

ADDENDUM

PROJECT NAME: **Robarts 5th Floor MDL Renovation**

COMPANY: **Superkül Architects**

ATTENTION: **William Elsworthy**

PROJECT NO.: **08086.009.E.001**

DATE: **2024-11-14**

ADDENDUM NO.: **E-03**

ISSUED BY: **Komal Bharti**

The following amendments are hereby made as part of the Contract Documents. The following revisions and/or additions shall be made to contract documents and the cost shall be included in the Tender Price.

1.0 SPECIFICATIONS

1.1 Refer to 26 05 73.00 – Electrical Power Systems Studies (included herein)

1.1.1 Clarify spec section referenced in N-3 of detail 1/TE-0.3.

1.2 Refer to 26 27 13.00 – Electronic Metering (included herein)

1.2.1 Add spec section in accordance with changes below.

2.0 DRAWINGS

2.1 Refer to TE-0.3 ELECTRICAL DETAILS (not included)

2.1.1 Delete CT requirement from base scope as shown and provide separate price for new submetering system as per note SP-1.

2.1.2 Delete drawing note N-5 and replace with SP-2, refer to associated photo (see drawing TE-0.3).

2.2 Refer to TE-0.7 ELECTRICAL DETAILS (not included)

2.2.1 Provide schedule for panels 006-NLP-05-04-AA, 006-NLP-05-04-BA, 006-NLP-05-04-CA, 006-NDP-05-04-AA, 006-NDP-05-04-BA, and 006-NDP-05-04-CA, as shown.

2.3 Refer to TE-5.2 FIFTH FLOOR POWER ANY SYSTEMS LAYOUT (included herein)

2.3.1 Delete separate price note SP-1 as shown.

2.3.2 Provide new general note #16 as shown.

3.0 Clarification

3.1.1 Client Request

END OF ELECTRICAL ADDENDUM

26 05 73.00 Electrical Power System Studies

1. General
 - 1.1. WORK INCLUDED
 - 1.1.1. Section 26 05 01.00 – GENERAL INSTRUCTIONS FOR ELECTRICAL SECTIONS.
 - 1.1.2. Section 26 05 04.00 – SUBMITTALS/SHOP DRAWINGS.
 - 1.2. REFERENCES
 - 1.2.1. CSA Z462 – Workplace Electrical Safety, latest edition.
 - 1.2.2. IEEE 1584 – IEEE Guide for Performing Arc Flash Hazard Calculations, latest edition.
 - 1.2.3. NFPA 70E – Standard for Electrical Safety in the Workplace, latest edition.
 - 1.3. SUMMARY
 - 1.3.1. The electrical power system studies for the project shall be performed by an approved electrical power systems contractor. The type and content of each study is specified in the following articles.
 - 1.3.2. The extent of the power systems studies shall include from the bus duct connection down to the branch circuit panels. All relays and fuse sizes to be included to ensure the best operation of the entire system. The studies shall also be performed to include the operation of the emergency power generation system.
 - 1.3.3. Contractor to label and re-label with the appropriate Client approved label all equipment that is new or the calculated values have changed from what is currently shown.
 - 1.4. SHOP DRAWINGS AND PRODUCT DATA
 - 1.4.1. Submit Shop Drawings and product data in accordance with Section 26 05 04.00 – SUBMITTALS/SHOP DRAWINGS.
 - 1.4.2. Completed electrical power system studies shall be bound and submitted to the Engineer. Submit initial version(s) of the power system studies during the project shop drawing stage. Submit another “final” version of the power system studies at the end of the project utilizing the final/installed values. The study must be stamped and signed by a professional engineer in the applicable jurisdiction of the project for all submissions.
 - 1.4.3. Contractor providing electrical power systems study to allow for revisions/adjustments based on review comments and actual transformer impedances.
 - 1.4.4. Provide a minimum of three (3) bound coloured copies of all submissions to Owner and Engineer for review. Modify studies based on comments received and continue to re-issue until an accepted version is agreed upon.
 - 1.4.5. Provide a copy of the working electronic file in native program format along with each of the final copies of the studies. Identify what software was used to complete the studies. The information contained within the project file remains the property of the owner and can be used by the Owner for future system modifications.
 - 1.4.6. Provide samples of the proposed arc flash labels. All labels to match the Owners standard labels.

