

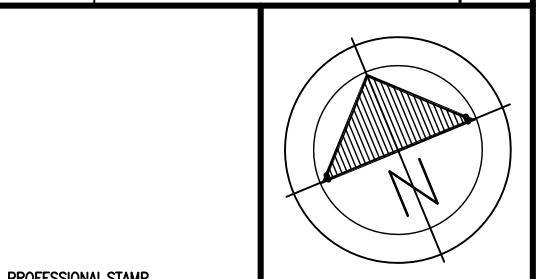
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1.	ISSUED FOR TENDER	24/02/2011

No.	Revision	Date



A	A detail no.	A
C	no. du detail	B/C
	B location drawing no.	
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	dessin no.	

project: **DAVID FLORIDA LABORATORY**
 BUILDING No. 65, SHIRLEY'S BAY, ONTARIO
 project: **SMALL FREIGHT ELEVATOR REPLACEMENT**

designed: _____
 date: _____
 drawn: JH
 date: _____
 reviewed: LCL
 date: _____
 approved: _____
 date: _____
 scale: AS NOTED

project no. **L+D 11.008**
 drawing no. **A1**

DRAWING LIST

ARCHITECTURE

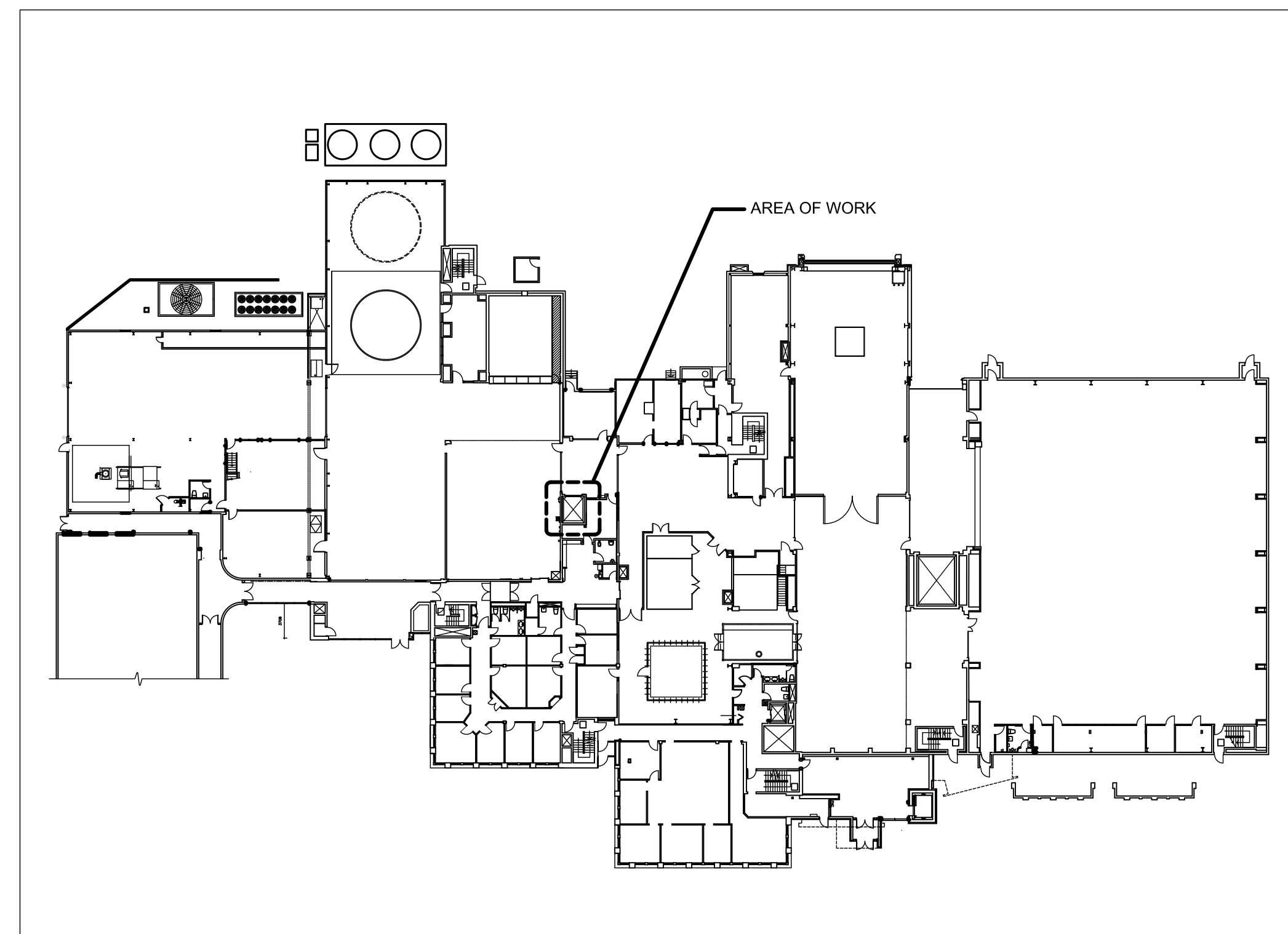
KEY PLAN, FLOOR PLANS _____ A1

MECHANICAL/ELECTRICAL

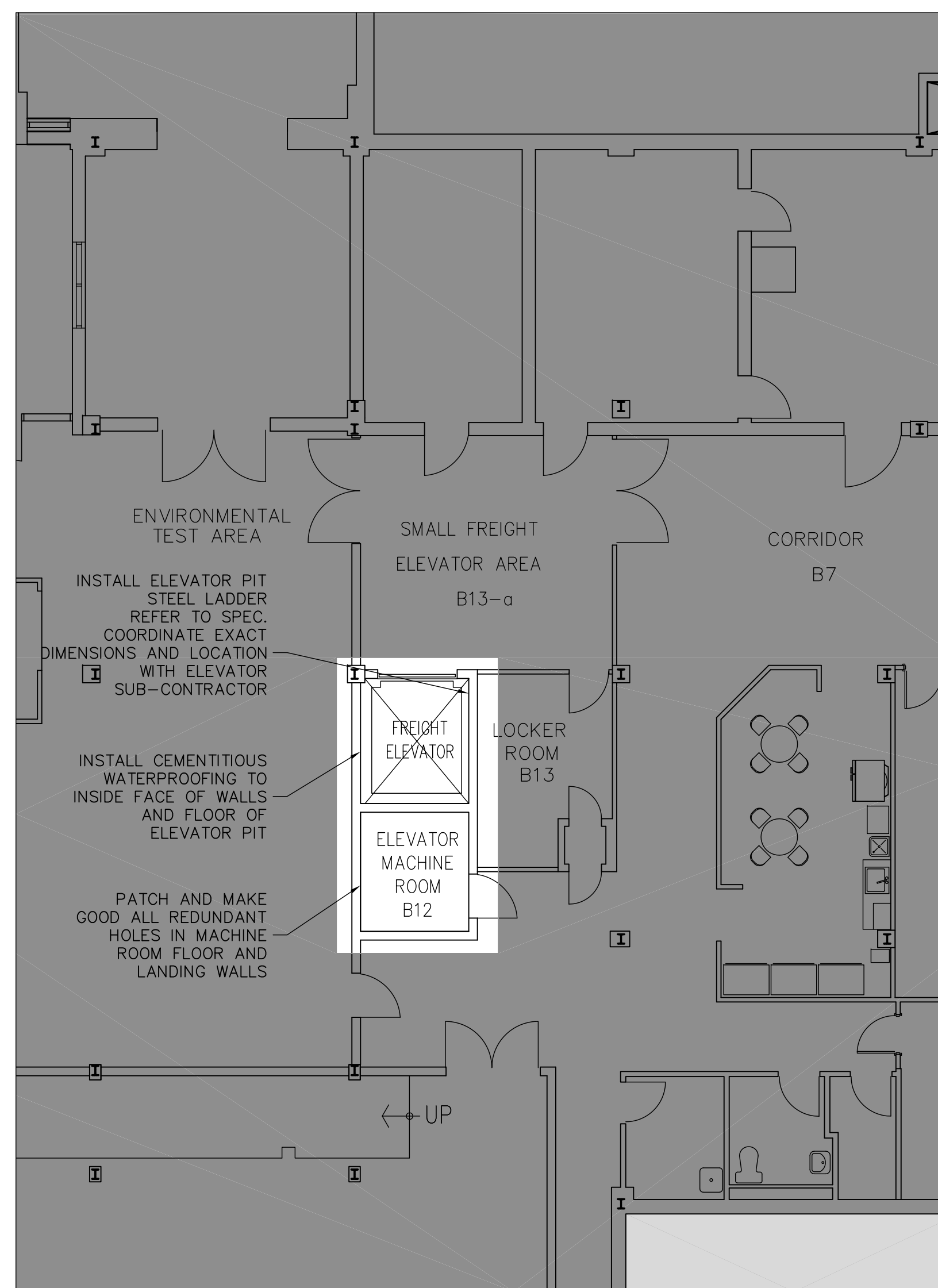
MECHANICAL/ELECTRICAL LAYOUTS & SCHEDULES _____ ME01

