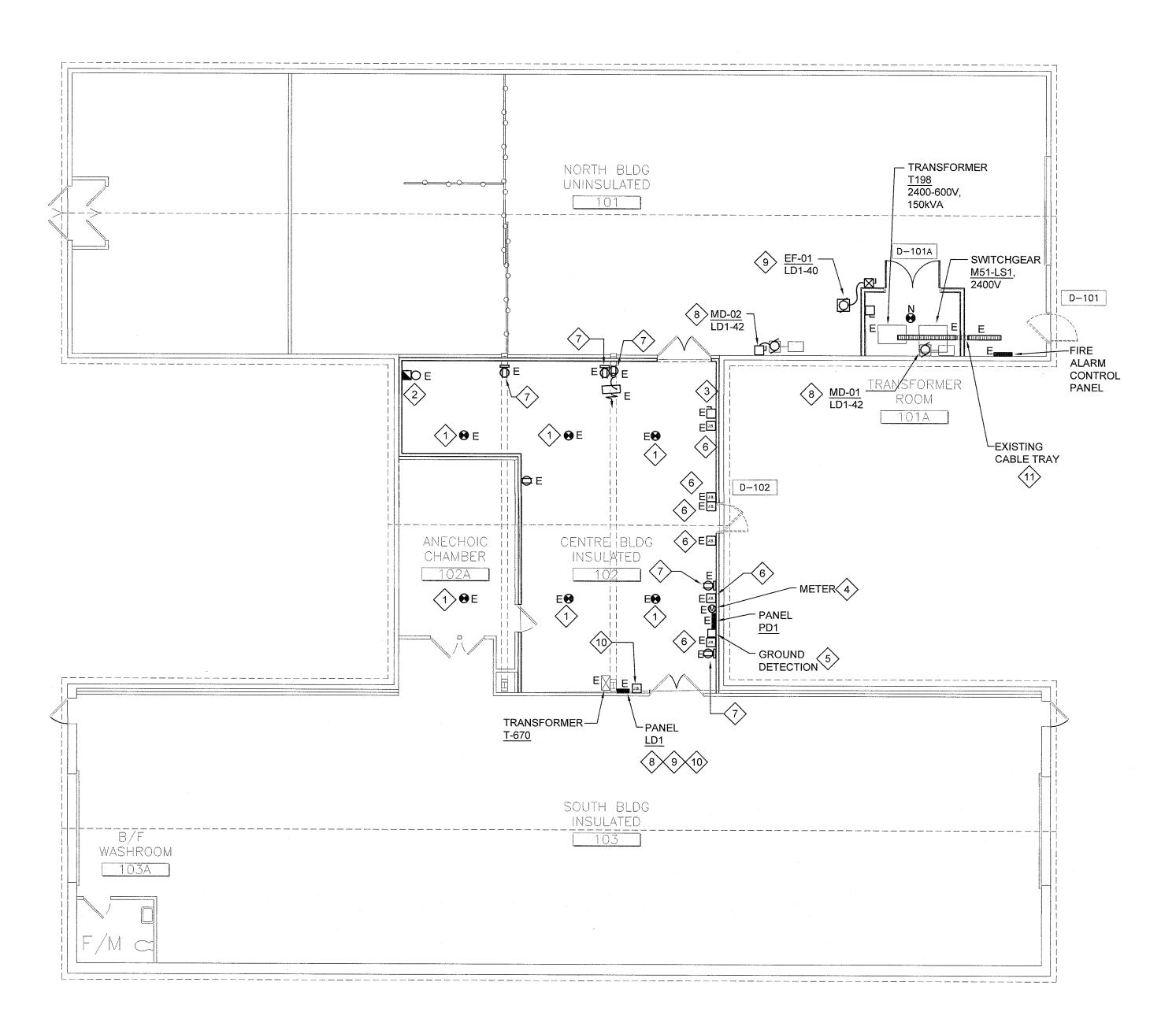
Designed By Conçu par T.O'R. 2014-08-07 (yyyy/mm/dd) Drawn By Dessiné par T.O'R. 2014-08-07 Date (yyyy/mm/dd) Reviewed By Examiné par Date (yyyy/mm/dd) Approved By Approuvé par M.M. 2014-08-07 Date (yyyy/mm/dd) Tender Soumission

