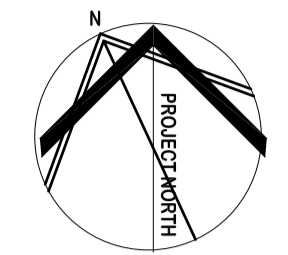


DAVID FLORIDA LABORATORY

BUILDING 65, SHIRLEY'S BAY WATER MAIN SYSTEM UPGRADE



2019.12.02



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revisions	description	date
08	Issued for Tender	2019.12.02
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01	Issued for 90% Review	2017.07.28

revisions	description	date
A	A detail no. no. du detail	
B	B location drawing no. sur dessin no.	
C	C drawing no. dessin no.	

project project

WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
3701 CARLING AVENUE, OTTAWA, ON
ADDRESS

drawing dessin

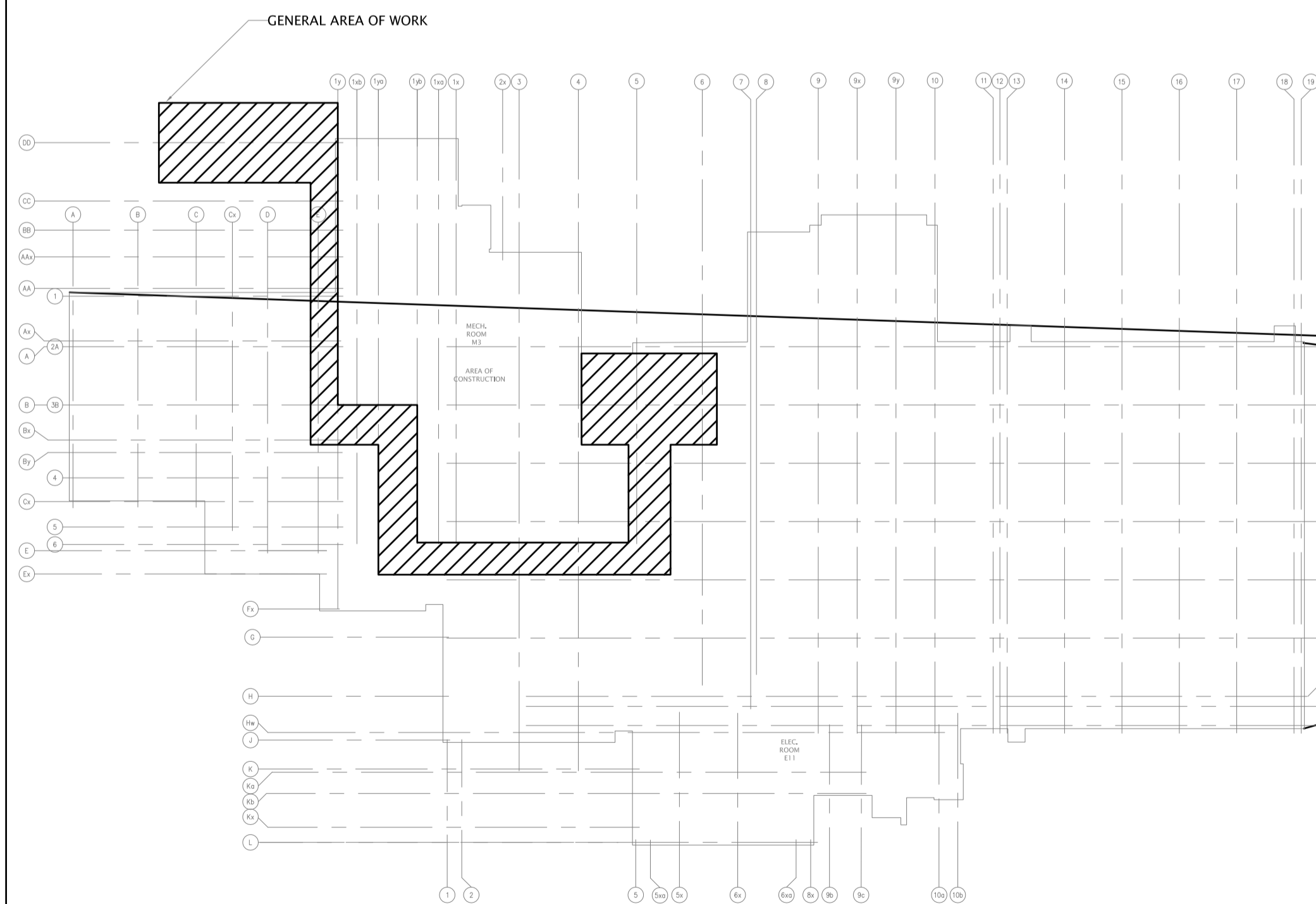
DRAWING LIST, & SITE KEYPLAN

Designed By	Conçu par
Date	(yyyy/mm/dd)
Drawn By	Dessiné par
Date	(yyyy/mm/dd)
Reviewed By	Examiné par
Date	(yyyy/mm/dd)
Approved By	Approuvé par
Date	(yyyy/mm/dd)
Tender	Soumission

Project Manager Administrateur de projets

Project no. **CSA17-M1** No. du projet
2017-037

Drawing no. **G1** No. du dessin



DRAWING	DESCRIPTION
G1	DRAWING LIST, & SITE KEYPLAN
MECHANICAL	
M1	MECHANICAL LEGENDS, GENERAL NOTES & PROCEDURES
M2	MECHANICAL FIRE PROTECTION SCHEMATIC DEMOLITION
M3	MECHANICAL FIRE PROTECTION SCHEMATIC NEW WORK
M4	FIRE PROTECTION DEMOLITION & NEW WORK BASEMENT LEVEL PARTIAL PLAN
ELECTRICAL	
E1	ELECTRICAL LEGENDS, GENERAL NOTES & PROCEDURES, & SCHEDULES
E2	POWER & SYSTEMS DEMOLITION & NEW WORK PARTIAL BASEMENT LEVEL PLAN
E3	POWER & SYSTEMS NEW WORK GROUND LEVEL PARTIAL PLAN
E4	ELECTRICAL DISTRIBUTION SINGLE LINE DIAGRAM NEW WORK
E5	POWER & SYSTEMS BUILDING 89 REFERENCE PICTURES

1 SITE KEY PLAN
G1 Scale: 1:500

DFL PROJECTS GENERAL NOTES & PROCEDURES:

- 1. THE MECHANICAL CONTRACTOR SHALL ACT AS THE PRIME CONTRACTOR...
2. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS & RE-INSPECTIONS REQUIRED TO BE PERFORMED BY LOCAL AUTHORITIES...
3. CONTRACTOR TO BE RESPONSIBLE FOR THE PROVISION (SUPPLY AND INSTALLATION) OF ALL MATERIALS, EQUIPMENT & SERVICES SHOWN ON THE PROJECT DRAWINGS & SPECIFICATIONS AS REQUIRED FOR A FULLY OPERABLE SYSTEM...
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION WORK...
5. DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS & ROUTE OF EACH COMPONENT TO BE INSTALLED OR REMOVED...
6. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES...
7. ALL DIMENSIONS TO BE VERIFIED ON SITE. EXACT LOCATION & ELEVATION OF EQUIPMENT IS SUBJECT TO SITE MEASUREMENTS.
8. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL MATERIAL, EQUIPMENT & FIXTURES TO DEPARTMENTAL REPRESENTATIVE FOR APPROVAL BEFORE COMMENCING INSTALLATION OR ORDERING...
9. ALL SUPPLIED MATERIALS, FIXTURES & EQUIPMENT TO BE NEW, FREE FROM DEFECTS, CERTIFIED & APPROVED BY CODE...
10. CSA SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT...
11. INSTALL ALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS & RECOMMENDATIONS.
12. ALL TRADES SHOULD BE LICENSED TO PERFORM ALL WORK SHOWN ON THE DRAWINGS INCLUDING REMOVALS & DEMOLITION.
13. DO NOT DAMAGE EXISTING FIRE SEPARATIONS AND FIRE PROTECTIONS IN THE PROJECT AREAS...
14. UNDER ANY CIRCUMSTANCES, DO NOT BLOCK REQUIRED ACCESS TO EXITS AND FIRE ESCAPE ROUTES DURING THE PROJECT DURATION...
15. SMOKE EATERS & POWERED EXHAUST FANS VENTED TO OUTSIDE OF BUILDING MUST BE USED DURING ALL BRAZING / WELDING / SOLDERING / CUTTING / GRINDING ACTIVITIES...
16. CONTRACTOR TO PROTECT ALL ARCHITECTURAL FINISHES & FLOORING DURING CONSTRUCTION...
17. EXACT TAPPING LIMITS AND ACCESS ROUTES TO BE DETERMINED ON SITE IN COORDINATION WITH CSA PROJECT MANAGER...
17.1. ALL TARPS TO BE NEW HEAVY DUTY POLYETHYLENE, WATER / MILDEW / TEAR RESISTANT...
17.2. APPROVED METHODS TO ATTACH STUDS / TARPS TO BUILDING AS FOLLOWS...
17.3. TARPS COULD BE HANGED OFF BUILDING STEEL STRUCTURAL USING HIGH STRENGTH CABLE TIES...
17.4. HANGING TARPS FROM BUILDING SERVICES (DUCTWORK, CONDUITS, PIPES, SUPPORTS, HANGERS ... ETC.) IS NOT PERMITTED.
17.5. CONTRACTOR IS RESPONSIBLE FOR CLEANING, PATCHING, REPAIRING & PAINTING ALL DAMAGED SURFACES & TAPE MARKS AFTER REMOVING TARPS.
18. PROVIDE FLOOR PROTECTION TO ENTIRE PROJECT AREAS AS FOLLOWS...
18.1. FLOOR TO BE WIPED CLEAN FROM ANY DEBRIS OR DUST PARTICLES.
18.2. PROVIDE MIN. 1/8" FOAM LAYER DIRECTLY ON ALL FLOORING.
18.3. PROVIDE HARD SHEETS ON TOP OF FOAM LAYER...
19. PROVIDE FURNITURE AND EQUIPMENT PROTECTION AS FOLLOWS...
19.1. OFFICE / LAB FURNITURE AND EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS.
19.2. SENSITIVE LAB TESTING EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS...
20. CONTRACTOR TO PROVIDE BILINGUAL CONSTRUCTION, ACCESS & SAFETY SIGNAGE, SIGNS TO BE POSTED ON ALL PROJECT FENCES & ENTRANCES AT THE START OF PROJECT AND BEFORE COMMENCING ANY WORK.
21. ACCESS TO THE SITE FOR MATERIAL, WORK FORCES AND FOR WASTE REMOVAL IS TO BE COORDINATED WITH CSA PROJECT MANAGER...
22. WHEN TESTING ACTIVITIES ARE NOT UNDERWAY, LARGE OR SMALL LOADING DOCKS CAN BE USED TO MOVE MATERIALS IN AND OUT OF THE BUILDING...
23. SANITARY FACILITIES WILL BE ASSIGNED FOR CONTRACTOR'S PERSONNEL...
24. ONLY DESIGNATED AREAS ARE TO BE USED FOR LUNCH AND BREAK TIME...
25. CONTRACTOR TO RESPECT ALL BUILDING FLOOR LOADING LIMITATIONS...
26. CONTRACTOR SHALL BE RESPONSIBLE TO KEEP THE OWNER'S ACCESS AREAS AND CORRIDORS CLEAN AT ALL TIMES...
27. DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS...
28. ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE SAW-CUT OR CORE DRILLED.

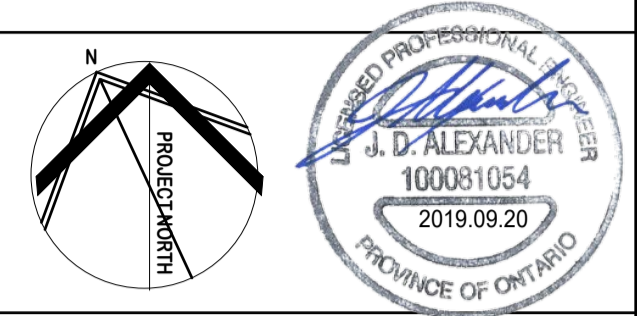
- JACK HAMMERING IS NOT PERMITTED. ALL WALLS, FLOORS & CEILINGS PENETRATIONS TO BE SEALED BY CONTRACTOR IN ACCORDANCE WITH APPLICABLE CODES...
29. PARTS NOTED TO BE SUPPLIED BY DEPARTMENTAL REPRESENTATIVE SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR AT NO ADDITIONAL COST.
30. PROJECTS MAY TAKE PLACE IN A CLEANROOM ENVIRONMENT, MANDATING SPECIAL MEASURES BE TAKEN TO REDUCE LABORATORY DISRUPTION...
31. ALL PERSONNEL MUST ATTEND MANDATORY DFL BRIEFING ON THE FIRST DAY OF PROJECT AND BEFORE STARTING ANY WORK...
32. IMPROPER / UNCLEAN / RIPPED CLOTHING, FOUL LANGUAGE, IMPROPER BEHAVIOR, SMOKING IN UNDESIGNATED AREAS INCLUDING CIGARETTES WILL NOT BE TOLERATED...
33. CSA, AT THEIR DISCRETION, MAY REQUEST A WORKER TO LEAVE THE SITE IF THERE IS DEMONSTRATED IMPAIRED MENTAL OR PHYSICAL CAPABILITY...
34. DFL IS A HIGH PROFILE OCCUPIED BUILDING, USE OF MUSIC OR RADIO ON SITE IS NOT PERMITTED AT ALL TIMES.
35. ALL PRIME CONTRACTOR & SUB TRADES WORKERS HAVE TO BE ESCORTED AT ALL TIMES WHILE IN BUILDING AND ON CAMPUS...
35.1. CSA WILL PROVIDE SECURITY COMMISSIONAIRES TO ESCORT.
35.2. PRIOR TO PROJECT START, GC TO PROVIDE A FULL LIST OF ALL PERSONNEL WORKING ON THE PROJECT AS WELL AS DEPARTMENTAL REPRESENTATIVES, SUPPLIERS & INSPECTORS IF POSSIBLE TO ISSUE NECESSARY FORMS FOR SITE AND BUILDING ACCESS.
35.3. PROVIDE AT LEAST 72 HOUR NOTICE FOR ANY ADDITIONAL NAMES OR FOR AFTER HOURS OR WEEKEND WORK.
35.4. NOTIFY CSA IMMEDIATELY OF ANY CHANGE IN SCHEDULE THAT AFFECTS THE NEED FOR SECURITY ESCORTS.
35.5. INDIVIDUALS WHO ARE NOT ON THAT LIST WILL BE DENIED ACCESS WITH NO EXCEPTIONS.
36. CONTRACTOR REPRESENTATIVE HAS TO BE PRESENT ON SITE AT ALL TIMES AND ACCOMPANY ALL SUB-TRADE WORKERS...
37. WEEKEND AND/OR AFTER-HOURS SHUTDOWNS TO BE SCHEDULED IN AGREEMENT WITH CSA PROJECT MANAGER...
38. CSA IS COMMITTED TO ENSURING A HEALTHY AND SAFE ENVIRONMENT FOR ITS EMPLOYEES, CONTRACTORS AND VISITORS...
38.1. THE REQUIREMENTS OUTLINED BELOW ARE PROVIDED AS REFERENCE AND ARE THERE TO ASSIST THE CONTRACTING COMPANY WHO PERFORMS THE WORK AND ACCEPTS THIS COMMITMENT COMPLETELY...
38.1.1. ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT: HTTP://WWW.E-LAWS.GOV.ON.CA
38.1.2. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "GUIDE TO DEVELOPING HEALTH AND SAFETY POLICIES AND PROGRAMS IN CONSTRUCTION" A COMPREHENSIVE GUIDE GRANTED TO MID-TO LARGE-SIZED GENERAL CONTRACTORS FOR DEVELOPING AND IMPLEMENTING AN EFFECTIVE HEALTH AND SAFETY PROGRAM...
38.1.3. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "CONSTRUCTION HEALTH AND SAFETY MANUAL". GUIDANCE ON HAZARD CONTROLS FOR ONTARIO CONTRACTORS...
38.2. THE CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT TO THE CSA PROJECT MANAGER A FULL PROJECT HEALTH AND SAFETY PLAN...
38.3. THE CONTRACTOR SHALL PROVIDE CSA PROJECT MANAGER A COPY OF ALL NOTICES OR OTHER WRITTEN CORRESPONDENCE PROVIDED TO OR RECEIVED BY THE ONTARIO MINISTRY OF LABOR...
38.4. THE CONTRACTOR SHALL FULLY IMPLEMENT THE PHSP FOR THE FULL DURATION OF THE CONTRACT...
38.5. A COPY OF ALL APPLICABLE TRAINING CERTIFICATES MUST BE PROVIDED PRIOR TO COMMENCING ANY WORK...
39. CONTRACTOR TO PROVIDE A MINIMUM OF 48 HOUR NOTICE TO CSA PRIOR FOR ANY DELIVERIES...
40. CONTRACTOR AND ALL HIS SUB-TRADES ARE RESPONSIBLE TO PROVIDE ALL LADDERS, SCAFFOLDING, LIFTS, CRANES AND ALL OTHER EQUIPMENT & TOOLS REQUIRED FOR PROJECT SCOPE...
41. CONTRACTOR TO TEMPORARILY SUPPORT ALL REMAINING PIPING LEFT AFTER DEMOLITION OR MODIFICATION UNTIL NEW PIPING & BRANCHES ARE TIED IN & INSTALLED...
42. CONTRACTOR AND ALL TRADES TO FOLLOW ALL CAMPUS & CSA/DFL PROCEDURES AT ALL TIMES...
MECHANICAL GENERAL NOTES:
1. ALL MATERIALS AND WORKMANSHIP SHALL - AS A MINIMUM - BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
- NATIONAL BUILDING CODE
- ONTARIO BUILDING CODE (OBC)
- CAN / CGA - B149.1 & .2,
- ASHRAE 90.1
- ONTARIO PLUMBING & FIRE CODES
- ALL OTHER APPLICABLE PROVINCIAL, MUNICIPAL AND SAFETY CODES AND REGULATIONS.
2. CONFIRM ALL PIPING / DUCTWORK DIMENSIONS AND ELEVATIONS ON SITE PRIOR TO INSTALLATION OR ORDERING EQUIPMENT.
3. CONTRACTOR TO ARRANGE FOR ALL NECESSARY HOT WORK PERMITS, ALLOW FOR 72 HOURS NOTICE AT LEAST FOR CSA TO ISSUE.
4. BE RESPONSIBLE FOR REMOVAL AND REINSTATING CEILINGS AS NECESSARY...
5. ALL BUILDING HVAC RETURN / EXHAUST GRILLS WITHIN CONSTRUCTION AREA MUST BE