MECHANICAL SPECIFICATIONS _____ ME02

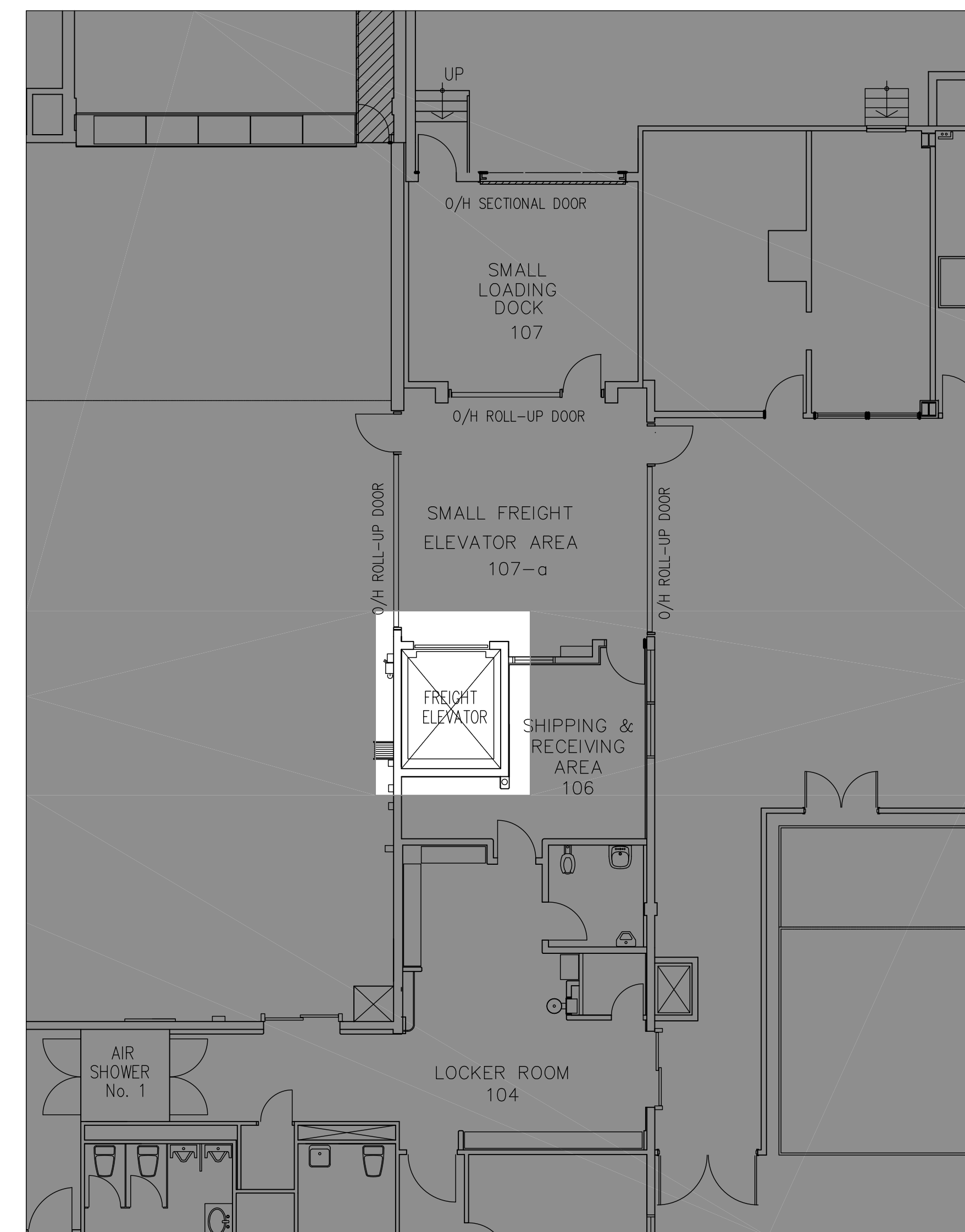
ELECTRICAL SPECIFICATIONS _____ ME03



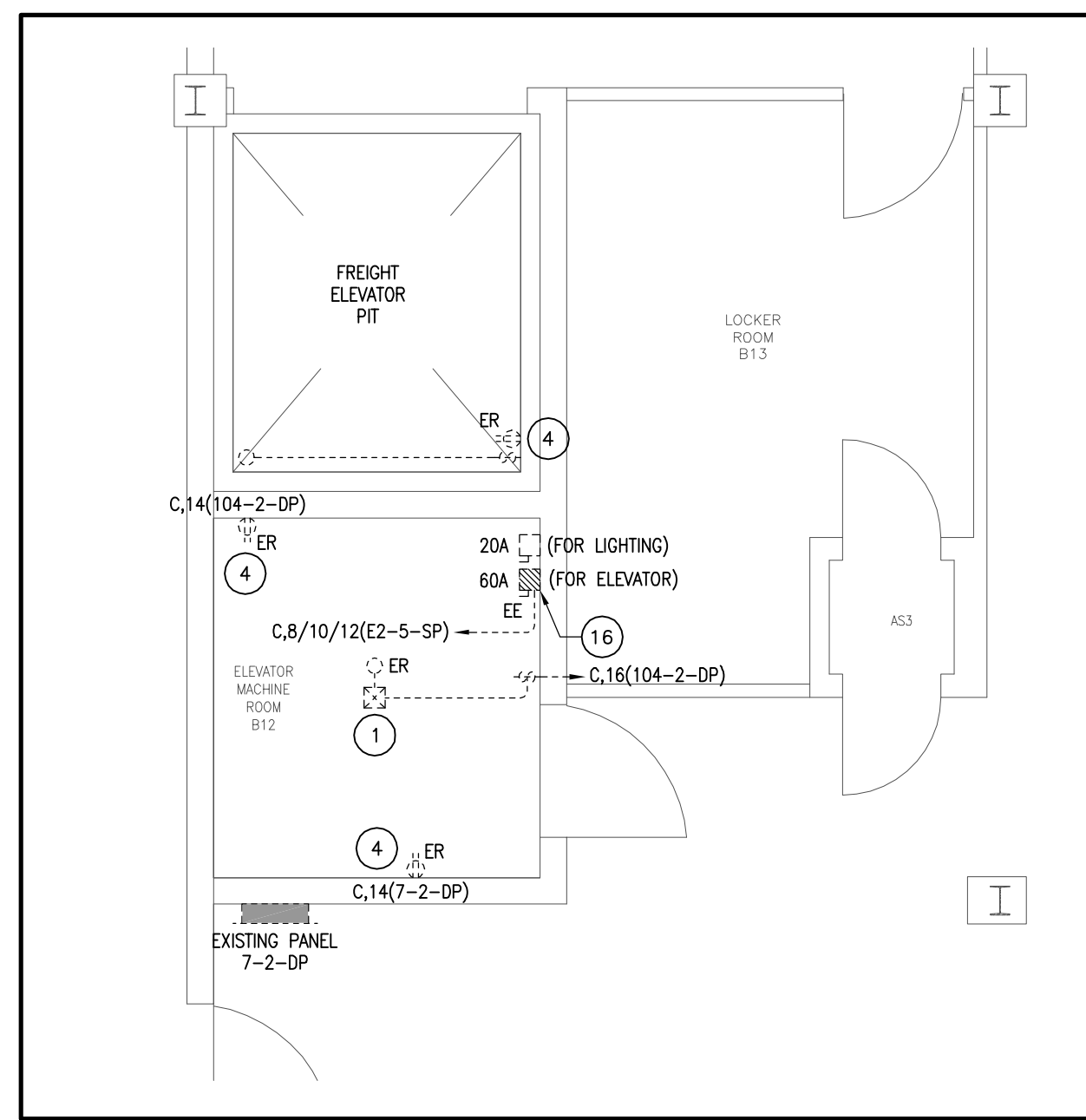
1 GROUND FLOOR KEY PLAN
 A-1 SCALE = NTS



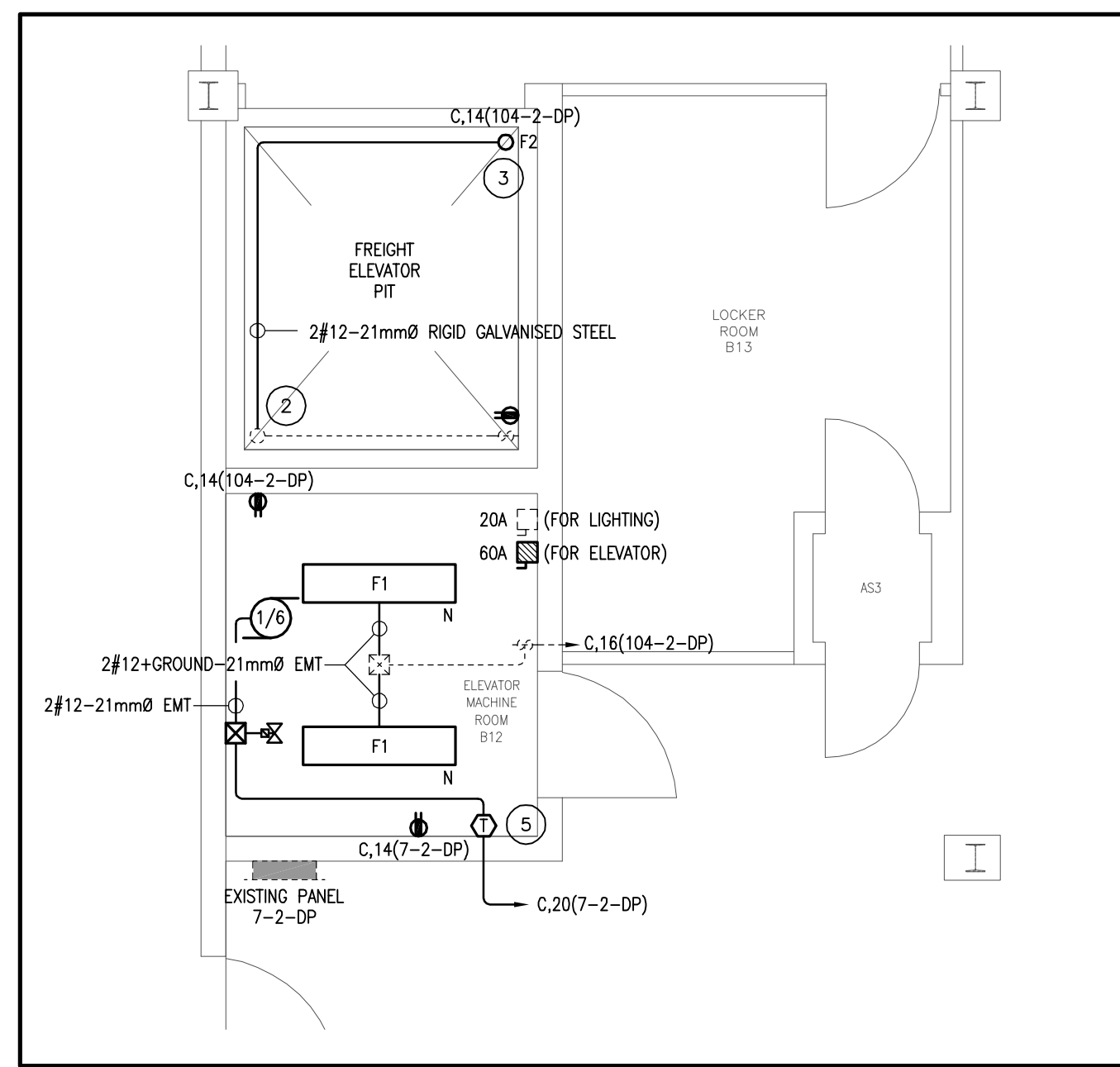
1 PARTIAL BASEMENT PLAN
 A-1 SCALE = 1 : 100



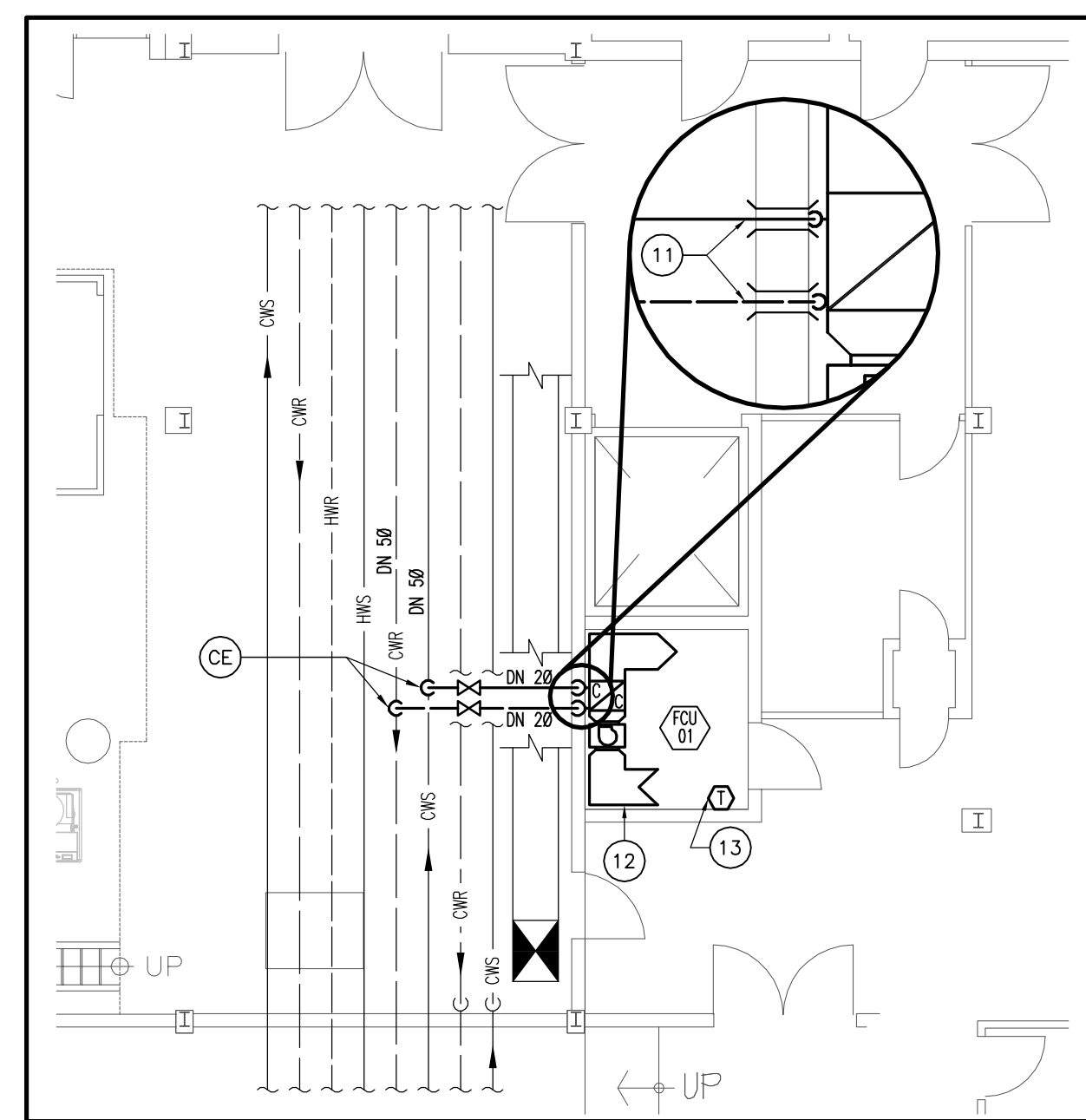
1 PARTIAL GROUND FLOOR PLAN
 A-1 SCALE = 1 : 100



