



Addendum

Project: Kingston Health Sciences Centre
Kingston General Hospital
Emergency Power System Capacity & Infrastructure Renewal

Contract No.: 10434805 (HHA: 2250139)

Bid Number: 10434805 / PLO 301360

Addendum No.: 01

Date Issued: Tuesday, July 21, 2026

No. of Pages: 43 pages

The following Addendum shall be read in conjunction with and become part and parcel of the bid documents and shall supersede the drawings and or specifications where applicable. Upon receipt to same, staple this Addendum directly to the inside front cover of the specifications. The Proponent shall bring this Addendum to the attention of all subcontractors, trades and suppliers.

1. The following documentation is issued under this Addendum.

- | | | |
|-----|--|----------|
| 1.1 | HDR Addendum No. A01, dated 2026-07-21 | 22 pages |
| 1.2 | HHA Addendum No. E-1, dated 2026-07-21 | 20 pages |

Per:

Rekha K Suresh, MSc, PMP
Project Manager

End of Addendum

The following Addendum shall be read in conjunction with and become part and parcel of the tendering documents and shall supersede the drawings and/or specifications where applicable. Upon receipt to same, staple this Addendum directly to the inside front cover of the specifications. The Proponent shall bring this Addendum to the attention of all subcontractors, trades and suppliers.

Addendum No. A01

1. General Clarifications

1.1. Proponent Questions:

1. Q: The work related to drilled concrete piers and shafts reads that the work of this section is unit price work, is this correct and if so there is no line item on the bid sheet for unit pricing.
A: To be confirmed in future Addendum.
2. Q: Has the generator been ordered and if not is the pricing still valid as I notice on Gal Powers quote to the hospital that their pricing is only valid for 60 days, which would have expired on June 16, 2026, based on their tender closing date of April 17, 2026, and will this price change based on current US/Canadian dollar currency rates if we order this after tender closing based on their qualification regarding US/Canadian dollar rates?
A: To be confirmed in future Addendum.
3. Q: Will comms cabling to the generator be required? I see there is a note #2 on electrical drawing E3-02 that reads "provide data drops for BAS controls" however the spec section for Comms reads "Not Used"
A: Please refer to HHA Addendum E-1 contained herein.
4. Q: Will this generator enclosure require sprinkler coverage?
A: The generator enclosure does not require sprinkler coverage.
5. Q: Who's responsible for filling the unit once the work is completed? I read in the Gal Power quote that fuel is by others.
A: KHSC will be responsible for fuel fill. Contractor shall coordinate scheduling fuel deliveries with KHSC PM and KHSC maintenance department. Contractor shall provide sufficient notice (2 weeks' notice minimum) as required to perform their scope and meet the project schedule.
6. Q: Architectural spec table of contents does not have a specification section 31 63 29 Drilled Concrete Piers and Shafts however in the spec right after SECTION 07 42 13.13 Insulated Metal Wall Panels, Section 31 63 29 is provided. Please advise if this was missed in the table of contents.
A: Please refer to Changes to Specification Table of Content items in this Addendum.

2. Changes to Specifications

- 2.1. Division 00, Section 00 01 10:
 - 2.1.1. Replace previous version with section dated 2026-07-21 "Issued for 100% IFT - Addendum 01" included herein.
 - 2.1.2. Insert new items under "DIVISION 01 – GENERAL REQUIREMENTS":
"01 75 11 - Testing of Integrated Fire Protection and Life Safety Systems"
 - 2.1.3. Insert new heading "DIVISION 27 – COMMUNICATIONS" respecting continuity of numerical order.
 - 2.1.4. Insert new item under "DIVISION 27 – COMMUNICATIONS":
"27 15 00 - Communications Cabling"

- 2.2. Division 01: Insert new Section 01 75 11 "Testing of Integrated Fire Protection and Life Safety Systems", Issued for Addendum 01, 2026-07-21 (attached).
- 2.3. Section 31 63 29 - "Drilled Concrete Piers and Shafts": Relocate this section to provide continuity of numerical order. Locate it immediately before Section 32 00 00.

3. Changes to Drawings

- 3.1. Drawings A-050, A-076, A-300, A-301, A-600
 - 3.1.1. For each drawing: Replace previous version with drawing dated 2026-07-21 "Issued for Addendum 01" included herein.
- 3.2. Drawing S-001, S-002, S-003
 - 3.2.1. Replace previous version with drawing dated 2026-07-21 "Issued for Addendum 01" included herein.
- 3.3. Drawing C-03, C-04
 - 3.3.1. Replace previous version with drawing dated 2026-07-21 "Issued for Addendum 01" included herein.

End of Addendum No. A01

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SUBSURFACE UTILITY REPORT
TOPOGRAPHICAL SURVEY

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1. Total Power Proposal
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TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

01 75 11

1 GENERAL

1.1 Scope

- .1 Provide testing of integrated fire protection and life safety systems and related equipment in accordance with CAN/ULC-S1001 except as modified in accordance with this specification section.
- .2 This specification is limited to testing of the interconnections between life safety and/or fire protection systems. Refer to separate technical specification sections for the individual testing and commissioning requirements for those systems.

1.2 Related Sections

- .1 Without limiting the scope of work or applicability of other specification sections, the work under this section directly integrates with or refers to the following specification sections:
 - .1 01 91 00 General Commissioning Requirements

1.3 Definitions and Abbreviations

- .1 The following definitions apply to this section.
 - .1 **Integrated testing coordinator*** – The person, firm, corporation, or organization responsible for the development and implementation of the integrated testing plan. Where a firm, corporation, or organization is responsible for integrated fire protection and life safety systems testing, a representative of that firm, corporation, or organization shall be designated as the integrated testing coordinator. (*as defined in CAN/ULC-S1001)
 - .2 **Integrated test plan*** – A written specific document, prepared by the ITC, outlining the required tests and necessary functional results to conduct integrated fire protection and life safety systems testing. (*as defined in CAN/ULC-S1001).
- .2 Abbreviations:
 - .1 **ITC** – Integrated testing coordinator.
 - .2 **FPLS** – Fire protection and life safety systems.

1.4 Applicable Codes and Standards

- .1 Installation codes and standards:
 - .1 CAN/ULC-S1001 Integrated Systems Testing of Fire Protection and Life Safety Systems

1.5 Qualified Tradesperson

- .1 Work to be performed by qualified, licensed and recognized firm with an established reputation in this field, using tradesperson holding applicable certificates of competency. The firm and its employees providing the ITC services shall:
 - .1 be certified under the ULC-S1001 Certification of Integrated Testing Service Providers program, and
 - .2 the work for such services shall be performed or be supervised by a licensed professional engineer licensed authorized to provide engineering services to the public in the place of the Work.

1.6 Submittals

- .1 Submit the integrated test plan for review by the Consultant at least thirty (30) days prior to commencement of the first system integration test. The integrated test plan shall comply with the requirements of ULC-S1001 and as specified herein.
- .2 Final ITC reports are to be authenticated in accordance with the professional engineering association requirements applicable to the place of the work.
- .3 The ITC shall complete and supply to the Consultant any required schedules or letters of conformity required by the applicable building code at the place of the Work, attesting to the completion of the satisfactory testing of integrated fire protection and life safety system program.

2 PRODUCTS

- .1 Not used.

3 EXECUTION

3.1 General Requirements

- .1 Notwithstanding the preface to CAN/ULC-S1001, be responsible for the procurement, including selection, payment and management, of the ITC company or personnel. ITC personnel may be a direct employee of the General Contractor or Construction Manager as applicable.
- .2 Include all labor and material as required to manage, develop and implement the integrated fire protection and life safety testing process.
- .3 Coordinate and jointly prepare with the applicable trade contractors whose equipment or systems are subject to the testing under this specification section, to conduct complete and thorough testing and documentation of the systems interface and integration between various FPLS systems provided under those Divisions.
- .4 The applicable Divisions of the Work that are subject to the FPLS integration testing are:
 - .1 Division 26 Emergency power distribution systems, emergency lighting control systems
 - .2 Division 28 Fire alarm systems, smoke alarm systems, security systems, notification systems
- .5 The testing requirements specified under this section are the minimum required for the purpose of obtaining an occupancy permit, and the successful completion of this testing program is a condition precedent for obtaining substantial performance/completion of the Work.
- .6 Where the project includes a commissioning program, the testing requirements under this specification section may be incorporated into the commissioning program, subject to meeting the preceding requirements concerning occupancy permit and substantial performance/completion of the Work.

3.2 Integrated Test Plan - Development

- .1 Develop the integrated test plan as described in section 5 of CAN/ULC-S1001, including but not limited to the following elements:
 - .1 coordinate with and obtain from the applicable Consultants the required information concerning the design performance criteria for the integration of FPLS equipment and systems, including
 - (a) building floor plans,

- (b) control sequences between separate systems,
 - (c) mechanical and electrical riser diagrams (if applicable),
- .2 obtain manufacturer's operating and testing instructions from the applicable trade contractors,
- .3 obtain any applicable alternate solutions to prescribed requirements of Code and Standards, from the applicable Consultant.
- .2 Prepare the integrated testing plan, which is to include, but is not limited to, the following elements:
 - .1 the functional objectives of the various system integrations,
 - .2 the sequence of operation of the integration elements of the FPLS systems including;
 - (a) operation under normal operating conditions,
 - (b) operation under fire conditions,
 - .3 a procedure for notifying occupants of integrated systems testing,
 - .4 safety management procedures, such as safety protocols and notifications, for ensuring occupant and worker safety during integrated system testing,
 - .5 where a building is to be tested in phases, additional procedure requirements for
 - (a) testing of each area in the building, with consideration that such areas will need to be tested at different points in time to support staged occupancy permits, and
 - (b) testing of the entire building once all stage areas are completed, including if any or all areas are concurrently occupied for any final testing.
- .3 Include as appendices or as a separate volume, the test procedure for each system-to-system integration test. Organize the test procedures into separate sections for each system-to-system integration test.
- .4 Include in the test plan a workflow diagram that illustrates dependencies between systems, to clearly identify predecessor and successor relationships between the various systems.
- .5 Include a testing schedule that coordinates and integrates with the overall construction schedule, identifying key dates where other parties may participate in witnessing any of the tests.
- .6 Submit a completed draft of the test plan for review by the Consultant(s). After review by the Consultant(s) and any required modifications made to the test plan, provide a revised draft of the test plan to the applicable authority having jurisdiction (as a minimum, this is the building department and the fire department).
- .7 Where revisions are made to the design of FPLS equipment or systems that impact the integration of those systems, update the integrated test plan and submit to the Consultant for review prior to its use.

3.3 Test Procedures

- .1 At a minimum, develop test procedures and test forms in accordance with the requirements of section 6 and section 7 of CAN/ULC-S1001 and as specified herein or as specified in technical Division specifications.
- .2 Test procedures shall test the functional operation of the device or system, except simulation may be used tests would;
 - .1 involve activation of non-resettable devices to demonstrate the integration functions,
 - .2 result in harm to persons or damage to a device, system or a building.
- .3 Where acceptance testing of two or more FPLS systems include verifying of the integration between those systems in accordance with required codes and standards (such as between a fire alarm system and a sprinkler or standpipe system), then documented test reports demonstrating the efficacy of such

integration will be considered as meeting the requirements of this specification section, subject to approval by the Consultant.

3.4 Integrated Test Plan - Implementation

- .1 Implement the FPLS integrated testing program in accordance with section 6 and section 7 of CAN/ULC-S1001 requirements. Before commencing any test, obtain the required documentation regarding completed installation verification, acceptance testing, notifications, and any applicable authority inspections of individual FPLS equipment and systems.
- .2 Provide notification of the testing schedule to the applicable authorities having jurisdiction and invite their participation in any test.
- .3 Provide any temporary installation measures, including wiring-jumpers, control open-circuits, or other temporary measures required for any test. If temporary measures are used, create a log report identifying each temporary measure, and the date they were installed, and for which integration test they are provided.
- .4 If, during testing, there is a defect or failure of the integration element, correct the defect and retest the affected integration element or system. Record on the test report forms the occurrence of the defect, the date and how the defect was corrected, and re-test date.
- .5 After the successful completion of integrated FPLS testing, return all systems to their normal operating state. If temporary measures were used, remove all such devices and return the system to their normal operating condition. Update the temporary measure log report to include date the temporary devices were removed, and include this log report in the final test report.

3.5 Final Test Results Report

- .1 Upon successful completion of the integrated FPLS systems testing, submit a final test report in accordance with section 7 of CAN/ULC-S1001, including
 - .1 the integrated testing plan,
 - .2 initial integration testing forms, filled-in with test results,
 - .3 re-test integration testing forms (if required), and
 - .4 supporting pre-integration testing verification documentation of applicable systems.
- .2 Submit copies of the final report as follows:
 - .1 one (1) hard-copy to each applicable authority having jurisdiction,
 - .2 one (1) hard-copy and one (1) PDF copy to the Consultant,
 - .3 two (2) hard-copies and two (2) PDF copies on separate portable media devices to the Owner.
- .3 In addition, provide one copy of the test plan and test procedures, unmarked, in PDF format to the Owner. Ownership and copyright of the unmarked test plan and procedures shall remain vested with the author of those documents; provide the Owner with a non-exclusive, transferrable, royalty-free license to reproduce and use these documents for the sole purpose of allowing the Owner to retest these systems in the future.

3.6 Requirement for Occupancy, Ready-for-Takeover and Substantial Completion

- .1 Completion of the final test report and submittal to the Owner, Consultant and Authorities Having Jurisdiction is a condition precedent for determination of the Work being ready for occupancy, ready-for-takeover or substantial completion, whichever event occurs first.

3.7 Demonstration and Training

- .1 Demonstrate the operation of, and providing training on, the integration of FPLS systems to the Owners operations staff in accordance with the requirements of Division 1, the applicable technical specification sections, and as follows:
 - .1 the function of the integration,
 - .2 the method of integration – hardwired, network communication, operating protocols,
 - .3 the type of information – data, commands, monitoring,
 - .4 any temporary measures to be taken to retest in the future.
- .2 Document this training information and provide two (2) copies in PDF format on two separate removable media devices.

3.8 Schedules

- .1 Schedule A – General Requirements for Testing Procedures.

4 SCHEDULE A

SUMMARY OF FPLS SYSTEM INTEGRATION

4.1 General

.1 This Schedule A summarizes the integration between various FPLS systems applicable to the project.