- PROTECTED & FILTERED AT ALL TIMES DURING CONSTRUCTION. PROVIDE DUST SEALS OR TEMPORARY FILTERS ON ALL SUPPLY DIFFUSERS...
6. USE OF THE WRAPS, TIE WIRE, PERFORATED BAND, WIRE CHAIN OR SOLID RING TYPE HANGERS IS NOT PERMITTED.
7. USE OF C-CLAMPS ON STEEL BEAMS IS NOT PERMITTED...
8. SEVERAL SYSTEMS OR PART OF SYSTEMS WILL BE SUBJECT TO A SHUT-DOWN PERIOD...
9. VERIFY THE EXACT LOCATION OF EXISTING SERVICES AND MAINS TO BE TYING-IN, REMOVED OR CAPPED PRIOR TO COMMENCING WORK.
10. USE FLAT BOTTOM DUCT TRANSITION PIECES FOR EFFECTIVE DRAINAGE.
11. ALL DUCT WORK AND SHEET METAL SHALL BE IN ACCORDANCE WITH S.M.A.C.N.A. - LOW VELOCITY SYSTEM.
12. SEAL ALL LONGITUDINAL AND CIRCUMFERENCE DUCT JOINTS WITH HIGH VELOCITY DUCT SEALER...
13. AS A MINIMUM PROVIDE 25mm THICK, HEAVY DENSITY, FIBERGLASS INSULATION WITH VAPOR BARRIER AND JACKETING ON ALL PLUMBING PIPING...
14. ALL EXPOSED JACKETING TO BE 0.016" ALUMINUM, PEBBLED (STUCCO) FINISH.
15. PROVIDE 300mm INSULATION PROTECTION GALVANIZED SHIELD / SADDLE PLATES WITH LOCK TABS AT EACH PIPE HANGER LOCATION.
16. ALL PIPING TO BE PRESSURE TESTED FOR A MINIMUM OF 24 HOURS AND IN ACCORDANCE WITH THE CODE REQUIREMENTS...
17. PROVIDE FIRE DAMPERS ON ALL DUCTS OR AIR TRANSFER OPENINGS PENETRATING A BUILDING FIRE SEPARATION.
18. FLEXIBLE DUCTS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 6 FEET AND MINIMUM DIAMETER OF 150mm.
19. ALL HVAC CONTROLS AND WIRING SHALL BE SIZED, SELECTED BY A SPECIALIZED CONTROLS SUB-TRADE IN FULL ACCORDANCE WITH EQUIPMENT MANUFACTURER RECOMMENDATIONS.
20. ISOLATE COPPER PIPE FROM HANGER OR OTHER PIPING WHERE ELECTROLYTIC ACTION CAN OCCUR.
21. VENT AND PRIME ALL P-TRAP FIXTURES IN ACCORDANCE WITH THE ONTARIO LATEST EDITION PLUMBING CODE...
22. APPROVED PLUMBING ACCESSORIES & VALVES: ANCON, ZURN, WATTS & CRANE.
23. ALL DRAINAGE AND VENT PIPING TO BE CAST IRON WITH MJ JOINTS OR DWV COPPER AS RATED BY MANUFACTURERS FOR RETURN AIR PLENUM USE AND APPROVED BY CODE.
24. ALL PLUMBING PIPING SHALL BE TYPE "L" NEW COPPER WITH LEAD FREE SOLDERED JOINTS...
25. ALL TEMPERATURE & PRESSURE GAUGES TO BE 1/2" DIA. SIZE, STAINLESS STEEL & GLYCERIN FILL...
26. USE VMC KORFUND MAXI-FLEX NEOPRENE MOUNTING FLOOR PADS ON ALL HEAVY EQUIPMENT...
27. USE ARMSTRONG CBV FOR ALL CIRCUIT BALANCING VALVES.
28. CONTRACTOR TO PROVIDE FULL DRAWINGS, SKETCHES & SPECIFICATIONS FOR ALL PROPOSED SERVICES SUPPORTS, ANCHORS & HANGERS UNDER THIS PROJECT SCOPE...
29. CONTRACTOR TO SUPPORT ALL SERVICES SHOWN ON PROJECT SCOPE FROM BUILDING STRUCTURAL MEMBERS...
30. CONTRACTOR TO PROVIDE FULL SYSTEM OF SUPPORTS AND HANGERS COMPLETE WITH ALL NECESSARY BRACKETS, BASE PLATES, INSERTS, FASTENERS, RODS AND ALL OTHER ACCESSORIES...
31. CONTRACTOR TO TEMPORARILY SUPPORT ALL REMAINING PIPING LEFT AFTER DEMOLITION OR MODIFICATION UNTIL NEW PIPING & BRANCHES ARE TIED IN & INSTALLED...
32. LABEL ALL PIPING, EQUIPMENT & DUCTWORK WITH REFERENCE TO THEIR SERVICE AND LOCATION...
32.1. WHITE LETTERS & ARROWS ON GREEN TAPE:
32.1.1. CHILLED WATER SUPPLY & RETURN
32.1.2. DRAINAGE, SANITARY, STORM & VENTS
32.1.3. HVAC SUPPLY & RETURN, EXHAUST AIR & FRESH AIR INTAKE DUCTWORK
32.2. BLACK LETTERS & ARROWS ON YELLOW TAPE:
32.2.1. HEATING WATER SUPPLY & RETURN
32.2.2. STEAM PIPING

MECHANICAL LEGEND table with columns SYMBOLOGY and DESCRIPTION. Includes symbols for existing piping, equipment to be removed, natural gas piping, piping down, offset, branch, cap, pipe break, ball valve, isolation valve, double check valve, back flow preventer, pump, condensate pump, flow switch, supervisory valve, floor drain, relief valve, pressure gauge, expansion tank.

Project header and footer information including: Canadian Space Agency logo, Agence spatiale canadienne, ERIC VACHON (Director, Security & Facilities), M. FARID, P. Eng. (Project Manager), ProEng CONSULTING INC. logo, drawing title 'MECHANICAL LEGENDS, GENERAL NOTES AND PROCEDURES', project location 'BUILDING 65, SHIRLEY'S BAY CAMPUS', and a revision table.

ÉRIC VACHON
 Director, Security & Facilities
M. FARID, P. Eng.
 Project Manager



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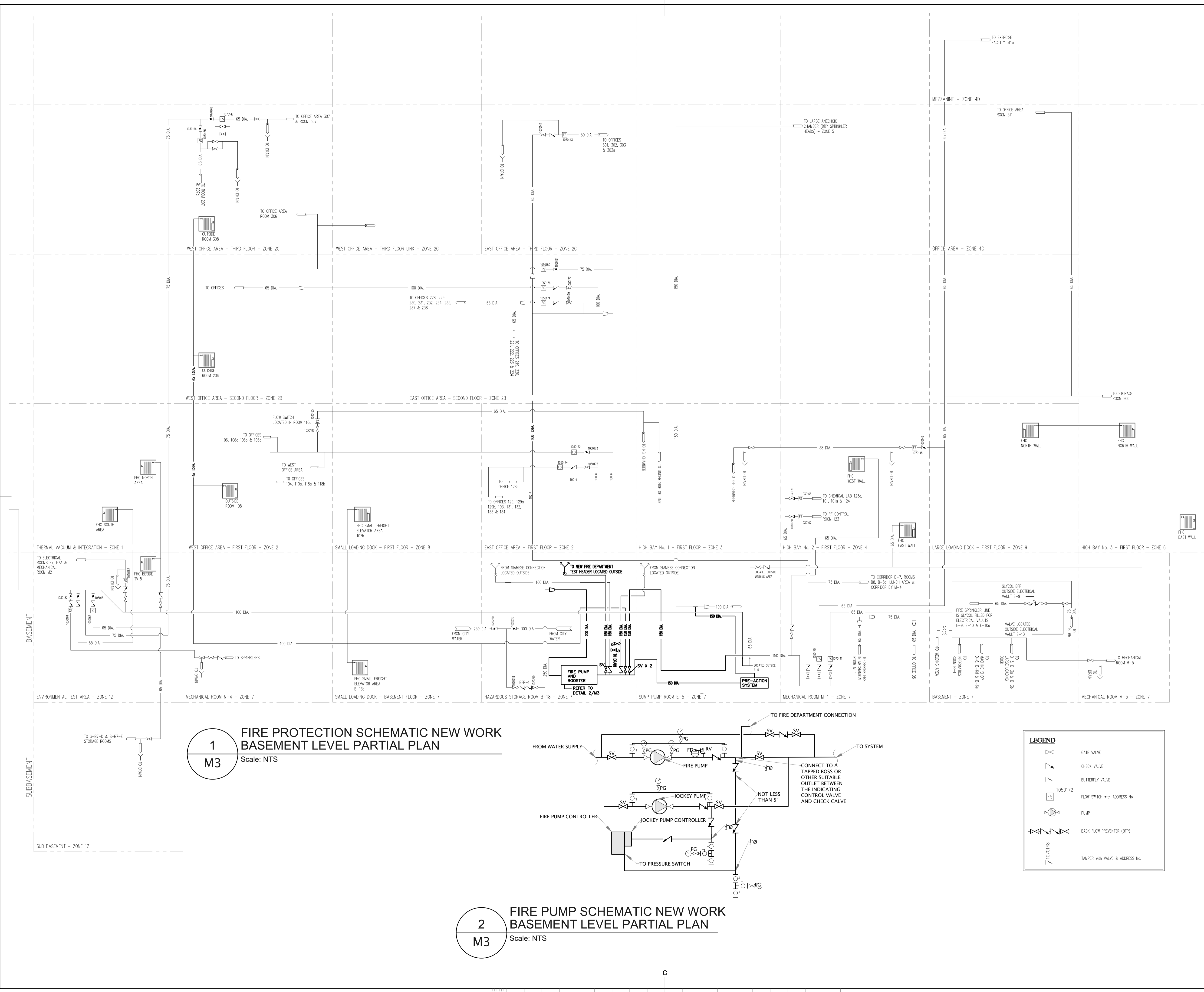
project project

WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
 3701 CARLING AVENUE, OTTAWA, ON
 ADDRESS

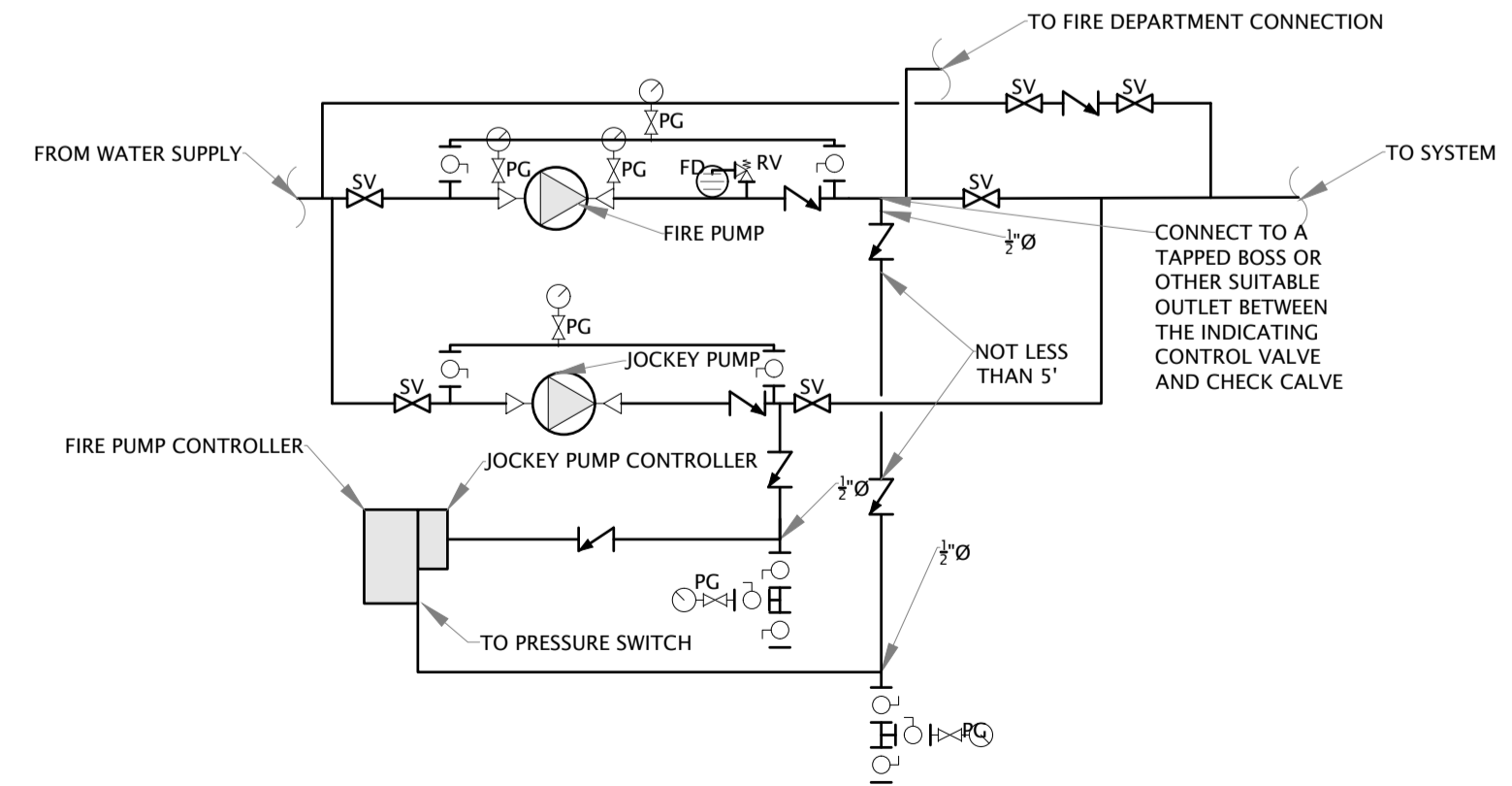
drawing dessin
MECHANICAL FIRE PROTECTION SCHEMATIC NEW WORK

Designed By	J.ALEXANDER	Conçu par	
Date		(yyyy/mm/dd)	
Drawn By	G.PARENT	Dessiné par	
Date		(yyyy/mm/dd)	
Reviewed By	J.ALEXANDER	Examiné par	
Date		(yyyy/mm/dd)	
Approved By	J.ALEXANDER	Approuvé par	
Date		(yyyy/mm/dd)	
Tender	J.ALEXANDER	Soumission	
Project Manager	Administrateur de projets		
Project no.	CSA17-M1	No. du projet	
		2017-037	
Drawing no.	M3	No. du dessin	



1
M3
FIRE PROTECTION SCHEMATIC NEW WORK
BASEMENT LEVEL PARTIAL PLAN
 Scale: NTS

2
M3
FIRE PUMP SCHEMATIC NEW WORK
BASEMENT LEVEL PARTIAL PLAN
 Scale: NTS



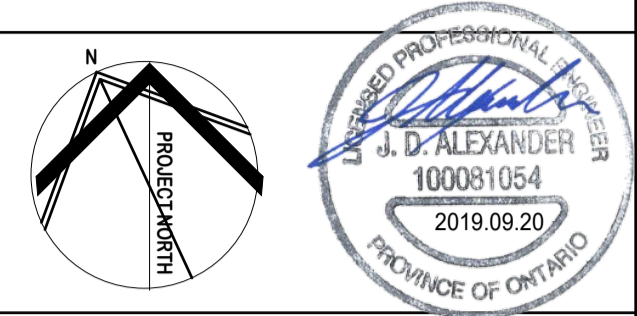
LEGEND

	GATE VALVE
	CHECK VALVE
	BUTTERFLY VALVE
	1050172 FLOW SWITCH WITH ADDRESS No.
	PUMP
	BACK FLOW PREVENTER (BFP)
	7.1070146 TAPPER WITH VALVE & ADDRESS No.