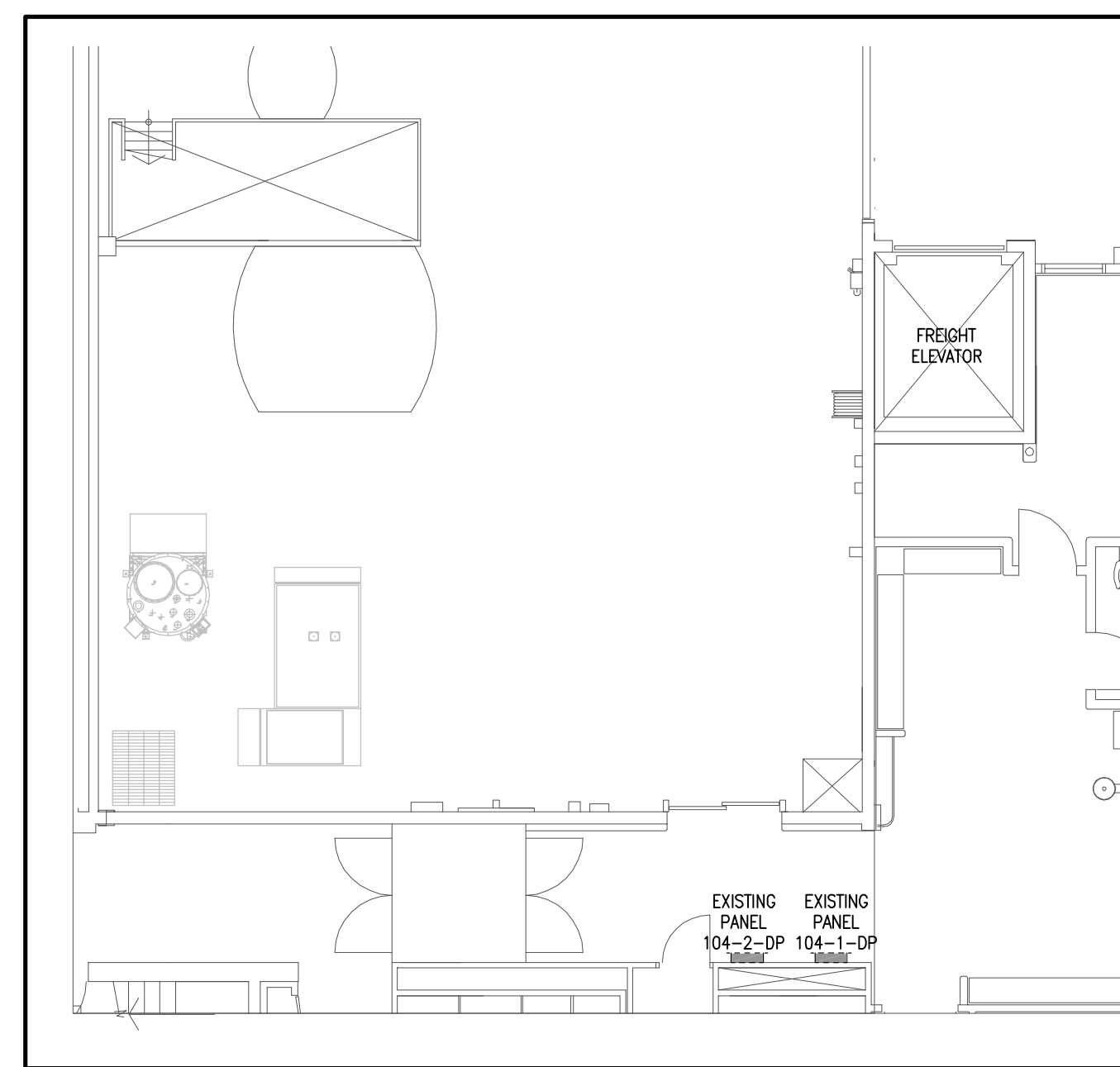
1 ELEVATOR - BASEMENT
EXISTING LAYOUT
SCALE: 1:50



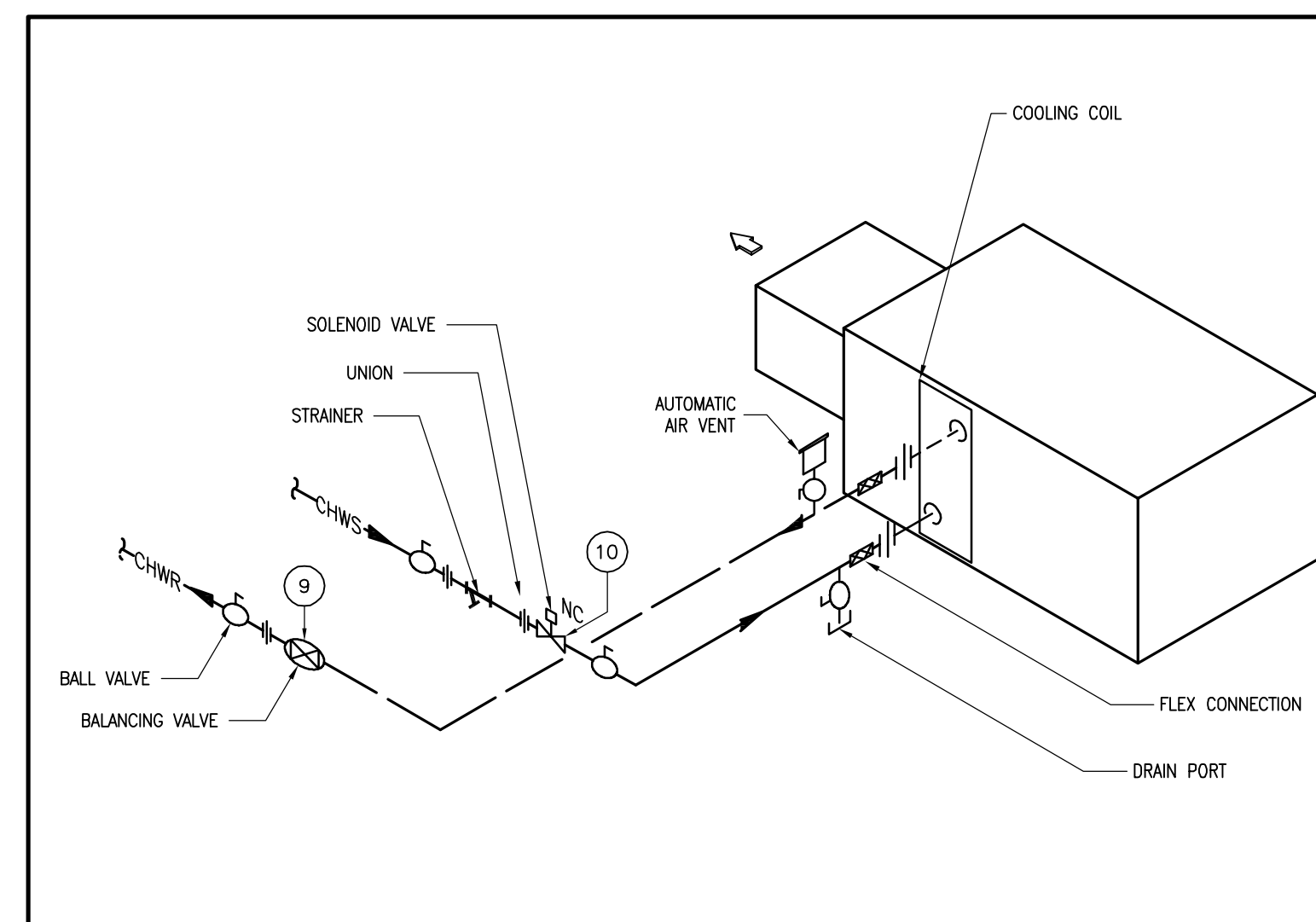
2 ELEVATOR - BASEMENT
NEW LAYOUT
SCALE: 1:50



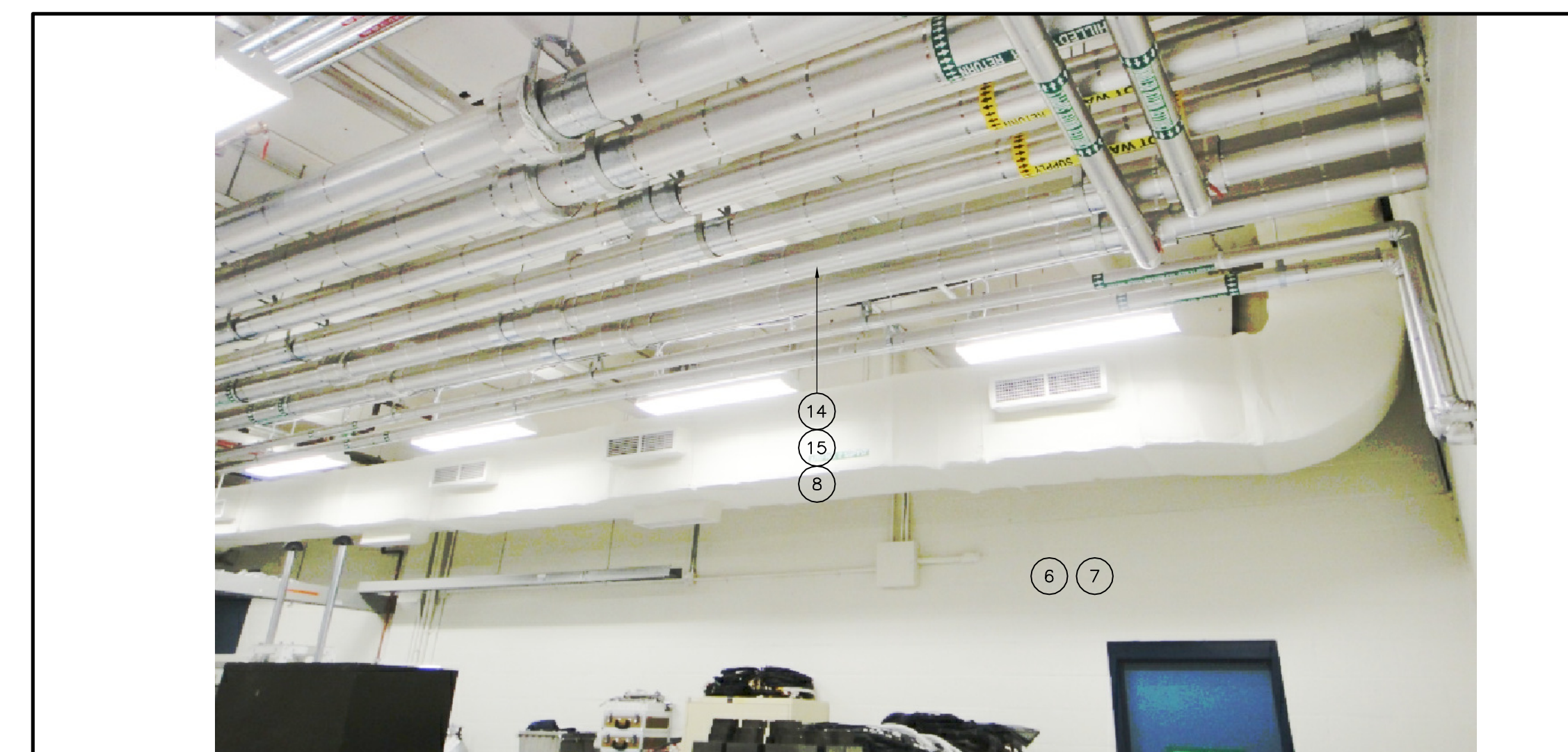
4 NEW MECHANICAL LAYOUT
SCALE: 1:100



3 ELEVATOR - GROUND FLOOR
LOCATION OF DISTRIBUTION PANELS
SCALE: 1:100



6 FAN COIL CONNECTION DETAIL
SCALE: NONE



6 PIPING CONNECTIONS AND ROUTING
SCALE: NONE

LEGEND

- 15A, 125V GFCI DUPLEX RECEPTACLE
- 15A, 125V DUPLEX RECEPTACLE
- DISCONNECT SWITCH 250V OR 347/600V
- FLUORESCENT LIGHTING FIXTURE, <TYPE X>
- LIGHT FIXTURE <TYPE X>
- JUNCTION AND/OR PULL BOX
- DISTRIBUTION PANEL
- SINGLE PHASE MOTOR, 1/6HP
- JUNCTION BOX
- THERMOSTAT
- EXISTING TO BE REMOVED
- NEW
- IDENTIFICATION PANEL CIRCUIT
- PANEL NAME
- CIRCUIT NUMBER
- SOLENOID VALVE
- EXISTING HYDRONIC SUPPLY
- EXISTING HYDRONIC RETURN
- EXISTING CHILLED WATER SUPPLY
- EXISTING CHILLED WATER RETURN
- NEW CHILLED WATER SUPPLY
- NEW CHILLED WATER RETURN
- PIPING DOWN
- ISOLATION VALVE
- NEW DUCTWORK
- EXISTING DUCTWORK
- SYSTEM FAN
- CONNECT TO EXISTING