Administrateur de projets Project Manager Project no. No. du projet

8014-061

No. du dessin

E01



### **GENERAL NOTES:**

1. REMOVE SPRAY FOAM INSULATION FROM THE COVERS OF JUNCTION BOXES IN CENTRE BUILDING 102.

- REINSTATE FIRE ALARM DEVICES UPON COMPLETION OF NEW CEILING. PROVIDE EXTENSION RINGS FLUSH TO NEW DRYWALL CEILING. PROVIDE NEW WIRING, NO JOINTS PERMITTED. PROVIDE FIRE ALARM TESTING, VERIFICATION CERTIFICATE UPON COMPLETION OF WORK.
- REINSTATE FIRE ALARM BELL UPON COMPLETION OF NEW WALL. PROVIDE FIRE ALARM TESTING, VERIFICATION CERTIFICATE UPON COMPLETION OF WORK.
- 3 REINSTATE EXISTING DISCONNECT UPON COMPLETION OF NEW WALL. EXTEND CONDUIT AND WIRING TO SUIT.
- 4 REINSTATE EXISTING METER UPON COMPLETION OF NEW WALL. EXTEND CONDUIT AND
- (5) REINSTATE EXISTING GROUND DETECTION UPON COMPLETION OF NEW WALL. EXTEND CONDUIT AND WIRING TO SUIT.
- 6 PROVIDE EXTENSION RINGS ON JUNCTION BOXES. PROVIDE COVER PLATES UPON COMPLETION OF NEW WALL. COORDINATE WITH DEPARTMENTAL REPRESENTATIVE.
- PROVIDE EXTENSION RINGS ON DEVICE BOXES. PROVIDE NEW COVER PLATES AND DEVICES UPON COMPLETION OF NEW WALL. EXTEND CONDUIT AND WIRING TO SUIT. COORDINATE WITH DEPARTMENTAL REPRESENTATIVE.
- PROVIDE A 15A-1P BREAKER IN THE EXISTING PANEL AS INDICATED TO SUPPLY NEW MOTORIZED DAMPERS. REFER TO ELECTRICAL ROOM VENTILATION SCHEMATIC ON MECHANICAL DRAWING M501. EXTEND CONDUIT AND WIRING TO SUIT.
- 9 PROVIDE A 15A-1P BREAKER IN THE EXISTING PANEL AS INDICATED TO SUPPLY NEW EXHAUST FAN <u>EF-01</u>. PROVIDE A MAGNETIC STARTER AS SHOWN. REFER TO ELECTRICAL ROOM VENTILATION SCHEMATIC ON MECHANICAL DRAWING M501. EXTEND CONDUIT AND WIRING TO SUIT.
- JUNCTION BOX LOCATED ABOVE PANEL LD1 TO BE RELOCATED TO ACCOMMODATE NEW GYPSUM CEILING. REWORK THREE CONDUITS ENTERING AND THREE CONDUITS EXITING THE JUNCTION BOX COMPLETE WITH CIRCUITS. ALLOW FOR 12 CIRCUITS TO BE REWORKED, EXTEND CONDUIT AND WIRING TO SUIT. COORDINATE WITH DEPARTMENTAL REPRESENTATIVE.
- CUT AND REMOVE A SECTION OF THE CABLE TRAY SUPPORTING THE 2400V CABLE TO ACCOMMODATE WALL CONSTRUCTION. PROVIDE CABLE TRAY SUPPORTS AT EACH END NEAR THE NEW WALL. PRIMARY CABLE IS TO BE RAN INSIDE A 150mm SPLIT SLEEVE PROVIDED BY OTHERS. THE SLEEVE IS TO BE FIRE STOPPED AFTER THE CABLE HAS BEEN INSTALLED..

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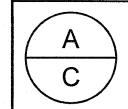
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Consulting Engineers

ISSUED FOR TENDER



**BUILDING M51 ROOF MODIFICATION** / INTERIOR WALL PROTECTION

ELECTRICAL GROUND FLOOR PLAN POWER & SYSTEMS

dessin

Designed By Conçu par 2014-08-07 T.O'R. 2014-08-07 (yyyy/mm/dd) Reviewed By (yyyy/mm/dd) Approved By Approuvé par (yyyy/mm/dd) Tender Soumission

