Brockville Main Sewage Pumping Station

BROCKVILLE
CITY OF THE 1000 ISLANDS

ADDENDUM NO. 2
June 3, 2026

Tender Closing Date: June 18, 2026

This Addendum forms part of the Contract Documents and amends the original drawings and specifications. Tenderers are reminded to acknowledge on the Form of Tender that this Addendum has been received.

GENERAL

Item No. 1 Questions from Bidders

1.1 I'm reaching out to you regarding the Brockville Sewage Pumping Station Construction Tender. As a generator manufacturer and provider, we are highly interested in participating in the project. We are one of the generators specified suppliers. Could you please send me the list of the electrical contractor you've qualified for this tender.

Please note that there are no prequalified Electrical contractors.

1.2 Good afternoon - I kindly request you to add Dynamic Water Control Gates for the supply of Fabricated Slide Gates and Hand Gates under Section 11382 on the above tender. Dynamic Water Control Gates is one of the reputed Canadian Manufacturer and the gates are designed, manufactured, and tested in Canada. The gates are designed to meet and/or exceed the requirements of AWWA C561 and are NSF-61 Certified. Dynamic have several installation all over Ontario. Dynamic will be able to meet the project specification and will bring competition to the bidding process. Dynamic equipment's will meet the project specification without exception. Please let me know if you require additional information for your evaluation.

Please note that no changes to the specifications for this item will be made at this time.

1.3 Upon quick review of the drawings, the following specification sections do not appear relevant. If so, would you please remove them from the specifications. Sections 03380, 03370, 03390, 05122, 05310, 05400, 09210, 09670, 09850, and 09960.

Please note that responses included in this Addendum address only Sections 05400, 09210, 09670. 09850 and 09960. Responses to the remaining sections will be provided under Addendum No. 3.

.1 Section 05400 is required to capture the HSS Structural Framing required for the high parapet, refer to drawing 2/A40.

.2 Section 09210 is required to capture the exterior grade sheathing for the parapet and for the tile back board in the washroom.

.3 Section 09670 is required; chemical resistant epoxy coating is required in the chemical dosing room.

.4 Section 09850 is not required and can be removed from the specification package. Please refer to this Addendum, Item 5.1.

.5 Section 09960 is not required and can be removed from the specification package. Please refer to this Addendum, Item 6.1.

1.4 Good morning – I kindly request you to include the Golden Anderson (GA) & Elite Valves for the supply of valves under section 15100 Process Valves and Actuators as below., Section 15100-A1 (Datasheet Type A1) : Eccentric Plug Valve - Please include Golden Anderson (GA) Fig B517 100% Port Full Eccentric Plug Valve. Section 15100-B1 (Datasheet Type B1): True Bi-Directional Knife Gate Valve - Please include Elite Series 5100 Knife Gate Valve. Section 15100-G1 (Datasheet Type G1): Air Release Valve (Sewage) - Please include GA Series 900 (Fig 925) Air Release valve for wastewater application. Section 15100-J2 (Datasheet Type J2): Pressure Relief Valve - Please include GA Figure 624 / 625 / 626 Surge Relief Valve for sewage (Angle or Wye Body). Please find enclosed the product datasheet for your evaluation. The proposed valve is functionally equivalent to the named products on the documents and have install base all over Ontario. We will be able to bring value and competition to the tendering process when named. Please let me know if you need any additional information, I'll be happy to furnish them.

Please note that no changes to the specifications for this item will be made at this time.

1.5 Should it be relevant to this tender, please provide the DSR mentioned under Section 01065.

Yes, a Designated Substances Report shall be provided for this Tender. Please refer to this Addendum, Item 9.1.

1.6 Please clarify (Refer to Question # 29.....) in Section 17051, item 2.9.5.

Please note that the reference to Question # 29 shall be removed. Please refer to this Addendum, Item 8.1.

1.7 According to the RFS on drawing A60 room 103 only requires a sealer, however drawing S13 mentions to provide a protective coating. Please clarify.

Room Finish Schedule on Drawing A60 to be updated to show Room 103 Chemical Dosing Room to receive chemical resistant epoxy floor coating.

1.8 I recently reviewed the tender for the Brockville Sewage Pumping Station and noted that Flygt is listed as a specified brand. I would like to introduce an alternative to Flygt: HOMA Pumps from Germany. HOMA has been successful in Europe for 70 years and has recently partnered with Nevtro as their sole Canadian dealer. HOMA pumps offer several distinct advantages, including: - Competitive Pricing: High-quality performance at a very competitive price point. - Industry-Leading Durability: A specialized hardness coating on the pump interior and impeller that extends the lifespan in demanding applications. - Warranty: An industry-leading 5-year warranty. I would appreciate the opportunity to present HOMA Pumps to you and your team as a viable alternative for future projects. I am available for a brief presentation via Zoom or an in-person "lunch and learn" session.

Please note that no changes to the specifications for this item will be made at this time.

1.9 Please clarify the meaning of 'GEN' under 'Supply By' for the generator emergency power off.

Remote Emergency Power off to be supplied by Generator manufacturer in accordance with Section 16622.

1.10 Confirm that detail 6/E05 on drawing E05 pertains to the direct buried feeder circuit to the existing public washroom.

Yes, Detail 6/E05 will apply to modifications of the existing direct buried feeder, in accordance with the OESC.

1.11 Please refer to the following 'revised' question: Upon quick review of the drawings, the following specification sections do not appear relevant. If so, would you please remove them from the specifications. Sections 02412, 03380, 03370 (Need Confirmation if Provisional Item, or not), 03390, 09670, 09850, and 09960.

Please refer to this Addendum, Item 1.3.

SPECIFICATIONS

Division 00-01

Item No. 2 Section 00050 (Table of Contents)

2.1 ADD Appendix C – Designated Substances Review – Main Sewage Pumping Station – 42 Water Street East, Brockville, ON, dated May 18, 2023, prepared by Gore and Storrie Limited, to the Table of Contents.

Item No. 3 Section 00050 (Table of Contents)

3.1 ADD Appendix D – Main Sewage Pumping Station As-builts – Main Sewage Pumping Station Design 42 Water Street East, Brockville, ON, dated August 1962, prepared by CM3 Environmental, to the Table of Contents.

Item No. 4 Section 01110 (Summary of Work)

4.1 DELETE Clause 1.8.4 and REPLACE with:

.4 Materials to be salvaged and turned over to the Owner shall be delivered to a location in the City as directed by the Owner. Contractor to unload salvaged items at the receiving location.

Architectural

Item No. 5 Section 09850 (Concrete Protective Coatings)

5.1 DELETE Section 09850 Concrete Protective Coatings from Issued for Tender Specifications and Table of Contents.

Item No. 6 Section 09960 (High Performance Coatings)

6.1 DELETE Section 09960 High Performance Coatings from Issued for Tender Specifications and Table of Contents.

Electrical

Item No. 7 Section 16622 (Standby Power System)

7.1 DELETE Clause 2.11.1. and REPLACE with new Clause 2.11.1:

.1 “Power Coated and baked over corrosion resistant pretreatment and compatible primer. Allow for custom colour. Final RAL colour shall be selected by the Consultant during shop drawing review phase.”

Item No. 8 Section 17051 (Control Panel Details)

8.1 DELETE Clause 2.9.5. and REPLACE with new Clause 2.9.5:

.1 Monitor the status of the Ethernet switch 24VDC power supply on the PLC via a Phoenix Contact PLC-RSC series relay.

Appendices

Item No. 9 Section Appendix A

9.1 ADD Appendix C – Designated Substances Review to this Tender, as attached to this Addendum.

Item No. 10 Section Appendix D

10.1 ADD Appendix D – Main Sewage Pumping Station As-builts to this Tender, as attached to this Addendum.

DRAWINGS

Civil

Item No. 11 Drawing C01 (Existing Conditions and Removals)

11.1 DELETE the note:

"EXISTING PUMPING STATION TO BE DECOMISSIONED AND THEN DEMOLISHED. REFER TO SEQUENCING SPECIFICATION AND DEMOLITION PLANS"

And REPLACE with:

"EXISTING PUMPING STATION TO BE DECOMISSIONED AND THEN DEMOLISHED. REFER TO SEQUENCING AND DEMOLITION SPECIFICATIONS. REFER TO AS-BUILT DRAWINGS FOR FAMILIARIZATION WITH EXISTING PUMPING STATION. BUILDING FOUNDATION TO BE REMOVED TO 2 m BELOW GRADE. CORE HOLES IN BOTTOM AND SIDES OF REMAINING FOUNDATION TO PROVIDE DRAINAGE. BACKFILL IN ACCORDANCE WITH SPECIFICATIONS."

Mechanical

Item No. 12 Drawing PID02 (Wet Well and Pump Station Process and Instrumentation Diagram)

12.1 REPLACE entire drawing with the attached revised drawing PID02. Drawing revisions include the following:

.1 ADD missing DI and AI point callout to FIT-110001. To align with existing I/O list.

.2 REPLACE ALL I/O PLC tags from CP-100 to PLC-100.

Item No. 13 Drawing PID03 (Chlorine System Process and Instrumentation Diagram)

13.1 REPLACE entire drawing with the attached revised drawing PID03. Drawing revisions include the following:

.1 REPLACE ALL I/O PLC tags from CP-100 to PLC-100.

Electrical

Item No. 14 Drawing ME01 (Motor Starter and Control List)

14.1 REPLACE entire drawing with the attached revised drawing E01. Drawing revisions include the following:

.1 AC-920004 Starter type revised to “Integral”.

.2 MUA-92001 Load updated to 8 kW.

.3 Wet Well Pump Locations updated to “Pump Room” (typical of 6).

.4 Sump Pump P-92001 Note updated to ‘ZONE 1 – SUBMERSIBLE”.

Item No. 15 Drawing E01 (Electrical Notes and Legends (1 of 2))

15.1 REPLACE entire drawing with the attached revised drawing E01. Drawing revisions include the following:

.1 NEW legend item: Exterior Rated Motion Sensor, Aimable.

Item No. 16 Drawing E02 (Electrical Notes and Legends (2 of 2)))

16.1 REPLACE entire drawing with the attached revised drawing E02. Drawing revisions include the following:

.1 NEW Luminaire type C1 and P1.

.2 NEW Switch Type Legend added to the lighting control schedule.

.3 Acceptable manufacturers in luminaire schedule updated to approved equivalent received before tender close.

Item No. 17 Drawing E07 (Electrical Details)

17.1 REPLACE entire drawing with the attached revised drawing E07. Drawing revisions include the following:

.1 Modified Exterior Lighting Control Logic Detail 7/E07.

Item No. 18 Drawing E10 (Single Line Diagram)

18.1 REPLACE entire drawing with the attached revised drawing E10. Drawing revisions include the following:

.1 LB-100 Load bank updated to 350 kW in 5 kW Steps to match specifications.

Item No. 19 Drawing E21 (Electrical Grounding Plan)

19.1 REPLACE entire drawing with the attached revised drawing E21. Drawing revisions include the following:

.1 ADD bonding jumpers to wet well hatches to align with drawing E12 Grounding diagram requirements.

Item No. 20 Drawing E22 (Site Lighting Plan)

20.1 REPLACE entire drawing with the attached revised drawing E22. Drawing revisions include the following:

.1 REPLACE Existing Drawing Notes to clarify control requirements.

.2 REPLACE Type P1 Luminaires with new Dimmable Linear LED.REPLACE 3 x type O1 Luminaires on West Façade of pumping station with type O2 Luminaires.

.3 REPLACE 1 x Type O2 Luminaire on East Facade with Type O1 Luminaire.

.4 ADD 2 x Type O1 Luminaires to the South Façade of the pumping station

.5 ADD 3 x Exterior rated Motion Sensors (Aimable) for control of exterior wallpack lighting within the gated area.

.6 ADD Note for contractor to provide conduit penetrations through bottom of overhangs as indicated. Terminate in new interior junction box. Cap and weatherproof exterior ends for future CCTV by others. (typical of 5)

Item No. 21 Drawing E32 (Ground Floor House Services Plan)

21.1 REPLACE entire drawing with the attached revised drawing E32. Drawing revisions include the following:

.1 REPLACE 2 x Type C1 Pendant type Fixtures with 2 x NEW type A5 Linear LEDs

.2 ADD Drawing note 2: “PROVIDE ZONE 1 RATED LIGHT SWITCH COMPLETE WITH PADLOCK PROVISION TO PERMIT LOCKING IN THE “ON” POSITION. PROVIDE LAMACOID NAMEPLATE IDENTIFYING: “WARNING – SWITCH ALSO CONTROLS WET WELL LIGHTING.”

.3 REPLACE Zone 1 Combination Exit Sign / Emergency Light in screen room with Zone 1 Emergency Light and Battery Unit In screen room.

END OF ADDENDUM NO. 2

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED

Owen Perrett, P. Eng.
Environmental Engineer

cc: All Plan Takers

Addenda to Date:

Addendum 1	May 26, 2026
Addendum 2	June 3, 2026

MANDATORY CONTRACTOR SITE VISIT - SIGN IN SHEET

Project: **Brockville Main Sewage Pumping Station**
Owner: City of Brockville
Consultant: J.L. Richards & Associates Limited

Company	Representative Name	Contact Information
Cornwall Gravel	Nolan Leger	nolan@cornwallgravel.ca
Dalcon Constructors	Jack Pineo	jpineo@pcl.com
Doran Contractors	Jason Hyland	jason.hyland@doran.ca
Excelpro	Mike Comstock	mike.comstock@excelpro.ca
Strong Bros	Thom Rodger	thomrodger@strongbros.ca
Roni Group	Kevin Bessy	kbessy@ronigroup.ca
Industrial Electrical Contractors Brockville Limited	Ron Gray	rgray@iebcl.ca
Graebeck Construction Ltd	Alexandre Dery	alexandre@graebeck.com
L.W. Bray	Stan Keys	admin@lwbray.com
Dalcon Constructors	Jean Legault	jmlegault@pcl.com
1000 Island Mechanical	Dave Rorabeck	drorabeck@timemechanical.net
Delsan - Aim	Shane Marcotte	smarcotte@delsan-aim.com
Eastern Welding	Cody Locey	clocey@easternwelding.ca
North America Construction	Joe Kelly	jkelly@nacsworld.com
Beaudoin Construction	Remy Gallego	remyg@beaudoinconstruction.ca
Buttcon East Ltd	Roberto Giugovaz	rgiugovaz@buttconeast.com
Baseline Constructors	Jamie Wilson	jamie@baselineconstructors.ca
Clearway Construction Inc	Mary Anna Trikas	maryannatrikas@clearwaygroup.com
Kingdom Construction	Matt Macleod	mattmacleod@kingdomconstruction.ca
ASCO Construction	Zack Diamond	zbraams-diamond@ascoconstruction.com
Black & McDonald Ltd	Wyatt Nielsen	wnielsen@blackandmcdonald.com
Chandos	Wil Foster	wfoster@chandos.com
J.C. Sulpher Construction	German Torres	german@gteagle.ca
Bourgon Construction	Matt Graham	tenders@rjbourgon.com
Thomas Fuller Construction	Weihua Wang	wwang@fuller.ca
Demo Plus	James VanderVeen	jvanderveen@demoplus.ca
Industra	Michael Corrado	mcorrado@industra.ca
Rose Group	Pete Loiselle	rosemech.com
Morey Construction Ltd	Hannah Riopelle	matt@moreyltd.ca
Ken Miller Exc	Braden Miller	braden@kenmillerexcavating.ca
Selleck Mech	Jamie Slach	jamie@selleckmechanical.com
Selleck Mech	Brandon Selleck	brandon@selleckmechanical.com
Graebeck Construction Ltd	Jacob Splinter	jacob@graebeck.com

APPENDIX C -
Designated Substances Review

DESIGNATED SUBSTANCE REVIEW

Brockville Main Sewage Pumping Station

42 Water Street East

Brockville, Ontario

Prepared for:

The City of Brockville

1 King Street West, Brockville, Ontario

Prepared By:

CM3 Environmental Inc.

5710 Akins Road, Stittsville, Ontario

Date: May 18, 2023
File: RCP-3164

Final Report CM3

Table of Contents

1.0 INTRODUCTION

1.1 Site Background

The Brockville Main Sewage Pumping Station is located at 42 Water Street East, in Centeen Park, in the City of Brockville. The building was constructed in 1962.

The pumping station is a masonry brick building on poured concrete foundation. The building is serviced by municipal sewer and water. It is heated by suspended natural gas fired heating units. CM3 understands that there are plans to upgrade the facility, which is likely to include significant demolition of this structure.

1.2 Regulatory Framework

Under Section 30 of the Occupational Health and Safety Act (OHSA), a project "owner shall determine whether any designated substances are present at the project site and shall prepare a list of all designated substances that are present". Ontario regulation 490/09 "Designated Substances" (O. Reg. 490/09) lists the designated substances as defined by OHSA. The following is a list of substances regulated by O. Reg 490/09.

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

Of the aforementioned designated substances, asbestos is further regulated by Ontario Regulation 278/05, "*Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*".

The following hazardous building materials are not designated substances regulated by O. Reg. 490/09, but could pose a significant risk to health and safety of workers, occupants, and the environment are included as part of this report. The Ministry of Labour (MOL) recognizes them as workplace hazards and enforces worker protection under the General Duty Clause 25(2) (h) of the OHSA. Clause 25(2) (h) states that the employers are required to "take every precaution reasonable in the circumstances for the protection of a worker". In such cases the MOL will refer to industry standards and guidelines for the safe handling and management of such materials.

- Polychlorinated Biphenyls (PCBs) - SOR/2008-273
- Ozone Depleting Substances (ODSs) - Federal Halocarbon Regulation 2003, SOR/2003-289
- UFFI - Under the Hazardous Products Act (R.S. C. H-3, S.1)

- Droppings
- Visible Mould
- Radioactivity

Where applicable, regulations pertaining to removal / abatement, and/or disposal of hazardous materials are provided in section 15.0 Recommendations.

1.3 Scope of Work

The scope of this project was to determine the location, condition, quantity and type of hazardous materials present in the building. The surveyors included building structural components, finishes, mechanical and electrical systems. For the purposes of this project, only the substances referenced in section 1.2 are reported.

The designated substances mentioned above may be present in partial and non-accessed areas and concealed spaces (i.e. wall and ceiling cavities). Furthermore, materials located within wall cavities could not be observed in order to determine their condition. In addition, CM3 would extrapolate quantities based on quantities observed in fully accessible locations.

This designated substance survey report has been prepared using the information during the site reconnaissance and analytical data.

1.4 Participants

The assessment was performed by Matthew Spearman of CM3 on May 2, 2023. The surveyor was unaccompanied during the site visit however facilities staff was present to open doors when necessary.

All samples were submitted under chain of custody to Paracel Laboratories Ltd, of Ottawa Ontario for analysis.

1.5 Limitations

The survey does not refer to substances that may be present in the day-to-day usage for other specialized equipment or areas in buildings (i.e. portable equipment, lead shields, fume hoods, etc.). There is a possibility that materials may exist which could not be reasonably identified within the scope of this assessment, or which were not apparent during previous site visits.

The scope did not include personal items or equipment (owner or occupant), buried or underground services or areas requiring significant demolition to assess. Wall and ceiling cavities were accessed wherever possible. Destructive investigative techniques were not employed.

1.6 Terminology

1.6.1 List of Acronyms & Abbreviations

TERM	DESCRIPTION	TERM	DESCRIPTION
ACM	Asbestos Containing Material	**MDL**	Method Detection Limit
CFC	Chlorofluorocarbon	**NS**	No Standard
cm^2	Centimeters squared	**ODS**	Ozone Depleting Substances
CAEAL	Canadian Association of Environmental Analytical Laboratories	**PCBs**	Polychlorinated Biphenyls
CM3	CM3 Environmental Inc.	**Pb**	Lead
DUP	Duplicate	**PLM**	Polorized Light Microscopy
EPA	Environmental Protection Agency	**ppm**	Parts Per Million
ESA	Environmental Site Assessment	**ppb**	Parts Per Billion
ESI	Environmental Site Inspection	**PVC**	Polyvinyl Chloride
GW	Groundwater	**QA/QC**	Quality Assurance/Quality Control
		RPD	Relative Percent Difference
Hg	Mercury	**T**	Metric Tonnes
Ha	Hectare	**TEM**	Transmission Electron Microscopy
HID	High Intensity Discharge	**TWAEL**	Time-Weighted Average Exposure Level
		µg/g	Micrograms/gram
m	Metre	**µg/L**	Micrograms/Litre
mg/kg	Milligrams per kilogram	**u/g**	Underground
m	Metre	**UFFI**	Urea Formaldehyde Foam Insulation

1.6.2 Glossary of Terms

Adjacent Property – Any properties that are contiguous or adjoining to the property being assessed.

Approved – Used in reference to a substance or system that has been investigated by a testing agency, accredited by the Standards Council of Canada, or is acceptable to the authority having jurisdiction and has been found to comply with specific requirements and is identified with an authorized marking of the testing agency, as appropriate.

Asbestos Containing Material (ACM) – In Ontario, any building material containing that contains 0.5% or more asbestos is recognized as ACM.

Client – The City of Brockville.

Commercial Property – any property where the primary activities of the land use is commercial (e.g., shopping mall) and not residential or manufacturing. This does not include operations where food is grown.

Contaminant – A substance that causes or may cause an adverse effect.

Contamination – The presence in soil, surface water, groundwater, air, or structures of a substance of concern, or a condition, in concentrations above appropriate pre-established criteria.

Criteria – Limits or levels for substances of concern that are established by regulating bodies.

Canadian Standards Association (CSA) – The Canadian Standards Association (CSA) is a membership association serving industry, government, consumers and other interested parties in Canada and the global marketplace. A leading developer of standards and codes, CSA enhances public safety, improves quality of life, preserves the environment and facilitates trade.

Dangerous Goods – Under the Transportation of Dangerous Goods Act (TDG) a dangerous good is a product, substance or organism included by its nature or by the regulations in any of the classes listed in the schedule of the ACT (Part 2 of the Transportation of Dangerous Goods Act.

Dangerous Goods Carrier – Under the Transportation of Dangerous Goods Act a carrier is a licensed transporter of dangerous goods. A transporter is a hauling firm that picks up properly packaged and labeled hazardous wastes from generators and transports it to designated facilities for treatment, storage, or disposal. Transporters are subject to TDG hazardous waste regulations.

Delineation – The physical and chemical assessment of all affected media at a site in three dimensions (length, width and depth) to the applicable criteria by sampling and analysis to determine the contaminant impact boundaries in a minimum of four horizontal directions.

Designated Substance – Any material that is designated as such in Ontario Regulation 490/09 of the Ontario Occupational Health and Safety Act.

Detection Limit – The smallest concentration or amount of a substance that can be reported as present in a sample with a specified degree of certainty by a definite complete analytical procedure.

Environment – The components of the earth and includes
(i) air, land, and water;
(ii) the layers of the atmosphere;
(iii) organic and inorganic matter and living organisms;
(iv) the interacting natural systems that include components referred to in subclasses (i) to (iii); and
(v) may refer to, the socio-economic, environmental health, cultural and other items referred to in the definition of environmental effect.

Environmental Audit – a systematic process of objectively obtaining and evaluating evidence regarding a verifiable assertion about an environmental matter to ascertain the degree of correspondence between the assertion and established criteria, and then communicating the results to the client. A verifiable assertion is a declaration or statement about specific subject matter that is supported by documented data.

Exposure – The amount of a physical or chemical agent that reaches a target or receptor through ingestion, dermal adsorption, and inhalation.

Exposure Pathway – The course a chemical or physical agent takes from a source to an exposed population or organism; it describes a unique mechanism by which an individual or population is exposed to chemicals or physical agents at or originating from a site.

Hazardous Material – A material that may, upon exposure, constitute an identifiable risk to human health or the natural environment. Hazardous material criteria are established with regard to appropriate regulatory requirements.

Ingestion – An exposure type whereby chemical substances enter the body through the mouth and into the gastrointestinal system.

Inhalation – The intake of a substance by receptors through the respiratory tract system.

Lead (Pb) – An inorganic substance that is hazardous to health if breathed or swallowed. Its use in gasoline, paints, and plumbing compounds has been restricted or eliminated by federal laws and regulations. Lead is a criteria pollutant that is regulated under provincial legislation and the National Pollution Release Inventory.

Mercury (Hg) – An inorganic substance that can accumulate in the environment and that is highly toxic to humans if breathed or swallowed.

Monitoring – Measurement of concentrations of chemicals in environmental media or in tissues of humans and other biological receptors/organisms over time.

Mould – a growth of fungi forming on vegetable or animal matter, commonly as a downy or furry coating, and associated with decay or dampness.

Municipality – A city, an incorporated town, a municipality of a county or district or village commissioners. Environmental Act.

Ozone Depleting Substance (ODS) – A family of man-made compounds that includes, but are not limited to, chlorofluorocarbons (CFCs), bromofluorocarbons (halons), methyl chloroform, carbon tetrachloride, methyl bromide, and hydrochlorofluorocarbons (HCFCs). These compounds have been shown to deplete stratospheric ozone, and therefore are typically referred to as ODSs.

Pathway – Any specific route by which a potential receptor or individual may be exposed to an environmental hazard, such as the release of a chemical material.

Polychlorinated Biphenyls (PCBs) – A family of 209 congeners of structurally similar chemicals which are known to suppress the immune system, disturb behaviour and reproduction, contribute to population declines in wildlife, have toxic effects on the developing nervous systems and on liver enzymes, act as a cancer promoter, and cause birth defects.

ppb (parts per billion): An amount of substance in a billion parts of another material.

ppm (parts per million): An amount of substance in a million parts of another material; also expressed by mg/kg or ml/L.

Property – Land and any improvements to land consisting of any physical object attached to the land with some degree of permanence, including buildings and other fixtures. The terms "property" and "site" are used interchangeably.

Property Owner – the owner of a property by legal title. The property owner referred to in this report is the City of Ottawa

Remediation – The management of a contaminated site to prevent minimize, or mitigate damage to human health or the environment. Remediation may include both direct physical actions (e.g., removal, destruction, and containment of contaminants) and institutional controls (e.g., zoning designations or orders).

Residential Property – Any property where the primary activity of the land use is residential or recreational activity.

Risk – The chance of injury or loss, defined as a measure of the probability and severity of an adverse effect to health, property, the environment, or other things of value.

Risk Assessment – A set of scientific methods for defining and estimation the probability and magnitude of undesired effects to receptors resulting from a specific event, such as a human action, a natural catastrophe, or an exposure to a substance.

Storage – The holding of a substance for a temporary period at the end of which it is intended to be processed, used, transported, treated or disposed of.

Urea Formaldehyde Foam Insulation (UFFI) - A type of foamed in-place insulation that releases formaldehyde gas. Under the *Hazardous Products Act updated in 1985* the use of UFFI was banned in Canada.

These definitions were based on those obtained from the Canadian Council of Ministers of the Environment, Canadian Standards Association, Environment Canada, U.S. EPA, Transport Canada dictionaries and Federal and Provincial Agencies.

2.0 EXECUTIVE SUMMARY

CM3 Environmental Inc. (CM3) was commissioned by the Corporation of the Town of Brockville (Client) to conduct a quantitative asbestos survey for the building located at 42 Water Street East in Brockville, Ontario. This work was completed in order to comply with Ontario Regulation 278/05 "*Designated Substance - Asbestos on Construction Projects and in*

Buildings and Repair Operations" (O. Reg. 278). A Designated Substance Survey (DSS) is required under Section 30 of the **Occupational Health and Safety Act** in order to identify designated substances that may be present within the proposed project areas.

2.1 General Findings and Recommendations

CM3's general findings and recommendations are summarized in the following table:

Executive Summary Table		
Designated Substance	**Findings**	**Recommendations**
Acrylonitrile	Possibly present in stable form in paints and adhesives.	No concerns.
Arsenic	Possibly present in stable form in paints and adhesives.	No concerns.
Asbestos	Asbestos (1% Tremolite) was identified in the plaster layer of the original roofing located in the attic space. The plaster is in good condition. In order to maintain the integrity on the exterior roofing shingles, no samples were collected as part of this investigation. Therefore, at this time the roofing shingles are presumed ACM.	Ensure that all asbestos containing materials that have the potential to be damaged during renovation or demolition activities are removed following the actions outlined in Ontario Regulation 278/05. Sampling of the exterior shingles should be completed on a project specific basis. Annual inspection of asbestos-containing materials is required by Ontario Regulation 278/05.
Benzene	Likely present in stable form in roofing asphalt, paints, and adhesives.	No concerns.
Coke Oven Emissions	None identified.	No concerns.
Ethlyene Oxides	None identified.	No concerns.
Isocyanates	None identified.	No concerns.
Lead	Lead containing paint (Grey on steel piping) was identified in Loc 3 and 4. Lead Containing paint (Grey on green on concrete footers) was identified in Loc 4.	It is recommended that if materials containing lead are to be disturbed, then procedures outlined in the Environmental Abatement Council of Canada (EACC) "Lead Abatement Guidelines" should be followed.

	Due to the age of construction lead may be present in solder joints, and on all copper piping the building. Lead acid batteries were observed in the electrical room.	Prior to removal from the site and disposal, materials containing lead should be subject to toxicity characteristic leaching procedure (TCLP) testing to determined toxicity with respect to lead prior to disposal in accordance with Ontario Regulation 347/90 "General – Waste Management" made under the Environmental Protection Act.
Mercury	Liquid mercury was observed to be present within thermostats that are located in the subject building. Mercury vapour is assumed to be present within fluorescent light tubes bulbs that are located in the subject building. Mercury may also be found in stable form in paints and adhesives.	If work on mercury containing materials is likely to produce mercury dust or fumes, for example during welding, torch cutting, grinding, sanding or sandblasting, then proper precautions should be followed. Do not break light tubes or liquid mercury from components. Recycle mercury from lamps and tubes when taken out of service. Mercury is classified as a hazardous waste and must be disposed of in accordance with local regulations. Best management practices dictate that mercury containing equipment be returned to participating recycling facilities or disposed of by a licensed hazardous materials contractor.
Silica	Crystalline silica is assumed to be present in the building within all concrete building materials.	During renovation or demolition ensure that work areas are well ventilated, wash stations are present for worker protection and that the maximum allowable airborne concentration for all silica

		forms is not exceeded. All work should be completed following the Ministry of Labour "Guideline – Silica on Construction Projects".
Vinyl Chloride	Likely present in stable form in pipes and interior finishes.	No concerns.
PCBs	PCB's can be found in equipment such as transformers, capacitors, electromagnets, heat transfer units, hydraulic engine and fluorescent lamp ballasts. Fluorescent lamp ballasts may contain minor quantities of PCBs (23.6 g).	Prior to any renovation or demolition, all ballasts should be compared to the information outlined in the 1991 Environment Canada publication "Identification of Lamp Ballasts Containing PCBs" and removed/disposed of accordingly
ODSs	Several hand-held portable fire extinguishers are present on-site.	Non-base building units (i.e. refrigerators) should be relocated or reused rather than destroyed. If the units will not be relocated, then a licensed technician should recover the refrigerants, in accordance with the Federal Halocarbon Regulation 2003.
UFFI	No evidence of UFFI was observed during the site investigation.	No concerns.
Droppings	No evidence of droppings was observed during the site investigation.	No concerns.
Visible Mould	No visible mould growth was observed during the site investigation.	No concerns.
Radioactivity	No sources of radioactivity were observed.	No concerns.

3.0 ASBESTOS

Asbestos is a generic term describing a number of naturally occurring fibrous metamorphic minerals of the hydrous magnesium silicate variety that differ in chemical composition and are suitable for use as non-combustible, non-conducting and chemically resistant materials. The different types of asbestos which may be found in building materials are Chrysotile, Amosite, Tremolite, Actinolite or Anthophyllite.

They belong to two major mineral groups, Serpentines and Amphiboles. Serpentine minerals are flexible and curly whereas amphibole fibres tend be straight with a fine fibre density that increases the likelihood of becoming and remaining airborne when disturbed. Chrysotile is a Serpentine and Amosite, Crocidolite, Tremolite, Actinolite, and Anthophyllite are Amphiboles.

The physical characteristics and chemical properties of asbestos made it very useful for a wide variety of products to strengthen them, provide heat or electrical insulation, offer fire or chemical resistance, and/or to absorb sound.

The main pathway for exposure to asbestos is inhalation. When inhaled in significant quantities, asbestos fibres can cause asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) and lung cancer.

As outlined in Ontario Regulation 278/05 “Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations”, any building material containing 0.5% or more asbestos (by weight) is recognized as an asbestos containing material (ACM).

The intent of the Regulation is to reduce worker exposure to asbestos. As such the regulation puts requirements on all stakeholders including building owners and managers to be aware of the presence, if any, of asbestos in their buildings and thus potential work areas. This is generally prescribed by having an "inventory” on hand of all ACM, also referred to as a survey. The regulation also details many other facets of the asbestos industry including removal procedures, health and safety requirements, training, etc. Any personnel working in or around asbestos should have, at a minimum, a basic understanding of the Regulation

ACMs are categorized as friable or non-friable in order to show how easily they may release asbestos fibres when disturbed.

A material that is **friable** is one which can be crumbled, pulverized or powdered by hand pressure. If a friable ACM is damaged or disturbed, it presents an inhalation risk because asbestos fibres are more easily released into the air. Examples of friable materials include sprayed fireproofing on structural steelwork, thermal insulation on mechanical systems, or textured finishes.

A **non-friable** asbestos product is one in which the asbestos fibres are bound or locked into the product matrix, so that the fibres are not readily released. Such a product would present a risk for fibre release only when it is subject to significant abrasion through activities such as sanding or cutting with electric power tools. Examples of non-friable asbestos products include vinyl asbestos floor tiles, acoustic ceiling tiles, and asbestos cement products.

Where suspect-ACMs could not be sampled, in order to maintain the integrity of the building component (i.e. roofing membranes, exterior finishes), these materials are referred to as Presumed Asbestos-Containing Materials (PACMs). PACMs are treated as though they are ACMs until laboratory analysis proves otherwise. Typically, samples are collected and submitted for analysis on a project-by-project basis.

3.1 Target Materials

Asbestos was used widely in construction materials including but not limited to:

- Insulation (i.e., pipe runs, boilers, pipe fittings, and gaskets);
- Spray-on coating/fireproofing;
- Cement products including cement sheets and exterior shingles and fences;
- Drywall joint compound filler;
- Plasters and decorative interior finishes;
- Acoustical ceiling tiles;
- Roofing felts and shingles;
- Vinyl floor tiles and sheet flooring; and,
- Mastics, tars, glues, and caulking.

In order to fully assess the potential presence/absence for the above materials CM3 personnel employ a methodical room-by-room field procedure. This procedure requires the inspector to observe and note the following building components as is part of our QA/QC program:

- Floor
- Wall
- Ceiling
- Structure
- Mechanical/Electrical
- Other
- Exterior

3.2 Analytical Procedure

Suspect materials were primarily assessed by visual inspection. On the basis of this inspection, select samples were collected from discrete locations using industry-accepted, safe sampling techniques that include the pre-wetting of materials and concealment of materials after collection. The buildings were treated as three functional spaces and the sampling and assessment of each building was conducted separately.

The number of samples collected is based on the suspect building materials present and the sampling criteria outlined in Table 1 “Bulk Materials Samples” of Ontario Regulation 278/05.

All suspect asbestos samples were submitted under chain of custody to Paracel Laboratories Limited for analysis. Samples were analyzed by polarized light microscopy with dispersion staining, following USEPA method 600/R-93/116.

The laboratory analytical reports are presented in **APPENDIX A**.

3.3 Reporting & Risk Assessment

CM3 provides all building information, methodology, laboratory results, and findings within the report. All information respecting detailed findings, quantities, access issues, conditions, and action items are reported.

3.3.1 Assessment of Condition

Spray Applied Fireproofing, Insulation, and Texture Finishes

To evaluate the condition of ACM spray applied as fireproofing, thermal insulation, or texture, decorative or acoustic finishes, the following criteria are applied:

GOOD - Surface of material shows no significant signs of damage, deterioration or delamination. Up to 1 percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes un-encapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

POOR - Sprayed materials show signs of damage, delamination or deterioration. More than 1 percent damage to surface of ACM spray.

In observation areas where damage exists in isolated locations; both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the survey or re-assessment form. FAIR condition is not utilized in the evaluation of the sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls (walls that may rise to the underside of the floor above or roof deck) that obstruct the above ceiling observations. Persons entering the ceiling are advised to be watchful for ACM DEBRIS prior to accessing or working above ceilings in areas of buildings with ACM regardless of the reported condition.

Mechanical Insulation

The evaluation of the condition of mechanical insulation (on boilers, breaching, ductwork, piping, tanks, equipment etc.) utilizes the following criteria:

GOOD - Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

FAIR - Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

POOR - Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. It is not possible to observe each foot of mechanical insulation from all angles.

Non-friable and Potentially Friable Materials
Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material should be treated as a friable product.

Debris from Friable ACM
The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as DEBRIS.

Debris from Damaged Non-Friable ACM
The presence of fallen ACM from damaged non-friable ACM is also reported separately from the non-friable ACM source. Only fallen non-friable ACM that has become friable is reported as DEBRIS.

The identification of the exact location or presence of DEBRIS on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations. Workers are advised to be watchful for the presence of DEBRIS prior to accessing or working in proximity to mechanical insulation or above ceilings in areas of buildings with ACM regardless of the reported presence or absence of DEBRIS.

3.3.2 Evaluation of Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

ACCESS (A) - Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.

ACCESS (B) - Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
frequently entered pipe chases, tunnels and service areas.

ACCESS (C) EXPOSED - Areas of the building above 8'-0" where use of a ladder is required to reach the ACM. Only refers to ACM that is exposed to view, from the floor or ladder, without the removal or opening of other building components such as ceiling tiles, or service access door or hatch. Does not include infrequently accessed service areas of the building.

ACCESS (C) CONCEALED - Areas of the building that require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes

rarely entered crawl spaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.

ACCESS (D) - Areas of the building behind inaccessible solid ceiling systems, walls or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc. is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine materials in ACCESS D.

3.3.3 Action Matrix and Definitions

Immediately clean-up **DEBRIS** that is likely to be disturbed.
Remove, repair or enclose friable ACM in **POOR** or **FAIR** condition whose continued deterioration will result in **DEBRIS** that is likely to be disturbed.

The following factors are also considered in making site-specific recommendations for compliance with the regulation and the practical implementation of the Asbestos Management Plan:

i) ACM in **POOR** condition is not routinely repairable. If an abatement action is necessary, removal is the recommended action (enclosure is a viable option in unusual circumstances).

ii) Mechanical insulation in **FAIR** condition can be repaired or removed based on the following general recommendations applied on a case by case basis (Note: Either repair or removal are legally acceptable options for the treatment of ACM found in **FAIR** condition):
Repair ACM mechanical insulation found in **FAIR** condition in **ACCESS (B)** or **ACCESS (C EXPOSED)** areas.