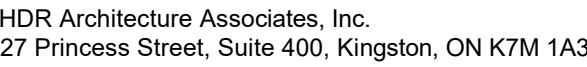
Originating System		Receiving System		
ULC-S1001 Section	Originating System	ULC-S1001 Section	Receiving System	Function
6.5	Emergency Generators	6.2	Fire Alarm	Generator trouble and alarm conditions
6.5	Emergency Generators	6.4	Elevators	Pre-transfer signal to elevator controllers
6.5	Emergency Generators	6.6	Emergency Lighting	Emergency lights are functional on loss of power
6.5	Emergency Generators	6.10	Fire Pumps	Emergency power transfers to fire pumps

Notes:

[1] Separate integration testing is not required where such testing is included as part of fire alarm verification in accordance with CAN/ULC-S537 Verification of Fire Alarm Systems

END OF SCHEDULE "A"

End of Section



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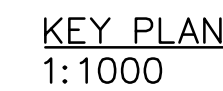
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02	07 11 2025	issued for 100% CD
03	06 20 2026	issued for 50% Tender
04	07 02 2026	issued for 90% Tender
05	07 15 2026	issued for Tender
06	07 21 2026	Issued for Addendum 01

Scale - As noted

Sheet Number:

A-050

Project Status:



GENERAL NOTE:
EXCAVATE AND REMOVE ALL EXISTING MATERIALS
AS REQUIRED TO COMPLETE THE WORK.
COORDINATE WITH STRUCTURAL, CIVIL & ELECTRICAL
DOCUMENTS.
REINSTATE FILL MATERIALS TO SPECIFIED GRADE,
REINSTATE PAVING AND CONCRETE SIDEWALKS AND
CURBS WHERE EXISTING IS TO REMAIN.
VERIFY ALL SITE SERVICES PRIOR TO COMMENCING
SITE WORK.

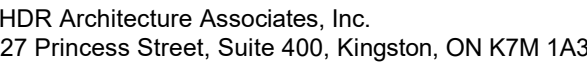
MAINTAIN ACCESS TO EXISTING GENERATOR
RE-FUELING PORT. MINIMIZE DISRUPTION TO DRIVE
AISLE AND SIDE WALK.

MAINTAIN ACCESS TO EMERGENCY RAMP AT ALL TIMES. MAINTAIN ACCESS AND EGRESS FROM BUILDING STAIR #7 AT ALL TIMES.



2
A050

GENERATOR SLAB EDGE PLAN
SCALE 1:75



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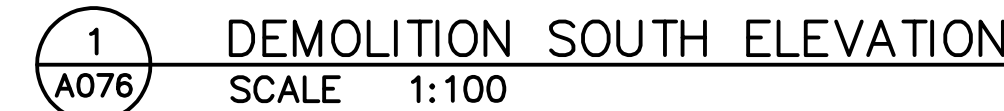
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Project Number	10434805
PLO Proj. No.	PL023-005
MOHLTC #	

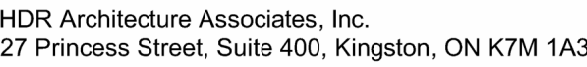
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Sheet Number:

Project Status:



ADDENDUM # 001
ITEM # 76.1.1



76 STUART STREET KINGSTON, ON K7L 2V7



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01	22 09 2025	issued for review
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SOUTH ELEVATION

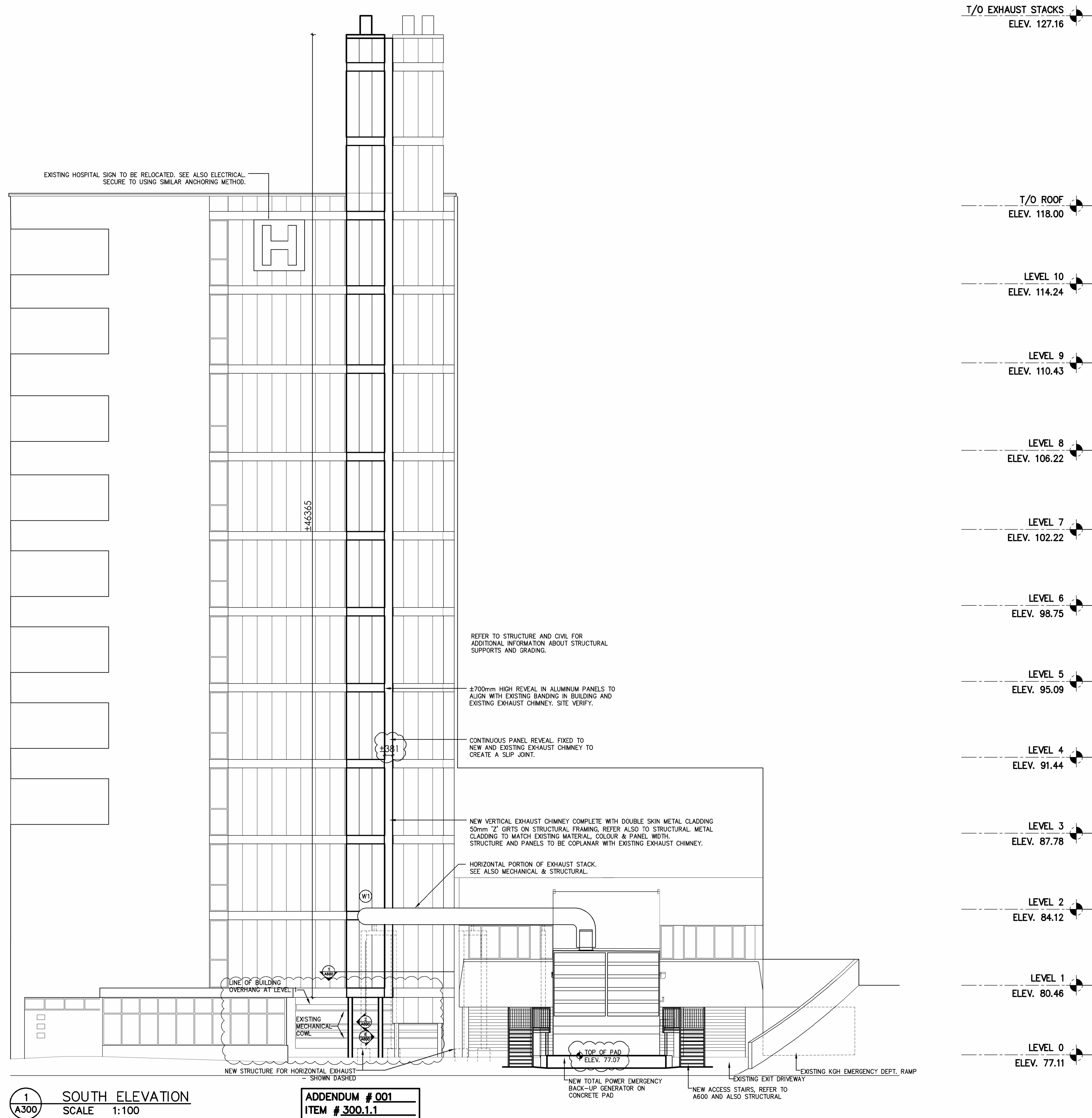
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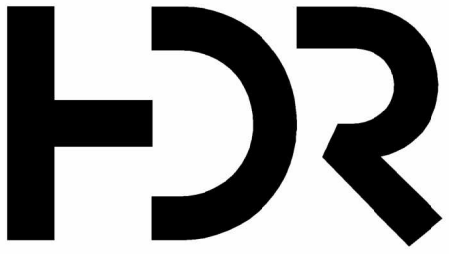
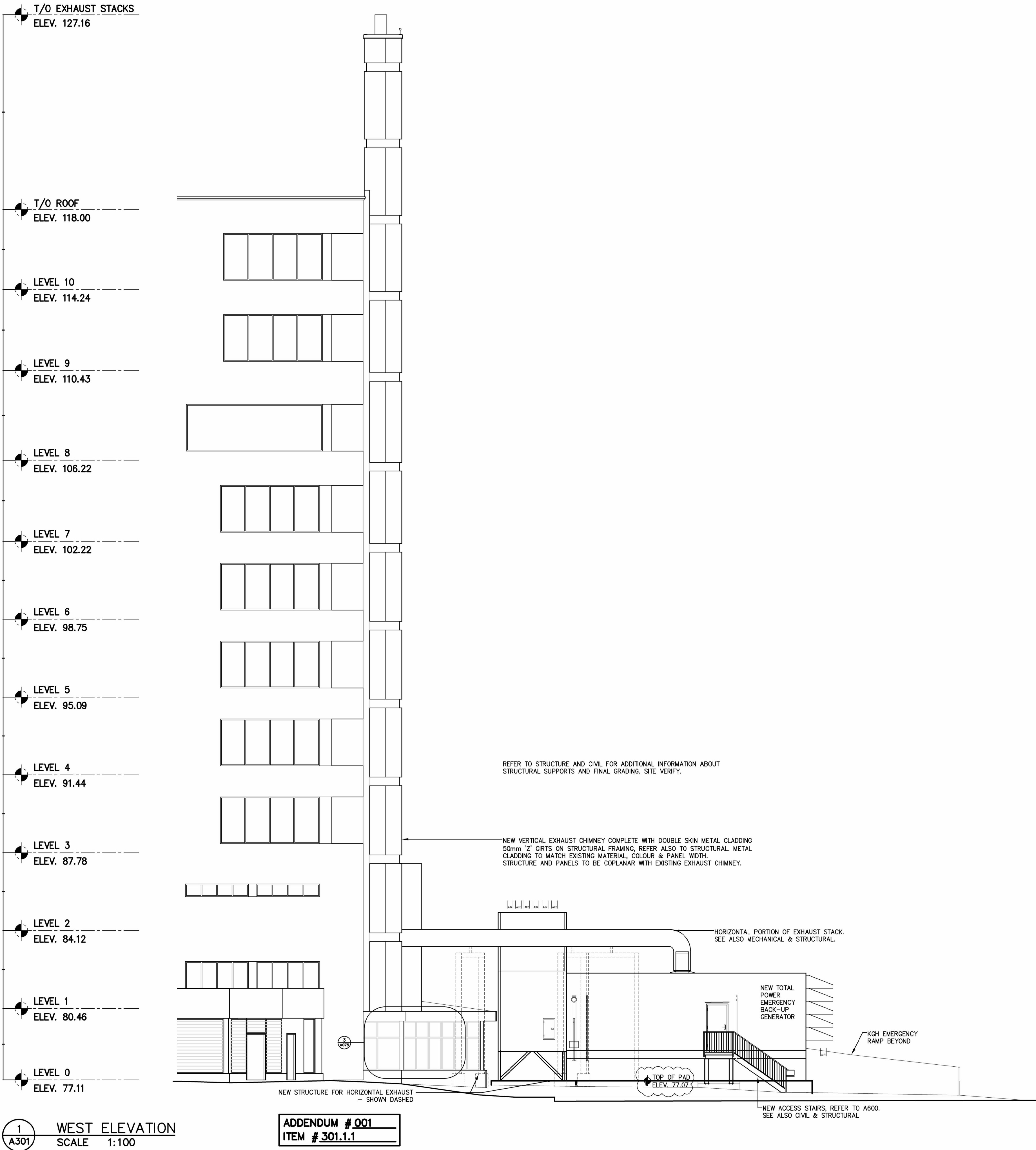
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A-300

Project Status:

10434805 - DEMO AND NEW ELEVATIONS.dwg





HDR Architecture Associates, Inc.
27 Princess Street, Suite 400, Kingston, ON K7M 1A3

Emergency Power System Capacity
& Infrastructure Remediation

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Kingston Health
Sciences Centre

Centre des sciences de
la santé de Kingston



Project Manager	HDR
Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil	HDR
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	CH

MARK	DATE	DESCRIPTION
01	22 09 2025	Issued for review
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DRAFT = NOT FOR
CONSTRUCTION

Project Number	10434805
PLO Proj. No.	PL023-005
MOHLTC #	

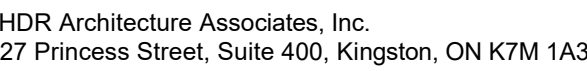
WEST ELEVATION

Scale - As noted

Sheet Number:

A-301

Project Status:



76 STUART STREET KINGSTON, ON K7L 2V7

Centre des sciences de
la santé de Kingston



MARK	DATE	DESCRIPTION
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Sheet Number:

Project Status:



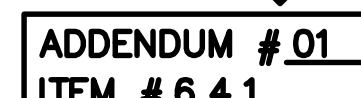
1 New Exhaust Chimney
A600 SCALE 1:25



2 Connection @ New Exhaust Shaft
A600 SCALE 1:25



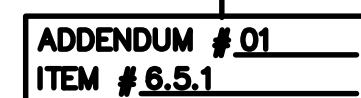
3 Enlarged Stair @ Generator – TYP
A600 SCALE 1:25



4 Section Detail @ Stair
A600 SCALE 1:5



6 Section Through Louvres @ Mechanical Plenum
A600 SCALE 1:25



5 Stair Elevation @ Generator - TYP
A600 SCALE 1:25

GENERAL NOTES

1. READ STRUCTURAL GENERAL NOTES AND TYPICAL DETAILS IN CONJUNCTION WITH STRUCTURAL DRAWINGS AND SPECIFICATIONS.
2. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH OTHER DISCIPLINES DRAWINGS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS.
3. REFER TO OTHER DISCIPLINE'S DRAWINGS AND VENDOR SHOP DRAWINGS TO CONFIRM DIMENSIONS, LOCATIONS AND ELEVATIONS OF SERVICES, DUCTS AND PIPES ETC.
4. BEFORE CONSTRUCTION, CHECK ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS AGAINST THE MECHANICAL AND ELECTRICAL DRAWINGS AND REPORT DISCREPANCIES TO THE ENGINEER.
5. BEFORE CONSTRUCTION, CHECK AND VERIFY ALL EXISTING CONDITIONS AT SITE AGAINST AS-BUILT AND DRAWINGS PROVIDED, REPORT ANY DISCREPANCIES TO THE ENGINEER. NOT ALL EXISTING CONDITIONS ARE SHOWN ON STRUCTURAL DRAWINGS.
6. PRIOR TO EXCAVATION, LOCATE EXISTING UNDERGROUND UTILITIES AND SERVICES AND PROTECT THEM DURING CONSTRUCTION. REPORT ANY CONFLICT TO THE ENGINEER.
7. UNLESS NOTED OTHERWISE, ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE REFERRING TO THE STRUCTURAL REINFORCED CONCRETE OR STEEL ONLY.
8. DIMENSIONS ARE IN MILLIMETERS. ELEVATIONS ARE IN METERS. DO NOT SCALE THE DRAWINGS.
9. ALL EMBEDDED ITEMS REQUIRED FOR UTILITIES, MECHANICAL AND ELECTRICAL SERVICES SHALL BE INCORPORATED INTO THE STRUCTURES APPROVED BY THE ENGINEER WHETHER OR NOT INDICATED ON THE STRUCTURAL DRAWINGS.
10. OBTAIN THE ENGINEER'S AGREEMENT BEFORE INSTALLATION OF OPENINGS, SLEEVES, AND CONDUITS WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
11. PROVIDE ALL TEMPORARY WEATHER PROTECTION, BRACING AND SHORING TO SUIT THE CONSTRUCTION AND TO MINIMIZE THE INTERFERING WITH CITY'S OPERATION. DESIGN LOADS AS INDICATED ON THE DRAWINGS SHALL NOT BE EXCEEDED DURING CONSTRUCTION.
12. THE STRUCTURE IS DESIGNED TO RESIST THE DESIGNED LOADS IN THE COMPLETED STAGE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE STRUCTURAL ADEQUACY FOR ANY PROPOSED CONSTRUCTION LOADS IMPOSED ON THE PARTIALLY COMPLETED STRUCTURES AND THE EXISTING STRUCTURES.
13. THE CONSTRUCTION OF THE PROJECT SHALL CONFORM TO THE CURRENT VERSION OF CODES AND STANDARDS.