LIGHTING FIXTURE TABLE

TYPE	DESCRIPTION	VOLTAGE	LAMP
F1	METALLIC SUSPENDED FLUORESCENT - 2 LAMPS 1220mm	120V	2 x 32 WATTS
F2	HEAVY DUTY WEATHER PROOF VBS COMPACT FLUORESCENT LIGHTING FIXTURE ENCLOSED AND GASKETER WITH PROTECTIVE GLASS AND HEADED GUARD, ALL ALUMINUM (MINE TYPE).	120V	28 WATTS PLC LAMP

FAN COIL SCHEDULE

DRAWING ID	AIR						WATER				MOTOR			ORIENTATION
	FLOW	SENSIBLE COOLING	TOTAL COOLING	ENTERING DB TEMP	LEAVING DB TEMP	PRESSURE DROP	FLOW	ENTERING TEMP	LEAVING TEMP	PRESSURE DROP	POWER	SPEED	ELECTRICAL SUPPLY	
	L/S	KW	KW	°C	°C	PA	L/S	°C	°C	KPA	KW	RPM	V/PH/Hz	
FCU-01	N/A	2	3	25	MAX 18	N/A	MAX 0.2	7	MIN 12	N/A	0.2 MAX	N/A	120/1/60	HORIZONTAL

DRAWING LIST

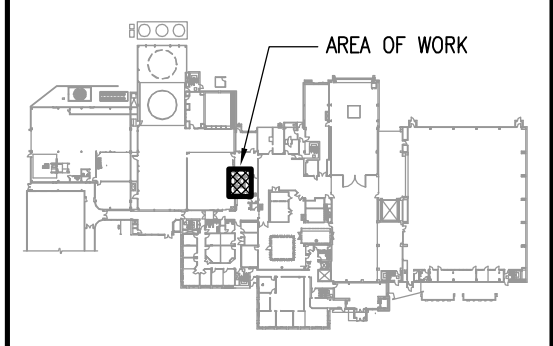
No	IDENT.	TITLE
MECHANICAL AND ELECTRICAL		
✓	ME01	MECHANICAL/ELECTRICAL ELEVATOR PIT EXISTING AND NEW LAYOUT
✓	ME02	MECHANICAL SPECIFICATIONS
✓	ME03	ELECTRICAL SPECIFICATIONS

GENERAL NOTES

1. LINES OF WIRING AND CABLING SHOWN IN DIAGRAMMATIC. VERIFY ACTUAL LOCATION ON SITE.
2. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE ON SITE, IN COORDINATION WITH ALL OTHER DISCIPLINES, THE BEST WAY TO RUN WIRES AND AFTER INFORMING THE DEPARTMENTAL REPRESENTATIVE FOR APPROVAL FOR WIRING BIGGER THAN GAWG.

DRAWING NOTES

1. EXISTING INCANDESCENT LIGHTING FIXTURE. REMOVE AND REPLACE WITH TWO (2) NEW FLUORESCENT STRIPS 1219mm TWIN 18 120V. SUSPEND FROM CEILING WITH CHAINS AT 3500MM FROM FLOOR.
2. EXISTING INCANDESCENT LIGHTING FIXTURE FOR HAZARDOUS LOCATION. REPLACE INCANDESCENT BULB WITH HEAVY-DUTY COMPACT FLUORESCENT LAMP 28W/ 120V.
3. EXTEND CIRCUIT FROM EXISTING LIGHTING FIXTURE. INSTALL AND CONNECT A SECOND HAZARDOUS LOCATION (GLASS 1 DIV 2 TYPED) ALUMINUM CAST FLUORESCENT LIGHTING FIXTURE WITH CARD, ENCLOSED AND GASKETED OF SAME TYPE OF EXISTING. MOUNT ON THE WALL AT SAME HEIGHT OF EXISTING ON A GFR ALUMINUM CAST JUNCTION BOX. ANCHOR TO WALL USING EXPANDED STAINLESS STEEL BOLTS. INSTALL ALSO A HEAVY-DUTY COMPACT FLUORESCENT LAMP 28W/ 120V.
4. EXISTING RECEPTABLES WITH DOUBLE OUTLETS 125V/15A. REPLACE OUTLETS WITH NEW GFI AND STAINLESS STEEL COVER PLATES.
5. NEW FAN, SOLENOID VALVE, AND THERMOSTAT TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR. THERMOSTAT, FAN, AND SOLENOID VALVE TO BE WIRED BY ELECTRICAL CONTRACTOR. PROVIDE AND CONNECT TO A NEW 15A IN THE DISTRIBUTION PANEL. THERMOSTAT TO ENERGIZED THE FAN AND THE SOLENOID VALVE.
6. THE CONSTRUCTION AREA MUST BE TARPED AND SEALED OFF FROM THE REST OF THE ROOM TO THE SATISFACTION OF THE BUILDING ENGINEER.
7. ALL CLEAN ROOM WORK MUST BE SCHEDULED WITH THE BUILDING ENGINEER.
8. LOCAL ISOLATION TO BE ACHIEVED THROUGH PIPE FREEZING. SCHEDULE SHUTDOWN WITH THE BUILDING ENGINEER.
9. BALANCING VALVE TO INCLUDE TEST PORTS, AND TO BE BALANCED TO THE FLOW RATE SPECIFIED ON THE FAN COIL UNIT SHOP DRAWINGS.
10. SOLENOID VALVE TO BE ON/OFF TYPE. ACTUATOR TO BE RATED TO 120V.
11. SLEEVES TO BE PROVIDED FOR PENETRATIONS THROUGH BLOCK WALL. FIRESTOPPING IS REQUIRED TO MAINTAIN FIRE SEPARATION.
12. FAN COIL UNIT TO BE PROVIDED AND INSTALLED. INSTALLATION TO BE AT LEAST 2.5 METERS ABOVE FINISHED FLOOR. CEILING HEIGHT IS OVER 4 METERS. UNIT TO BE WALL MOUNTED IN A FASHION TO PERMIT ACCESS TO INTERNAL COMPONENTS AND TO EASE INSTALLATION OF PIPEWORK. UNIT TO INCLUDE INTERNAL DRAIN PAN.
13. LINE VOLTAGE THERMOSTAT TO BE PROVIDED WITH FAN COIL UNIT AND WALL MOUNTED AT 1.5 METERS ABOVE FINISHED FLOOR. WIRING TO FAN AND SOLENOID VALVE TO BE BY ELECTRICAL CONTRACTOR.
14. PIPING TO BE CONNECTED AT THIS LOCATION. PIPE CONNECTIONS TO BE AT THE TOP OF EXISTING PIPING. PIPE TO BE ROUTED ALONG THE CEILING ABOVE LIGHT FIXTURES AND ADJACENT DUCT WORK.
15. INSULATION AND LABELLING TO MATCH EXISTING.
16. REPLACE EXISTING DISCONNECT WITH NEW CSA TYPE 1 UNFUSED 600V 60A 3Ø.



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2.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-10-20
1.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-07-12



A	A detail no. of detail	A
B	B location drawing no. of detail no.	B/C
C	C drawing no. of detail no.	

project **DAVID FLORIDA LABORATORY**
BUILDING No. 65, SHIRLEY'S BAY, ONTARIO
SMALL FREIGHT ELEVATOR REPLACEMENT

drawing **MECHANICAL/ELECTRICAL ELEVATOR PIT EXISTING AND NEW LAYOUT**
dessin

designed	Geoffrey Lynch / Richard St-Louis	conçu
date	2011-07-07	
drawn	Julie Marsan	dessiné
date	2011-07-07	
reviewed	Geoffrey Lynch / Daniel Dubé	examiné
date	2011-07-07	
approved	Geoffrey Lynch / Daniel Dubé	approuvé
date	2011-07-07	
scale	As Indicated	

project no.	034P039156	no. du projet
drawing no.	ME01	no. du dessin

MECHANICAL GENERAL PROVISIONS

PART 1 GENERAL

1.1 SUBMITTALS

.1 SHOP DRAWINGS AND PRODUCT DATA ACCOMPANIED BY:

- .1 MOUNTING ARRANGEMENTS
- .2 OPERATING AND MAINTENANCE CLEARANCES
- .3 DETAILED DRAWINGS OF BASES, SUPPORTS, AND ANCHOR BOLTS
- .4 ACOUSTICAL SOUND POWER DATA, WHERE APPLICABLE
- .5 POINTS OF OPERATION ON PERFORMANCE CURVES
- .6 MANUFACTURER TO CERTIFY CURRENT MODEL PRODUCTION
- .7 CERTIFICATION OF COMPLIANCE TO APPLICABLE CODES

2. CLOSEOUT SUBMITTALS:

- .1 OPERATION DATA TO INCLUDE:
 - .1 OPERATION INSTRUCTION FOR SYSTEMS AND COMPONENT
 - .2 VALVES SCHEDULE AND FLOW DIAGRAM

2. MAINTENANCE DATA TO INCLUDE:

- .1 SERVICING, MAINTENANCE, OPERATION AND TROUBLE-SHOOTING INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT
- .2 DATA TO INCLUDE SCHEDULES OF TASKS, FREQUENCY, TOOLS REQUIRED AND TASK TIME

3. PERFORMANCE DATA TO INCLUDE:

- .1 EQUIPMENT MANUFACTURER'S PERFORMANCE DATASHEETS WITH POINT OF OPERATION AS LEFT AFTER COMMISSIONING IS COMPLETE
- .2 EQUIPMENT PERFORMANCE VERIFICATION TEST RESULTS

3. TESTING, ADJUSTING AND BALANCING REPORTS.

4. AS-BUILT DRAWINGS:

- .1 PRIOR TO START OF TESTING, ADJUSTING AND BALANCING FOR HVAC, FINALIZE PRODUCTION OF AS-BUILT DRAWINGS
- .2 IDENTIFY EACH DRAWING IN LOWER RIGHT HAND CORNER IN LETTERS AT LEAST 12 MM HIGH AS FOLLOWS: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (SIGNATURE OF CONTRACTOR) (DATE)
- .3 PERFORM TESTING, ADJUSTING AND BALANCING FOR HVAC USING AS-BUILT DRAWINGS
- .4 SUBMIT COMPLETED REPRODUCIBLE AS-BUILT DRAWINGS WITH OPERATING AND MAINTENANCE MANUALS

1.2 TAB

TAB IS USED THROUGHOUT THIS SECTION TO DESCRIBE THE PROCESS, METHODS AND REQUIREMENTS OF TESTING, ADJUSTING AND BALANCING FOR HVAC.

TAB MEANS TO TEST, ADJUST AND BALANCE TO PERFORM IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND TO DO OTHER WORK AS SPECIFIED IN THIS SECTION.

TAB: PERFORMED IN ACCORDANCE WITH:

- .1 ASSOCIATED AIR BALANCE COUNCIL, (ABC) NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) TABLES, PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS.

- .1 USE TAB STANDARD PROVISIONS, INCLUDING CHECKLISTS, AND REPORT FORMS TO SATISFY CONTRACT REQUIREMENTS

SCHEDULE TIME REQUIRED FOR TAB (INCLUDING REPAIRS, RE-TESTING) INTO PROJECT CONSTRUCTION AND COMPLETION SCHEDULE TO ENSURE COMPLETION BEFORE ACCEPTANCE OF PROJECT.