ÉRIC VACHON

Director, Security & Facilities

M. FARID, P. Eng.
Project Manager



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

project project

WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
3701 CARLING AVENUE, OTTAWA, ON
ADDRESS

drawing dessin

FIRE PROTECTION DEMOLITION & NEW WORK BASEMENT LEVEL PARTIAL PLAN

Designed By J.ALEXANDER Conçu par
Date (yyyy/mm/dd)

Drawn By G.PARENT Dessiné par
Date (yyyy/mm/dd)

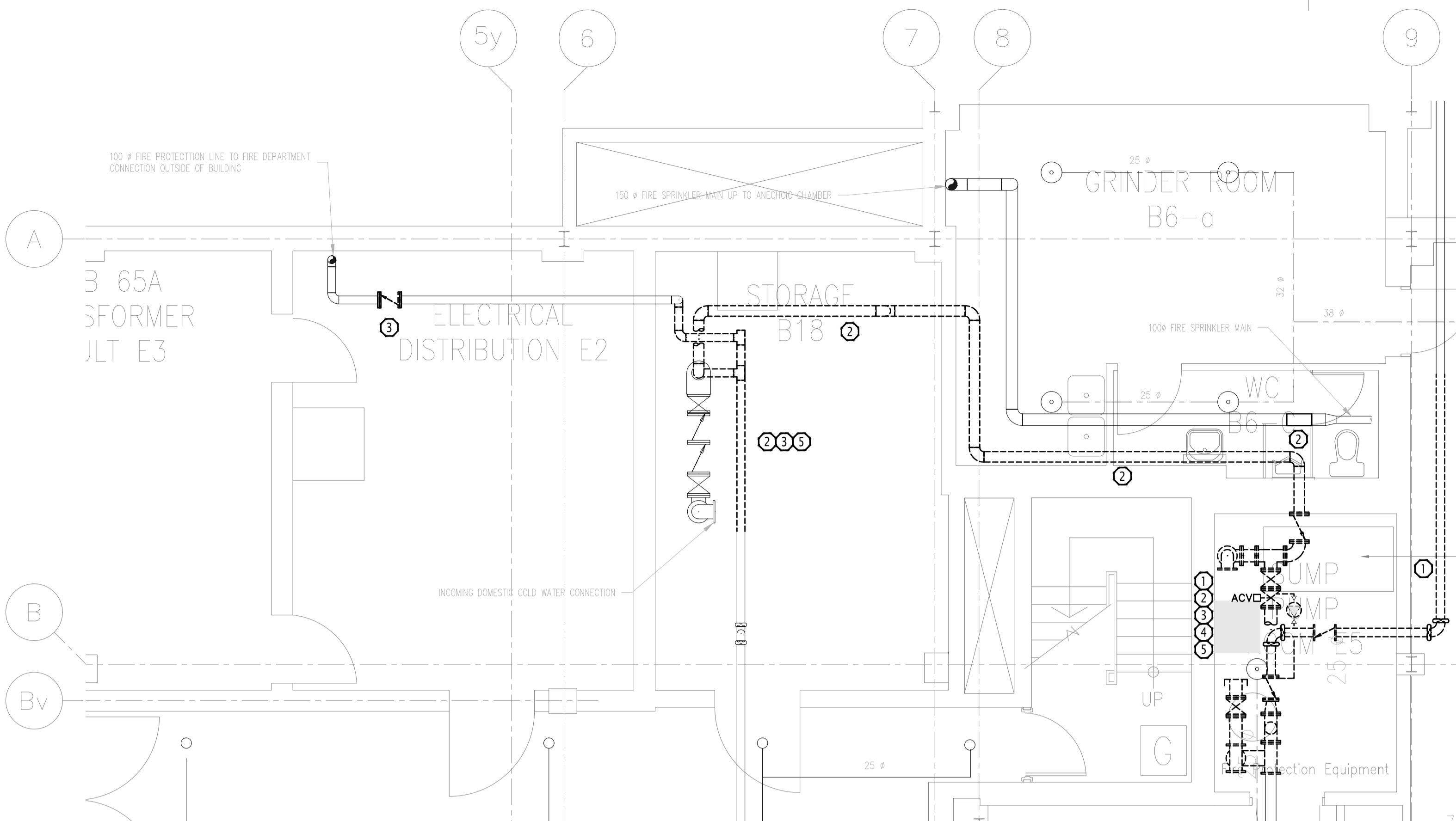
Reviewed By J.ALEXANDER Examiné par
Date (yyyy/mm/dd)

Approved By J.ALEXANDER Approuvé par
Date (yyyy/mm/dd)

Tender J.ALEXANDER Soumission
Project Manager Administrateur de projets

Project no. CSA17-M1 No. du projet
2017-037

Drawing no. M4 No. du dessin

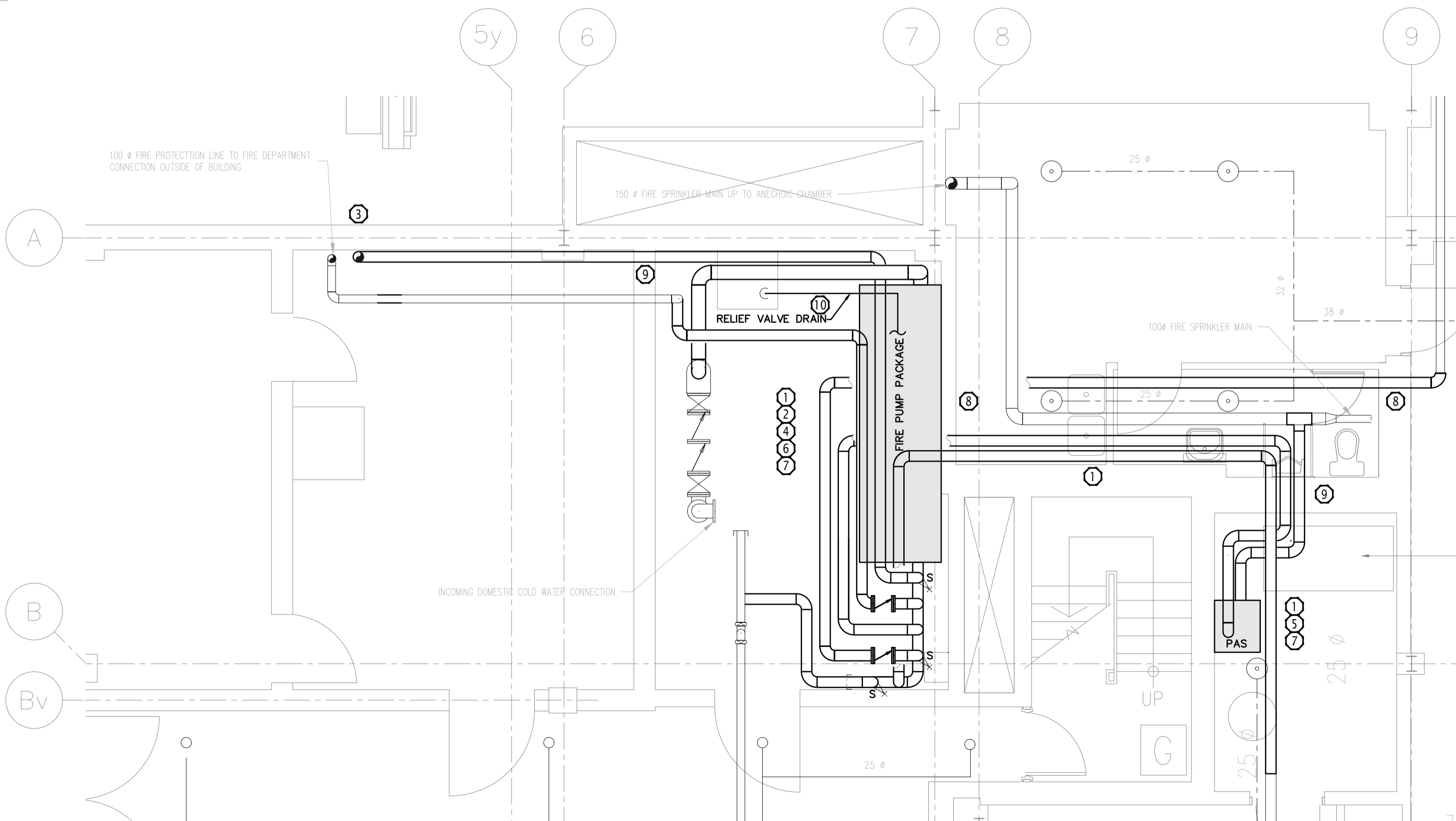


DESCRIPTION OF FIRE PROTECTION DEMOLITION:

- REMOVE EXISTING SIAMESE PIPING, VALVES & ACCESSORIES.
- REMOVE EXISTING FIRE PROTECTION PIPING C/W VALVES, SUPPORTS & ACCESSORIES.
- REMOVE EXISTING SUPERVISED VALVES & ALARM CHECK VALVES.
- REMOVE EXISTING JOCKEY PUMP C/W ASSOCIATED VALVES & ACCESSORIES.
- CONTRACTOR SHALL DE-ENERGIZE THE SPRINKLER SYSTEM BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. RE-ENERGIZE THE SPRINKLER SYSTEM AFTER THE COMPLETION OF WORK.

1 FIRE PROTECTION DEMOLITION BASEMENT LEVEL PARTIAL PLAN

M4 Scale: 1:50



DESCRIPTION OF FIRE PROTECTION NEW WORK:

- PROVIDE NEW SPRINKLER & STANDPIPE PIPING C/W VALVES & ACCESSORIES.
- PROVIDE NEW SUPERVISED VALVES & ALARM CHECK VALVES.
- PROVIDE NEW FIRE DEPARTMENT TEST HEADER C/W ASSOCIATED PIPING, VALVES & ACCESSORIES.
- NEW FIRE PUMP PACKAGE C/W JOCKEY PUMP & CONTROLLER SUPPLIED BY DEPARTMENT REPRESENTATIVE & INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL ALLOW FOR TEMPORARY PUMP SUPPORT & REMOVAL OF TWO MAIN VERTICAL SUPPORT BEAMS TO DELIVER PUMP PACKAGE INTO STORAGE ROOM B18. FIRE PUMP MANUFACTURER SHALL SITE VERIFY RE-INSTALLATION OF SUPPORT BEAMS. PROVIDE ADDITIONAL FITTINGS & ACCESSORIES AS REQUIRED. PRE-PURCHASED FIRE PUMP INFORMATION SHALL BE REQUESTED FROM DEPARTMENT REPRESENTATIVE. CONTRACTOR SHALL ALLOW TO REMOVE AND REINSTATE ALL WATER PIPED CONNECTIONS TO CONTROL PANEL TO ALLOW FOR REMOVAL, INSTALLATION OF THE FIRE PUMP INTO SPACE AND THEN REINSTALLATION OF FIRE PUMP CONTROL PANEL.
- PROVIDE NEW PRE-ACTION SYSTEM C/W CONTROLLER & COMPRESSOR.
- CONTRACTOR SHALL DE-ENERGIZE THE SPRINKLER SYSTEM BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. RE-ENERGIZE THE SPRINKLER SYSTEM AFTER THE COMPLETION OF WORK.
- PROVIDE 100MM HIGH CONCRETE HOUSE KEEPING PAD UNDERNEATH FIRE PUMP. NEW SPRINKLER HEADER AND FIRE-ACTION COMPRESSOR. HOUSEKEEPING PAD SHALL BE AT MINIMUM 150MM WIDER THAN FOOTPRINT OF EQUIPMENT.
- PROVIDE PENETRATIONS THROUGH 600MM DEEP CONCRETE WALL.
- PROVIDE PENETRATIONS THROUGH BLOCK WALL.
- PIPE FIRE PUMP RELIEF VALVE TO EXISTING SUMP PIT. REUSE EXISTING LID OPENING AND SEAL TO PIPE.
- PROVIDE SCANNING OF ALL WALLS PRIOR TO CORRIGING.
- PROVIDE FIRE STOPPING OF ALL PENETRATIONS.

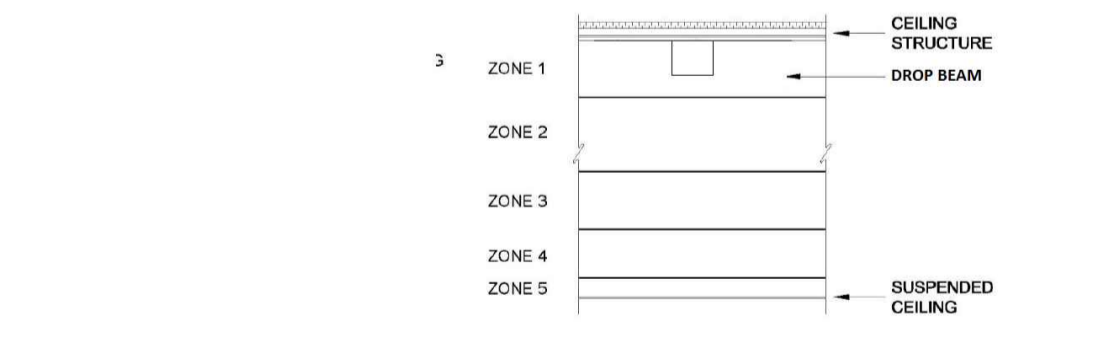
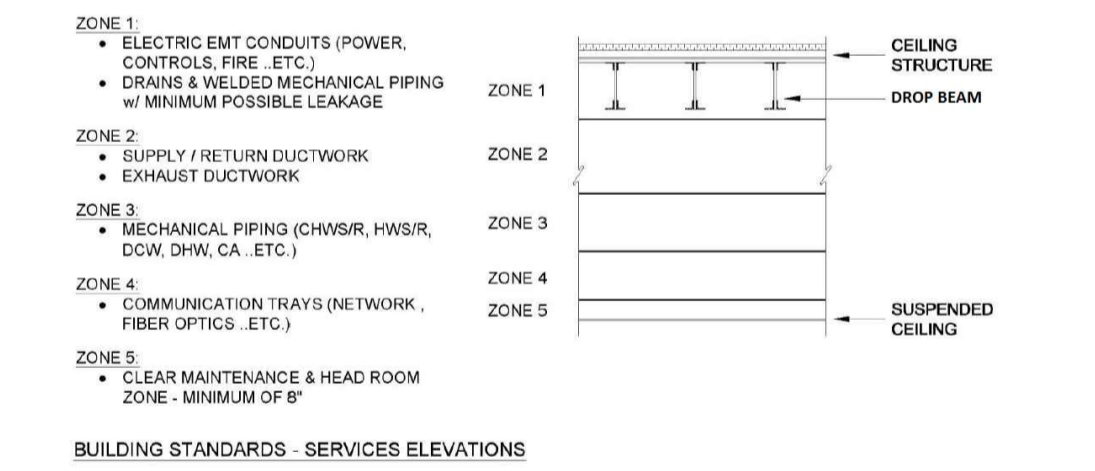
2 FIRE PROTECTION NEW WORK BASEMENT LEVEL PARTIAL PLAN

M4 Scale: 1:50

DFL PROJECTS GENERAL NOTES & PROCEDURES:

- THE GENERAL CONTRACTOR SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS & RE-INSPECTIONS REQUIRED TO BE PERFORMED BY LOCAL AUTHORITIES HAVING JURISDICTION INCLUDING INSPECTION AND TESTING EXCEPT FOR BUILDING PERMIT TO THE CITY OF OTTAWA WHICH WILL BE APPLIED FOR BY OWNER. TURN OVER TO THE OWNER ALL ORIGINAL APPROVAL DOCUMENTATION & CERTIFICATES.
 - CONTRACTOR TO BE RESPONSIBLE FOR THE PROVISION (SUPPLY AND INSTALLATION) OF ALL MATERIALS, EQUIPMENT & SERVICES SHOWN ON THE PROJECT DRAWINGS & SPECIFICATIONS AS REQUIRED FOR A FULLY OPERABLE SYSTEM, UNLESS CHANGED OR REPLACED BY REVISED DRAWINGS, SPECIFICATIONS OR ADDENDA.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION WORK. BE RESPONSIBLE FOR ALL FLOOR CUTTING, CORE DRILLING, ALL CHASES, OPENINGS AND PATCHING AS MAY BE REQUIRED BY ALL SUB TRADES WHO MAY OR MAY NOT BE UNDER HIS CONTRACT AGREEMENTS.
 - DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS & ROUTE OF EACH COMPONENT TO BE INSTALLED OR REMOVED. THEY ARE ONLY PROVIDING A GENERAL OVERVIEW OF THE PROJECT SCOPE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW THE SITE CONDITIONS DURING THE TENDER PERIOD AND EXAMINE THE EXTENT OF THE DEMOLITION, REMOVALS & NEW INSTALLATIONS TO INCLUDE IN THE TENDER PRICE ALL NECESSARY LABOR AND MATERIAL REQUIRED FOR A FULLY OPERABLE SYSTEM AS INTENDED.
 - ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES WHERE VARIED BY THE PROJECT SPEC.
 - ALL DIMENSIONS TO BE VERIFIED ON SITE. EXACT LOCATION & ELEVATION OF EQUIPMENT IS SUBJECT TO SITE MEASUREMENTS.
 - CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL MATERIAL, EQUIPMENT & FIXTURES TO DEPARTMENTAL REPRESENTATIVE FOR APPROVAL BEFORE COMMENCING INSTALLATION OR ORDERING. ALL SAMPLES TO BE PROVIDED UPON CSA REQUEST AT NO ADDITIONAL COST.
 - ALL SUPPLIED MATERIALS, FIXTURES & EQUIPMENT TO BE NEW, FREE FROM DEFECTS, CERTIFIED & APPROVED BY CODE. REUSE OF ANY EXISTING PARTS IN NOT PERMITTED UNLESS APPROVED BY OWNER.
 - CSA SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT. COORDINATE AND HAND OVER TO CSA PROJECT MANAGER AS REQUIRED. DISPOSE OF ANY REMAINING OR UNWANTED EQUIPMENT OR SERVICES AND REMOVE OFF SITE IN A LEGAL MANNER AND COMPLY WITH THE ENVIRONMENTAL PROTECTION ACT, ONTARIO REGULATIONS FOR WASTE MANAGEMENT PROGRAM. CERTIFICATE OF DISPOSAL TO BE HANDED OVER TO OWNER AFTER REMOVALS ARE DONE.
 - INSTALL ALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS & RECOMMENDATIONS.
 - ALL TRADES SHOULD BE LICENSED TO PERFORM ALL WORK SHOWN ON THE DRAWINGS INCLUDING REMOVALS & DEMOLITION.
 - DO NOT DAMAGE EXISTING FIRE SEPARATIONS AND FIRE PROTECTIONS IN THE PROJECT AREAS. ANY DAMAGES INCURRED TO EXISTING FIRE SEPARATIONS AND PROTECTIONS SHALL BE RESTORED TO APPROVED CONDITIONS TO MEET REQUIRED RATING AND CODES AT NO ADDITIONAL COSTS TO THE PROJECT.
 - UNDER ANY CIRCUMSTANCES, DO NOT BLOCK REQUIRED ACCESS TO EXITS AND FIRE ESCAPE ROUTES DURING THE PROJECT DURATION. ALL EXISTING LIFE SAFETY SYSTEMS AND INDICATORS SHALL BE OPERATIONAL AT ALL TIMES.
 - SMOKE EATERS & POWERED EXHAUST FANS VENTED TO OUTSIDE OF BUILDING MUST BE USED DURING ALL BRAZING / WELDING / SOLDERING / CUTTING / GRINDING ACTIVITIES TO MINIMIZE CONTAMINATION & ODOR TO ADJACENT AREAS PARTICULARLY IN CLEAN ROOMS. PROVIDE 72 HOUR NOTICE TO CSA TO ARRANGE FOR HOT WORK PERMITS.
 - CONTRACTOR TO PROTECT ALL ARCHITECTURAL FINISHES & FLOORING DURING CONSTRUCTION, BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING SURFACES RESULTING FROM ALL PROJECTS WORK. THE CONTRACTOR SHALL MAKE GOOD ALL DAMAGED SURFACES INCLUDING ANY PAINT TOUCH-UPS REQUIRED. REPAIR ALL WALLS, FLOORS & CEILING IN CORE AREA WHERE MECHANICAL & ELECTRICAL SERVICES PASS THROUGH.
 - EXACT TARPING LIMITS AND ACCESS ROUTES TO BE DETERMINED ON SITE IN COORDINATION WITH CSA PROJECT MANAGER.
 - ALL TARPS TO BE NEW HEAVY DUTY POLYETHYLENE, WATER / MILDEW / TEAR RESISTANT, WHITE, TIGHT SEALED FROM DECK TO FLOOR, CONTRACTOR TO PROVIDE ACCESS ZIPPERS OR DOORS AS REQUIRED BY CSA, USE METAL STUDS AS FRAMING SUPPORTS, NO WOOD MATERIALS TO BE USED IN TARPS CONSTRUCTION UNLESS APPROVED BY CSA.
 - APPROVED METHODS TO ATTACH STUDS / TARPS TO BUILDING AS FOLLOW:
 - ON FLOORS: HEAVY DUTY COMMERCIAL DOUBLE SIDED TAPE TO SECURE METAL STUDS TO FLOORS. USE OF SCREWS OR TAPCONS ARE NOT PERMITTED.
 - ON DRYWALLS / MASONRY / METAL SIDING WALLS: DUCT OR TUCK TAPE IS NOT ALLOWED DIRECTLY ON BUILDING FINISHES AS IT WILL DAMAGE THEM WHEN REMOVED; APPLY MASKING PAINT GREEN TAPE FIRST AND THEN DUCT / TUCK TAPE ON TOP OF IT. STUDS CAN BE SCREWED TO DRYWALL / MASONRY WALLS GIVING THAT ALL HOLES WILL BE PATCHED & PAINTED (WHOLE WALL / AREA TO BE PAINTED, SMALL / LOCAL PAINT PATCHES ARE NOT PERMITTED).
 - TARPS COULD BE HANGED OFF BUILDING STEEL STRUCTURAL USING HIGH STRENGTH CABLE TIES, PROVIDE HEAVY GAUGE UNISTRUTS AS NEEDED FOR CROSS RUNS OR TO DISTRIBUTE TARPS LOAD.
 - HANGING TARPS FROM BUILDING SERVICES (DUCTWORK, CONDUITS, PIPES, SUPPORTS, HANGERS ... ETC.) IS NOT PERMITTED.
 - CONTRACTOR IS RESPONSIBLE FOR CLEANING, PATCHING, REPAIRING & PAINTING ALL DAMAGED SURFACES & TAPE MARKS AFTER REMOVING TARPS.
- PROVIDE FURNITURE AND EQUIPMENT PROTECTION AS FOLLOW:
 - FLOOR TO BE WIPED CLEAN FROM ANY DEBRIS OR DUST PARTICLES.
 - PROVIDE MIN. 1/8" FOAM LAYER DIRECTLY ON ALL FLOORING.
 - PROVIDE HARD SHEETS ON TOP OF FOAM LAYER, ALL SHEETS SEAMS TO BE DUCT-TAPED TO PREVENT DEBRIS / DUST FROM GETTING TRAPPED UNDER THE PROTECTION SHEETS. USE OF OSB SHEETS IS NOT PERMITTED.
- PROVIDE FURNITURE AND EQUIPMENT PROTECTION AS FOLLOW:
 - OFFICE / LAB FURNITURE AND EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS.
 - SENSITIVE LAB TESTING EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS, CLEAN SCAFFOLDING TO BE ERECTED ON TOP OF ALL LAB EQUIPMENT TO PROTECT FROM POSSIBLE FALLING OBJECTS.
- CONTRACTOR TO PROVIDE BILINGUAL CONSTRUCTION, ACCESS & SAFETY SIGNAGE, SIGNS TO BE POSTED ON ALL PROJECT FENCES & ENTRANCES AT THE START OF PROJECT AND BEFORE COMMENCING ANY WORK.
- ACCESS TO THE SITE FOR MATERIAL, WORK FORCES AND FOR WASTE REMOVAL IS TO BE COORDINATED WITH CSA PROJECT MANAGER. USE ONLY ELEVATORS DESIGNATED BY CSA AND PROTECT THEM FROM DAMAGE.
- WHEN TESTING ACTIVITIES ARE NOT UNDERWAY, LARGE OR SMALL LOADING DOCKS CAN BE USED TO MOVE MATERIALS IN AND OUT OF THE BUILDING FROM 7:00 AM TO 8:00 AM WITHOUT CSA NEEDING TO PROVIDE NOTICE TO BUILDING STAFF. IF ACCESS IS REQUIRED AFTER THIS TIME OR FOR LONGER PERIODS, 72 HOUR NOTICE MUST BE PROVIDED TO CSA TO CONFIRM AVAILABILITY AND ARRANGE FOR PROPER NOTICES.
- SANITARY FACILITIES WILL BE ASSIGNED FOR CONTRACTOR'S PERSONNEL. OTHERS SHALL NOT BE USED. KEEP FACILITIES CLEAN.
- ONLY DESIGNATED AREAS ARE TO BE USED FOR LUNCH AND BREAK TIME. ALL OTHER AREAS ARE OFF LIMITS INCLUDING CAMPUS CAFETERIA.
- CONTRACTOR TO RESPECT ALL BUILDING FLOOR LOADING LIMITATIONS, COORDINATE AND CONFIRM WITH CSA PROJECT MANAGER PRIOR TO BRING IN ANY HEAVY TOOLS, EQUIPMENT AND LIFTS.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO KEEP THE OWNER'S ACCESS AREAS AND CORRIDORS CLEAN AT ALL TIMES.
 - CLEAN AND REMOVE ALL DEMOLITION AND CONSTRUCTION WASTE FROM PROJECT SITE ON DAILY BASIS AND UPON COMPLETION OF PROJECT.
 - DO NOT USE CSA WASTE CONTAINERS. AN AREA WILL BE DESIGNATED FOR LOCATING

- CONTRACTOR WASTE BINS.
- CONTRACTOR TO PROVIDE ALL CLEANING EQUIPMENT & SUPPLIES, USE OF BUILDING CLEANING EQUIPMENT OR SUPPLIES ARE NOT PERMITTED.
 - DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS DURING THE COURSE OF THE PROJECT. ANY NOISY / DUSTY / SMELLY ACTIVITIES SHALL BE DONE AFTER REGULAR WORKING HOURS OR WEEKENDS, COORDINATE WITH CSA PROJECT MANAGER WITH A MINIMUM NOTICE OF 72 HOURS.
 - ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE SAW-CUT OR CORE DRILLED. JACK HAMMERING IS NOT PERMITTED. ALL WALLS, FLOORS & CEILING PENETRATIONS TO BE MET FOR CONTRACTOR IN ACCORDANCE WITH APPLICABLE CODES & THE DEPARTMENTAL REPRESENTATIVE'S REQUIREMENTS.
 - PARTS NOTED TO BE SUPPLIED BY OWNER SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR AT NO ADDITIONAL COST.
 - PROJECTS MAY TAKE PLACE IN A CLEANROOM ENVIRONMENT, MANDATING SPECIAL MEASURES BE TAKEN TO REDUCE LABORATORY DISRUPTION. CLASS & CLEANROOM STANDARDS ARE TO BE MET FOR THE AREA SURROUNDING CONSTRUCTION AT ALL TIMES AND ARE SUBJECT TO VERIFICATION.
 - ALL PERSONNEL MUST ATTEND MANDATORY DFL BRIEFING ON THE FIRST DAY OF PROJECT AND BEFORE STARTING ANY WORK. ADHERE TO THE INFORMATION PRESENTED AT ALL TIMES. ANY PERSON WHO DID NOT ATTEND THIS BRIEFING WILL NOT BE ALLOWED TO WORK ON SITE - NO EXCEPTIONS
 - IMPROPER / UNCLEAN / RIPPED CLOTHING, FOUL LANGUAGE, IMPROPER BEHAVIOR, SMOKING IN UNDESIGNATED AREAS INCLUDING E-CIGARETTES WILL NOT BE TOLERATED AND WORKER WILL BE ESCORTED OFF CAMPUS IMMEDIATELY - NO EXCEPTIONS.
 - CSA, AT THEIR DISCRETION, MAY REQUEST A WORKER TO LEAVE THE SITE IF THERE IS DEMONSTRATED IMPAIRED MENTAL OR PHYSICAL CAPABILITY AFFECTING HIS/HER WORK PERFORMANCE AND POSSIBLY PUTTING OTHERS AT RISK DUE TO CONSUMPTION OF ALCOHOL OR ILLEGAL SUBSTANCES.
 - DFL IS A HIGH PROFILE OCCUPIED BUILDING, USE OF MUSIC OR RADIO ON SITE IS NOT PERMITTED AT ALL TIMES.
 - ALL GC & SUB-TRADES WORKERS HAVE TO BE ESCORTED AT ALL TIMES WHILE IN BUILDING AND ON CAMPUS.
 - CSA WILL PROVIDE SECURITY COMMISSIONAIRES TO ESCORT.
 - PRIOR TO PROJECT START, GC TO PROVIDE A FULL LIST OF ALL PERSONNEL WORKING ON THE PROJECT AS WELL AS DEPARTMENTAL REPRESENTATIVES, SUPPLIERS & INSPECTORS IF POSSIBLE TO ISSUE NECESSARY FORMS FOR SITE AND BUILDING ACCESS.
 - PROVIDE AT LEAST 72 HOUR NOTICE FOR ANY ADDITIONAL NAMES OR FOR AFTER HOURS OR WEEKEND WORK.
 - NOTIFY CSA IMMEDIATELY OF ANY CHANGE IN SCHEDULE THAT AFFECTS THE NEED FOR SECURITY ESCORTS.
 - INDIVIDUALS WHO ARE NOT ON THAT LIST WILL BE DENIED ACCESS WITH NO EXCEPTIONS.
 - GENERAL CONTRACTOR REPRESENTATIVE HAS TO BE PRESENT ON SITE AT ALL TIMES AND ACCOMPANY ALL SUB-TRADE WORKERS; SUB-TRADES ARE NOT ALLOWED TO BE ON SITE OR TO WORK WITHOUT THE PRESENCE OF GC - NO EXCEPTIONS.
 - WEEKEND AND/OR AFTER-HOURS SHUTDOWNS TO BE SCHEDULED IN AGREEMENT WITH CSA PROJECT MANAGER. PROVIDE AT LEAST 72 HOUR NOTICE IN ADVANCE.
 - CSA IS COMMITTED TO ENSURING A HEALTHY AND SAFE ENVIRONMENT FOR ITS EMPLOYEES, CONTRACTORS AND VISITORS AND WILL ALIGN ITSELF WITH CONTRACTORS WHO SHARE IN THIS VISION.
 - THE REQUIREMENTS OUTLINED BELOW ARE PROVIDED AS REFERENCE AND ARE THERE TO ASSIST THE CONTRACTING COMPANY WHO PERFORMS THE WORK AND ACCEPTS THIS COMMITMENT COMPLETELY.
 - ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT: HTTP://WWW.E-LAWS.GOV.ON.CA
 - INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "GUIDE TO DEVELOPING HEALTH AND SAFETY POLICIES AND PROGRAMS IN CONSTRUCTION" A COMPREHENSIVE GUIDE GEARED TO MID- TO LARGE-SIZED GENERAL CONTRACTORS FOR DEVELOPING AND IMPLEMENTING AN EFFECTIVE HEALTH AND SAFETY PROGRAM: HTTP://WWW.IHSA.CA
 - INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "CONSTRUCTION HEALTH AND SAFETY MANUAL" - GUIDANCE ON HAZARD CONTROLS FOR ONTARIO CONTRACTORS: HTTP://WWW.IHSA.CA
 - THE GENERAL CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT TO THE CSA PROJECT MANAGER A FULL PROJECT HEALTH AND SAFETY PLAN, HEREIN CALLED PHSP, PRIOR TO THE COMMENCEMENT OF ANY WORKS AND WITHIN 2 WEEKS OF CONTRACT AWARD.
 - THE GENERAL CONTRACTOR SHALL PROVIDE CSA PROJECT MANAGER A COPY OF ALL NOTICES OR OTHER WRITTEN CORRESPONDENCE PROVIDED TO OR RECEIVED BY THE ONTARIO MINISTRY OF LABOR, FOR THE DURATION OF THE CONTRACT.
 - THE GENERAL CONTRACTOR SHALL FULLY IMPLEMENT THE PHSP FOR THE FULL DURATION OF THE CONTRACT.
 - A COPY OF ALL APPLICABLE TRAINING CERTIFICATES MUST BE PROVIDED PRIOR TO COMMENCING ANY WORK. CERTIFICATES MUST SHOW EXACT COMPANY NAME AND ADDRESS THAT PROVIDED THE TRAINING. CSA RESERVES THE RIGHT TO REQUEST THE COURSE OUTLINE FROM THE COMPANY THAT PROVIDED THE TRAINING. IF THE PROOF OF TRAINING DOES NOT DEMONSTRATE THE WORKER AS BEING COMPETENT OPERATORS, FURTHER TRAINING MAY BE REQUESTED BY THE CSA PRIOR TO COMMENCING ANY WORK AT NO ADDITIONAL COST.
 - GC TO PROVIDE A MINIMUM OF 48 HOUR NOTICE TO CSA PRIOR FOR ANY DELIVERIES. GENERAL CONTRACTOR MUST BE ON SITE TO RECEIVE THE SHIPMENT. IF THE DELIVERY PERTAINS TO LIFTING EQUIPMENT, THE QUALIFIED CONTRACTOR SCHEDULED TO USE THE EQUIPMENT MUST INSPECT AND RECEIVE THE LIFT FROM THE COMPANY.
 - GC AND ALL HIS SUB-TRADES ARE RESPONSIBLE TO PROVIDE ALL LADDERS, SCAFFOLDING, LIFTS, CRANES AND ALL OTHER EQUIPMENT & TOOLS REQUIRED FOR PROJECT SCOPE INCLUDING INSTALLING & REMOVING TARPS & PROTECTION MATERIALS. USE OF BUILDING TOOLS, EQUIPMENT, TROLLEYS, FORKLIFTS, SKIDS, LADDERS, LIFTS, CRANES ... ETC. ARE NOT PERMITTED.
 - ALL TRADES TO FOLLOW BUILDING SERVICE ELEVATIONS STANDARD AS FOLLOW:



DISTRIBUTION FEEDER SCHEDULE

FEEDER ROUTING			WIRE DETAILS				RACEWAY DETAILS			LENGTH	REMARKS
SOURCE	DESTINATION	QUANTITY	GAUGE	NUMBER OF RUNS	VOLTAGE (V)	TYPE	SIZE (mm)Ø	NUMBER OF RUNS	TYPE		
1500KW GENERATOR - BUILDING 89	600A EXTERNAL BREAKER - BUILDING 89	1	250MCM	6	1000	TECK	N/A	N/A	N/A	PROVIDE FEEDER & CONNECT TO NEW SPLIT LUGS IN GENERATOR PULLBOX.	
300A EXTERNAL BREAKER - BUILDING 89	FIRE PUMP ATS (EMERGENCY) - STORAGE ROOM B18	1	3	3	1000	MINERAL INSULATED	N/A	N/A	N/A	PROVIDE JACKETING ON M.I. CABLE WHERE INDICATED. CONNECT AT 300A BREAKER. CONNECT AT FIRE PUMP ATS.	
SUB STATION 65A - ELECTRICAL ROOM E3	FIRE PUMP ATS (NORMAL) - STORAGE ROOM B18	1	3	3	1000	MINERAL INSULATED	N/A	N/A	N/A	PROVIDE NEW FEEDER CONNECT TO NEW 300A 3-POLE BREAKER IN SWITCHGEAR 65A. CONNECT TO FIRE PUMP ATS.	