DESIGN NOTES

1. THE DESIGN OF THIS PROJECT IS IN CONFORMANCE TO THE CURRENT EDITION OF THE FOLLOWING CODES AND STANDARDS:
 - ONTARIO BUILDING CODE
 - OBC-2024
 - CAN/CSA A23.3 DESIGN OF CONCRETE STRUCTURES
 - CAN/CSA S16-19
2. DEAD LOADS & SUPERIMPOSED DEAD LOADS
 - SELF WEIGHT OF THE STRUCTURE
 - APPROX GENERATOR OPERATING WEIGHT INCLUDING FUEL TANK* AND APPURTENANCES = 587 KN (131800 LBS) .
 - ASSUMED PIPE WEIGHT = 53 kg/m.
 - ASSUMED CONDUIT BANK 100 kg/m
 - ASSUMED CABLE TRAY ASSEMBLY 215 kg/m
- * CONTRACTOR SHALL VERIFY THE FINAL EQUIPMENT DIMENSIONS, OPERATING WEIGHT, SUPPORT REQUIREMENTS, AND ALL ASSOCIATED LOADS FROM THE APPROVED SUBMITTALS. ANY DISCREPANCIES FROM THE DESIGN ASSUMPTIONS SHALL BE REPORTED TO THE STRUCTURAL ENGINEER IN WRITTEN FORM REVIEW PRIOR TO FABRICATION OR INSTALLATION.
3. LIVE LOADS
 - 4.8 kN
4. WIND LOADS
 - $q_{50} = 0.47 \text{ kPa}$
 - $w = 1.25$
5. SNOW LOADS:
 - GROUND SNOW LOAD (S_g) = 2.1 kPa
 - SNOW LOAD ON ROOF = 2.6 kPa
 - $i_s = 1.25$

CONNECTIONS TO EXISTING BUILDING

1. PRIOR TO DRILLING OR INSTALLING ANY POST-INSTALLED ANCHORS INTO EXISTING CONCRETE, THE CONTRACTOR SHALL PERFORM NON-DESTRUCTIVE SCANNING TO LOCATE EXISTING REINFORCING STEEL, EMBEDDED CONDUITS AND OTHER EMBEDDED ITEMS.
2. ANCHOR LOCATIONS SHALL BE ADJUSTED AS NECESSARY TO AVOID CUTTING OR DAMAGING EXISTING REINFORCEMENT OR EMBEDDED SERVICES.
3. CUTTING, DRILLING THROUGH, OR REMOVING EXISTING REINFORCING STEEL SHALL NOT BE PERMITTED UNLESS SPECIFICALLY REVIEWED AND APPROVED IN WRITING BY THE ENGINEER OF RECORD.
4. ANY CONFLICTS IDENTIFIED DURING SCANNING SHALL BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING DRILLING OR ANCHOR INSTALLATION.

POST INSTALLED ANCHORS:

1. POST-INSTALLED ANCHORS MUST ONLY BE USED WHERE INDICATED ON THE DRAWINGS. THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE CONTRACTING OFFICER PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
2. CARE MUST BE TAKEN TO AVOID CONFLICTS WITH EXISTING REINFORCING STEEL AND OTHER EMBEDDED ITEMS WHEN DRILLING HOLES. REINFORCING BARS MUST NOT BE DAMAGED DURING DRILLING OR ANCHOR INSTALLATION. HOLES MUST BE DRILLED AND CLEANED PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS MUST BE INSTALLED PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AT NOT LESS THAN THE MINIMUM EDGE DISTANCES AND/OR SPACING INDICATED IN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
3. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE LISTED IN THE SPECIFICATION OR INDICATED ON THE DRAWINGS MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. IF REQUESTED, CALCULATIONS PREPARED BY A REGISTERED PROFESSIONAL ENGINEER, LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED, MAY BE REQUIRED AS PART OF THE SUBMITTAL PACKAGE.
4. UNLESS NOTED OTHERWISE, THE MINIMUM EMBEDMENT PROVIDED FOR ADHESIVE ANCHORED REINFORCING BARS MUST DEVELOP THE FULL TENSILE STRENGTH OF THE BARS.
5. SPECIAL INSPECTION IS REQUIRED FOR ALL POST-INSTALLED ANCHORS. SEE SPECIFICATION 01 45 35.

FOUNDATION

1. FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATION AND REQUIREMENTS OF THE GEOTECHNICAL REPORT: "2021.001-101-D3 – GEOTECHNICAL INVESTIGATION FOR PROPOSED GENERATOR KHSC-19JN2026"
2. THE UNDERLYING ROCK STRATUM IS LOCATED AT AN APPROXIMATE DEPTH OF 2.0 M BELOW THE FINISHED GRADE LEVEL. GEOTECHNICAL BEARING RESISTANCE FOR FOUNDATIONS BEARING DIRECTLY ON THE COMPETENT LIMESTONE = 5,000 kPa.
3. REMOVE UNSUITABLE SOILS AND BACKFILL IN ACCORDANCE WITH CONTRACT SPECIFICATION 31 23 33.01 TO THE SATISFACTION OF CONTRACT ADMINISTRATOR.
4. REFER TO SPECIFICATIONS AND ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA) FOR EXCAVATION & BACKFILL REQUIREMENTS.
5. ARRANGE FOR A CONTRACT ADMINISTRATOR TO INSPECT EXCAVATION, BACKFILL, AND COMPACTION ON SUB-SOIL CONDITION BELOW SLAB ON GRADE AS SPECIFIED.
6. PROVIDE SAW CUT CONTROL JOINTS FOR SLAB ON GRADE IN ACCORDANCE WITH TYPICAL DETAILS AND SPECIFICATIONS.
7. PROTECT FOOTINGS, BASE SLAB, FOUNDATION WALLS, SLAB ON GRADE AND ADJACENT SOIL AGAINST FREEZING & FROST ACTION AT ALL TIMES DURING CONSTRUCTION.
8. SEPARATE SLAB ON GRADE FROM WALLS BY ISOLATION OR EXPANSION JOINTS AS SPECIFIED IN TYPICAL DETAILS, UNLESS NOTED OTHERWISE.
9. DO NOT DISTURB THE EXISTING FOUNDATIONS AND STRUCTURES ADJACENT TO THE PROPOSED CONSTRUCTION.
10. PROVIDE SLOPE ON GROUND SURFACE ON A POSITIVE GRADE AWAY FROM STRUCTURE TO PROVIDE SURFACE WATER RUNOFF.
11. ALL FOOTING, SLAB ON GRADE AND APRON SLAB, SUB GRADE MUST BE EVALUATED BY GEOTECHNICAL ENGINEER PRIOR PLACING CONCRETE, A MAXIMUM AXIAL DEFLECTION AT SERVICE LOAD SHALL BE 20 mm.
12. MAXIMUM WATER-TO-CEMENTING MATERIALS RATIO (w/c) SHALL BE 0.45 FOR ALL CONCRETE SLABS ON GRADE.
13. FLOOR FINISH: TROWELED FINISH WITH 90mm TOPPING (40mm SP 12.5 + 50mm SP 19.0).
14. SUBSURFACE WATER SHOULD BE ANTICIPATED DURING EXCAVATION OF THE DRILLED SHAFTS, AND TEMPORARY CASING OR SLURRY WILL BE REQUIRED TO PROPERLY CONSTRUCT THE SHAFT. THE TEMPORARY CASING SHOULD BE REMOVED DURING OR IMMEDIATELY AFTER CONCRETE PLACEMENT. PERMANENT CASING IS NOT RECOMMENDED.
12. FROST DEPTH = 1500mm

CONCRETE AND REINFORCEMENT

1. CONCRETE MATERIALS, METHODS OF CONCRETE CONSTRUCTION AND TESTING SHALL CONFORM TO CAN/CSA A23.1/A23.2 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION/TEST METHODS AND STANDARD PRACTICES FOR CONCRETE, ALL CONCRETE MEMBERS ARE DESIGNED IN ACCORDANCE WITH CAN/A23.3, DESIGN OF CONCRETE STRUCTURES.
2. REINFORCING STEEL SHALL CONFORM TO CAN/CSA G30.18 GRADE 400W.
3. REFER TO DRAWINGS AND SPECIFICATIONS FOR CONCRETE STRENGTH REQUIREMENTS. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL NOT BE LESS THAN THE FOLLOWING SPECIFIED:

ELEMENT	CLASS OF EXPOSURE	28 DAY COMPRESSIVE STRENGTH (MPa)
SLAB ON GRADE AND FOUNDATION	C-1	35

4. CONCRETE COVER TO REINFORCING STEEL: (UNLESS NOTED OTHERWISE)

TYPE OF MEMBER EXPOSURE CONDITION	CAST-IN-PLACE CONCRETE (MM)
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	75
CONCRETE NOT SUBMERGED OR EXPOSED TO EARTH OR DE-ICING CHEMICALS —PRINCIPLE REINFORCEMENT	50

5. LOCATION AND DETAILS OF CONSTRUCTION JOINTS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO CONTRACT ADMINISTRATOR FOR REVIEW AND APPROVAL.
6. CHAMFER ALL EXTERNAL CONCRETE EDGES/CORNERS VISIBLE AND ABOVE GRADE 20 mm x 20 mm UNLESS OTHERWISE NOTED.
7. WHERE THE STRUCTURAL THICKNESS OF A SLAB VARIES OR WHERE THE TOP SURFACE OF A SLAB IS SHOWN SLOPED, MAINTAIN CONSTANT COVER TO REINFORCING STEEL, TOP REINFORCING STEEL SHALL FOLLOW THE SLOPE OF THE SLAB.
8. NO SLEEVES, PIPES, HOLES, OR NOTCHES SHALL BE PLACED THROUGH SLABS.
9. UNLESS NOTED OTHERWISE, ALL BAR SPLICES SHALL BE CLASS B TENSION LAP AND ANCHORAGE LENGTH SHALL BE TENSION DEVELOPMENT LENGTH. NO MORE THAN 50% OF REBAR SHALL BE SPLICED AT ANY ONE LOCATION EXCEPT SHOWN ON THE DRAWINGS.
10. FOR POST INSTALLED ANCHOR: HILTI HIT-HY 200 OR HIT-RE 500 ADHESIVE ANCHOR SYSTEM, REFER TO HILTI NORTH AMERICAN PRODUCT TECHNICAL GUIDE.
11. FOLLOW ALL SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR THE DESIGN, CONSTRUCTION OF CONCRETE FORMWORK AND FALSEWORK, AS WELL AS THE INSTALLATION OF WATERSTOP AND WATERPROOFING.

STEEL

- S1. DESIGN STRENGTHS:
HSS SECTIONS $F_y=350$ MPA (CSA G40.21 350W CLASS H)
ALL OTHER PLATES AND SHAPES: $F_y=250$ MPA (CSA G40.21 300W)
- S2. ALL STRUCTURAL MEMBERS SHALL BE HOT DIP GALVANIZED COATED AS PER PROJECT SPECIFICATIONS.
- S3. DIMENSIONS:
TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNO.
- S4. ELEVATIONS:
TOP OF STEEL REFERS TO TOP SURFACE OF MEMBER OR FLANGE UNO.
- S5. WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE BASED ON MATERIAL THICKNESS IN ACCORDANCE WITH AISC SPECIFICATIONS.
- S6. ALL BOLTED STRUCTURAL CONNECTIONS ARE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.
- S7. CONFORM TO AISC 360, STEEL CONSTRUCTION MANUAL AND AISC 341, SEISMIC DESIGN MANUAL.
- S8. THE SEISMIC LOAD RESISTING SYSTEM (SLRS) IS DENOTED ON THE FRAMING PLANS AND FRAME ELEVATIONS. THE SLRS DESIGNATION INCLUDES THE MEMBER AND CONNECTIONS AT EACH END. FRAMES ARE DENOTED AS FOLLOWS:
- A. MOMENT FRAME: 
- B. CONCENTRICALLY BRACED FRAME: 
- FOR SLRS SYSTEMS OR PARTS OF SYSTEMS THAT ARE NOT INCLUDED IN FRAMES, (SLRS) IS PLACED NEXT TO THE BEAM SIZE ON THE FRAMING PLAN (eg: ON A COLLECTOR ELEMENT (DRAG STRUT): MEMBER DESIGNATION (SLRS))
- S9. ALL STEEL BEAMS SHALL RECEIVE STANDARD CAMBER PER THE SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE PLANS. BEAMS REQUIRING SPECIAL CAMBER ARE DENOTED ON THE BEAMS SHOWN ON THE FRAMING PLANS. EXAMPLE: (+1/2") INDICATES 1/2".
- S10. UNLESS OTHERWISE NOTED OR SHOWN, BOLTED BEAM CONNECTIONS SHALL BE SIMPLE SHEAR CONNECTIONS, BOLTED STEEL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE 360, MANUAL OF STEEL CONSTRUCTION, AND AISC 341, SEISMIC DESIGN MANUAL, USING A325 (GALVANIZED) BOLTS. {USE ASTM A593 FOR STAINLESS STEEL CONNECTIONS WHEN REQUIRED}. ALL BOLTED STRUCTURAL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL OR REQUIRED TO BE SLIP-CRITICAL AISC SPECIFICATION. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.

- S9. ALL STEEL BEAMS SHALL RECEIVE STANDARD CAMBER PER THE SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE PLANS. BEAMS REQUIRING SPECIAL CAMBER ARE DENOTED ON THE BEAMS SHOWN ON THE FRAMING PLANS. EXAMPLE: (+1/2") INDICATES 1/2".

310. UNLESS OTHERWISE NOTED OR SHOWN, BOLTED BEAM CONNECTIONS SHALL BE SIMPLE FRAMED SHEAR CONNECTIONS. BOLTED STEEL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE AISC 360, MANUAL OF STEEL CONSTRUCTION, AND AISC 341, SEISMIC DESIGN MANUAL, USING ASTM A325 [GALVANIZED] BOLTS. {USE ASTM A593 FOR STAINLESS STEEL CONNECTIONS WHERE REQUIRED;} ALL BOLTED STRUCTURAL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL OR REQUIRED TO BE SLIP-CRITICAL BY THE AISC SPECIFICATION. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.