DO TAB TO FOLLOWING TOLERANCES OF DESIGN VALUES:

- .1 HYDRONIC SYSTEMS: PLUS OR MINUS 10%

TAB REPORT TO SHOW RESULTS IN SI UNITS AND TO INCLUDE:

- .1 PROJECT RECORD DRAWINGS
- .2 SYSTEM SCHEMATICS

PART 2 PRODUCTS

.1 NOT APPLICABLE

PART 3 EXECUTION

3.1 PAINTING REPAIRS AND RESTORATION

- .1 PRIME AND TOUCH UP MARRED FINISHED PAINTWORK TO MATCH ORIGINAL
- .2 RESTORE TO NEW CONDITION, FINISHES WHICH HAVE BEEN DAMAGED

3.2 CLEANING

- .1 CLEAN INTERIOR AND EXTERIOR OF ALL SYSTEMS INCLUDING STRAINERS, VACUUM INTERIOR OF DUCTWORK AND AIR HANDLING UNITS
- .2 REMOVE SURPLUS MATERIALS, EXCESS MATERIALS, RUBBISH, TOOLS AND EQUIPMENT

3.3 FIELD QUALITY CONTROL

- .1 MANUFACTURER'S FIELD SERVICES:
 - .1 OBTAIN WRITTEN REPORT FROM MANUFACTURER VERIFYING COMPLIANCE OF WORK, IN HANDLING, INSTALLING, APPLYING, PROTECTING AND CLEANING OF PRODUCT AND SUBMIT MANUFACTURER'S FIELD REPORTS AS DESCRIBED IN PART 1 - SUBMITTALS
 - .2 PROVIDE MANUFACTURER'S FIELD SERVICES CONSISTING OF PRODUCT USE RECOMMENDATIONS AND PERIODIC SITE VISITS FOR INSPECTION OF PRODUCT INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
 - .3 SCHEDULE SITE VISITS, TO REVIEW WORK, AS DIRECTED IN PART 1 - QUALITY ASSURANCE

2.0 PIPING

PART 1 GENERAL

1.1 HANGERS AND SUPPORTS FOR HVAC PIPING:

- .1 CONSTRUCT PIPE HANGER AND SUPPORT TO MANUFACTURER'S RECOMMENDATIONS UTILIZING MANUFACTURER'S REGULAR PRODUCTION COMPONENTS, PARTS AND ASSEMBLIES
- .2 BASE MAXIMUM LOAD RATINGS ON ALLOWABLE STRESSES PRESCRIBED BY ASME B31.1 OR MSS SP58
- .3 ENSURE THAT SUPPORTS, GUIDES, ANCHORS DO NOT TRANSMIT EXCESSIVE QUANTITIES OF HEAT TO BUILDING STRUCTURE
- .4 DESIGN HANGERS AND SUPPORTS TO SUPPORT SYSTEMS UNDER CONDITIONS OF OPERATION, ALLOW FREE EXPANSION AND CONTRACTION, PREVENT EXCESSIVE STRESSES FROM BEING INTRODUCED INTO PIPEWORK OR CONNECTED EQUIPMENT
- .5 PROVIDE FOR VERTICAL ADJUSTMENTS AFTER ERECTION AND DURING COMMISSIONING. AMOUNT OF ADJUSTMENT IN ACCORDANCE WITH MSS SP58

1.2 IDENTIFICATION OF PIPING SYSTEMS

- .1 IDENTIFY CONTENTS BY BACKGROUND COLOUR MARKING, PICTOGRAM (AS NECESSARY), LEGEND, DIRECTION OF FLOW BY ARROWS. TO CAN/CSB 24.3 EXCEPT WHERE SPECIFIED OTHERWISE
- .2 ARROWS SHOWING DIRECTION OF FLOW:
 - .1 OUTSIDE DIAMETER OF PIPE OR INSULATION LESS THAN 75 MM: 100 MM LONG X 50 MM HIGH
- .3 EXTENT OF BACKGROUND COLOUR MARKING:
 - .1 TO FULL CIRCUMFERENCE OF PIPE OR INSULATION
- .4 MATERIALS FOR BACKGROUND COLOUR MARKING, LEGEND, ARROWS:
 - .1 OTHER PIPES: PRESSURE SENSITIVE VINYL WITH PROTECTIVE OVERCOATING, WATERPROOF CONTACT ADHESIVE UNDERCOATING, SUITABLE FOR AMBIENT OF 100% RH AND CONTINUOUS OPERATING TEMPERATURE OF 150 DEGREES C AND INTERMITTENT TEMPERATURE OF 200 DEGREES C
- .5 COLOURS AND LEGENDS:
 - .1 TO MATCH EXISTING

PART 2 PRODUCTS

2.1 PIPE

- .1 SCHEDULE 40 BLACK STEEL PIPE

2.2 BALANCING VALVES:

- .1 PRESSURE RATING: CLASS125
- .2 TO INCLUDE TEST PORTS FOR BALANCING
- .3 CONNECTIONS: SCREWED ENDS TO ANSI B1.20.1 AND WITH HEXAGONAL SHOULDERS

2.3 SOLENOID VALVES:

- .1 PRESSURE RATING: CLASS125
- .2 ON/OFF TYPE
- .3 RATED TO 120V
- .4 CONNECTIONS: SCREWED ENDS TO ANSI B1.20.1 AND WITH HEXAGONAL SHOULDERS

2.4 BALL VALVES:

- .1 EXCEPT FOR SPECIALTY VALVES, TO BE SINGLE MANUFACTURER
- .2 PRODUCTS TO HAVE CRN REGISTRATION NUMBERS
- .3 BALL VALVES:
 - .1 BODY AND CAP: CAST HIGH TENSILE BRONZE TO ASTM B62
 - .2 PRESSURE RATING: CLASS125
 - .3 CONNECTIONS: SCREWED ENDS TO ANSI B1.20.1 AND WITH HEXAGONAL SHOULDERS
 - .4 STEM: TAMPERPROOF BALL DRIVE
 - .5 STEM PACKING NUT: EXTERNAL TO BODY
 - .6 BALL AND SEAT: REPLACEABLE STAINLESS STEEL SOLID BALL AND TEFLON SEATS
 - .7 STEM SEAL: TFE WITH EXTERNAL PACKING NUT
 - .8 OPERATOR: REMOVABLE LEVER HANDLE

2.5 PIPE HANGERS

- .1 FINISHES:
 - .1 PIPE HANGERS AND SUPPORTS: GALVANIZED AFTER MANUFACTURE
- .2 UPPER ATTACHMENT TO CONCRETE:
 - .1 CEILING: CARBON STEEL WELDED EYE ROD, CLEVIS PLATE, CLEVIS PIN AND COTTERS WITH WELDLESS FORGED STEEL EYE NUT. ENSURE EYE 6 MM MINIMUM GREATER THAN ROD DIAMETER
 - .2 CONCRETE INSERTS: WEDGE SHAPED BODY WITH KNOCKOUT PROTECTOR PLATE ILL LISTED TO MSS SP69
 - .3 SHOP AND FIELD-FABRICATED ASSEMBLIES:
 - .1 TRAPEZE HANGER ASSEMBLIES
 - .2 STEEL BRACKETS
 - .3 SWAY BRACES FOR SEISMIC RESTRAINT SYSTEMS
 - .4 HANGER RODS: THREADED ROD MATERIAL TO MSS SP58:
 - .1 ENSURE THAT HANGER RODS ARE SUBJECT TO TENSILE LOADING ONLY
 - .2 PROVIDE LINKAGES WHERE LATERAL OR AXIAL MOVEMENT OF PIPEWORK IS ANTICIPATED
 - .5 PIPE ATTACHMENTS: MATERIAL TO MSS SP58:
 - .1 ATTACHMENTS FOR STEEL PIPING: CARBON STEEL
 - .2 ATTACHMENTS FOR COPPER PIPING: COPPER PLATED BLACK STEEL

2.6 INSULATION

- .1 MINERAL FIBRE SPECIFIED INCLUDES GLASS FIBRE, ROCK WOOL, SLAG WOOL
- .2 THERMAL CONDUCTIVITY ("K" FACTOR) NOT TO EXCEED SPECIFIED VALUES AT 24 DEGREES C MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM C335
- .3 TAC CODE A_3: RIGID MOULDED MINERAL FIBRE WITH FACTORY APPLIED VAPOUR RETARDER JACKET:
 - .1 MINERAL FIBRE: TO CAN/ULC_S702
 - .2 JACKET: TO CGSB 51_GP_52MA
 - .3 MAXIMUM "K" FACTOR: TO CAN/ULC_S702
 - .4 TAPE: SELF-ADHESIVE, ALUMINUM, 50MM WIDE MINIMUM
 - .5 CONTACT ADHESIVE: QUICK SETTING
 - .6 CANVAS ADHESIVE: WASHABLE
 - .7 ALUMINUM JACKET:
 - .1 TO ASTM B209
 - .2 THICKNESS: 0.50 MM SHEET
 - .3 FINISH: STUCCO EMBOSSED
 - .4 JOINING: LONGITUDINAL AND CIRCUMFERENTIAL SLP JOINTS WITH 50MM LAPS
 - .5 FITTINGS: 0.5MM THICK DE-SHAPED FITTING COVERS WITH FACTORY-ATTACHED PROTECTIVE LINER
 - .6 METAL JACKET BANDING AND MECHANICAL SEALS: STAINLESS STEEL, 19MM WIDE, 0.5MM THICK AT 300MM SPACING

PART 3 EXECUTION

3.1 APPLICATION

- .1 MANUFACTURER'S INSTRUCTIONS: COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS, INCLUDING PRODUCT TECHNICAL BULLETINS, HANDLING, STORAGE AND INSTALLATION INSTRUCTIONS, AND DATASHEETS

3.2 CONNECTIONS TO EQUIPMENT

- .1 IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS UNLESS OTHERWISE INDICATED
- .2 USE VALVES AND EITHER UNIONS OR FLANGES FOR ISOLATION AND EASE OF MAINTENANCE AND ASSEMBLY
- .3 USE DOUBLE SWING JOINTS WHEN EQUIPMENT MOUNTED ON VIBRATION ISOLATION AND WHEN PIPING SUBJECT TO MOVEMENT
- .4 CONNECTION INTO ADJACENT PIPING/TUBING:
 - .1 STEEL PIPE SYSTEMS: SCREWED ENDS TO ANSI/ASME B1.20.1

3.3 DRAINS

- .1 DRAIN VALVES: NPS 3/4 GATE OR GLOBE VALVES UNLESS INDICATED OTHERWISE, WITH HOSE END MALE THREAD, CAP AND CHAIN

3.4 AIR VENTS

- .1 INSTALL AUTOMATIC AIR VENTS TO CSA B139 AT HIGH POINTS IN PIPING SYSTEM
- .2 INSTALL ISOLATING VALVE AT EACH AUTOMATIC AIR VALVE

3.5 DIELECTRIC COUPLINGS

- .1 GENERAL: COMPATIBLE WITH SYSTEM, TO SUIT PRESSURE RATING OF SYSTEM
- .2 LOCATIONS: WHERE DISSIMILAR METALS ARE JOINED
- .3 NPS 2 AND UNDER: ISOLATING UNIONS OR BRONZE VALVES