- 1.4.7. Contractor shall submit initial power system study at the same time as shop drawings for electrical distribution equipment, such that the Engineer can review the adequacy of equipment interrupting capacity or withstand ratings, prior to equipment being released for manufacture. In situations where the entire study cannot be submitted with the electrical distribution shop drawings, contractor shall submit at a minimum a preliminary short circuit study for review.
2. Product
- 2.1. ELECTRICAL POWER SYSTEM STUDIES
- 2.1.1. Short-Circuit Analysis
- .1 Calculation of maximum RMS symmetrical three-phase short-circuit and single line to ground fault current at each significant location in the electrical system shall be made using a digital computer.
 - .2 Appropriate motor short-circuit contribution shall be included at the appropriate locations in the system so that the computer calculated values represent the highest short-circuit current the equipment will be subjected to under fault conditions.
 - .3 A tabular computer printout shall be included which lists the calculated short-circuit currents, X/R ratios, equipment short-circuit interrupting or withstand current ratings, and notes regarding the adequacy or inadequacy of the equipment.
 - .4 The study shall include a computer printout of input circuit data including conductor lengths, number of conductors per phase, conductor impedance values, insulation types, transformer impedances and X/R ratios, motor contributions, and other circuit information as related to the short-circuit calculations.
 - .5 Include a computer printout identifying the maximum available short-circuit current in RMS symmetrical amperes and the X/R ratio of the fault current for each bus/branch calculation.
 - .6 The system one-line diagram shall be computer generated and will clearly identify individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location and other information pertinent to the computer analysis.
 - .7 A comprehensive discussion section evaluating the adequacy or inadequacy of the equipment must be provided and include recommendations as appropriate for the improvements to the system.
 - .8 The contractor shall be responsible for supplying conductor information (lengths, types, number per phase, etc.) in a timely manner to allow the short-circuit analysis to be completed prior to final installation.
 - .9 Any inadequacies shall be called to the attention of the engineer and recommendations made for improvements as soon as they are identified.
- 2.1.2. Protective Device Time-Current Coordination Analysis
- .1 The time-current coordination analysis shall be performed with the aid of a digital computer and will include the determination of settings, ratings, or types for the over-current protective devices supplied.
 - .2 A sufficient number of computer generated log-log plots shall be provided to indicate the degree of system protection and coordination by displaying the time-current characteristics of series connected over-current devices and other pertinent system parameters.

- .3 Computer printouts shall accompany the log-log plots and will contain descriptions for each of the devices shown, settings of the adjustable devices, the short-circuit current availability at the device location when known, and device identification numbers to aid in locating the devices on the log-log plots and the system one-line diagram.
- .4 The study shall include a separate, tabular computer printout containing the suggested device settings of all adjustable over-current protective devices, the equipment where the device is located, and the device number corresponding to the device on the system one-line diagram.
- .5 A computer generated system one-line diagram shall be provided which clearly identifies individual equipment buses, bus numbers, device identification numbers and the maximum available short-circuit current at each bus when known.
- .6 A discussion section which evaluates the degree of system protection and service continuity with over-current devices, along with recommendations as required for increasing system protection or device coordination.
- .7 Significant deficiencies in protection and/or coordination shall be called to the attention of the engineer and recommendations made for improvements as soon as they are identified.

2.1.3. Arc Flash/Incident Energy Study

- .1 An Arc Flash/Incident Energy Study shall be performed to determine the incident energy and arc flash protection boundary at each piece of electrical equipment and to identify the level of PPE required by people working on that respective equipment.
- .2 The study shall take into account all the information set forth in the short circuit study and the coordination study. Contractor to use the minimum and maximum fault currents provided by the utility to determine the worst incident energy levels. Provide two columns in your arc flash summary sheet identifying the current at both fault levels. Contractor to revisit the coordination study and revise coordination to provide the minimum incident energy levels as possible. Provide recommendations to reduce the incident energy levels even further at the risk of affecting the coordination to allow Owner and Engineer's Representative to review options and provide feedback.
- .3 Calculate the arc flash hazard, incident energy level and the flash protection boundary as per IEEE 1584. PPE level recommendations as per NFPA 70E / CSA Z462.
- .4 All electrical equipment to be identified with the incident energy, flash protection boundary and level of PPE required.
- .5 Purpose made labels to be provided on all electrical equipment. All equipment where levels were not calculated are to be provided with a standard warning label. Label samples to be submitted for review by Owner and Engineer's Representative.