LEGEND:
 - : NOT APPLICABLE
 □ : FOR CONTRACTORS USE, TO BE COORDINATED ON SITE.
 NOTES: ALL FEEDERS SHALL HAVE SEPARATE GROUND CONDUCTOR.

POWER AND SYSTEMS LEGEND

SYMBOL	DESCRIPTION
[JB]	ELECTRICAL BOX: JB - POWER
⊠	DISCONNECT
⊠	EXTERNAL BREAKER
⊠	FIRE ALARM ATS
⊠	CONTROLS CABINET
⊠	CONDUIT STUB C/W INSULATED PLASTIC BUSHINGS / CONDUIT UP / CONDUIT DOWN
⊠	FIRE ALARM SUPERVISORY VALVE
⊠	FIRE ALARM FLOW SWITCH
⊠	FIRE ALARM MODULE
⊠	DIRECT MOTOR CONNECTION TO 600V 3Ø EQUIPMENT, HORSEPOWER INDICATED
⊠	ELECTRICAL CABINET, TYPE AS INDICATED (FIRE ALARM, CONTROLS, ELECTRICAL PANEL)
⊠	BREAKER, RATING INDICATED

LINETYPE LEGEND

SYMBOL	DESCRIPTION
---	EXISTING CONDUIT/EQUIPMENT
----	EXISTING CONDUIT/EQUIPMENT TO BE REMOVED/RELOCATED
---	NEW/RELOCATED CONDUIT/EQUIPMENT
----	CONDUIT BELOW GRADE/SLAB
----	MECHANICAL EQUIPMENT
----	ROOM OUTLINE

- GENERAL CONTRACTOR AND ALL TRADES TO FOLLOW ALL CAMPUS & CSA/DFL PROCEDURES AT ALL TIMES, GC IS RESPONSIBLE TO DISTRIBUTE ALL PROCEDURES TO ALL HIS WORKERS & SUB-TRADES.
- GENERAL ELECTRICAL NOTES:**
- THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH ALL ISSUED CONTRACT SPECIFICATIONS, ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS, EXCEPT WHERE REPLACED OR CHANGED BY DIRECTIVE OR CORRECTIVE ADDENDA OR REVISED DRAWINGS AND SPECIFICATIONS.
 - ALL WORK MUST BE IN FULL ACCORDANCE WITH THE CANADIAN ELECTRIC CODE PART 1 C22-1:02 AND THE LATEST EDITION OF THE ONTARIO SAFETY CODE.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION (SUPPLY, INSTALLATION & WIRING) OF ALL EQUIPMENT SHOWN ON THE CONTRACT DRAWINGS AND SPECIFICATIONS UNLESS CHANGED OR REPLACED BY REVISED DRAWINGS, SPECIFICATIONS ADDENDA.
 - THE SUCCESSFUL BIDDER SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS AND WORK REQUIRED TO BE PERFORMED BY LOCAL AUTHORITIES INCLUDING INSPECTION BY ESA AND TESTING.
 - ALL DIMENSIONS SHALL BE VERIFIED ON SITE. EXACT LOCATION OF EQUIPMENT IS SUBJECT TO SITE MEASUREMENTS.
 - ALL BIDDERS AND THEIR SUB TRADES ARE STRONGLY ADVISED TO ATTEND THE SITE VISIT TO FAMILIARIZE THEMSELVES WITH THE SITE CONDITIONS AND EXACT SCOPE OF WORK.
 - IF ANY DISCREPANCY OCCURS ON THE DEPARTMENTAL REPRESENTATIVE'S DRAWINGS, THE CONTRACTOR SHALL, DURING TENDERING, ASSUME THE LARGER / GREATER. ANY DISCREPANCY SHALL BE REFERRED TO THE DEPARTMENTAL REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.
 - DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS OF CONDUIT ROUTES, OFFSETS, ETC. BE RESPONSIBLE FOR CAREFULLY EXAMINE THE WORK SITE PRIOR TO TENDER CLOSE-OUT AND INCLUDE IN THE TENDER PRICE ALL NECESSARY LABOR AND MATERIAL REQUIRED FOR A FULLY OPERABLE SYSTEM AS INTENDED.
 - PARTS NOTED ON DRAWINGS TO BE SUPPLIED BY OWNER SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR.
 - ALL WIRING TO BE MINIMUM #12 AWG COPPER STRANDED WIRES UNLESS OTHERWISE STATED. CONDUITS & JUNCTION BOXES SHALL NOT BE LOADED MORE THAN 60% OF ITS MAXIMUM RATED CAPACITY.
 - ALL ELECTRICAL RACEWAYS & EQUIPMENT TO BE SQUARE TO BUILDING LINES AND SHALL BE SEPARATELY SUPPORTED FROM BUILDING STRUCTURE. A GROUND CONDUCTOR IS REQUIRED IN ALL RACEWAYS.
 - ALL CONNECTORS & COUPLINGS SHALL BE STEEL WITH INSULATED THROATS. ALL CONDUITS TO BE EMT, MINIMUM OF 3/4" UNLESS OTHERWISE STATED. ARMORED CABLE IS NOT A CONDUIT & PROJECT MANAGER MUST APPROVE THE USE OF IT.
 - LOCATE ALL BOXES ON STRAIGHT RUNS, EACH BOX TO BE BONDED.
 - ALL CONDUIT RUNS SHALL BE COLOR CODED TO BUILDING COLOR CODE. ALL CONDUITS TO BE MARKED AT THE START AND END OF EACH RUN & AT BOTH SIDES OF ANY WALL, STANDARD ELECTRIC TAPE IS TO BE USED FOR MARKING.
 - ALL OUTLETS, SWITCHES, COMMUNICATION JACKS TO BE WHITE, DECORA STYLE W/ BRUSHED STAINLESS STEEL COVER PLATE.
 - USE OF TIE WRAPS OR TIE WIRE IS NOT ACCEPTABLE.
 - ALL CONDUITS RUNS LENGTH SHOWN ON DRAWINGS ARE FOR GENERAL REFERENCE ONLY, CONTRACTOR TO EXAMINE SITE TO DETERMINE EXACT ROUTE & DIMENSIONS.
 - IMMEDIATELY AFTER AWARDED THE CONTRACT, THE CONTRACTOR SHALL SUBMIT TO THE DEPARTMENTAL REPRESENTATIVE A DETAILED WORK SCHEDULE, IN THE FORM OF COMPUTERIZED BAR CHART OUTLINING ALL PROJECT ACTIVITIES AND SCHEDULED SHUT DOWNS.
 - CORE DRILL WALLS AND FLOORS FOR NEW SERVICES & WIRING. SEALING OF ALL EXISTING OPENINGS AFTER SERVICES ARE REMOVED SHALL FORM PART OF THIS CONTRACT.
 - INSTALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS.
 - BE RESPONSIBLE FOR REMOVAL AND REINSTATING CEILING AS NECESSARY.
 - WORK UNDER THIS PROJECT MAYBE CONDUCTED AT ELEVATIONS IN EXCESS OF 15m (50 FT.), CONTRACTOR MUST ENSURE THAT ALL STAFF & SUB CONTRACTORS ARE TRAINED IN ELEVATED WORK AND FALL PROTECTION.
 - ALL SERVICES OR EQUIPMENT THAT IS SHOWN TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY COMPLETE WITH ALL ASSOCIATED SERVICES, SUPPORTS, HANGERS ETC. ANY ABANDONED OR UNUSED COMPONENTS FOUND WITHIN THE SCOPE OF THIS PROJECT SHALL BE TERMINATED, REMOVED AND REMAINING IF ANY SHALL BE MADE SAFE.
 - DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS OF EACH COMPONENT TO BE INSTALLED OR REMOVED. THEY ARE ONLY PROVIDING A GENERAL OVERVIEW OF THE PROJECT SCOPE. BE RESPONSIBLE TO REVIEW THE SITE CONDITIONS DURING THE TENDER PERIOD AND EXAMINE THE EXTENT OF THE DEMOLITION, REMOVALS & NEW INSTALLATIONS.
 - OWNER SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT. COORDINATE AND HAND OVER AS NECESSARY. DISPOSE OF ANY REMAINING UNWANTED EQUIPMENT OR SERVICES AND REMOVE OFF SITE.
 - DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS DURING THE COURSE OF THE PROJECT. ANY NOISY / DUSTY / SMELLY ACTIVITIES SHALL BE DONE AFTER HOURS OR AT WEEKENDS, COORDINATE WITH CSA PROJECT MANAGER WITH A MINIMUM NOTICE OF 48 HOURS.

Canadian Space Agency / Agence spatiale canadienne

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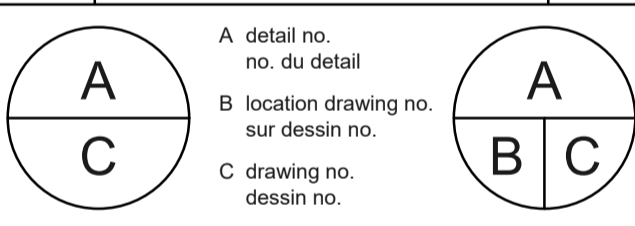
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Contractor to verify all dimensions & conditions on site and immediately notify the engineer of all discrepancies.

revisions	description	date
08	Issued for Tender	2019.12.02
07	Re-issued for Tender	2019.09.20
06	Re-issued for Tender	2019.09.06
05	Re-issued for Tender	2018.10.12
04	Issued for Tender	2018.08.17
03	Issued for Review	2017.12.08
02	Issued for ESA Review	2017.10.18
01	Issued for 90% Review	2017.07.28



WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
 3701 CARLING AVENUE, OTTAWA, ON
 ADDRESS

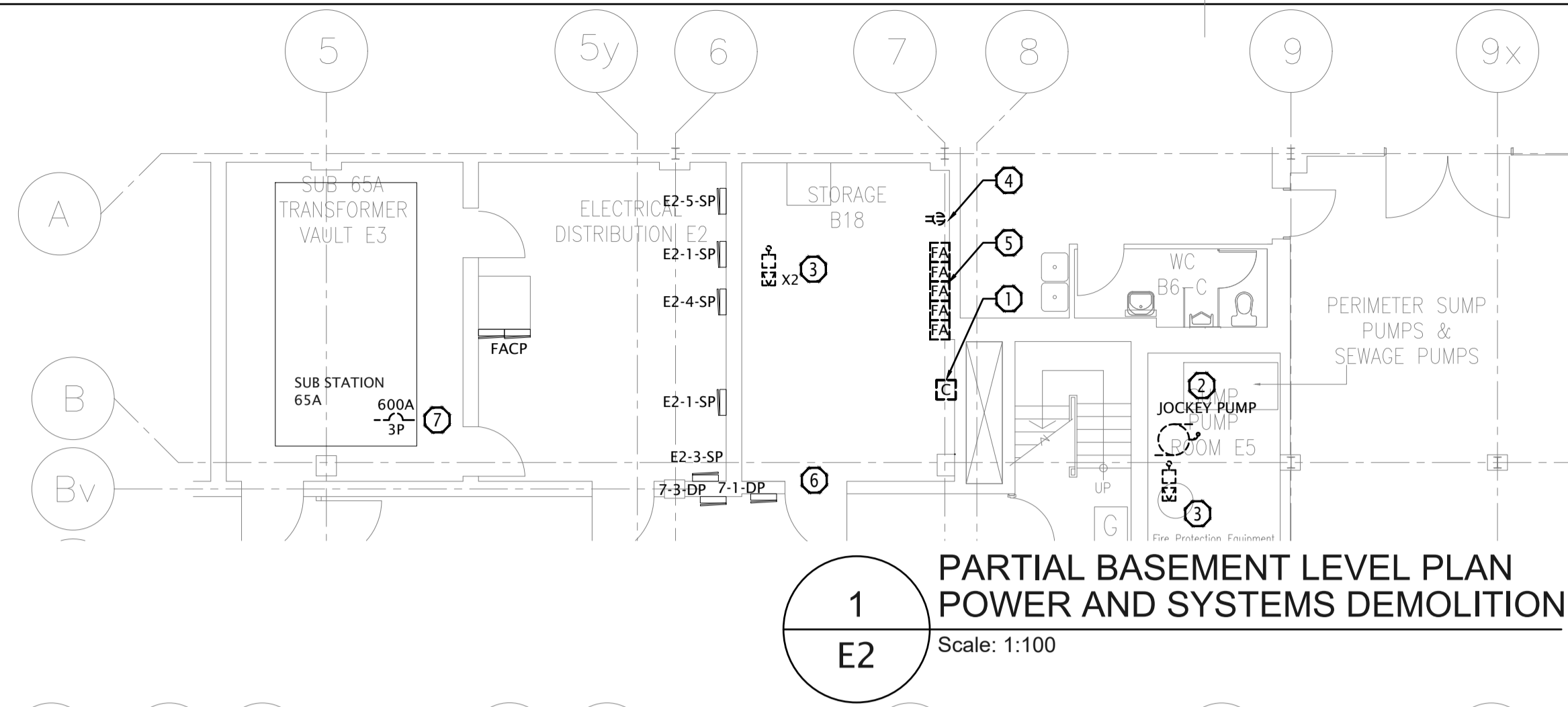
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ELECTRICAL LEGENDS, GENERAL NOTES & PROCEDURES, & SCHEDULES

Designed By	M.LACHOWICZ	Conçu par	Conçu par
Date		(yyyy/mm/dd)	
Drawn By	J GIBSON	Dessiné par	Dessiné par
Date		(yyyy/mm/dd)	
Reviewed By	M.LACHOWICZ	Examiné par	Examiné par
Date		(yyyy/mm/dd)	
Approved By	M.LACHOWICZ	Approuvé par	Approuvé par
Date		(yyyy/mm/dd)	
Tender	M.LACHOWICZ	Soumission	Soumission
Project Manager	Administrateur de projets		
Project no.	CSA17-M1	No. du projet	No. du projet
		2017-037	
Drawing no.	E1	No. du dessin	No. du dessin

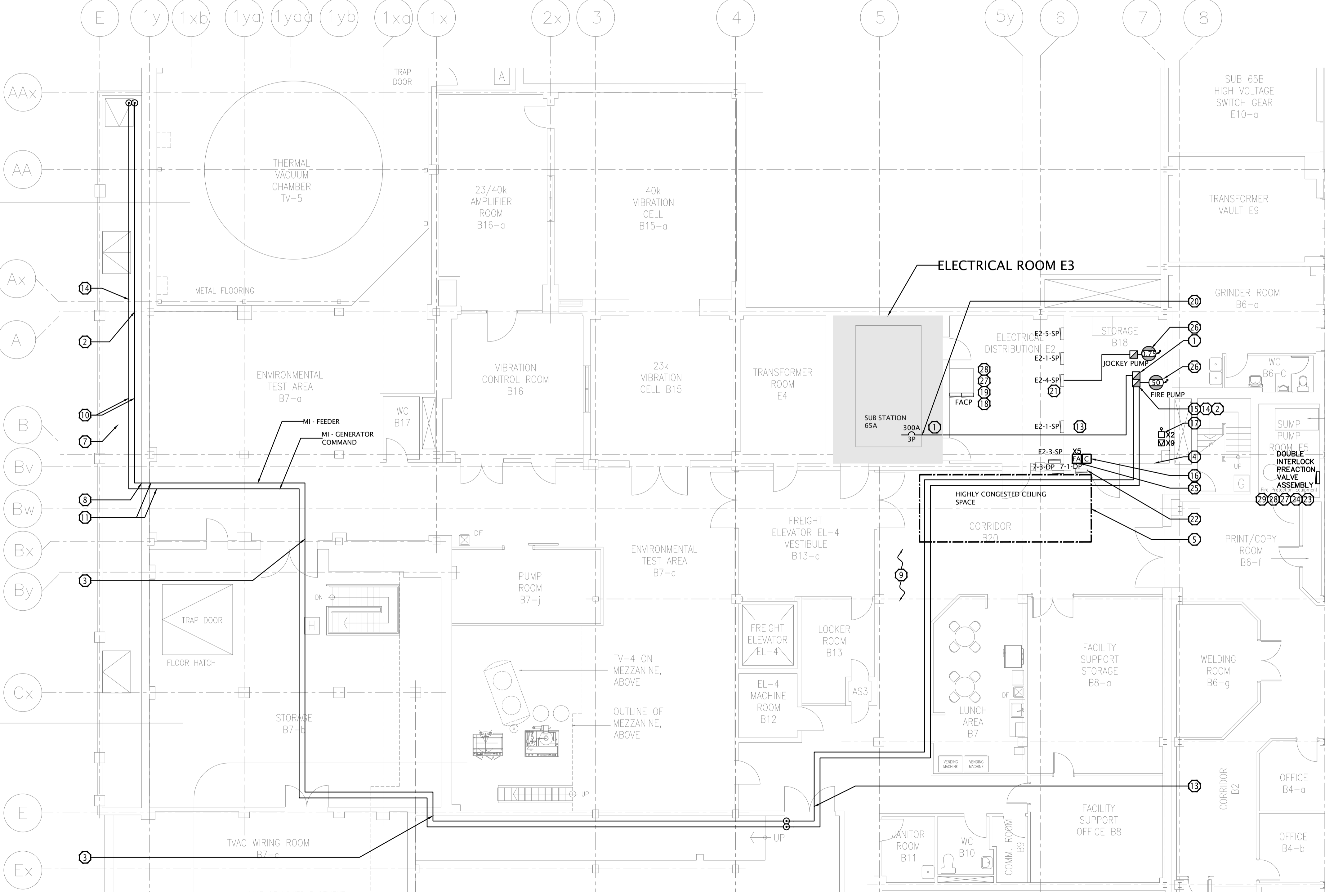
GENERAL NOTE

1. ALL WORK ASSOCIATED WITH SHUTDOWN OF SWITCHGEAR SHALL BE PERFORMED AFTER HOURS OVER A LONG WEEKEND, AT TIME COORDINATED WITH DEPARTMENTAL REPRESENTATIVE. CONTRACTOR TO PROCEED IMMEDIATELY WITH ORDERING OF MATERIAL AND SCHEDULING OF WORK AND LABOUR.