3.6 PIPEWORK INSTALLATION

- .1 INSTALL PIPEWORK TO CSA B139
- .2 SCREWED FITTINGS JOINTED WITH TEFLON TAPE
- .3 INSTALL TO ISOLATE EQUIPMENT AND ALLOW REMOVAL WITHOUT INTERRUPTING OPERATION OF OTHER EQUIPMENT OR SYSTEMS
- .4 ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS
- .5 SADDLE TYPE BRANCH FITTINGS MAY BE USED ON MAINS IF BRANCH LINE IS NO LARGER THAN HALF SIZE OF MAIN:
 - .1 HOLE SAW (OR DRILL) AND REAM MAIN TO MAINTAIN FULL INSIDE DIAMETER OF BRANCH LINE PRIOR TO WELDING SADDLE
- .6 INSTALL EXPOSED PIPING, EQUIPMENT, RECTANGULAR CLEANOUTS AND SIMILAR ITEMS PARALLEL OR PERPENDICULAR TO BUILDING LINES
- .7 SLOPE PIPING, EXCEPT WHERE INDICATED, IN DIRECTION OF FLOW FOR POSITIVE DRAINAGE AND VENTING
- .8 INSTALL EXCEPT WHERE INDICATED, TO PERMIT SEPARATE THERMAL INSULATION OF EACH PIPE
- .9 REAM PIPES, REMOVE SCALE AND OTHER FOREIGN MATERIAL BEFORE ASSEMBLY
- .10 USE ECCENTRIC REDUCERS AT PIPE SIZE CHANGES TO ENSURE POSITIVE DRAINAGE AND VENTING
- .11 FABRICATE HANGERS, SUPPORTS AND SWAY BRACES IN ACCORDANCE WITH ANSI B31.1 AND MSS SP58
- .3.7 SLEEVES:
 - .1 GENERAL: INSTALL WHERE PIPES PASS THROUGH MASONRY, CONCRETE STRUCTURES, FIRE RATED ASSEMBLIES, AND AS INDICATED
 - .2 MATERIAL: SCHEDULE 40 BLACK STEEL PIPE
 - .3 CONSTRUCTION: USE ANNUAL FINIS CONTINUOUSLY WELDED AT MID-POINT AT FOUNDATION WALLS AND WHERE SLEEVES EXTEND ABOVE FINISHED FLOORS
 - .4 SIZES: 6 MM MINIMUM CLEARANCE BETWEEN SLEEVE AND UNINSULATED PIPE OR BETWEEN SLEEVE AND INSULATION
 - .5 INSTALLATION:
 - .1 CONCRETE, MASONRY WALLS, CONCRETE FLOORS ON GRADE: TERMINATE FLUSH WITH FINISHED SURFACE
 - .6 SEALING:
 - .1 FOUNDATION WALLS AND BELOW GRADE FLOORS: FIRE RETARDANT, WATERPROOF NON-HARDENING MASTIC

3.8 FIRE STOPPING

- .1 INSTALL FIRESTOPPING WITHIN ANNUAL SPACE BETWEEN PIPES, DUCTS, INSULATION AND ADJACENT FIRE SEPARATION
- .2 INSULATED PIPES: ENSURE INTEGRITY OF INSULATION AND VAPOUR BARRIERS

3.9 FLUSHING OUT OF PIPING SYSTEMS

- .1 BEFORE START-UP, CLEAN INTERIOR OF PIPING SYSTEMS
- .2 PREPARATORY TO ACCEPTANCE, CLEAN AND REFURBISH EQUIPMENT AND LEAVE IN OPERATING CONDITION, INCLUDING REPLACEMENT OF FILTERS IN PIPING SYSTEMS

3.10 PRESSURE TESTING OF EQUIPMENT AND PIPEWORK

- .1 ADVISE DEPARTMENTAL REPRESENTATIVE 48 HOURS MINIMUM PRIOR TO PERFORMANCE OF PRESSURE TESTS
- .2 MAINTAIN SPECIFIED TEST PRESSURE WITHOUT LOSS FOR 4 HOURS MINIMUM. SPECIFIED TEST PRESSURE TO BE TWICE THE WORKING PRESSURE OF THE SYSTEM
- .3 PRIOR TO TESTS, ISOLATE EQUIPMENT AND OTHER PARTS WHICH ARE NOT DESIGNED TO WITHSTAND TEST PRESSURE OR MEDIA
- .4 CONDUCT TESTS IN PRESENCE OF DEPARTMENTAL REPRESENTATIVE
- .5 PAY COSTS FOR REPAIRS OR REPLACEMENT, RETESTING, AND MAKING GOOD. INSULATE OR CONCEAL WORK ONLY AFTER APPROVAL AND CERTIFICATION OF TESTS

3.11 START-UP OF HYDRONIC SYSTEMS

- .1 AFTER CLEANING IS COMPLETED AND SYSTEM IS FILLED:
 - .1 ENSURE AIR IS REMOVED
 - .2 CLEAN OUT STRAINERS REPEATEDLY UNTIL SYSTEM IS CLEAN
 - .3 PERFORM TAB
 - .4 ADJUST PIPE SUPPORTS, HANGERS, SPRINGS AS NECESSARY
 - .5 MONITOR PIPE MOVEMENT, PERFORMANCE OF EXPANSION JOINTS, LOOPS, GUIDES, ANCHORS
 - .6 RE-TIGHTEN BOLTS USING TORQUE WRENCH, TO COMPENSATE FOR HEAT-CAUSED RELAXATION. REPEAT SEVERAL TIMES DURING COMMISSIONING
 - .7 CHECK OPERATION OF DRAIN VALVES
 - .8 ADJUST VALVE STEM PACKINGS AS SYSTEMS SETTLE DOWN
 - .9 FULLY OPEN BALANCING VALVES (EXCEPT THOSE THAT ARE FACTORY-SET)
 - .10 ADJUST ALIGNMENT OF PIPING AT PUMPS TO ENSURE FLEXIBILITY, ADEQUACY OF PIPE MOVEMENT, ABSENCE OF NOISE OR VIBRATION TRANSMISSION

3.12 EXISTING SYSTEMS

- .1 CONNECT INTO EXISTING PIPING SYSTEMS AT TIMES APPROVED BY DEPARTMENTAL REPRESENTATIVE
- .2 BE RESPONSIBLE FOR DAMAGE TO EXISTING PLANT BY THIS WORK

3.0 VENTILATION

PART 1 GENERAL

1.1 SUMMARY

- .1 SECTION INCLUDES:
 - .1 MATERIALS AND INSTALLATION FOR FAN COIL UNITS

PART 2 PRODUCTS

2.1 FAN COIL UNIT

- .1 CABINET: STEEL, 1.2 MM THICK, WALL MOUNTING, FRONT INLET/ [FRONT] [TOP] OUTLET
- .2 ELEMENTS: STAINLESS STEEL SHEATHED WITH CORROSION PROTECTED STEEL OR ALUMINUM FINIS COVERING FULL LENGTH OF ELEMENT
- .3 BLOWER MOTORS: ONE SPEED, SINGLE PHASE
- .4 FILTER: REPLACEABLE

2.2 THERMOSTAT (LINE VOLTAGE, COILING)

- .1 LINE VOLTAGE WALL MOUNTED INTEGRAL ELECTRIC THERMOSTAT WITH:
 - .1 FULL LOAD RATING: 22 A AT 120V
- .2 TEMPERATURE SETTING RANGE: 5 DEGREES C TO 30 DEGREES C
- .3 DOUBLE POLE
- .4 THERMOMETER RANGE: 5 DEGREES C TO 30 DEGREES C
- .5 SCALE MARKINGS: OFF_5_10_15_20_25 DEGREES C

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 MOUNT FAN COIL UNIT
- .2 MOUNT WALL THERMOSTAT

3.3 SEQUENCE OF OPERATIONS

- .1 SET THE THERMOSTAT TO 25 DEGREES C
- .2 IF THE TEMPERATURE EXCEEDS 25 DEGREES C THEN:
 - .1 THE FAN STARTS
 - .2 THE SOLENOID VALVE OPENS
- .3 IF THE TEMPERATURE DROPS BELOW 25 DEGREES C THEN:
 - .1 THE FAN STOPS
 - .2 THE SOLENOID VALVE CLOSES

YVES GUINDON

Director, Security & Facilities

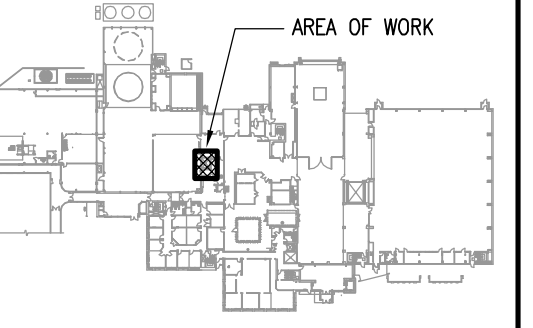
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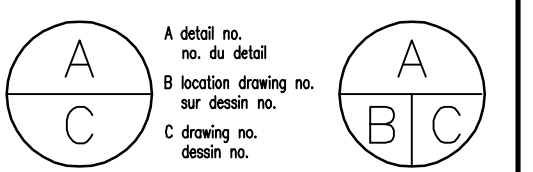
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2.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-10-20
1.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-07-12
No.	Revision	Date

PROFESSIONAL STAMP



project **DAVID FLORIDA LABORATORY** project
BUILDING No. 65, SHIRLEY'S BAY, ONTARIO
SMALL FREIGHT ELEVATOR REPLACEMENT

drawing **MECHANICAL SPECIFICATIONS** dessin

designed	Geoffrey Lynch	concu
date	2011-07-07	
drawn	Julie Marsan	dessine
date	2011-07-07	
reviewed	Geoffrey Lynch	examine
date	2011-07-07	
approved	Geoffrey Lynch	approuve
date	2011-07-07	
scale	As Indicated	

project no. 034P039156 no. du projet

drawing no. ME02 no. du dessin

ELECTRICAL SPECIFICATIONS

1.0 GENERAL INSTRUCTIONS

1.1 GENERAL

- THE ELECTRICAL WORK SHALL CONFORM TO THE DRAWINGS AND THE FOLLOWING GENERAL INSTRUCTIONS THAT FORM PART OF THESE CONTRACT DOCUMENTS. THE SAME APPLIES TO CLARIFICATION DRAWINGS, CORRESPONDANCE AND ALL OTHER DOCUMENTS THAT ARE OR WILL BE PROVIDED BY ENGINEER.
- MATERIALS SHALL COME FROM PROVINCIAL SOURCES AS MUCH AS POSSIBLE, RESPECTING QUALITY AND COST.
- THE CONTRACTOR SHALL EXECUTE ANY ADDITIONAL WORK ASKED FOR IN WRITING BY ENGINEER, WITH THE APPROVAL OF THE OWNER. THE OWNER WILL NOT ACCEPT ANY CLAIM FOR ADDITIONAL WORK IF THIS WORK HAS BEEN EXECUTED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
- THE CONTRACTOR SHALL, AT HIS OWN COST, PROTECT, SUPPORT, BRACE, DIVERT AND RESTORE TO THE COMPLETE SATISFACTION OF THE ENGINEER:
 - ANY COMMUNICATION OR ELECTRICAL CONDUIT RUN, ETC.;
 - ANY ELECTRICAL EQUIPMENT AND OTHERS;
 - ANY FLOORS, WALLS, CEILING AND OTHER STRUCTURAL OR ARCHITECTURAL COMPONENTS;
- WHICH MAY BE FOUND, MODIFIED OR DAMAGED DURING THE COURSE OF THIS CONTRACT.
- ALL DAMAGES CAUSED TO PROPERTY AND EXISTING SERVICES BY THE CONTRACTOR SHALL IMMEDIATELY BE REPAIRED TO THE SATISFACTION OF THE ENGINEER, WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- THE ELECTRICAL DRAWINGS DO NOT INDICATE ALL ARCHITECTURAL AND STRUCTURAL DETAILS. EXACT INFORMATION SHALL BE OBTAINED ON SITE AND FROM ARCHITECTURAL AND STRUCTURAL DRAWINGS, WHICH SHALL BE REVIEWED.
- THE ELECTRICAL DRAWINGS INDICATE IN A GENERAL MANNER, THE POSITION OF EQUIPMENT, CONDUIT RUNS, AND OTHER REQUIRED FIXTURES.
- THE INSTALLATIONS ARE SHOWN IN SCHEMATICALLY COMPLETE THE INSTALLATION AS FOLLOWS:
 - RUN CONDUIT PARALLEL TO THE BUILDING STRUCTURE, WHEN EXPOSED;
 - NO CUTTING OR BORING THROUGH STRUCTURAL ELEMENTS WITHOUT WRITTEN PERMISSION;
 - ALL EXISTING EQUIPMENT WHICH IS TO BE REMOVED AND RELOCATED SHALL BE CHECKED AND CLEANED;
 - RELOCATE ANY EQUIPMENT WITHOUT ADDITIONAL COST WITHIN THREE (3) METERS OF INDICATED LOCATION BEFORE IT IS INSTALLED;
 - MINIMIZE AS MUCH AS POSSIBLE EXPOSED EQUIPMENT;

1.2 AS-BUILT DRAWINGS

- ALL MODIFICATIONS TO MATERIALS, EQUIPMENT OR FIXTURES AND ALL DEVIATIONS TO THE CONDUIT RUNS AND OTHERS SHALL BE, AFTER APPROVAL FROM THE ENGINEERS AND AFTER EXECUTION, SHALL BE NOTED IN RED ON ONE CLEAN SET OF DRAWINGS THAT THE CONTRACTOR WILL PREPARE AND SUBMIT TO THE ENGINEER FOR RELEASE OF "AS BUILT" DRAWINGS.