2.2. APPROVED ELECTRICAL POWER SYSTEMS CONTRACTORS

2.2.1. The power system studies shall be completed by qualified and experienced personnel.

2.2.2. The specified electrical power system studies shall be performed by:

- .1 Schneider-Electric Services.
- .2 Eaton - Cutler-Hammer Service Group.
- .3 ABB.
- .4 G.T. Wood.
- .5 K-Line – K-Tek.
- .6 Pelikan Inc.
- .7 General Electric (GE).

- .8 Eastenghouse.
- .9 AC Tesla.
- .10 Brosz Technical Services.
- .11 Enkompass Power and Energy Corp.

3. Execution

3.1. GENERAL

- 3.1.1. Contractor to include for all on site surveys and investigations in order to obtain all the relevant information to complete all the studies.
- 3.1.2. The relays and equipment will be set up on site by the Technical Services Division Startup Service Contractor. Coordinate with this Contractor to ensure information is relayed accordingly.
- 3.1.3. Review work on site to ensure equipment has been set up as per the coordination study. Have the Technical Services Division Startup Service Contractor test systems at random to ensure the coordination study has been adhered to.
- 3.1.4. Submit a report and a letter reporting to the Engineer and Owner that the coordination study information has been followed.
- 3.1.5. Contractor to revise fuse sizes as identified in the report and modify the drawings to represent as-built conditions.

3.2. LABELLING

- 3.2.1. Have power system study specialist install arc flash labels on all equipment. Coordinate with the Electrical Contractor.
- 3.2.2. Where manufacturer listed series ratings are permitted, install UL series rating label on all devices that are part of a series rating.

3.3. TRAINING

- 3.3.1. Provide one day of in-depth training on arc-flash safety detailing the industry and code requirements including the details of the specific project for the Owner and the Owner's representatives.

END OF section

26 27 13.00 Electronic Metering

1. General

1.1. WORK INCLUDED

1.1.1. Section 26 05 01.00 – GENERAL INSTRUCTIONS FOR ELECTRICAL SECTIONS.

1.1.2. Section 26 05 04.00 – SUBMITTALS/SHOP DRAWINGS.

1.1.3. Section 26 05 34.00 – CONDUITS, CONDUIT FASTENERS AND FITTINGS.

1.1.4. Section 26 05 21.00 – WIRES AND CABLES UNDER 2000 V.

1.2. STANDARDS

1.2.1. Except as noted by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the Canadian Electrical Manufacturer's Association, CSA and Measurement Canada.

1.2.2. The system shall be bench certified/approved by Measurement Canada for legal trade under the "Electricity and Gas Act" of Canada.

1.2.3. At the completion of installation, the system shall be field reviewed to verify compliance with Measurement Canada Specifications.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1.3.1. Submit Shop Drawings and product data in accordance with Section 26 05 04.00 – SUBMITTALS/SHOP DRAWINGS.

1.3.2. Submit shop drawings and manufacturers data for the component items shown and specified under this section of the specification. This shall include, but not limited to:

- .1 System riser, one line and installation diagrams.
- .2 Manufacturer's system and communications connection diagram.
- .3 Information on selected reporting software.
- .4 All electrical and mechanical meters.
- .5 All final verification and acceptance forms/letters.

1.3.3. Do not supply any equipment to this project prior to shop drawing review by the Engineer's Representative.

1.3.4. Shop drawings will be stamped and signed by the Electrical Contractor prior to submittal, allow a minimum of one week for review of the shop drawings submitted.

1.3.5. At the completion of the Project, As-Built Drawings will be submitted by the Submetering Supplier/Manufacturer and Electrical Contractor, who will prepare a complete manufacturer's manual including but not limited to all as-built wiring diagrams and all required Measurement Canada certifications and test results.