- DESCRIPTION OF POWER & FIRE ALARM DEMOLITION:**
- TEMPORARILY DISCONNECT AND REMOVE 120V CONTROLS CABINET. DISCONNECT FOUR (4) 3/4" CONDUIT C/W WIRING. RETAIN CIRCUITS AND DEVICES FOR RE-USE IN NEW CONSTRUCTION. COORDINATE WITH MECHANICAL TRADES ON LAYOUT OF SPRINKLER SYSTEM AND TEST HEADER TO PROVIDE REQUIRED CLEARANCES.
 - DISCONNECT POWER FROM EXISTING JOCKEY PUMP REMOVE CONDUIT AND WIRING BACK TO NEAREST JUNCTION BOX. LABEL CIRCUIT AS SPARE WITH ROOM NUMBER ON PANEL SCHEDULE. REMOVAL OF JOCKEY PUMP BY MECHANICAL TRADES.
 - TYPICAL: DISCONNECT ADDRESSABLE SUPERVISORY VALVES AND FLOW SWITCH. RETAIN FIRE ALARM CIRCUITS FOR CONNECTION TO NEW SUPERVISORY VALVES AND FLOW SWITCHES IN NEW CONSTRUCTION.
 - REMOVE WALL MOUNTED RECEPTACLE C/W CONDUIT AND WIRING BACK TO SOURCE.
 - TEMPORARILY DISCONNECT AND REMOVE FIVE (5) X ADDRESSABLE FIRE ALARM POINTS C/W CONDUIT AND WIRING. TO BE REMOVED AND RELOCATED. RETAIN CIRCUITS AND DEVICES FOR RE-USE IN NEW CONSTRUCTION.
 - PRIOR TO MOVING THROUGH DOOR INTO ROOM B18 DISCONNECT OWNER SUPPLIED JOCKEY PUMP CONTROLLER FROM JOCKEY PUMP AND REMOVE WITH SUPPLIES, AND DISCONNECT OWNER SUPPLIED FIRE PUMP CONTROLLER FROM FIRE PUMP AND REMOVE WITH SUPPORTS. RECONNECT INSIDE STORAGE ROOM B18.
 - REMOVE ONE (1) SPARE 600A 3-POLE BREAKER IN MAIN SWITCH GEAR LOCATED IN THE TRANSFORMER VAULT E3.

1 PARTIAL BASEMENT LEVEL PLAN POWER AND SYSTEMS DEMOLITION
Scale: 1:100



2 PARTIAL BASEMENT LEVEL PLAN POWER AND SYSTEMS NEW WORK
Scale: 1:100

DESCRIPTION OF POWER & FIRE ALARM NEW WORK:

- PROVIDE MINERAL INSULATED CABLE FOR NEW FIRE PUMP ATS (NORMAL POWER). PROVIDE CONNECTION TO NEW FIRE PUMP ATS (NORMAL POWER). PROVIDE ONE (1) 300A 3-POLE BREAKER IN MAIN SWITCHGEAR LOCATED IN THE TRANSFORMER VAULT E3. ALL WORK ASSOCIATED WITH SHUTDOWN OF SWITCHGEAR SHALL BE PERFORMED DURING PERIOD IDENTIFIED BY DEPARTMENTAL REPRESENTATIVE.
- PROVIDE MINERAL INSULATED CABLE FROM NEW 300A BREAKER IN GENERATOR BUILDING TO NEW FIRE PUMP ATS (EMERGENCY POWER). PROVIDE CONNECTION TO NEW FIRE PUMP ATS.
- TYPICAL: PROVIDE PENETRATIONS OF APPROXIMATELY ±500mm THICK CONCRETE WALL, PATCH, FIRE STOP, AND MAKE GOOD ALL PENETRATIONS.
- REMOVE EXISTING PATCH FOR FIRE RATED OPENING TO ALLOW WIRING TO PENETRATE TO STORAGE ROOM. PROVIDE FIRE STOP, AND MAKE GOOD ONCE WIRING IS INSTALLED AND SECURED.
- INSTALL MINERAL INSULATED CABLE IN CONGESTED CEILING SPACE ABOVE ALL DUCT WORK TIGHT TO UNDERSIDE OF DROP BEAMS.
- TYPICAL: INSTALLATION OF ELECTRICAL EQUIPMENT IN CEILING SPACES SHALL CONFORM TO GENERAL NOTES/PROCEDURES ON DRAWING E1.
- RESPECT ALL CONFINED SPACE WORK AND PROCEDURES WITHIN AREA.
- PROVIDE PENETRATIONS OF APPROXIMATELY ±500mm CONCRETE WALL, PATCH, FIRE STOP, WEATHER SEAL, AND MAKE GOOD ALL PENETRATIONS.
- TEMPORARILY REMOVE TILES AND ADJUST LIGHTING FIXTURES IN AREA AS REQUIRED.
- PROVIDE MINERAL INSULATED CABLE WITH JACKETING WITHIN CONFINED SPACE AREA.
- PROVIDE SPLICE KIT AND TRANSITION FROM MINERAL INSULATED CABLE WITH JACKETING TO MINERAL INSULATED CABLE WITHOUT JACKETING.
- PROVIDE M.I. CABLE C/W SPLICE KIT AS REQUIRED. COORDINATE LOCATION OF SPLICE KIT ON SITE WITH LENGTH OF CONDUCTORS.
- TYPICAL: PROVIDE PENETRATIONS THROUGH BLOCK WALL. PATCH, FIRE STOP, AND MAKE GOOD ALL PENETRATIONS.
- PROVIDE 2#12AWG MINERAL INSULATED CABLES BETWEEN GENERATOR LOCATED IN BUILDING 89 AND FIRE PUMP ATS FOR FIRE PUMP TO COMMAND THE GENERATOR ON.
- PROVIDE CONNECTION AT GENERATOR IN BUILDING 89 AND IN STORAGE ROOM B18 FOR GENERATOR CONTROLS TO FIRE PUMP ATS CONTROLLER.
- RELOCATE 120V CONTROLS CABINET TO MAKE ROOM FOR NEW FIRE PUMP EQUIPMENT. MODIFY AND EXTEND CONDUIT AND WIRING AS REQUIRED. PROVIDE CONNECTION TO CIRCUITS RETAINED DURING DEMOLITION.
- TYPICAL: PROVIDE CONNECTION TO FIRE PUMP FLOW SWITCHES AND SUPERVISORY VALVES C/W CONDUIT AND WIRING.
- PROVIDE INTERCONNECTION C/W MINERAL INSULATED WIRING (7X2#18AWG) BETWEEN FIRE PUMP CONTROLLER AND FIRE ALARM PANEL FOR THE FOLLOWING ALARMS:
 - POWER AVAILABLE
 - PHASE REVERSAL
 - MOTOR RUN
 - COMMON PUMP ROOM ALARM
 - COMMON MOTOR TROUBLE
 - TWO ADDITIONAL PROGRAMMABLE POINTS
- RETAIN AND PAY FOR BASE BUILDING FIRE ALARM CONTRACTOR TO PROVIDE VERIFICATION AND REPORT.
- TRANSITION FROM RW90 - 1000V INSULATION TO MINERAL INSULATED CABLE WITHIN SUB 65A TRANSFORMER VAULT E3. PROVIDE MINERAL INSULATED CABLE BETWEEN SUB 65A TRANSFORMER VAULT E3 AND STORAGE B18.
- PROVIDE 15A, 600V, 3-POLE BREAKER IN PANEL E2-4-SP 14/16/18 C/W 3#12+GND-27MM EMT TO SERVE JOCKEY PUMP.
- PROVIDE 25A, 208V, 2-POLE BREAKER IN PANEL 7-1-DP CIRCUIT 34/36 C/W 2#10+GND-21MM EMT TO SERVE PREACTION SYSTEM COMPRESSOR. REMOVE EXISTING 40A 2-POLE BREAKER FROM SAID CIRCUIT.
- PROVIDE 120V LINE VOLTAGE CONNECTION TO DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY CONTROL PANEL FROM EXISTING SPARE 15A BREAKER IN PANEL 7-1-DP CIRCUIT 22 C/W CONDUIT AND WIRING.
- PROVIDE 208V LINE VOLTAGE MOTOR CONNECTION TO AIR COMPRESSOR NEXT TO DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY FROM NEW 25A BREAKER IN PANEL 7-1-DP ON CIRCUIT 34/36 C/W CONDUIT, WIRING AND MOTOR RATED SWITCH NEXT TO AIR COMPRESSOR.
- RELOCATE FIVE (5) ADDRESSABLE FIRE ALARM POINTS TO MAKE ROOM FOR NEW FIRE PUMP EQUIPMENT. MODIFY AND EXTEND CONDUIT AND WIRING AS REQUIRED. RECOMMISSION ZONES/DEVICES FOLLOWING COMPLETION.
- RECONNECT JOCKEY PUMP AND FIRE PUMP TO JOCKEY PUMP AND FIRE PUMP CONTROLLERS RESPECTIVELY. PROVIDE MANUFACTURERS FACTORY VERIFICATION AFTER RECONNECTION.
- PROVIDE ADDRESSABLE TROUBLE, ALARM, SUPERVISORY AND WATER FLOW CIRCUITS FROM DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY CONTROL PANEL TO FA PANEL C/W MINERAL INSULATED CABLE AND ADDRESSABLE RELAYS.
- PROVIDE CONNECTION FROM FIRE ALARM PANEL'S ADDRESSABLE VESDA (SERVING ANECHOIC CHAMBER) SYSTEM'S FIRE ALARM POINT TO DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY CONTROL PANEL FOR ACTUATION OF ALARM AT PREACTION CABINET C/W MINERAL INSULATED CABLE.
- PROVIDE CONNECTION BETWEEN DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY AND DOUBLE INTERLOCK PREACTION VALVE ASSEMBLY CONTROL PANEL FOR THE FOLLOWING POINTS C/W END OF LINE RESISTORS:
 - DV-5A VALVE
 - SYSTEM MAIN CONTROL VALVE
 - AUTOMATIC DRAIN VALVE
 - MAIN DRAIN VALVE
 - DIAPHRAGM SUPPLY VALVE
 - SOLENOID VALVE
 - MANUAL CONTROL STATION
 - ALARM TEST VALVE
 - WATER SUPPLY GAUGE TEST VALVE
 - DIAPHRAGM SUPPLY CHECK VALVE
 - DOWNSTREAM SHUT OFF VALVE
 - FUNNEL DRAIN CHECK VALVE
 - SYSTEM DRAIN VALVE
 - SYSTEM GAUGE VALVE
 - AIR CHECK VALVE
 - AIR SUPPLY VALVE
 - AIR PRESSURE RELIEF VALVE
 - AIR SUPPLY CONNECTION
 - DRY PILOT ACTUATION
 - ALARM CONTROL VALVE
 - SYSTEM SHUT-OFF VALVE
 - PS-10 WATER FLOW
 - WATER FLOW
 - WATER FLOW BELL
 - GENERAL ALARM BELL

Canadian Space Agency / Agence spatiale canadienne

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04	Issued for Tender	2018.08.17
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02	Issued for ESA Review	2017.10.18
01	Issued for 90% Review	2017.07.28

project A
C detail no. no. du detail

location drawing no. sur dessin no.

drawing no. dessin no.

project A
B
C

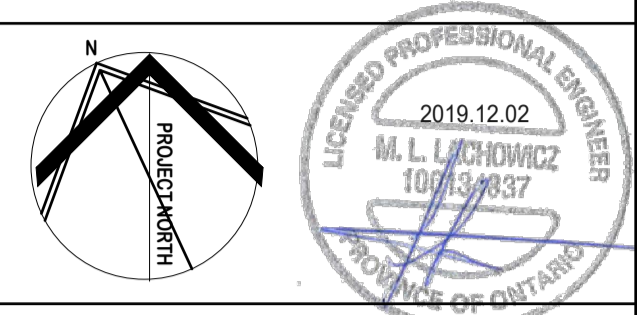
WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
3701 CARLING AVENUE, OTTAWA, ON
ADDRESS

drawing A
C dessin

POWER & SYSTEMS DEMOLITION & NEW WORK BASEMENT LEVEL PARTIAL PLAN

Designed By	M.LACHOWICZ	Conçu par	
Date		(yyyy/mm/dd)	
Drawn By	J.GIBSON	Dessiné par	
Date		(yyyy/mm/dd)	
Reviewed By	M.LACHOWICZ	Examiné par	
Date		(yyyy/mm/dd)	
Approved By	M.LACHOWICZ	Approuvé par	
Date		(yyyy/mm/dd)	
Tender	M.LACHOWICZ	Soumission	
Project Manager	Administrateur de projets		
Project no.	CSA17-M1	No. du projet	
		2017-037	
Drawing no.	E2	No. du dessin	



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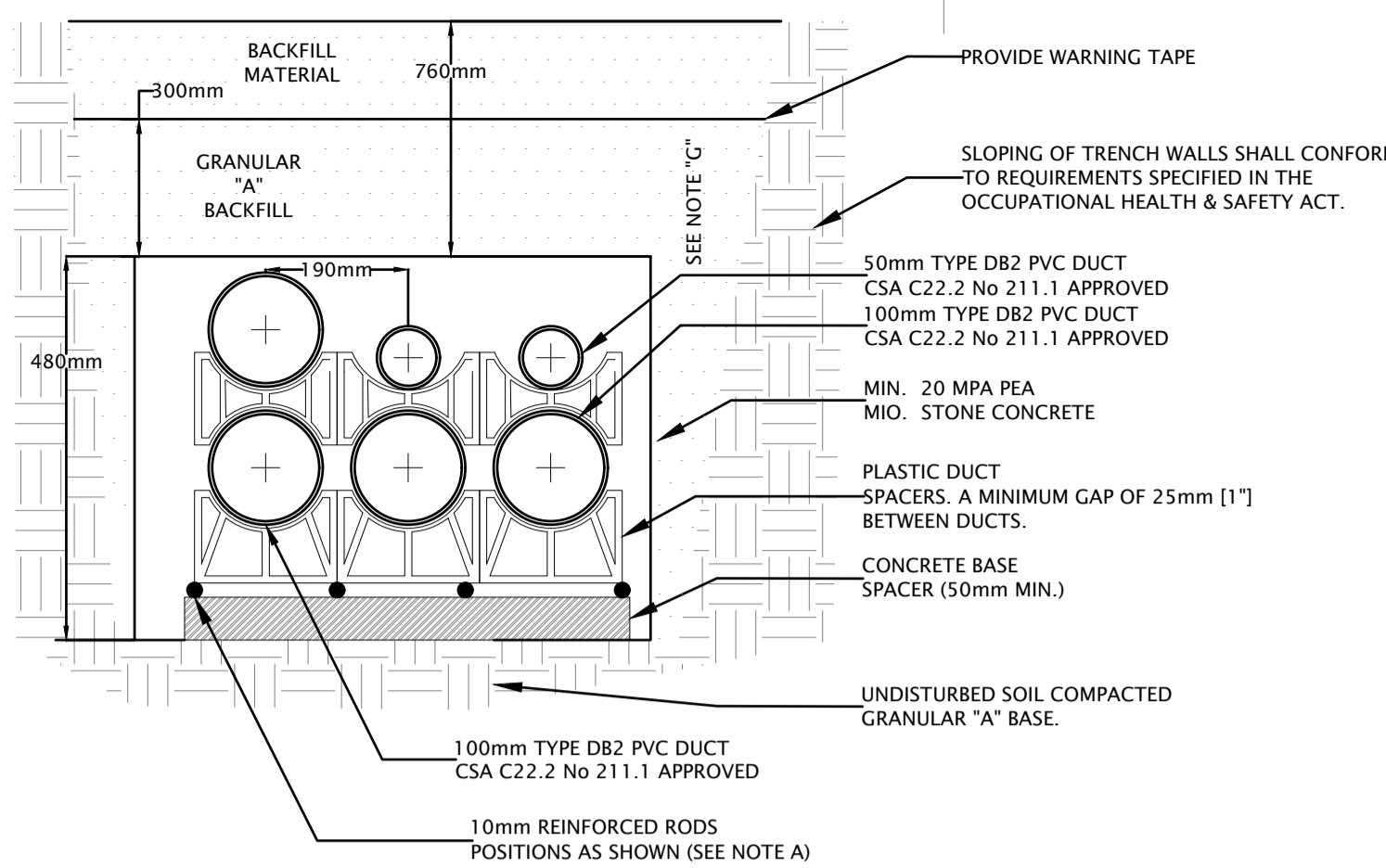
A	A detail no.	A
C	no. du detail	B
	B location drawing no. sur dessin no.	C
	C drawing no. dessin no.	