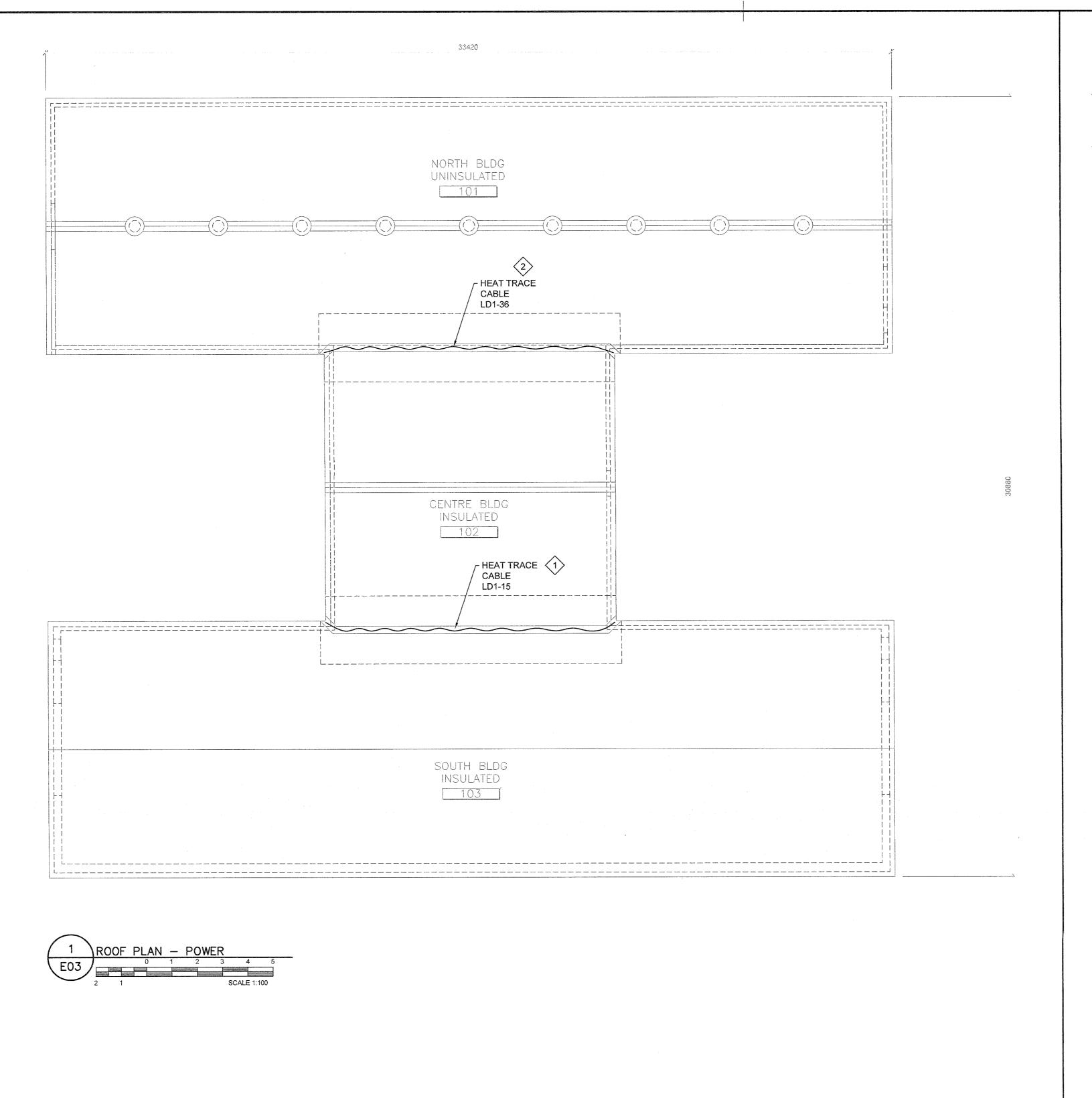
Project Manager Administrateur de projets No. du projet

8014-061 Drawing no.

E02

No. du dessin

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- 1 REMOVE EXISTING HEAT TRACE CABLE AND PROVIDE NEW HEAT TRACE CABLE AND COMPONENTS AS REQUIRED. THE HEAT TRACE CABLE IS TO COVER THE FULL GUTTER AS SHOWN. REMOVE EXISTING BREAKER AND PROVIDE NEW GFI RATED HEAT TRACE BREAKER.
- PROVIDE NEW HEAT TRACE CABLE AND COMPONENTS AS REQUIRED. THE HEAT TRACE CABLE IS TO COVER THE FULL GUTTER AS SHOWN. PROVIDE A 15A-1P, GFI RATED HEAT TRACE BREAKER IN THE EXISTING PANEL AS INDICATED TO SUPPLY NEW HEAT TRACE CABLE. EXTEND CONDUIT AND WIRING TO SUIT.