DEMOLITION/TEMPORARY WORKS

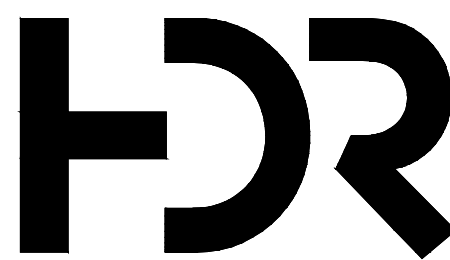
1. CONTRACTOR TO VERIFY & CONFIRM ALL EXISTING CONDITIONS PRIOR TO DEMOLITION, REPORT ANY DISCREPANCIES TO CONTRACT ADMINISTRATOR.
2. CONTRACTOR TO INSTALL INTERIOR/EXTERIOR HOARDING TO SEPARATE BUILDING FROM CONSTRUCTION ZONES AND PROVIDE REQUIRED SAFE MEANS OF EGRESS FROM CONSTRUCTION ZONE OF EXISTING FACILITIES AT ALL TIMES APPROVED BY THE AUTHORITIES HAVING JURISDICTION.
3. PROVIDE DUST AND DEBRIS PROTECTION TO MATERIALS AND EQUIPMENT TO REMAIN & AREAS OUTSIDE THE ZONE OF WORK IN ACCORDANCE WITH SPECIFICATIONS.
4. IN ALL CASES, EXERCISE ALL REASONABLE CARE DURING REMOVAL OPERATIONS TO AVOID DAMAGING ITEMS TO BE SALVAGED, RE-USED OR ITEMS THAT ARE NOT PART OF SCOPE OF WORK. CONTRACTOR SHALL BE DEEMED RESPONSIBLE FOR ANY DAMAGES RESULTING FROM ITS ACTION.
5. DEMOLISH CONCRETE IN SMALL SECTIONS, CAREFULLY REMOVE HEAVY OR LARGE OBJECTS.
6. THE CONTRACTOR IS TO AVOID ANY DAMAGE TO THE SURFACE OF SOUND CONCRETE WHICH IS TO REMAIN THROUGH REMOVAL OPERATION. WHERE ANY SUCH DAMAGE IS DONE TO SOUND MATERIAL, IT MUST BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE TO THE SATISFACTION OF CONTRACT ADMINISTRATOR.

GENERAL CONSTRUCTION NOTES

1. ALL EXISTING UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN, ARE TO BE LOCATED AND MARKED PRIOR TO COMMENCING CONSTRUCTION WITHIN THE SITE AND ON EXISTING ABUTTING ROAD ALLOWANCE. NAY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE GOVERNING BODY AT THE SOLE EXPENSES OF THE OWNER'S CONTRACTOR
2. THE OWNER'S CONTRACTOR IS TO MEET ALL THE REQUIREMENTS OF THE OWNERS OF THE UTILITIES ON THIS PLAN, AND MUST MAKE SATISFACTORY ARRANGEMENTS WITH THE UTILITY COMPANIES FOR CROSSING THEIR INSTALLATIONS AND FOR PROVIDING ADEQUATE PROTECTION DURING CONSTRUCTION. ALL EXISTING UNDERGROUND PLANT (ie. TELEPHONE DUCT, GAS MAINS, SEWER, WATERMAINS) THAT WILL BE CROSSED UNDER DURING THE INSTALLATION OF SERVICES FOR THIS DEVELOPMENT SHALL BE SUPPORTED BY A SUPPORT BEAM OR BY OTHER METHODS AS MAY BE REQUIRED BY THE OWNER'S CONTRACTOR AND INDEPENDENT ENGINEERING REVIEW/CERTIFICATION SHALL BE UNDERTAKEN WHERE NECESSARY AT NO EXTRA COST TO THE CONTRACTOR.
3. ALL EXISTING BOLLARDS AND ROAD SURFACES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST AS GOOD AS ORIGINAL (PRE-CONSTRUCTION CONDITION), ALL TO THE SATISFACTION OF THE CITY ENGINEER.
4. PRIOR TO COMMENCING ANY CONSTRUCTION, THE OWNER'S CONTRACTOR MUST VERIFY ALL OUTLET INFORMATION, BENCHMARKS, ELEVATIONS AND DIMENSIONS AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
5. PRIOR TO COMMENCING ANY WORK ON THE INSTALLATION OF SERVICES, AN APPROVED SET OF PLANS MUST BE AVAILABLE ON THE JOB SITE AND SHALL REMAIN THERE UNTIL WORK IS COMPLETED
6. THE OWNER'S CONTRACTOR IS RESPONSIBLE FOR THE CONTROL OF SURFACE AND SUBSURFACE WATER.
7. THE OWNER'S CONSULTING ENGINEER SHALL PROVIDE FULL-TIME INSPECTION AND A CERTIFICATE OF COMPLIANCE UPON COMPLETION FOR ALL WORKS TO BE CONSTRUCTED ON EXISTING CITY STREETS.
8. THE OWNER SHALL HAVE ITS PROFESSIONAL ENGINEER PROVIDE ADEQUATE INSPECTION DURING DURING CONSTRUCTION ON THE SITE AND A CERTIFICATE OF COMPIATION OF WORK UPON COMPIATION OF ALL WORKS WHICH ARE TO BE ASSUMED BY THE OWNER.
9. THE OWNER'S CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT THE SPILLING OR DUMPING OF HAZARDOUS MATERIAL WHILE FUELING AND MAINTAINING VEHICLES AND EQUIPMENT.
10. IF IN THE OPINION OF THE ENGINEER A ZONE IS CONTAMINATED THROUGH NEGLECT AND/OR DELIBERATE MISHANDLING OF TOXIC MATERIALS BY THE OWNER'S CONTRACTOR, THE OWNER'S CONTRACTOR SHALL AT NO EXPENSE TO THE OWNER EXCAVATE AND DISPOSE OF ALL CONTAMINATED MATERIALS OF AN APPROVED DISPOSAL SITE AND PROVIDE SOIL REMEDIATION.

ABBREVIATIONS

ADD'L	ADDITIONAL	MH	MANHOLE
&	AND	Mpa	MEGAPASCAL
L	ANGLE (METAL)	MAX.	MAXIMUM
@	AT	MECH.	MECHANICAL
		m	METRE
BOT.	BOTTOM	mm	MILLIMETRE
BLDG.	BUILDING	MIN.	MINIMUM
CB	CATCH BASIN	MISC.	MISCELLANEOUS
C/C	CENTRE TO CENTRE	-	MINUS
C/L OR	CENTRE LINE		
CJ	CONSTRUCTION JOINT		
CONC.	CONCRETE	N/A	NOT APPLICABLE
CONT.	CONTINUOUS	N.T.S.	NOT TO SCALE
CONTR. JT.	CONTRACTION JOINT	NO. OR #	NUMBER
C/W	COMPLTETE WITH		
		PL	PLATE
DIA.	DIAMETER	+	PLUS
DWG.	DRAWING	±	PLUS OR MINUS
E.F.	EACH FACE		
E.S.	EACH SIDE	REINF.	REINFORCING
E.W.	EACH WAY	REV.	REVISION
EL.	ELEVATION (ABOVE DATUM)		
ELEC.	ELECTRICAL	SAN.	SANITARY
ELEV.	ELEVATION (VIEW)	SEC.	SECTION
EMBED.	EMBEDMENT	SIM	SIMILAR
EX. OR EXIST.	EXISTING	SOG	SLAB ON GRADE
EXP. JT.	EXPANSION JOINT	SPECS.	SPECIFICATIONS
EQ.	EQUAL	S.S.	STAINLESS STEEL
GALV.	GALVANIZED	STG.	STAGGERED
HOR	HORIZONTAL	STIR.	STIRRUP
		STRUCT.	STRUCTURAL
JT.	JOINT		
kN	KILONEWTON	TELECOM	TELECOMMUNICATION
kPa	KILOPASCAL	TEMP.	TEMPORARY
		TBD	TO BE DETERMINED
LG.	LENGTH, LONG	T/O	TOP OF
LLH	LONG LEG HORIZONTAL	TOC	TOP OF CONCRETE
LLV	LONG LEG VERTICAL	THK.	THICKNESS
		T&B	TOP AND BOTTOM
		TYP.	TYPICAL
		U.N.O.	UNLESS NOTED OTHERWISE
		VERT.	VERTICAL



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EMERGENCY POWER SYSTEM CAPACITY & INFRASTRUCTURE REMEDiation

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Project Manager	HDR
Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

[illegible]

Project Number	10331045
PLO Proj. No.	
MOHLTC #	

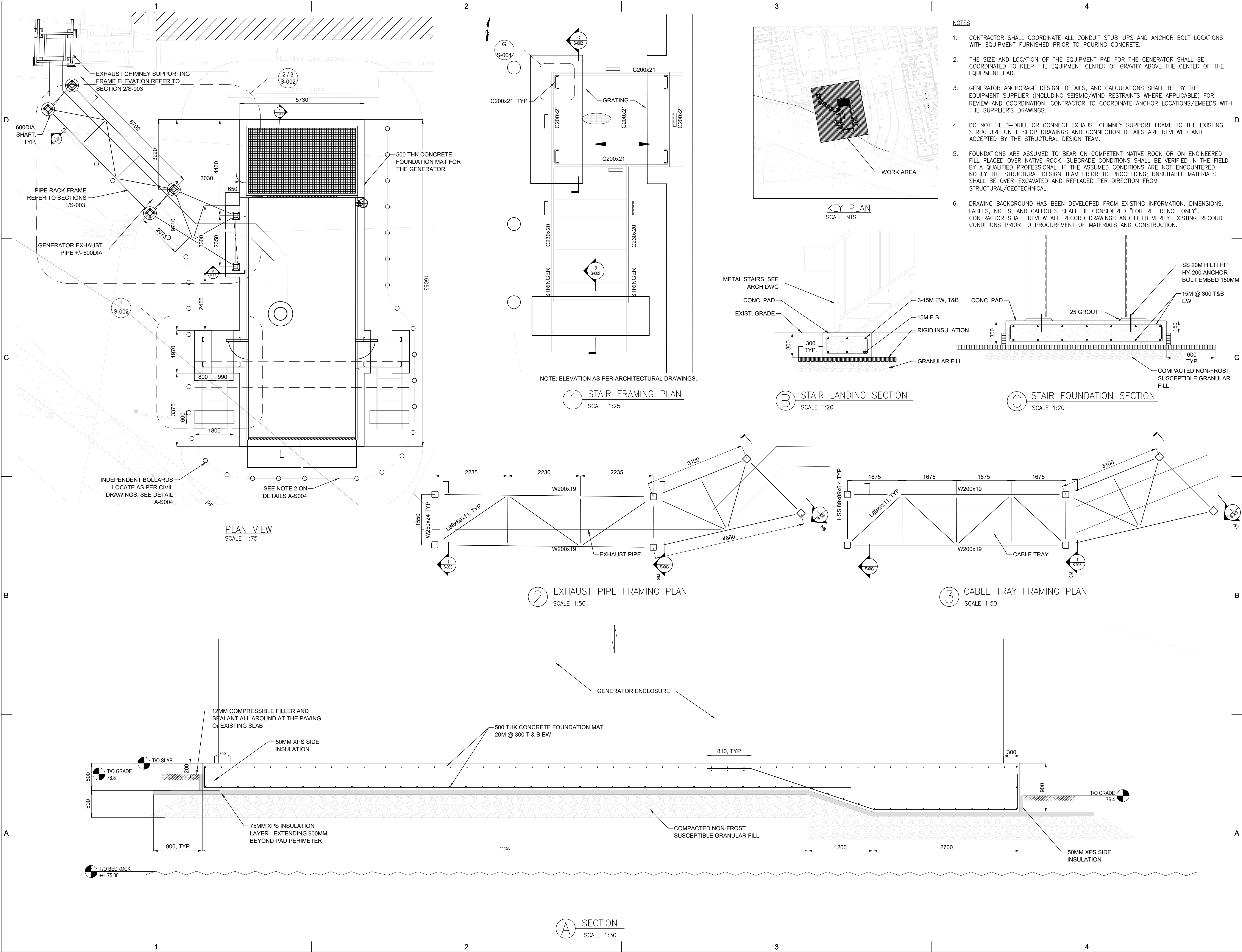
STRUCTURAL GENERAL NOTES & ABBREVIATIONS

Scale - As noted

Sheet Number

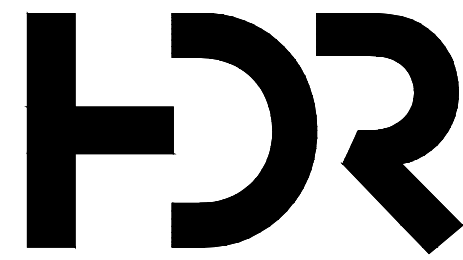
S-001

Project Status: Addendum 01



NOTES

1. CONTRACTOR SHALL COORDINATE ALL CONDUIT STUB-UPS AND ANCHOR BOLT LOCATIONS WITH EQUIPMENT FURNISHED PRIOR TO POURING CONCRETE.
2. THE SIZE AND LOCATION OF THE EQUIPMENT PAD FOR THE GENERATOR SHALL BE COORDINATED TO KEEP THE EQUIPMENT CENTER OF GRAVITY ABOVE THE CENTER OF THE EQUIPMENT PAD.
3. GENERATOR ANCHORAGE DESIGN, DETAILS, AND CALCULATIONS SHALL BE BY THE EQUIPMENT SUPPLIER (INCLUDING SEISMIC/WIND RESTRAINTS WHERE APPLICABLE) FOR REVIEW AND COORDINATION. CONTRACTOR TO COORDINATE ANCHOR LOCATIONS/EMBEDS WITH THE SUPPLIER'S DRAWINGS.
4. DO NOT FIELD-DRILL OR CONNECT EXHAUST CHIMNEY SUPPORT FRAME TO THE EXISTING STRUCTURE UNTIL SHOP DRAWINGS AND CONNECTION DETAILS ARE REVIEWED AND ACCEPTED BY THE STRUCTURAL DESIGN TEAM.
5. FOUNDATIONS ARE ASSUMED TO BEAR ON COMPETENT NATIVE ROCK OR ON ENGINEERED FILL PLACED OVER NATIVE ROCK. SUBGRADE CONDITIONS SHALL BE VERIFIED IN THE FIELD BY A QUALIFIED PROFESSIONAL. IF THE ASSUMED CONDITIONS ARE NOT ENCOUNTERED, NOTIFY THE STRUCTURAL DESIGN TEAM PRIOR TO PROCEEDING; UNSUITABLE MATERIALS SHALL BE OVER-EXCAVATED AND REPLACED PER DIRECTION FROM STRUCTURAL/GEOTECHNICAL.
6. DRAWING BACKGROUND HAS BEEN DEVELOPED FROM EXISTING INFORMATION. DIMENSIONS, LABELS, NOTES, AND CALLOUTS SHALL BE CONSIDERED "FOR REFERENCE ONLY". CONTRACTOR SHALL REVIEW ALL RECORD DRAWINGS AND FIELD VERIFY EXISTING RECORD CONDITIONS PRIOR TO PROCUREMENT OF MATERIALS AND CONSTRUCTION.