1.4. DESCRIPTION OF SYSTEM

1.4.1. Work under this section is subject to the requirements of Section 26 05 01.00 - GENERAL INSTRUCTIONS FOR ELECTRICAL SECTIONS.

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- 1.4.2. Provide a fully digital utility (i.e. electricity, water, gas, heating and cooling energy) measurement system for multi-tenant buildings incorporating complete metering. The mechanical meters and electrical metering panel(s) must have its own local display for reading the meters connected to it.
- 1.4.3. All utility consumption metering on site shall be supplied and coordinated through the Submetering Supplier and Electrical Contractor. Consumption metering for all utilities on site must be coordinated through the Submetering Supplier and Electrical Contractor to:
- .1 Ensure metering infrastructure meets all applicable regulatory requirements.
 - .2 Is capable of seamlessly integrating to the chosen end user platform.
 - .3 Allow for necessary tenant billing data criteria.
 - .4 Ensure non-proprietary data protocols.
 - .5 Allow for one point of contact for all stakeholders.
- 1.4.4. Submetering System to collect data on Electricity energy consumption. Meters to communicate data to central point(s) and be remotely accessible by operations team, accounting, etc., using a web-based data collection and reporting software.
- 1.4.5. System to include:
- .1 Meter Hardware - Electrical
 - .2 Communications Infrastructure
 - .3 Data Collection and Reporting
 - .4 Execution and Verification
- 1.4.6. The submetering system shall be scalable to include other utility metering, including the power metering system on the Main 416 V Switchboard. System shall be used for tenant billing, and/or energy management.
- 1.4.7. Provide computerized metering in accordance with the Contract Documents. The system to come complete with all parts necessary to operate this system.
- 1.4.8. Remote sub-metering panels shall be used for electricity consumption and display in a digital format and in real numbers.
- 1.4.9. All electricity submetering units to be mounted in a CSA Type 1 with drip hood, sprinkler proof enclosure either located next to the electrical panel(s) and require no tools to open.
- 1.4.10. Metering panels communicate over their own network, which can report to remote computers using telephone or Ethernet/WAN/Internet communications.
- 1.5. WARRANTY
- 1.5.1. All meters shall have a manufacturer's warranty of 3 years.
- 1.5.2. All other equipment shall be free from defect in materials and workpersonship under normal use and service for the period of twenty four (24) months from the date of acceptance.
2. Products
- 2.1. ELECTRICAL METERS/METERING AND SUBMETERING EQUIPMENT
- 2.1.1. The electricity meter system will be used to monitor key house electrical loads and riser disconnects on each tenant floor and optional metering for select tenant 120/208 plug loads fed within the building.