Remove ACM mechanical insulation found in **FAIR** condition in **ACCESS (B)** and **ACCESS (C EXPOSED)** areas, where future damage to the ACM is likely to occur.

Remove ACM mechanical insulation found in **FAIR** condition with **ACCESS (A)** to eliminate the potential for re-damaging ACM by all building users.

iii) ACM in **GOOD** condition present in **ACCESS (A)** can be managed by surveillance, as long as it is not disturbed by future renovation, maintenance or demolition. However, pro-active removal of the ACM in **ACCESS (A)** should be considered where damage is possible by ongoing occupant activity (accidental or intentional).

iv) Non-friable or manufactured products are considered in the action matrix as follows:

Non-friable or manufactured products reported in **POOR** condition or friable **DEBRIS** resulting from the deterioration of non-friable ACM are treated as friable materials and the appropriate Action, depending on accessibility, is determined from the Action Matrix for friable ACM.

For non-friable or manufactured products reported in **GOOD** condition, Action 7 (surveillance) is recommended regardless of Accessibility.

v) Remove all ACM from a particular area where small quantities of asbestos are present and removal will negate the need for the use of the Asbestos Management Plan in that area.

With these principles in mind, the following Action Matrix Tables establish the recommended asbestos control action. Note that factors not included in the above discussion, such as an owner's policy decision to remove material, knowledge of upcoming maintenance, etc., may result in a recommendation that differs from this table. The **ACTIONS** are described in full following the table.

Table 1 Action Matrix

	CONDITION			
ACCESS	**GOOD**	**FAIR**	**POOR**	**DEBRIS**
(A)	ACTION 5/7[1]	ACTION 5/6[2]	ACTION 3	ACTION 1
(B)	ACTION 7	ACTION 6/5[3]	ACTION 3	ACTION 1
(C) EXPOSED	ACTION 7	ACTION 6	ACTION 4	ACTION 2
(C) CONCEALED	ACTION 7	ACTION 7	ACTION 4	ACTION 2
(D)	ACTION 7	ACTION 7	ACTION 7	ACTION 7

[1] If material in **ACCESS (A)**/**GOOD** condition is not removed **ACTION 7** is required.
[2] If material in **ACCESS (A)**/**FAIR** condition is not removed **ACTION 6** is required.
[3] Remove ACM in **ACCESS (B)**/**FAIR** condition if ACM is likely to be disturbed.

Action Definitions

ACTION 1 - Immediate Clean-Up of DEBRIS that is Likely to Be Disturbed
Restrict access that is likely to cause a disturbance of the ACM **DEBRIS** and clean up ACM **DEBRIS** immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements. The surveyor should immediately notify the Asbestos Coordinator of this condition.

ACTION 2 - Type 2 Precautions for Entry into Areas with ACM DEBRIS
At locations where ACM **DEBRIS** can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos precautions. The precautions will be required until the ACM **DEBRIS** has been cleaned up, and the source of the **DEBRIS** has been stabilized or removed.

ACTION 3 - ACM Removal Required for Compliance
Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.

ACTION 4 - Type 2 Precautions for Access into Areas Where ACM is present and Likely to be disturbed by Access
Use Type 2 asbestos precautions when entry or access into an area is likely to disturb the ACM. **ACTION 4** must be used until the ACM is removed (Use ACTION 1 or 2 if **DEBRIS** is present).

ACTION 5 - Proactive ACM Removal
Remove ACM in lieu of repair, or at locations where the presence of asbestos in **GOOD** condition is not desirable.

ACTION 6 - ACM Repair
Repair ACM found in **FAIR** condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work treat ACM as material in **GOOD** condition and implement **ACTION 7**. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement **ACTION 5**.

ACTION 7 - Routine Surveillance
Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precautions (Type 1, Type 2 or Type 3) during disturbance of the remaining ACM.

3.4 Findings

3.4.1 Exterior Finishes

The exterior of the pumping station is stucco on masonry block.

Seven (7) samples (ST-01A, ST-01B, ST-01C, ST-01D, ST-01E, ST-01F, ST-01G) of stucco were collected from the exterior of the building. The samples were submitted for asbestos content analysis. No asbestos was detected in the samples analyzed.

Three samples (RC-01A, RC-01B, RC-01C) of the roof membrane were collected from the original rooftop of the building and submitted for asbestos content analysis. The laboratory determined that 1% tremolite asbestos was detected in the plaster layer concealed beneath the felt and tar roofing samples analyzed. The plaster layer was observed to be in good condition. Approximately 115 m^2 of the plaster is present on the original rooftop. The material is non-friable.

Asbestos may be present in the exterior roofing materials. However, in order to maintain the integrity of the roof membrane no samples were collected for asbestos content analysis. As such, the material is presumed to contain asbestos until proven otherwise via laboratory analysis.

3.4.2 Flooring

The entire building is unfinished poured concrete. No concerns with regards to asbestos.

3.4.3 Interior Finishes

The interior is unfinished with glazed masonry block walls, concrete foundation and exposed steel decking. The entrance vestibule, stairwell and the electrical room around the roof hatch have ceilings that are finished with drywall.

Three (3) samples (DJC-01A, DJC-01B, DJC-01C) of drywall joint compound were collected from entrance vestibule and the electrical room areas. The samples were submitted for asbestos content analysis. No asbestos was detected in the samples analyzed.

Seven (7) samples (BM-01A, BM-01B, BM-01C, BM-01D, BM-01E, BM-01F, BM-01G) of concrete block mortar were collected from the entrance vestibule, electrical room and the attic space above. The samples were submitted for asbestos content analysis. No asbestos was detected in the samples analyzed.

Three (3) samples (PAR-01A, PAR-01B, PAR-01C) of parging at the base of the walls were collected from the electrical room. The samples were submitted for asbestos content analysis. No asbestos was detected in the samples analyzed.

3.4.4 Miscellaneous

Three samples (FSP-01A, FSP-01B, FSP-01C) of firestop putty were collected from the electrical penetrations within the electrical room and submitted for asbestos content analysis. No asbestos was detected in the samples analyzed.

CM3 inspected the concrete block walls for the presence of loose-fill vermiculite insulation. No suspect vermiculite was observed.

4.0 LEAD

Lead is a naturally occurring metal element and is the most common metal found in the environment. Pure metallic lead was primarily used to make products such as electric storage batteries, ammunition, solder, radiation shields, pipes and sheaths for electric cables. The most common organic lead compounds are tetraethyl (TEL) and tetra methyl (TML) lead that were used as anti-knock agents in gasoline. Inorganic lead compounds such as lead oxides, chromates, carbonates and nitrates are commonly found in insecticides, pigments, paints, frits, glasses, plastics and rubber compounds.

Lead may affect the health of workers if it is in a form that may be inhaled, ingested, or absorbed through skin. Lead dust consists of small, solid particles of metallic lead or lead compounds that are generated by sanding, grinding, polishing, and sawing operations. Lead fume is produced in significant amounts when solid lead or materials containing lead are heated to temperatures above 500^{o}C, as in welding and flame cutting or burning.

Paint chip samples were collected from painted surfaces within the building. All paint chip samples were collected by scraping the paint down to the base material substrate to ensure collection of all layers of paint. Care was taken to avoid collection of the underlying substrate to reduce analytical substrate matrix interference.

Paint chip samples were submitted to a third-party laboratory (Paracel) for the determination of lead content. Analysis was conducted by the laboratory following EPA 6020 – Digestion, ICP-MS. Results were reported by the laboratory as micrograms per grams (ug/g).

A variety of paints were observed throughout the buildings. The paint samples submitted for analysis represent the overall majority of paint that exists within the facility. Paints that exist on a single door, a cabinet, a small area, etc., may be considered lead-based paint. A total of six (6) samples of paint were collected throughout the facility and submitted for analysis. Analytical results are provided in **Appendix A**.

For the purposes of our assessment, any paint containing lead at a concentration of 0.5% by weight (i.e. 5,000ug/g, or 5,000ppm) or greater is lead-based paint (LBP). These paints represent the greatest potential exposure if disturbed. Paints confirmed to contain lead at a concentration of at least 0.009% by weight (i.e. 90ug/g, or 90ppm) but less than 0.5% by weight

are considered to be lead-containing paints (LCP). These paints may present an exposure hazard depending on the type of work activities (i.e. degree of disturbance) and length of exposure. Paint with lead concentrations below 0.009% by weight are not considered to be lead-containing and represent little to no lead exposure hazard. The following Table is a summary of the analytical results, and classification of paint.

Sample ID	Paint Description	Lead content (ppm)	LBP, LCP, no concerns
PS-01	Off-white on light green on gypsum board ceilings	8	No concerns
PS-02	Grey on concrete floors	20	No concerns
PS-03	Off-white on concrete walls	12	No concerns
PS-04	Grey on steel piping	3,350	LCP
PS-05	Grey on green on concrete footing	3,580	LCP
PS-06	Beige on stucco	5	No concerns

Lead-acid batteries were observed within the electrical room. Lead may also be present in solder joints and on all copper piping within the building.

5.0 SILICA

Silica occurs naturally as crystalline or amorphous material. It is normally found in concrete, mortar, acoustic ceiling tiles, and stucco finishes. Crystalline silica is more toxic than amorphous silica, and therefore, is only regulated under the Occupational Health and Safety Act. The TWAEL of a work to silica dust is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 0.10 mg/m^3 of air for quartz and tripoli, and 0.05 mg/m^3 of air for cristobalite and tridynite.

Silica is expected to be present in the concrete building materials, drywall, and other cementitious materials. No sampling was completed for silica analysis.

6.0 MERCURY

Mercury may be commonly found in thermostats, fluorescent lamp tubes and High Intensity Discharge (HID) light bulbs. Mercury or mercury vapour within light fixtures, thermometers, thermostats and electrical switches poses no risks to workers or occupants provided that the mercury containers remain intact and undisturbed.

The TWAEL of a worker to mercury compounds is to be maintained at the lowest practical level and not to exceed an eight-hour average concentration of 0.05 mg/m^3 of air for all mercury except alkyl mercury oxide for which a concentration of 0.01 mg/m^3 of air should not be exceeded.

Liquid mercury was observed within thermostats located in the electrical room.

Mercury vapor is expected to be present within fluorescent lighting identified throughout the building.

Mercury may be used as a preservative in paints.

7.0 ARSENIC

Arsenic can be found in paint on roofing flashings, floors, walls and on the underside of the concrete ground floor structures in old buildings. The Time-Weighted Average Exposure Limits (TWAEL) of a worker exposed to airborne arsenic is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 10 mg/m^3 of air.

Considering the age of the building, arsenic could be present in the above listed materials. However, there is a low probability of finding arsenic-based coatings and minor amounts of this metal did not justify that the sampling be performed in the present assessment.

8.0 OTHER DESIGNATED SUBSTANCES

8.1 ACRYLONITRILE

Acrylonitrile is used to produce polymers such as acrylonitrile-butadiene-styrene (ABS) resins. These polymers are used in the manufacturing of a wide range of commercial products (i.e., automotive parts, clothing, carpets, etc.).

Workers are typically exposed to acrylonitrile at manufacturing facilities that produce the aforementioned products through inhaling its vapour, direct skin contact, or through ingestion. Although, acrylonitrile may be present in some of the building materials, including adhesives and coatings, the chemical will likely be bonded in the polymer form. Therefore, it is not expected that an adverse exposure to acrylonitrile will occur unless the building materials are heated to extreme temperatures.

The TWAEL of a worker exposed to airborne acrylonitrile is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 4.3 mg/m^3 of air (2 ppmv).

In its hardened polymer form, acrylonitrile is not expected to release emissions that would exceed the allowable limits. Pure acrylonitrile was not identified within the subject building.

8.2 BENZENE

Benzene is typically found in petroleum-based products such as gasoline and diesel fuels, asphalt and other hydrocarbon-based products. Based on the age of the subject building it is possible that benzene is present in the paints, adhesives, roofing materials. However, over time, the benzene compound volatizes out of the products and is released into the ambient air. Therefore, it is likely that only trace levels of benzene exist.

Health effects of benzene exposure include irritation of eyes, skin, respiratory system, dizziness, and nausea. Benzene is classified as potential human carcinogens.

The TWAEL of a worker exposed to airborne benzene is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 3.2 mg/m³ of air (1 ppmv) and not exceed an eight-hour average concentration of 16 mg/m³ of air (5 ppmv).

Direct sources of benzene emissions were not identified within the building.

A fuel storage tank was observed in the electrical room.

8.3 COKE OVEN EMISSIONS

Coke oven emissions are the exhaust released during the burning process of coke (pure carbon). This process was not observed and is not expected to take place within this building; therefore, it is unlikely that coke oven emission concentrations will exceed the maximum allowable TWAEV of 0.15mg/m^3 for occupants in the structure.

8.4 ETHYLENE OXIDE

Ethylene oxides are used in production of many foams, adhesives, and paints. Over time, ethylene oxide will volatize out of these materials and may be present in trace amounts in the ambient air in the building. It is not expected that ethylene oxide levels will become hazardous to occupants in the structure.

Processes that may release ethylene oxide to ambient air were not identified within the subject building.

8.5 ISOCYANATES

Isocyanates are raw materials from which all polyurethane products are made. Over time, isocyanates may volatize out of these materials but will only be present in trace amounts.

Health effects of isocyanate exposure include irritation of skin and mucous membranes, chest tightness, and difficult breathing. Isocyanates include compounds classified as potential human carcinogens and known to cause cancer in animals. The main effects of hazardous exposures are occupational asthma and other lung problems, as well as irritation of the eyes, nose, throat, and skin.

The TWAEL of a worker exposed is isocyanate dust is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 0.2 µmoles/m³ of air (0.005 ppmv).

Manufactured products under normal conditions do not typically pose a health risk. However, sawing or scraping uncured polyurethane that still contains some unreacted-NCO groups will release isocyanate dust. Uncured polyurethanes were not identified within the subject building.

8.6 VINYL CHLORIDE

Vinyl Chloride is found in many applications such as PVC pipes and fittings.

The TWAEL of a worker exposed to vinyl chloride emission is to be maintained at the lowest practical level and not exceed and eight-hour average concentration of 5.2 mg/m³ of air (1 ppmv).

Vinyl chloride in the PVC compound is bound in a solid matrix that is unlikely to become airborne. Vinyl chloride emissions are not likely to exceed the prescribed limits within the subject building.

9.0 POLYCHLORINATED BIPHENYLS (PCBs)

Chlorobiphenyls (PCB's) can be found in equipment such as transformers, capacitors, electromagnets, heat transfer unit, hydraulic engine, caulking/sealants and fluorescent lamp ballasts.

Two federal Canadian Environmental Protection Act (CEPA) regulations apply to the use and storage of PCB's. The **Chlorobiphenyls Regulation (SOR/2008-273)** limits the quantity of out of service PCB materials that can be stored at a facility for more than 6 months to 1 kg of PCB. There are also several government policies and guidelines that outline safe practices for the handling and storage of PCB containing material. Fluorescent lamp ballasts may contain minor quantities of PCBs (23.6 g). No out of service ballasts were observed and it is unlikely that the above quantity would ever be exceeded.

Random suspect fluorescent lamp ballasts were inspected during the site reconnaissance and compared to the information outlined in the 1991 Environment Canada publication "Identification of Lamp Ballasts Containing PCBs". No PCB containing ballasts were observed. However, due to the overall quantity of ballast it was impractical to inspect all ballasts during this assessment; therefore, it is possible that PCB containing ballasts are present within the building.

No materials were observed during the site assessment and presumed to contain PCBs.

10.0 OZONE DEPLETING SUBSTANCES (ODSs)

ODSs have been widely used in many industrial, commercial and residential applications. They can be found in applications such as refrigerants in heat pumps, refrigerators, freezers and air conditioners (A/C); blowing agents for plastics, foam product and insulation; cleaning agents for metals, electronic equipment and components; and as dry-cleaning fluids.

Ontario Regulation 463/10 "Ozone Depleting Substances and Other Halocarbons", made under the Environmental Protection Act, outlines definitions for what chemical substances constitute an ODS. The regulation also defines the requirements for sale, transfer, handling, labelling and worker training.

Sources of ODSs in the building were primarily movable contents, or non-base building such as several hand-held portable fire extinguishers.

11.0 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was developed in Europe in the 1950's as an improved means of insulating difficult to reach cavities in house walls. It was typically injected through 1cm to 2cm diameter holes drilled in interior or exterior walls. During the 1970's when concerns about energy efficiency led to efforts to improve insulation in Canada, UFFI became an important insulation product

for existing buildings. Most installations occurred between approximately 1970 and Dec. 1980. The use of UFFI was then banned by the Canadian Hazardous Products Act.

Interior and exterior spaces were inspected to identify if UFFI was present. No holes indicative of the possible injection of UFFI were identified in the interior or exterior walls of the building.

12.0 DROPPINGS

Bird and animal droppings may present a health risk. The most serious health risks arise from disease organisms that grow in the nutrient rich accumulations of bird and animal droppings. Fungal diseases are associated with bird, bat and animal droppings. The two most common diseases associated with bird and bat droppings are histoplasmosis and cryptococcosis. No droppings were observed on site.

13.0 VISIBLE MOULD

Moulds and fungi are ubiquitous in nature and are necessary for the breakdown of leaves, wood and other plant debris. These micro-organisms can enter a building directly or by their spores being carried in by the air, people, or contents, etc.

Mould need three things to grow: moisture, food source, and optimum temperatures. The key factor is moisture. In modern buildings, moisture is present as the result of:

- Flooding;
- leaks in the roof or plumbing;
- sealed buildings that do not allow excess moisture to escape;
- sources such as cooking facilities, showers, etc.; or,
- excess humidity.

This assessment has been performed to determine presence of visible mould growth and is limited in its nature. No sampling (air, bulk, lift, etc.) was completed as part of this assessment. A visual inspection of interior surfaces in the subject building was completed by CM3 to identify areas where apparent mould was most likely to proliferate (i.e., areas where water damage/staining was visible on building material surfaces). An intrusive assessment was not completed as part of this investigation. Assessing potential health risks to potential building occupants was beyond the scope of our investigation.

Material observed with black staining and/or a textured and discoloured appearance is described as apparent or suspect mould propagation. Water and water staining was observed in the basement of the building due to leaking water pumps. No mould propagation was observed at the time of the assessment.

14.0 RADIOACTIVITY

Smoke detectors can contain a small amount of the radioactive isotope Americium-241. The radiation emitted from these detectors is negligible when compared to natural background radiation and is not considered hazardous. The disposal of radioactive smoke detectors is not controlled. Based on CM3s observations radioactive smoke detectors are not present at the Site.

15.0 RECOMMENDATIONS

CM3 provides the following recommendations based on the information provided by the Client, our observations, the regulatory framework, and the Statement of Limitations provided in Section 16 of this report.

15.1 Asbestos

The exterior roof membrane is presumed to contain asbestos until proven otherwise by laboratory analysis. Core sampling of the roof membrane should be completed on a project specific basis.

Ensure that all ACMs that have the potential to be damaged during renovation or demolition activities are removed following the actions outlined in Ontario Regulation 278/05.

- The asbestos abatement must be conducted by competent workers in accordance with Ontario Regulation 278/05;
- Plaster roof layer (1% Tremolite Asbestos, Non-Friable)
    - The removal of greater than 1-meter square of non-friable asbestos-containing plaster can be completed as a Type 2 Operation provided that the material is wetted prior to and during the abatement activities and power tools are not used.
- If the use of power tools is required for the removal of any asbestos containing materials, then Type 3 asbestos abatement procedures must be implemented.

All waste generated during the asbestos abatement operations must be properly handled and packaged in accordance with O.reg 278/05 and disposed of in accordance with Ontario Regulation 347.

As a risk control measure annual inspection of ACMs is required by O.Reg. 278/05 to ensure the condition of the material remains in good condition where the release of asbestos fibres is minimized.

15.2 Lead

If work on lead containing materials is likely to produce lead dust or fumes, for example during welding, torch cutting, grinding, sanding or sandblasting, then proper precautions should be followed. As best industry practice, CM3 recommends that the Environmental Abatement Council of Canada (EACC) “Lead Abatement Guidelines” be followed when working with potential lead hazards.

The Time-Weighted Average Exposure Limits (TWAEL) of a worker to lead is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 0.05 mg/m^3 of air for non-tetraethyl lead and 0.10 mg/m^3 of air in the case of tetraethyl lead.

Waste generated from demolition activities that contain lead, such as lead-based paint undergo Toxicity Characteristic Leaching Procedure testing in order to classify the waste. If the concentration of lead exceeds that of the leachate quality criteria, then waste must be classified as hazardous and must be disposed of at a landfill that accepts hazardous waste in accordance with O. Reg 347, as amended.

15.3 Mercury

If mercury (Hg) is removed or relocated, work must be completed in accordance with Ontario Regulation 490/09. Recycling of fluorescent light tubes should be performed by a contractor. If removed, fluorescent tubes must be recycled.

Do not break light tubes or liquid mercury from components. Recycle mercury from lamps and tubes when taken out of service. Mercury is classified as a hazardous waste and must be disposed of in accordance with local regulations. Best management practices dictate that mercury containing equipment be returned to participating recycling facilities or disposed of by a licensed hazardous materials contractor.

Mercury may also be present as a preservative in paints.

The TWAEL of a worker to mercury is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 0.025 mg/m^3 of air for all forms of mercury except alkyl compounds which is 0.01 mg/m^3 of air. If work on mercury containing materials is likely to produce mercury dust or fumes, for example during welding, torch cutting, grinding, sanding or sandblasting, then proper precautions should be followed.

15.4 ODS

Non-base building units (i.e. window A/Cs, refrigerators, and freezers) should be relocated or reused rather than destroyed. If the units will not be relocated, then a licensed technician should purge the refrigerants, in accordance with the Federal Halocarbon Regulation, 2003.

15.5 Silica

Silica occurs naturally as crystalline material in concrete and cement. Crystalline silica is significantly more toxic than amorphous silica. Therefore, for health reasons, only crystalline varieties are regulated under Ontario Regulation 490/09 as one of the designated substances. Silica dust can be generated through such processes such as blasting, grinding, crushing or sandblasting silica-containing material. Silica is often found contained within concrete walls, stairs and ramps. Therefore, appropriate respiratory protection and ventilation must be utilized during construction and demolition. As best industry practice CM3 recommends that the ministry of Labour “Guideline for Silica on Construction Projects” is followed when dealing with potential silica hazards.

The guideline outlines suggestions for worker protection, protective equipment, and defines the different work classifications for working on materials that contain silica.

15.6 PCBs

During any lighting refit or during routine maintenance the old ballast should be inspected for PCBs. Any ballasts found to contain PCBs should be stored separately on a temporary basis until they can be disposed of by a licensed waste hauler.

16.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for the **City of Brockville**. It is intended for the sole and exclusive use of the **City of Brockville and their authorized agents** for the purpose(s) set out in this report. Any use of, reliance on or decision made based on this report by any person other than the **City of Brockville** for any purpose, or by the **City of Brockville** for a purpose other than the purpose(s) set out in this report, is the sole responsibility of such other person or the **City of Brockville** and CM3 Environmental Inc. make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

Any conclusions or recommendations made in this report reflect CM3 Environmental Inc.'s judgment based on the following limited investigations: visual site inspection(s) on the date(s) set out in this report; examination of public records; and interviews with individuals having information about the site. While efforts have been made to substantiate information provided by third parties, CM3 Environmental Inc. makes no representation or warranty as to its completeness or accuracy.

This report has been prepared for specific application to this site. Unless otherwise stated, the findings cannot be extended to previous or future site conditions; portions of the site which were unavailable for direct investigation; subsurface locations which were not investigated directly; or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated or in quantities not ascertained.

Nothing in this report is intended to constitute or provide a legal opinion. CM3 Environmental Inc. makes no representation as to the requirements of or compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by the **City of Brockville and their authorized agents** and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of CM3 Environmental Inc.

Appendix A – Analytical Results/Laboratory Certificates of Analysis

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Certificate of Analysis

CM3 Environmental Inc.

5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Richard Pope

Client PO: Pumping Station
Project: RCP3164
Custody:

Report Date: 9-May-2023
Order Date: 3-May-2023

Order #: 2318269

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2318269-01	DJC-01A
2318269-02	DJC-01B
2318269-03	DJC-01C
2318269-04	BM-01A
2318269-05	BM-01B
2318269-06	BM-01C
2318269-07	BM-01D
2318269-08	BM-01E
2318269-09	BM-01F
2318269-10	BM-01G
2318269-11	FSP-01A
2318269-12	FSP-01B
2318269-13	FSP-01C
2318269-14.1	PAR-01A
2318269-14.2	PAR-01A
2318269-14.3	PAR-01A
2318269-15.1	PAR-01B
2318269-15.2	PAR-01B
2318269-15.3	PAR-01B
2318269-16.1	PAR-01C
2318269-16.2	PAR-01C
2318269-16.3	PAR-01C
2318269-17.1	RC-01A
2318269-17.2	RC-01A
2318269-18.1	RC-01B
2318269-18.2	RC-01B

Approved By:

Heather S.H. McGregor, BSc

Laboratory Director - Microbiology

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

2318269-19.1	RC-01C
2318269-19.2	RC-01C
2318269-20.1	ST-01A
2318269-20.2	ST-01A
2318269-21.1	ST-01B
2318269-21.2	ST-01B
2318269-22.1	ST-01C
2318269-22.2	ST-01C
2318269-23.1	ST-01D
2318269-23.2	ST-01D
2318269-24.1	ST-01E
2318269-24.2	ST-01E
2318269-25.1	ST-01F
2318269-25.2	ST-01F
2318269-26.1	ST-01G
2318269-26.2	ST-01G

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2318269-01	02-May-23	White/Grey	Drywall Joint Compound	No	**Client ID: DJC-01A**	[AS-LR-NA]
					Non-Fibers	100
2318269-02	02-May-23	White	Drywall Joint Compound	No	**Client ID: DJC-01B**	
					Non-Fibers	100
2318269-03	02-May-23	White	Drywall Joint Compound	No	**Client ID: DJC-01C**	
					Non-Fibers	100
2318269-04	02-May-23	White	Mortar	No	**Client ID: BM-01A**	
					Non-Fibers	100
2318269-05	02-May-23	White	Mortar	No	**Client ID: BM-01B**	
					Non-Fibers	100
2318269-06	02-May-23	White	Mortar	No	**Client ID: BM-01C**	
					Non-Fibers	100
2318269-07	02-May-23	White	Mortar	No	**Client ID: BM-01D**	
					Non-Fibers	100
2318269-08	02-May-23	Grey	Mortar	No	**Client ID: BM-01E**	
					Non-Fibers	100
2318269-09	02-May-23	Grey	Mortar	No	**Client ID: BM-01F**	
					Non-Fibers	100
2318269-10	02-May-23	Grey	Mortar	No	**Client ID: BM-01G**	
					Non-Fibers	100
2318269-11	02-May-23	Grey	Firestop	No	**Client ID: FSP-01A**	
					Non-Fibers	99
					Other fibers	1

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2318269-12	02-May-23	Grey	Firestop	No	**Client ID: FSP-01B**	
					Non-Fibers	99
					Other fibers	1
2318269-13	02-May-23	Grey	Firestop	No	**Client ID: FSP-01C**	
					Non-Fibers	99
					Other fibers	1
2318269-14.1	02-May-23	Dark Grey	Parging	No	**Client ID: PAR-01A**	
					Non-Fibers	100
2318269-14.2	02-May-23	Grey	Parging	No	**Client ID: PAR-01A**	
					Non-Fibers	100
2318269-14.3	02-May-23	Light Grey	Parging	No	**Client ID: PAR-01A**	
					Non-Fibers	100
2318269-15.1	02-May-23	Dark Grey	Parging	No	**Client ID: PAR-01B**	
					Non-Fibers	100
2318269-15.2	02-May-23	Grey	Parging	No	**Client ID: PAR-01B**	
					Non-Fibers	100
2318269-15.3	02-May-23	Light Grey	Parging	No	**Client ID: PAR-01B**	
					Non-Fibers	100
2318269-16.1	02-May-23	Dark Grey	Parging	No	**Client ID: PAR-01C**	
					Non-Fibers	100
2318269-16.2	02-May-23	Grey	Parging	No	**Client ID: PAR-01C**	
					Non-Fibers	100
2318269-16.3	02-May-23	Light Grey	Parging	No	**Client ID: PAR-01C**	
					Non-Fibers	100

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2318269-17.1	02-May-23	Black	Roofing Core	No	**Client ID: RC-01A** [AS-PRE]	
					MMVF	5.06
					Non-Fibers	94.94
2318269-17.2	02-May-23	Grey	Plaster	**Yes**	**Client ID: RC-01A** [Z-01]	
					Tremolite	1
					Non-Fibers	99
2318269-18.1	02-May-23	Black	Roofing Core	No	**Client ID: RC-01B** [AS-PRE]	
					MMVF	1.56
					Non-Fibers	98.44
2318269-18.2	02-May-23	Grey	Plaster		**Client ID: RC-01B**	
					not analyzed, positive stop	
2318269-19.1	02-May-23	Black	Roofing Core	No	**Client ID: RC-01C** [AS-PRE]	
					MMVF	4.31
					Non-Fibers	95.69
2318269-19.2	02-May-23	Grey	Plaster		**Client ID: RC-01C**	
					not analyzed, positive stop	
2318269-20.1	02-May-23	White	Stucco	No	**Client ID: ST-01A**	
					Non-Fibers	100
2318269-20.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01A**	
					Non-Fibers	100
2318269-21.1	02-May-23	White	Stucco	No	**Client ID: ST-01B**	
					Non-Fibers	100
2318269-21.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01B**	
					Non-Fibers	100

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2318269-22.1	02-May-23	White	Stucco	No	**Client ID: ST-01C**	
					Non-Fibers	100
2318269-22.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01C**	
					Non-Fibers	100
2318269-23.1	02-May-23	White	Stucco	No	**Client ID: ST-01D**	
					Non-Fibers	100
2318269-23.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01D**	
					MMVF	5
					Non-Fibers	95
2318269-24.1	02-May-23	White	Stucco	No	**Client ID: ST-01E**	
					Non-Fibers	100
2318269-24.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01E**	
					Non-Fibers	100
2318269-25.1	02-May-23	White	Stucco	No	**Client ID: ST-01F**	
					Non-Fibers	100
2318269-25.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01F**	
					MMVF	5
					Non-Fibers	95
2318269-26.1	02-May-23	White	Stucco	No	**Client ID: ST-01G**	
					Non-Fibers	100
2318269-26.2	02-May-23	Grey	Stucco	No	**Client ID: ST-01G**	
					Non-Fibers	100

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

**** Analytes in bold indicate asbestos mineral content.**

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Order #: 2318269

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: Pumping Station

Report Date: 09-May-2023

Order Date: 3-May-2023

Project Description: RCP3164

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part763 and EPA/600/R-93/116	2 - Ottawa West	CALA 1262	9-May-23

Ottawa West Lab: 25 Northside Rd, Unit C Nepean, Ontario K2H 8S1

Qualifier Notes

Sample Qualifiers :

AS-LR-NA: Layers/materials inseparable, combined and not analysed separately

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Z-01: Sample contains vermiculite

Work Order Revisions | Comments

None

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Chain of Custody
(Lab Use Only)

Page . of .

Client Name: CM3 Environmental Inc.	Project Reference: Pumping STATION
Contact Name: Richard Pope + MATT SPEARMAN	Quote #: CM3 Rates
Address: 5710 Akins Road, Stittsville, ON	PO #: RCP-3164
Telephone: Office: 613-838-2323	Email Address: Richard @CM3environmental.com Matthew @CM3environmental.com

Turnaround Time:

- ☐ Immediate
- ☐ 4 Hour
- ☐ 8 Hour
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

	Paracel Order Number: / Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	Please See attached Sample Log	May 2			Please See attached Sample Log	☒
2						☐
3						☐
4						☐
5						☐
6						☐
7						☐
8						☐
9						☐
10						☐
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery:

Relinquished By (Sign): Matthew Spearman	Received at Depot:	Received at Lab: 4:05	Verified By:
Relinquished By (Print): MATT SPEARMAN			
Date/Time: MAY 3 / 16:05	Date/Time:	Date/Time: May 3/23 pm	Date/Time: 05/03/23 4:17 pm

B128 and B129 Asbestos Samples

Project #: RCP-3164
Site Address: Pumping Station – 42 Water Street East, Brockville, ON
Project description: Pre-Demo DSR
Date sampled: May 2, 2023
Sampled by: Matthew Spearman

#	Sample ID	Location	Material/Description
1	DJC-01A	Loc 1 – Entrance Vestibule – Ceiling	Drywall Joint Compound
2	DJC-01B	Loc 2 – Electrical Room – Ceiling	Drywall Joint Compound
3	DJC-01C	Loc 2 – Electrical Room – Ceiling at Hatch	Drywall Joint Compound
4	BM-01A	Loc 1 – Entrance Vestibule – West Wall	Concrete Block Mortar
5	BM-01B	Loc 2 – Electrical Room – North Wall	Concrete Block Mortar
6	BM-01C	Loc 2 – Electrical Room – South Wall	Concrete Block Mortar
7	BM-01D	Loc 2 – Electrical Room – South Wall	Concrete Block Mortar
8	BM-01E	Loc 5 – Attic Space – West Wall	Concrete Block Mortar
9	BM-01F	Loc 5 – Attic Space – South Wall	Concrete Block Mortar
10	BM-01G	Loc 5 – Attic Space – East Wall	Concrete Block Mortar
11	FSP-01A	Loc 2 – Electrical Room – North Wall	Firestop Putty (Grey)
12	FSP-01B	Loc 2 – Electrical Room – North Wall	Firestop Putty (Grey)
13	FSP-01C	Loc 2 – Electrical Room – North Wall	Firestop Putty (Grey)
14	PAR-01A	Loc 2 – Electrical Room – Base of North Wall	Parging
15	PAR-01B	Loc 2 – Electrical Room – Base of North Wall	Parging
16	PAR-01C	Loc 2 – Electrical Room – Base of North Wall	Parging
17	RC-01A	Loc 5 – Attic Space – Original Rooftop	Roofing Core (Analyze all layers)
18	RC-01B	Loc 5 – Attic Space – Original Rooftop	Roofing Core (Analyze all layers)
19	RC-01C	Loc 5 – Attic Space – Original Rooftop	Roofing Core (Analyze all layers)
20	ST-01A	Exterior – South Face	Stucco
21	ST-01B	Exterior – South Face	Stucco
22	ST-01C	Exterior – South Face	Stucco
23	ST-01D	Exterior – Northeast Corner	Stucco
24	ST-01E	Exterior – Southwest Corner	Stucco
25	ST-01F	Exterior – Northwest Corner	Stucco
26	ST-01G	Exterior – Northeast Corner	Stucco

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Certificate of Analysis

CM3 Environmental Inc.

5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Richard Pope

Client PO: Pumping Station
Project: RCP3164
Custody:

Report Date: 5-May-2023
Order Date: 3-May-2023

Order #: 2318312

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2318312-01	PS-01
2318312-02	PS-02
2318312-03	PS-03
2318312-04	PS-04
2318312-05	PS-05
2318312-06	PS-06

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Pumping Station**

Report Date: 05-May-2023
Order Date: 3-May-2023
Project Description: RCP3164

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	5-May-23	5-May-23

Qualifier Notes:

Sample Qualifiers :

1 : Complete separation of paint from substrate not possible for this sample and a small amount of substrate has been included in the paint digestion.

QC Qualifiers :

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Pumping Station**

Report Date: 05-May-2023
Order Date: 3-May-2023
Project Description: RCP3164

Sample Results

Lead

Matrix: Paint

Paracel ID	Client ID	Sample Date	Units	MDL	Result
2318312-01	PS-01	2-May-23	ug/g	5	8
2318312-02	PS-02	2-May-23	ug/g	5	20
2318312-03	PS-03	2-May-23	ug/g	5	12
2318312-04	PS-04	2-May-23	ug/g	5	3350
2318312-05	PS-05	2-May-23	ug/g	5	3580
2318312-06	PS-06	2-May-23	ug/g	5	5 [1]

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**5**	**ug/g**						
Matrix Duplicate									
Lead	**15.6**	**5**	**ug/g**	**30.4**			**NC**	**50**	**QR-01**
Matrix Spike									
Lead	52.7	5.00	ug/g	ND	103	70-130			

PARACEL LABORATORIES LTD.