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EMERGENCY POWER SYSTEM
CAPACITY &
INFRASTRUCTURE
REMEDATION

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Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

MARK	DATE	DESCRIPTION
01	22 09 2025	issued for review
02	07 11 2025	issued for 100% CD
03	22 06 2026	issued for 50% IFB
04	02 07 2026	issued for 90% IFB
05	15 07 2026	issued for 100% IFB
06	21 07 2026	Addendum 01

Project Number
P/O Proj. No.
MOHLTC #

10331045

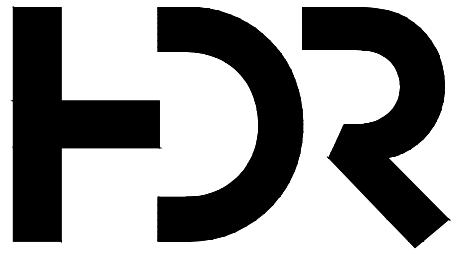
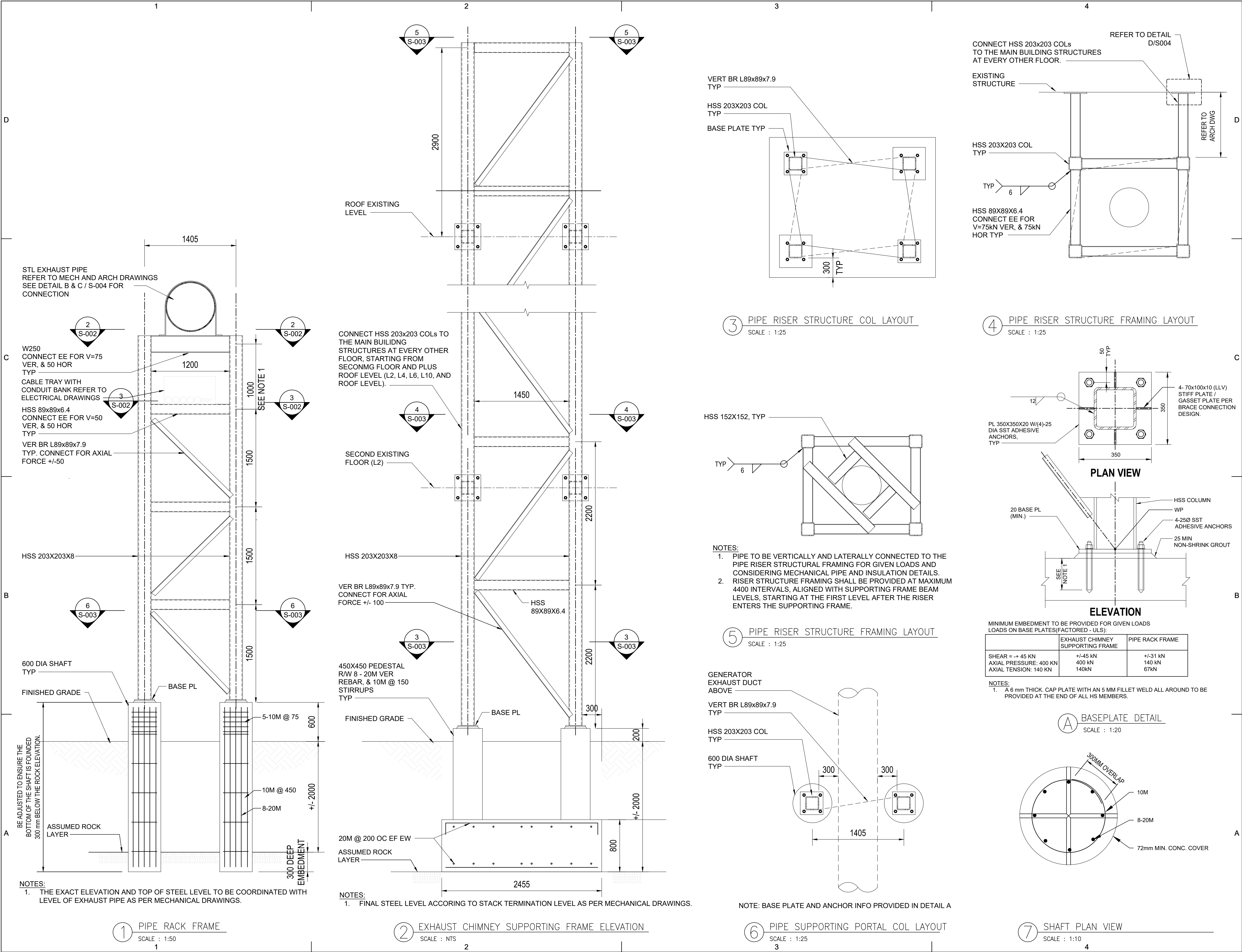
STRUCTURAL
PLAN VIEW &
SECTION

Scale - As noted

Sheet Number:

S-002

Project Status: Addendum 01



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EMERGENCY POWER SYSTEM CAPACITY & INFRASTRUCTURE REMEDATION

76 STUART STREET KINGSTON, ON K7L 2V7



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Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

MARK	DATE	DESCRIPTION
01	22 09 2025	issued for review
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03	22 06 2026	issued for 50% IFB
04	02 07 2026	issued for 90% IFB
05	15 07 2026	issued for 100% IFB
06	21 07 2026	Addendum 01

Project Number
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MOHLTC #

10331045

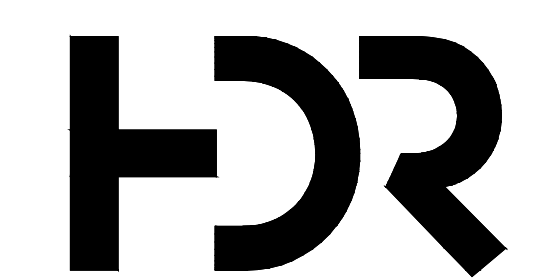
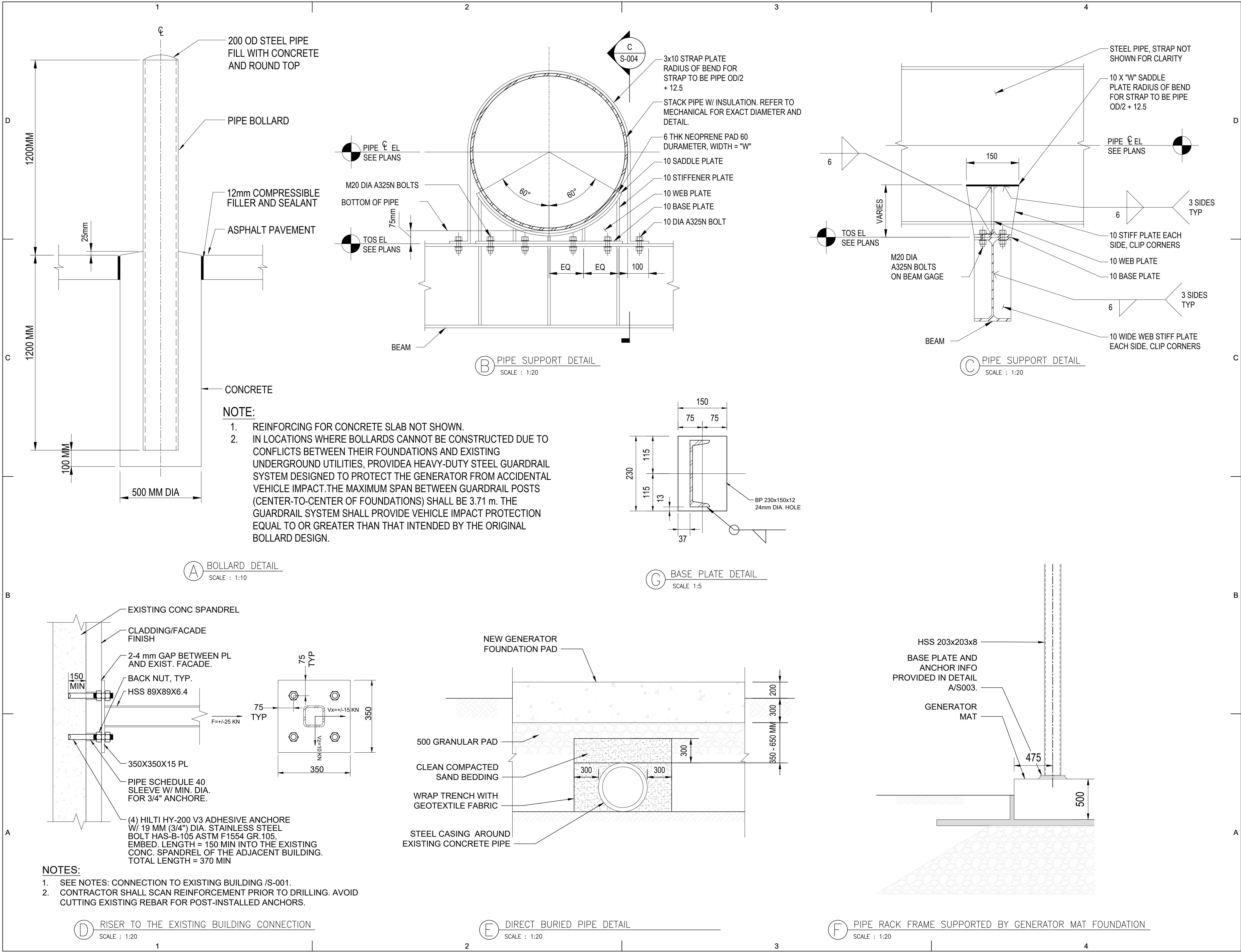
STRUCTURAL SECTIONS & TYPICAL DETAILS

Scale - As noted

Sheet Number:

S-003

Project Status: Addendum 01



HDR Architecture Associates, Inc.
27 Princess Street, Suite 400, Kingston, ON K7M 1A3

EMERGENCY POWER SYSTEM CAPACITY & INFRASTRUCTURE REMEDATION

76 STUART STREET KINGSTON, ON K7L 2V7



Project Manager	HDR
Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

MARK	DATE	DESCRIPTION
01	22 09 2025	issued for review
02	07 11 2025	issued for 100% CD
03	22 06 2026	issued for 50% IFB
04	02 07 2026	issued for 90% IFB
05	15 07 2026	issued for 100% IFB
06	21 07 2026	Addendum 01

Project Number
PLO Proj. No.
MOHLTC #

10331045

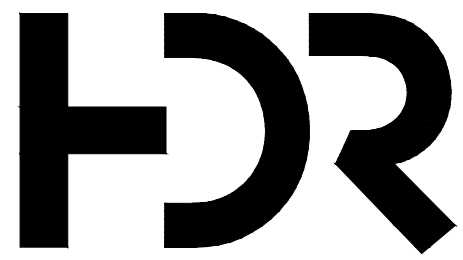
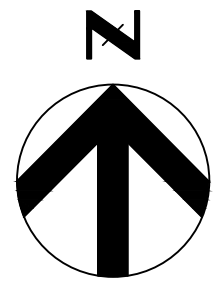
STRUCTURAL TYPICAL DETAILS

Scale - As noted

Sheet Number:

S-004

Project Status: Addendum 01



HDR Architecture Associates, Inc.
27 Princess Street, Suite 400, Kingston, ON K7M 1A3

Emergency Power System Capacity & Infrastructure Remediation

76 STUART STREET KINGSTON, ON K7L 2V7

**Kingston Health
Sciences Centre**

Centre des sciences de
la santé de Kingston



Project Manager	HDR
Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	HDR
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

MARK	DATE	DESCRIPTION
01	22 06 2026	ISSUED FOR 50% IFB Submission
02	02 07 2026	ISSUED FOR 90% IFB Submission
03	15 07 2026	ISSUED FOR 100% IFB Submission
04	21 07 2026	ISSUED FOR ADDENDUM 1

Project Number
PLO Proj. No.
MOHLTC #

10434805



SITE PLAN UNDERGROUND STRUCTURES

Scale: 1:100

Sheet Number:

C-03

Project Status: PRELIMINARY

SEWER CONSTRUCTION NOTES

1. CONTRACTOR SHALL INSTALL AND MAINTAIN THE TEMPORARY BY-PASS SYSTEM DURING CONSTRUCTION.

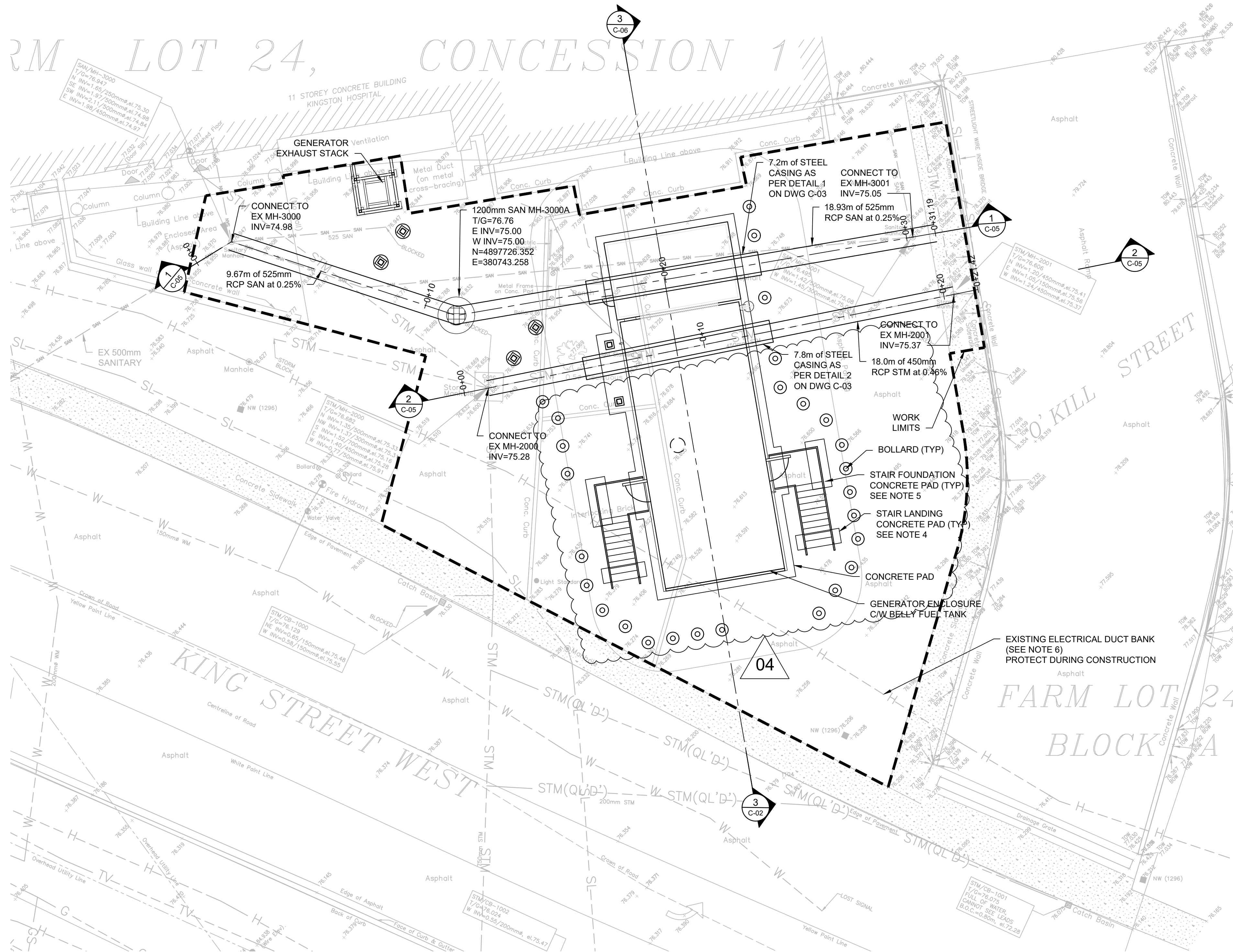
2. CONTRACTOR SHALL PROVIDE THE TEMPORARY BYPASS PUMPING DOCUMENTS (DRAWINGS, DETAILS, CALCULATIONS, PRODUCT SPECIFICATIONS, ETC.) SIGNED BY THE PROFESSIONAL ENGINEER LICENSED IN ONTARIO FOR CONSULTANT'S REVIEW PRIOR TO CONSTRUCTION START.