- 2.1.2. All meters to be Measurement Canada approved and their installation to be verified and commissioned as per Measurement Canada S-E-04 standards.
- 2.1.3. Meters to have Ethernet interface for direct connection to building's central fibre communications network.
- 2.1.4. Each multi-meter includes current transformers, potential transformers (if applicable), cable connections and Ethernet and BACNet IP capabilities. Meters must have BTL listing (BACNet Testing Laboratories).
- 2.1.5. All electrical meters must be tested, sealed and verified to Measurement Canada standards (no exceptions). Verification of meter installation on-site to comply with Measurement Canada S-E-04 inspection procedures.
- 2.1.6. Meters must be capable of directly metering North American 120/208 V, 120/240 V, 240/416 V, and 277/480 V and 347/600 V wye services. Meters may use manufacturer specified and supplied Potential Transformers for the higher voltages, if required.
 - .1 The Potential transformers, if required, shall be mounted in a separate enclosure rated for the size and capacity necessary to feed the number of meters shown as per the drawings and rated by the manufacturer. Potential transformers must be Measurement Canada approved for revenue metering (independently or as part of system approval).
 - .2 Potential transformers shall be factory assembled and come complete with electrical disconnects and fuses mounted in a separate enclosure.
- 2.1.7. Metering Units must have the capability of a single incoming cable with associated current transformers (CT's).
- 2.1.8. All CTs to be solid core with 5A secondary ratio.
- 2.1.9. Must meet all ISO 9001 standards for quality control where all meters test to a minimum of +/- 0.2% accuracy.
- 2.1.10. Operating Frequency: 50/60 Hz.
- 2.1.11. Power Factor Range: 0.5 to 1.0 lead/lag.
- 2.1.12. Operating Temperature Range: -40 degrees to +55 degrees C.
- 2.1.13. Current Ranges: 100/200/400 Amps or 5/10 Amp interface (services over 400 A or critical loads)
- 2.1.14. Metering unit(s) must be able to meter a minimum of 24 single-pole circuits, 12 single phase/Network meters and 8 three phase type meters.
- 2.1.15. All meters shall be bi-directional.
- 2.1.16. All meter front panel instantaneous-value update intervals shall be no greater than once every 60- seconds.
- 2.1.17. All RMS values shall be True RMS, not Average RMS.
- 2.1.18.
- 2.1.19. Meter communications options: Ethernet, Modbus TCP, BACNet or modem:
 - .1 Ethernet interface at each metering device
 - .2 Meters must be a push IP based communication
 - .3 There cannot be any modifications to customer's existing firewall
 - .4 Modbus TCP or BACnet communications for interface to client systems
- 2.1.20. Meters and their elements must conform to the Measurement Canada "Standard Drawings for Electrical Metering Installations" to ensure accurate metering. All configurations shall come with current transformers/transducers required in the "Standard Drawings".

2.1.21. Approved Electrical Submeter Manufacturers:

- .1 Schneider METSEPM556

2.2. DATA COLLECTION, REPORTING, BILLING AND SYSTEM SOFTWARE

2.2.1. All meter data must be collected via the communication infrastructure and reported through one or more of the following software options. At a minimum, 15 minute interval KWh data must be available for download into a CSV, Excel file.

2.2.2. The following capabilities and services must be provided:

.1 Web-hosted Energy Reporting Software:

- .1 Provide QMC MeterConnex web-based reporting software or approved equal. Graphing and exportation of meter data shall be available on-line. Tenant interface shall also be available, provided as a Software as a Service with no upfront costs

.2 BAS and Power Quality Meter Integration:

- .1 Seamlessly integrate meter register data for meters pertaining to building operations and/or maintenance. This shall include communicating and fully integrating the Submetering System with information from the Power Quality Meters installed on the Main 600V Switchboard of the building. Electrical Contractor to coordinate communications protocol with Power Quality Meters supplied as specified in section 26 09 13.01 - Power Quality Metering System.

.3 The Submetering Supplier must have the following capabilities as an option for their system:

.1 Tenant Billing Services:

- .1 Read all meter data on a monthly basis and produce tenant invoices for electricity, heating and cooling energy and domestic water use. Billing summary shall be capable of being sent to property or tenant directly.
- .2 Shall provide menu driven generation of energy bills in a format similar to the format provided by the local Utility Supplier. Shall permit energy cost calculations that utilizes information from account bill received from the local Utility Supplier, allowing for the incorporation of co-incident demand charges and time of use rates allocated to each tenant.
- .3 Shall permit multiple metering points to be allocated to a single tenant file in order to totalize a number of metering points and energy costs to a single tenant account.
- .4 Shall permit reconfiguration of tenant accounts through menu selection.
- .5 Shall list all tenant accounts including the tenant history file.
- .6 Shall access the actual metering measurements used in deriving each Tenant's invoice.
- .7 Provide billing data within a format compatible with standard accounting packages.

- .2 This service shall be provided on an ongoing basis and negotiated with the Owner/Property Manager at completion of system installation.

.4 The Submetering System Software shall meet the following requirements:

- .1 Must be accessible by any user via standard web-browser, such as IE, Chrome, etc.
- .2 Also provide a Windows™ based simplified user interface for system operation.

