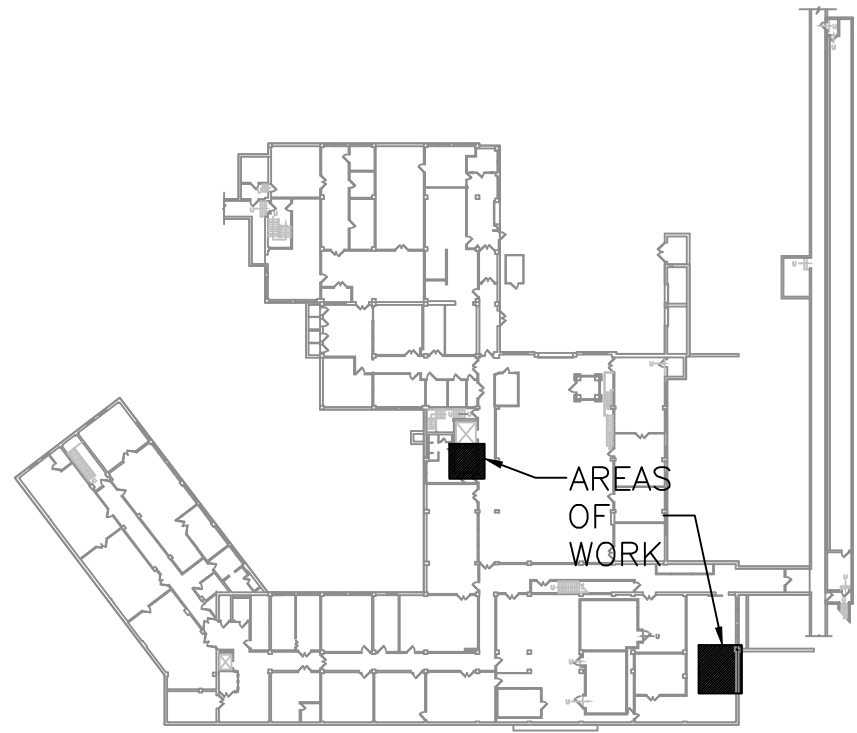


# NRC BUILDING M-20 CENTRE ELEVATOR UPGRADE

  
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KEY PLAN - M-20 BASEMENT

ELECTRICAL DRAWING LIST	
Sheet Number	Sheet Title
ELECTRICAL	
D-3957-E1	ELECTRICAL COVER SHEET
D-3957-E2	ELECTRICAL SPECIFICATIONS PAGE 1
D-3957-E3	ELECTRICAL SPECIFICATIONS PAGE 2
D-3957-E4	ELECTRICAL SPECIFICATIONS PAGE 3
D-3957-E5	ELECTRICAL POWER PLAN CENTRE ELEVATOR MACHINE ROOM
D-3957-E6	ELECTRICAL POWER PLAN PART PENTHOUSE
D-3957-E7	ELECTRICAL DEMOLITION - BASEMENT CENTRE
D-3957-E8	ELECTRICAL DEMOLITION - BASEMENT CENTRE SOUTH

SYMBOL	DESCRIPTION
■	SURFACE MOUNTED PANEL BOARD
□	DISCONNECT SWITCH
JB	JUNCTION BOX
⊕	DIRECT CONNECTION TO 600V EQUIPMENT
NOTE: NOT ALL SYMBOLS APPLY, REFER TO FLOOR PLANS AND DRAWINGS	

revisions	description	date
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Project Title:  
**NRC BUILDING M-20  
 CENTRE ELEVATOR UPGRADE**

Drawing Title:  
**ELECTRICAL COVER SHEET**

Project Number: 14138.001		Date: 2014-04-02
Scale: N.T.S.	Dwg. No. D-3957-E1	
Drawn By: S.S.	Approved By: A.D.	

## GENERAL REQUIREMENTS

### 1. REGULATIONS

- 1.1. COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF ALL APPLICABLE CODES, THE REQUIREMENTS OF FEDERAL, PROVINCIAL AND MUNICIPAL CODES, LOCAL BY-LAWS, THE APPLICABLE STANDARDS OF THE UNDERWRITERS' ASSOCIATION AND ALL AUTHORITIES HAVING JURISDICTION. ALSO, COMPLY WITH THE STANDARDS FOR THE BUILDING(S) IN WHICH THE WORK IS TO TAKE PLACE.
- 1.2. ELECTRICAL DRAWINGS SHALL NOT BE SCALED FOR MEASUREMENTS, EQUIPMENT DIMENSIONS OR DIMENSIONED LOCATIONS. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND CONFIRM ALL MEASUREMENTS ON SITE WITH THE ARCHITECTURAL CONSULTANT. CONTRACTOR IS TO MAKE ARRANGEMENT TO GET A COPY OF ARCHITECTURAL DRAWINGS AND ALL OTHER CONSULTANT DRAWINGS AFFECTING ELECTRICAL WORK. THE ELECTRICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
- 1.3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION SCHEDULE AND ALL SPECIFIED INTERIM SCHEDULES. CONTRACTOR MUST COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE AND SPECIFIED INTERIM SCHEDULES.
- 1.4. DAMAGE BY THIS CONTRACTOR TO ANY SYSTEM OCCURRING DURING EXECUTION OF THE WORK SHALL BE RECTIFIED AT THE CONTRACTOR'S EXPENSE.
- 1.5. THE EXISTING BUILDING MUST BE KEPT IN OPERATION AT ALL TIMES. ASSUME FULL RESPONSIBILITY FOR ANY DISRUPTION TO EXISTING SERVICES. ARRANGE WORK IN SUCH A MANNER THAT INTERRUPTIONS IN SERVICES OCCUR ONLY AT PRE-SCHEDULED TIMES.
- 1.6. MAINTAIN AT THE JOB SITE, AT ALL TIMES, QUALIFIED PERSONNEL AND SUPPORTING STAFF, WITH PROVEN EXPERIENCE IN SUPERVISION, TESTING AND ADJUSTING PROJECTS OF COMPATIBLE NATURE AND COMPLEXITY.

### 2. SCOPE OF WORK

- 2.1. THE WORK SHALL INCLUDE ALL LABOUR, MATERIALS, EQUIPMENT AND TOOLS REQUIRED FOR A COMPLETE AND WORKING INSTALLATION AS DESCRIBED, BUT NOT NECESSARILY LIMITED TO ITEMS LISTED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS. IN BRIEF, THIS WORK INCLUDES BUT IS NOT LIMITED TO:
  - .1 DISCONNECTION AND REMOVAL OF EXISTING MANUAL TRANSFER SWITCH FOR CENTRE ELEVATOR C/W FEEDER FROM SWITCH TO ELEVATOR MOTOR.
  - .2 PROVISION OF NEW FUSIBLE DISCONNECT SWITCH FOR NEW CENTRE ELEVATOR MOTOR.
  - .3 RE-LABELLING OF EFFECTED PANEL BOARDS.