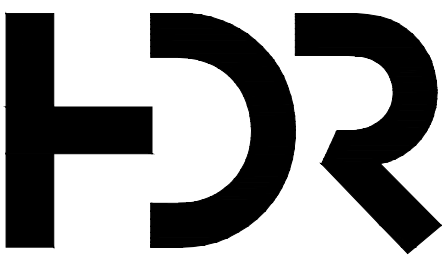
3. CONTRACTOR SHALL DEVELOP A PLAN OF MAINTAINING HOSPITAL ENTRANCE OPEN DURING CONSTRUCTION TO ENSURE THAT OCCUPANTS CAN SAFELY EXIT THE BUILDING AND PROVIDE THIS PLAN FOR CONSULTANT'S REVIEW PRIOR TO CONSTRUCTION START.

4. SEE STRUCTURAL DRAWINGS FOR STAIR LANDING CONCRETE PAD DETAIL.

5. SEE STRUCTURAL DRAWINGS FOR STAIR FOUNDATION CONCRETE PAD DETAIL.

6. EXISTING ELECTRICAL DUCT BANK DEPTH AND DIMENSIONS ARE UNKNOWN. CONTRACTOR SHALL CONFIRM EXISTING DUCT BANK INFORMATION AND PROVIDE TO CONSULTANT FOR REVIEW PRIOR TO CONSTRUCTION START.





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Emergency Power System Capacity & Infrastructure Remediation

76 STUART STREET KINGSTON, ON K7L 2V7

**Kingston Health
Sciences Centre**

Centre des sciences de
la santé de Kingston



Project Manager	HDR
Project Designer	HDR
Project Architect	HDR
Landscape Architect	
Civil Architect	HDR
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS
Interior Designer	
Equipment Planner	
Wayfinding	
Drawn By	

MARK	DATE	DESCRIPTION
01	22 06 2026	ISSUED FOR 50% IFB Submission
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03	15 07 2026	ISSUED FOR 100% IFB Submission
04	21 07 2026	ISSUED FOR ADDENDUM 1

Project Number
PLO Proj. No.
MOHLTC #

10434805



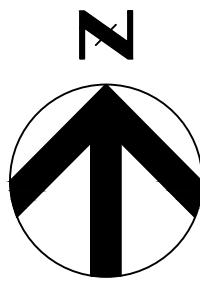
SITE PLAN GRADING

Scale: 1:100

Sheet Number:

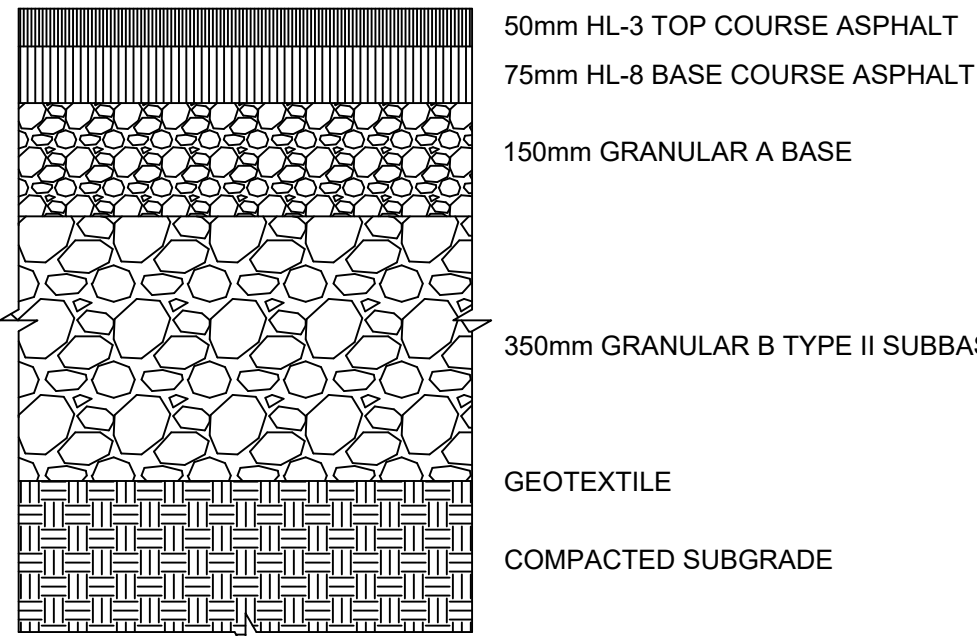
C-04

Project Status: PRELIMINARY

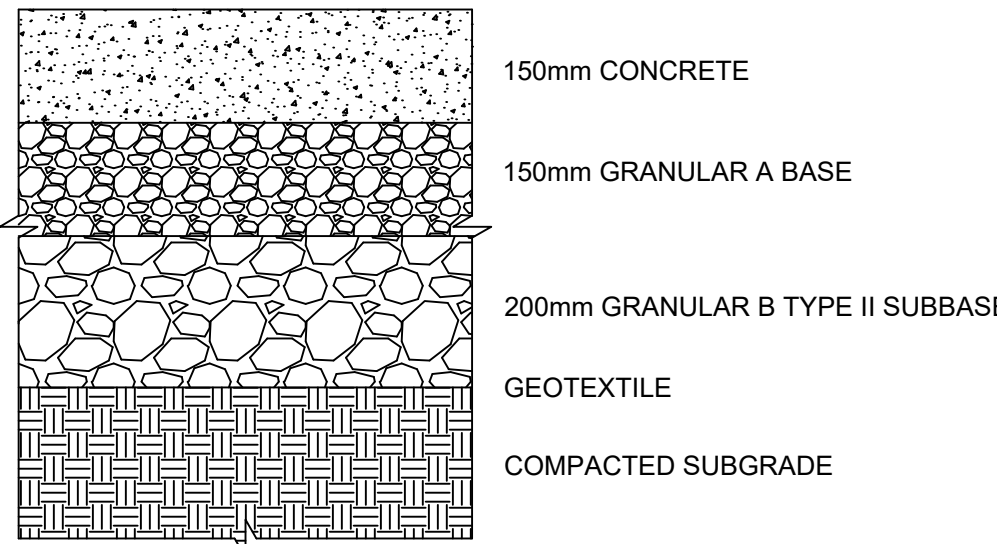


NOTES

1. EXHAUST PIPE LAYOUT AND SUPPORTS TO BE CONFIRMED BY THE GENERATOR MANUFACTURER.
2. SEE STRUCTURAL DRAWINGS FOR BOLLARD DETAILS.
3. SEE STRUCTURAL DRAWINGS FOR GUARDRAIL DETAILS.
4. NEW CONCRETE SIDEWALK SHALL MATCH EXISTING GRADES.
5. NEW CONCRETE PAVEMENT SHALL MATCH EXISTING GRADES.
6. SEE STRUCTURAL DRAWINGS FOR STAIR LANDING CONCRETE PAD DETAIL.
7. SEE STRUCTURAL DRAWINGS FOR STAIR FOUNDATION CONCRETE PAD DETAIL.

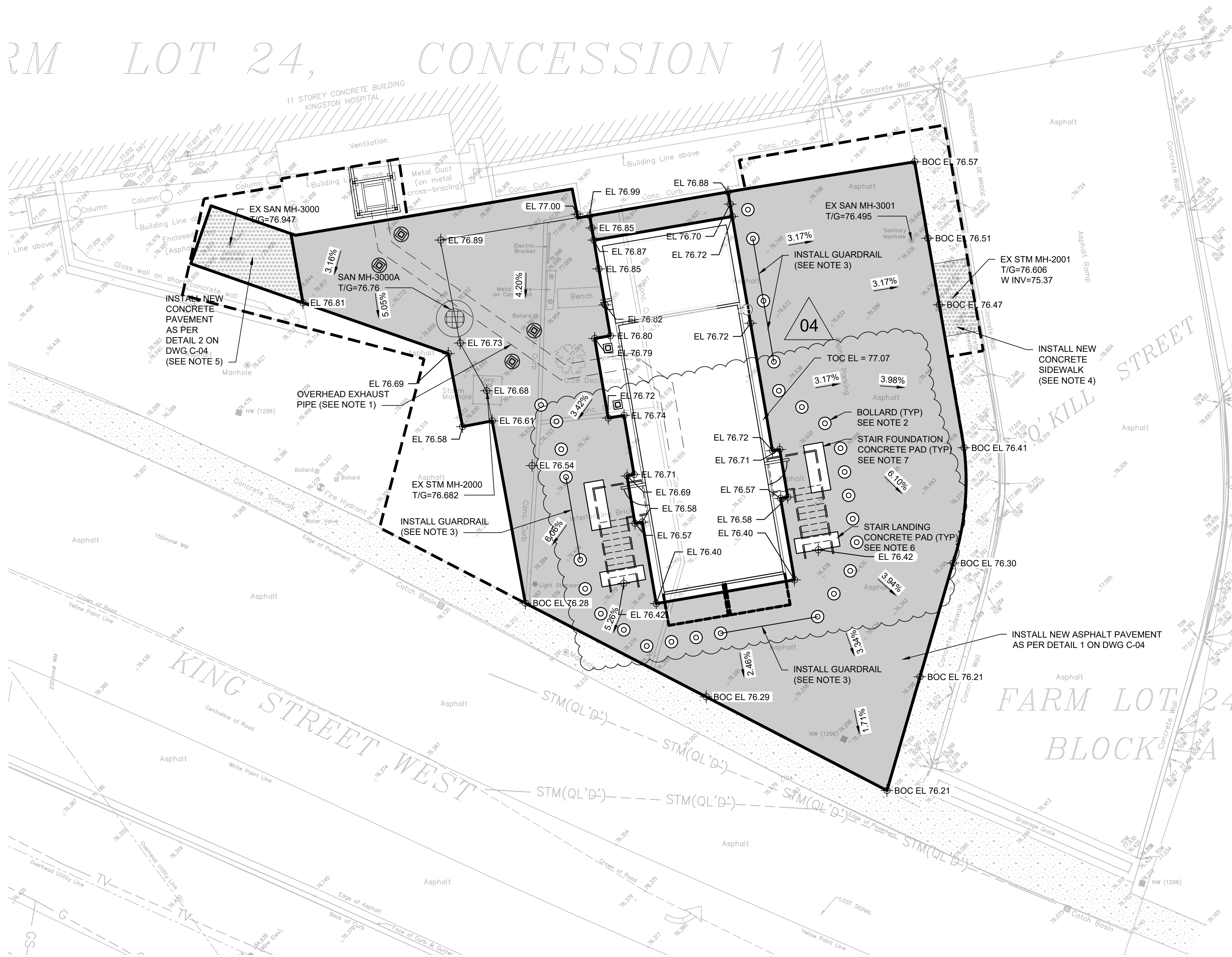


DETAIL 1 - ASPHALT PAVEMENT SECTION



DETAIL 2 - CONCRETE PAVEMENT
SECTION AT ENCLOSED ENTRANCE

TENDER DRAWING
NOT FOR CONSTRUCTION



**ADDENDA
00 91 13**

Addendum No.: E-1

The information listed below is to form part of the Contract Documents. All associated costs are to be included in the Bid Price shown on the Bid Form. Acknowledgment of this Addendum, by number, is to be shown in the space provided on the Bid Form.

1 SPECIFICATIONS

1.1 Section 27 15 00 Communications Cabling

- .1 New specification issued with this addendum.

2 DRAWINGS

2.1 Drawing E0-10 Electrical Site Plan

- .1 Cable entry point and cable route revised on re-issued drawing. Notes 5 and 6 updated.
- .2 Refer to re-issued drawing.

2.2 Drawing E3-02 Exterior Layout

- .1 Relocate type LW1 and provide additional type LW1 in locations shown on re-issued drawing.

End of Section

COMMUNICATIONS CABLING

27 15 00

1 GENERAL

1.1 General Requirements

- .1 Conform to Section 1 as applicable.
- .2 Conform to Section 16010, Electrical General Requirements.

1.2 References

- .1 Reference is made in this Specification to the following standards, the latest issue and supplements of which shall apply and are hereby made a part of this Specification as if written in full herein:
- .2 The installation standards adopted in this installation for both the horizontal and vertical subsystems utilizing unshielded twisted pair conforming to EIA/TIA specifications are as follows:

ANSI/TIA/EIA 568A:	Formerly EIA/TIA-568 is a Commercial Building Telecommunications Cabling Standard. It addresses the telecommunications wiring system requirements for commercial buildings that support various LAN, data, voice and image/video systems (first issued in July 1991). Released as the new ANSI/TIA/EIA 568A.
ANSI/EIA/TIA 569A:	Commercial Building Standard for Telecommunications Pathways & Spaces. The purpose of this standard is to standardize the design and construction practices within and between buildings, mainly commercial establishments, which support telecommunications media and equipment.
CSA T529:	Canadian standard for Commercial Building Telecommunications Wiring Standard equivalent to EIA/TIA 568 (approved for publication).
CSA T530:	Building Facilities, Design Guidelines for Telecommunications (same as EIA/TIA 569).IEEE 802.3 Ethernet 10Base-T LAN: The purpose (relative to cabling) of this standard is to define media and distance requirements for 10 Mbit/s LAN (issued in October 1990).
TSB 67:	System Bulletin that define field testing of UTP Basic Links (limited to the work area telecommunications outlet/connector to cross connect in wiring closet only) and Channels (complete connectivity from electronic wiring closet through to the work area device (including line cords in work area and patch cords or cross-connect in closet).
CSA C22.1	Canadian Electric Code Part 1 Ontario Hydro Electrical Safety Code
CSA C22.2 No. 214	Communications Cables
ISO/IEC IS 11801A	Generic Cabling For Customer Premises
CENELEC EN 50173	Performance Requirements for generic Cabling systems
BICSI TDM Issue 8	Telecommunications Distribution Methods Manual (2/98)

1.3 Shop Drawings and Product Data

- .1 Submit shop drawings and product data in accordance with Section 26 01 01 Electrical General Requirements.
- .2 Name plates to be in accordance with Article "Equipment Identification".
- .3 Include:
 - .1 Details for all devices, components and cabling types.

1.4 Work Included

- .1 Work to be done under this Section to include furnishing of labour, materials, and equipment required for installation, testing and putting into proper operation complete systems as shown as specified and as otherwise required. Complete systems shall be left ready for continuous and efficient satisfactory operation.
- .2 Connect new cabling to existing patch panels in existing communications closet.