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Consulting Engineers

1 ISSUED FOR TENDER description

**BUILDING M51** ROOF MODIFICATION / INTERIOR WALL

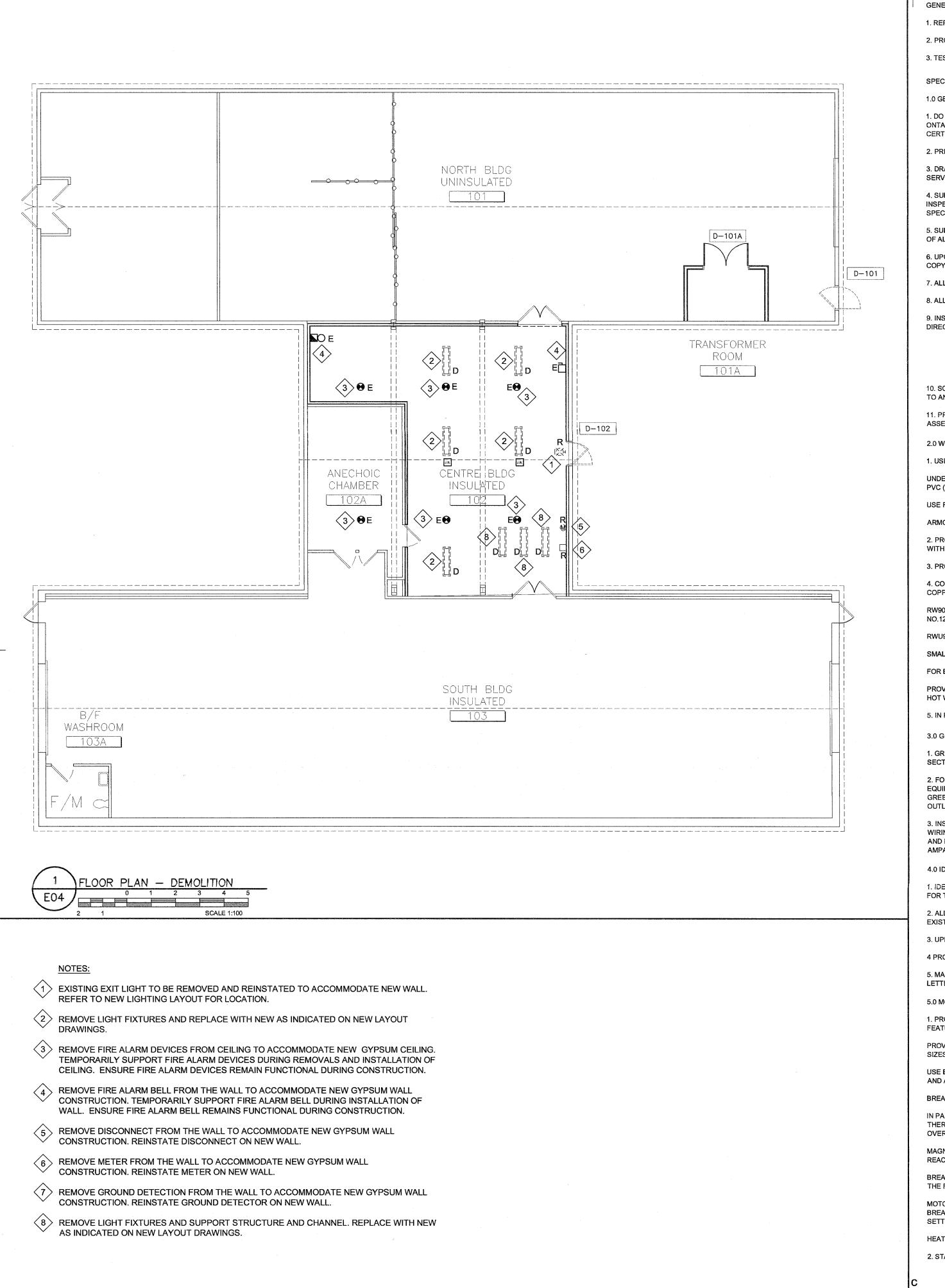
PROTECTION

ELECTRICAL **ROOF PLAN** POWER & SYSTEMS

Designed By Conçu par 2014-08-07 (yyyy/mm/dd) Reviewed By Examiné par (yyyy/mm/dd) Approuvé par 2014-08-07 Soumission Administrateur de projets No. du projet 8014-061 No. du dessin