- .3 Tiered access so users can only access meter data and reports selected by system owner.
- .4 Up to 100 user accounts available.
- .5 Multiple utilities must be presented, including electricity, water, gas and thermal energy.
- .6 Environment Canada weather data must be collected (Heating and Cooling Degree Days, Average Temperature).
- .7 Metering data must be available to other software parties via API (Application Program Interface).
- .8 All data must be exportable in CSV or Excel format.
- .9 Mandatory Functionality:
 - .1 Bill Generation, including utility consumption and rates.
 - .2 Visual Reports, including 15 minute energy profiles, load comparisons.
 - .3 Heat Mapping Tool.
 - .4 Weather Regression modelling based on HDD/CDD or average temperature.
 - .5 Alarming tools: demand or consumption min and max thresholds and automated email or text alarm to selected users.
 - .6 Automated reporting tool: automated PDF report sent to selected users showing energy-related KPIs (Key Performance Indicators) of property.
 - .7 Revenue legal metering measurements shall be received from all sub-metering sensors and stored in a central Data Collection Unit (DCU).
 - .8 To monitor, acknowledge and control communications with the remote metering points and to log any disruption of the communication link or unauthorized system access or tampering.
 - .9 To permit the user to view instantaneous readings of voltage, current, power, phase angle, present and peak demand for any electricity meter.
 - .10 To permit the user to view instantaneous readings present usage (totalized) or demand (last 15 minute interval) for any mechanical meter.
 - .11 Provide the ability to export data into Reporting Applications (e.g. Web and Excel VBA).
 - .12 To include service menus for diagnostic monitoring of the metering equipment and through either a modem and telephone link or Internet access to permit remote diagnostics by the manufacturer's service technicians. Security access control shall permit remote diagnosis to be locked out.

2.3. WIRING

- 2.3.1. Provide all wiring in conduit as required to operate the entire system. Wiring to be provided as per manufacturer's instructions. All power wiring to be in conformance with the electrical code.

3. Execution

3.1. DRAWING REVIEW

- 3.1.1. Submetering Supplier and Electrical Contractor to review tenant electrical using construction contract drawings to coordinate and budget all meters and M-Bus communications system according to site-specific distribution and property needs. This includes the Electrical Contract Drawings.

3.2. ELECTRICAL METER INSTALLATION

- 3.2.1. All metering equipment shall be installed in electrical or mechanical rooms, as indicated on the drawings.
- 3.2.2. Remove electrical panel cover.
- 3.2.3. Wire bending space should be in compliance with Canadian Electrical Code Section 12. Verify that Current Transformers, Power Taps, and wiring can be installed without crowding the electrical panel.
- 3.2.4. Verify that the Current Transformers can be installed with a minimum 1/2 inch clearance to uninsulated live parts in panel, and without bearing against dead metal parts.
- 3.2.5. Verify that power is 120V, 120/280V, 120/240V, 240/416V or 416V, 277/480V, 480V, 347/600V or 600V. Verify that neutral is available if applicable.
- 3.2.6. Provide a dedicated 15A, 120VAC circuit for each panel and equipment from the nearest available panel. Provide a new breaker in the respective panel.
- 3.2.7. Verify that the meter is the right size and voltage for the installation.
- 3.2.8. Secure metal conduit to panel. Use insulating bushing. Reliable grounding is required. Locknuts must be tightened enough to pierce paint in cabinet.
- 3.2.9. Secure meter enclosure in or on wall, according to location, and connect conduit using locknut. Attach the enclosure to a wall stud using screws to provide equivalent support.
- 3.2.10. Install CT's and PT's per manufacturer's recommendations.
- 3.2.11. Interconnect all metering panels with wiring in conduit as per manufacturer's instructions. Provide connection of Metering Panels to remote accesses connection: telephone, Ethernet connection, etc.
- 3.2.12. Replace electrical panel covers.
- 3.2.13. Contact Electrical Safety representatives for verification of compliance to governing electrical codes.
- 3.2.14. All electrical multi-meters must be verified according to Measurement Canada S-E-04 inspection procedures.
- 3.2.15. Contact Measurement Canada or accredited service provider for installation verification. Installation verification shall include a tenant-to-breaker check. Electrical Contractor must be available for verification support.
- 3.2.16. Top of meter display to be no higher than 1.9m (75") and bottom of the meter display to be no lower than 1.2m (47") above finished floor.