1.3 OWNERSHIP AND INTERPRETATION OF DRAWINGS & SPECIFICATIONS

- THE ENGINEER HAVING DESIGNED THESE DRAWINGS AND SPECIFICATIONS IS THE ONLY PERSON THAT CAN INTERPRET THEIR EXACT MEANING AND HAS THE EXCLUSIVE OWNERSHIP. ALSO, THESE DOCUMENTS CANNOT BE USED AS A WHOLE OR PART TO EXECUTE ANY OTHER PROJECT OTHER THAN THE ONE SPECIFIED HEREIN.
- IN SPITE OF ARTICLE 1.01, DURING THE BID, THE CONTRACTOR SHALL ESTABLISH THE WORK TO BE DONE IN ACCORDANCE WITH THE REFERENCES GIVEN ON THE DRAWINGS OR ADVISE THE ENGINEER OF ANY ERRORS, OMISSIONS, LACK OF DATA, DIFFERENCES BETWEEN THE DOCUMENTS AND OF DISCREPANCIES RELATIVE TO THE EXISTING.

1.4 STUDY OF THE DOCUMENTS

- ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING (WHILE STILL UNDER TENDER). OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE OF ANY REQUIRED CHANGES.

1.5 SCOPES OF WORK

THE SCOPE OF WORK INCLUDES:

- SUPPLY, INSTALLATION AND CONNECTION OF ALL THE ELECTRICAL EQUIPMENT THAT IS SHOWN ON THE DRAWINGS OR MENTIONED IN THE SPECIFICATIONS, WITH ALL NECESSARY ACCESSORIES, EVEN THOSE NOT ILLUSTRATED ON PLANS AND SPECIFICATIONS BUT REQUIRED FOR PROPER OPERATION.
- THE FOLLOWING OBLIGATIONS REQUIREMENTS SUPPLY:
 - TO HAVE THE WHOLE SYSTEM IN GOOD WORKING ORDER, ACCORDING TO RULES OF THE TRADE, STANDARD PRACTICES AND IN CLOSE RELATION WITH OTHER IMPLICATED TRADES.
 - TO DO THE WORK AND SUPPLY ALL THE NECESSARY MATERIALS, TOOLS, EQUIPMENT, LABOUR AND SUPERVISION REQUIRED FOR THE COMPLETE EXECUTION OF THE WORK AS INDICATED, DESCRIBED OR REASONABLY IMPLIED ON THE DRAWINGS OR IN THE PRESENT GENERAL INSTRUCTIONS.
 - PROTECT THE WORK DURING THE PROJECT AGAINST BAD WEATHER, FIRE, THEFT AND VANDALISM.

1.6 GUARANTEES

- THE WHOLE WORK SHALL BE FREE OF MANUFACTURING, MATERIAL AND INSTALLATION DEFECTS. ALL SUPPLIED AND INSTALLED MATERIALS, FIXTURES AND EQUIPMENT SHALL BE NEW AND OF THE FIRST QUALITY.
- IF, DURING THE WARRANTY PERIOD, IT IS PROVEN THAT SUCH DEFECTS EXISTS, THE CONTRACTOR SHALL REPAIR OR REPLACE THE DEFECTIVE EQUIPMENT OR WORK WITHOUT CLAIMING AN ADDITIONAL AMOUNT FROM THE OWNER. IN ADDITION, DURING THE WARRANTY PERIOD, HE SHALL ASSUME THE RESPONSIBILITY OF ALL DELAYS OR DAMAGES CAUSED BY THESE DEFECTS, AND, IF REQUIRED, CORRECT ALL DAMAGES CAUSED TO THE ADJACENT SURFACES BY THE REPAIRS OR MODIFICATIONS WHILE IN THE EXECUTION OF THE WORK.
- A WRITTEN ONE (1) YEAR WARRANTY SHALL BE SUPPLIED BY THE CONTRACTOR FOR ALL THE EQUIPMENT AND FIXTURES, THEIR INSTALLATION AND OPERATION. THIS WARRANTY COMES INTO FORCE AT THE BEGINNING OF THE FINAL APPROVAL OF THE WORK BY THE ENGINEER.

1.7 SHOP DRAWINGS

- AS REQUIRED, BEFORE ORDERING MATERIAL, EQUIPMENT AND FIXTURES THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER AT LEAST FIVE (5) COPIES OF EACH SHOP DRAWINGS AND THE SAMPLES OF THE MATERIALS TO BE USED FOR THE ENGINEER'S APPROVAL.
- THE REVIEW AND THE APPROVAL OF THE DRAWINGS AND SAMPLES BY THE ENGINEER ARE APPLICABLE ONLY TO THE GENERAL LAYOUT, ERRORS IN SIZES AND QUANTITIES, INCLUDING THE OBSTACLES TO THE WORK TO BE DONE SHALL BE NOTED, BUT THIS WILL NOT FREE THE CONTRACTOR FROM HIS RESPONSIBILITY TO COMPLETE THE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- THE CHARACTERISTICS OF THE MATERIALS AND THE RELEVANT MANUFACTURING AND INSTALLATION DETAILS AND ALL OTHER PARTICULAR FUNCTIONS AND STANDARDS SHALL BE CLEARLY INDICATED ON EACH OF THE SHOP DRAWINGS.

1.8 OPERATION AND MAINTENANCE

- THE CONTRACTORS IS REQUIRED TO:
 - PUT THE SYSTEM IN OPERATION AND CHECK THE PERFORMANCE AND OPERATION CHARACTERISTICS REQUIRED BY THE PLANS AND SPECIFICATIONS;
 - CHECK EACH CONTROL DEVICE IN SIMULATED CONDITIONS, THEN MAKE A WRITTEN REPORT TO CONFIRM THAT THE SYSTEMS ARE FUNCTIONING ACCORDING TO DRAWINGS, SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS;
 - SUPPLY TWO DOCUMENTS CONTAINING SHOP DRAWINGS, SHOP-TRIALS, BENCH-TEST RESULTS, OPERATION, INSTRUCTION AND SERVICE MANUALS.

1.9 CODES, LICENSES, STANDARDS, COSTS

- OBTAIN AND PAY THE REQUIRED PERMITS.
- DO NOT CONCEAL WORK BEFORE INSPECTION BY THE ENGINEER AND OTHER RESPONSIBLE AUTHORITIES HAVING JURISDICTION.
- OBSERVE THE APPLICABLE CODES AND STANDARDS OF WHICH THE PRINCIPALS ARE NBC, COCR, MINISTRY OF LABOR, ENVIRONMENTAL PROTECTION AND ALL OTHERS PERTAINING TO THIS PROJECT. IN CASE OF CONFLICT THE MOST RESTRICTIVE SHALL APPLY.
- ALSO ALL TEMPORARY AND PERMANENT CONNECTION CHARGES TO THE PUBLIC UTILITIES SUCH AS: DOMESTIC WATER, SEWER, POLES, VALVES, NATURAL GAS, ETC., SHALL BE PAID BY THE GENERAL CONTRACTOR.

1.10 SECURITY

- ALL WORK TO BE DONE AS PER CLIENT SECURITY REQUIREMENTS.

1.11 RIGHTS

- ALL CHANGES AND ALL MODIFICATIONS REQUIRED BY AN INSPECTOR OF A COMPETENT JURISDICTION SHALL BE CARRIED OUT WITHOUT ADDITIONAL COSTS OR EXPENSES FOR THE OWNER.
- THE CONTRACTOR SHALL PAY ALL DUES FOR THE USAGE OF PATENTED PRODUCTS. IF ANY, AND PROTECT THE OWNER AGAINST ALL CLAIMS RELATED TO THE WORKS DUE TO THE PATENTS IN FORCE AT THE TIME OF THE SIGNATURE OF THE CONTRACTUAL DOCUMENTS.

1.12 PRECAUTIONS

- ALL EQUIPMENT, CONDUITS, PIPING AND OTHERS ARE SHOWN SCHEMATICALLY AND THEIR LOCATION IS APPROXIMATIVE, THE EXACT LOCATION SHALL BE DETERMINED ON SITE.
- UNLESS OTHERWISE NOTED, ALL ELECTRICAL EQUIPMENT THAT IS TO BE REMOVED WILL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE DISPOSED OF FROM SITE AT HIS OWN EXPENSE, UNLESS INDICATED OTHERWISE.
- DURING THE WORK, IF CERTAIN FIXTURES AND/OR EQUIPMENT (EXISTING OR NEW) ARE REQUIRED FOR CONTINUATION OF AN ELECTRICAL OPERATION THE CONTRACTOR WILL (RE) LOCATE ON A TEMPORARY OR PERMANENT BASIS, THE FIXTURES AND/OR EQUIPMENT TO AN ADEQUATE LOCATION AND DO THE NEEDED RESPECTIVE CONNECTIONS.
- ALL REINSTALLED OR RELOCATED FIXTURES OR EQUIPMENT SHALL BE CLEANED AND REPAIRED AS NEEDED BEFORE THE FINAL INSTALLATION AND CONNECTION.
- THE CONTRACTOR SHALL COORDINATE THE WORK WITH MANUFACTURERS, SUPPLIERS AND OTHER TRADES IMPLICATED IN THE PROJECT.

1.13 DOCUMENTS TO BE SUPPLIED

- AT THE INTERIM INSPECTION, THE CONTRACTOR SHALL SUPPLY, ALL DOCUMENTS PERTINENT TO THE WORK EXECUTED.
- ELECTRICAL:
 - LETTER OF WARRANTY.
 - INSPECTION CERTIFICATE FROM "MINISTRY OF LABOR" OR EQUIVALENT OFFICE.
 - MANUFACTURERS OF FIRE-ALARM SYSTEM AND OTHER SYSTEM INSPECTION CERTIFICATE, IF APPLICABLE.
- ALL ABOVE MENTIONED DOCUMENTS SHALL BE DULY SIGNED BY A AUTHORIZED QUALIFIED PERSON.

1.14 SERVICES INTERRUPTIONS

- ALL ELECTRICAL SERVICE INTERRUPTIONS FORESEEN BY THE CONTRACTOR SHALL BE COORDINATED WITH THE OWNER AT LEAST 48 HOURS IN ADVANCE. INTERRUPTIONS SHALL BE MADE DURING WEEKEND NIGHTS (12:00AM TO 6:00AM) OR AS INDICATED BY OWNER, WITHOUT EXTRA CHARGES TO CONTRACT. THE DURATION OF AN INTERRUPTION SHALL NOT LAST MORE THEN TWO (2) HOURS.

1.15 SMALL WORKS

- THE CONTRACTOR SHALL EXECUTE ALL ANCILLARY WORK, WHICH MAY NOT BE INDICATED ON THE DRAWINGS, BUT IS REQUIRED TO COMPLETE THE WORK AND ANY SUCH ADDITIONS SHALL BE INCLUDED WITH THE TENDER.
- ALL WORK IN PART OR IN WHOLE SHALL BE, AT ALL TIMES, EXECUTED TO THE SATISFACTION OF THE ENGINEER.

1.16 COORDINATION

- THE FINAL LOCATION OF LIGHTING FIXTURES, AND OTHER ELECTRICAL EQUIPMENT SHALL BE COORDINATED ON SITE WITH THE NEW EQUIPMENT, AND EQUIPMENT FROM OTHER TRADES.

1.17 EQUIVALENCE

- THE BID SHALL BE BASED ON PRODUCTS SPECIFIED IN DOCUMENTS. THE CONTRACTOR MAY SUBMIT EQUIVALENCES BUT HE SHALL PROVIDE SPECIFIED PRODUCTS IN THE CASE OF NON-ACCEPTANCE OF EQUIVALENCES.