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GENERAL INSTRUCTIONS:

1. REPAIR AND MAKE GOOD ALL WALLS, CEILINGS, ETC. CUT UNDER THIS DIVISION.

2. PROTECT EXISTING WORK AND EQUIPMENT DURING CONSTRUCTION.

3. TEST ALL SYSTEM COMPONENTS FOR PROPER OPERATION AND SAFETY.

### SPECIFICATION NOTES:

1. DO COMPLETE INSTALLATION IN ACCORDANCE WITH THE FOLLOWING: ONTARIO BUILDING CODE, ONTARIO ELECTRICAL CODE, AMENDMENTS AND APPLICABLE LOCAL REGULATIONS C/W INSPECTION

2. PRIOR TO TENDER, CONFIRM SITE CONDITIONS AND LOCATION OF EXISTING SERVICES.

3. DRAWINGS INDICATE GENERAL LOCATION, QUANTITY AND TYPE OF OUTLETS FOR ELECTRICAL SERVICES ONLY. DO NOT SCALE.

4. SUBMIT ALL PLANS REQUIRED BY THE INSPECTION AUTHORITY FOR APPROVAL. FURNISH INSPECTION CERTIFICATE, PRIOR TO FINAL PAYMENT, TO SHOW INSTALLED WORK CONFORMS WITH SPECIFICATION AND REGULATIONS. PAY ALL FEES AND PERMIT COSTS.

5. SUBMIT COPY OF SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL. PROVIDE SHOP DRAWINGS OF ALL EQUIPMENT AND DEVICES.

6. UPON COMPLETION OF WORK PROVIDE MARKUP PRINTS DESCRIBING ASBUILT CONDITIONS AND 1 COPY OF MAINTENANCE MANUALS.

7. ALLOW FOR RELOCATION OF OUTLETS UP TO 3000mm PRIOR TO INSTALLATION AT NO EXTRA COST.

8. ALL WIRING DEVICES TO BE SPECIFICATION GRADE.

9. INSTALL ELECTRICAL EQUIPMENT AT THE FOLLOWING HEIGHTS UNLESS OTHERWISE INDICATED OR - LOCAL SWITCHES AND DIMMER SWITCHES: 1220mm

- GENERAL RECEPTACLES: 400mm - WALL MOUNTED FIRE ALARM BELLS, HORNS OR STROBES: 2400mm - CARD READERS, KEYPADS AND SECURITY DEVICES: 1220mm - DOOR CONTACTS: TOP OF DOOR FRAME

10. SCAN ALL AFFECTED SHAFT WALLS, BLOCK WALLS, FLOORS OR OTHER SUCH ASSEMBLIES PRIOR TO ANY CORE DRILLING OR SAW-CUTTING.

11. PROVIDE APPROPRIATE FIRESTOPPING FOR ALL PENETRATIONS THROUGH FIRE-RATED

### 2.0 WIRING METHOD

1. USE ELECTRICAL METALLIC TUBING (EMT) FOR ALL WORK EXCEPT FOR THE FOLLOWING USAGE:

UNDERGROUND CONDUIT FOR EXTERIOR LIGHTING AND OTHER ELECTRICAL SERVICES SHALL BE IN PVC (TYPE 2), TO CSA C22.2 NO.211, JAN. 1985.

USE FLEXIBLE METAL CONDUIT FOR FINAL CONNECTIONS TO FLUORESCENT FIXTURES.

ARMOURED CABLE DROP FROM CEILING TO WALL OUTLET.

2. PROVIDE IN ALL CONDUITS AN INSULATED GREEN GROUNDING CONDUCTOR (NO.12 AWG). RUN WITH CIRCUIT CONDUCTORS AN TO ALL ENCLOSURES.

3. PROVIDE PULL STRINGS IN ALL EMPTY CONDUIT.

4. CONDUCTOR MATERIAL (WIRE IN CONDUIT) - ANNEALED COMMERCIAL GRADE, 98% CONDUCTIVITY, COPPER. NO.12 AWG AND LARGER - STRANDED.

RW90, UNLESS OTHERWISE NOTED. PROVIDE 600V RATED FOR 347/600V AND 120/208V WIRING, SIZES NO.12 AND NO.10 AWG.

RWU90, NO.8 AND LARGER, 1000V RATED FOR 347/600V AND 120/208V WIRING.