### 3. PERMITS, CERTIFICATES, FEES INSPECTIONS

- 3.1. APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS, EXAMINATIONS AND FEES REQUIRED FOR WORK OF DIVISION 26. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER WITH CERTIFICATES THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH ALL CODES, BUILDING STANDARDS, AND ALL AUTHORITIES HAVING JURISDICTION.
- 3.2. ARRANGE FOR INSPECTION OF ALL WORK BY THE AUTHORITIES HAVING JURISDICTION OVER THE WORK. ON COMPLETION OF THE PROJECT, PRESENT TO THE CONSULTANT THE FINAL UNCONDITIONAL CERTIFICATE OF APPROVAL FROM THE INSPECTING AUTHORITIES.
- 3.3. REQUEST IN WRITING FOR A COMPLETED ROUGH-IN AND FINAL INSPECTION OF THE ELECTRICAL SYSTEMS. WHEN THE FINAL INSPECTION REQUEST IS MADE, CONTRACTOR IS TO ENSURE THAT ALL DEFICIENCIES ARE COMPLETE; THAT SYSTEMS ARE READY FOR OPERATION; THAT EQUIPMENT HAS BEEN COMMISSIONED; ALL TAGS AND NAMEPLATES ARE INSTALLED; DRAWINGS AND CHARTS ARE COMPLETE; ALL FIXTURES AND EQUIPMENT HAVE BEEN CLEANED; SPARE PARTS HAVE BEEN PROVIDED; CONTROL SYSTEMS OPERATIONAL AND THE LANDLORD'S STAFF INSTRUCTED IN ALL PHASES OF THE SYSTEM OPERATION.

### 4. WARRANTY

- 4.1. ONCE THE WORK IS COMPLETED, PROVIDE THE OWNER WITH A WRITTEN WARRANTY FOR ONE YEAR. THE WARRANTY SHALL COVER THE WORK AND MATERIALS. REPAIR AND REPLACE ANY DEFECTS IN MATERIAL OR WORKMANSHIP AT NO EXTRA COST TO THE OWNER.

### 5. SUBMITTALS

- 5.1. BEFORE STARTING ANY WORK, SUBMIT THE REQUIRED NUMBER OF COPIES OF SHOP DRAWINGS AND SPECIFICATIONS TO THE ELECTRICAL CONSULTANTS FOR THEIR REVIEW AND COMMENTS. COMPLY WITH ANY CHANGES REQUESTED AS PART OF THE CONTRACT, BUT NOTIFY THE CONSULTANT IMMEDIATELY OF SUCH CHANGES, PREPARE AND FURNISH ANY ADDITIONAL DRAWINGS, DETAILS OR INFORMATION AS MAY BE REQUIRED.

### 6. SHOP DRAWINGS

- 6.1. SUBMIT SHOP DRAWINGS, FIVE (5) COPIES FOR ALL MAJOR EQUIPMENT (PANEL BOARDS, LUMINAIRES, ETC.). SHOP DRAWINGS SHALL BE REVIEWED AND STAMPED FOR ACCEPTANCE BY THE APPROPRIATE TRADE PRIOR TO SUBMISSION TO THE CONSULTANT. EQUIPMENT SHALL NOT BE ORDERED OR INSTALLED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ELECTRICAL CONSULTANT.

### 7. PRODUCTS AND MATERIALS

- 7.1. ALL EQUIPMENT AND MATERIALS SHALL BE C.S.A. APPROVED.
- 7.2. ALL EQUIPMENT MATERIAL, DEVICES AND WIRING SHALL CONFORM TO THE CANADIAN ELECTRICAL CODE OR CODE HAVING JURISDICTION FOR THE PURPOSE FOR WHICH THEY ARE TO BE USED AND SHALL BEAR THE APPROVAL OF THE CSA AND/OR ULC OR HAVE SPECIAL APPROVAL OF THE INSPECTION AUTHORITY.
- 7.3. ALL MATERIAL AND EQUIPMENT SHALL BE NEW. WHERE MANUFACTURER IS NOT SPECIFIED, MATERIAL AND EQUIPMENT SHALL BE OF HIGH COMMERCIAL QUALITY AND CONSISTENT WITH BASE BUILDING STANDARDS.

### 8. EXAMINATION AND PROTECTION OF SITE

- 8.1. INCLUDE IN THE TENDER THE TOTAL SCOPE OF WORK WHICH IS TO INCLUDE BUT NOT LIMITED TO CUTTING, PATCHING, REMOVING, RE-ROUTING OF EXISTING ELECTRICAL EQUIPMENT AND WIRING, REMOVING, RELOCATING AND MODIFICATION OF LUMINAIRES, AS REQUIRED TO SUCCESSFULLY EXECUTE ALL WORK DESCRIBED. PRIOR TO SUBMITTING PRICE THE CONTRACTOR IS TO REVIEW ANY DISCREPANCIES WITH THE CONSULTANT AND REPORT ANY AMBIGUITIES, OMISSIONS, CONFLICTS OR DEPARTURES FROM BUILDING CODES OR BY-LAWS. NO CLAIMS FOR EXTRA PAYMENT WILL BE CONSIDERED BECAUSE OF FAILURE TO FULFILL THIS CONDITION.

### 9. CUTTING AND PATCHING

- 9.1. LOCATIONS OF ALL FLOOR PENETRATIONS, INCLUDING CORE DRILLING, SAW CUTTING AND X-RAYING SHALL BE APPROVED ON SITE BY THE ARCHITECTURAL CONSULTANT, BUILDING OWNER, AND STRUCTURAL ENGINEER. OBTAIN NECESSARY APPROVALS PRIOR TO X-RAY AND DRILLING. INCLUDE FOR ALL COSTS IN THIS CONTRACT.
- 9.2. PROVIDE ALL CLEANUP, LIFTING, STORAGE, CUTTING, PATCHING AND FLASHING AS REQUIRED. REMOVE ALL EXCESS DEBRIS, MATERIAL AND EQUIPMENT FROM SITE.
- 9.3. PATCH AND SEAL ALL OPENINGS IN FLOORS, WALLS AND PARTITIONS. IF FLOORS, WALLS OR PARTITIONS ARE FIRE RATED, PATCH AND SEAL PENETRATIONS WITH FIRE RESISTANT INSULATION AND APPROVED FIRE STOP SYSTEMS.