1.18 DELIVERY

- INDICATE IN TENDER FORM DELIVERY DELAYS THAT CAN INTERFERE WITH WORK EXECUTION.

1.19 TEMPORARY POWER

- ELECTRICAL CONTRACTOR SHALL BE RESPONSABLE TO PROVIDE TEMPORARY LIGHTING AND POWER, AT NO EXTRA COST TO CONTRACT.

1.20 FINAL INSPECTION

- FINAL INSPECTION SUBJECT TO APPROVAL BY ENGINEER.

REQUEST FINAL INSPECTION AFTER:

 - DEFICIENCIES NOTED IN JOB INSPECTIONS ARE COMPLETED.
 - SYSTEMS HAVE BEEN TESTED AND ARE FULLY OPERATIONAL.
 - BALANCING OF LOADS IS COMPLETE.
 - CERTIFICATES HAVE BEEN FURNISHED.
 - AS-BUILT DRAWINGS ARE COMPLETE.
 - ALL INTERIM INSPECTION DEFICIENCIES HAVE BEEN CORRECTED AND VERIFIED.

2.0 TECHNICAL ELECTRICAL INSTRUCTIONS

2.1 GENERAL REQUIREMENTS

- PROVIDE ALL LABOUR, NEW MATERIALS AND ALL NECESSARY EQUIPMENT TO MAKE A COMPLETE INSTALLATION OF ELECTRICAL WORK.
- DO COMPLETE INSTALLATION IN ACCORDANCE WITH ONTARIO ELECTRICAL CODE LATEST EDITION AND NATIONAL BUILDING CODE OF CANADA.
- ALL ELECTRICAL WORK AND EQUIPMENT IS TO BE COVERED BY WARRANTY OF A MINIMUM OF ONE (1) YEAR, MATERIAL AND LABOUR, STARTING FROM THE DATE OF FINAL ACCEPTANCE.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY ON SITE FOR THE ROOM REQUIRED TO EXECUTE THE DIFFERENT WORK AND THAT IT IS IN ACCORDANCE WITH CODE REQUIREMENTS.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 3/4" (19MM) FIREPROOFED PLYWOOD BACKBOARD, ANCHORED TO WALL, FOR THE INSTALLATION OF PANELS, OTHER ELECTRICAL DISTRIBUTION EQUIPMENTS AND TELEPHONE EQUIPMENTS.
- ALL EQUIPMENT SHOWN IN DOTTED LINES ARE EITHER EXISTING, PROVIDED BY OTHERS OR IN A STRUCTURAL SLAB, ALL ACCORDING TO THE INTENT ON THE DRAWINGS OR INDICATED NOTES.
- PROVIDE AND INSTALL ALL APPROPRIATE "U" SHAPE GALVANIZED STEEL SUPPORT CHANNELS 41MM X 41MM TO SUPPORT ELECTRICAL EQUIPMENT. ALL CUTS MADE TO CHANNELS WILL HAVE TO BE COATED WITH A GALVANIZED PROTECTION.

2.2 GROUNDING

- INSTALL A COMPLETE PERMANENT, CONTINUOUS GROUNDING SYSTEM INCLUDING CONDUCTORS, CONNECTORS AND ACCESSORIES, ALL ACCORDING TO THE ONTARIO ELECTRICAL CODE.
- GROUND WALL WIRE MESH WITH A #6 RW-90 GREEN INSULATION CONDUCTOR UP TO CLOSEST JUNCTION BOX WITH TWO (2) HOLES DOUBLE COMPRESSION LUGS.

2.3 WIRING

- ALL CONDUCTORS SHALL BE COPPER WITH RW-90 600 VOLTS INSULATION MINIMUM WIRE SIZE SHALL BE #12 AWG. MINIMUM WHEN LOAD OR BREAKER RATINGS ARE GREATER THEN 15A, THE CONDUCTOR SHALL BE AS INDICATED OR OF CAPACITY EQUAL TO THE LOAD OF BREAKER TRIP SIZE AS DETERMINED BY THE APPLICABLE CODE.
- AC90 TYPE CABLE SHALL BE USED IN METAL STUD WALL CONSTRUCTION, FINAL CONNECTIONS TO LIGHT FIXTURES, TO RECEPTACLES AND OTHER ELECTRICAL EQUIPMENTS FOR A MAXIMUM LENGHT OF 4500MM PER CONNECTION.

2.4 OUTLET BOXES

- ALL OUTLET OR JUNCTIONS BOXES SHALL BE SUPPORTED INDEPENDENTLY FROM THE CONDUITS CONNECTED TO IT.
- THESE BOXES SHALL BE IN GALVANIZED STEEL AND EQUIPPED WITH PLASTER RING, AS REQUIRED BY THE INSTALLATION OR THE APPLICATION. UNLESS OTHERWISE NOTED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED COVERPLATES.

2.5 WIRING DEVICE

- WIRING DEVICE TO BE SPECIFICATION GRADE.
- ALL DEVICES TO BE WHITE UNLESS CONNECTED ON EMERGENCY, IN WHICH CASE THEY SHALL BE RED.
- ALL COVER PLATES TO BE STAINLESS STEEL.

2.6 ELECTRICAL PANELS

- ALL ELECTRICAL PANELS SHALL BE FROM SAME MANUFACTURER THROUGHOUT AND SHALL HAVE THE FOLLOWING CHARACTERISTICS:
 - BUS AND BREAKERS TO HAVE A RUPITURING CAPACITY OF 10KA @ 250V AND 14KA @ 347V AND 600V, SYMMETRIC OR AS INDICATED.
 - PROVIDE LOCK-ON DEVICES ON BREAKERS FEEDING COMPUTER RECEPTACLES, EMERGENCY LIGHTING CIRCUITS, EXTERIOR LIGHTING, 24 HOUR LIGHTING, EXIT SIGN CIRCUITS, FIRE ALARM PANEL AND ALL OTHERS AS INDICATED ON DRAWINGS.
 - PROVIDE A COMPLETE CIRCUIT DIRECTORY WITH TYPED LEGEND SHOWING LOCATION AND LOADS OF EACH CIRCUIT. INSERT LEGENDS IN RESERVED SPACE INSIDE PANEL DOORS. THIS APPLIES ALSO TO EXISTING PANELBOARDS THAT HAVE BEEN MODIFIED.
 - THE DOOR OF EACH PANEL SHALL BE EQUIPPED WITH A KEYPED LOCKING DEVICE.
- ACCEPTABLE MANUFACTURERS:
 - CUTLER HAMMER;
- PLEASE TAKE NOTE THAT IN THE ELECTRICAL PANEL DETAIL SHEETS, "SPARE" INDICATES A CIRCUIT WITH A BREAKER THAT IS FREE FOR FUTURE CIRCUITS, AND "SPACE" INDICATES A CIRCUIT WITHOUT ANY BREAKER. WHEN NO IDENTIFICATIONS ARE SHOWN, CONSIDER THE CIRCUIT AS BEING A SPACE, UNLESS NOTED OTHERWISE ON THE PANEL.

2.7 CONDUITS

- UNLESS OTHERWISE NOTED, USE ELECTRIC METALLIC TUBING (EMT) THROUGHOUT THE PROJECT WITH RAIN TIGHT COUPLINGS.
- USE ARMURED CABLE AC-90 FOR FINAL CONNECTION TO LIGHT FIXTURES AND RECEPTACLES FOR A MAXIMUM LENGHT OF 4.5 METRES.
- USE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR CONNECTION TO MOTORS, GENERATORS OR VIBRATING EQUIPMENT IN DAMP, WET OR CORROSIVE LOCATIONS.
- FASTEN CONDUIT SECURELY AT EACH 1500MM WITH ONE HOLE STEEL STRAPS FOR CONDUITS 50MM AND SMALLER. TWO HOLE STEEL STRAPS FOR CONDUITS LARGER THAN 50mm.
- INSTALL CONDUITS TO CONSERVE HEADROOM CONDUITS SHALL BE INSTALLED ROUND STRUCTURAL BEAMS AND SHALL BE RUN PARALLEL TO BUILDING LINES.
- PROVIDE POLYPROPYLENE FISH CORDS IN EMPTY CONDUITS AND PROVIDE A PLASTIC BUSHING AT EACH END OF CONDUIT BEING USED FOR COMMUNICATION AND DATA CABLES.
- MINIMUM CONDUIT SIZE FOR LIGHTING AND POWER CIRCUITS: 21mm

2.8 LAMPS

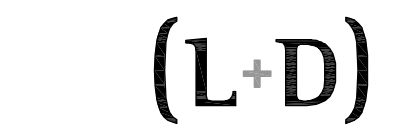
- PROVIDE AND INSTALL ALL LAMPS REQUIRED FOR THE PROJECT AND ENSURE THAT THEY ARE APPROPRIATE FOR EACH FIXTURE TYPE. ALL LAMPS INSTALLED IN SAME TYPE LIGHTING FIXTURE SHALL BE IDENTICAL, SHALL COME FROM A SINGLE MANUFACTURER AND SHALL HAVE THE SAME CAPACITY, DIMENSIONS AND SAME COLOUR RENDERING.

2.9 DISCONNECT

- EEMAC 1 GENERAL PURPOSE TYPE DISCONNECT SWITCHES AND THEY SHALL ACCEPT HRC, FORM 1, CLASS J FUSES.
- DISCONNECT SWITCHES SHALL BE EQUIPPED WITH PROVISION FOR PADLOCKING IN ON-OFF POSITION AND MECHANICALLY INTERLOCKED DOOR TO PREVENT OPENING WHEN HANDLE IS IN ON POSITION.
- DISCONNECT SWITCHES SHALL BE SECURELY FIXED TO THE EQUIPMENT IT IS FEEDING IF APPROVED BY EQUIPMENT MANUFACTURER OR ELSE IT SHALL BE INSTALLED ON AN INDEPENDENT CHANNEL SUPPORT.

2.10 FIRE ALARM

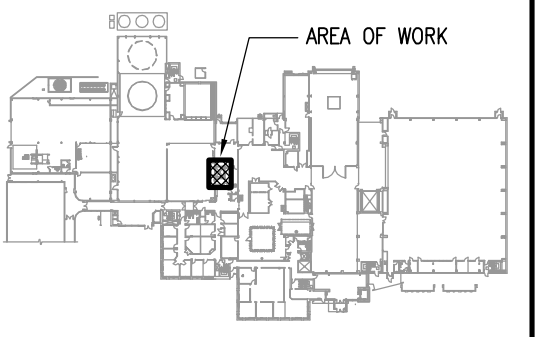
- THE EXISTING SYSTEM IS A COMBINATION OF AN ORIGINAL UNITED MARINE SYSTEM WITH RECENT SIGNICANT UPGRADES BY CERBERUS/SIEMENS.
- THE EXISTING FIRE ALARM SYSTEM DESCRIBED ABOVE IS SCHEDULED FOR REPLACEMENT IN WOOD BANANI BOUTHILLETTE PARIZEAU INC. FIRE ALARM REPLACEMENT PROJECT (PWSC #409322). ALL WORK RELATED TO FIRE ALARM IN THIS PROJECT MUST BE COORDINATED WITH THIS PROJECT AND WILL BE DONE BY OTHERS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUITY OF THIS SYSTEM BY COORDINATING ALL NECESSARY MEASURES TO ENSURE SYSTEM INTEGRITY DURING THE MODIFICATIONS OF THIS SYSTEM.



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2.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-10-20
1.	ISSUED FOR 100% FOR TENDER/CONSTRUCTION	2011-07-12
No.	Revision	Date



A	A detail no. du détail	A
B	B location drawing no. for dessin no.	B
C	C drawing no. dessin no.	C

project: DAVID FLORIDA LABORATORY project: BUILDING No. 65, SHIRLEY'S BAY, ONTARIO
drawing: SMALL FREIGHT ELEVATOR REPLACEMENT dessin:

ELECTRICAL SPECIFICATIONS

designed	Richard St-Louis	conçu
date	2011-07-07	
drawn	Julie Marsan	dessiné
date	2011-07-07	
reviewed	Daniel Dubé	examiné
date	2011-07-07	
approved	Daniel Dubé	approuvé
date	2011-07-07	
scale	None	

project no.	034P039156	no. du projet
drawing no.		no. du dessin

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