ELECTRICAL PREPARATION FOR WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
3701 CARLING AVENUE, OTTAWA, ON
ADDRESS

POWER & SYSTEMS DEMOLITION & NEW WORK GROUND LEVEL PARTIAL PLAN

Designed By	M.LACHOWICZ	Conçu par	
Date		(yyyy/mm/dd)	
Drawn By	J.GIBSON	Dessiné par	
Date		(yyyy/mm/dd)	
Reviewed By	M.LACHOWICZ	Examiné par	
Date		(yyyy/mm/dd)	
Approved By	M.LACHOWICZ	Approuvé par	
Date		(yyyy/mm/dd)	
Tender	M.LACHOWICZ	Soumission	
Project Manager	Administrateur de projets		
Project no.	CSA17-M1	No. du projet	
		2017-037	
Drawing no.	E3	No. du dessin	

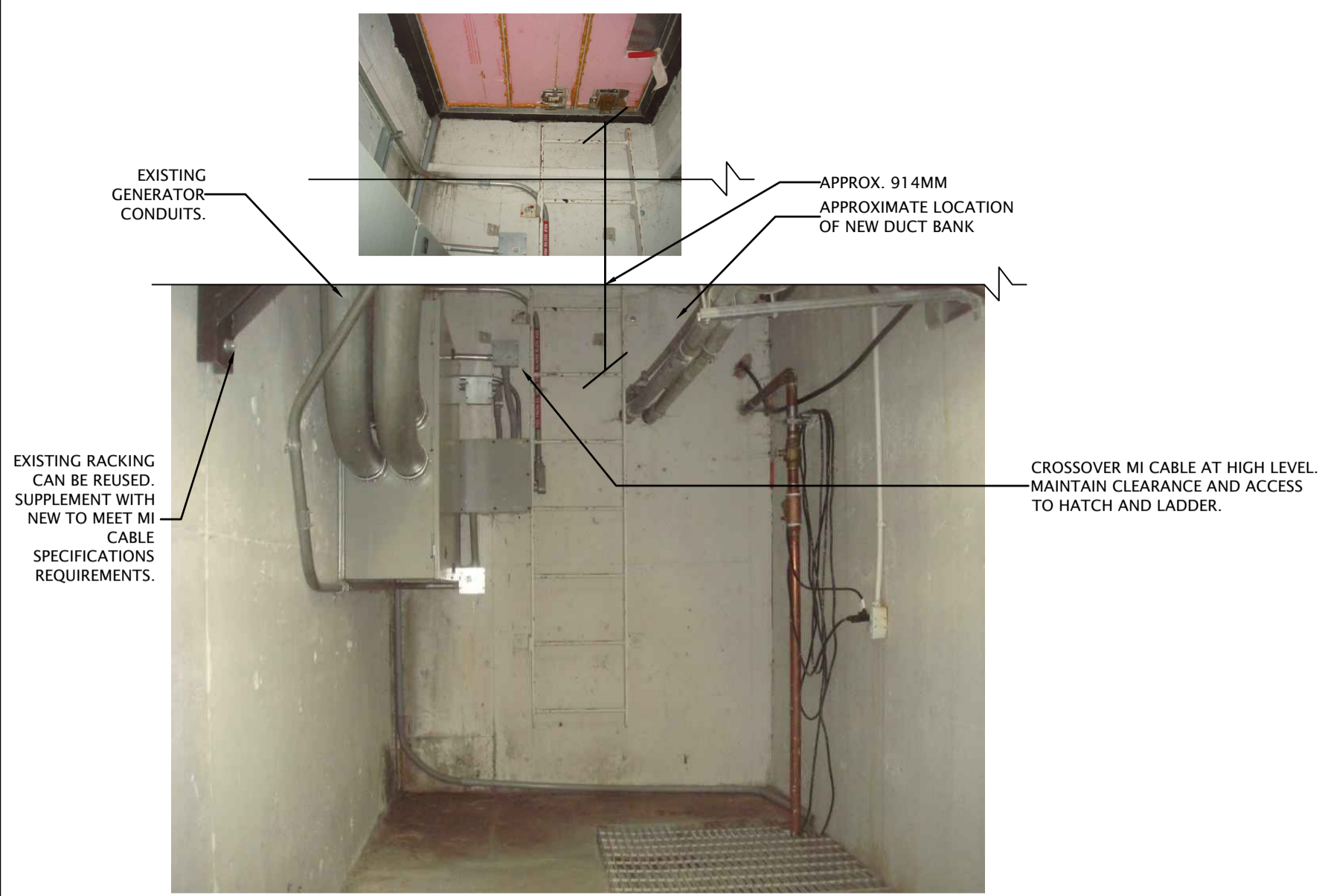


3 NEW DUCT BANK CROSS SECTIONAL VIEW
Scale: N.T.S.

- NOTES:
- REINFORCING RODS FULL LENGTH OF CONCRETE ENCASED DUCTS. OVERLAP JOINTS BY 150mm ON BASE SPACERS AND TIE BOTH ENDS. DRILL AND DOWEL RODS 85mm INTO WALL(S) OF CONCRETE STRUCTURE.
 - DUCT SPACERS TO BE PLACED AT A MAXIMUM OF 1500mm AND WITHIN 150mm OF COUPLING. PLASTIC DUCT SPACERS TO BE USED ONLY IF CONCRETE DUCT SPACERS ARE UNAVAILABLE.
 - FORMS REQUIRED FOR BOTH SIDES OF THE FULL LENGTH OF CONCRETE ENCASED DUCT STRUCTURE.
 - DUCTS AND TRENCHES MUST BE INSPECTED BY DEPARTMENTAL REPRESENTATIVE BEFORE ANY CONCRETE IS POURED.
 - CONTRACTOR MUST ENSURE THAT ALL DUCTS ARE CLEANED, RODED AND THAT A 8mm POLYPROPYLENE ROPE IS LEFT IN EACH DUCT.
 - ALL BACKFILL MATERIAL MUST BE APPROVED BY DEPARTMENTAL REPRESENTATIVE. ACCEPTABLE BACKFILL MATERIAL, THE BACKFILL SHALL CONSIST OF MATERIAL PROCESSED BY CRUSHING, SCREENING AND BLENDING IN ORDER TO STRICTLY MEET THE REQUIREMENTS OF GRADATION SHOWN BELOW. BLENDING, IF REQUIRED, SHALL BE CARRIED OUT AT THE PRODUCTION PLANT. MATERIAL SHALL NOT QUALIFY AS CLASS "A" UNLESS IT HAS BEEN PROCESSED BY CRUSHING, REGARDLESS OF NATURAL PARTICLE SIZES. AT LEAST 40% OF THE WEIGHT OF THE MATERIAL RETAINED ON THE 4.75 MM SIEVE SHALL HAVE AT LEAST ONE FRACTURED FACE.
 - STEEL PLATES ARE TO BE USED IF THE COVER OVER THE DUCT BANK IS LESS THAN 450mm THE PLATES ARE TO BE 6.5mm IN THICKNESS AND THE WIDTH OF THE DUCT BANK BEING COVERED. ANY DEVIATION FROM THE STANDARD COVER OF 760mm MUST BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
 - ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - PROVIDE WARNING TAPE APPROXIMATELY HALF WAY BETWEEN THE INSTALLATION AND GRADE LEVEL COVERING THE WIDTH OF THE REWAYAYS.

DESCRIPTION OF POWER & SYSTEMS NEW WORK:

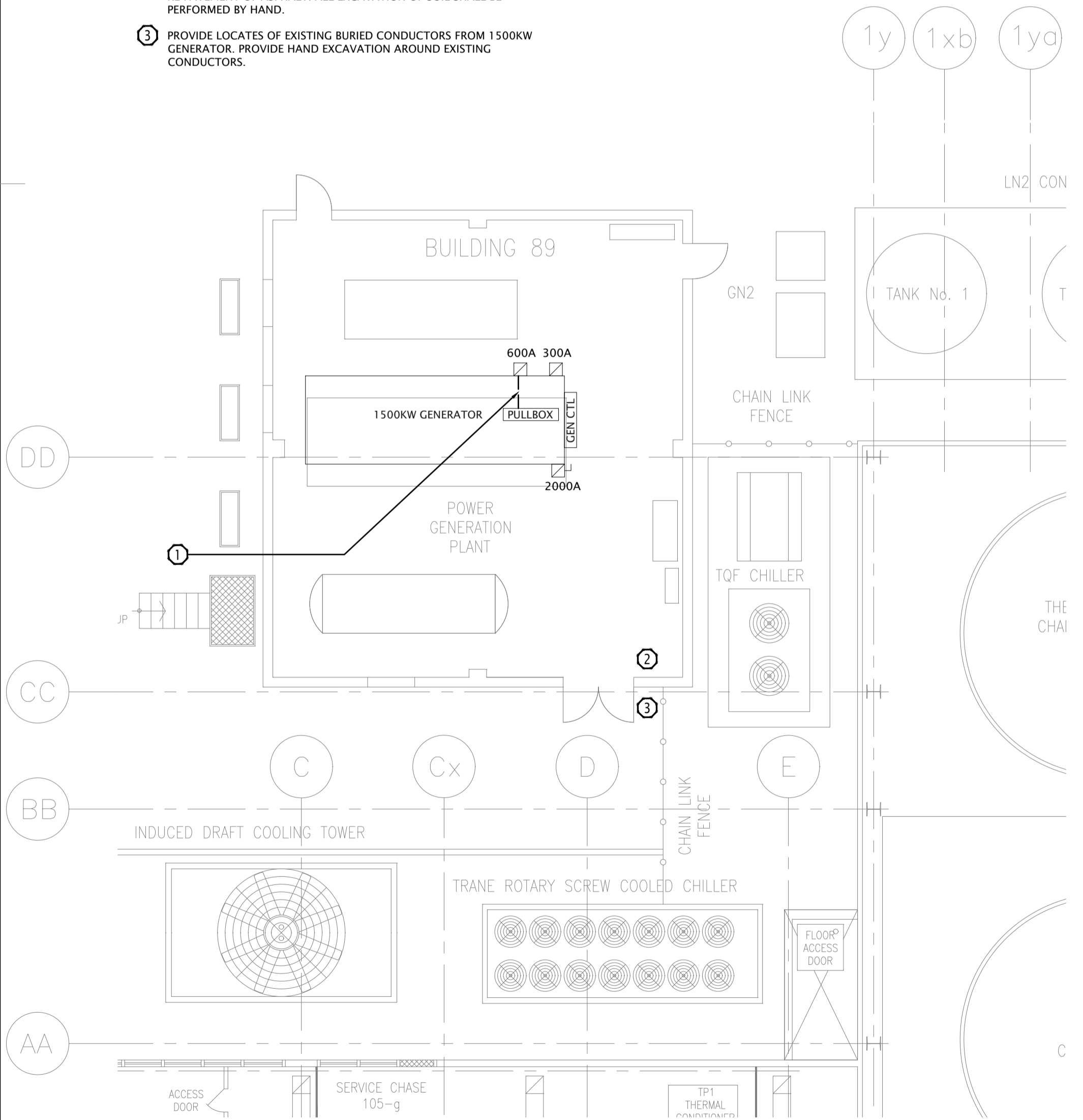
- PROVIDE FOUR (4) SPLIT LUGS ON LINE SIDE OF EXISTING MAIN 8 REAKER TO ACCOMMODATE NEW CONDUCTORS.
- PROVIDE EXTERNAL 300A 3-POLE BREAKER MOUNTED ON UNISTRUT SUPPORT C/W CONDUIT & WIRING. CABLE (MINERAL INSULATED CABLE). PROVIDE CONNECTION TO NEW SPLIT LUGS IN GENERATOR SPLITTER.
- PROVIDE MINERAL INSULATED CABLE C/W MOUNTING ACCESSORIES FROM 300A BREAKER IN GENERATOR BUILDING TO BASEMENT STORAGE ROOM B18.
- PROVIDE CONNECTION TO EMERGENCY SIDE OF FIRE PUMP CONTROLLER IN STORAGE ROOM B18. REFER TO DRAWING E2 FOR ROOM LOCATION.
- PROVIDE 2#12 AWG MINERAL INSULATED CABLES FOR GENERATOR CONTROL.
- PROVIDE TERMINATION INSIDE GENERATOR CONTROLLER FROM FIRE PUMP ATS.
- RETAIN AND PAY FOR GENERAL CONTRACTOR TO PROVIDE PENETRATION AND WEATHER DRIP HOOD TO MATCH EXTERIOR FINISH OF BUILDING B9; IN GENERATOR BUILDING ENVELOPE AND TO PROVIDE PENETRATION TO BASEMENT LEVEL OF ACCESS SHAFT. GENERAL CONTRACTOR TO PATCH, WEATHER SEAL, PRIME AND PAINT, AND MAKE GOOD ALL PENETRATIONS.
- RETAIN AND PAY FOR GENERAL CONTRACTOR TO PROVIDE PENETRATION TO BASEMENT LEVEL TO ACCESS SHAFT. GENERAL CONTRACTOR TO PATCH, WEATHER SEAL, AND MAKE GOOD ALL PENETRATIONS.
- PROVIDE FOUR (4) 100MM AND TWO (2) 50MM PVC CONDUITS FROM EXTERIOR OF GENERATOR BUILDING TO CONFINED SPACE TUNNEL BURIED IN CONCRETE AS PER DETAIL 3/E3. PROVIDE PULLSTRING IN ALL CONDUITS.
- PROVIDE LOCATES OF EXISTING BURIED CONDUCTORS FROM 1500KW GENERATOR. PROVIDE HAND EXCAVATION AROUND EXISTING CONDUCTORS.
- PROVIDE EXCAVATION OF ASPHALT TO ALLOW FOR THE INSTALLATION OF PVC CONDUITS C/W CONCRETE, CAUTION TAPE, BACKFILL, AND RE-PAVEMENT OF ASPHALT. ALL EXCAVATION OF SOIL SHALL BE PERFORMED BY HAND.
- RECONNECT EXISTING 600A LOAD BANK BREAKER FROM NEW SPLIT LUGS INSIDE SPLITTER.
- PROVIDE STEEL PLATES BETWEEN EXISTING CONDUCTORS FROM 1500KW GENERATOR AND NEW DUCT BANK. TRANSITION OVER EXISTING BURIED PVC CONDUITS. ALLOW FOR STEEL PLATES ENTIRE LENGTH OF DUCT BANK, PROVIDE AS REQUIRED.
- BOTTOM OF DUCT BANK SHALL BE APPROXIMATELY 914MM BELOW GRADE AT CONFINED SPACE ACCESS TUNNEL. REFER TO DETAIL 4/E3 FOR REVIEW OF SERVICES AND ELEVATION OF EXISTING TUNNEL.



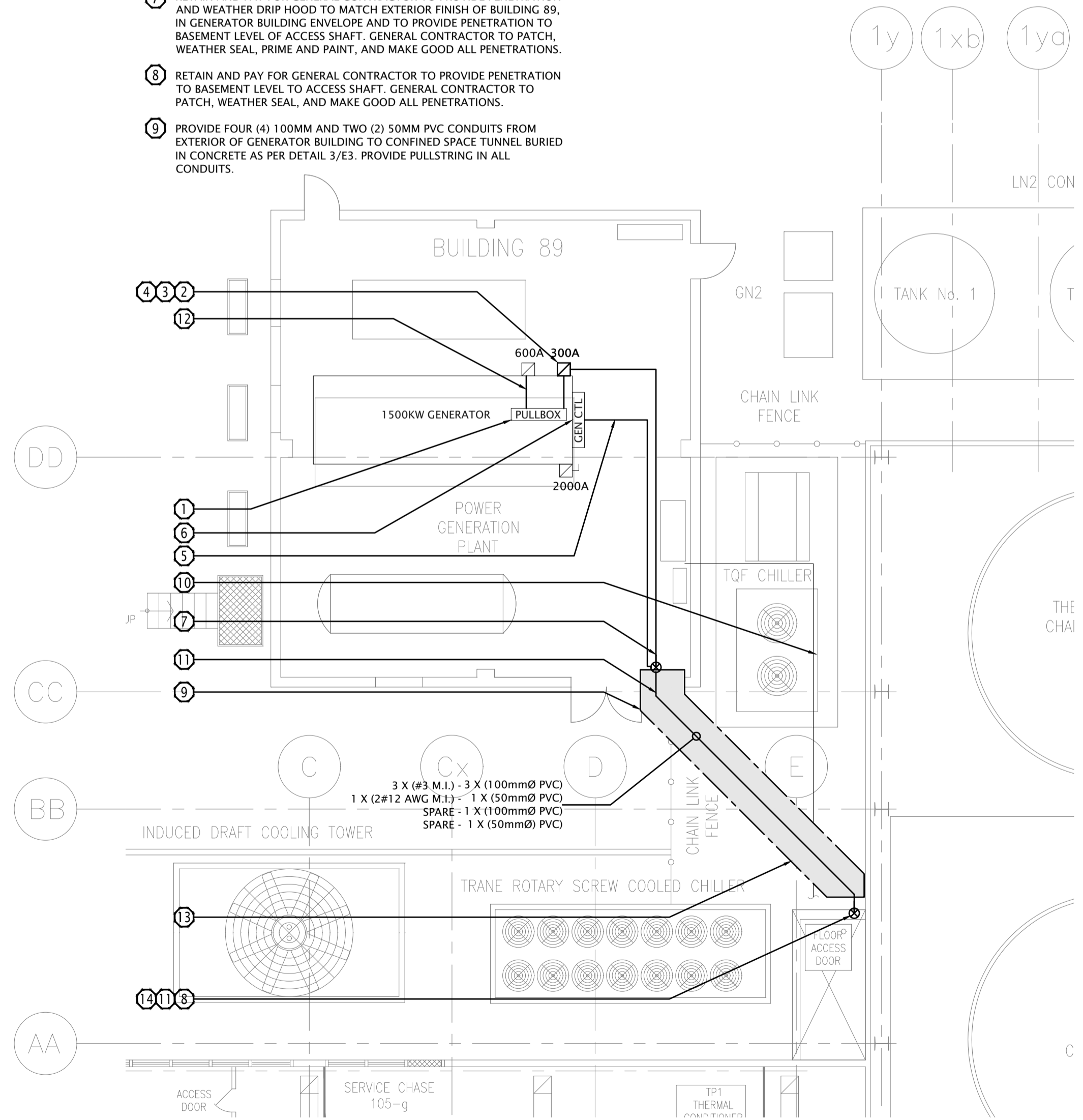
4 CONFINED SPACE TUNNEL EXISTING SERVICES
Scale: N.T.S.