### 10. FIRESTOPPING

- 10.1. PROVIDE FIREPROOF SEALS IN ACCORDANCE WITH THE LOCAL CODES AND STANDARDS AND THE ONTARIO BUILDING CODE.
- 10.2. DO NOT USE CONCRETE FOR FIRE STOPPING ON CABLE TRAYS, WIRE WAYS, OR CONDUIT. CONTRACTORS, WHO USE THIS METHOD, WILL BE REQUIRED TO REPLACE THE CONCRETE WITH APPROVED FIRE STOP AND REPLACE AND TEST CABLES AFFECTED.

### 11. ACCESS DOORS

- 11.1. PROVIDE ALL ACCESS DOORS WHERE REQUIRED TO SERVICE ALL NEW AND EXISTING EQUIPMENT. ACCESS DOORS SHALL BE OR EQUAL TO LEPAGE AND SHALL BE COMPATIBLE WITH CEILING/WALL TYPE AND FINISH. ACCESS DOORS LOCATED IN DRYWALL CEILING SHALL BE RECESSED TYPE WITH AN INFILL PANEL AND SHALL BE FLUSH WITH THE SURROUNDING FINISHES. ELECTRICAL SERVICES ARE TO BE COORDINATED WITH OTHER TRADES TO MINIMIZE THE NUMBER OF ACCESS POINTS. CO-ORDINATE LOCATION AND SIZES WITH THE CONSULTANT SUBMIT DRAWING(S) TO THE CONSULTANT FOR REVIEW INDICATING SIZE AND LOCATION OF ALL DOORS PRIOR TO PROCEEDING WITH THE INSTALLATION.



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CENTRE ELEVATOR UPGRADE

Drawing Title:  
ELECTRICAL SPECIFICATIONS  
PAGE 1

Project Number: 14138.001	Date: 2014-04-02
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Project Title:  
**NRC BUILDING M-20 CENTRE ELEVATOR UPGRADE**

Drawing Title:  
**ELECTRICAL SPECIFICATIONS PAGE 2**

Project Number: 14138.001	Date: 2014-04-02
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Drawn By: S.S.	Dwg. No. D-3957-E3

**12. DRAWINGS AND INSTALLATION**

- 12.1. NO MODIFICATIONS ARE TO BE MADE TO THE ELECTRICAL DESIGN AS OUTLINED ON THE ISSUED DRAWINGS WITHOUT WRITTEN APPROVAL FROM THE CONSULTANT.
- 12.2. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE SCOPE OF THE WORK, GENERAL ARRANGEMENT AND LOCATION OF THE EQUIPMENT AND OUTLETS. THEY ARE NOT INTENDED TO SHOW THE DETAILS OF THE INSTALLATION. OBTAIN ALL DIMENSIONS FROM ARCHITECTURAL DRAWINGS AND DETAILS. VERIFY EXACT LOCATION AND MOUNTING HEIGHT OF ALL WIRING DEVICES WITH ARCHITECTURAL CONSULTANT PRIOR TO INSTALLATION.

**13. SEISMIC REQUIREMENTS**

- 13.1. ALL INSTALLATIONS ARE TO CONFORM TO SEISMIC REQUIREMENTS AS LISTED IN THE OBC. CONTRACTOR IS TO PROVIDE SHOP DRAWINGS FOR SEISMIC INSTALLATIONS PRODUCED BY A LICENSED PROFESSIONAL ENGINEER. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS TO PROVIDE A LETTER OF CONFORMANCE FOR THE SEISMIC INSTALLATIONS SEALED BY A LICENSED PROFESSIONAL ENGINEER STATING THAT THE INSTALLATION ARE IN CONFORMANCE WITH SEISMIC REQUIREMENTS AS LISTED IN OBC.

**14. CLEANING**

- 14.1. AT THE TIME OF FINAL CLEANING, CLEAN ELECTRICAL EQUIPMENT, LIGHTING REFLECTORS, LENSES AND OTHER LIGHTING SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. REMOVE DEBRIS AND EXCESS MATERIALS FROM ELECTRICAL ROOMS AND SWEEP ELECTRICAL ROOMS CLEAN.
- 14.2. ALL PENETRATIONS THROUGH FLOORS AND FIRE RATED WALLS SHALL BE PACKED WITH AN APPROVED FIRE MATERIAL INSULATION AND SHALL BE SEALED IN ACCORDANCE WITH ITEM 1.22. ABOVE BY ELECTRICAL CONTRACTOR.

**15. STATEMENT OF PRICES**

- 15.1. INCLUDE IN THE TENDER PRICE ALL COSTS FOR PREMIUM TIME, FOR WEEKEND WORK AND SHIFT WORK TO TIE-IN SERVICES AT A TIME SUITABLE TO THE LANDLORD, OR TO MAINTAIN EXISTING SYSTEMS IN OPERATIONS DURING SHUTDOWNS.
- 15.2. WHERE DISPUTES ARE UNAVOIDABLE, WE RESERVE THE RIGHT TO ACQUIRE THE SERVICES OF A 3RD PARTY COST CONSULTANT TO REVIEW ALL QUOTATIONS AND WHERE NECESSARY COMPLETE A DETAILED SITE SURVEY TO REVIEW THE INSTALLATION.
- 15.3. ALL PROFIT AND OVERHEAD FEES ARE TO BE FIXED AT 10% & 5% UNLESS AGREED TO BY THE OWNER/CONSULTANT PRIOR TO INSTALLATION.
- 15.4. FOREMAN CHARGES SHOULD NOT EXCEED 10%.
- 15.5. NO PROJECT MANAGEMENT FEES WILL BE ACCEPTED.
- 15.6. INVOICES FOR PROGRESS DRAWS MUST BE SUBMITTED IN A FORMAT ACCEPTABLE TO OWNER/CONSULTANT.