3.3. CALIBRATION AND MAINTENANCE SERVICE

- 3.3.1. All meters shall be Measurement Canada bench verified, and Submetering Supplier will provide all Inspection/Verification Certificates within as-built documentation in order to provide a complete operational system.

- 3.3.2. Submetering Supplier will include all required Measurement Canada installation inspections in pricing. All appropriate equipment is to be labelled with the respective certification labels.
- 3.3.3. Electrical Contractor to provide "AS BUILT" – marked up by Submetering Supplier; "Record of Metering Installation" sheet(s) indicating each meter, serial no., address, cross reference, metered tenant(s) and other applicable information. Information to be forwarded to software or reporting vender.
- 3.3.4. The Submetering Supplier shall verify, adjust and test the system. Verification to be carried out with the assistance of the Electrical and Mechanical Contractor. Upon completion, Submetering Supplier to issue a "CERTIFICATE OF ACCEPTANCE" to the Engineer's Representative/Owner, and Electrical Contractor. This shall be submitted as a Shop Drawing to the Consultants and incorporated into the final O&M Manuals.
- 3.3.5. Submetering Supplier shall demonstrate operation of the system as follows:
- .1 Meter readings at the meter
 - .2 Diagnostics
 - .3 Provide manual of installed system.
- 3.3.6. The Submetering Supplier shall provide pricing for billing services, on a per meter price, for collection of tenant sub-metered energy for return to building management or local distribution company (LCD) to apply against facility energy costs.
- 3.3.7. The Submetering Supplier shall detail remote connectivity requirements (telephone, High-Speed Internet, etc.). Building owner/property manager shall provide necessary remote connectivity to allow for remote billing services, if required.
- 3.3.8. Submetering Supplier to register the system with Measurement Canada and work with the Owner to obtain all required information to do so.
- 3.3.9. After the specified Measurement Canada approval period (seal period typically 6 years), the Submetering Supplier shall provide options for maintaining Measurement Canada Approval. This may include, but not limited to: Onsite Re-verification or removal of existing equipment and replacement with Measurement Canada verified equipment.
- 3.3.10. The Submetering Supplier shall provide pricing to the Owner for system maintenance, repair and/or replacement service to the extent that is covered by the warranty.
- 3.4. COMMUNICATIONS
- 3.4.1. Provide a dedicated IP connection at point of central data collection for remote meter reading and diagnostics of the system.
- 3.5. TRAINING
- 3.5.1. Submetering Supplier to provide 4 hour training and software manual for Owner's staff of selected reporting system.

END OF SECTION

7 NEW PANEL 006-NLP-05-04-AA
TE-07 N.T.S.

4 NEW PANEL 006-NDP-05-04-AA
TE-07 N.T.S.

1 NEW PANEL 006-NLP-05-02-CA
TE-47 N.T.S.

NEW PANEL 006-NLP-05-04-BA
N.T.S.

5 NEW PANEL 006-NDP-05-04-BA
TE-07 N.T.S.

2 NEW PANEL 006-ELP-05-02-FA
T.E.S.

9 NEW PANEL 006-NLP-05-04-CA
T.E.O.T. N.T.S.

6 NEW PANEL 006-NDP-05-04-CA
T.E.O.J. N.T.S.

3 NEW PANEL 006-ELP-05-02-FC
TE-47 N.T.S.

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2	2024-11-14	ISSUED FOR ADD E-03
1	2024-10-25	ISSUED FOR ADD E-01
No.	Date	Issue/Revision

PROJECT CONTACT

NAME: Greg Zapp

TEL: 647 288 5479

EMAIL: Greg.Zapp@smithandandersen.com

THIS DRAWING SHALL BE READ IN CONJUNCTION
WITH ELECTRICAL SPECIFICATION SUBMITTED FOR
THIS PROJECT.