DESCRIPTION OF POWER & SYSTEMS DEMOLITION:

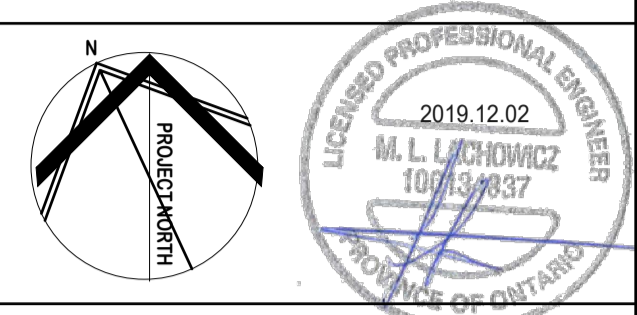
- DISCONNECT FEEDER SERVING 600A LOAD BANK BREAKER IN SPLITTER LOCATED ABOVE GENERATOR. RETAIN CONDUIT, WIRING, AND LOAD BANK BREAKER FOR RE-USE IN NEW CONSTRUCTION.
- PROVIDE EXCAVATION OF ASPHALT TO ALLOW FOR THE INSTALLATION OF PVC CONDUITS C/W CONCRETE, CAUTION TAPE, BACKFILL, AND RE-PAVEMENT OF ASPHALT. ALL EXCAVATION OF SOIL SHALL BE PERFORMED BY HAND.
- PROVIDE LOCATES OF EXISTING BURIED CONDUCTORS FROM 1500KW GENERATOR. PROVIDE HAND EXCAVATION AROUND EXISTING CONDUCTORS.



1 GROUND LEVEL PARTIAL PLAN POWER AND SYSTEMS DEMOLITION
Scale: 1:100



2 GROUND LEVEL PARTIAL PLAN POWER AND SYSTEMS NEW WORK
Scale: 1:100



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01	Issued for 90% Review	2017.07.28

revisions	description	date
A	A detail no.	
B	B location drawing no.	
C	C drawing no.	

ELECTRICAL PREPARATION FOR WATER MAIN SYSTEM UPGRADE

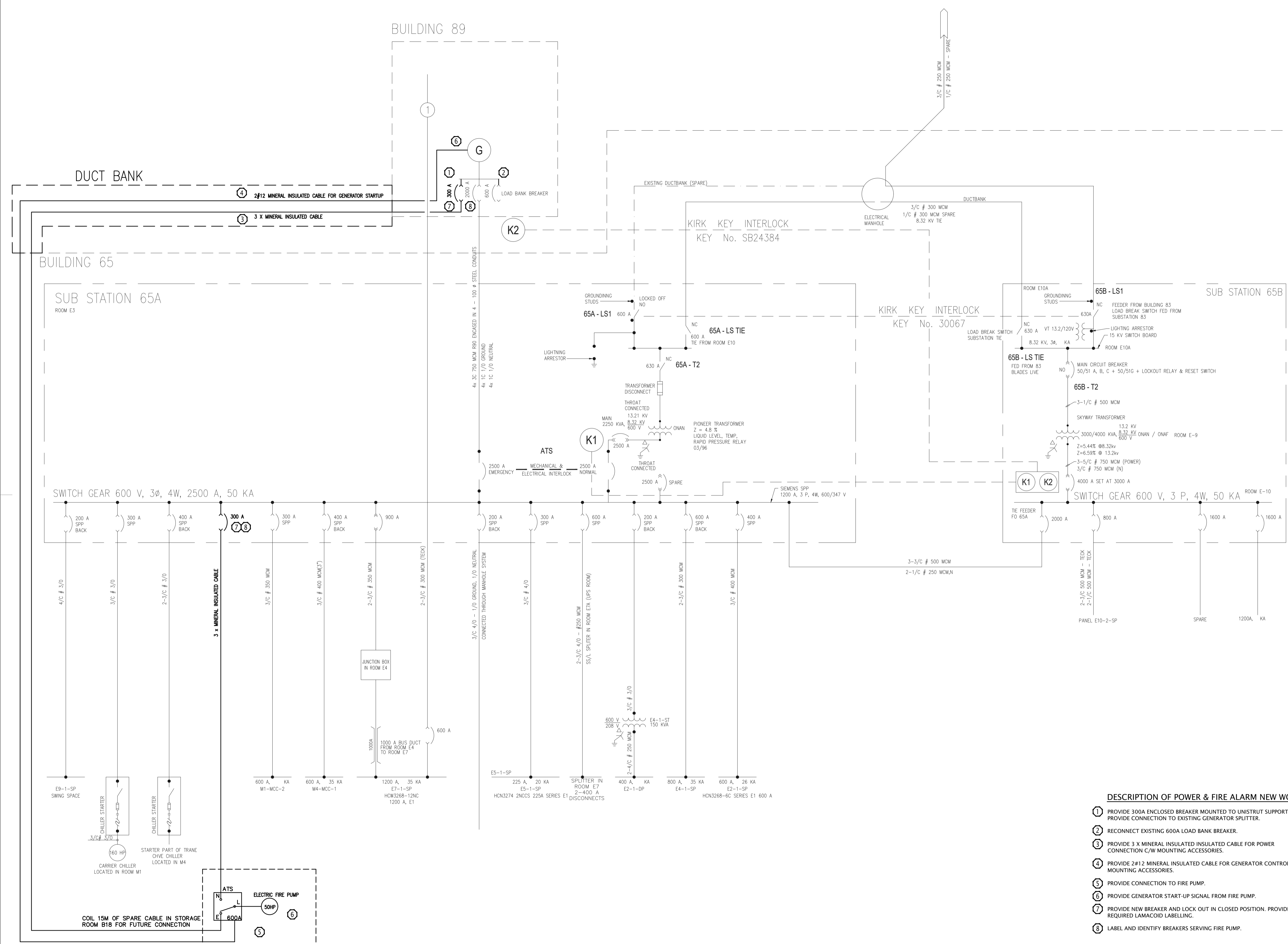
BUILDING 65, SHIRLEY'S BAY CAMPUS
 3701 CARLING AVENUE, OTTAWA, ON
 ADDRESS

ELECTRICAL DISTRIBUTION SINGLE LINE DIAGRAM NEW WORK

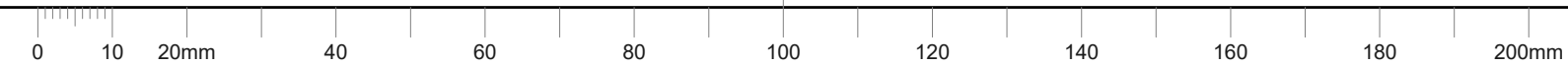
DESCRIPTION OF POWER & FIRE ALARM NEW WORK:

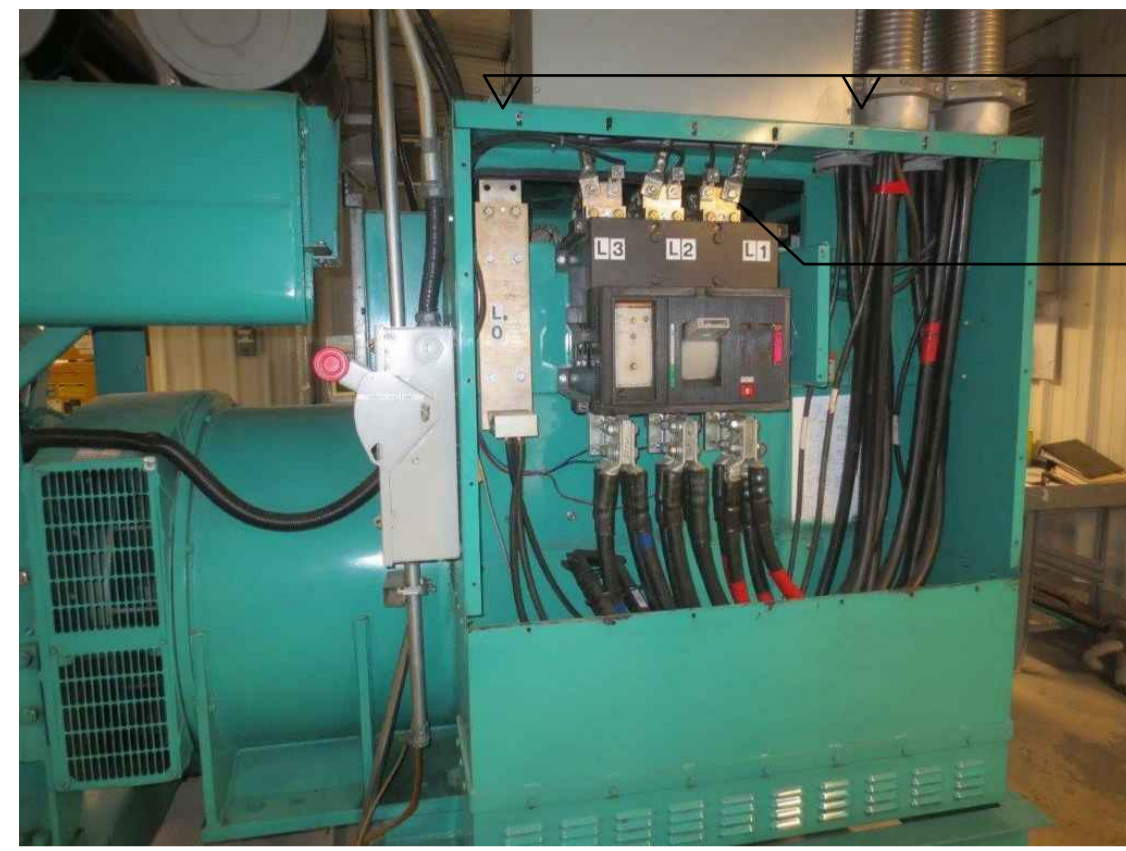
- 1 PROVIDE 300A ENCLOSED BREAKER MOUNTED TO UNISTRUT SUPPORT. PROVIDE CONNECTION TO EXISTING GENERATOR SPLITTER.
- 2 RECONNECT EXISTING 600A LOAD BANK BREAKER.
- 3 PROVIDE 3 X MINERAL INSULATED CABLE FOR POWER CONNECTION C/W MOUNTING ACCESSORIES.
- 4 PROVIDE 2#12 MINERAL INSULATED CABLE FOR GENERATOR CONTROL C/W MOUNTING ACCESSORIES.
- 5 PROVIDE CONNECTION TO FIRE PUMP.
- 6 PROVIDE GENERATOR START-UP SIGNAL FROM FIRE PUMP.
- 7 PROVIDE NEW BREAKER AND LOCK OUT IN CLOSED POSITION. PROVIDE REQUIRED LAMACOID LABELLING.
- 8 LABEL AND IDENTIFY BREAKERS SERVING FIRE PUMP.

Designed By	M.LACHOWICZ	Conçu par	
Date		(yyyy/mm/dd)	
Drawn By	J.GIBSON	Dessiné par	
Date		(yyyy/mm/dd)	
Reviewed By	M.LACHOWICZ	Examiné par	
Date		(yyyy/mm/dd)	
Approved By	M.LACHOWICZ	Approuvé par	
Date		(yyyy/mm/dd)	
Tender	M.LACHOWICZ	Soumission	
Project Manager	M.LACHOWICZ	Administrateur de projets	
Project no.	CSA17-M1	No. du projet	
		2017-037	
Drawing no.	E4	No. du dessin	



C





2
E5

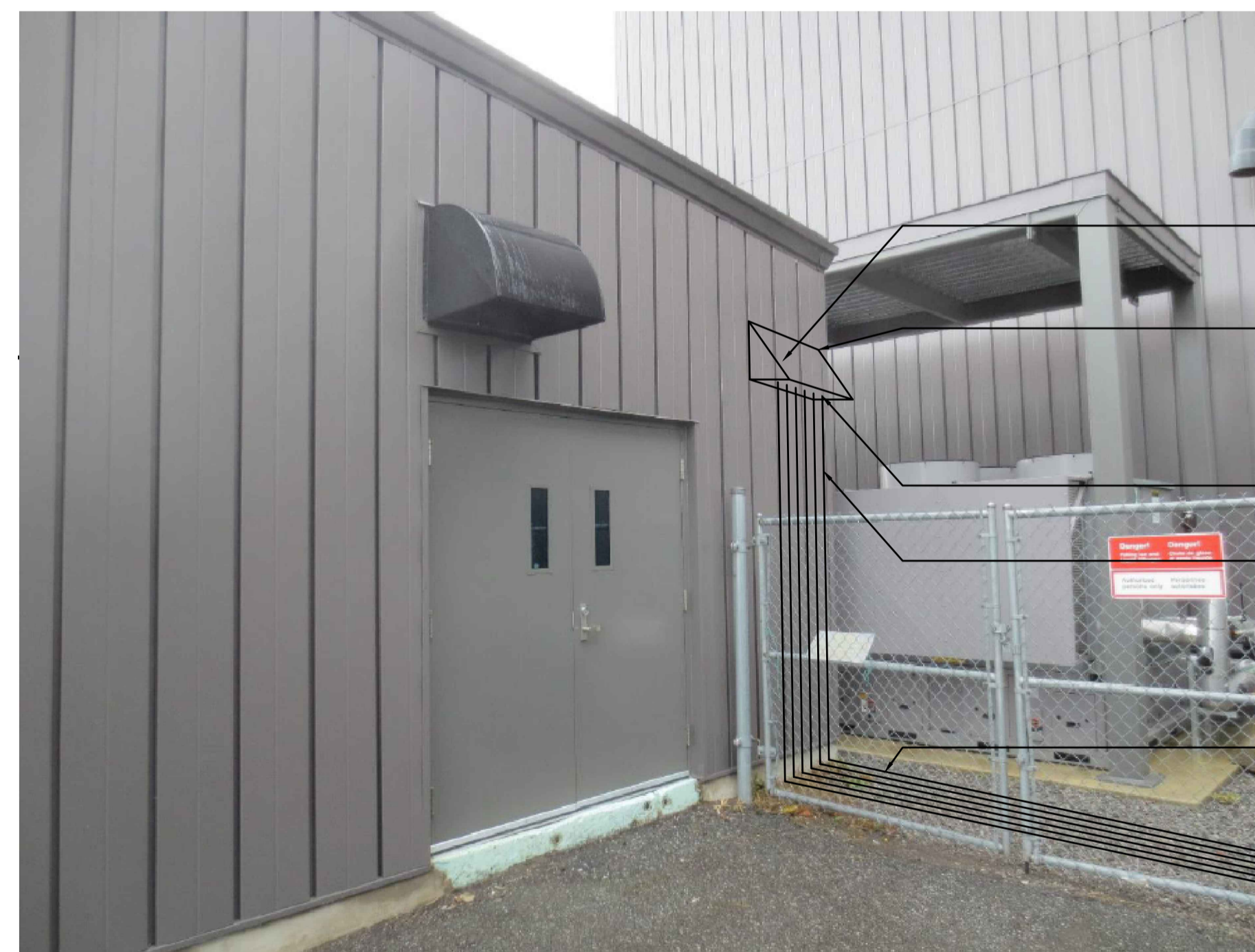
REPLACE LUGS

1
E5
GENERATOR PULLBOX
Scale: N.T.S.



2
E5
GENERATOR PULLBOX
Scale: N.T.S.

REPLACE LUGS



APPROXIMATE LOCATION OF THE WALL PENETRATION FOR THE CONDUITS. INSTALL DRIP EDGE METAL FLASHING OVER TOP.

WEATHER DRIP HOOD

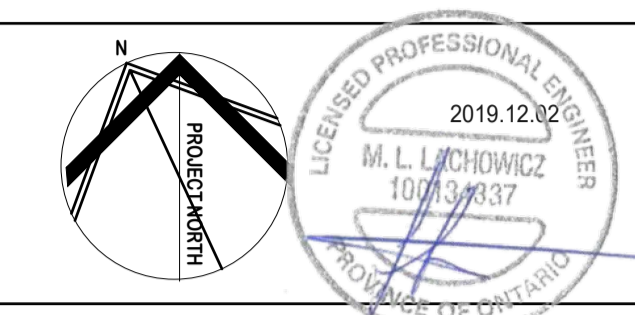
SEAL CONDUITS AT TOP

PVC CONDUITS

SCAN, LOCATE EXISTING SERVICES AND EXCAVATE NEW DUCT BANK

3
E5
BUILDING 89 WALL PENETRATION
Scale: N.T.S.

ÉRIC VACHON
Director, Security & Facilities
M. FARID, P. Eng.
Project Manager



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

project / projet

ELECTRICAL PREPARATION FOR WATER MAIN SYSTEM UPGRADE

BUILDING 65, SHIRLEY'S BAY CAMPUS
3701 CARLING AVENUE, OTTAWA, ON
ADDRESS

drawing / dessin
POWER & SYSTEMS
BUILDING 89
REFERENCE PICTURES

Designed By	M. LACHOWICZ	Conçu par	M. LACHOWICZ
Date		(yyyy/mm/dd)	
Drawn By	J. GIBSON	Dessiné par	J. GIBSON
Date		(yyyy/mm/dd)	
Reviewed By	M. LACHOWICZ	Examiné par	M. LACHOWICZ
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Date		(yyyy/mm/dd)	
Tender	M. LACHOWICZ	Soumission	M. LACHOWICZ
Project Manager	M. LACHOWICZ	Administrateur de projets	M. LACHOWICZ
Project no.	CSA17-M1	No. du projet	CSA17-M1
			2017-037
Drawing no.	E5	No. du dessin	E5

C