**16. EXTRA WORK**

- 16.1. PROVIDE A COMPLETE ITEMIZED COST BREAKDOWN OF ALL MATERIAL, EQUIPMENT AND LABOUR COST ASSOCIATED WITH EACH SUBMISSION FOR ELECTRICAL CHANGE NOTICE IN THE FOLLOWING FORMAT: ALL MATERIAL USED IN THE CHANGE(S) MUST BE IDENTIFIED BY THE FOLLOWING:
 

QUANTITY	AMOUNT OF PRODUCT
PRICE PER UNIT	PRICE PER UNIT BASED ON NECA LATEST ELECTRICAL PRICE GUIDE
HOURS PER UNIT	HOURS BASED ON NECA NORMAL RATE (COLUMN 1)
MATERIAL COST	TOTAL COST OF MATERIAL
TOTAL HOURS	PER ITEM.
- 16.2. MATERIAL DISCOUNTS: MATERIALS WILL BE PRICED AT NATIONAL PRICE SERVICE LESS THE FOLLOWING:
 

ALL CONDUITS :	LESS 30%
ALL CONDUIT FITTINGS, CONDULETS, CONDUIT SUPPORTS:	LESS 25%
BUILDING WIRE:	LESS 30%
FASTENERS AND SUPPORTS:	LESS: 25%
- 16.3. WHERE REQUESTED, PROVIDE PROPER SUPPLIERS OR DISTRIBUTORS QUOTATIONS AND BACKUP.

**16.4. SUMMARY TO INCLUDE:**

- TOTAL MATERIAL VALUE
- ITEMIZE PST
- JOURNEY MAN RATE AS PER CONTRACT OR INDUSTRY GUIDELINES
- OVERHEAD
- MARK-UP

**19.5. CHANGE NOTICE(S) ARE TO INCLUDE AT NO EXTRA COST:**

- |                             |                          |
|-----------------------------|--------------------------|
| ELECTRICAL INSPECTOR PERMIT | CLEAN UP                 |
| AS BUILT DRAWINGS           | TOOL CHARGES             |
| MATERIAL DELIVERY           | ENGINEERING AND DRAFTING |
| SAFETY                      | ESTIMATING AND MATERIAL  |
| EXPEDITING                  |                          |
| GUARANTEE                   | PARKING                  |

**20. AS-BUILT/ RECORD DRAWINGS**

- 20.1. AS-BUILT DRAWINGS ARE TO CONSIST OF TWO PRINTED COPIES AND ONE AUTOCAD COPY OF UPDATED DRAWINGS. THE DRAWINGS ARE TO INCLUDE ALL POWER AND LIGHTING CIRCUITS AND INCLUDE ALL CONDUIT RUNS 21mm AND LARGER. IDENTIFY APPROXIMATE LOCATION OF ALL JUNCTION BOXES. ALSO INCLUDE ALL COMMUNICATIONS CONDUITS AND CABLE TRAY IF THEY FORM PART OF THE CONTRACT DOCUMENTS. ALL ELECTRICAL PANELS IN THIS CONTRACT HAVE THE LEGEND UP-DATED, TAPED AND PUT INTO AS-BUILTS. AUTOCAD DRAWINGS ARE AVAILABLE FROM SMITH + ANDERSEN.

**21. OPERATION AND MAINTENANCE MANUALS**

- 21.1. PROVIDE TWO (2) SETS OF 'OPERATIONS AND MAINTENANCE MANUALS' WITH THE FOLLOWING INFORMATION:
  - .1 NAME AND ADDRESS OF LOYAL SUPPLIERS
  - .2 TECHNICAL DATA OF LUMINAIRES AND EQUIPMENT WITH PARTS LIST
  - .3 SHOP DRAWINGS AS REVIEWED BY CONSULTANT
  - .4 ONE YEAR WARRANTY
  - .5 LOAD BALANCING REPORT
- 21.2. VERIFICATION REPORTS AND CERTIFICATES FOR ANY NEW FIRE ALARM COMPONENTS OR TIE-INS, AND BASE BUILDING TIE-INS FOR LIGHTING CONTROL, DIGITAL METERING, SECURITY SYSTEM, ETC.
- 21.3. LOCAL HYDRO CERTIFICATE

**SPECIFICATION**

**1. GENERAL NOTES**

- 1.1. COORDINATE SCHEDULING OF ALL WORK WITH PROJECT MANAGER.
- 1.2. ANY PROPOSED CHANGES AND/OR MODIFICATIONS DUE TO SITE CONDITIONS MUST RECEIVE APPROVAL FROM THE INTERIOR DESIGNER AND CONSULTANTS.

**2. DEMOLITION AND WORK IN EXISTING BUILDING**

- 2.1. ALL SHUTDOWNS OF EXISTING BUILDING SYSTEMS SHALL BE COORDINATED WITH THE OWNER OR HIS REPRESENTATIVE AT LEAST THREE(3) WORKING DAYS IN ADVANCE. LONGER NOTICES MAY BE REQUIRED, VERIFY BUILDING STANDARDS AND PROTOCOL.
- 2.2. NEW CONDUITS AND OTHER NEW SERVICES SHALL BE CAREFULLY ROUTED SO THAT THEY DO NOT INTERFERE WITH ANY EXISTING INSTALLATIONS. ANY EXISTING CONDUITS, CABLES, CABLE TRAYS, BUS DUCTS OR OTHER SERVICES THAT INTERFERE WITH THE NEW INSTALLATION SHALL BE RELOCATED UNDER THIS CONTRACT AT NO EXTRA COST TO OWNER.
- 2.3. PROVIDE ALL CLEANUP, LIFTING, STORAGE, CUTTING, PATCHING AND FLASHING AS REQUIRED. REMOVE ALL EXCESS DEBRIS, MATERIAL AND EQUIPMENT FROM SITE.
- 2.4. THE EXISTING BUILDING MUST BE KEPT IN OPERATION AT ALL TIMES. ASSUME FULL RESPONSIBILITY FOR ANY DISRUPTION TO EXISTING SERVICES. ARRANGE WORK IN SUCH A MANNER THAT INTERRUPTIONS IN SERVICES OCCUR ONLY AT PRE-SCHEDULED TIMES.
- 2.5. ENSURE THAT ALL ELECTRICAL, LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.

- 2.6. RELOCATE ANY ELECTRICAL FEEDERS OR EQUIPMENT THAT ARE REQUIRED TO REMAIN IN SERVICE, THAT ARE SECURED TO EXISTING WALLS, FLOORS OR CEILINGS.
- 2.7. ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND TO MEET THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF OFFSITE.
- 2.8. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.
- 2.9. PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE OWNER'S PERMISSION FOR THE USE OF ELECTRICAL, PLUMBING OR DRAINAGE OUTLETS.

3. IDENTIFICATION

- 3.1. PROVIDE TYPED CIRCUIT DIRECTORIES SHOWING CONNECTED LOADS TO ALL NEW PANEL BOARDS AND EXISTING PANEL BOARDS WITHOUT DIRECTORIES. EXISTING PANEL BOARD'S DIRECTORIES SHALL BE REPLACED WITH NEW TYPE – WRITTEN DIRECTORIES REFLECTING THE LATEST REVISIONS.
- 3.2. PROVIDE LAMACOID NAMEPLATES C/W IDENTIFYING NAME, VOLTAGE, CURRENT RATING FED FROM, ETC. WITH BLACK LETTERS ON A WHITE BACKGROUND TO ALL PANEL BOARDS AND ELECTRICAL EQUIPMENT. MINIMUM SIZE OF LETTERING, 6.35mm HIGH.