Paracel ID: 2318312

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)

Client Name: CM3 Environmental Inc.	Project Ref: Pumping Station
Contact Name: Richard Pope + Matt Spearman	Quote #: CM3 Rates
Address: 5710 Akins Road, Stittsville, ON	PO #: RCP-3164
Telephone: 613-838-2323	E-mail: Richard @cm3environmental.com Matthew @cm3environmental.com

Page 1 of 1

Turnaround Time

☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☐ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: ___
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analysis: Lead	Required Analysis: Mercury
1	Please see attached Sample Log	P			May 2, 2023		X	
2								
3								
4								
5								
6								
7								
8								
9								
10								

Comments:

Method of Delivery:

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): MATT SPEARMAN	Date/Time: May3'23 4:05 pm	Date/Time: May 4/23 10:04	Date/Time: May 4/23 10:44
Date/Time: MAY 3 16:05	Temperature: °C	Temperature:	pH Verified: ☐ By:

Paracel ID: 2318312

Lead Samples

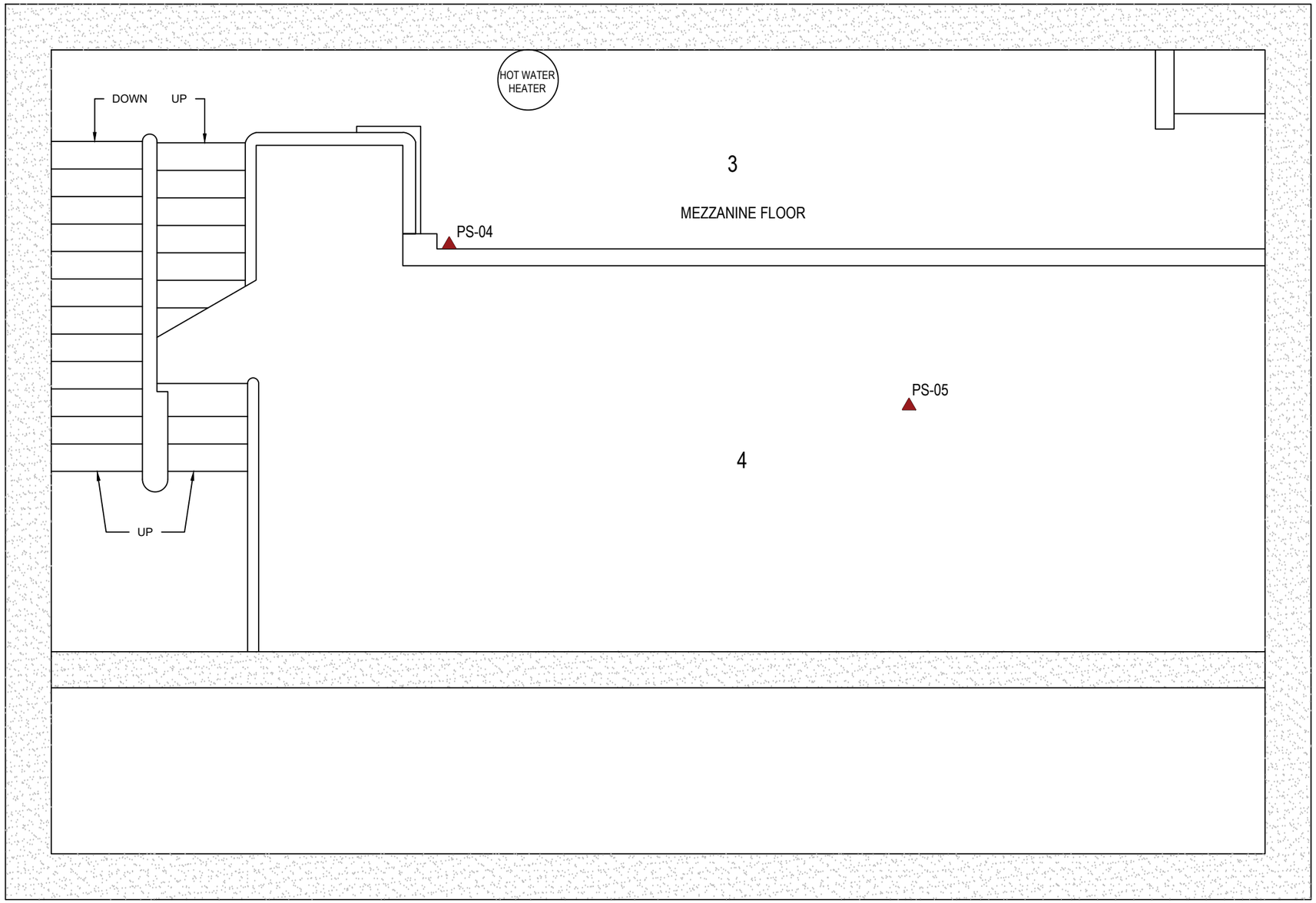
Project #: RCP-3164
Site Address: Pumping Station – 42 Water Street East, Brockville, ON
Project description: Pre-Demo DSR
Date sampled: May 2, 2023
Sampled by: Matthew Spearman

#	Sample ID	Location	Material/Description	Analysis
1	PS-01	Loc 2 – Electrical Room – Ceiling	Off-White on Light Green on Gypsum Board	Lead
2	PS-02	Loc 2 – Electrical Room – Floor	Grey on Concrete	Lead
3	PS-03	Loc 2 – Electrical Room – Wall	Off-White on Concrete	Lead
4	PS-04	Loc 3 – Basement Catwalk – Piping	Grey on Steel Piping	Lead
5	PS-05	Loc 4 – Pump Room - Footing	Grey on Green on Concrete	Lead
6	PS-06	Exterior – Siding	Beige on Stucco	Lead

May 3/23 Stacey Walkmo
4:00pm

May 4/23 Mayar
10:44am

Appendix B – Plans/Drawings



LEGEND

- ASBESTOS BULK SAMPLE LOCATION
- LEAD BULK SAMPLE LOCATION

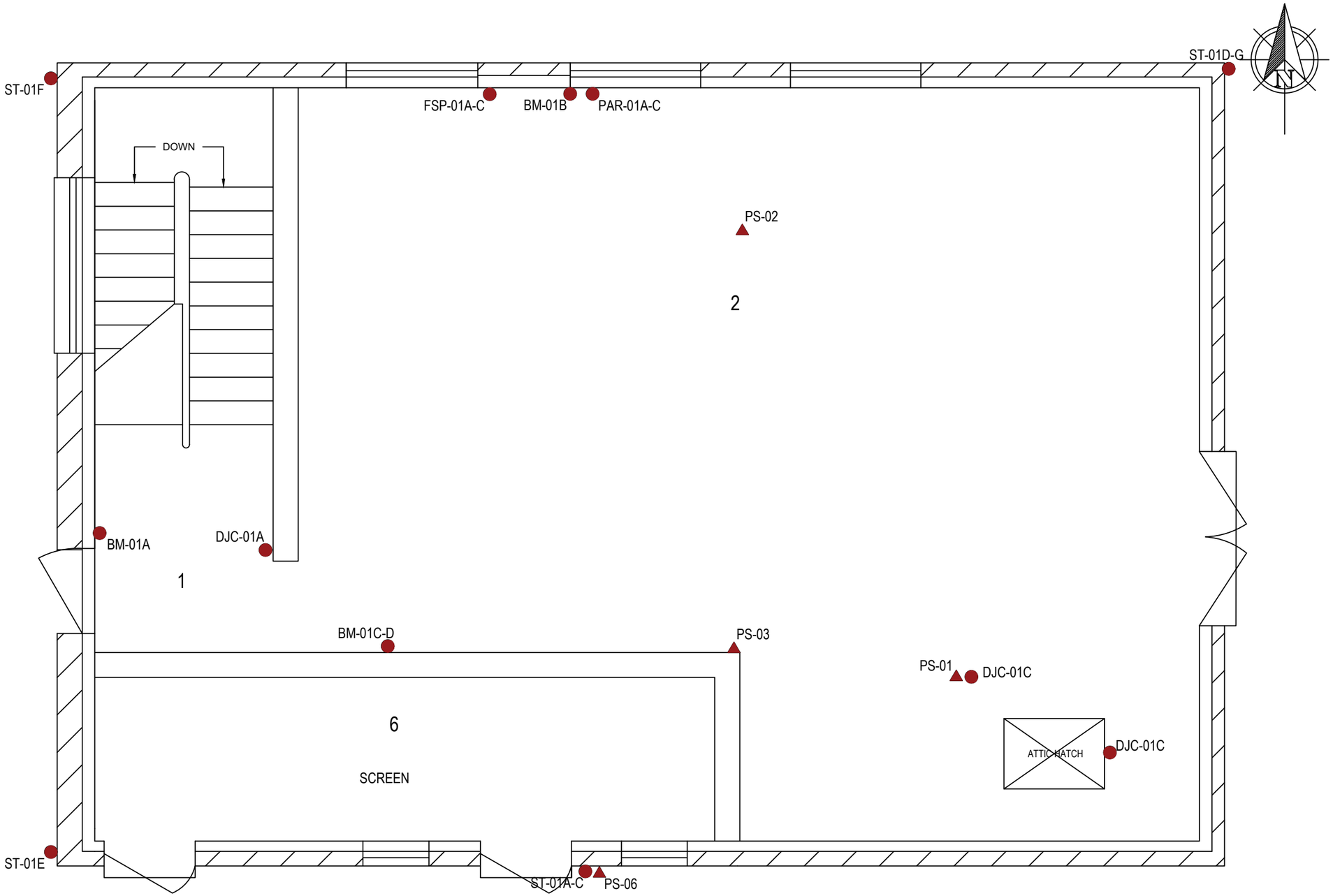
cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

BROCKVILLE
CITY OF THE 1000 ISLANDS

DESIGNATED SUBSTANCE REPORT
MAIN SEWAGE PUMPING STATION
42 WATER STREET EAST,
BROCKVILLE, ONTARIO

BASEMENT FLOOR PLAN

Project:	Drawn By:
RCP-3164	KS
Date:	Reviewed By:
MAY 2023	RCP
Scale:	Figure:
NTS	1



LEGEND

- ASBESTOS BULK SAMPLE LOCATION
- LEAD BULK SAMPLE LOCATION

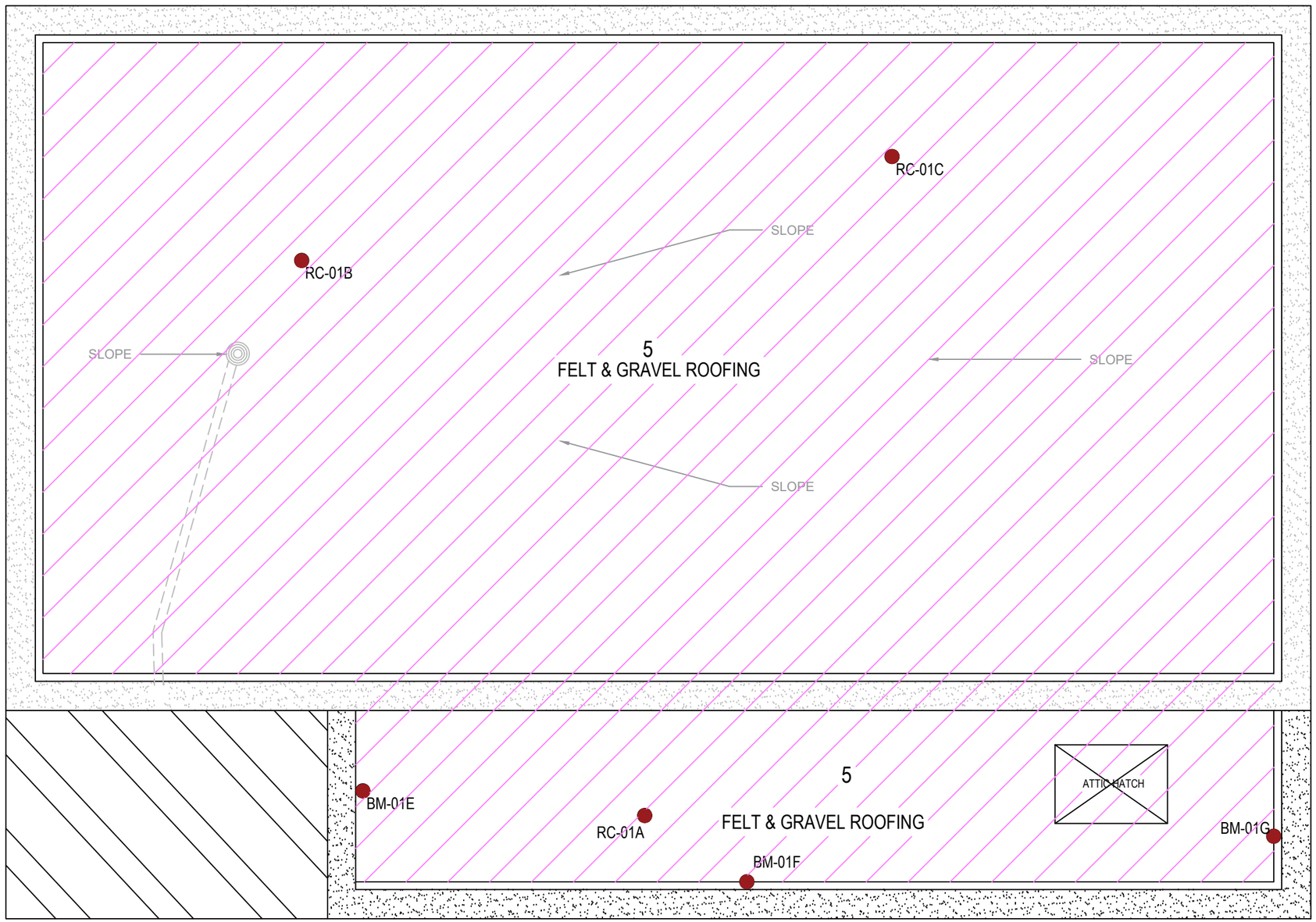
cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

BROCKVILLE
CITY OF THE 1000 ISLANDS

DESIGNATED SUBSTANCE REPORT
MAIN SEWAGE PUMPING STATION
42 WATER STREET EAST,
BROCKVILLE, ONTARIO

MAIN FLOOR PLAN

Project: RCP-3164	Drawn By: KS
Date: MAY 2023	Reviewed By: RCP
Scale: NTS	Figure: 2



LEGEND

- ASBESTOS BULK SAMPLE LOCATION
- LEAD BULK SAMPLE LOCATION
- ASBESTOS-CONTAINING PLATER

NOTES:

- ASBESTOS-CONTAINING PLASTER CONCEALED BENEATH NON-ASBESTOS CONTAINING MATERIAL FELT GRAVEL ROOFING.

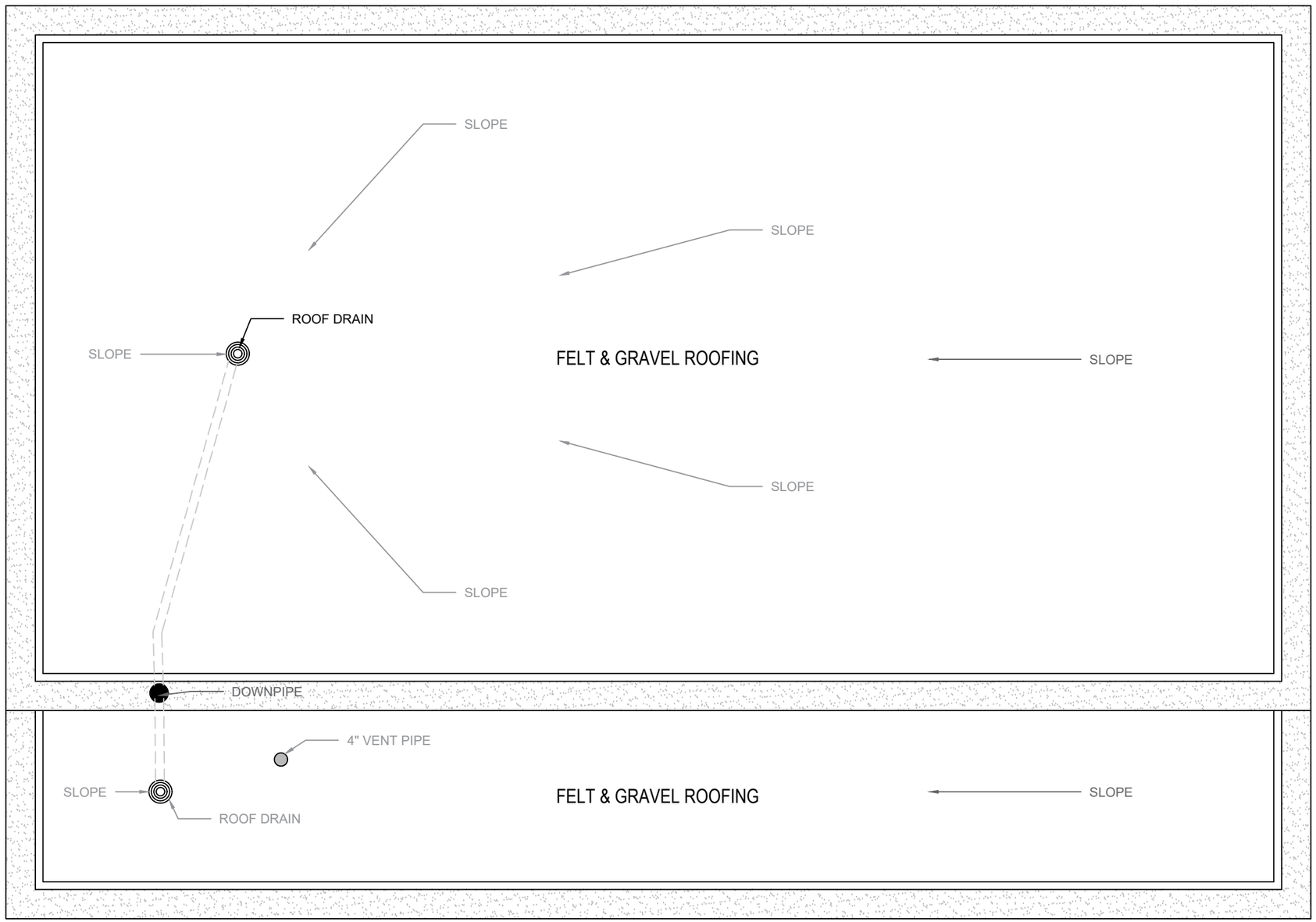
cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

BROCKVILLE
CITY OF THE 1000 ISLANDS

DESIGNATED SUBSTANCE REPORT
MAIN SEWAGE PUMPING STATION
42 WATER STREET EAST,
BROCKVILLE, ONTARIO

ATTIC SPACE FLOOR PLAN

Project: RCP-3164	Drawn By: KS
Date: MAY 2023	Reviewed By: RCP
Scale: NTS	Figure: 3



LEGEND

cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

BROCKVILLE
CITY OF THE 1000 ISLANDS

DESIGNATED SUBSTANCE REPORT
MAIN SEWAGE PUMPING STATION
???ADDRESS ??

ROOF PLAN

Project:	Drawn By:
RCP-3164	KS
Date:	Reviewed By:
MAY 2023	RCP
Scale:	Figure:
NTS	3

Appendix C – Photographic Log

Photograph 1: Exterior view of Sewage Pumping Station, northwest corner.

Photograph 2: Exterior view of Sewage Pumping Station, southeast corner.

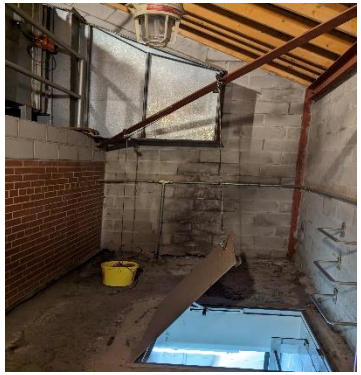
Photograph 3: View of Loc 1, entrance vestibule and stairwell.

Photograph 4: View of Loc 2, electrical room.

Photograph 5: View of Loc 3, mezzanine level.

Photograph 6: View of Loc 4, pump room.

Photograph 7: View of Loc 5, attic space.



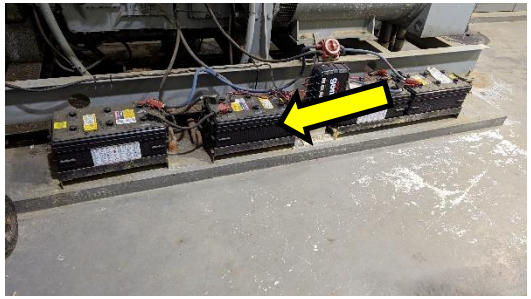
Photograph 8: View of hatch on lower original rooftop in Loc 5, attic space.

Photograph 9: View of asbestos-containing plaster concealed beneath tar and felt roofing in Loc 5, attic space.

Photograph 10: Exposed asbestos-containing plaster observed in Loc 5, attic space.

Photograph 11: Lead-containing grey paint observed on large diameter steel piping in Loc 4, pump room.

Photograph 12: Lead-containing grey on light green paint on concrete footers observed in Loc 4, pump room.



Photograph 13: Lead-acid batteries were observed connected to a backup generator in Loc 2, electrical room.

Photograph 14: Mercury vapour T8 fluorescent lamps were observed throughout the building.

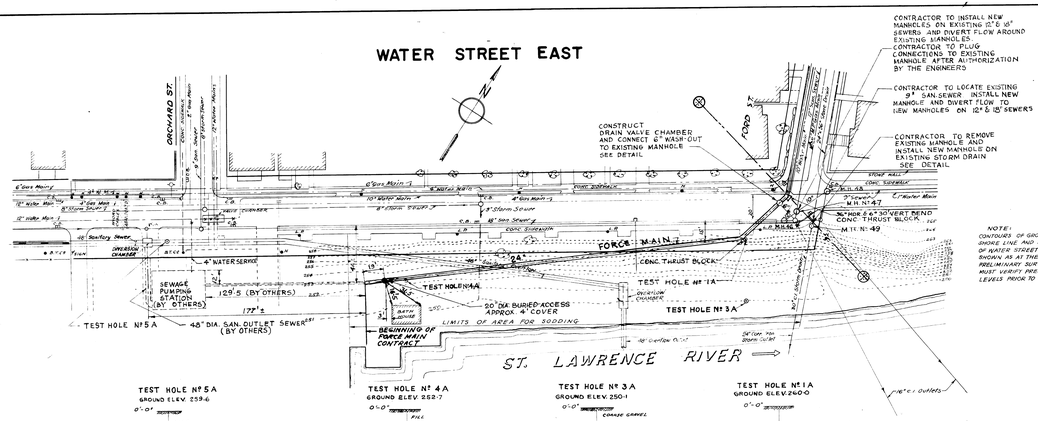
Photograph 15: A mercury vial was observed within a thermostat located on the north wall of Loc 2, electrical room.

Photograph 16: A fuel storage tank was observed in Loc 2, electrical room.

APPENDIX D -

Main Sewage Pumping Station As-builts

5701

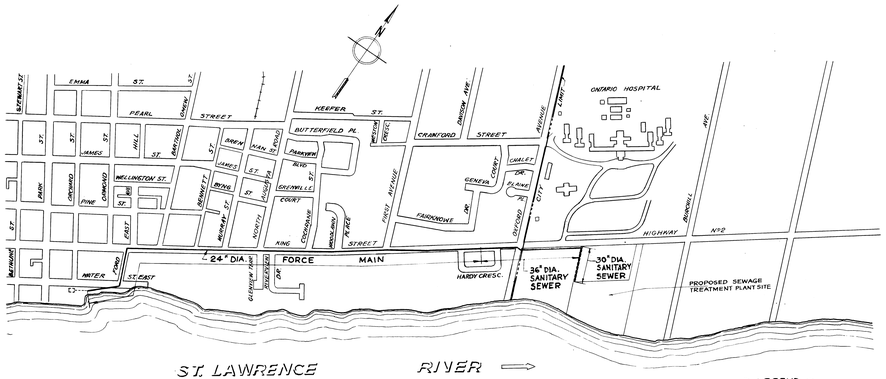


TEST HOLE Nº 5A
GROUND ELEV. 259.6
0'-0" FILL
5'-0" SAND
10'-0" GRAVEL
14'-0" RED ROCK QUARTZITE (MANY FISSURES)

TEST HOLE Nº 4A
GROUND ELEV. 252.7
0'-0" FILL
5'-2" GRAVEL
13'-0" RED ROCK QUARTZITE (GOOD)

TEST HOLE Nº 3A
GROUND ELEV. 250.1
0'-0" COARSE GRAVEL SAND SMALL BOULDERS
7'-0" RED ROCK QUARTZITE (VERY HARD) WITH THIN BANDS OF LIMESTONE
10'-0"

TEST HOLE Nº 1A
GROUND ELEV. 240.0
0'-0" SAND GRAVEL SMALL BOULDERS
8'-0" RED ROCK GREY QUARTZITE (VERY GOOD)
13'-6" WATER
18'-0"

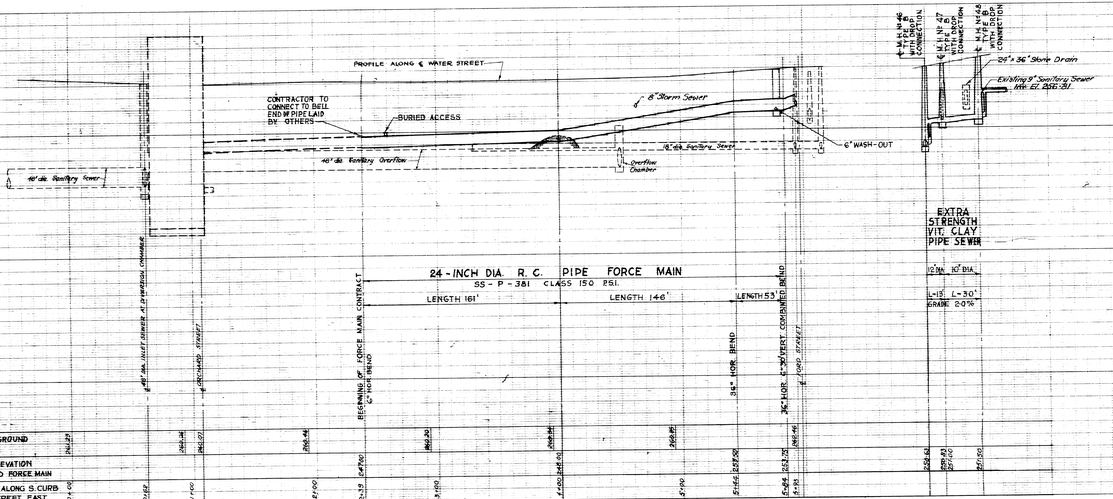


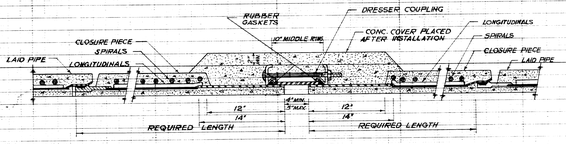
GENERAL PLAN
SCALE 1" - 500'-0"

LEGEND

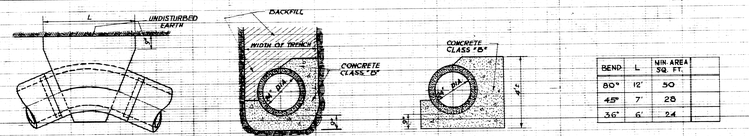
EXISTING SANITARY SEWERS — MANHOLE
EXISTING STORM SEWERS — MANHOLE
EXISTING WATER MAINS — GATE VALVE — HYDRANT
EXISTING GAS MAINS — GAS VALVE
BELL TELEPHONE CO. UNDERGROUND CABLES
HYDRO UNDERGROUND CABLES
WATER & GAS SERVICE VALVES, CATCH BASINS & STORMS — C.B.
BELL TEL CO. & HYDRO POLES & LAMP POSTS — B.T.CO. — H. — L.P.
SIDEWALKS, DRIVES & CULVERTS — PAVED DRIVE — GRAVEL DRIVE — CULVERT — HEADWALL — CURB — SIDEWALK — ROAD
TEST HOLES
PROPOSED FORCE MAIN — BURIED ACCESS — ACCESS CHAMBER — MANHOLE — DRAIN
PROPOSED SEWER
PROPOSED WATER MAIN — GATE VALVE
ROCK

NOTE
HOUSE AND BUILDING UTILITY SERVICES INDICATED ON THE DRAWINGS ARE NOT COMPLETE. EXACT LOCATIONS ARE TO BE DETERMINED IN THE FIELD.





DETAIL OF CLOSURE PIECES
SCALE 1½" = 1'-0"



BEND	L	MIN. AREA SQ. FT.
90°	12'	50
45°	7'	28
36°	6'	24

PLAN — SECTION IN ROCK TRENCH — SECTION IN EARTH TRENCH — DIMENSION

CONCRETE THRUST BLOCK
SCALE: ¾" = 1'-0"

REVISED AS CONSTRUCTED DEC. 1963

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

SEWAGE FORCE MAIN AND OUTFALL SEWER

GENERAL PLAN, DETAILS & PLAN & PROFILE

J. G. Hodgins
CONSULTING ENGINEERS
TORONTO, ONT.

SCALES: AS SHOWN

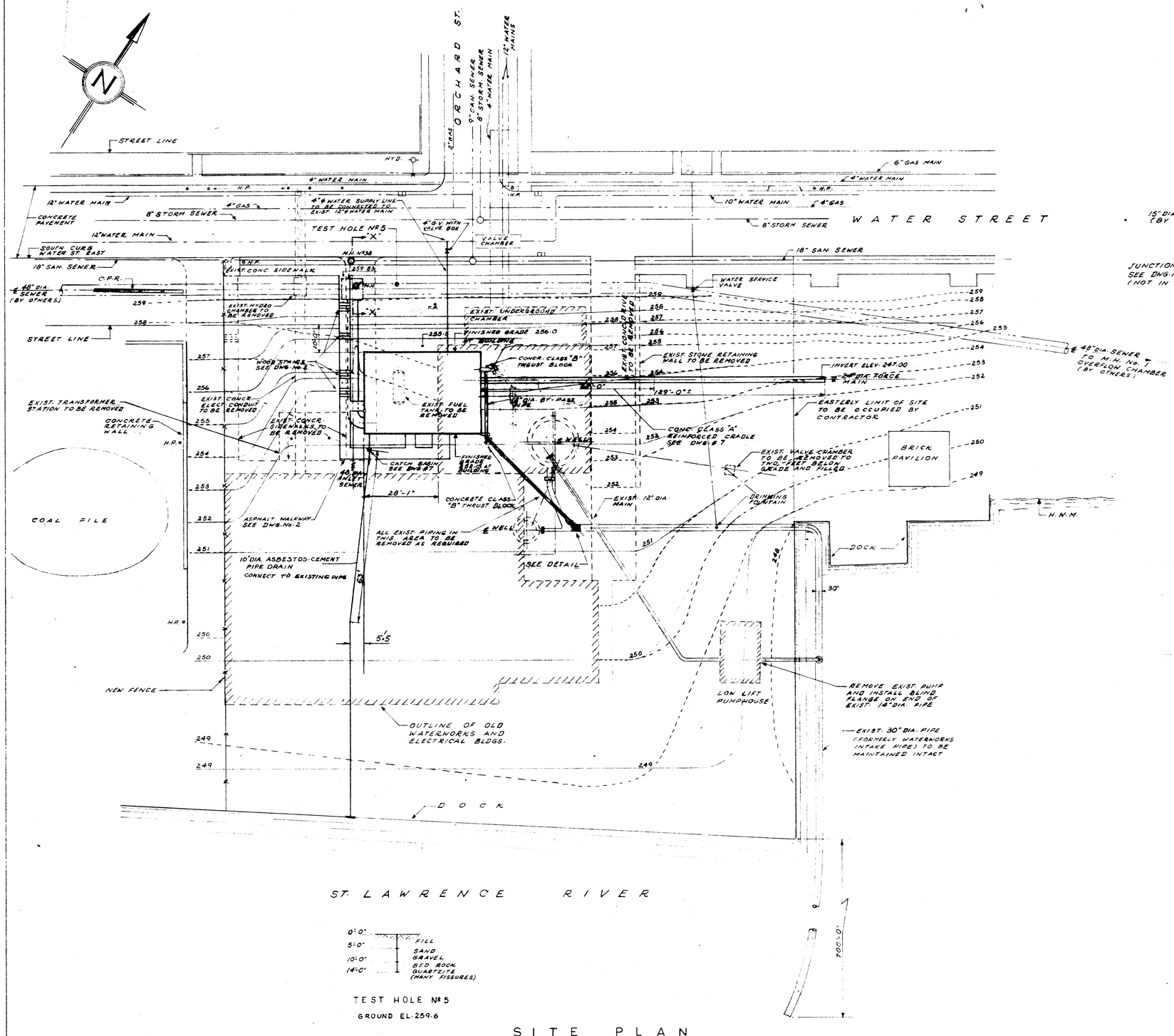
DATE: JANUARY 1963
REVISED: MARCH 8, 1963

DWG No. 1

FILE Nº 105-G-P-667

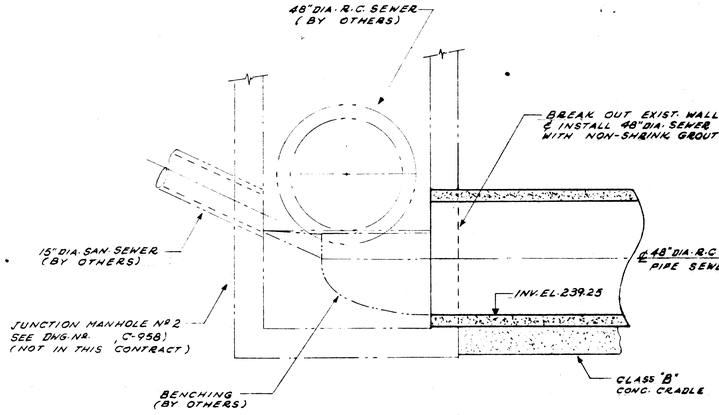

KING STREET EAST
KING STREET EAST
KING STREET EAST
HIGHWAY N
WATER STREET EAST
FORD STREET
ST. LAWRENCE RIVER
RIVER
DETAIL OF CLOSURE PIECES
PROPOSED FORCE MAIN
PROPOSED SEWER
PROPOSED WATER MAIN
ROCK
PLAN
CONCRETE THRUST BLOCK
CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM
SEWAGE FORCE MAIN AND OUTFALL SEWER
GENERAL PLAN, DETAILS & PLAN & PROFILE
DWG. FILE NO

5706



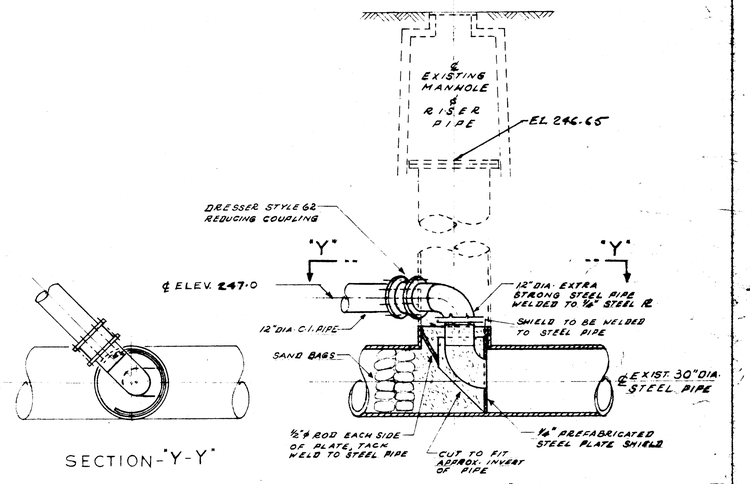
SITE PLAN

SCALE: 1" = 20'-0"



SECTION - "X - X"

SCALE: 3/8" = 1'-0"



SECTION - "Y - Y"

SUGGESTED DETAIL OF CONNECTION TO EXIST. 30" DIA. PIPE

SCALE: 3/8" = 1'-0"

NOTE: FINAL DETAILS TO BE DETERMINED AT SITE

SUGGESTED PROCEDURE FOR CONNECTION:

1. EXCAVATE AND EXPOSE RISER.
2. DETERMINE WATER LEVEL IN RISER PIPE AND CUT OFF AND REMOVE TOP PORTION OF RISER APPROXIMATELY 6-INCHES ABOVE WATER LEVEL.
3. PLACE SAND BAGS IN EXIST. 30-INCH DIA. PIPE ON SIDE TOWARDS EXISTING BUILDINGS.
4. INSERT PREFABRICATED STEEL PLATE SHIELD WITH 12-INCH DIA. PIPE CONNECTION AND SPOT WELD IN PLACE.
5. FILL WITH CLASS "B" CONCRETE TO TOP OF CUT IN RISER.