SMALLEST CONDUCTOR SIZE ALLOWED NO.12 AWG UNLESS OTHERWISE SPECIFIED.

FOR BRANCH CIRCUITS OVER 23M (75') IN LENGTH, USE NO.10 AWG FOR ENTIRE LENGTH. PROVIDE SEPARATE NEUTRAL CONDUCTOR FOR ALL COMPUTER BRANCH CIRCUITS (SIZE TO MATCH

5. IN FINISHED AREAS RUN CONDUIT CONCEALED, PARALLEL TO BUILDING LINES.

## 3.0 GROUNDING

1. GROUNDING EQUIPMENT TO CSA C22.2 NO. 41. COPPER GROUNDING CONDUCTORS TO CSA C22.1, SECTION 10 (LATEST EDITION). INSULATED GROUNDING CONDUCTORS AS HEREIN SPECIFIED.

2. FOR STANDARD DUPLEX RECEPTACLES PROVIDE INSULATED GROUND CONDUCTOR. SIZE FOR EQUIPMENT GROUND IN ACCORDANCE WITH ELECTRICAL CODE. MINIMUM CONDUCTOR SIZE #12 WITH GREEN INSULATION. GROUND CONDUCTOR TO BE CONNECTED UNDER A BONDING SCREW TO OUTLET BOX(ES) AND PANELBOARD.

3. INSTALL SEPARATE 'GREEN' GROUND CONDUCTOR IN SAME CONDUIT WITH CIRCUIT (POWER WIRING) CONDUCTORS. BOND SECURELY TO GROUND SCREW IN EACH OUTLET, JUNCTION, PULL BOX AND EQUIPMENT ENCLOSURE. GROUND CONDUCTOR EQUAL IN AMPACITY TO SIZE OF CIRCUIT AMPACITY OR IN ACCORDANCE WITH CODE FOR EQUIPMENT GROUNDING.

## 4.0 IDENTIFICATION

1. IDENTIFY SOURCE, VOLTAGE AND LOAD ON ALL JUNCTION BOXES. USE OF P-TOUCH TYPE MARKERS FOR THESE LOCATIONS IS ACCEPTABLE.

2. ALL CONDUCTORS TO BE COLOUR CODED IN ACCORDANCE WITH CSA 22.1 - SECTION 4. 036 AND EXISTING BUILDING WIRE COLOUR CODE SYSTEM.

3. UPDATE ALL PANELBOARD SCHEDULES AS REQUIRED.

4 PROVIDE LAMICOID IDENTIFICATION LABELS ON ALL EQUIPMENT.

5. MARK ALL CIRCUIT NUMBERS ON RECEPTACLES, DOWNFEED SERVICE POLES, ETC. WITH BLACK LETTERS ON CLEAR P-TOUCH LABELS.

5.0 MOULDED CASE CIRCUIT BREAKERS

1. PROVIDE MOULDED CASE CIRCUIT BREAKERS TO CSA 22.2 NO. 5.1, WITH THE FOLLOWING

PROVIDE AUTOMATIC MOULDED CASE CIRCUIT BREAKERS IN PANELBOARDS AS INDICATED. BREAKER SIZES AND TRIPS AS SCHEDULED, OR INDICATED ON THE ONE-LINE DIAGRAM.

USE BOLT-ON MOULDED CASE CIRCUIT BREAKERS, QUICK-MAKE, QUICK-BREAK TYPE FOR MANUAL

AND AUTOMATIC OPERATION WITH TEMPERATURE COMPENSATION FOR 40°C (104°F) AMBIENT.

BREAKERS SHALL BE COMMON TRIPS WITH SINGLE HANDLE FOR MULTI-POLE APPLICATION.

IN PANELBOARDS, MOULDED CASE CIRCUIT BREAKERS TO OPERATE AUTOMATICALLY BY MEANS OF THERMAL AND MAGNETIC TRIPPING DEVICES TO PROVIDE INVERSE TIME CURRENT TRIPPING UNDER OVERLOAD CONDITIONS, AND INSTANTANEOUS MAGNETIC TRIPPING FOR CIRCUIT PROTECTION.

MAGNETIC INSTANTANEOUS TRIP ELEMENTS TO OPERATE ONLY WHEN THE VALUE OF CURRENT REACHES 10 TO 12 TIMES THE BREAKER TRIP SETTING.

BREAKER MINIMUM INTERRUPTING CAPACITY (SYMMETRICAL RMS VALUES) SHALL BE NOT LESS THAN THE FOLLOWING: 600V - 25kA; 240V - 10kA.