4. MOUNTING HEIGHTS

- 4.1. VERIFY EXACT LOCATION AND MOUNTING HEIGHT OF ALL WIRING DEVICES WITH INTERIOR DESIGN CONSULTANT PRIOR TO INSTALLATION.

5. CONDUIT AND WIRING

- 5.1. NEW CONDUITS AND OTHER NEW SERVICES SHALL BE CAREFULLY ROUTED SO THAT THEY DO NOT INTERFERE WITH ANY EXISTING INSTALLATIONS. ANY EXISTING CONDUITS, CABLES, CABLE TRAYS, BUS DUCTS OR OTHER SERVICES THAT INTERFERE WITH THE NEW INSTALLATION SHALL BE RELOCATED UNDER THIS CONTRACT AT NO EXTRA COST TO OWNER.
- 5.2. ALL WIRING SHALL BE IN CONCEALED EMT CONDUIT UNLESS OTHERWISE NOTED. SECURE CONDUIT TO UNDERSIDE OF FLOOR SLAB ABOVE. DO NOT CLIP TO CEILING HANGERS IN ANY MANNER, OR FASTEN TO SPRINKLER PIPE SYSTEM. MINIMUM SIZE OF CONDUIT SHALL BE 21mm UNLESS NOTED OTHERWISE.
- 5.3. NO SECTION OF CONDUIT SHALL BE LONGER THAN 30 METERS (100 FEET) OR CONTAIN MORE THAN TWO 90-DEGREE BENDS BETWEEN PULL BOXES. PROVIDE PULL BOXES AS REQUIRED.
- 5.4. FINAL POWER CONNECTIONS TO NOISE AND/OR VIBRATIONS PRODUCING EQUIPMENT (TRANSFORMERS, MOTORS, DIMMING RACK, DIESEL GENERATOR, ETC.) SHALL BE MADE WITH FLEXIBLE CONDUIT OR FLEXIBLE CABLE, LENGTH OF FLEX OR CABLE NOT TO EXCEED 3 FEET.
- 5.5. AC90 (BX) ARMORED CABLE CAN BE USED IN WALL PARTITIONS. WHERE THE ARMORED CABLE LEAVES PARTITION, A MAXIMUM OF 3 METERS IS ALLOWABLE INTO CEILING SPACE JUNCTION BOX. DO NOT RUN ARMORED CABLE IN EXPOSED AREAS OR INTO PANEL BOARDS.
- 5.6. ALL WIRING SHALL BE STRANDED COPPER, TYPE RW-90 XLPE INSULATION. MINIMUM WIRE SIZE FOR 120V BRANCH WIRING SHALL BE NO. 12 AWG COPPER. IF DISTANCE BETWEEN ELECTRICAL PANEL AND FIRST OUTLET EXCEEDS 80 FEET, A NO. 10 AWG COPPER SHALL BE USED (UP TO 120 FEET). VOLTAGE DROP IN ANY CIRCUIT SHALL NOT EXCEED 3%.
- 5.7. PROVIDE A DEDICATED NEUTRAL AND GROUND WIRE OF THE SAME AWG AS THE CIRCUIT CONDUCTOR FOR ALL CIRCUITS IDENTIFIED ON THE DRAWINGS.
- 5.8. PROVIDE GROUNDING TO EQUIPMENT AS REQUIRED BY THE CANADIAN ELECTRICAL CODE OR CODE HAVING JURISDICTION.
- 5.9. GROUNDING OF CONDUIT SYSTEMS: ALL CONDUIT SYSTEMS ARE TO BE INDEPENDENTLY GROUNDING WITH THE USE OF A DEDICATED GROUND WIRE. CONDUIT IS NOT TO BE USED AS GROUNDING OR BONDING METHOD.

6. CIRCUIT BREAKERS

- 6.1. REPLACE ALL EXISTING CIRCUIT BREAKERS WITH NEW AS IDENTIFIED ON ISSUED DRAWINGS.
- 6.2. MOLDED CASE CIRCUIT BREAKERS TO BE BOLT-ON TYPE OF THE SAME OR COMPATIBLE MANUFACTURER AS EXISTING EQUIPMENT, WITH THE SAME INTERRUPT CAPACITY RATING AS OTHER EXISTING BREAKERS IN THE SAME PANELBOARD.

7. DISCONNECT SWITCHES – FUSED AND NON-FUSED

- 7.1. FUSIBLE OR NON-FUSIBLE, HORSEPOWER RATED DISCONNECT SWITCH IN CSA ENCLOSURE 2 SPRINKLER PROOF, SIZE AS INDICATED.
- 7.2. PROVISION FOR PADLOCKING IN ON-OFF SWITCH POSITION BY THREE LOCKS.
- 7.3. MECHANICALLY INTERLOCKED DOOR TO PREVENT OPENING WHEN HANDLE IN ON POSITION.
- 7.4. FUSES: SIZE AS INDICATED, CLASS J, CURRENT LIMITING.
- 7.5. FUSEHOLDERS: SUITABLE WITHOUT ADAPTORS, FOR TYPE AND SIZE OF FUSE INDICATED.
- 7.6. QUICK-MAKE, QUICK-BREAK ACTION.
- 7.7. ON-OFF SWITCH POSITION INDICATION ON SWITCH ENCLOSURE COVER.
- 7.8. PROVIDE LAMACOID NAMEPLATE ON FRONT OF SWITCH. NAME OF LOAD CONTROLLED TO BE ENGRAVED ON NAMEPLATE.
- 7.9. PROVIDE A LAMACOID THAT INDICATES THE REPLACEMENT FUSE SIZE AS WELL AS THE MAXIMUM ALLOWABLE FUSE SIZE FOR THAT DISCONNECT BASED UPON THE SIZING OF THE FEEDER.