1.5 Operation and Maintenance Data

- .1 Provide operation and maintenance data for incorporation into manual specified in Section 26 01 01 Electrical General Requirements.

1.6 Maintenance Materials

- .1 Provide maintenance materials as required and as specified in Section 26 01 01 Electrical General Requirements.

1.7 Installation Requirements

- .1 Each location will have 1 data 'Category 6' enhanced UTP drop (or as otherwise noted on the drawings). The drawings description of the outlet configurations shall take precedence.
- .2 All UTP cables shall have eight -24 AWG thermoplastic insulated, solid conductors formed into individually uniform twisted pairs and enclosed in a CMR rated (FT4) thermoplastic jacket and all individual conductors to be insulated with fluorinated ethylene propylene (FEP).
- .3 All drops will be routed through empty conduit system or ceiling mounted cable trays provided and installed by the Electrical Contractor. If conduits are not provided for the entire route of the cable, and the cable runs through a plenum space or fire protection is required CMP (FT-6) cable must be used.
- .4 All drops will be protected by spiral wrap where necessary. The communication contractor is responsible to supply and install spiral wrap.
- .5 All data drops will use a blue EZ MDVO PS5 modular jacks. All voice outlets will use a black EZ MDVO PS5 modular jacks.
- .6 All data drops will terminate on existing modular patch panels.
- .7 All drop locations and quantities to be confirmed prior to the start of the installation.

- .8 Performance of the cables shall comply with the latest draft of ANSI/EIA/TIA-568A Addendum 5 Attenuation and Power Sum Near End Cross Talk (NEXT) parameters for UTP Enhanced Category 6 cable.

1.8 Installation Requirements Workstation

- .1 All horizontal cabling shall be Belden IBDN `Category 6 enhanced UTP'.. The colour of all horizontal cables shall be white.

1.9 Installers

- .1 The staff selected for the installation of the Multipurpose Communication Cabling shall conform to the following:
 - .1 Ability to provide Manufacturer Certification in the installation of "BELDEN" IBDN systems.
 - .2 Detailed knowledge of Ethernet (IEEE 802.3) standards.
 - .3 Detailed knowledge of networking equipment.
 - .4 Proven experience with voice, data wiring.
 - .5 Proven experience in management of construction project.
 - .6 Proven experience in troubleshooting and problem solving with network voice and data networks.
 - .7 The ability to provide timely, flexible availability.
 - .8 Compatible with the local I.B.E.W.
 - .9 Belden Certified System Vendor
- .2 Submit to the Consultant within seven days of Contract Award a list of all staff to be used in above installation including proof of experience.

1.10 Delivery of Documentation

- .1 Floor plans shall be clearly labelled indicating all cable runs and test documents shall be provided within seven (7) days of completion of each stage of this project.
- .2 Drawings shall be produced on AUTOCAD Release 2014. All input complete and supplied on a memory key. Hand drawn documents will not be acceptable.
- .3 All information and shop drawings to be included in Data Books.
- .4 A hard and soft copy of the testing results shall be provided to HH Angus upon completion of the project when final certification approval is requested.

1.11 Manufacturer –BELDEN

- .1 Refers to the company that manufactures the components and is responsible for the design and installation guidelines used by the Vendor (installer) to complete this cabling system installation.
- .2 The manufacturer along with the Vendor (installer) is responsible for the final warranty and certification of the application assurance.
- .3 The Installer shall show proof of a contractual relationship with the manufacturer, and shall pass through the manufacturer's certification to purchaser.

- .4 All cabling, termination hardware, and connecting cords shall be sourced from the certifying manufacturer to assure quality control and validity of the manufacturer's warranty.
- .5 The Contractor, will accept complete responsibility for the design, installation, certification, and support of the cabling system. Installer must show proof that installer has the certifying manufacturer's support on all of these issues.
- .6 No subcontractors shall be used for substitution of the work awarded to the communications contractor.
- .7 All work shall be performed and supervised by Telecommunications Technicians and Project Managers who are qualified to install voice, data, and image cabling systems and to perform related tests as required by the manufacturer in accordance with the manufacturer's methods.
- .8 The Telecommunications Technicians employed shall be fully trained and qualified by the manufacturer on the installation and testing of the equipment to be installed.
- .9 Evidence that the vendor is a current certified installer of the manufacturer must be provided in writing prior to work commencing on the structured cabling for the building.
- .10 The contractor shall have a proven track record in cabling projects. This must be shown by the inclusion of details of at least three projects involving Cat. 6 and Category 5e cabling which have been completed by the installer in the last two years.
- .11 Clean Up
 - .1 The cable installer shall be responsible for replacing any ceiling tiles damaged during the cabling installation.
 - .2 All ceiling tiles will be returned to their original positions.
 - .3 The installer shall be responsible for cleanup and removing debris created in the course of the work in the riser rooms and office areas, including the wiping down of furniture from ceiling dirt/dust.
 - .4 The installer shall ensure that all supplies and equipment are placed in the allocated areas at the completion of each work day.

2 MULTIPURPOSE COMMUNICATIONS WIRING SYSTEMS

2.1 GENERAL

- .1 System to consist of Data Structured Wiring System.
- .2 Room outlets with data communications style plug assembly and 4 pair cables to existing switches installed in communications rack in telecommunications closets.
- .3 Interconnection between components for a completely tested system as indicated.
- .4 System wiring to be identifiable to "BELDEN" IBDN and Bell Canada colour coding and wiring order.
- .5 Label, test and document each termination as indicated.
- .6 Submit samples of face plates and communications outlets for approval before ordering.
- .7 Submit shop drawings for equipment, cabling, receptacles and miscellaneous devices etc.

2.2 QUALIFICATION OF SYSTEM

- .1 Acceptable proposed Systems will be covered by a two part certification program provided by the a single manufacturer ("BELDEN") and that manufacturer's certified Vendor (INSTALLER). IBDN certification shall provide the assurance that all present and future applications engineered for the performance level of the cabling system used will work for the lifetime of the certified IBDN Plus Cabling System, IBDN Gigabit Cabling System 1200, IBDN Gigabit Cabling System 2400, or IBDN Control Cabling System. Should the certified IBDN Plus Cabling System, IBDN Gigabit Cabling System 1200, IBDN Gigabit Cabling System 2400, or IBDN Control Cabling System fail to support the application(s) designed to operate over it—whether at the time of cut over to the new cabling system, during subsequent use, or after upgrading to a newer supported application (for example, to a Fast Ethernet or an ATM network from a lower-speed network environment)—BELDEN and the Vendor shall take prompt corrective action.
- .2 Manufacturer shall administer a follow on program through the Installer to provide support and service to the purchaser.
- .3 The first part is an assurance program which provides that the certified system will support the applications for which it is designed (including ATM 155 Mbps for Certified Cat 6), during the Lifetime of the certified system.
- .4 The second portion of the certification is a twenty five years warranty provided by the manufacturer and the Vendor (installer) on all products within the system (cords, telecommunications outlet/connectors, cables, cross-connects, and baluns).
- .5 In the event that the certified system ceases to support the certified applications, whether at the time of cut over, during normal use or when upgrading (e.g. ATM), the manufacturer and vendor(installer) shall commit to promptly implement corrective action
- .6 Documentation proving the cabling system's compliance to the "End to End" Channel Performance recommendations, as listed in Annex E of ANSI/TIA/EIA 568A (future CAN/CSA-T529) shall be provided by the Vendor prior to the structured cabling system being installed.
- .7 The cabling system must conform to the current issue of industry standard CAN/CSA-T529. This standard is currently being revised and is presently available as the US document ANSI/TIA/EIA 568A. All performance requirements of this document must be followed.
- .8 As well, workmanship and installation methods used shall be equal to or better than that found in the BICSI (Building Industry Consulting Service International) TDM manual.
- .9 Purchaser demands strict adherence to the performance specifications listed in ANSI/TIA/EIA 568A (future CAN/CSA-T529).Manufacturer shall maintain 9001 Quality Control certification for the facilities that manufacturer the product used in this cabling system.
- .10 The selected cabling system shall be able to support video over Category 6 UTP cable by means of broadband video baluns. Manufacturer application guideline shall be provided as proof of manufacturer support of this application.
- .11 New buildings and major renovations of telecommunications spaces and pathways should conform to CAN/CSA-T530. Modification to administrative issues require written approval from purchaser and certifying manufacturer.
- .12 The cabling system must conform to applicable Building and Electrical Safety Codes.

2.3 MANUAL AND END USER RESPONSIBILITY

- .1 The vendor shall provide an End User's Manual describing the essential system elements as well as the end user's responsibility for maintaining the integrity of the cabling system over time. This Manual shall include, as a minimum, guidelines for system expansion and modification (moves, additions, changes of service) as well as labelling and record keeping.

2.4 EXECUTION

- .1 Submittals Vendor shall submit:
 - .1 A complete telecommunications cabling system layout, including cable routing, wiring closet(s) and telecommunications outlet/connector designations. The layout shall detail locations of all equipment and indicate all wiring pathways.
 - .2 Manufacturer's technical documentation on all devices used in cabling system.
 - .3 Manufacturer supplied End User's Manual.
 - .4 Manufacturer supplied Application Guidelines for required applications.
 - .5 As each floor is completed as built drawings shall be provided showing complete communications wiring system including all cable runs, outlet labels, jacks etc.
- .2 Check out wiring on cabling systems before final connections to equipment are made. Install intercommunication wiring in conduit in accordance with the following:
 - .1 Low and line level wires may be combined with D.C. wiring in same conduit provided low level line is shielded, but install A.C. lines in separate conduits.
 - .2 Install low and high level wires in separate conduits.
 - .3 High level wires may be combined with A.C. or D.C. wiring without shielding.
 - .4 Line and high level wires may be combined in the same conduit provided line level wires are shielded.
 - .5 "BELDEN" IBDN certified system.
 - .6 Installation shall conform to the standard EIA/TIA 568A.
- .3 Interpretation or designation of the low, line and high level wires shall be the responsibility of Equipment Manufacturer. Correct any cross-talk, feed-back or other audible interferences, which occur on any of sound systems, under this Section without expense to Owner.
- .4 Periodic random inspection will be performed during the installation period to ensure that all NORDX IBDN installation procedures and T568A industry standards are being followed.
- .5 Upon completion of each phase of the project, a certification inspection walk through will be performed by Universities representatives and HHA inspection personnel to verify compliance to the standards.
- .6 Completely test out systems and, before they are turned over to Owner, demonstrate them to Owner's representative until such time as he is fully conversant with the operation of the systems. Six months after installation has been accepted by Owner, arrange a time convenient to Owner to do necessary re-aligning, and replace defective components.

3 DATA WIRING SYSTEM

3.1 SYSTEM REQUIREMENTS

- .1 The structured Data wiring cabling system offered and quoted, shall incorporate all features and facilities listed in this specification. The structured cabling system shall consist of any or all of the following subsystems:
 - .1 Horizontal Subsystem
- .2 The system shall support, data local area networks (LAN), and video on a common cabling platform. The systems that shall be supported include, but are not limited to:
 - .1 Data Processing - IBM, NCR, Hewlett Packard, Honeywell, Prime, Ericsson, Olivetti, Wang, UNISYS, DEC, Gandalf, Data Communications EIA-232-D, RS-422, RS-423, Gigabit Ethernet, Ethernet, Fibre Distributed Data Interface (FDDI), Voice Applications - AT&T, Matra Communications, Rolm, Northern Telecom, Mitel, NEC, ICL, ISDN, Video - Analog Video, Digital Video, and Video Conferencing.
- .3 The system shall cover its capacity and functionality with minimum components.
- .4 The system shall be flexible and capable of including new facilities or technologies as they become required or available.

3.2 HORIZONTAL SUBSYSTEM

- .1 Horizontal Cabling
 - .1 Contractor shall supply horizontal cables to connect each information outlet to the backbone subsystem on the same floor.
 - .2 All horizontal cabling shall be BELDEN Enhanced UTP CAT-5 IBDN-1200, BELDEN for FT4 environment, white color.
 - .3 All Category 6 and 5e enhanced UTP cables shall conform to or exceed the EIA/TIA 568 Commercial Building Wiring Standard. Horizontal Cable Section and the EIA/TIA Technical Systems Bulletin 36 for Unshielded Twisted Pair Cables. Other standards supported include IEEE 802.3, 1Base5, 100 Base-T, 10BASE-T; IEEE 802.5, 4 Mbps, 16Mbps (328 ft {100m}, 104 Workstations) and proposed ANSI X3T9.5 TP-PMD requirements for UTP at 100 Mbps. In addition, cables shall be capable of supporting evolving high-end applications such as 155 Mbps ATM 1000 Base-T.
 - .4 For all cable routes that exceed 90m, provide the appropriate Belden Application Based Remote IP Cable.
- .2 The horizontal 4 pair Cat 6 enhanced UTP cable shall be Underwriter's Laboratories (UL) listed type CMR unless otherwise specified.
- .3 All Category 6 enhanced Unshielded Twisted Pair (UTP) cables shall be composed of 24 AWG solid copper conductors, dual insulated with high density polyethylene (HDPE) and shall meet or exceed the Electrical Specifications listed below:
 - .1 The UTP-based cabling system shall have a 160 MHz Channel Bandwidth over a maximum distance of 100m (328 ft) and a channel Power Sum Attenuation-to-Crosstalk Ratio (PSACR) of 9.6 dB @ 100 MHz using an interconnect or BIX cross connect configuration.
 - .2 The UTP-based cabling system shall use matched components from a single manufacturer, certified to deliver system performance over the lifetime of the applications which the cabling system was originally designed to support.

- .3 All components used in the UTP-based cabling system shall be warranted for a period of 25 years from date of installation against defects in materials and workmanship.
- .4 The UTP-based cabling system shall comply with the following standards:
 - (a) Enhanced Category 6 - TIA/EIA Addendum
 - (b) Category 6 - ANSI/TIA/EIA-568, TIA/EIA TSB67
 - (c) Class D - CENELEC EN50173
 - (d) Class D - ISO/IEC 11801
- .5 The UTP-based cabling system shall be capable of supporting the following applications:
 - (a) 1.2 Gbps ATM*
 - (b) Gigabit Ethernet (1000BASE-T)
 - (c) Broadband Video
 - (d) 25/52/155/622 Mbps ATM
 - (e) Fast Ethernet (100BASE-TX, 100BASE-T4)
 - (f) 100VG-AnyLAN
 - (g) TP-PMD
 - (h) Ethernet (10BASE-T)
 - (i) 4/16 Mbps Token-Ring
 - (j) Baseband Video
 - (k) ARCnet/ARCnet Plus
 - (l) IBM System 370/3270
 - (m) IBM 3x - AS/400
 - (n) IBM 4700 Financial Communication System
 - (o) IBM 5080/6090 Graphics System
 - (p) EIA-232/EIA-422
 - (q) Voice
- .4 All Category 6 outlets shall be:
 - .1 The outlet UTP connection module shall be Power Sum rated, with a Power Sum NEXT performance equal to or better than ANSI/TIA/EIA-568 Category 6 pair-to-pair NEXT performance specifications, and shall have a PS5 marking to indicate compliance.
 - .2 The eight-position outlet UTP connection module shall accommodate six-position modular plug modular cords without damage to either the cord or the module.
 - .3 The outlet UTP connection module shall use a hand-termination installation method, without the need for punch down tools or slip lock pliers.
 - .4 The outlet UTP connection module shall have an optional cover to protect the module when not in use.
 - .5 The outlet UTP connection module and its optional cover shall be available in the following colors: grey, almond, white, black, orange, red, yellow, green, blue, purple, and brown.
 - .6 The outlet UTP connection module shall be designed for use at the Work Area, Telecommunications Closet and/or Equipment Room without modification.
 - .7 The outlet UTP connection module shall only have a single insulation displacement connection block for the termination of wire pairs.
 - .8 The outlet UTP connection module shall be available in both the T568A-ISDN and T568B-ALT wiring configurations.
 - .9 The outlet UTP connection module shall be UL Listed and CSA Certified.
 - .10 The outlet UTP connection module shall be made of fire-retardant UL 94V-0 plastic.
 - .11 The outlet UTP connection module shall have an insulation displacement connection featuring insulation-slicing, tin-plated clips, forming a gas-tight connection.