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO JOHN G. POWELL

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

SITE PLAN & DETAILS

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO

SCALE: AS SHOWN

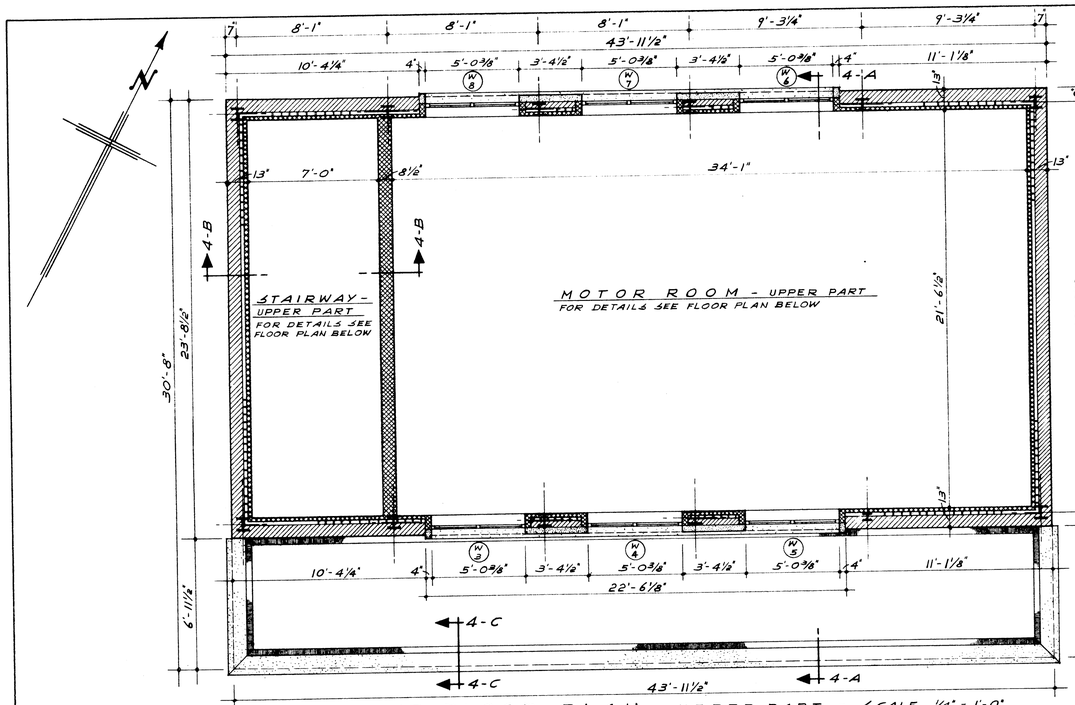
DATE: AUGUST, 1962

DWG. No 1

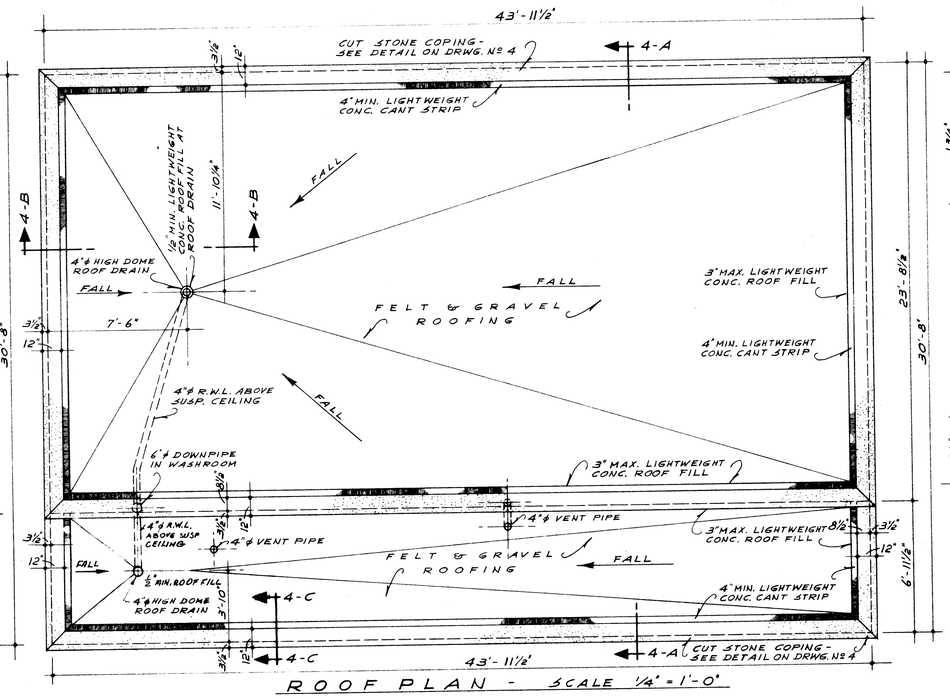
REVISED AS CONSTRUCTED DEC. 1963

FILE No 103.6-D-5431.A

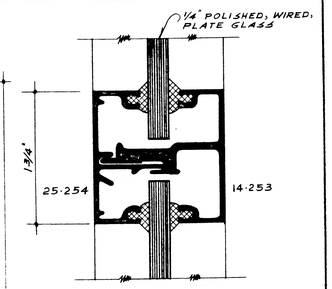
DWG. FILE NO. 3-B-4



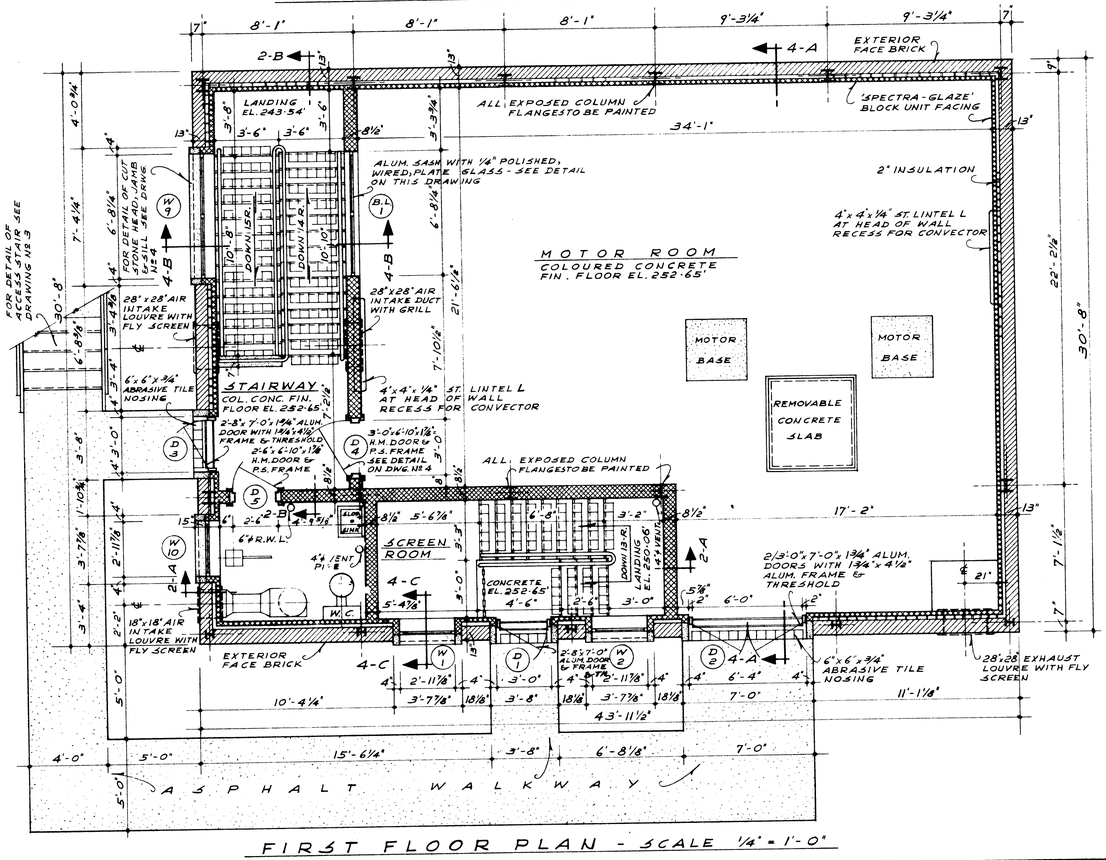
FIRST FLOOR PLAN - UPPER PART - SCALE ¼" = 1'-0"



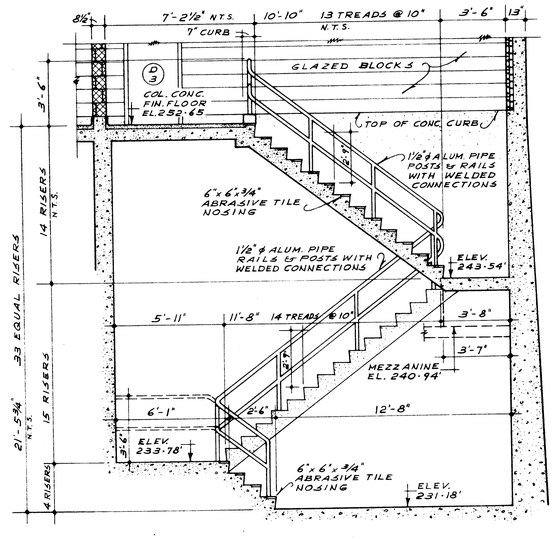
ROOF PLAN - SCALE ¼" = 1'-0"



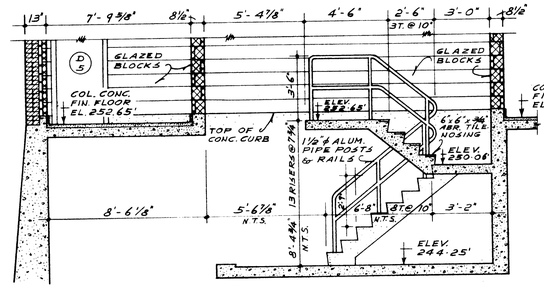
DETAIL OF ALUM. SASH IN BORROWED LIGHT
SCALE: FULL SIZE



FIRST FLOOR PLAN - SCALE ¼" = 1'-0"



SECTION 2-B SCALE ¼" = 1'-0"



SECTION 2-A SCALE ¼" = 1'-0"

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

PLANS, STAIRS & DETAILS
ARCHITECTURAL

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO.

SCALE: ¼" = 1'-0"

DATE: AUGUST 1962

DWG. Nº 2

R. HUGH CRAWFORD
ONTARIO ASSOCIATION OF ARCHITECTS
MEMBER
ARCHITECT

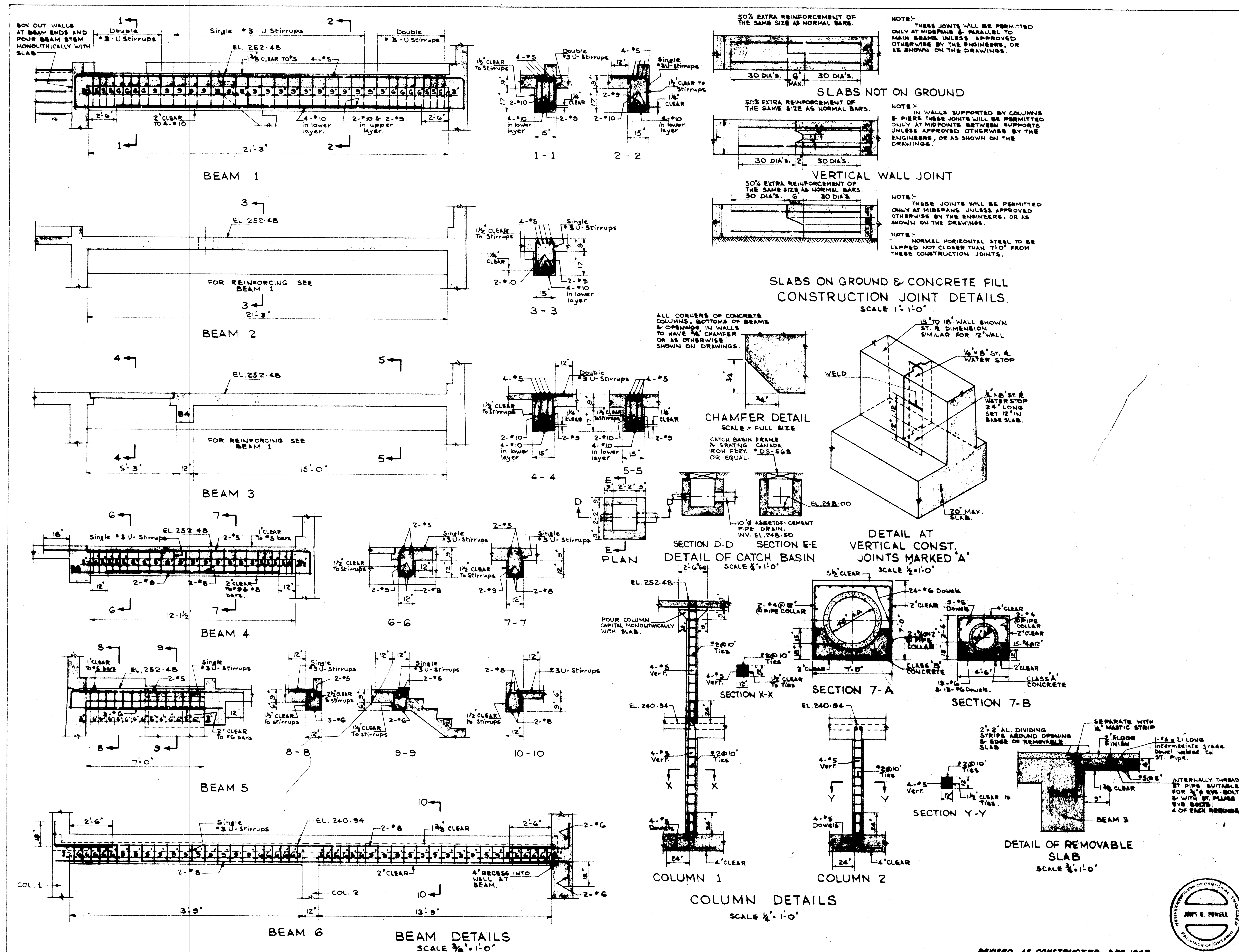
REVISED AS CONSTRUCTED DEC. 1963.

FILE Nº 103-6-D-5432A

DWG. FILE NO.
3-B-4

5710

354



CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

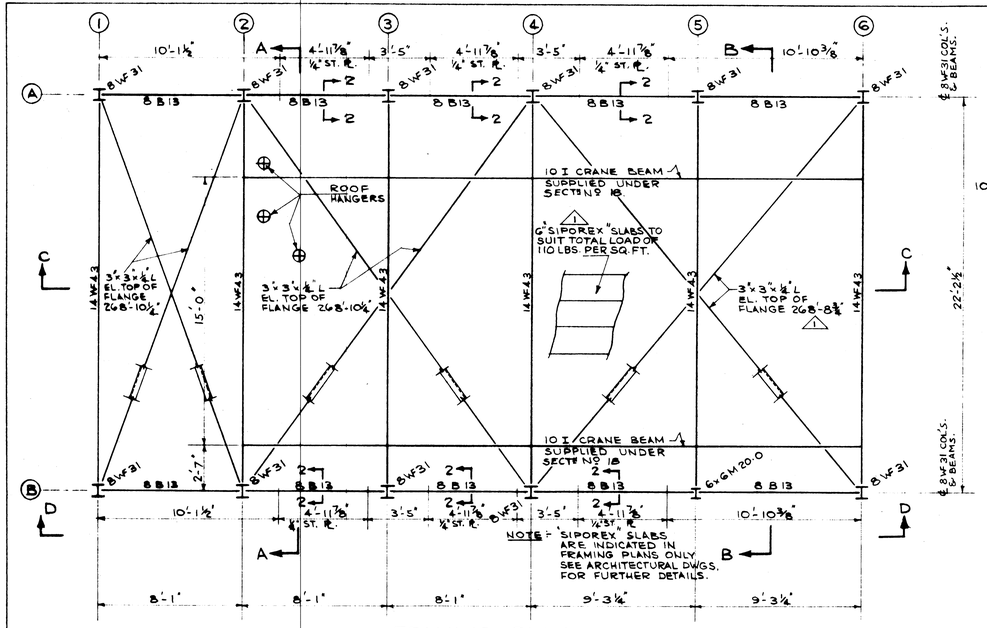
MISCELLANEOUS DETAILS
STRUCTURAL

SCALE: AS SHOWN

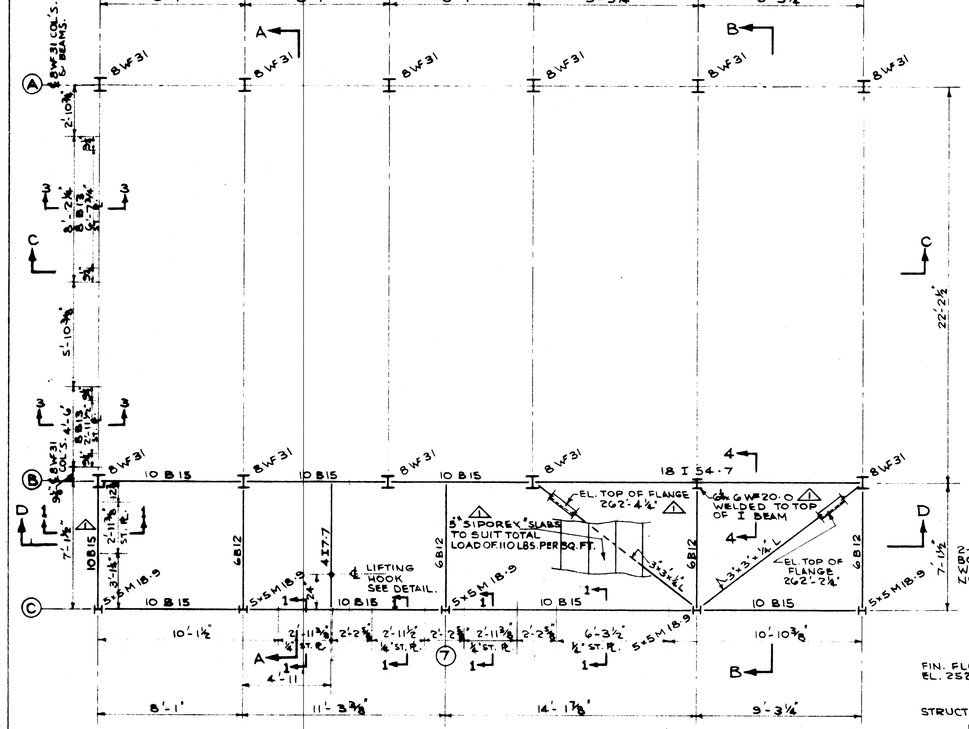
DATE: AUGUST, 1962. DWG. No 7

DWG. FILE
3-B-4

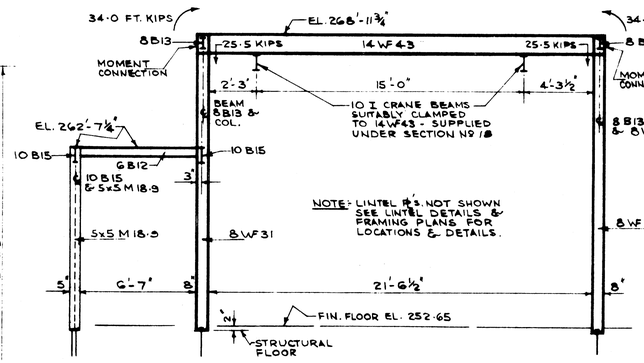
5711



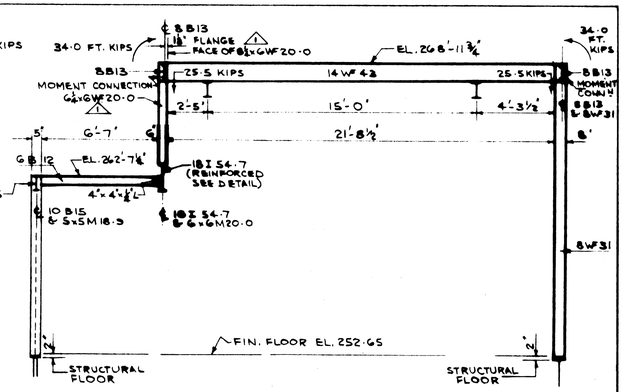
FRAMING PLAN
AT EL. 269.00
SCALE 1/4" = 1'-0"



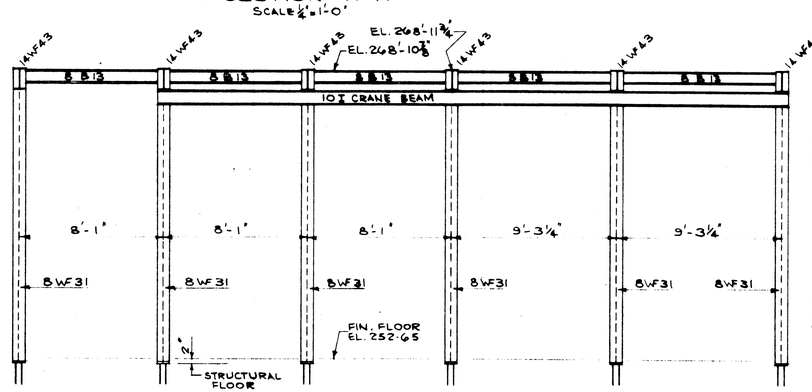
FRAMING PLAN
AT EL. 264.00
SCALE 1/4" = 1'-0"



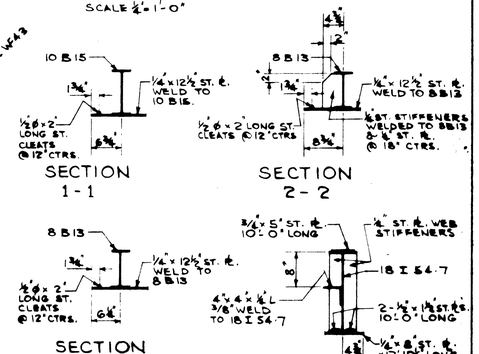
SECTION A-A
SCALE 1/4" = 1'-0"



SECTION B-B
SCALE 1/4" = 1'-0"



SECTION C-C
SCALE 1/4" = 1'-0"

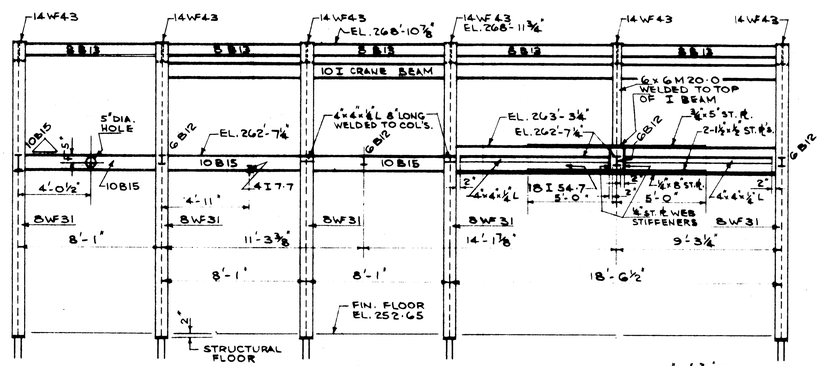


LINTEL DETAILS
SCALE 3/4" = 1'-0"

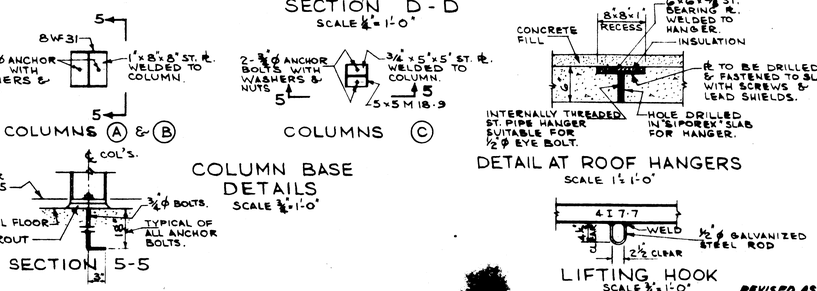
FOR LOCATIONS & DETAILS OF LOOSE LINTELS NOT SHOWN ON THIS DWG. SEE ARCHITECTURAL DWG'S.

ALL SHOP CONNECTIONS TO BE WELDED.
ALL SITE CONNECTIONS TO BE WELDED OR TO BE MADE WITH HIGH TENSILE BOLTS.

"SIPOREX" SLABS TO BE SUPPLIED WITH ANCHORS SUITABLE FOR RESISTING UPLIFT & FOR PROVIDING LATERAL SUPPORT TO SUPPORTING BEAMS.



SECTION D-D
SCALE 1/4" = 1'-0"



REVISED AS CONSTRUCTED DEC. 1963

JOHN C. POWELL — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

STEEL FRAMING
STRUCTURAL

J. C. Powell

GORE & STORRIE LIMITED
CONSULTING ENGINEERS,
TORONTO, ONTARIO.

SCALE: AS SHOWN.

DATE: AUGUST, 1962.
⚠ REVISED JAN. 1963

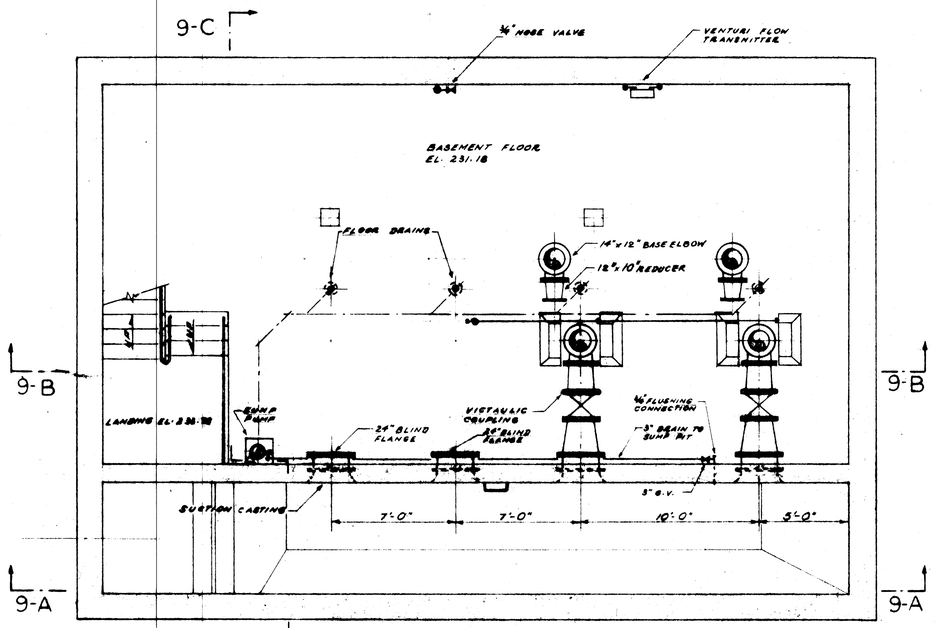
DWG. N° 7A

FILE N° 103-G-D-6437 A

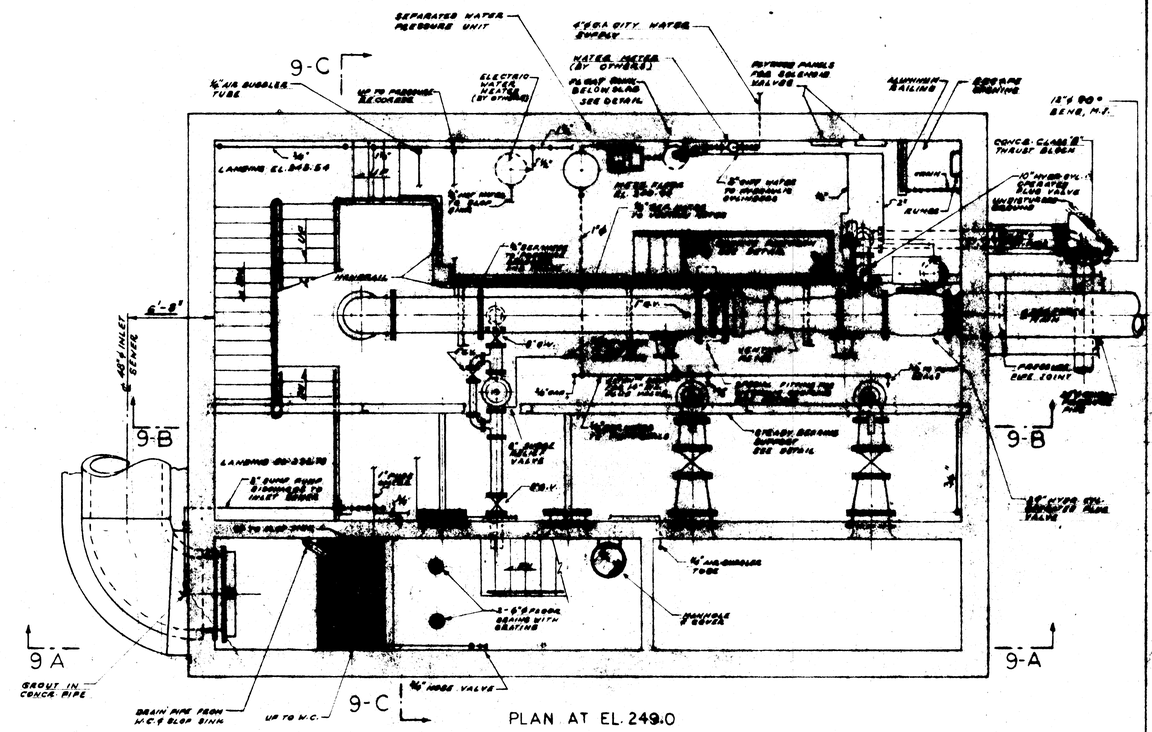
DWG. FILE NO. 3-B-4

5712

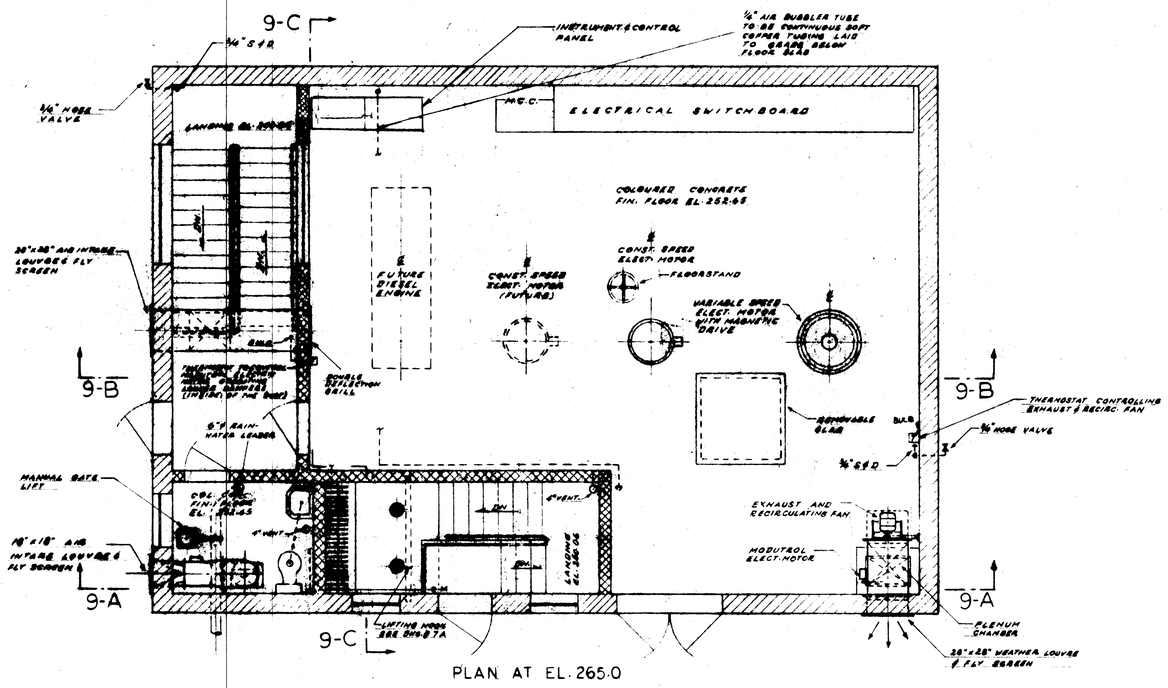
356



PLAN AT EL. 238.0



PLAN AT EL. 249.0



PLAN AT EL. 265.0

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

PLANS
MECHANICAL

COREL & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO.

JOHN D. POWELL

SCALE: ⅛"=1'-0"

DATE: AUGUST, 1962

DWG No 8

REVISED AS CONSTRUCTED DEC. 1963

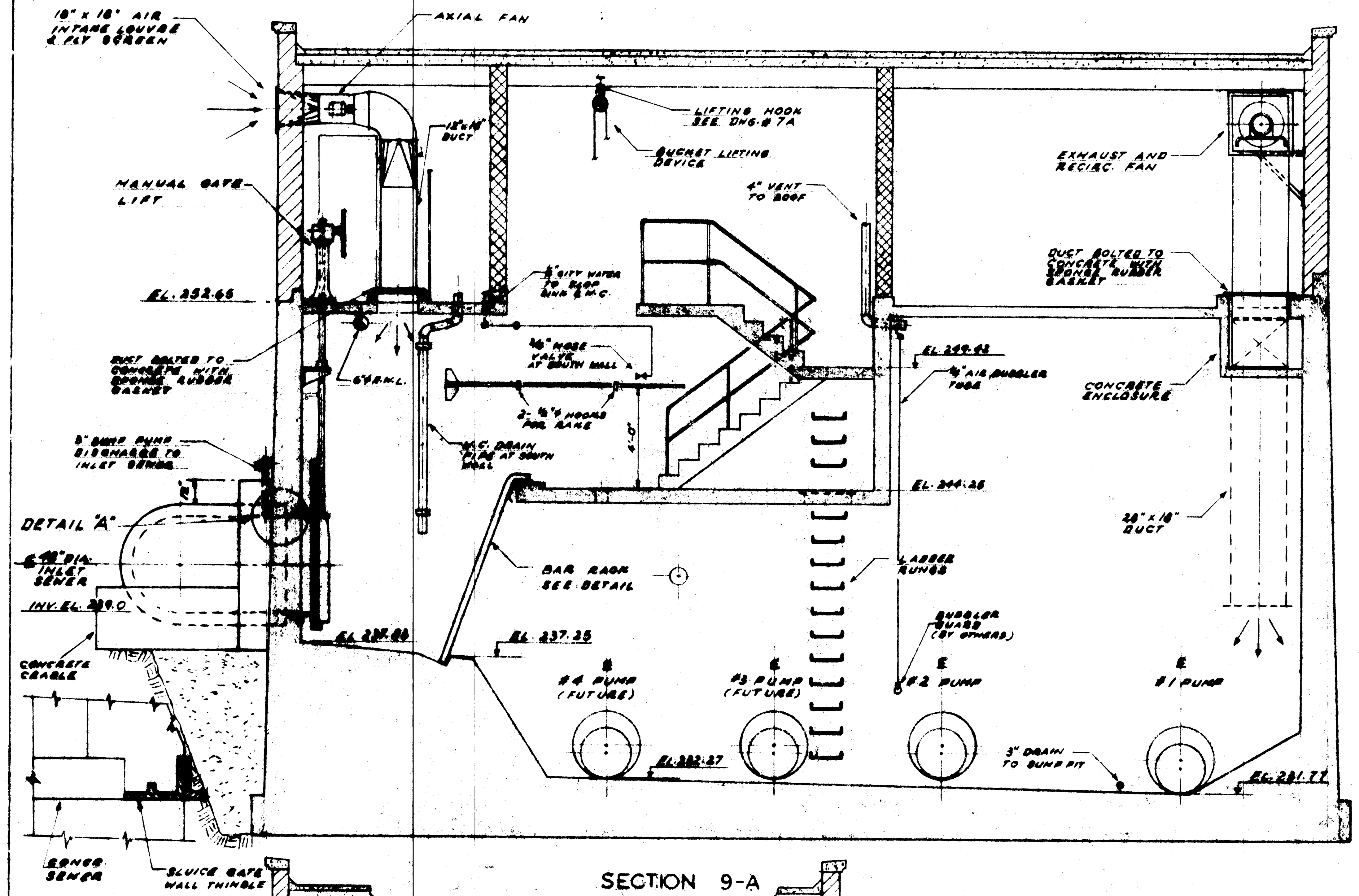
FILE No 103-6-D-S 4.33

COREL & STORRIE, LIMITED

DWG. FILE NO.

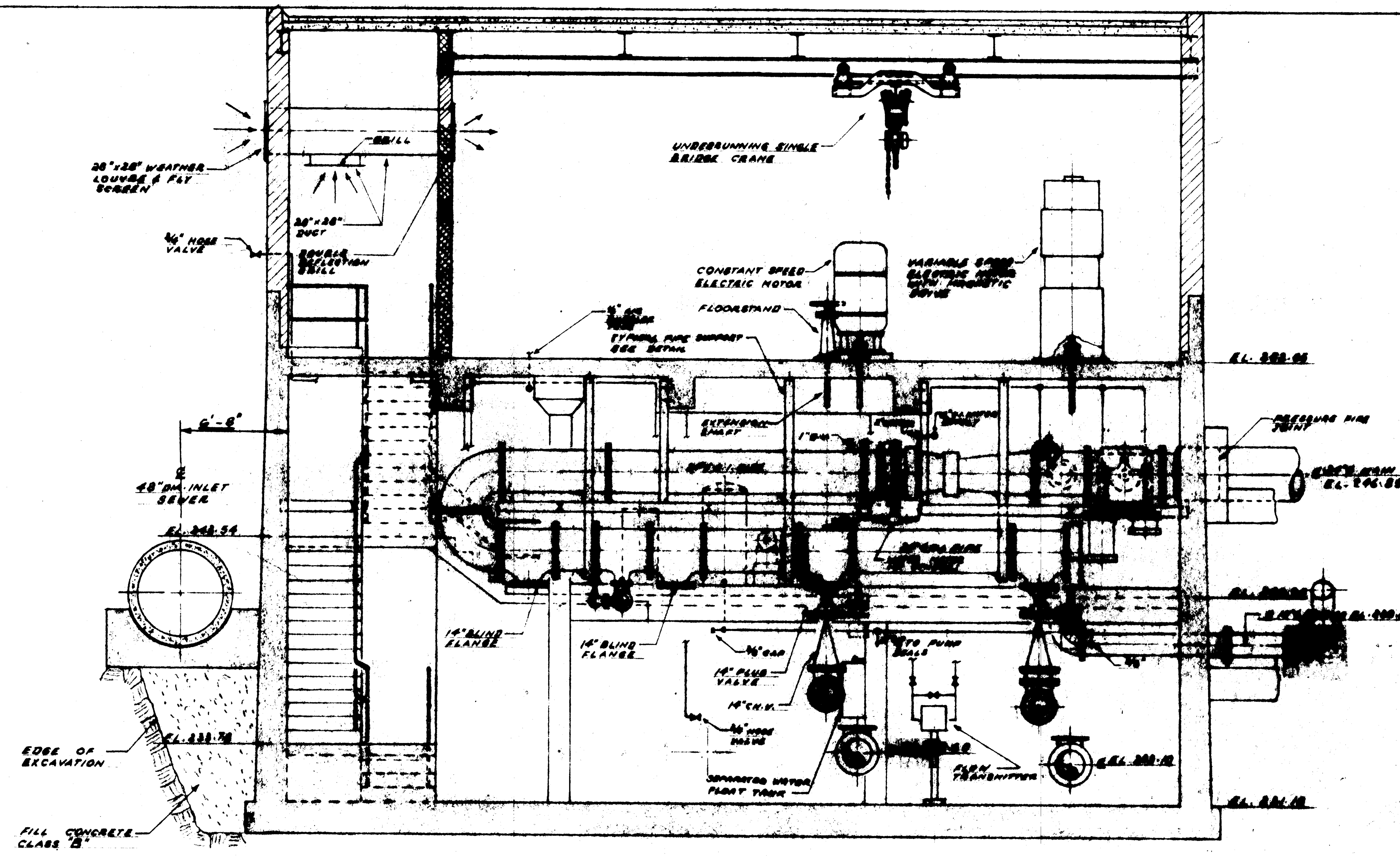
5713

357

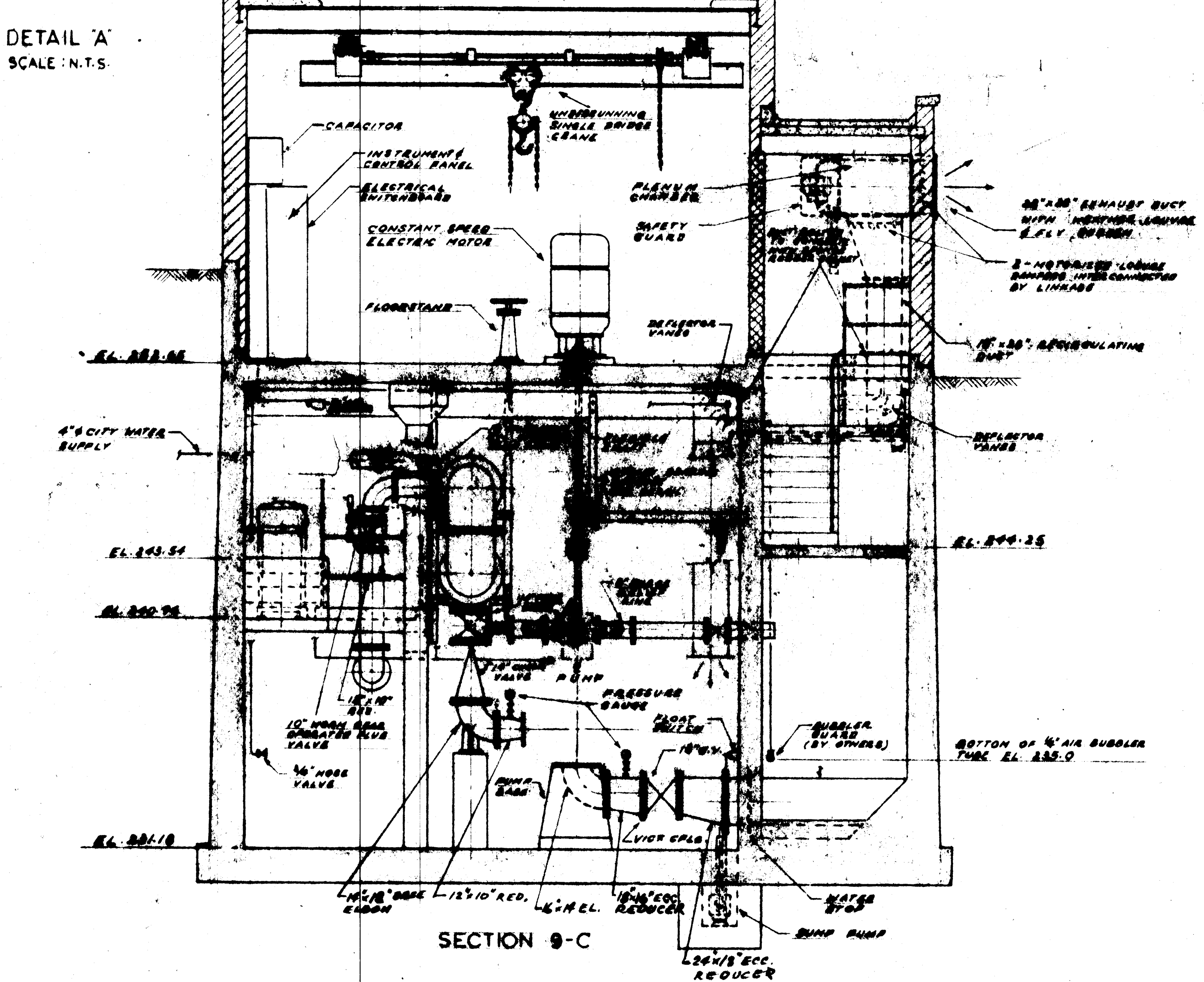


SECTION 9-A

DETAIL "A"
SCALE: N.T.S.