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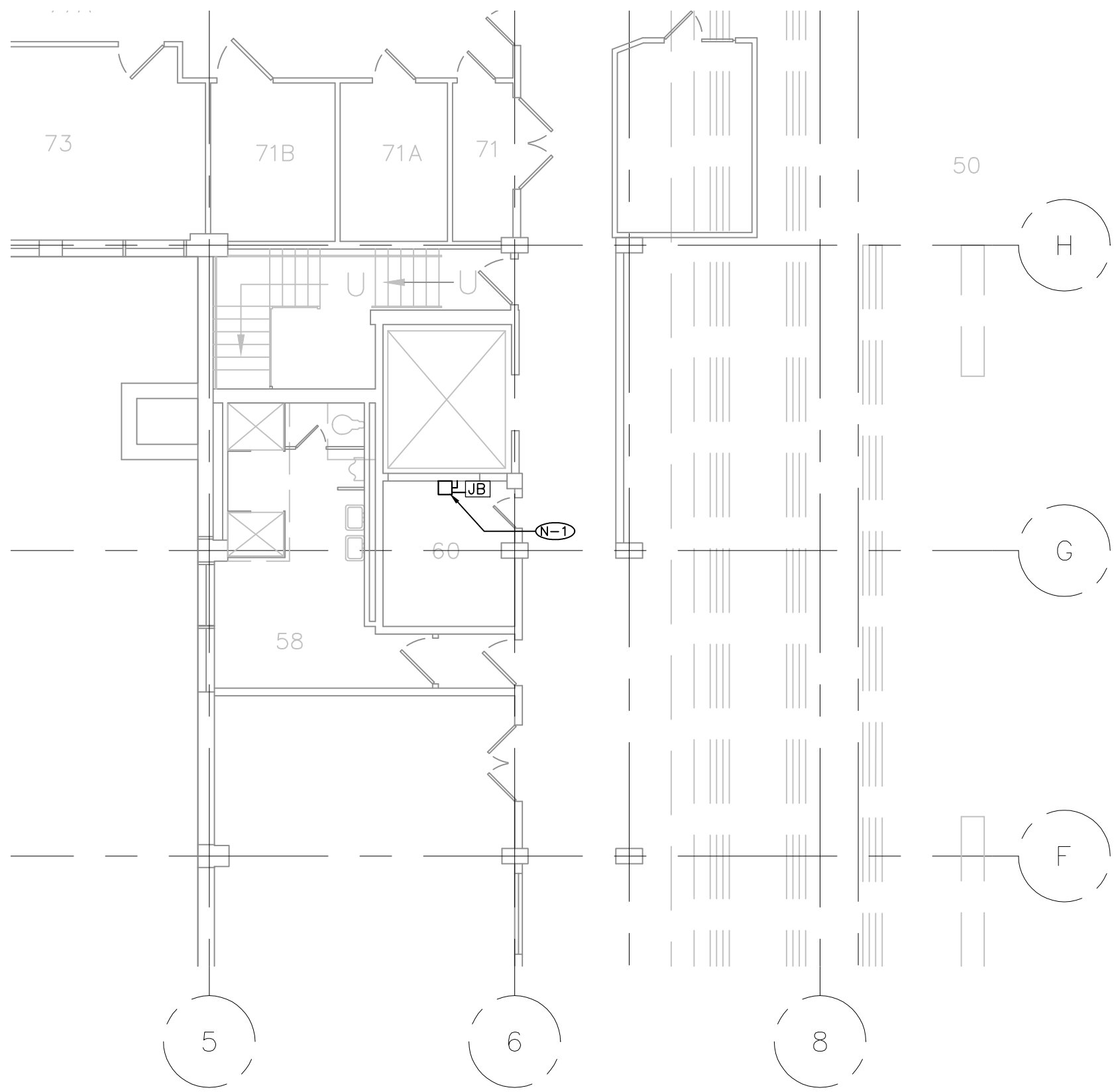
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ELECTRICAL SPECIFICATIONS  
PAGE 3

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Drawn By: S.S.	Approved By: A.D.

**Smith + Andersen**  
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**DRAWING NOTES:**

(N-1) PROVIDE 600V 100A 3PSN FUSIBLE DISCONNECT SWITCH C/W 100A FUSES. CONNECT NEW WIRING FROM EXISTING PANEL 'P2' TO LINE LUGS OF DISCONNECT SWITCH. REFER TO DRAWING D-3957-E6 FOR LOCATION OF PANEL 'P2'.



revisions	description	date
0	ISSUED FOR TENDER	APR 02 2014
A	ISSUED FOR REVIEW	MAR 21 2014

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Project Title:  
**NRC BUILDING M-20  
 CENTRE ELEVATOR UPGRADE**

Drawing Title:  
**ELECTRICAL POWER PLAN  
 CENTRE ELEVATOR  
 MACHINE ROOM**

Project Number: 14138.001	Date: 2014-04-02
Scale: 1:100	Drawn By: S.S.
Approved By: A.D.	Dwg. No. D-3957-E5

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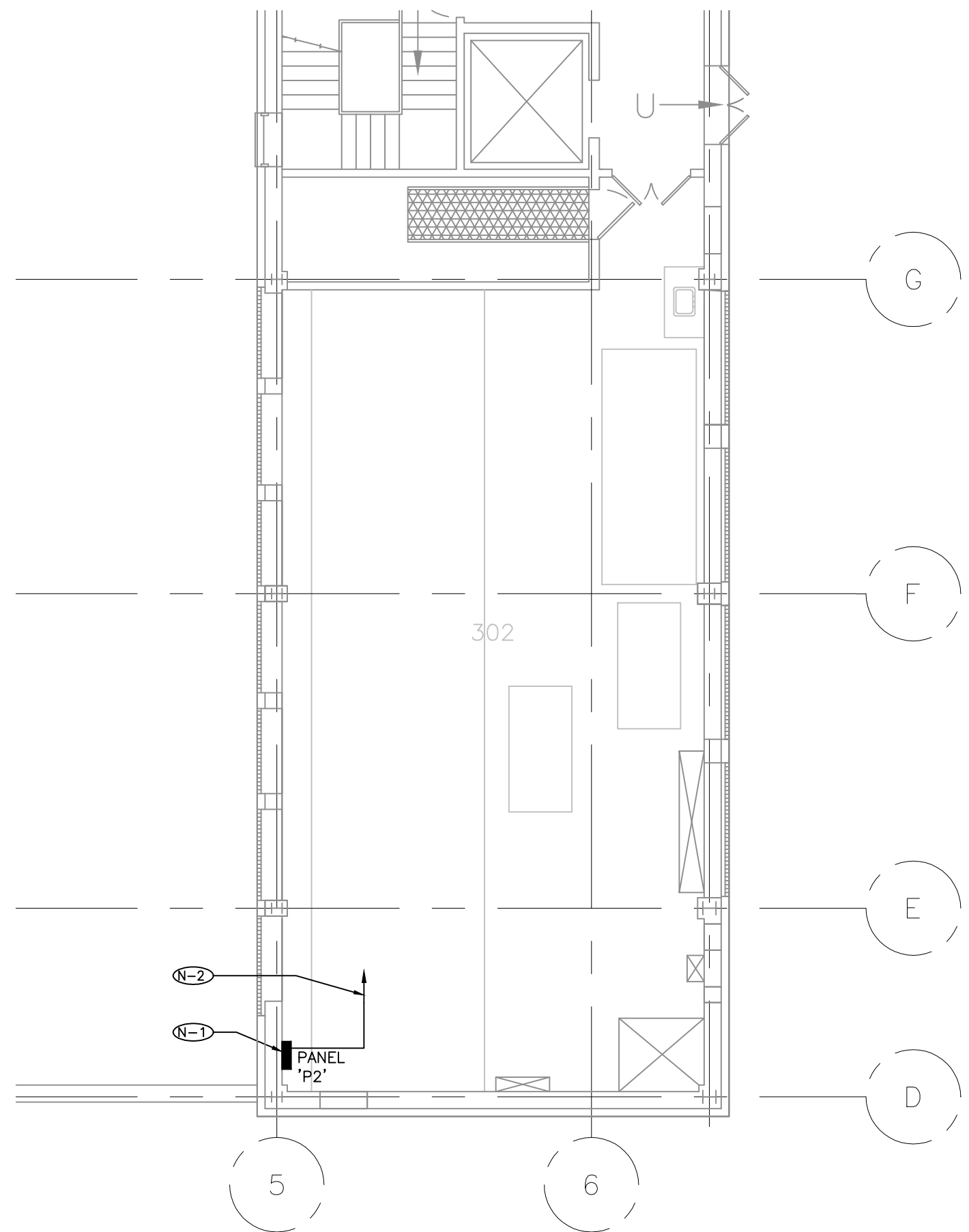
Project Title:  
**NRC BUILDING M-20  
 CENTRE ELEVATOR UPGRADE**