Smith + Andersen

1100 - 100 Sheppard Ave. East, Toronto On, M2N 6N5
416 487 8151 f 416 487 9104 am@smithandersen.com

No. Date Issue/Revision

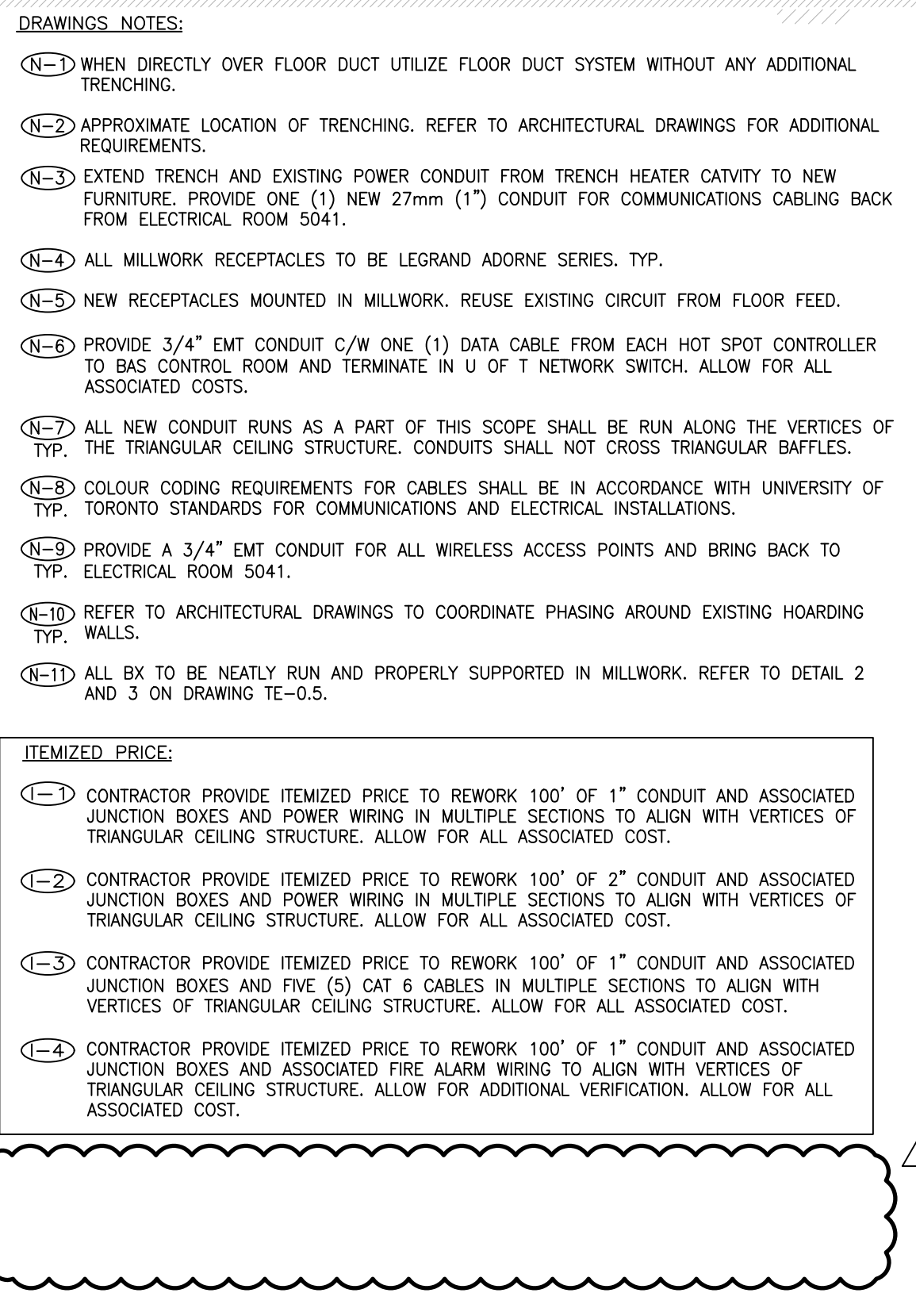
Robarts 5th Floor MDL
Renovation

Title:

ELECTRICAL DETAILS

Project No. 08086.009.MEAVD	Scale AS NOTED
Drawing No.	

TE-0.7



Roberts 5th Floor MDL Renovation	
Title:	
FIFTH FLOOR POWER AND SYSTEMS LAYOUT	
Project No. 08086.009 MEAVD	Scale 1: 100
Drawing No.	
TE-5.2	