SECTION 9-B



SECTION 9-C

REVISED AS CONSTRUCTED DEC. 1963

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

SECTIONS
MECHANICAL

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO

REGISTERED PROFESSIONAL ENGINEER
JOHN G. POWELL
PROVINCE OF ONTARIO

SCALE: ¼" = 1'-0"

DATE: AUGUST, 1962

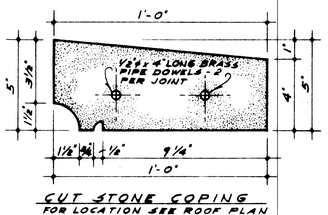
DWG. No 9

DWG. FILE

5714

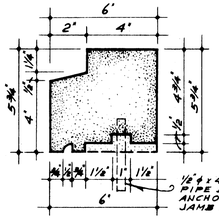
CUT STONE DETAILS

SCALE 3" = 1'-0"



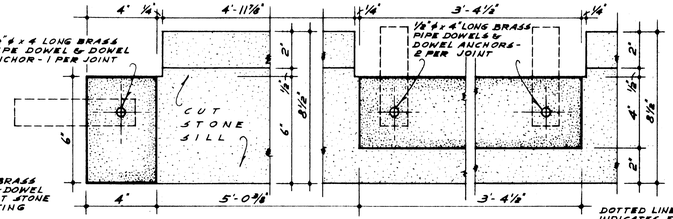
CUT STONE COPING

FOR LOCATION SEE ROOF PLAN ON DRAWING NO 3



CUT STONE HEAD AT D1 TO D3 & W1 TO W10 INCLUDED

DOTTED LINES SHOW HEAD ABOVE CUT STONE JAMB & FACING

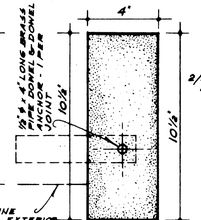


CUT STONE JAMB

2 AT W1, W2, W9 & W10 AND 1 AT W3, W5, W6 & W8 REQUIRED

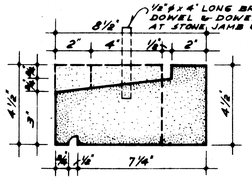
CUT STONE FACING

4 PANELS REQUIRED



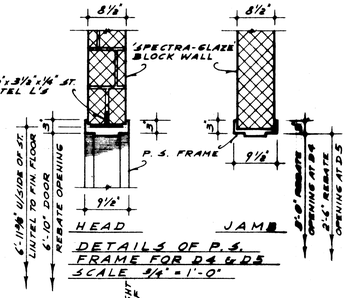
DOTTED LINE INDICATES EXTERIOR FACE OF BRICK WALL

CUT STONE JAMB AT D1, D2 & D3



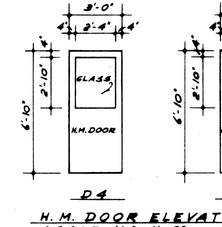
CUT STONE SILL AT W1 - W10 INC.

DOTTED LINES SHOW SILL UNDER CUT STONE JAMB & FACING



DETAILS OF P.S. FRAME FOR D4 & D5

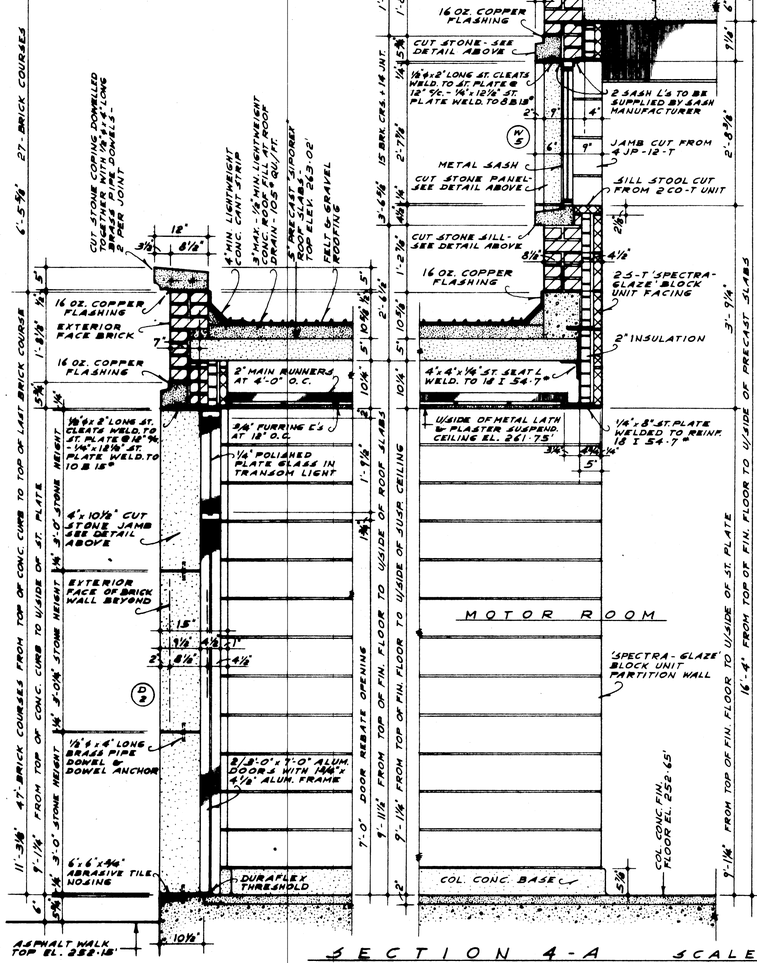
SCALE 3/4" = 1'-0"



D4 D5

H. M. DOOR ELEVATIONS

SCALE 1/4" = 1'-0"



SECTION 4-A SCALE 3/4" = 1'-0"

SECTION 4-B SCALE 3/4" = 1'-0"

SECTION 4-C

SCALE 3/4" = 1'-0"

REVISED AS CONSTRUCTED DEC. 1963

CITY OF BROCKVILLE

SEWAGE DISPOSAL SYSTEM

WATER STREET SEWAGE PUMPING STATION

SECTIONS

ARCHITECTURAL

R. HUGH CRAWFORD MEMBER ONTARIO ASSOCIATION OF ARCHITECTS ARCHITECT

GORE & STORRIE LIMITED CONSULTING ENGINEERS TORONTO, ONTARIO.

JOHN G. FOWELL REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

SCALE: AS SHOWN

DATE: AUGUST 1962

DWG № 4

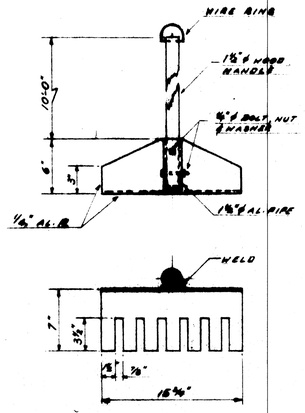
FILE №108-6-D-5434A

DWG. FILE NO. 3-B-4

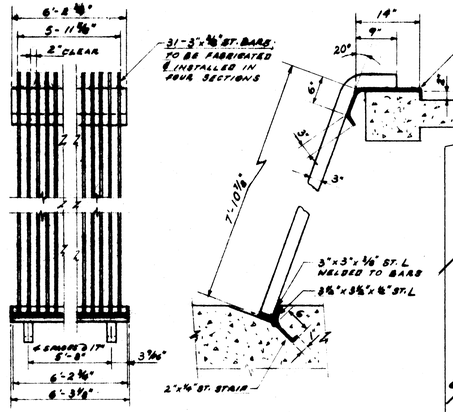
5716

353

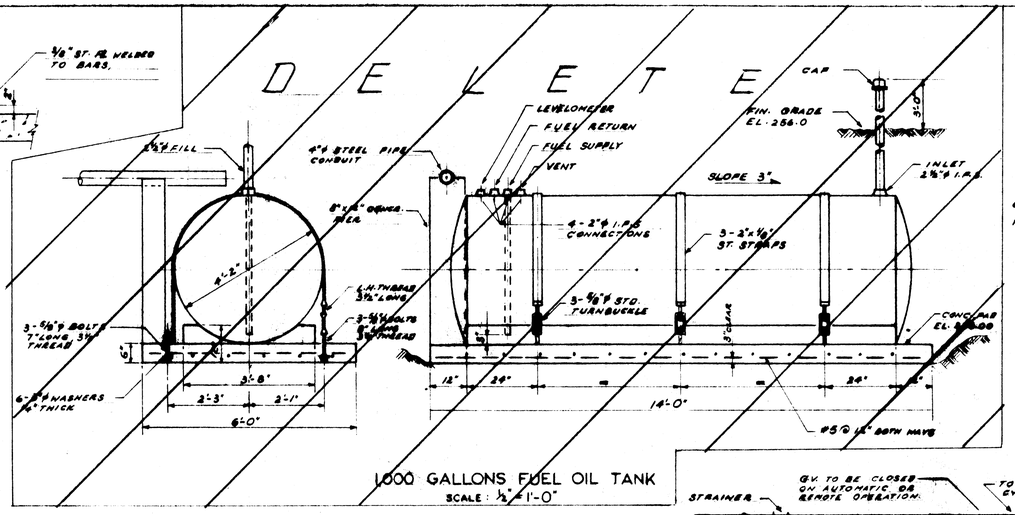

SECTION 6-B
SECTION 6-C
SECTION 6-Q
SECTION 6-J
SECTION 6-D
SECTION 6-E
SECTION 6-F
SECTION 6-G
SECTION 6-H
SECTION 6-K
SECTION 6-L
SECTION 6-M
SECTION 6-N
SECTION 6-P
TEMPORARILY SUPPORT SLAB UNTIL AT LEAST 3 DAYS AFTER 9" WALL HAS BEEN POURED
CONC. CLASS "B" UNDER PIPE TO EDGE OF EXCAVATION
FILL CONC. CLASS "A"
LEAVE ROUGH
CONCRETE CLASS "A" PIPE SUPPORT (SEE SECTION 6-P)
DOVETAIL ANCHOR SLOTS SEE ARCH. DWGS. EAST WALL SIMILAR
NOTE:- ONLY 13 RISERS SHOWN ON THIS FLIGHT OF STAIRS INSTEAD OF 14 REQ'D.
NOTE:- FOR REINFORCING NOT SHOWN SEE OTHER SECTIONS.
33 EQUAL RISERS N.T.S.
15 EQUAL RISERS
NOTE:- ONLY 8 RISERS SHOWN ON THIS FLIGHT OF STAIRS INSTEAD OF 9 REQ'D.
TEMPORARILY SUPPORT SEE SEC. 6-B
FOR DETAILS OF REMOVABLE SLAB SEE DWG. Nº 7
NOTE:- FOR REINFORCING IN WALL SEE OTHER SECTIONS
FILL CONC. CLASS 'B' BETWEEN PIPE & PIPE SUPPORT
CONCRETE PIPE SUPPORT BEAMS TO EXTEND AT LEAST 24" BEYOND EXCAVATION TO UNDISTURBED GROUND. MIN. LENGTH OF BEAMS = 9 FT. - 2 BEAMS REQD
REVISED AS CONSTRUCTED DEC. 1963.
1 REVISED JAN. 1963
CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM
WATER STREET
SEWAGE PUMPING STATION
SECTIONS
STRUCTURAL
GORE & STORRIE LIMITED.
CONSULTING ENGINEERS
TORONTO, ONTARIO
REGISTERED PROFESSIONAL ENGINEER
JOHN G. POWELL
PROVINCE OF ONTARIO
SCALE:- 1/4" = 1'-0"
DATE: AUGUST, 1962.
DWG. Nº 6
FILE Nº 103.6-D-5436
DWG. FILE NO.



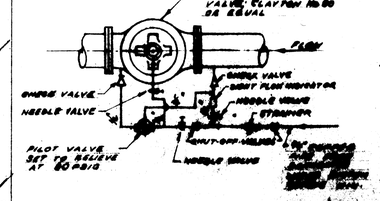
DETAIL OF RAKE
SCALE: 1½" = 1'-0"



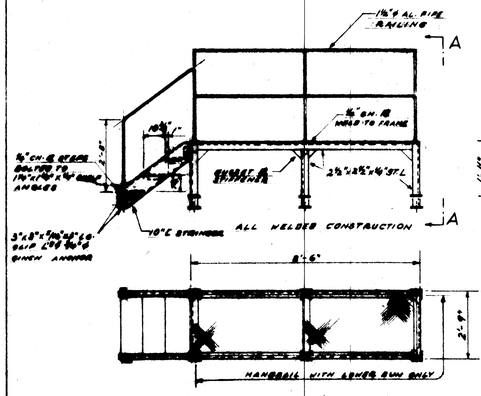
BAR RACK
SCALE: ⅜" = 1'-0"
GALVANIZED AFTER WELDING



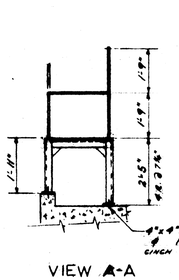
1000 GALLONS FUEL OIL TANK
SCALE: ½" = 1'-0"



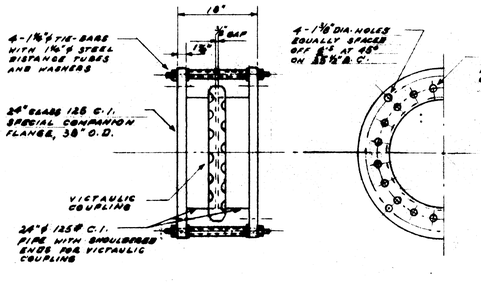
SURGE RELIEF VALVE CONTROL PIPING
DIAGRAMMATIC



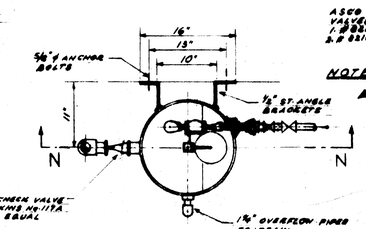
SERVICE PLATFORM
FOR VENTURI METER
SCALE: ⅜" = 1'-0"

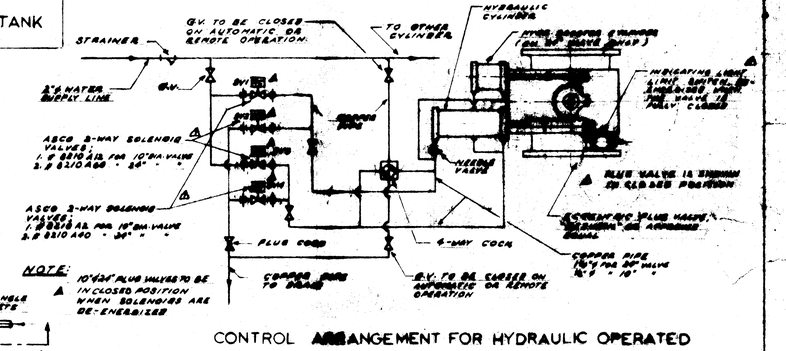


VIEW A-A

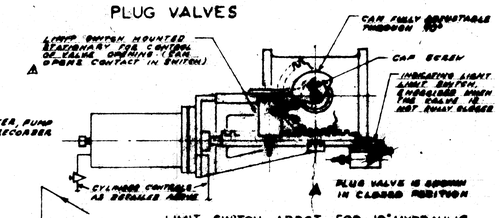


SPECIAL FITTING FOR
VICTAULIC COUPLING
SCALE: ¾" = 1'-0"

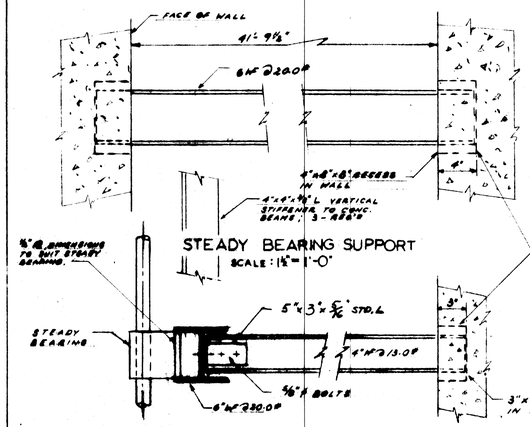




CONTROL ARRANGEMENT FOR HYDRAULIC OPERATED PLUG VALVES

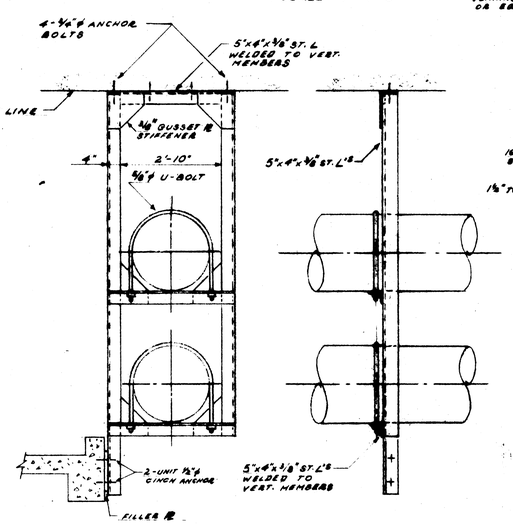


LIMIT SWITCH ARRGT. FOR 10" HYDRAULIC OPERATED PLUG VALVE

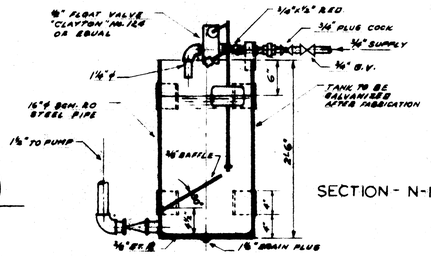


STEADY BEARING SUPPORT
SCALE: 1½" = 1'-0"

BEARING SUPPORT STIFFENER
SCALE: 1½" = 1'-0"

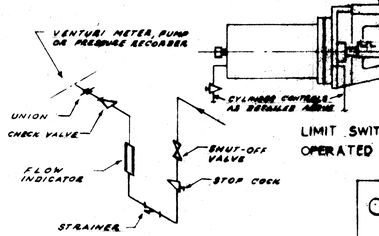


TYPICAL PIPE SUPPORT - 3 REQ'D
SCALE: ½" = 1'-0"

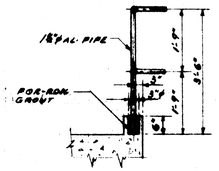


SECTION - N-N

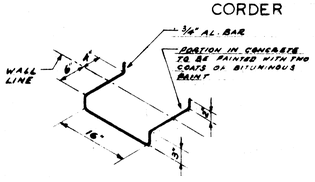
SEPARATED WATER FLOAT TANK
SCALE: 1" = 1'-0"



TYPICAL DETAIL OF WATER PURGE FOR VENTURI, CENTRIFUGAL PUMP GLAND SEALS & PRESSURE RECORDER



DETAIL OF HANDRAIL
SCALE: ½" = 1'-0"



DETAIL OF LADDER RUNG
SCALE: ¾" = 1'-0"

REVISED AS CONSTRUCTED DEC. 1963

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

MISCELLANEOUS DETAILS
MECHANICAL

JOHN G. POWELL
REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO.

SCALE: AS SHOWN

DATE: AUGUST, 1962
REVISED JAN. 2-4, 1963

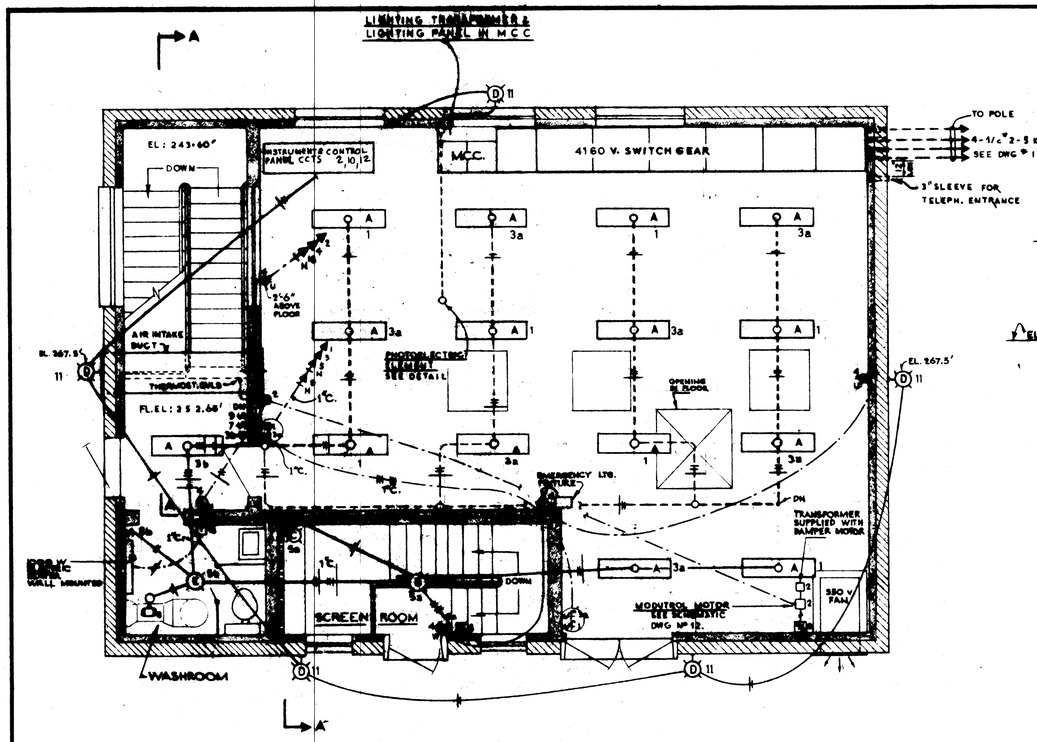
DWG. No 10

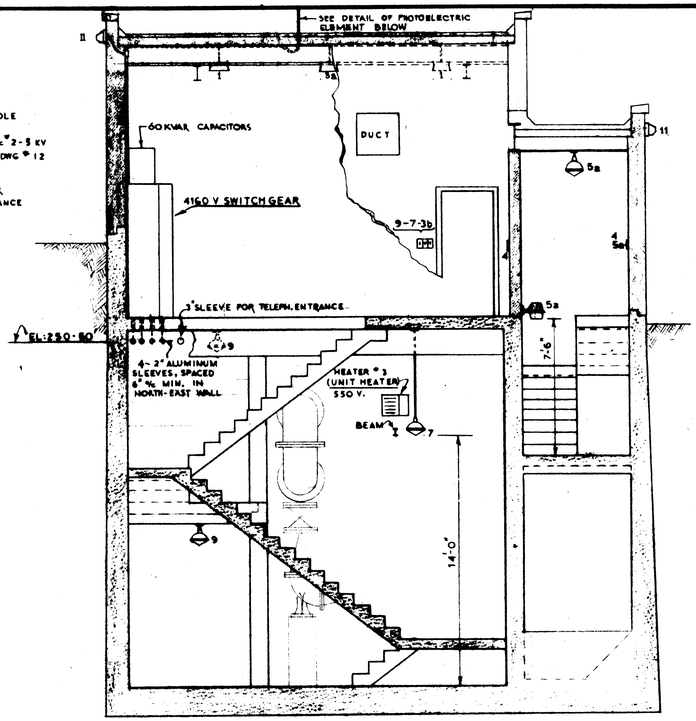
FILE No 103-6-P-5428

DWG. FILE 2-B-4

5718

355





SECTION A-A
SCALE: 1/4"=1'-0"

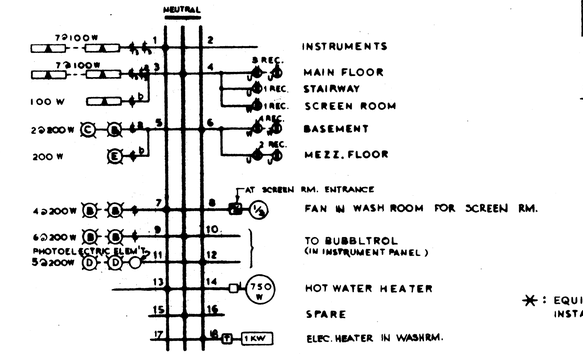
LEGEND

- EXPOSED CONDUIT
- 1-3-5-N — HOME RUN TO LIGHTING PANEL, ARROWS INDICATE CIRCUIT NUMBERS, 'N' INDICATES NEUTRAL
- CONDUIT CONCEALED IN CEILING OR WALL, TICKS INDICATE NUMBER OF WIRES
- 5#12-¾"C. — CONDUIT IN FLOOR SLAB (I.E.: 5 CONDUCTORS #12 IN ¾" RIGID STEEL CONDUIT)
- A — FLUORESCENT FIXTURE (I.E.: TYPE 'A' - CCT #3)
- INCANDESCENT FIXTURE
- $, $3 — SINGLE POLE SWITCH, 3 WAY SWITCH
- DUPLEX RECEPTACLES TYPE 'U' OR 'W'. MOUNT 4 ft. ABOVE FLOOR EXCEPT AS NOTED
- JUNCTION BOX
- TS — TRANSFER SWITCH
- MANUAL MOTOR STARTER
- FS, PS — FLOAT SWITCH, PRESSURE SWITCH
- T, Y — THERMOSTAT, ELAPSED TIME COUNTER
- START-STOP PUSHBUTTON
- HAND-OFF-AUTO SELECTOR SW., 'ON-OFF' SELECTOR SWITCH
- MC — MOLDING COIL
- A, V — AMMETER, VOLTMETER
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER AND FUSE
- CONTROL TRANSFORMER
- DISCONNECT SWITCH
- TDR — TIME DELAY RELAY

MCC MOTOR CONTROL CENTRE
CCT CIRCUIT
REC. DUPLEX RECEPTACLE

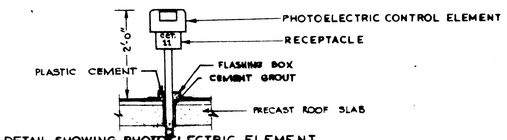
NOTES

1. ALL FLUORESCENT FIXTURES TO HAVE THERMALLY PROTECTED BALLASTS
2. USE RIGID CONDUIT, ¾" MIN. OR AS NOTED. USE SEALTITE FOR MOTOR CONN.
3. ALL WIRES #12 ga. MIN. R.H.W. INSULATION - OR AS NOTED
4. ALL 550 V & 4160 V. EQUIPMENT TO BE CONNECTED TO MAIN GROUND
5. CONCEALED WIRING THROUGHOUT.
6. MINIMUM SPACING FOR CONDUITS IN SLAB SHALL BE THREE DIAMETERS

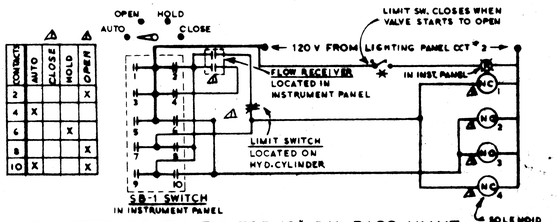


18 CCT-3 PH. PANEL
CCTS 1-18 ARE 15A. SINGLE POLE BREAKERS

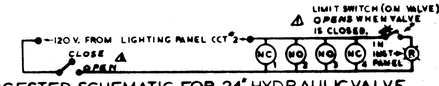
LIGHTING PANEL LAYOUT



DETAIL SHOWING PHOTOELECTRIC ELEMENT MOUNTED ON ROOF
NOT TO SCALE



SUGGESTED SCHEMATIC FOR 10" BY-PASS VALVE



SUGGESTED SCHEMATIC FOR 24" HYDRAULIC VALVE

* : EQUIPMENT SUPPLIED BY OTHERS BUT INSTALLED UNDER THIS ITEM

REVISED AS CONSTRUCTED. DEC 1963

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET
SEWAGE PUMPING STATION

LIGHTING LAYOUT
ELECTRICAL

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO

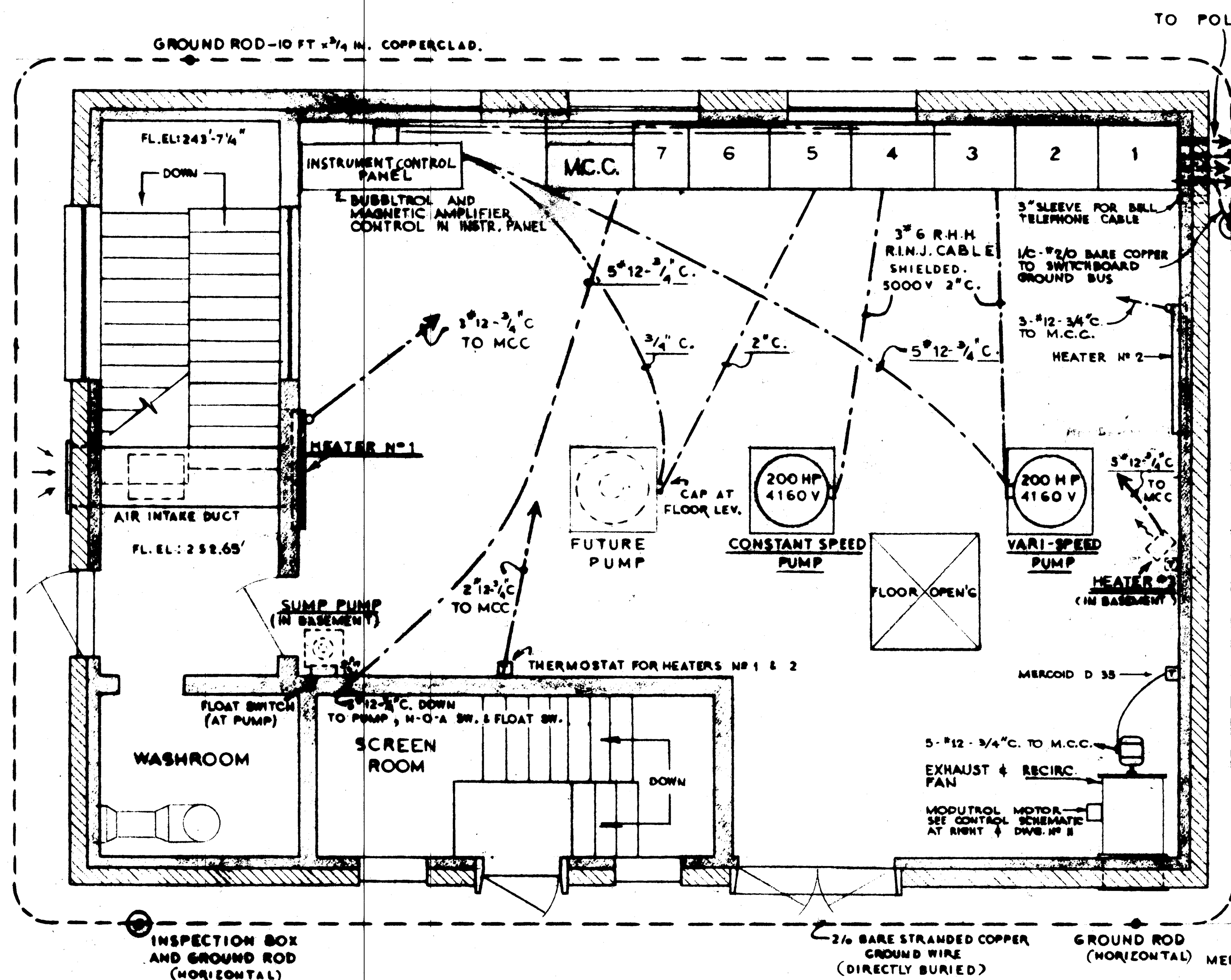
SCALE: AS NOTED

DATE: MAY 1962
REVISED JAN. 24, 1963

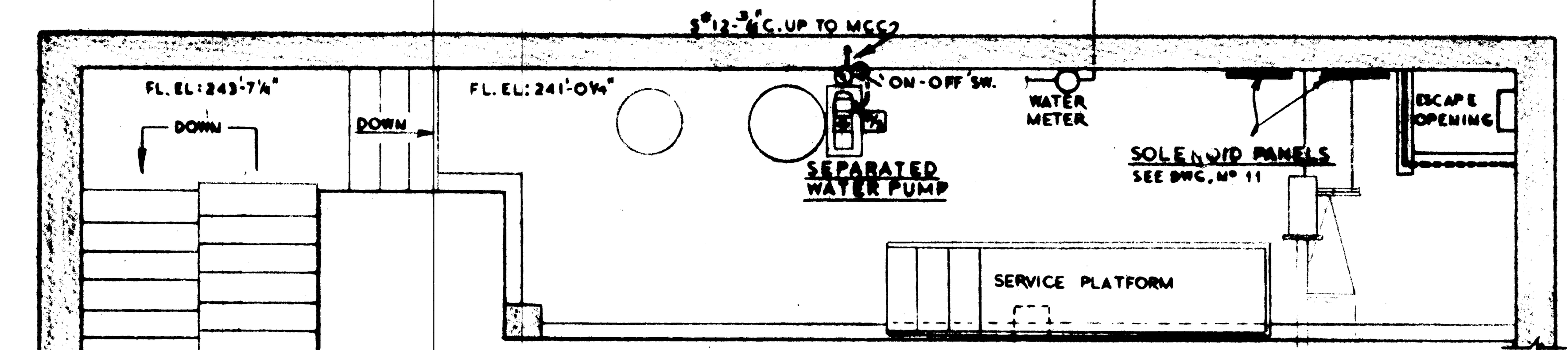
DWG Nº 11

FILE Nº 103-6-D-5441

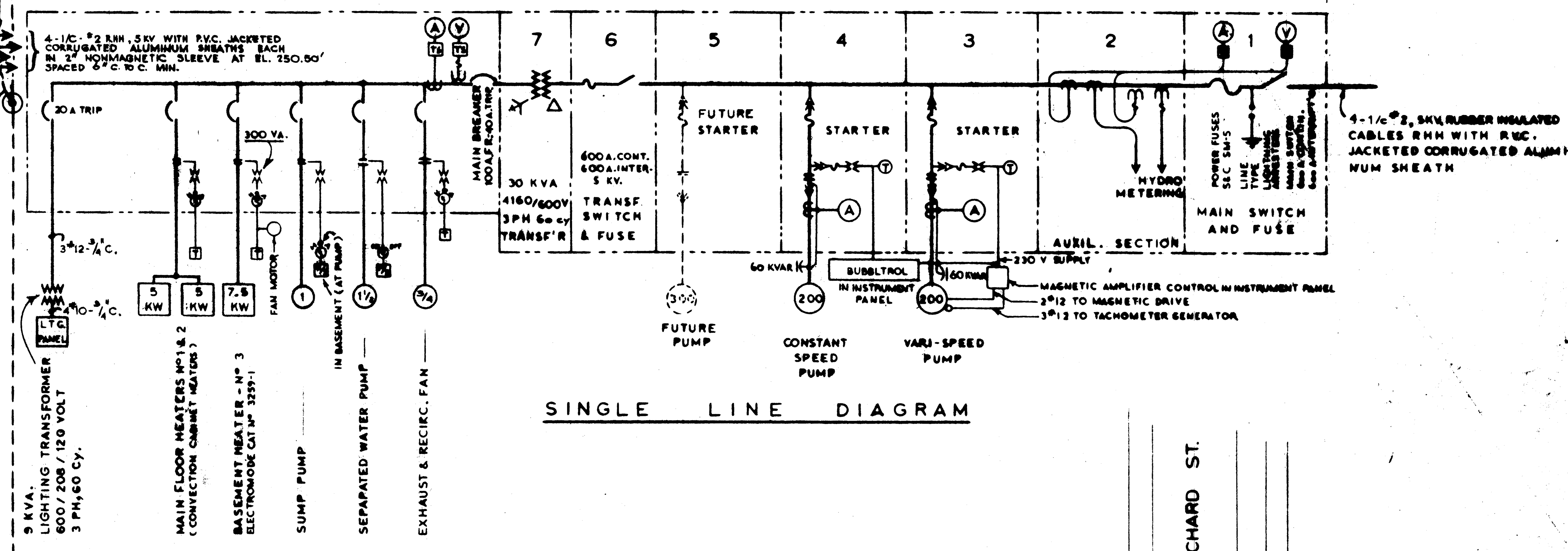
DWG. FILE NO. 3-B-4


TO POLE
GROUND ROD-10 FT. COPPERCLAD.
INSTRUMENT CONTROL PANEL
M.C.C.
7 6 5 4 3 2 1
FUTURE PUMP
CONSTANT SPEED PUMP
VARI-SPEED PUMP
200 HP 4160 V
FLOOR OPEN'G
HEATER Nº1
HEATER Nº2
AIR INTAKE DUCT
SUMP PUMP (IN BASEMENT)
FLOAT SWITCH (AT PUMP)
WASHROOM
SCREEN ROOM
THERMOSTAT FOR HEATERS Nº 1 & 2
EXHAUST & RECIRC FAN
INSPECTION BOX AND GROUND ROD (HORIZONTAL)
GROUND ROD (HORIZONTAL)