MOTOR CONTROL MAGNETIC STARTERS SHALL BE PROVIDED WITH MOTOR CIRCUIT INTERRUPTER BREAKERS - 600V, 3 POLE, 25kA INTERRUPTING CAPACITY, MAGNETIC TRIP ONLY, ADJUSTABLE (8 SETTINGS), WITH LOCKING PIN.

HEAT TRACE BREAKERS TO BE GFCI WITH A 30mA TRIP LEVEL.

2. STANDARD OF ACCEPTANCE: CSA APPROVED FOR PANELBOARD

12.0 MOTOR PROTECTION AND CONTROL

.6 CONTROL TRANSFORMER.

1. MAGNETIC AND COMBINATION MAGNETIC STARTERS OF SIZE, TYPE, RATING AND ENCLOSURE TYPE AS INDICATED WITH COMPONENTS AS FOLLOWS:

1 CONTACTOR SOLENOID OPERATED, RAPID ACTION TYPE.

.2 MOTOR OVERLOAD PROTECTIVE DEVICE IN EACH PHASE MANUALLY RESET FROM OUTSIDE

.3 POWER AND CONTROL TERMINALS. .4 WIRING AND SCHEMATIC DIAGRAM INSIDE STARTER ENCLOSURE IN VISIBLE LOCATION. .5 IDENTIFY EACH WIRE AND TERMINAL FOR EXTERNAL CONNECTIONS, WITHIN STARTER, WITH PERMANENT NUMBER MARKING IDENTICAL TO DIAGRAM.

2. COMBINATION TYPE STARTERS TO INCLUDE MOTOR CIRCUIT INTERRUPTER WITH OPERATING LEVER ON OUTSIDE CIRCUIT INTERRUPTER AND PROVISION FOR:

.1 LOCKING IN "OFF" POSITION WITH UP TO THREE (3) PADLOCKS.

.2 LOCKING IN "ON" POSITION. .3 INDEPENDENT LOCKING OF ENCLOSURE DOOR.

.4 PROVISION FOR PREVENTING SWITCHING TO "ON" POSITION WHILE ENCLOSURE DOOR OPEN.

3. ACCESSORIES: 1 SELECTOR SWITCHES HAND-OFF-AUTO: HEAVY DUTY LABELLED AS INDICATED.

.2 LED INDICATING LIGHTS: OIL-TIGHT TYPE RED FOR RUN. .3 2-N/O AND 2-N/C SPARE AUXILIARY CONTACTS UNLESS OTHERWISE INDICATED.

CHECK SEQUENCE CONTROLS, INTERLOCKING WITH OTHER SEPARATE RELATED STARTERS, EQUIPMENT, CONTROL DEVICES, TO ENSURE OPERATION AS REQUIRED.

1. MANUALLY OPERATED GENERAL PURPOSE AC SWITCHES TO CSA C22.2 NO. 111.

2. SNAP SWITCHES TO CSA C22.2 NO. 55-M1986 (R2003).

3. RECEPTACLES, PLUGS AND SIMILAR DEVICES TO CSA C22.2 NO. 42-99 (R2004).

4. COVERPLATES TO CSA C22.2 NO. 42.1-00 (R2004).

15A, 120V SINGLE POLE, THREE-WAY, FOUR-WAY SPECIFICATION GRADE SWITCHES AS INDICATED.

TOGGLE OPERATED, FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY OF MOTOR LOADS.

SWITCHES OF ONE MANUFACTURER THROUGHOUT PROJECT. EQUAL TO HUBBELL 1200 SERIES FOR 120V, AND HUBBELL 1800 SERIES FOR 347V.

INSTALL SINGLE THROW SWITCHES WITH HANDLE IN THE 'UP' POSITION WHEN SWITCH IS CLOSED.

INSTALL SWITCHES IN GANG TYPE OUTLET BOX WHEN MORE THAN ONE SWITCH IS REQUIRED IN ONE LOCATION.

### RECEPTACLES:

DUPLEX RECEPTACLES, CSA TYPE 5-15R, 125V, 15A, U GROUND, SPECIFICATION GRADE EQUAL TO HUBBELL

7. COVERPLATES:

PROVIDE STAINLESS STEEL COVERPLATES FOR ALL WIRING DEVICES.