Drawing Title:  
**ELECTRICAL POWER PLAN  
 PART PENTHOUSE**

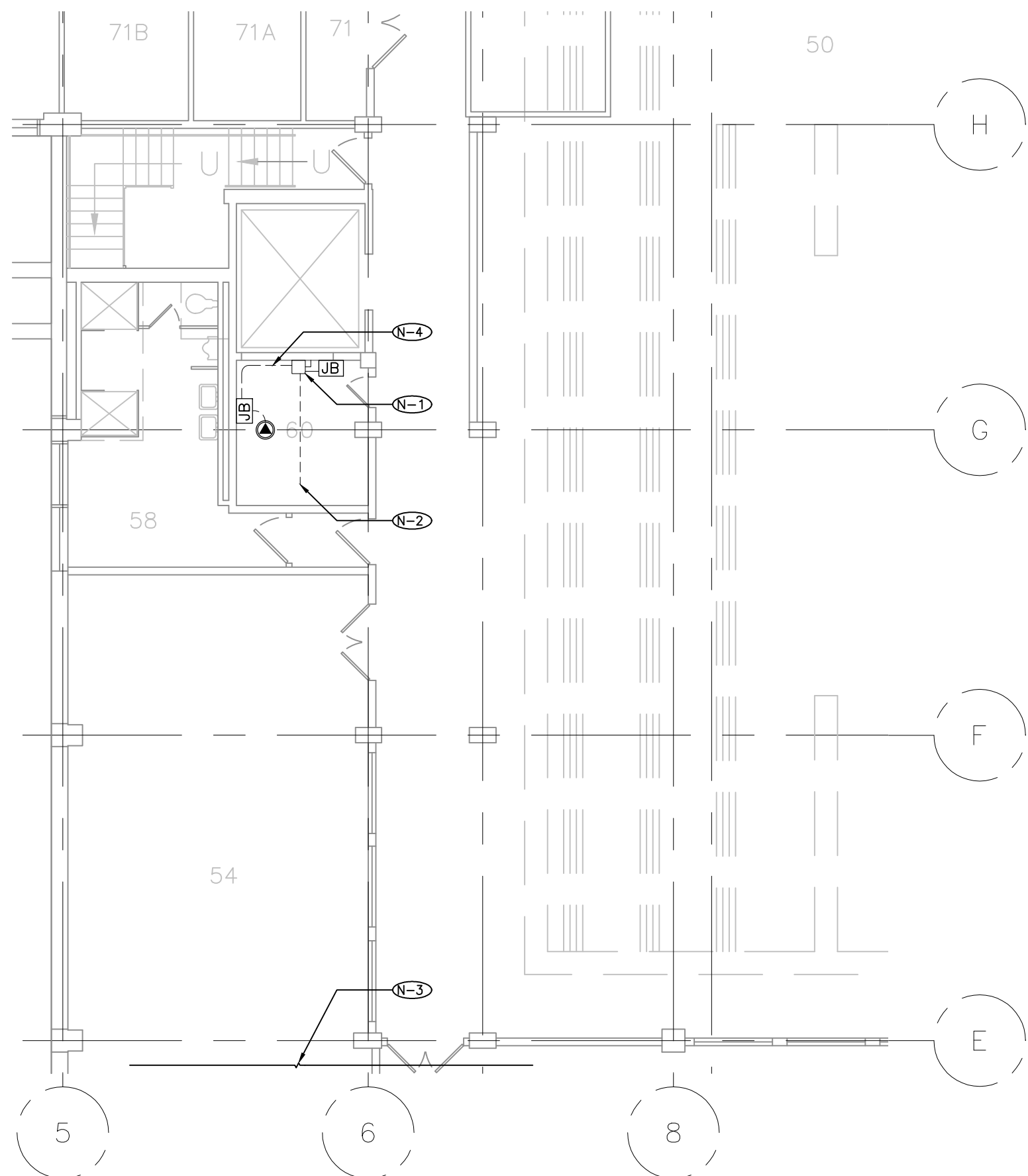
Project Number: 14138.001	Date: 2014-04-02
Scale: 1:100	Approved By: A.D.
Drawn By: S.S.	Dwg. No. D-3957-E6

**DRAWING NOTES:**

- (N-1) REPLACE EXISTING 3-POLE 60A BREAKER FOR CENTRE ELEVATOR AT CIRCUIT 5 OF EXISTING AMALGAMATED ELECTRIC PANEL BOARD WITH 3-POLE 100A BREAKER.
- (N-2) REPLACE EXISTING WIRING AND CONDUIT FOR CENTRE ELEVATOR FROM PANEL 'P2' TO EXISTING ELEVATOR TRANSFER SWITCH IN BASEMENT ELEVATOR MACHINE ROOM WITH 3#3+GND-35mmC. REFER TO DRAWING D-3957-E7 FOR LOCATION OF ELEVATOR TRANSFER SWITCH. VERIFY EXACT LOCATION OF PANEL 'P2' ON SITE.