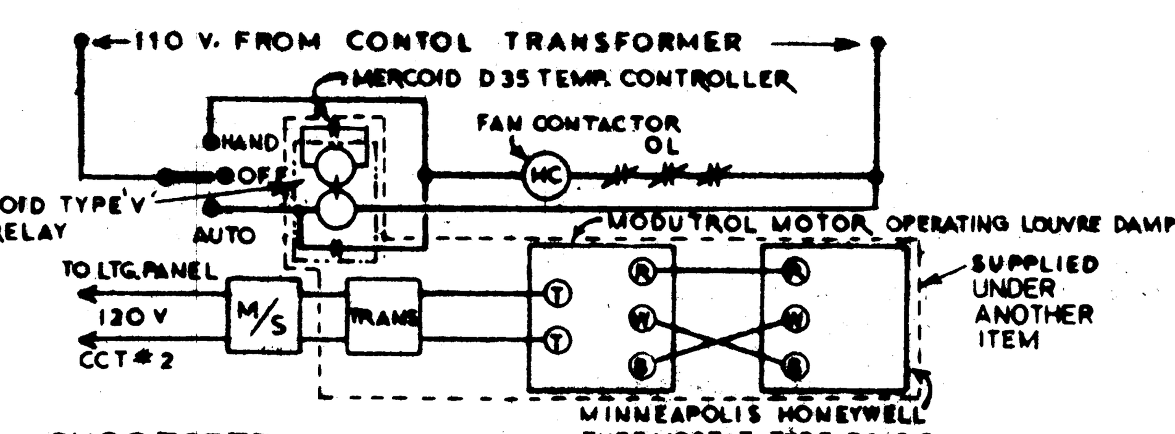
MAIN FLOOR – PLAN
SCALE: ¼" = 1'–0"



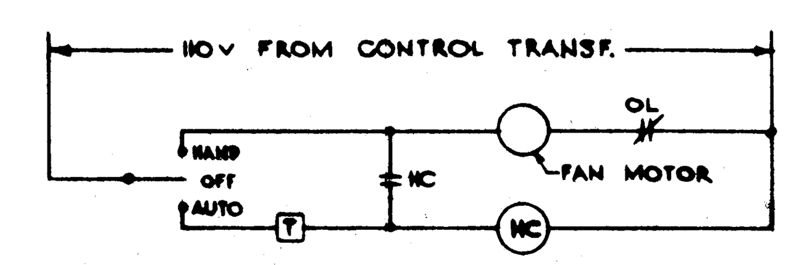
MEZZANINE FLOOR PLAN
SCALE: ¼" = 1'–0"


550V MOTOR CONTROL CENTRE
4160 V. SWITCHGEAR
7 6 5 4 3 2 1
30 KVA 4160/600V 3PH 60 cy TRANSF'R
TRANSF. SWITCH & FUSE
FUTURE STARTER
STARTER
STARTER
HYDRO METERING
AUXIL. SECTION
MAIN SWITCH AND FUSE
FUTURE PUMP
CONSTANT SPEED PUMP
VARI-SPEED PUMP
9 KVA LIGHTING TRANSFORMER 600/208/120 VOLT 3 PH, 60 Cy.
MAIN FLOOR HEATERS Nº 1 & 2
BASEMENT HEATER - Nº 3
SUMP PUMP
SEPARATED WATER PUMP
EXHAUST & RECIRC. FAN

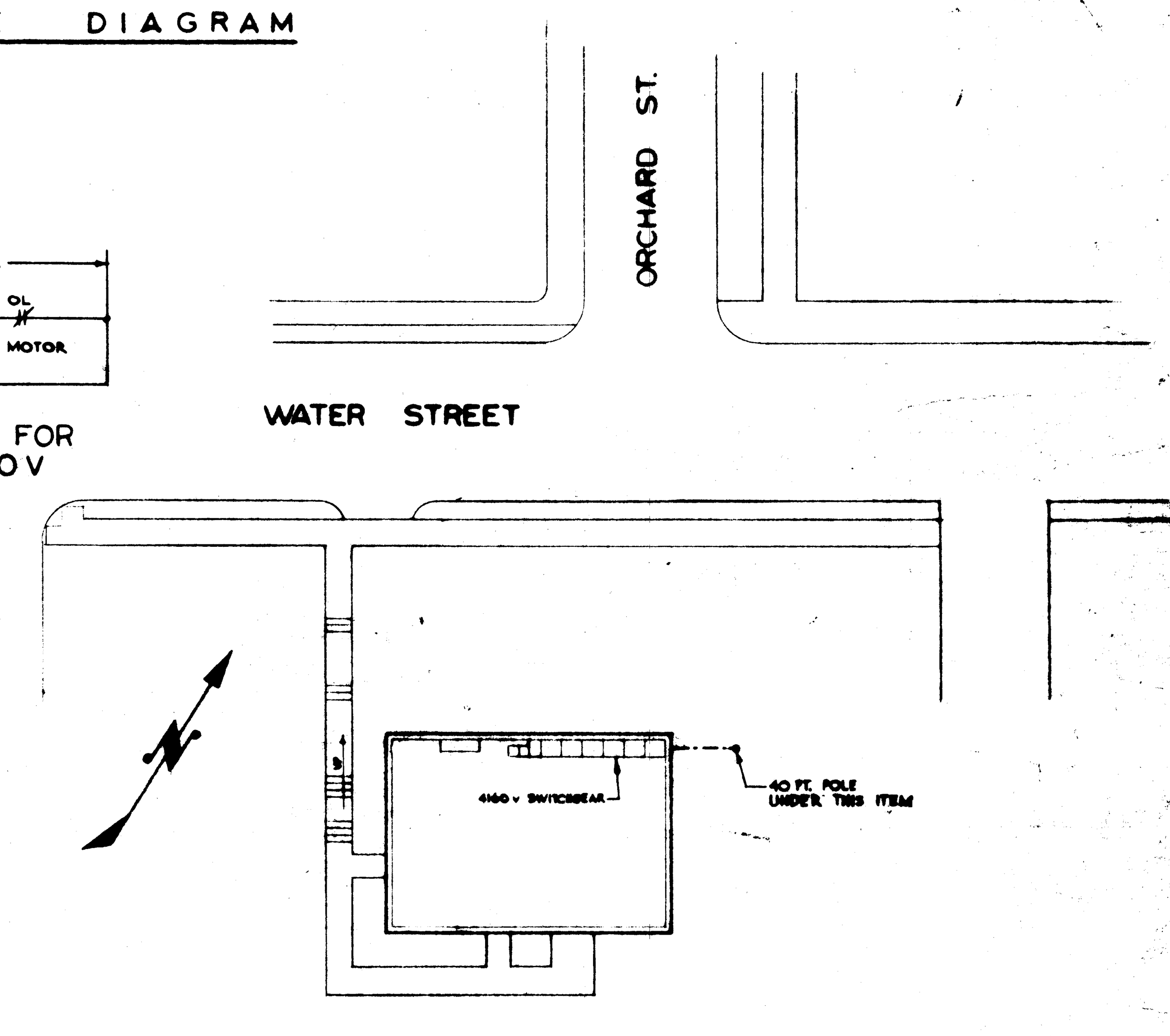
SINGLE LINE DIAGRAM



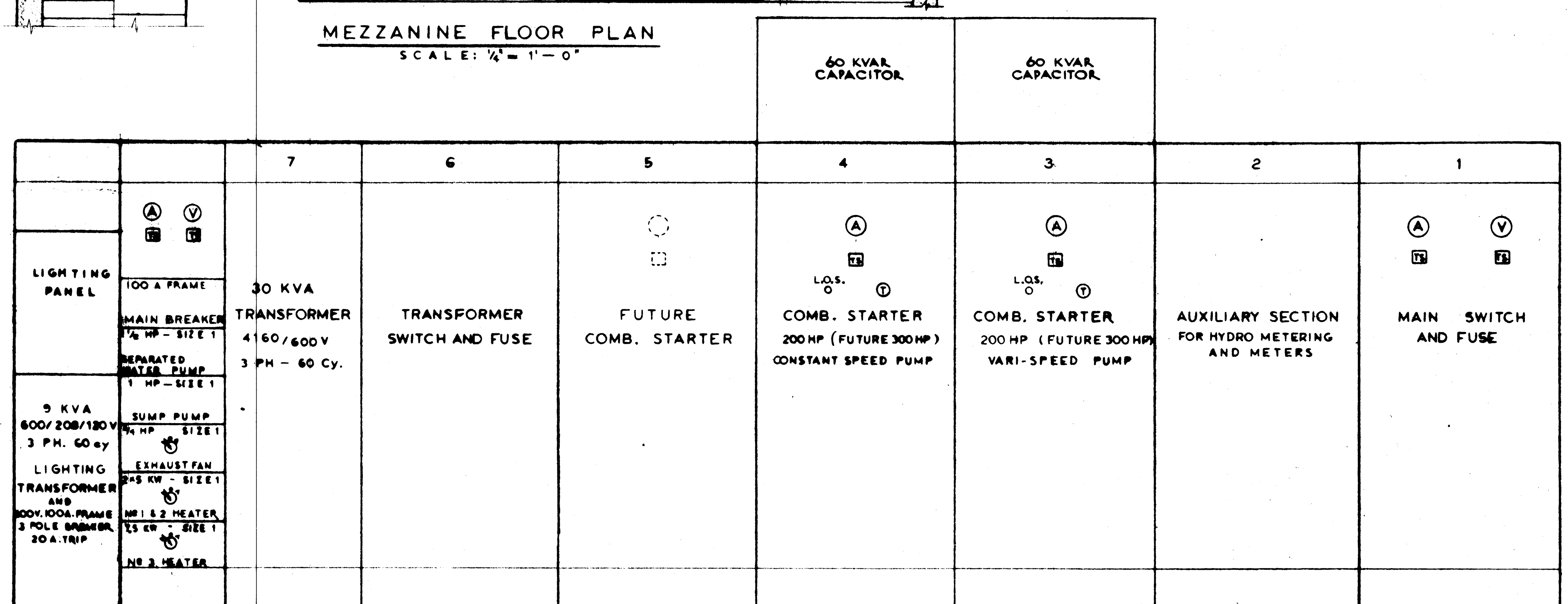
SUGGESTED CONTROL SCHEMATIC FOR EXHAUST & RECIRC. FAN AND MODUTROL MOTOR



CONTROL SCHEMATIC FOR HEATER Nº 3, 3 PH - 550 V



SITE PLAN
SCALE: 1" = 20'-0"


60 KVAR CAPACITOR
60 KVAR CAPACITOR
7 6 5 4 3 2 1
LIGHTING PANEL
100 A FRAME MAIN BREAKER
SEPARATED WATER PUMP
SUMP PUMP
EXHAUST FAN
Nº 1 & 2 HEATER
Nº 3 HEATER
9 KVA 600/208/120 V 3 PH. 60 cy LIGHTING TRANSFORMER
30 KVA TRANSFORMER 4160/600 V 3 PH - 60 Cy.
TRANSFORMER SWITCH AND FUSE
FUTURE COMB. STARTER
COMB. STARTER 200 HP (FUTURE 300 HP) CONSTANT SPEED PUMP
COMB. STARTER 200 HP (FUTURE 300 HP) VARI-SPEED PUMP
AUXILIARY SECTION FOR HYDRO METERING AND METERS
MAIN SWITCH AND FUSE
M.C.C.

ELECTRICAL SWITCHBOARD ARRANGEMENT
SCALE: ⅜" = 1'-0"

REVISED AS CONSTRUCTED DEC. 1963

CITY OF BROCKVILLE
SEWAGE DISPOSAL SYSTEM

WATER STREET SEWAGE PUMPING STATION

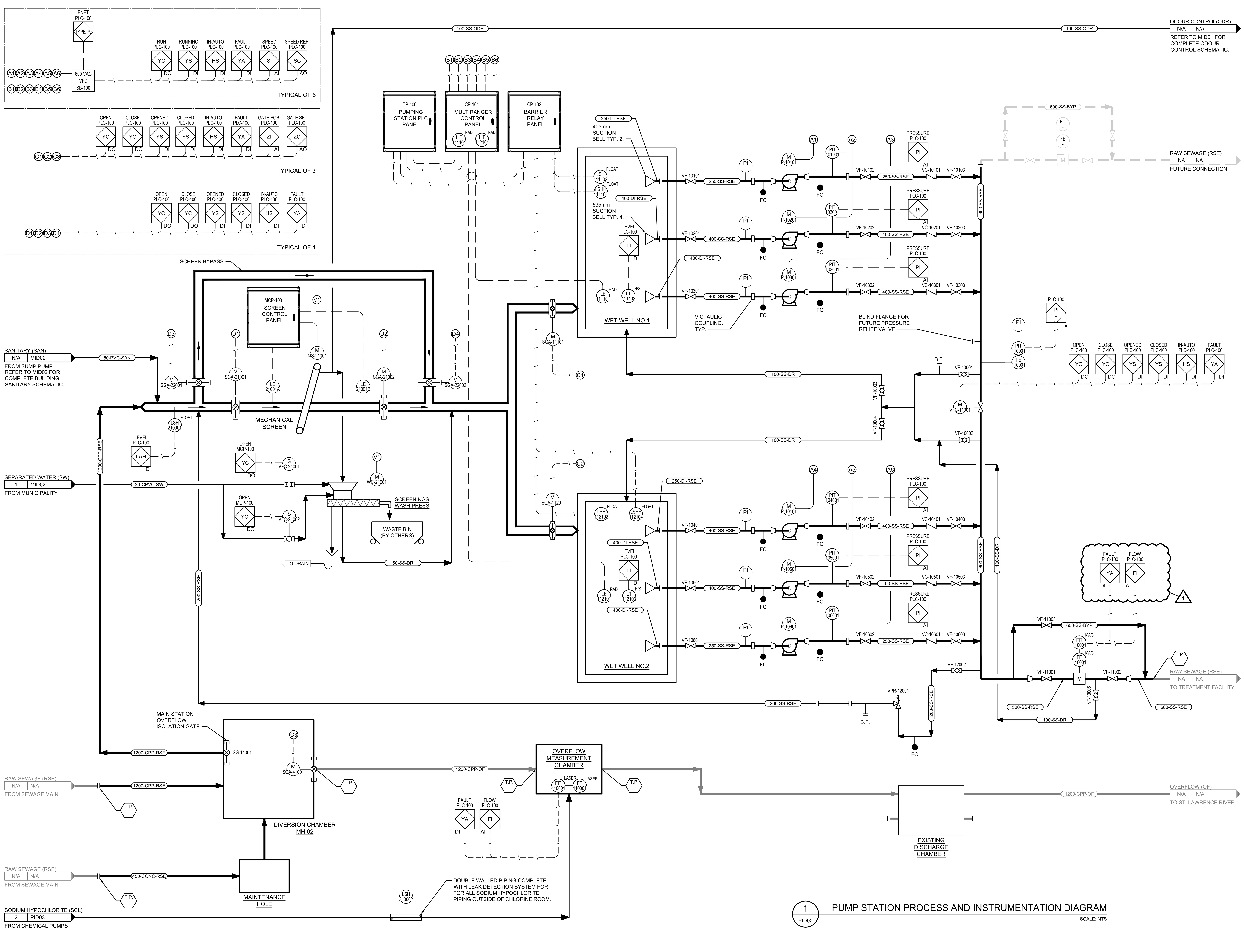
POWER LAYOUT
ELECTRICAL

GORE & STORRIE LIMITED
CONSULTING ENGINEERS
TORONTO, ONTARIO

SCALE: AS NOTED

DATE MAY 1962 DWG Nº 1

DWG. FILE



100-SS-ODR
ODOUR CONTROL(ODR)
N/A N/A
REFER TO MID01 FOR COMPLETE ODOUR CONTROL SCHEMATIC.
ENET PLC-100 TYPE 7B
RUN PLC-100 YC DO
RUNNING PLC-100 YS DI
IN-AUTO PLC-100 HS DI
FAULT PLC-100 YA DI
SPEED PLC-100 SI AI
SPEED REF. PLC-100 SC AO
600 VAC VFD SB-100
TYPICAL OF 6
OPEN PLC-100 YC DO
CLOSE PLC-100 YC DO
OPENED PLC-100 YS DI
CLOSED PLC-100 YS DI
IN-AUTO PLC-100 HS DI
FAULT PLC-100 YA DI
GATE POS. PLC-100 ZI AI
GATE SET PLC-100 ZC AO
TYPICAL OF 3
TYPICAL OF 4
CP-100 PUMPING STATION PLC PANEL
CP-101 MULTIRANGER CONTROL PANEL
CP-102 BARRIER RELAY PANEL
LIT 11101 RAD
LIT 12101 RAD
600-SS-BYP
FIT
FE
RAW SEWAGE (RSE)
NA NA
FUTURE CONNECTION
250-DI-RSE
405mm SUCTION BELL TYP. 2.
535mm SUCTION BELL TYP. 4.
400-DI-RSE
LSH 11102 FLOAT
LSHH 11104 FLOAT
LEVEL PLC-100 LI DI
LE 11101 RAD
LT 11103 H/S
WET WELL NO.1
VF-10101 250-SS-RSE
VF-10201 400-SS-RSE
VF-10301 400-SS-RSE
M P-10101
M P-10201
M P-10301
PIT 10101
PIT 10201
PIT 10301
PRESSURE PLC-100 PI AI
VF-10102 250-SS-RSE VC-10101 VF-10103
VF-10202 400-SS-RSE VC-10201 VF-10203
VF-10302 400-SS-RSE VC-10301 VF-10303
FC
600-SS-RSE
VICTAULIC COUPLING. TYP.
BLIND FLANGE FOR FUTURE PRESSURE RELIEF VALVE
PLC-100 PI AI
PIT 10001
PE 10001
SCREEN BYPASS
MCP-100 SCREEN CONTROL PANEL
SANITARY (SAN)
N/A MID02
FROM SUMP PUMP REFER TO MID02 FOR COMPLETE BUILDING SANITARY SCHEMATIC.
50-PVC-SAN
M SGA-22001
M SGA-21001
LE 21001A
M MS-21001
LE 21001B
M SGA-21002
M SGA-22002
M SGA-11101
MECHANICAL SCREEN
LSH 21001 FLOAT
LEVEL PLC-100 LAH DI
1200-CPP-RSE
OPEN MCP-100 YC DO
S VFC-21001
S VFC-21002
M WC-21001
SCREENINGS WASH PRESS
WASTE BIN (BY OTHERS)
SEPARATED WATER (SW)
1 MID02
FROM MUNICIPALITY
20-CPVC-SW
TO DRAIN
50-SS-DR
200-SS-RSE
100-SS-DR
VF-10003
VF-10004
B.F.
VF-10001
VF-10002
M VFC-11001
OPEN PLC-100 YC DO
CLOSE PLC-100 YC DO
OPENED PLC-100 YS DI
CLOSED PLC-100 YS DI
IN-AUTO PLC-100 HS DI
FAULT PLC-100 YA DI
M SGA-11201
LSH 12102 FLOAT
LSHH 12104 FLOAT
LE 12101 RAD
LT 12103 H/S
WET WELL NO.2
VF-10401 400-SS-RSE
VF-10501 400-SS-RSE
VF-10601 250-SS-RSE
M P-10401
M P-10501
M P-10601
PIT 10401
PIT 10501
PIT 10601
VF-10402 400-SS-RSE VC-10401 VF-10403
VF-10502 400-SS-RSE VC-10501 VF-10503
VF-10602 250-SS-RSE VC-10601 VF-10603
FAULT PLC-100 YA DI
FLOW PLC-100 FI AI
VF-11003 600-SS-BYP
FIT 10001 MAG
FE 10001 MAG
VF-11001
VF-11002
VF-11005
VF-12002
VPR-12001
500-SS-RSE
600-SS-RSE
RAW SEWAGE (RSE)
NA NA
TO TREATMENT FACILITY
T.P.
200-SS-RSE
B.F.
MAIN STATION OVERFLOW ISOLATION GATE
SG-11001
M SGA-41001
DIVERSION CHAMBER MH-02
1200-CPP-OF
OVERFLOW MEASUREMENT CHAMBER
FIT 41001 LASER
FE 41001 LASER
FAULT PLC-100 YA DI
FLOW PLC-100 FI AI
RAW SEWAGE (RSE)
N/A N/A
FROM SEWAGE MAIN
1200-CPP-RSE
450-CONC-RSE
MAINTENANCE HOLE
EXISTING DISCHARGE CHAMBER
OVERFLOW (OF)
N/A N/A
TO ST. LAWRENCE RIVER
LSH 310002
DOUBLE WALLED PIPING COMPLETE WITH LEAK DETECTION SYSTEM FOR ALL SODIUM HYPOCHLORITE PIPING OUTSIDE OF CHLORINE ROOM.
SODIUM HYPOCHLORITE (SCL)
2 PID03
FROM CHEMICAL PUMPS

1 PID02 PUMP STATION PROCESS AND INSTRUMENTATION DIAGRAM

SCALE: NTS

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: NTS

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:

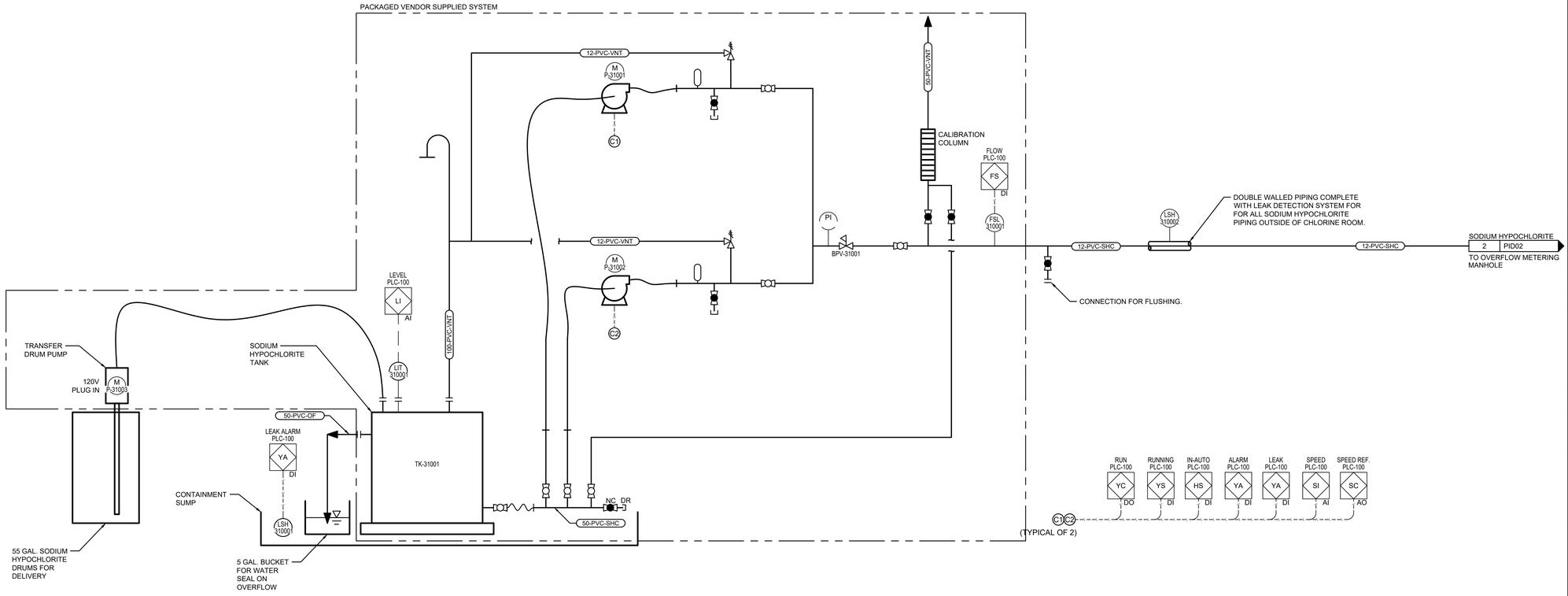
WET WELL AND PUMP STATION PROCESS AND INSTRUMENTATION DIAGRAM

DESIGN: MH/CW
DRAWN: JV
CHECKED: TP
JLR #: 32239-000

DRAWING #: PID02

PLOT DATE: Friday, May 29, 2026 8:22:40 AM

File Location: \\jlrichards\Corp\Projects\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\04-Process\PID02 WET WELL & PS PID.dwg



1 PID03 CHLORINE SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

SCALE: NTS

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: NTS

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:

CHLORINE SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

DESIGN: MH/CW	
DRAWN: JV	DRAWING #:
CHECKED: TP	PID03
JLR #: 32239-000	

PLOT DATE: Friday, May 29, 2026 8:22:39 AM

File Location: \\jlrichards\Corp\Projects\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\04-Process\PID03 CHLORINE SYSTEM.dwg

GENERAL NOTES:

GENERAL NOTES APPLY TO ALL ELECTRICAL DRAWINGS

A. CONTRACTOR TO COORDINATE WITH OTHER TRADES AND PROVIDE RECEPTACLES, BREAKERS, WIRING, CONDUIT AND OUTLET BOXES IN ORDER TO PROVIDE MAINTENANCE RECEPTACLES FOR HVAC AND SIMILAR EQUIPMENT THAT ARE LOCATED ON ROOFTOPS, IN COMPLIANCE WITH ONTARIO ELECTRICAL SAFETY CODE RULES 2-314, 26-702, 26-704 AND 26-710 AS WELL AS BULLETIN 26-27-0 AND 26-28-1. RECEPTACLES UNDER THIS PROVISION MAY NOT BE SHOWN ON LAYOUT DRAWINGS OR WITHIN LIGHTING PANEL SCHEDULES. RECEPTACLES UNDER THIS PROVISION ARE TO BE PROVIDED AS A HOUSE SYSTEM PLANNING INSTALLATION REQUIREMENT OF THE CONTRACTOR, IN COMPLIANCE WITH ONTARIO ELECTRICAL SAFETY CODE RULES AND BULLETINS.

B. ALL EXXX, IXXX, NXXX, MEXXX, MIDXXX AND PIDXXX SERIES DRAWINGS TO BE READ IN CONJUNCTION WITH THIS DRAWING. SYMBOLS AND NOTES SHOWN ON THIS DRAWING APPLY TO THOSE DRAWINGS.

C. NOT ALL SYMBOLS USED IN THE EXXX, IXXX AND NXXX SERIES DRAWINGS MAY BE SHOWN ON THIS LEGEND. IN SUCH CASES INDUSTRY STANDARD SYMBOLOGY WILL BE EMPLOYED AND A DESCRIPTION PROVIDED.

D. WHERE CABLE TRAYS ARE NOT PROVIDED FOR TECK OR SIMILAR ARMOURED CABLES, PROVIDE CONTINUOUS UNISTRUT FRAMING OR ENGINEERED CABLE SUPPORT SYSTEMS SUITABLE FOR TECK CABLE INSTALLATIONS. STRAP CABLES AT INERVALS AND IN A MANNER THAT MAINTAINS ALIGHNMENT, MINIMIZES SAGGING, AND FOLLOWS BUILDING LINES FOR A NEAT AND TIDY INSTALLATION.

E. PROVIDE CONDUITS FOR ALL SECURITY AND ACCESS CONTROL SYSTEMS WIRING. CONDUIT TYPES AND DETAILS AS INDICATED, SIZE CONDUITS TO SUIT.

F. EXXX AND IXXX SERIES DRAWINGS TO BE READ IN CONJUNCTION WITH MEXXX SERIES DRAWINGS, INCLUDING THE MOTOR STARTER AND CONTROLS LIST AS WELL AS THE HAZARDOUS AREA CLASSIFICATION DRAWINGS.

G. WHERE CONDUITS ARE USED FOR WIRING EQUIPMENT THAT MAY VIBRATE, PROVIDE LIQUID-TIGHT METALLIC FLEXIBLE CONDUITS FOR THE FINAL CONNECTION TO SUCH EQUIPMENT. SUCH EQUIPMENT SHOULD INCLUDE TRANSFORMERS, MOTORS, VALVES AND UPSS. LENGTH OF THE FLEXIBLE CONDUIT MUST NOT EXCEED 450MM, REFER TO SECTION 16133.

H. NO CABLING OR CONDUITS TO BE RUN ON ANY EXTERIOR WALL. PENETRATE EXTERIOR WALL AT LOCATION WHERE DEVICE IS TO BE MOUNTED. THERE SHOULD BE NO VISIBLE CABLING, CONDUITS OR CONDUIT FITTINGS ON ANY BUILDING EXTERIOR.

I. PROVIDE MECHANICAL PROTECTION FOR ALL CABLES TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS.

J. UNLESS OTHERWISE INDICATED, MINIMUM EMT, RGS, AND OCAL CONDUIT SIZE FOR CAT6 AND FIBRE CABLES TO BE 21MM.

K. CONTRACTOR TO PROVIDE HOUSEKEEPING PADS FOR ALL FREESTANDING ELECTRICAL EQUIPMENT. REFER TO STRUCTURAL DRAWINGS FOR FURTHER DETAILS.

PROCESS PLANS

A. REFER TO THE SINGLE LINE DIAGRAMS AND PANEL SCHEDULES FOR WIRING REQUIREMENTS.

B. PROVIDE ALUMINUM BARRIERS IN CABLE TRAYS TO SEPARATE CABLES OF DIFFERENT VOLTAGES. PROVIDE THE REQUIRED APPURTENANCES TO PREVENT GALVANIC CORROSION OF DISSIMILAR METALS. BARRIERS TO BE BONDED BACK TO GROUND.

C. PROVIDE CABLE TRAY OR UNISTRUT SUPPORT FOR VERTICAL RUNS OF CABLES .

D. ALL MOUNTING BRACKETS AND FASTENERS (INCLUDING UNISTRUT) TO BE STAINLESS STEEL WITH STAINLESS STEEL HARDWARE.

E. COORDINATE ALL CORING WITH STRUCTURAL. X-RAY CONCRETE PRIOR TO CORING. ENSURE NO REINFORCING BARS OR STRUCTURAL STEEL IS DAMAGED WITHOUT PRIOR APPROVAL FROM THE CONSULTANT.

F. COORDINATE FINAL ROUTING OF CABLE TRAYS WITH MECHANICAL, ELECTRICAL AND STRUCTURAL ELEMENTS. ENSURE CABLE TRAYS DO NOT OBSTRUCT ACCESS TO ANY PROCESS, MECHANICAL OR ELECTRICAL EQUIPMENT.

G. CONDUCTOR AND CABLE TRAY SIZES INDICATED IN THE CONTRACT DOCUMENTS ARE PROVIDED AS MINIMUM SIZES FOR TENDER PURPOSES ONLY. THE CONTRACTOR IS TO REVIEW AND PLAN FINAL CABLE ROUTING, TRAY LOADING AND ADJUST AS REQUIRED, WHILE ALSO COMPLYING WITH THE LATEST REVISION OF THE ONTARIO ELECTRICAL SAFETY CODE. DERATING HAS NOT BEEN FACTORED INTO THE DESIGN IN ORDER TO PROVIDE THE CONTRACTOR WITH THE FLEXIBILITY OF SELECTING THE FINAL ROUTE.

H. ANY CHANGES REQUIRED TO THE CABLING AND CABLE TRAYS IDENTIFIED IN THESE DOCUMENTS ARE TO BE SUBMITTED FOR REVIEW PRIOR TO ORDERING ANY MATERIALS. ADJUSTMENTS TO THE CONTRACT WILL BE MADE FOR THE INCREASED COST IN MATERIALS ONLY, WHEN COMPARED WITH WHAT IS SPECIFIED IN THE CONTRACT DOCUMENTS. NO CONSIDERATION WILL BE GIVEN FOR ADDITIONAL COMPENSATION ARISING FROM THE CONTRACTOR'S FAILURE TO PLAN THEIR WORK PRIOR TO ORDERING AND INSTALLING ANY MATERIALS.

I. PROVIDE 100% CABLE SPACING FOR POWER CABLES IN CABLE TRAYS. UPSIZE CABLE TRAY AS REQUIRED TO ACHIEVE THIS SPACING.

J. UNLESS OTHERWISE INDICATED, SIZE ALL CONDUITS TO SUIT, IN ACCORDANCE WITH THE REQUIREMENTS OF THE OESC.

K. PROVIDE A GROUND WIRE IN EACH CONDUIT CONTAINING POWER OR CONTROL CONDUCTORS. SIZE GROUND WIRES IN ACCORDANCE WITH THE REQUIREMENTS OF THE OESC.

L. CONTRACTOR TO PRE-PLAN, DOCUMENT AND SUBMIT TO THE LOCAL INSPECTOR ALL AS-CONSTRUCTED AND COMPONENT SAFETY DATA REQUIRED FOR ALL INTRINSICALLY SAFE INSTALLATIONS PROVIDED, IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS. FINAL ESA ACCEPTED DOCUMENTATION MUST BE INCLUDED IN OPERATIONS AND MAINTENANCE MATERIALS.

M. PROVIDE TWO (2) SEPARATE CONDUITS BETWEEN EACH MAGNETIC FLOWMETER SENSOR AND THE ASSOCIATED REMOTE TRANSMITTER - ONE CONDUIT FOR THE EXCITATION CABLE, THE OTHER FOR THE SIGNAL CABLE. COORDINATE DETAILS WITH THE MANUFACTURER.

N. ADDITIONAL CABLE REQUIREMENTS:
- MULTI-CONDUCTOR ARMOURED CABLES: ANIXTER 7TD SERIES, 600VAC, AL ARMOURED.
- MULTI-PAIR ARMOURED CABLES: ANIXTER 323-639-16XX SERIES
- MULTI-PAIR UNARMOURED CABLES: ANIXTER 323-631-16XX SERIES
- MULTI TRIAD ARMOURED CABLES: ANIXTER 323-679-16XX SERIES
- PORTABLE CONTROL CABLES: ANIXTER 4DS SERIES SOOW

R. DESPITE THE HAZARDOUS CLASSIFICATION RATING OUTLINED IN DRAWING MEXXX , ALL ELECTRICAL INSTALLATIONS INSIDE THE AREAS IDENTIFIED ON DRAWING MEXXX AS ZONE 2 ENVIRONMENTS SHALL BE RATED FOR A ZONE 1 ENVIRONMENT. REFER TO DRAWING MEXXX.

S. CONTRACTOR TO ENSURE THAT THE DISPLAYS FOR ALL INSTRUMENTS, AS WELL AS THE DISPLAYS ON ALL PANELS, ARE FULLY VISIBLE AND ACCESSIBLE. COORDINATE WITH TRADES.

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
B.O.C.T.	BOTTOM OF CABLE TRAY ABOVE A.F.F
B.O.F.	BOTTOM OF FLOAT
DTT	DRY TYPE TRANSFORMER
E	EMERGENCY POWER
ES	ETHERNET SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND CONDUCTOR
HOA	HAND-OFF-AUTO
IG	ISOLATED GROUND
JB	JUNCTION BOX (POWER OR COMBINED DISCRETE & ANALOG)
JBA	ANALOG JUNCTION BOX
JBD	DISCRETE JUNCTION BOX
MCC	MOTOR CONTROL CENTRE
MCS	MOULDED CASE SWITCH
MIO	MODULAR PLC I/O
MTS	MANUAL TRANSFER SWITCH
N	NORMAL POWER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O/C	OVER COUNTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
TL	TWIST LOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WP	WEATHER PROOF

RACEWAY REQUIREMENTS

AREA DESCRIPTION	RACEWAY TYPE
I&C / ELECTRICAL ROOM	SURFACE MOUNT, EMT c/w LIQUID-TIGHT FITTINGS
GROUND FLOOR ROOMS (ABOVE GRADE)	SURFACE MOUNT, EMT c/w LIQUIDTIGHT FITTINGS
PIPE GALLERY/ PUMP ROOM (BELOW GRADE)	SURFACE MOUNT, RGS OR TECK90 (NO PVC)
WET WELL	SURFACE MOUNT, RGS OR TECK90 c/w RATED CONNECTORS
EXTERIOR (ABOVE GRADE)	SURFACE MOUNT, RAC (NO TECK90 OR PVC)
EXTERIOR (BELOW GRADE)	CONCRETE ENCASED DB2 PVC OR TECK90 C/W RATED CONNECTORS
SCREEN ROOM	SURFACE MOUNT RGS OR TECK90 C/W RATED CONNECTORS

HOUSE SYSTEMS WIRING / CABLE GUIDES SCHEDULE

COPPER CONDUCTORS IN A RACEWAY

MAXIMUM CIRCUIT AMPERAGE	SINGLE PHASE CIRCUIT	THREE PHASE CIRCUIT
15 AMP	2c-#12 AWG RW90 + GND IN 21mm C	3c-#12 AWG RW90 + GND IN 21mm C
20 AMP.	2c-#12 AWG RW90 + GND IN 21mm C	3c-#12 AWG RW90 + GND IN 21mm C
30 AMP.	2c-#10 AWG RW90 + GND IN 21mm C	3c-#10 AWG RW90 + GND IN 21mm C

NOTE: MINIMUM SIZES ONLY. INCREASE CONDUIT SIZE AS REQUIRED TO MAINTAIN MAXIMUM FILL OF 40%

HOUSE SERVICES PLANS

A. COORDINATE LIGHTING MOUNTING HEIGHTS WITH MECHANICAL EQUIPMENT. LIGHTING NOT TO BE OBSTRUCTED OR INTERFERE WITH ANY MECHANICAL OR ELECTRICAL EQUIPMENT.

B. ALL RECEPTACLES IN THE PROCESS AREAS TO BE MOUNTED AT 1200MM A.F.F.

C. REFER TO SERIES DRAWINGS FOR PANEL SCHEDULES.

D. NO CABLING OR CONDUITS TO BE RUN HORIZONTALLY ON ANY EXTERIOR WALL. PENETRATE EXTERIOR WALL AT LOCATION WHERE DEVICE IS TO BE MOUNTED. THERE SHOULD BE NO VISIBLE HORIZONTAL CABLING OR CONDUITS ON BUILDING EXTERIOR.

E. UNLESS OTHERWISE INDICATED, SIZE ALL CONDUITS TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS.

F. PROVIDE A GROUND WIRE IN EACH CONDUIT CONTAINING POWER OR CONTROL CONDUCTORS. SIZE GROUND WIRES TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS.

G. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING CHAINS AND OTHER APPURTENANCES TO SECURE LIGHTING FIXTURES TO AVOID INTERFERENCES WITH MECHANICAL, ARCHITECTURAL AND STRUCTURAL ELEMENTS AND TO PREVENT SUCH ITEMS FROM DIMINISHING THE LIGHTING LEVELS, WHETHER IT IS CALLED FOR EXPLICITLY OR NOT IN THE DRAWINGS. REFER TO SECTION AS NOTED IN SECTION 16500, ALL CHAINS FOR LIGHTING INSIDE PROCESS AND WET/DAMP AREAS SHALL BE STAINLESS STEEL C/W STAINLESS STEEL MOUNTING HARDWARE

H. JUNCTION BOX, CONDUIT, TRAPEZE HANGER AND SUPPORT CHANNEL SYSTEMS ARE NOT PERMITTED TO BE INSTALLED AND / OR SECURED DIRECTLY TO UNDERSIDE OF STEEL ROOF DECK SYSTEM. SECURE SUCH SUPPORT CHANNEL AND / OR TRAPEZE HANGERS TO STRUCTURAL OPEN WEB STEEL JOIST.