### 7.0 FIRE PROTECTION SYSTEM

1. DO INSTALLATION TO ULC-S524 AND VERIFICATION TO ULC-S537 (LATEST EDITION) AND CSA C22.1 SECTION

2. THE MANUFACTURER SHALL MAKE AN INSPECTION OF THE COMPLETED SYSTEM AND THE EQUIPMENT COMPONENTS NECESSARY TO THE DIRECT OPERATION OF THE SYSTEM, SUCH AS MANUAL STATIONS, THERMAL DETECTORS AND CONTROLS. SUBMIT A COPY OF THE INSPECTING TECHNICIAN'S REPORT SHOWING LOCATION OF EACH DEVICE AND CERTIFYING THE TEST RESULTS OF EACH DEVICE.

### 8.0 HEAT TRACE CABLE

8.1 HEAT TRACE CABLE

SELF-LIMITING 120 VOLT HEATING CABLE MODIFIED POLYOLEFIN OUTER JACKET, TINNED COPPER BRAID, MODIFIED POLYOLEFIN INNER JACKET, SELF REGULATING CONDUCTIVE CORE AND NICKEL PLATED COPPER BUS WIRES. HEATING CAPACITY: 15W/M; FOR USE WITH 120V POWER SUPPLY.

## 8.2 CONTROLS:

LINE VOLTAGE THERMOSTAT SPECIFICALLY MANUFACTURED FOR THE CONTROL SELF-LIMITING HEATING

THERMOSTAT SHALL HAVE THE FOLLOWING FEATURES. -LINE VOLTAGE: 120 VOLT, 22 AMPS.

-NEMA 4X POLYURETHANE COATED, CAST ALUMINUM HOUSING, STAINLESS STEEL HARDWARE. -FIXED SET POINT: 4.4°C (NON-ADJUSTABLE). -SENSOR EXPOSURE LIMITS - 34 °C TO 60°C

-TWO POLE SINGLE THROW SWITCH. -SENSOR TYPE AND FIXED FLUID FILLED BULB AND 800 MM CAPILLARY

## 8.3 MANUFACTURER'S INSTRUCTIONS:

COMPLIANCE: COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS OR SPECIFICATIONS. INCLUDING PRODUCT TECHNICAL BULLETINS, HANDLING, STORAGE AND INSTALLATION INSTRUCTIONS, AND

## 8.4 INSTALLATION:

INSTALL HEATING CABLE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DISTRIBUTE AND FASTEN CABLE AS SPECIDIED BY THE MANUFACTURER. ENSURE THAT HEATING CABLES DO NOT TOUCH OR CROSS EACH OTHER. RUN ONLY COLD LEADS IN CONDUIT AND ENSURE SENSING BULB DOES NOT TOUCH CABLE. GROUND SHIELD TO BUILDING GROUND. COORDINATE CABLE INSTALLATION WITH INSULATION APPLICATION. LOOP ADDITIONAL CABLE AT FITTINGS, VALVES, AND FLANGES.

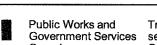
MAKE POWER AND CONTROL CONNECTIONS.

## 8.5 FIELD QUALITY CONTROL

USE 500 V MEGGER TO TEST CABLES FOR CONTINUITY AND INSULATION VALUE AND RECORD READINGS BEFORE, DURING AND AFTER INSTALLATION.

WHERE RESISTANCE OF 50 MEGOHMS OR LESS IS MEASURED, STOP WORK AND ADVISE DEPARTMENTAL REPRESENTATIVE.

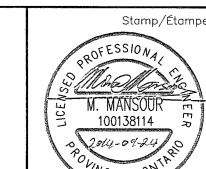
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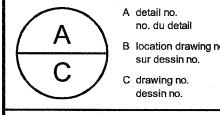
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Consulting Engineers

ISSUED FOR TENDER description date A detail no.



**BUILDING M51** ROOF MODIFICATION / INTERIOR WALL **PROTECTION** 

Designed By

Drawing no.

project

**ELECTRICAL GROUND FLOOR PLAN DEMOLITION** 

T.0'R.

dessin

Conçu par

No. du dessin

Date	2014-08-07	(yyyy/mm/dd)		
Drawn By	T.O'R.	Dessiné par		
Date	2014-08-07	(yyyy/mm/dd)		
Reviewed By		Examiné par		
Date		(yyyy/mm/dd)		
Approved By	M.M.	Approuvé par		
Date	2014-08-07	(yyyy/mm/dd)		
Tender		Soumission		
Project Manager	Administrateur de projets			
Project no.		No. du projet		
8014-061				

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