**1 PARTIAL POWER PLAN - PENTHOUSE ROOM 302**  
 D-3957-E6 1:100



**DRAWING NOTES:**

- (N-1) DISCONNECT AND REMOVE EXISTING MANUAL TRANSFER SWITCH FOR CENTRE ELEVATOR. RETAIN NORMAL FEED FOR RECONNECTION.
- (N-2) REMOVE EXISTING EMERGENCY FEED BACK TO EXISTING PANEL EP1. REFER TO DRAWING D-3957-E8 FOR LOCATION OF EP1.
- (N-3) REFER TO DRAWING D-3957-E8 FOR CONTINUATION.
- (N-4) DISCONNECT AND REMOVE EXISTING WIRING AND CONDUIT FROM EXISTING ELEVATOR MOTOR TO EXISTING MANUAL TRANSFER SWITCH.

**1 ELECTRICAL DEMOLITION PARTIAL PLAN**  
D-3957-E7 1:100

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Project Title:  
**NRC BUILDING M-20  
CENTRE ELEVATOR UPGRADE**

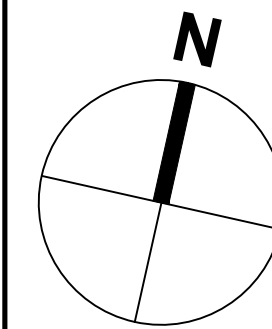
Drawing Title:  
**ELECTRICAL DEMOLITION  
PART PLAN  
BASEMENT CENTRE**

Project Number: 14138.001		Date: 2014-04-02
Scale: 1:100	Approved By: A.D.	
Drawn By: S.S.	Dwg. No. D-3957-E7	



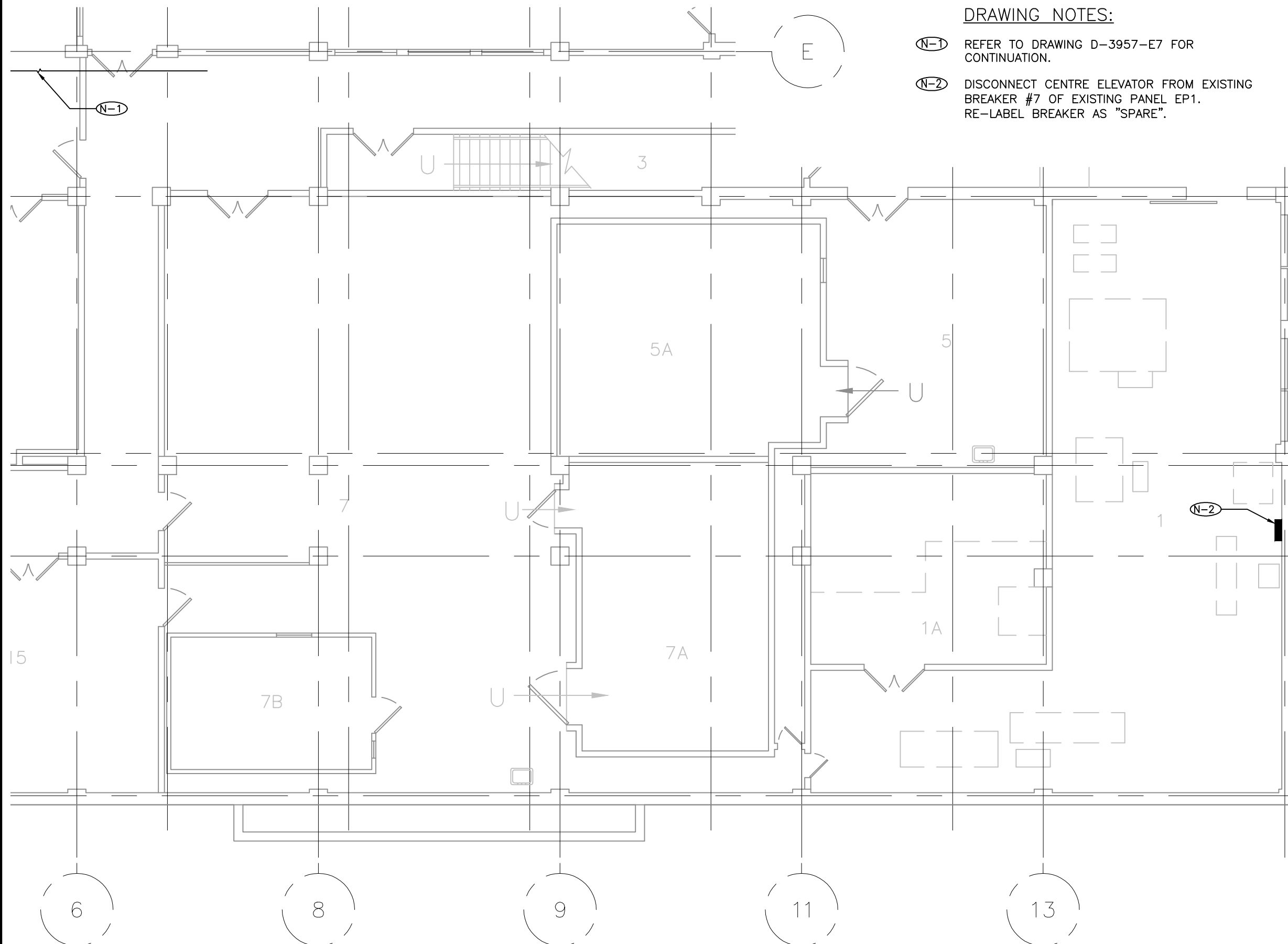
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**DRAWING NOTES:**

- (N-1) REFER TO DRAWING D-3957-E7 FOR CONTINUATION.
- (N-2) DISCONNECT CENTRE ELEVATOR FROM EXISTING BREAKER #7 OF EXISTING PANEL EP1. RE-LABEL BREAKER AS "SPARE".



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Project Title:  
**NRC BUILDING M-20  
 CENTRE ELEVATOR UPGRADE**

Drawing Title:  
**ELECTRICAL DEMOLITION  
 PART PLAN  
 BASEMENT CENTRE SOUTH**

Project Number: 14138.001	Date: 2014-04-02
Scale: 1:100	Drawn By: S.S.
Approved By: A.D.	Dwg. No. D-3957-E8

**1 ELECTRICAL DEMOLITION BASEMENT PART PLAN**  
 D-3957-E8 1:100