I. WALL MOUNTED EMERGENCY LIGHTS TO BE MOUNTED AT 2400MM A.F.F. COORDINATE WITH SITE CONDITIONS. THE ONTARIO ELECTRICAL SAFETY CODE REQUIRES RECEPTACLES TO WHICH UNIT EQUIPMENT IS TO BE CONNECTED SHALL NOT BE MORE THAN 1500MM FROM THE LOCATION OF THE UNIT EQUIPMENT. NOTE THAT SUCH RECEPTACLES MAY NOT BE SHOWN ON THE DRAWINGS. PROVIDE ALL SUCH RECEPTACLES.

J. ALL DISCONNECTS FOR MECHANICAL LOADS MAY NOT BE SHOWN ON DRAWINGS. PROVIDE LOCAL DISCONNECTS TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS. REFER TO SINGLE LINE DIAGRAMS, PIDS, MIDS, MOTOR STARTER AND CONTROL LIST AS WELL AS SPECIFICATION SECTION 16440 WHERE SUCH DEVICES ARE REQUIRED (FOR ANY REASON).

K. COORDINATE THE LOCATION OF WASHROOM RECEPTACLES WITH ARCHITECTURE PRIOR TO THE INSTALLATION OF THE ASSOCIATED CONDUITS AND WIRING.

L. PROVIDE STAINLESS STEEL BRACKETS AND FASTENERS, AS REQUIRED, FOR DISCONNECTS AND ALL OTHER EQUIPMENT.

CONTROLS SCHEMATICS SYMBOLS

	ADJUSTABILITY
	BATTERY
	CAPACITOR
	COIL, OPERATING
	CONDUCTOR, CROSSING OF PATHS OR CONDUCTORS NOT CONNECTED
	CONDUCTOR, JUNCTIONS OF CONNECTED PATHS, CONDUCTORS OR WIRES
(SHIELD)	CONDUCTOR, SHIELDED
	CONTACT, NORMALLY CLOSED
	CONTACT, NORMALLY OPEN
T.O.	CONTACT, TIME DELAY, NORMALLY OPEN WITH TIME DELAY CLOSING (T.C.)
T.O.	CONTACT, TIME DELAY, NORMALLY OPEN WITH TIME DELAY OPENING (T.O.)
T.O.	CONTACT, TIME DELAY, NORMALLY CLOSED WITH TIME DELAY OPENING (T.O.)
T.C.	CONTACT, TIME DELAY, NORMALLY CLOSED WITH TIME DELAY CLOSING (T.C.)
FU	FUSE
GRD	GROUND, CHASSIS OR FRAME
	LIGHT, INDICATING
	LIGHT, INDICATING, PUSH TO TEST
AM	METER (INSTRUMENT)
M	MOTOR, THREE-PHASE, INDUCTION
OL CONTACT / ELEMENT	OVERLOAD RELAY, THERMAL
	RESISTOR, ADJUSTABLE (RHEOSTAT)
	SHIELD, SHIELDING
	SOLID-STATE ELEMENTS OR DEVICES
	LIMIT SWITCH (POSITION SWITCH) NORMALLY OPEN
	LIMIT SWITCH (POSITION SWITCH) NORMALLY OPEN, HELD CLOSED
	LIMIT SWITCH (POSITION SWITCH) NORMALLY CLOSED
	LIMIT SWITCH (POSITION SWITCH) NORMALLY CLOSED, HELD OPEN
	FLOAT SWITCH, CLOSING ON RISING LEVEL
	FLOAT SWITCH, OPENING ON RISING LEVEL
	PRESSURE SWITCH, CLOSED BY RISING PRESSURE
	PRESSURE SWITCH, OPENED BY RISING PRESSURE
	MOMENTARY OR SPRING RETURN, NORMALLY OPEN CIRCUIT CLOSING-MAKE
	MOMENTARY OR SPRING RETURN, NORMALLY OPEN AND NORMALLY CLOSED
	MOMENTARY OR SPRING RETURN, NORMALLY OPEN AND NORMALLY CLOSED, DOUBLE CIRCUIT
	MUSHROOM HEAD, APPLIED TO TWO CIRCUIT PUSHBUTTON
	TEMPERATURE SWITCH, CLOSED BY RISING TEMPERATURE
	TEMPERATURE SWITCH, OPENED BY RISING TEMPERATURE
	SINGLE POLE DOUBLE THROW SWITCH
	SHUNT TRIP

RECEPTACLE SYMBOLS

	20A, 125V, NEMA 5-20R T-SLOT DUPLEX RECEPTACLE
X2	ZONE 2 RATED DUPLEX RECEPTACLE
GFCI	20A, 125V, NEMA 5-20R T-SLOT GFCI DUPLEX RECEPTACLE
GFCI/WP	20A, 125V, NEMA 5-20R T-SLOT GFCI WP "IN USE" DUPLEX RECEPTACLE
	MISCELLANEOUS, TYPE AS INDICATED

POWER SYMBOLS

JB	JUNCTION BOX
	FUSED DISCONNECT SWITCH
	UNFUSED DISCONNECT SWITCH
	EXPLOSION PROOF UNFUSED DISCONNECT SWITCH
	COMBINATION STARTER
	SINGLE PHASE MOTOR (INDICATED HP)
	THREE PHASE MOTOR (INDICATED HP)
	HARD WIRED
	PANELBOARD
	SURGE PROTECTIVE DEVICE
	CIRCUIT BREAKER
	GENERATOR
M	POWER MONITOR WITH CT/PT
	EYS FITTING
	CABLE TRAY, SIZE AS INDICATED
N-TIER	MULTI-TIER CABLE TRAY SYSTEM, SIZE AND NUMBER OF TIERS AS INDICATED
	DRY TYPE TRANSFORMER, TYPE AS INDICATED

LIGHTING SYMBOLS

	SWITCH (CIRCUIT AS INDICATED) ('X1' DENOTES ZONE 1 RATED, 'X2' DENOTES ZONE 2 RATED)
3PT	3-POSITION TOGGLE SWITCH (CIRCUIT AS INDICATED)
M	MOTOR RATED SWITCH (CIRCUIT AS INDICATED)
OS	CEILING MOUNTED OCCUPANCY SENSOR
PC	PHOTOCELL
	LED LIGHT FIXTURE, TYPE AS INDICATED
	WALL MOUNTED FIXTURE TYPE AS INDICATED
1 E E	DUAL HEAD EMERGENCY LIGHTING BATTERY UNIT
	DOUBLE REMOTE EMERGENCY LIGHT HEAD
	WALL MOUNTED EXIT SIGN
E E	COMBINATION DUAL HEAD EMERGENCY BATTERY UNIT / EXIT SIGN
1 MD	EXTERIOR RATED AIMABLE MOTION SENSOR

MISCELLANEOUS

T	THERMOSTAT
VFD	VARIABLE FREQUENCY DRIVE
	ELECTRIC UNIT HEATER
C	EQUIPMENT CONTROLLER

INSTRUMENTATION SYMBOLS

ABC 12345	SIGNALLING DEVICE
M ABC-12345	MOTORIZED EQUIPMENT
S VFC-12345	SOLENOID VALVE
ABC 12345	INSTRUMENT/DEVICE

COMMUNICATION SYMBOLS

	ETHERNET OUTLET

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

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CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:

ELECTRICAL NOTES AND LEGENDS (1 OF 2)

DESIGN:	IDM
DRAWN:	RH
CHECKED:	BM
JLR #:	32239-000
DRAWING #:	E01

PLOT DATE: Friday, May 29, 2026 8:11:00 AM

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\05-Elect\32239 LEGEND AND GENERAL NOTES.dwg

LUMINAIRE SCHEDULE

		TYPE	LAMP	DESCRIPTION	MANUFACTURER
		A1	LED 4000K 80 CRI 6400 LUMEN 50 W	175mm x 1265mm VAPOR-TIGHT LED STRIP LIGHT WITH HIGH IMPACT FROSTED PRISMATIC LENS FOR WIDE DISTRIBUTION. WET LOCATION RATED WITH SEAMLESS GASKET HOUSING AND STAINLESS STEEL LATCHES. 120 V. TO BE CHAIN HUNG. PROVIDE INTEGRAL OCCUPANCY SENSORS FOR STAIRWELLS.	- COLUMBIA LIGHTING # LXEM4-40-HL-RFP-E-U - METALUX # 4VT3-SL3C3-W-UNV-SSL-VT3SS-VBK - APPROVED EQUIVALENT.
		A2	LED 4000K 80 CRI 6400 LUMEN 50 W	175mm x 1265mm VAPOR-TIGHT LED STRIP LIGHT W/ HIGH IMPACT SMOOTH FROSTED LENS FOR GENERAL DISTRIBUTION. WET LOCATION RATED WITH SEAMLESS GASKET HOUSING AND STAINLESS STEEL LATCHES. 120 V. TO BE CHAIN HUNG. COMPLETE WITH INTEGRAL OCCUPANCY SENSOR AS REQUIRED.	- COLUMBIA LIGHTING # LXEM4-40-HL-RFP-E-U - METALUX # 4VT3-SL3C3-G-UNV-SSL-VT3SS-VBK - APPROVED EQUIVALENT.
		A3	LED 4000K 80 CRI 4000 LUMEN 32 W	175mm x 1265mm VAPOR-TIGHT LED STRIP LIGHT WITH HIGH IMPACT SMOOTH FROSTED LENS FOR GENERAL DISTRIBUTION. WET LOCATION RATED WITH SEAMLESS GASKET HOUSING AND STAINLESS STEEL LATCHES. 120 V. TO BE CHAIN HUNG. PROVIDE INTEGRAL OCCUPANCY SENSORS FOR CORRIDORS. COMPLETE WITH INTEGRAL OCCUPANCY SENSOR AS REQUIRED.	- COLUMBIA LIGHTING # LXEM4-40-VW-RFP-E-U - METALUX # 4VT3-SL3C3-G-UNV-SSL-VT3SS-VBK - APPROVED EQUIVALENT.
		A4	LED 4000K 80 CRI 8000 LUMEN 69 W	175mm x 1265mm VAPOR-TIGHT LED STRIP LIGHT WITH HIGH IMPACT FROSTED PRISMATIC LENS FOR WIDE DISTRIBUTION. WET LOCATION RATED WITH SEAMLESS GASKET HOUSING AND STAINLESS STEEL LATCHES. 120 V. TO BE CHAIN HUNG.	- COLUMBIA LIGHTING # LXEM4-40-VL-RFP-E-U - METALUX # 4VT3-LD5-8-W-UNV-CD1-SSL-VT3-SS-VBK - APPROVED EQUIVALENT
		A5	LED 3500K 90 CRI 3800 LUMEN 30 W	219mm x 610mm SURFACE MOUNTED LED LINEAR LIGHT WITH HIGH IMPACT DIFFUSE POLYCARBONATE LENS FOR GENERAL DISTRIBUTION. WET LOCATION RATED WITH SEAMLESS GASKET HOUSING AND STAINLESS STEEL LATCHES. 120 V. TO BE SURFACE MOUNTED.	- CURRENT # PVNT-2-25-35K9-NDM-UNV-C-BLT - APPROVED EQUIVALENT
		D1	LED 4000K 80 CRI 5500 LUMEN 47 W	4' LINEAR LED FOR HAZARDOUS CLASS 1, DIVISION 1 LOCATION, UL844 LISTED, IP66 RATED, NEMA4X, UL 1598 WET LOCATION. RUGGED AND DURABLE DESIGN FOR HAZARDOUS, HIGH VIBRATION, IMPACT AND HOSE DOWN APPLICATIONS. TO BE CHAIN HUNG.	- BPO #HILL-4UW-44-4K-D120 - ACUITY BRANDS # HXPL 5L-5000K - RIG-A-LITE # XP LED SERIES - APPROVED EQUIVALENT
		D2	LED 5000K 8000 LUMEN 94W	HEAVY DUTY WALL MOUNTED EXPLOSION PROOF LED FIXTURE SUITABLE FOR CLASS 1 DIVISION 1 AREA. WET LOCATION NEMA 4X RATED HOUSING WITH EXTERNAL WIREGUARD. 120V.	- BPO #HILL-C-EX-60W-C2-N-4K-120 - HOLOPHANE # HRLL-8L-AS-GG-WL - HUBBELL # HLEML-4530B2-G-AN - CROUSE-HINDS # EVLL7LCBX21/UNV1 - APPROVED EQUIVALENT
		D3	LED 4000K 8000 LUMEN 68W	4' LINEAR LED FOR HAZARDOUS ZONE 2 LOCATION, UL844 LISTED, IP65, IP66 AND IP67 RATED, NEMA4X, UL 1598 WET LOCATION. DURABLE DESIGN FOR HAZARDOUS, HIGH VIBRATION, IMPACT AND HOSE DOWN APPLICATIONS. TO BE CHAIN HUNG OR WALL MOUNTED (REFER TO PLANS AND STAIR SECTION)	- COLUMBIA LIGHTING # HEM4-40HL-DFA-EU - FAL-EX-T060-227-4K0-70-120-SP-FR-00-X - APPROVED EQUIVALENT
		L4	LED 3500K 80 CRI 2000 LUMEN 25W	2' LINEAR VANITY LIGHT. WALL MOUNTED. SUITABLE FOR DAMP LOCATION.	- COLUMBIA LIGHTING # MPS2-35MW-CW-EDU-MPSCE - COOPER # 2BCLED-LD4-20SL-F-UNV-L835-CD1-U - APPROVED EQUIVALENT
		L1	LED 3500K 80 CRI 1800 LUMEN 14.5W	4' x 3" RECESSED LINEAR STRIP LIGHT. TRIGAIN, 90CRI 126LPW. TO BE RECESSED IN EXTERIOR CANOPY. SUITABLE FOR WET LOCATIONS.	- LITECONTROL # 3W-DW-D-4-4-SOFW-CX-30K9-D045-1C-UNV - APPROVED EQUIVALENT
		L2	LED 3000K 80 CRI 840 LM/FT 14.12W/FT	WALL MOUNTED LED WALL GRAZING LINEAR LUMINAIRE. PROGRESSIVE THERMAL PROTECTION. ULTRA NARROW BEAM FOR WALL GRAZING. IP66, SUITABLE FOR OUTDOOR APPLICATIONS.	- GVA # STR10-300-CM-10W-R300-3083-L6-10-NL-INF - APPROVED EQUIVALENT
		P1	LED 3000K 80 CRI 200 LUMENS 3W	120V LINEAR LED STRIP WITH INTEGRAL DRIVER AND DIMMING CAPABILITY; FLEXIBLE TAPE SYSTEM COMPLETE WITH ALUMINUM MOUNTING CHANNELS FOR EXTERIOR CONTINUOUS ARCHITECTURAL LIGHTING APPLICATIONS. FIXTURE TO BE INSTALLED BELOW PLANTER FACE CAP; REFER TO DETAILS 8 & 9/A40. ASSEMBLY SHALL BE VANDAL-RESISTANT, COMPACT, AND VISUALLY UNOBTRUSIVE.	- KLUS # KWP-LV30-1213-120V + E69203 - APPROVED EQUIVALENT
		O1	LED 3000K 80 CRI 2000 LUMEN 14W	WALL MOUNTED LED LUMINAIRE WITH HEAVY-WALL DIE CAST ALUMINIUM HOUSING AND REMOVABLE HINGED DOOR FRAME. HIGH EFFICIENCY LED OPTICS TO SHAPE THE LIGHT OUTPUT. TYPE 4W DISTRIBUTION.	- BEACON # VPW1-24L-15-3K7-4W - APPROVED EQUIVALENT
		O2	LED 3000K 80 CRI 3000 LUMEN 23W	WALL MOUNTED LED LUMINAIRE WITH HEAVY-WALL, DIE CAST ALUMINIUM HOUSING AND REMOVABLE HINGED DOOR FRAME. HIGH EFFICIENCY LED OPTICS TO SHAPE THE LIGHT OUTPUT. TYPE 4F DISTRIBUTION.	- BEACON # VPW1-24L-25-3K7-4F - APPROVED EQUIVALENT

LUMINAIRE SCHEDULE

		TYPE	LAMP	DESCRIPTION	MANUFACTURER
			LED EXIT SIGN	WALL MOUNTED RUNNING MAN STYLE EXIT SIGN. STEEL CONSTRUCTION PAINTED WHITE. 120V INPUT VOLTAGE, 24VDC BACKUP VOLTAGE.	- READY-LITE #RS3WU - AIMLITE RPST SERIES - EMERGI-LITE #ES3WU - APPROVED EQUIVALENT
		EBU	LED EQUIVALENT TO 18 WATT HALOGEN	24V EMERGENCY BATTERY UNIT c/w DOUBLE LIGHTING HEADS. STEEL CONSTRUCTION PAINTED WHITE. AUTO TESTING WITH SELF DIAGNOSTICS. BATTERY SIZED TO PROVIDE 30 MINUTES OF LIGHTING WITH CONNECTED LOAD. 120V INPUT VOLTAGE.	- READY-LITE # LDX24-1442LD14 - AIMLITE EBST SERIES - EMERGI-LITE # 24ESL144/2LM - APPROVED EQUIVALENT
		R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	24V REMOTE EMERGENCY LIGHTING c/w DOUBLE LIGHTING HEADS. WHITE IN COLOUR.	- READY-LITE # RM2-LD14 - AIMLITE RMSM SERIES - EMERGI-LITE # EF9DM-LM - APPROVED EQUIVALENT
	X1	R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	EMERGENCY LIGHTING WITH DOUBLE HEAD. CLASS 1, DIVISION 1 HAZARDOUS LOCATION c/w 30 MIN. MAINTENANCE FREE BATTERY. CSA CERTIFIED TO C22.2 #137, C22.2 #141-15, C860-11.	- READY LITE - LDX-EXP-P SERIES - STANPRO - PRMY SERIES - APPROVED EQUIVALENT.
	X2	R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	EMERGENCY LIGHTING WITH DOUBLE HEAD. CLASS 1, DIVISION 2 HAZARDOUS LOCATION c/w 30 MIN. MAINTENANCE FREE BATTERY. CSA CERTIFIED TO C22.2 #137, C22.2 #141-15, C860-11.	- READY LITE - LDX-EXP-P SERIES - STANPRO - SLBXPII SERIES - APPROVED EQUIVALENT
		EXIT/ R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	COMBINATION PICTOGRAM EXIT SIGN AND EMERGENCY LIGHTING WITH DOUBLE HEAD. MAINTENANCE FREE BATTERY. 120V EMERGENCY LIGHTING 12 VOLT BATTERY PACK c/w INTEGRAL AND REMOTE HEADS. SEALED LONG LIFE (10 YEARS) BATTERY SIZED TO MAINTAIN LOAD FOR 1/2 HOUR MINIMUM. EXIT SIGN FRAME AND BACKPLATE SHALL EACH BE OF ONE-PIECE STEEL CONSTRUCTION. THE FACEPLATE(S) SHALL BE CONSTRUCTED OF ROBUST CLEAR POLYCARBONATE PANELS WITH AN OPAQUE BORDER COLOURED FACTORY-WHITE. THE LIGHT SOURCE SHALL BE WHITE LIGHT EMITTING DIODES (LED) AND SHALL PROVIDE EVEN ILLUMINATION IN NORMAL AND EMERGENCY OPERATION.	- READY LITE # RAC1W12502LD10 - EMERGI-LITE # ECA1W12502LJ - APPROVED EQUIVALENT
	X1	EXIT/ R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	LED RUNNING MAN EXIT SIGN AND EMERGENCY LIGHTING, ZONE 1 HAZARDOUS LOCATION RATED WITH EMERGENCY LIGHTING HEAD. CSA CERTIFIED TO C22.2 #137, C22.2 #141-15, C860-11. MOUNTING AND FACES AS INDICATED c/w 30 MIN. MAINTENANCE FREE BATTERY.	READY LITE # LDX12-120-X-11-LD10-P2 STANPRO - PRMY SERIES
	X2	EXIT/ R-EBU	LED EQUIVALENT TO 18 WATT HALOGEN	LED RUNNING MAN EXIT SIGN AND EMERGENCY LIGHTING. ZONE 2 HAZARDOUS LOCATION RATED WITH EMERGENCY LIGHTING HEAD. CSA CERTIFIED TO C22.2 #137, C22.2 #141-15, C860-11. MOUNTING AND FACES AS INDICATED c/w 30 MIN. MAINTENANCE FREE BATTERY.	- READY LITE #RHC-G-6L36W-LD2 - STANPRO - PMRNX SERIES - APPROVED EQUIVALENT

LUMINAIRE SCHEDULE NOTES

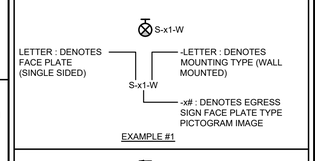
1. BATTERY UNIT CAPACITY AND RATING SHALL BE SELECTED BY THE CONTRACTOR TO SUIT THE QUANTITY AND TYPE OF EMERGENCY LIGHTING HEADS SERVED

LIGHTING CONTROL SCHEDULE

ROOM	FIXTURE TYPE	MOUNTING - UNLESS OTHERWISE INDICATED	MANUAL CONTROL			AUTOMATIC CONTROL								NOTES
						DEVICE				SETTINGS				
			ON / OFF SWITCH	ON / OFF / DIMMER SWITCH	SWITCH TYPE	SENSOR TYPE	SENSOR INTEGRAL TO FIXTURE	INDEPENDENT CEILING MOUNTED SENSOR	WALL MOUNTED COMBINATION SWITCH / SENSOR	FULL ON	PARTIAL ON TO 70%	MANUAL ON	FULL OFF	PARTIAL OFF AS INDICATED	
CHLORINE DOSING ROOM	A2	SUSPENDED				INT	●			●			●		
CORRIDORS	A3	SUSPENDED				INT	●			●				●	PARTIAL DIMMING TO 50% DURING BUSINESS HOURS / FULL OFF OVERNIGHT
STAIRWELLS (RATED)	D3	SUSPENDED													UNSWITCHED; ALWAYS ON
MECHANICAL ROOM	A1	SUSPENDED	●		T1										
ELECTRICAL ROOM	A2	SUSPENDED	●		T1										
I&C/SCADA ROOM	A1	SUSPENDED	●		T1										
SCREEN ROOM & WET WELL (RATED)	D1 / D2	SUSPENDED / WALL MOUNTED	●		Z1										LOCATED IN SCREEN ROOM; PROVIDE ZONE 1 RATED LIGHT SWITCH COMPLETE WITH PAD-LOCKABLE LOCKOUT COVERPLATE
STORAGE ROOM	A2	SUSPENDED				INT	●			●			●		
PUMP ROOM MECH ROOM	D3	WALL MOUNTED	●		T1										RATED ZONE 2 IN CASE OF VENTILATION FAILURE
WASHROOM	L4 / C1	WALL / SUSPENDED				T2		●		●			●		
PIPE GALLERY	A4	SUSPENDED	●		T1		1								
PIPE GALLERY & PUMP ROOM	D3	SUSPENDED													NIGHTLIGHT; ALWAYS ON; RATED ZONE 2 IN CASE OF VENTILATION FAILURE
PUMP ROOM	A2	SUSPENDED	●		T1										
EXTERIOR	L1, L2, P1	VARIOUS													ASTRONOMICAL TIMECLOCK CONTROL. REFER TO DETAIL 7/E07
EXTERIOR (SOUTH AND WEST)	O1, O2	WALL MOUNTED					●								ASTRONOMICAL TIMECLOCK AND MOTION SENSOR REFER TO DETAIL 7/E07, AIM MOTION SENSOR TO MINIMIZE NUISANCE ACTIVATION BEYOND FENCE LINE
EXTERIOR (EAST)	O2	WALL MOUNTED													ASTRONOMICAL TIMECLOCK CONTROL. REFER TO DETAIL 7/E07

SWITCH AND SENSOR TYPES:
T1: ON/OFF TOGGLE SWITCH
T2: CEILING MOUNTED OCCUPANCY SENSOR
Z1: ZONE 1 RATED TOGGLE SWITCH
INT: INTEGRAL TO FIXTURE

PICTOGRAM EMERGENCY EGRESS SIGN FIXTURE IDENTIFICATION SCHEDULE

EGRESS SIGN TYPE#	EGRESS SIGN PICTOGRAM IMAGE GRAPHICAL SYMBOLS AND DESCRIPTION	LEGEND FACE PLATE(S) / LEGEND MOUNTING TYPE
x1	 RUNNING MAN IN DOORWAY	LEGEND FACE PLATE(S) S - SINGLE SIDED D - DOUBLE SIDED LEGEND MOUNTING TYPE W - WALL MOUNTED C - CEILING MOUNTED WITH CANOPY E - END MOUNTED U - UNIVERSAL MOUNTED WITH CANOPY(S) ST - STEM MOUNTED WITH RAIN TIGHT FITTING
x2	 RUNNING MAN IN DOORWAY WITH PROGRESS TO THE RIGHT 90° DIRECTIONAL ARROW	EGRESS SIGN IDENTIFICATION EXAMPLES  S-x1-W LETTER : DENOTES FACE PLATE (SINGLE SIDED) -LETTER : DENOTES MOUNTING TYPE (WALL MOUNTED) -x# : DENOTES EGRESS SIGN FACE PLATE TYPE PICTOGRAM IMAGE EXAMPLE #1 D-x2/x3-C LETTER : DENOTES FACE PLATE (DOUBLE SIDED) LETTER : DENOTES MOUNTING TYPE (CEILING MOUNTED WITH CANOPY) x# / x# : DENOTES EGRESS SIGN FACE PLATE TYPES (PICTOGRAM IMAGE ON SIDE ONE AND PICTOGRAM IMAGE ON SIDE TWO.) EXAMPLE #2
x3	 RUNNING MAN IN DOORWAY WITH PROGRESS TO THE LEFT 90° DIRECTIONAL ARROW	

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PROFESSIONAL STAMP

PROJECT NORTH

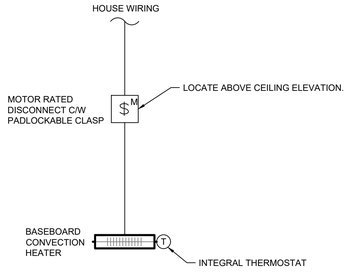
PROJECT:
BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE
CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:
ELECTRICAL NOTES AND LEGENDS (2 OF 2)

DESIGN: IDM	
DRAWN: RH	DRAWING #: E02
CHECKED: BM	
JLR #: 32239-000	

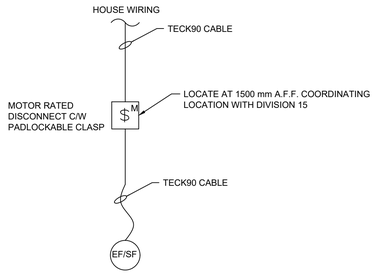
PLOT DATE: Friday, May 29, 2026 8:11:00 AM

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 LEGEND AND GENERAL NOTES.dwg



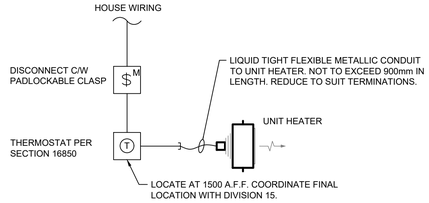
1 E07 TYPICAL BASEBOARD HEATER

SCALE: NTS



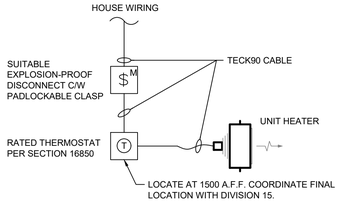
2 E07 VENTILATION SYSTEM LOGIC (FOR HARDWIRED CONTINUOUS VENTILATION FANS w/o DAMPERS)

SCALE: NTS



3 E07 TYPICAL ELECTRIC UNIT HEATER (NON-RATED)

SCALE: NTS

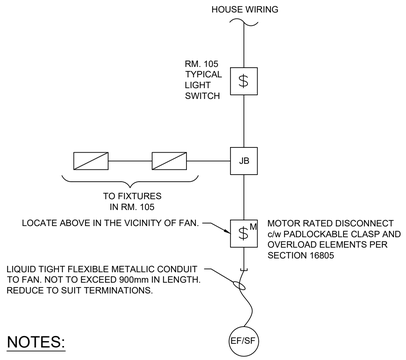


NOTES:

1. WHERE WALL-MOUNTED THERMOSTAT IS NOT REQUIRED, PROVIDE TECK90 CABLE FROM SUITABLE EXPLOSION-PROOF DISCONNECT AND THE ELECTRICAL UNIT HEATER. REFER TO ALL MID DRAWINGS.

4 E07 TYPICAL ELECTRIC UNIT HEATER (RATED)

SCALE: NTS

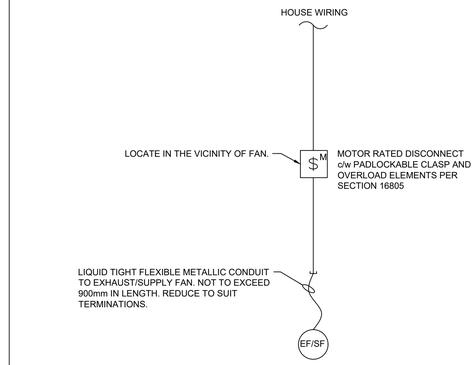


NOTES:

1. PROVIDE A DPDT MOTOR RATED LIGHT SWITCH FOR THE LIGHTS INSIDE THIS ROOM. ONE SET OF CONTACTS TO CONTROL THE LIGHTS, THE OTHER SET TO CONTROL THE FAN AND ASSOCIATED DAMPER. IN ADDITION, INTERLOCK THIS FAN WITH ASSOCIATED DAMPER SO THAT THE FAN DOES NOT RUN IF DAMPER IS NOT CONFIRMED OPEN.

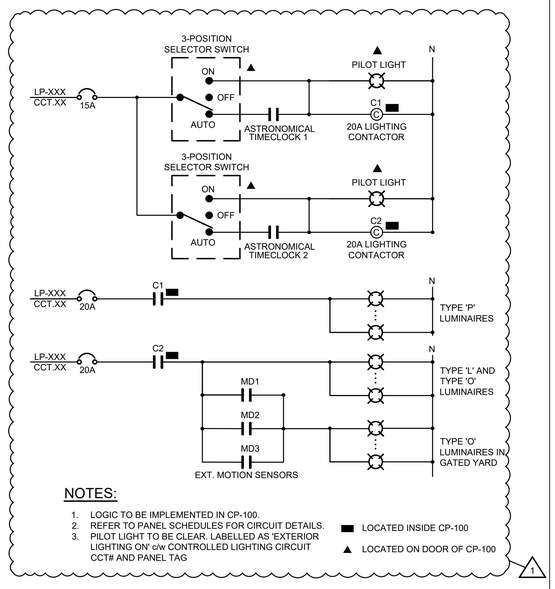
5 E07 RM. 105 VENTILATION SYSTEM LOGIC (FOR HARDWIRED CONTROLLED VENTILATION FANS)

SCALE: NTS



6 E07 NON-HAZARDOUS AREA VENTILATION SYSTEM LOGIC (FOR HARDWIRED CONTINUOUS VENTILATION FANS w/o DAMPERS)

SCALE: NTS

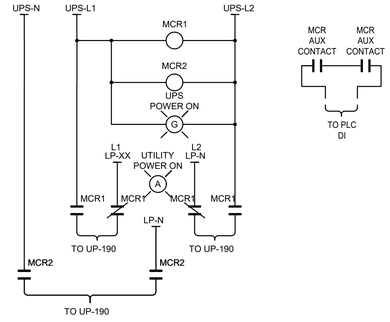


NOTES:

1. LOGIC TO BE IMPLEMENTED IN CP-100.
2. REFER TO PANEL SCHEDULES FOR CIRCUIT DETAILS.
3. PILOT LIGHT TO BE CLEAR. LABELLED AS 'EXTERIOR LIGHTING ON' c/w CONTROLLED LIGHTING CIRCUIT CCT# AND PANEL TAG

7 E07 EXTERIOR LIGHTING CONTROL LOGIC

SCALE: N.T.S.

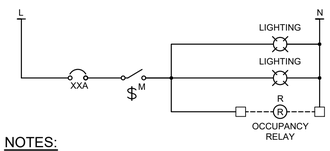


DETAIL NOTES:

1. UPDATE LOGIC FOR FINAL UPS VOLTAGE AND PHASE REQUIREMENTS. PROVIDE ADDITIONAL CONTACTORS, PILOT LIGHTS AND OTHER ACCESSORIES TO SUIT.
2. NOTE THAT THIS DETAIL APPLIES TO UPS-190. THIS LOGIC IS TO BE IMPLEMENTED INSIDE MBP-014.
3. PROVIDE A FULL VOLTAGE PILOT LIGHT. PLC TO MONITOR SWITCHING CONTACTORS SEPARATELY.
4. UPS SWITCH CONTACTOR PER ALLEN BRADLEY 100-C SERIES. NUMBER OF CONTACTS TO SUIT

5 E07 UPS POWER LOGIC

SCALE: N.T.S.

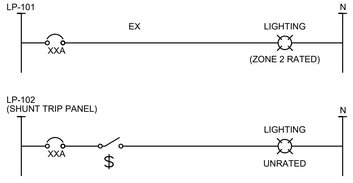


NOTES:

1. OCCUPANCY RELAY TO BE LOCATED INSIDE HVAC CONTROL PANEL.
2. REFER TO DRAWING I15.

9 E07 TYPICAL ROOM OCCUPANCY LOGIC

SCALE: N.T.S.



NOTES:

1. RATED LIGHTING IN DE-RATED AREAS ARE UNSWITCHED UNLESS OTHERWISE NOTED

10 E07 INTERIOR LIGHTING FOR DE-RATED AREAS (PUMP ROOM AND PIPE-GALLERY)

SCALE: N.T.S.

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PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

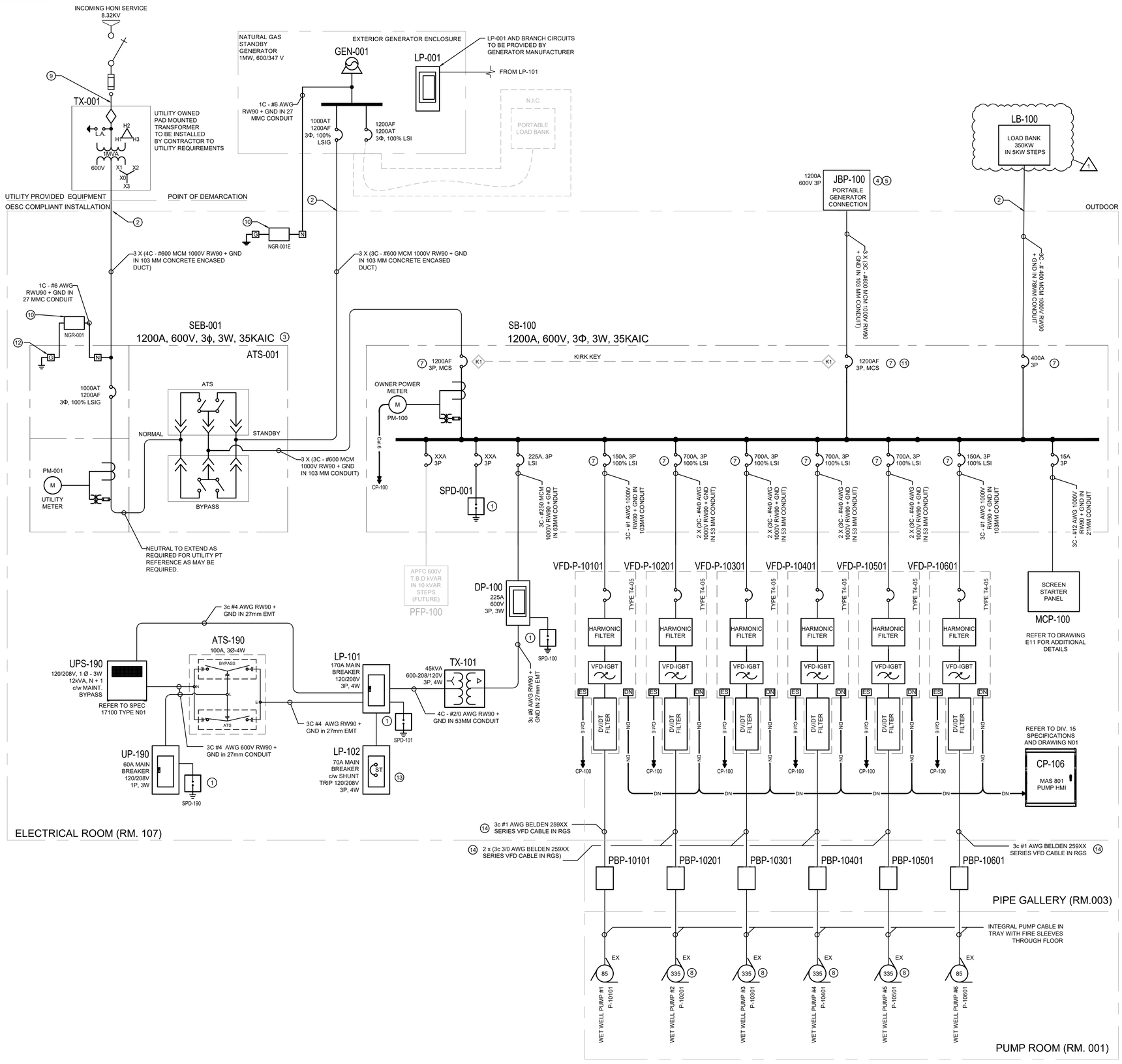
DRAWING:

ELECTRICAL DETAILS

DESIGN: IDM	
DRAWN: CS	DRAWING #:
CHECKED: BM	E07
JLR #: 32239-000	

PLOT DATE: Friday, May 29, 2026 8:10:58 AM

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 TRENCHING AND LIGHTING DETAILS.dwg



GENERAL NOTES:

A. ALL 'DP' AND 'LP' PANELS ARE SHOWN AS PARTIAL SCHEMATICS, REFER TO PANEL SCHEDULES.

B. ALL INDOOR RACEWAY INSTALLATIONS SHALL BE EMT COMPLETE WITH LIQUID-TIGHT FITTINGS UNLESS EXPLICITLY INDICATED OTHERWISE. MINIMUM EMT RACEWAY SIZE SHALL BE 21mm.

C. ALL RACEWAY INSTALLATIONS SHALL BE RAC FOR OUTDOOR LOCATIONS, UNLESS INDICATED OTHERWISE.

D. ALL UNDERGROUND INSTALLATIONS SHALL BE RIGID PVC CONDUIT OR DB2 WHERE ENCASED IN CONCRETE, UNLESS INDICATED OTHERWISE.

E. SHORT CIRCUIT kAIC RATINGS INDICATED ARE MINIMUM REQUIREMENTS TO BE PROVIDED.

F. ALL 600V SERVICE CONDUCTORS SHALL BE 1000V RATED.

G. CIRCUIT TAGS HAVE BEEN PROVIDED STRICTLY FOR CONVENIENCE PURPOSES WHEN REVIEWING THIS DRAWING WITHIN THE ELECTRICAL DRAWING SET. WHERE PROVIDED, CIRCUIT TAGS SHALL NOT IMPLY OR BE PRESUMED TO LIMIT THE CONTRACTOR'S PROVISIONAL REQUIREMENTS IN ANY WAY.

H. PLAN AND ELEVATION LAYOUT DRAWINGS MAY NOT NECESSARILY IDENTIFY A ROUTE FOR EVERY CIRCUIT TAG SHOWN ON THIS DRAWINGS.

I. REGARDLESS OF WHETHER OR NOT CIRCUIT TAGS ARE INDICATED ON THIS DRAWING:

I.A. THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR AND PROVIDE ALL REQUIRED CIRCUITS AS SPECIFIED ON THIS DRAWING. BASED ON ENDPOINT LOCATIONS INDICATED WITHIN LAYOUT DRAWINGS.

I.B. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PLAN AND PROVIDE CIRCUIT ROUTING AND INSTALLATIONS, IN FULL COMPLIANCE WITH THESE CONTRACT DOCUMENTS, FOR A COMPLETE AND FUNCTIONAL, CODE COMPLIANT SYSTEM.

DRAWING NOTES:

1. SIZE CONDUIT AS PER MANUFACTURER'S WRITTEN REQUIREMENTS. COORDINATE EXACT BREAKER SIZE WITH SPD MANUFACTURER AND PROVIDE GROUND AS PER SPD MANUFACTURER'S REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. TRANSITION DUCTBANK RACEWAYS TO RIGID GALVANIZED STEEL CONDUIT WITHIN DRYWELL. PROVIDE ZONE-2 RATED PULL BOXES AND APPROVED GAS SEALS AT TRANSITIONS, AS REQUIRED..
3. CONTRACTOR TO COORDINATE METERING CT/PT COMPARTMENT AND OTHER SPECIFIC REQUIREMENTS WITH THE LOCAL UTILITY BEFORE ORDERING EQUIPMENT.
4. PORTABLE GENERATOR JUNCTION BOX TO MEET THE FOLLOWING REQUIREMENTS:
   - CABLE CONNECTORS TO SUIT ALL CONNECTED WIRING, INCLUDING WIRING TO THE PORTABLE GENERATOR
   - SEQUENCED CONNECTION MECHANISM FOR IMPROVED SAFETY. CONNECTION AND DISCONNECTION TO THE JUNCTION BOX TO FOLLOW A SPECIFIC SEQUENCE, ENSURING GROUND CONNECTION
   - COLOUR CODED CABLE CONNECTIONS. CONNECTOR COLOUR CONFIGURATION TO SUIT
   - FACILITATES THE USE OF SINGLE CONDUCTOR CABLES AT HIGHER AMPERAGES
   - CONNECTOR TYPES TO SUIT PORTABLE GENERATOR APPLICATIONS, MALE CONNECTORS. CONTRACTOR TO PROCURE AND TURN OVER MATCHING FEMALE CONNECTORS TO THE MUNICIPALITY IN UNOPENED PACKAGES
   - REFER TO SECTION 16441 FOR ADDITIONAL REQUIREMENTS
5. INSTALLATION TO ENSURE NO WATER INGRESS INTO THE JUNCTION BOX.
6. RESERVED.
7. PROVIDE FORM C DRY CONTACT FOR SCADA MONITORING
8. 335HP MOTORS ARE LIMITED TO A MAXIMUM PUMP BHP MECHANICAL DEMAND LOAD OF 300 HP AT NAMEPLATE RPM (REDUCED IMPELLERS)
9. PROVIDE UTILITY COMPLIANT MEDIUM VOLTAGE UNDERGROUND SERVICE IN CONCRETE ENCASED DUCTBANK TO UTILITY OWNED PAD MOUNTED TRANSFORMER.
10. OESC COMPLIANT, 5A @ 347 V, CONTINUOUS DUTY RATED, NEUTRAL GROUNDING RESISTOR ASSEMBLY.
11. PROVIDE AUXILIARY CONTACTS ON BREAKER TO INTERLOCK AND DISABLE LOAD BANK WHEN BREAKER IS CLOSED.
12. PERIMETER GROUNDING LOOP SHALL SERVE AS THE FACILITY GROUNDING ELECTRODE SYSTEM. REFER TO DRAWING 1/E12 FACILITY GROUNDING DIAGRAM FOR ADDITIONAL DETAILS.
13. LP-102 MAIN BREAKER PROVIDED WITH 120V SHUNT TRIP. BREAKER SHALL AUTOMATICALLY TRIP OPEN UPON SIGNAL FROM CP-103 (GAS DETECTION PANEL) TO DE-ENERGIZE ALL UNRATED EQUIPMENT AND CONNECTED LOAD WITHIN THE DRYWELL.
14. FEEDER SIZED FOR PRICING PURPOSES ONLY. FINAL VFD CABLE INSTALLATION TO SUIT CONNECTION TO FINAL PUMP CABLE IN APPROVED SHOP DRAWINGS.

CLASSIFIED EQUIPMENT RATINGS

EX - NEMA 7 CSA EXPLOSION PROOF EQUIPMENT
IS - CSA INTRINSICALLY SAFE EQUIPMENT (LOW ENERGY CIRCUIT)

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: N.T.S.

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

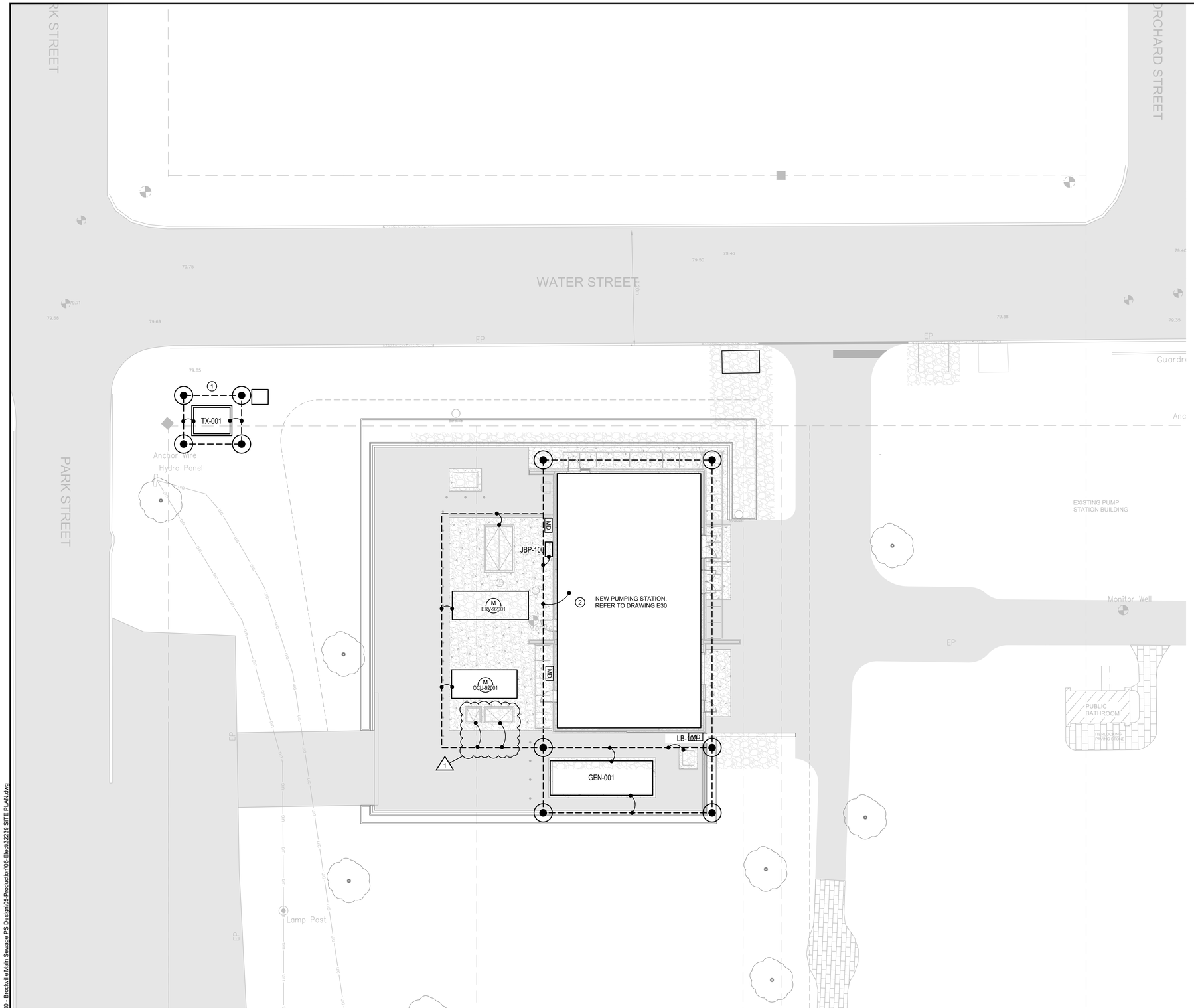
PROJECT:
BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE
CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:
SINGLE LINE DIAGRAM

DESIGN: BM	
DRAWN: AS	DRAWING #: E10
CHECKED: BM	
JLR #: 32239-000	

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 - SINGLE LINE DIAGRAM.dwg

PLOT DATE: Friday, May 29, 2026 8:11:04 AM



1 ELECTRICAL GROUNDING PLAN (E21)
SCALE: 1:150
0 1 3 5 10m

DRAWING NOTES:

1. BOND TRANSFORMER IN ACCORDANCE WITH HONI REQUIREMENTS, REFER TO DRAWING E12 FOR ADDITIONAL DETAILS.
2. BOND THE DISTRIBUTION GROUNDING SYSTEM TO THE BUILDING PERIMETER GROUNDING LOOP. THE BUILDING PERIMETER GROUNDING LOOP SHALL SERVE AS THE SYSTEM GROUNDING ELECTRODE. ALL BONDING CONNECTIONS SHALL BE CONTINUOUS, ACCESSIBLE WHERE PRACTICABLE, AND INSTALLED IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE, AND ESA REQUIREMENTS. REFER TO DRAWING E12 FOR ADDITIONAL DETAILS.

LINE TYPE LEGEND AND SYMBOLS

- 2/0 BARE COPPER GROUND WIRE
- 2/0 GREEN INSULATED COPPER GROUND WIRE
- GROUND WIRE PER OESC SECTION 10. REFER TO SINGLE LINE DIAGRAMS.
- 3000mm GROUND ROD. WHERE ROCK IS PRESENT COORDINATE WITH ESA INSPECTOR AND PROVIDE GROUNDING PLATES IN LIEU OF GROUND ROD.

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SCALE: 1:150

CLIENT: BROCKVILLE, CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca
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CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

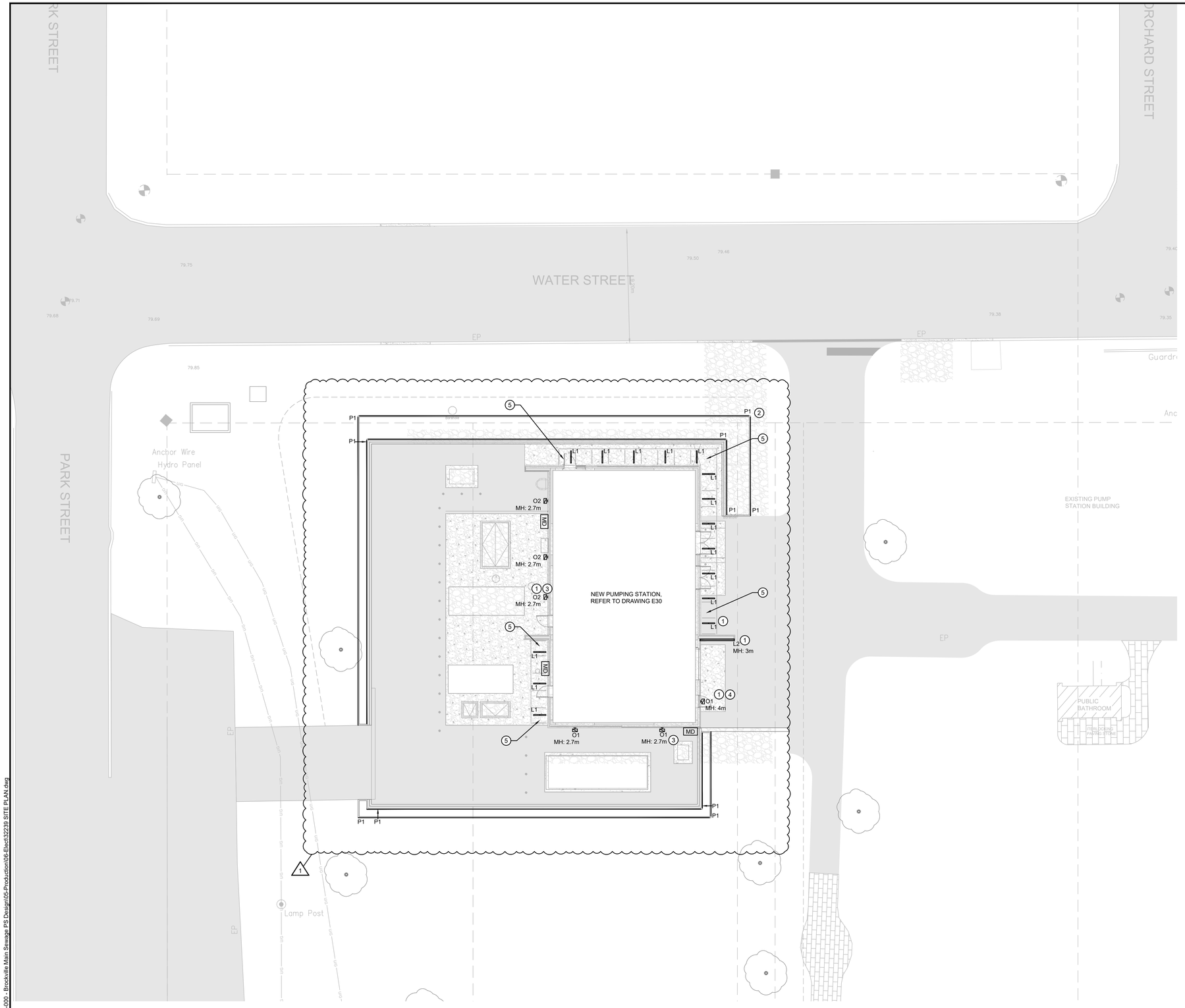
PROJECT:
BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE
CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:
ELECTRICAL GROUNDING PLAN

DESIGN: IDM	
DRAWN: CS	DRAWING #: E21
CHECKED: BM	
JLR #: 32239-000	

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 SITE PLAN.dwg

PLOT DATE: Friday, May 29, 2026 8:11:04 AM



1 SITE LIGHTING PLAN
E22
SCALE: 1:150
0 1 3 5 10m

DRAWING NOTES:

1. TYPICAL FOR TYPE O1, O2, L1 & L2:
   ALL EXTERIOR TYPES O1, O2, L1 AND L2 LIGHTING TO BE FED FROM CCT # LP-101-18
2. TYPICAL FOR TYPE P1:
   ALL EXTERIOR TYPE P1 LIGHTING TO BE FED FROM CCT # LP-101-20
3. TYPICAL FOR TYPE O- LUMINAIRES INSTALLED ON THE WEST AND SOUTH FACADE OF BUILDING
   TO BE CONTROLLED BY EXTERIOR RATED MOTION DETECTORS. REFER TO DETAIL 7/E07.
4. TYPE O2 LUMINAIRE INSTALLED ON EAST FACADE OF BUILDING TO BE CONTROLLED BY ASTRONOMICAL TIMECLOCK. REFER TO DETAIL 7/E07.
5. CONTRACTOR TO PROVIDE CONDUIT PENETRATIONS THROUGH BOTTOM OF OVERHANGS AS INDICATED. TERMINATE IN NEW INTERIOR JUNCTION BOX. CAP AND WEATHERPROOF EXTERIOR ENDS FOR FUTURE CCTV BY OTHERS. (TYPICAL OF 5)

GENERAL NOTES:

A. ALL EXTERIOR LIGHTING CONTROL PANELS AND LOW-VOLTAGE TRANSFORMERS SHALL BE LOCATED WITHIN THE BUILDING ELECTRICAL ROOM.

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1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:150

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

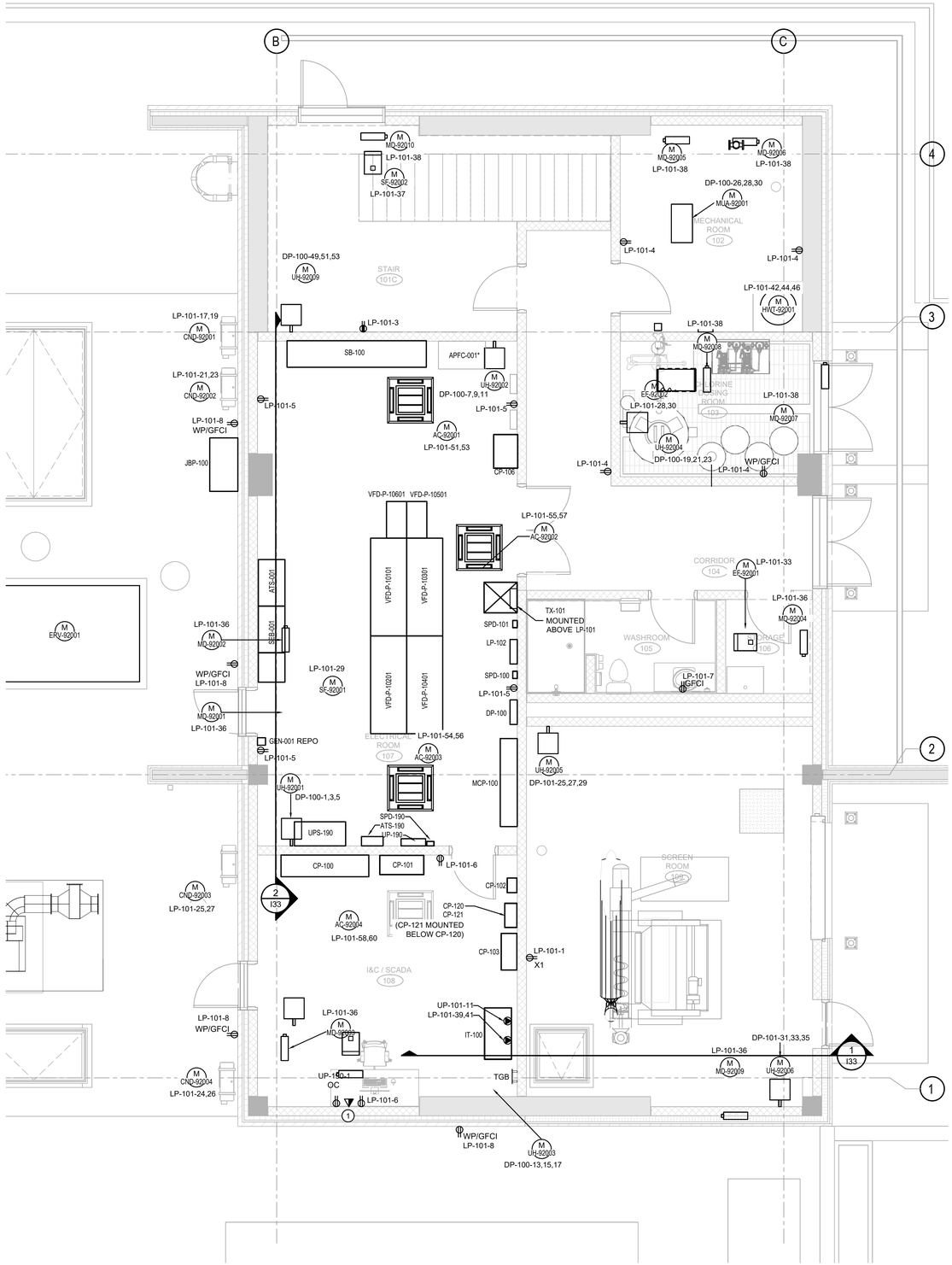
PROJECT:
BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE
CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:
SITE LIGHTING PLAN

DESIGN: IDM/RH	
DRAWN: RH	DRAWING #: E22
CHECKED: BM	
JLR #: 32239-000	

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\05-Elect\32239 SITE PLAN.dwg

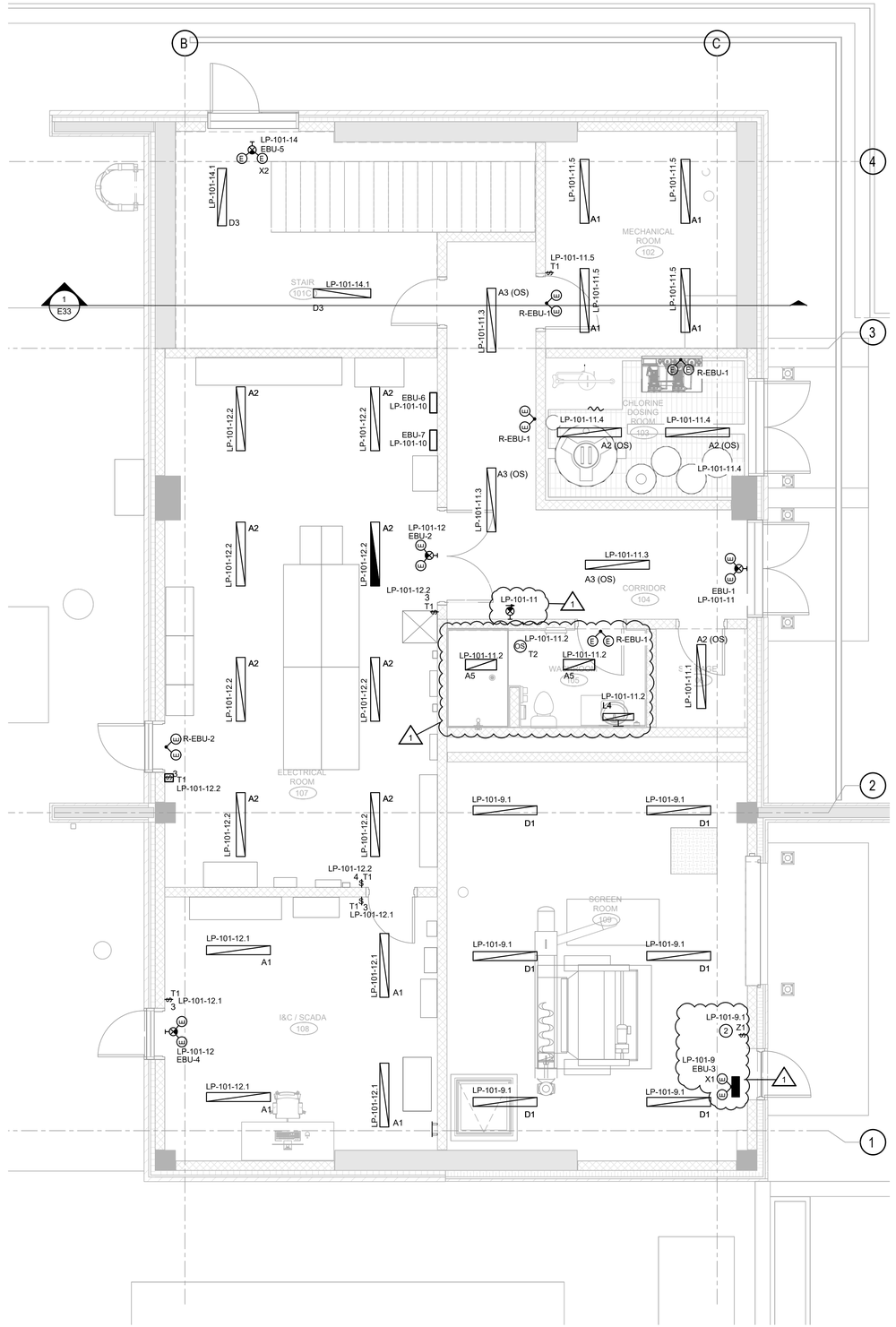
PLOT DATE: Friday, May 29, 2026 8:11:01 AM



1 E32 GROUND FLOOR HOUSE SERVICES

SCALE: 1:50

0 1 2 3 4m



2 E32 GROUND FLOOR LIGHTING PLAN

SCALE: 1:50

0 1 2 3 4m

GENERAL NOTES:

A. IN GENERAL, ONLY EQUIPMENT ENDPOINT LOCATIONS ARE INTENDED TO BE SHOWN ON THIS DRAWING. BASED ON THE IDENTIFIED EQUIPMENT LOCATIONS, THE ELECTRICAL CONTACTOR SHALL PROVIDE ALL PROCESS AND HOUSE SYSTEMS CIRCUITRY AS INDICATED ON SCHEMATIC DIAGRAMS AND/OR SPECIFIED ELSEWHERE WITHIN THE CONTRACT DOCUMENTS.

B. WHEN CIRCUIT LAYOUTS AND/OR SPECIFIC CIRCUIT ROUTING OF CIRCUITS ARE SHOWN ON THIS DRAWING
- IT IS STRICTLY PROVIDED FOR THE GENERAL UNDERSTANDING OF THE DESIGN INTENT, AS IDENTIFIED ON SCHEMATIC BASED DRAWINGS AND/OR SPECIFIED ELSEWHERE WITHIN THE CONTRACT DOCUMENTS.
- THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO REVIEW THE INSTALLATION AND MAKE ADJUSTMENTS AS NECESSARY IN ORDER TO PROVIDE A COMPLETE AND FUNCTIONAL, CODE COMPLIANT, SYSTEM.
- IT SHALL NOT IMPLY OR BE PRESUMED TO LIMIT THE CONTRACTOR'S PROVISIONAL REQUIREMENTS AS SPECIFIED ELSEWHERE WITHIN THE CONTRACT DOCUMENTS.

C. REFER TO DRAWING E22 FOR EXTERIOR LIGHTING AND ADDITIONAL REQUIREMENTS

DRAWING NOTES:

1. REFER TO DRAWING N01 FOR DETAILS.
2. PROVIDE ZONE 1 RATED LIGHT SWITCH COMPLETE WITH PADLOCK PROVISION TO PERMIT LOCKING IN THE "ON" POSITION. PROVIDE LAMACOID NAMEPLATE IDENTIFYING: "WARNING – SWITCH ALSO CONTROLS WET WELL LIGHTING."

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: AS INDICATED

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca

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CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:

GROUND FLOOR HOUSE SERVICES PLAN

DESIGN:	IDM
DRAWN:	RH
CHECKED:	BM
JLR #:	32239-000

DRAWING #: E32

PLOT DATE: Friday, May 29, 2026 8:11:08 AM

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 GROUND FLOOR HOUSE SERVICES PLAN.dwg

MOTOR STARTER AND CONTROL LIST

GENERAL			MOTOR										CONTROL DETAILS & RESPONSIBILITIES															
													STARTER						AT MOTOR				AUTOMATION				COMMENTS
DEVICE TAG	DESCRIPTION	GENERATOR SEQUENCE	DEVICE LOCATION	POWER SOURCE	VOLTAGE	PHASE	LOAD	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	TYPE	DETAIL REFERENCE	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	SUPPLIED BY	INSTALLED BY	CONTROL WIRED BY	COMMISSIONED BY	STARTER NOTES
AC 92001	ELECTRICAL ROOM INDOOR AC UNIT	0	ELECTRICAL ROOM 107	LP 101	208	1	0.3 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
AC 92002	ELECTRICAL ROOM INDOOR AC UNIT	0	ELECTRICAL ROOM 107	LP 101	208	1	0.3 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
AC 92003	ELECTRICAL ROOM INDOOR AC UNIT	0	ELECTRICAL ROOM 107	LP 101	208	1	0.3 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
AC 92004	I&C ROOM INDOOR AC UNIT	0	I&C ROOM 108	LP 101	208	1	0.3 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
CND 92001	CONDENSOR SERVING AC-92001	0	EXTERIOR	LP 101	208	1	5.8 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
CND 92002	CONDENSOR SERVING AC-92002	0	EXTERIOR	LP 101	208	1	5.8 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
CND 92003	CONDENSOR SERVING AC-92003	0	EXTERIOR	LP 101	208	1	5.8 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
CND 92004	CONDENSOR SERVING AC-92004	0	EXTERIOR	LP 101	208	1	5.8 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
EF 92001	WASHROOM EXHAUST FAN	0	WASHROOM	LP 101	120	1	0.03 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
EF 92002	CHLORINE ROOM EXHAUST FAN	0	CHLORINE DOSING 103	LP 101	120	1	0.5 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
EMH 92001	MOTORIZED HOIST	0	PIPE GALLERY 003	DP 100	600	3	3 HP	S	E	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
ERV 92001	ENERGY RECOVERY VENTILATOR	0	EXTERIOR	DP 100	600	3	7 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
HWT 92001	HOT WATER TANK	0	MECHANICAL ROOM 102	LP 101	208	3	3 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
LB 100	GENERATOR LOAD BANK	0	EXTERIOR	SB 100	600	3	300 KW	E	E	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
MD 92001	ELECTRICAL ROOM AIR INTAKE MOTORIZED DAMPER	0	ELECTRICAL ROOM 107	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92002	ELECTRICAL ROOM AIR EXHAUST MOTORIZED DAMPER	0	ELECTRICAL ROOM 107	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92003	I&C EXHAUST MOTORIZED DAMPER	0	I&C ROOM 108	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92004	WASHROOM MOTORIZED DAMPER	0	WASHROOM	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92005	MECHANICAL ROOM MOTORIZED DAMPER	0	MECHANICAL ROOM 102	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92006	MECHANICAL ROOM MOTORIZED DAMPER	0	MECHANICAL ROOM 102	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92007	CHLORINE ROOM EXHUAST MOTORIZED DAMPER	0	CHLORINE DOSING 103	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92008	CHLORINE ROOM EXHUAST MOTORIZED DAMPER	0	CHLORINE DOSING 103	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92009	SCREEN ROOM INTAKE MOTORIZED DAMPER	0	SCREEN ROOM 109	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MD 92010	STAIRWELL INTAKE MOTORIZED DAMPER	0	STAIRWELL 101	LP 101	120	1	10 W	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
MS 21001	MECHANICAL BAR SCREEN	0	SCREEN ROOM 109	MCP 100	600	3	1.5 HP	V	M	E	G	VENDOR		V	E	E	G	V	E	E	G	V	E	E	G	ZONE 1
MUA 92001	MECHANICAL ROOM MAKE UP AIR UNIT	0	MECHANICAL ROOM 102	DP 100	600	3	8 KW	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	8 KW HEATER, 0.23HP MOTOR
OCU 92001	ODOUR CONTROL UNIT	0	EXTERIOR	DP 100	600	3	5 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
P 10101	WET WELL PUMP #1	0	PUMP ROOM 001	SB 100	600	3	85 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 10201	WET WELL PUMP #2	0	PUMP ROOM 001	SB 100	600	3	335 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 10301	WET WELL PUMP #3	0	PUMP ROOM 001	SB 100	600	3	335 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 10401	WET WELL PUMP #4	0	PUMP ROOM 001	SB 100	600	3	335 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 10501	WET WELL PUMP #5	0	PUMP ROOM 001	SB 100	600	3	335 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 10601	WET WELL PUMP #6	0	PUMP ROOM 001	SB 100	600	3	85 HP	M	M	E	G	TYPE T4-05	1/E13	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 2 - SUBMERSIBLE
P 31001	SODIUM HYPOCHLORITE PUMP #1	0	CHLORINE DOSING 103	LP 101	120	1	0.33 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
P 31002	SODIUM HYPOCHLORITE PUMP #2	0	CHLORINE DOSING 103	LP 101	120	1	0.33 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
P 92001	SUMP PIT PUMP	0	PUMP ROOM 001	DP 100	600	3	2.4 HP	M	M	E	G	VENDOR		V	E	E	G	V	E	E	G	V	E	E	G	ZONE 1 - SUBMERSIBLE
SF 92001	ELECTRICAL ROOM SUPPLY FAN	0	ELECTRICAL ROOM 107	LP 101	120	1	0.06 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
SF 92002	STAIRWELL SUPPLY FAN	0	STAIRWELL 101	LP 101	120	1	0.16 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
SGA 11101	WET WELL AUTOMATED SCREEN INLET GATE #1	0	WET WELL	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 11201	WET WELL AUTOMATED SCREEN INLET GATE #2	0	WET WELL	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 21001	MECHANICAL SCREEN AUTOMATED SCREEN INLET GATE #1	0	SCREEN ROOM 109	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 21002	MECHANICAL SCREEN AUTOMATED SCREEN INLET GATE #2	0	SCREEN ROOM 109	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 22001	MECHANICAL SCREEN AUTOMATED SCREEN INLET GATE #3	0	SCREEN ROOM 109	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 22002	MECHANICAL SCREEN AUTOMATED SCREEN INLET GATE #4	0	SCREEN ROOM 109	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
SGA 41001	OVERFLOW AUTOMATED SCREEN INLET GATE	0	OVERFLOW CONTROL CHAMBER	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	
TSP 92001	TRAP SEAL PRIMER	0	MECHANICAL ROOM 102	LP 101	120	1	0.03 KW	M	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92001	ELECTRICAL ROOM ELECTRIC UNIT HEATER 1	0	ELECTRICAL ROOM 107	DP 100	600	3	3 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92002	ELECTRICAL ROOM ELECTRIC UNIT HEATER 2	0	ELECTRICAL ROOM 107	DP 100	600	3	3 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92003	I&C ROOM ELECTRIC UNIT HEATER	0	I&C ROOM 108	DP 100	600	3	3 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92004	CHLORINE ROOM ELECTRIC UNIT HEATER	0	CHLORINE DOSING 103	DP 100	600	3	7.5 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92005	SCREEN ROOM ELECTRIC UNIT HEATER 1	0	SCREEN ROOM 109	DP 100	600	3	5 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
UH 92006	SCREEN ROOM ELECTRIC UNIT HEATER 2	0	SCREEN ROOM 109	DP 100	600	3	5 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	ZONE 1
UH 92007	BELOW GRADE STAIRWELL ELECTRIC UNIT HEATER 1	0	STAIRWELL 101	DP 100	600	3	3 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92008	BELOW GRADE STAIRWELL ELECTRIC UNIT HEATER 2	0	STAIRWELL 101	DP 100	600	3	3 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
UH 92009	ABOVE GRADE STAIRWELL ELECTRIC UNIT HEATER 1	0	STAIRWELL 101	DP 100	600	3	5 KW	M/E	M	E	G	INTEGRAL	N/A	E	E	E	G	E	E	E	G	E	E	E	G	
VFC 11001	MOTORIZED VALVE	0	PIPE GALLERY 003	DP 100	600	3	0.75 HP	M	M	E	G	INTEGRAL	N/A	M	E	E	G	E	E	E	G	E	E	E	G	ZONE 2
VFC 21001	SCREEN PACKAGE SOLENOID VALVE	0	SCREEN ROOM 109	MCP 100	120	0	0.03 KW	V	M	E	G	INTEGRAL	N/A	V	E	E	G	V	E	E	G	V	E	E	G	ZONE 1
VFC 21002	SCREEN PACKAGE SOLENOID VALVE	0	SCREEN ROOM 109	MCP 100	120	0	0.03 KW	V	M	E	G	INTEGRAL	N/A	V	E	E	G	V	E	E	G	V	E	E	G	ZONE 1
WC 21001	WASHER COMPACTOR	0	SCREEN ROOM 109	MCP 100	600	3	1.5 HP	V	M	E	G	VENDOR		V	E	E	G	V	E	E	G	V	E	E	G	ZONE 1

1 ME01 MOTOR STARTER & CONTROL LIST

SCALE: N.T.S.

LEGEND:

A	=>	ARCHITECTURAL
E	=>	ELECTRICAL CONTRACTOR
G	=>	GENERAL CONTRACTOR
M	=>	MECHANICAL CONTRACTOR
V	=>	PROCESS EQUIPMENT VENDOR / SUPPLIER

GENERAL NOTES:

A. FOR ALL HOUSE SYSTEM EQUIPMENT PROVIDE CONDUIT AND WIRING FROM THE INDICATED SOURCE PANEL OR MCC TO THE LOAD AS PER THE HOUSE SYSTEM WIRING SCHEDULE ON DRAWING E01.

B. FOR POWER SOURCES THAT ARE LABELLED LP or BP THE PANEL SCHEDULES WILL GOVERN WHEN CONFLICTS EXIST

C. FOR POWER SOURCES THAT ARE LABELLED DP or BP, THE PANEL SCHEDULES WILL GOVERN WHEN CONFLICTS EXIST

D. COORDINATE EXACT LOAD AND WIRE SIZE WITH ACTUAL EQUIPMENT REQUIREMENTS.

E. WHERE CONFLICTS ARISE REFER TO LAYOUT DRAWINGS FOR EQUIPMENT/DEVICE LOCATIONS.

F. FOR CONFLICTS BETWEEN THIS AND OTHER DRAWINGS REFER TO OTHER DRAWINGS FOR CLARIFICATION. ADVISE CONSULTANT.

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR ADDENDUM 002	02/06/26
0	ISSUED FOR TENDER	13/05/26

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: N.T.S.

CLIENT: BROCKVILLE CITY OF THE 1000 ISLANDS

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

BROCKVILLE MAIN SEWAGE PUMPING STATION AND FORCEMAIN UPGRADE

CENTEEN PARK, BROCKVILLE, ONTARIO

DRAWING:

MOTOR STARTER AND CONTROL LIST

DESIGN:	IDM
DRAWN:	RH
CHECKED:	BM
JLR #:	32239-000

DRAWING #: ME01

File Location: P:\32000\32239-000 - Brockville Main Sewage PS Design\05-Production\06-Elect\32239 MOTOR STARTER & CONTROL LIST.dwg

PLOT DATE: Friday, May 29, 2026 8:11:05 AM