- .12 The outlet UTP connection module shall have a maximum Contact Resistance of 1 milliohm per contact.
- .13 The outlet UTP connection module shall have a minimum Insulation Resistance of 100 megaohms between clips.
- .14 The outlet UTP connection module shall have a durability rating of 200 insertions/withdrawals of any combination of 24 and 26 AWG wire.
- .15 The outlet UTP connection module modular jack shall be FCC Part 68, Subpart F compliant.
- .16 The outlet UTP connection module modular jack durability shall be 1500 mating cycles.
- .17 The outlet UTP connection module modular jack contact material shall be nickel with 50 micro-inches gold plated.
- .18 The outlet UTP connection module modular jack maximum Current Rating shall be 1.5 amperes.
- .19 The outlet UTP connection module modular jack Dielectric Strength shall be 1000V RMS at 60 Hz for 1 minute.
- .20 The outlet UTP connection module modular jack minimum Insulation Resistance shall be 500 megaohms.
- .21 Outlet Faceplate:
 - (a) The faceplate housing the outlet UTP connection modules shall provide a symmetrically-centered appearance for the modules.
 - (b) The faceplate housing the outlet UTP connection modules shall have no visible mounting screws.
 - (c) The faceplate housing the outlet UTP connection modules shall be removable without requiring the removal of screws or other fasteners.
 - (d) The faceplate housing the outlet UTP connection modules shall have an outlet wiring diagram stamped on the inside.
 - (e) It shall be possible to inspect and/or reterminate the UTP cable at the outlet through front access at the faceplate.
 - (f) The faceplate housing the outlet UTP connection modules shall have aperture plugs to cover any unused openings in the faceplate.
 - (g) It shall be possible to install the outlet UTP connection modules in wall mounted single and dual-gang electrical boxes, utility poles and modular furniture (cubicle) access points using manufacturer-supplied faceplates and/or adapters, equipped with front, side or angled-entry options for modular cords.
 - (h) The faceplate housing the outlet UTP connection modules shall be available in the following colors: grey, almond, white, and black.
- .5 Outlets shall be wired in an EIA/TIA 568 A configuration.
- .6 Unless otherwise noted on the floor plans, the information outlet shall be surface flush mounted, single or multi jacks as indicated.
- .7 Each work area shall be supplied with a telecommunications outlet/connector (previously called a modular jack) for connection to the horizontal media. All telecommunications outlet/connectors shall be installed in an appropriate faceplate. All telecommunications outlet/connectors shall be complete with faceplate and attached permanently to a fixed structure, such as building walls, utility poles or modular furniture partitions.
- .8 The work area telecommunications outlet/connector must provide maximum flexibility in supporting UTP, fibre, and coax while maintaining performance in order to meet the changing requirements that are likely to occur throughout the life of the system.

- .9 In order to allow normal expansion of service during the life of the cabling system, flush work area telecommunications outlets shall provide sufficient density to support up to a maximum of eight connectors per single gang telecommunications outlet and twelve connectors per double gang telecommunications outlet.

4 EXECUTION

4.1 Data Cable Installation

- .1 Communications cables shall be placed through conduit, raceways or floor penetration. During the laying of the cable, installer shall take care not to stress the cable. After the cable is installed, the installer shall make sure that all parts of the cable are supported properly according to the manufacturer guidelines. There shall be acceptable (to the manufacturer) minimum physical stress on installed cables.
- .2 In order to achieve a level of reliability that approximates that of a factory manufactured connector, field installable connector shall have a factory physical contact (PC) polish.
- .3 Ensure that proper cable support techniques are utilized for suspending and supporting riser cables as per manufacturer's specifications. Cable ties shall also be used to prevent side to side movement of the cable. The cable ties shall not be installed so as to deform the cable jacket.
- .4 Provide, install and terminate the indicated quantities of riser cables in the communications rooms.
- .5 Supply all materials and labour for the installation of the complete Communications Cabling system including all cables and terminations.
- .6 All cables shall be neatly bundled, tie-wrapped and routed together. Secure cable bundles to vertical and horizontal supports and neatly fasten to plywood backboards or termination racks when routing to termination panels.
- .7 Installation shall be suitably tested and demonstrated to the Engineer consistent with standard industry practice.
- .8 Installation shall conform to the standard, EIA/TIA 568A.
- .9 The length of each individual run of horizontal cable from the administration subsystem (Communications Closet) on each floor to the information outlet shall not exceed 295 ft (90 m).
- .10 All cables shall be neatly bundled and tie-wrapped. Secure cable bundles to vertical and horizontal supports in Communications rooms to support cable bundles.
- .11 Utilize all indicated and available cable pathways such as conduit, cable trays, ducts, raceways and furniture system channels except where otherwise noted. Exercise caution when pulling cables in such pathways to avoid damage to any cabling and to ensure that the cable manufacturers' maximum pull-force and minimum bend radii specifications are adhered to.
 - .1 All free-running cables shall be securely fastened to appropriate cable supports and harnesses a minimum of every 1500mm so that cables are bundled tightly. All cables shall be completely supported by the harness so that the entire mass of the cables and the harnesses is self supporting and no weight is transferred to any other existing fixture or structure in the ceiling space (such as suspended ceiling or light fixtures). The Contractor shall be responsible for the supply of all materials (such as hangers, harnesses or supports) and labour that may be required to achieve this.

- .2 Route all cables to maintain minimum separations from sources of lighting, power cables, HVAC and electrical equipment as indicated in the "BELDEN" minimum separation schedule or otherwise required. The Contractor shall be responsible for the supply of all materials (such as hangars, harnesses or supports) and labour that may be required to maintain the indicated minimum separations.
- .3 In the building Communication Closets all communications cables shall be neatly tie-wrapped, bundled, supported and routed to the corresponding termination panel in the hub rooms or computer room. The Contractor shall be responsible for the supply and installation of any additional cable supports. Tie-wraps on Cat 6 cables must be of velcro type only (plastic cable ties are not acceptable)
- .4 Inform the Consultant of any cable lengths in excess of 90 m in length prior to installation.
- .5 Each run of cable between the termination block and the data outlet shall be continuous without any joints or splices.
- .6 In suspended ceiling and raised floor areas where systems duct, cable trays or conduit are not available, the Contractor shall bundle station wiring with velcro cable ties at appropriate distances (plastic cable ties are not acceptable for Cat 6 cabling). The cable bundling shall be supported via "J" hooks attached to the existing building structure and framework. Plenum cable will be used in all appropriate areas where cables are not enclosed in metal raceways or concrete encased conduits.
- .7 Where the Contractor is required to remove ceiling tiles, such Work shall not break or disturb grid or tiles.
- .8 Conduit runs installed by the contractor should not exceed 100 feet or contain more than two 90 degree bends without utilizing appropriately sized pull boxes.
- .9 The splitting of pairs within a cable between different jacks is not permitted. Terminating resistors in the case of ISDN applications shall be placed external to the telecommunications outlet/connector.
- .10 Cable shall be provided on reels or in Reelex boxes. Cable shall be marked decrementally from 100 ft to indicate both the length of a run as well as the amount of cable remaining on the reel or within the carton.
- .11 The installation of the horizontal cable shall follow the appropriate recommendations covered in the Manufacturer's Design Guide and the appropriate standards documents. This is done in order to ensure adequate protection from Electro-Magnetic Interference (EMI) sources and to ensure that all components and cables are in good condition after installation.
- .12 Copper cables shall be handled, installed, and supported as per the manufacturer's guidelines. During the laying of the cable, installer shall take care not to over stress the cable. After the cable is installed, installer shall make sure that all parts of the cable are supported properly and shall be stress free at both ends and throughout their length.
- .13 All telecommunications outlet/connectors shall be securely mounted at all work area locations and shall be located so that the cable required to reach the work area equipment will be no more than 3 meters long.
- .14 All copper cables shall be handled, installed, and supported as per the manufacturer's guidelines. During the laying of the cable, installer shall take care not to over stress the cable. After the cable is installed, installer shall make sure that all parts of the cable are supported properly and shall be stress free at both ends and throughout their length.
- .15 All telecommunications outlet/connectors shall be securely mounted at all work area locations and shall be located so that the cable required to reach the work area equipment will be no more than 3 meters long.

- .16 A non-impact termination method using either a stuffer cap with pliers or full-cycle terminating tool having both tactile and audible feedback to indicate proper termination shall be used. High impact tools are not permitted.
- .17 Terminated conductor ends shall be properly trimmed to assure a minimum clearance of 0.250 in. between the conductors of adjacent modules.
- .18 Face plates shall be clean in appearance. Mounting hardware shall not be visible on the faceplate. If colour coded modules are employed, colors shall comply with the requirements of CAN/CSA 528.
- .19 The work area telecommunications outlet/connectors shall not be responsible for creating "resonance" on short cable runs as described in the Field Testing TSB 67 (Draft 13 section 7.8 Short Links/Channels). This problem is related to return loss and/or the balance of the link and can cause transmission errors.
- .20 Telecommunications outlet/connector shall require (or specifically not allow more than) only one single connection to horizontal cable as per CAN/CSA-T529 standard.
- .21 Flush mounted face plates shall accommodate modular telecommunications outlet/connectors and be available in four connectors per single gang telecommunications outlet.
- .22 All telecommunications outlets shall be made of high impact plastic.
- .23 The same modular telecommunications outlet/connectors as found in the flush and surface mount telecommunications outlets shall be installable in utility poles and modular furniture using manufacturer face plates or adapters for this purpose. Each telecommunications outlet shall house as many as three telecommunications outlet/connectors.
- .24 The eight position modular UTP telecommunications outlet/connector and its pin assignments shall meet the requirements described in the standard CAN/CSA-T529 as T568A.
- .25 Each telecommunications outlet shall be uniquely labelled. The label shall form an integral part of the faceplate.

5 TESTING/WARRANTY

5.1 General

- .1 Provide Commissioning Verification, Inspection and Certification.

5.2 Test requirements:

- .1 Every cabling channel in the installation shall be tested in accordance with the field test specifications defined by the Telecommunications Industry Association (TIA) standard ANSI/TIA/EIA-568-A-5 (Feb. 2000).
- .2 The installed twisted pair horizontal links shall be tested from the IDF in the telecommunications room to the telecommunication wall outlet in the work area against the "Channel" performance limits specification as defined in ANSI/TIA/EIA-568-A-5 (Feb. 2000).
- .3 100% of the installed cabling links must be tested and must pass the requirements of the standards mentioned in above specifications. Any failing channel must be diagnosed and corrected. The corrective action shall be followed with a new test to prove that the corrected channel meets the performance requirements. The final and passing result of the tests for all links shall be provided in the test results documentation in accordance with Section below.
- .4 Trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof shall execute the tests.

- .5 The test equipment (tester) shall comply with the accuracy requirements for enhanced level II (Level II-E) field testers as defined in TIA-568-A-5 (Annex B).
- .6 The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy.
- .7 The tester interface adapters must be of high quality and the cable shall not show excessive twisting or kinking resulting from repetitive coiling and storing of the tester interface adapters.
- .8 The Pass or Fail condition for the link-under-test is determined by the results of the required individual tests. Any Fail or Fail* result yields a Fail for the link-under-test. In order to achieve an overall Pass condition, the results for each individual test parameter must Pass or Pass*.
- .9 A Pass or Fail result for each parameter is determined by comparing the measured values with the specified test limits for that parameter. The test result of a parameter shall be marked with an asterisk (*) when the result is closer to the test limit than the accuracy of the field tester. The field tester manufacturer must provide documentation as an aid to interpret results marked with asterisks.
- .10 A representative of the end-user shall be invited to witness field testing. The representative shall be notified of the start date of the testing phase 5 business days before testing commences.
- .11 A representative of the end-user will select a random sample of 5% of the installed links. The representative (or his authorized delegate) shall test these randomly selected links and the results are to be stored in accordance with the prescriptions in Specifications. The results obtained shall be compared to the data provided by the installation contractor. If more than 2% of the sample results differ in terms of the pass/fail determination, the installation contractor under supervision of the end-user representative shall repeat 100% testing and the cost shall be borne by the installation contractor.

5.3 Performance Test Parameters

- .1 The test parameters for Cat 6 are defined in ANSI/TIA/EIA standard 568-A, Addendum 5. Parameters that have not changed from the original Cat 6 standards are listed and documented in TIA TSB-67 (October 1995). The test of each link shall contain all of the following parameters as detailed below. In order to pass the link test all measurements (at each frequency in the range from 1 MHz through 100 MHz) must meet or exceed the limit value determined in the above-mentioned Cat 6 standard.
- .2 Each parameter shall be measured from 1 through 350 MHz and all of these measurement points are to be recorded in the test results information as detailed in Specifications Section describing test results.
- .3 Wire Map as defined in TIA TSB-67
 - .1 Wire Map shall report Pass if the wiring of each wire-pair is determined to be correct.
- .4 Length as defined in TIA TSB-67
 - .1 (The field tester shall be capable of measuring length of all pairs of a basic link or channel based on the propagation delay measurement and the average value for NVP ⁽¹⁾).
 - .2 The physical length of the link shall be calculated using the pair with the shortest electrical delay. This length figure shall be reported and shall be used for making the Pass/Fail decision. The Pass/Fail criteria are based on the maximum length allowed for the Basic Link configuration (90

¹ Nominal Velocity of Propagation (NVP) expresses the speed of the electrical signals along the cabling link in relation to the speed of light in vacuum (3×10^8 m/second). Insulation characteristics and twist rate of the wire pair influence NVP in minor ways. Typically, an 'average' value for NVP is published for all four wire-pairs in a data cable.

meters plus the length of the tester patch cables – maximum 4 meters) plus 10% to allow for the variation and uncertainty of NVP.

.5 Attenuation as defined in TIA TSB-67

- .1 Attenuation shall be tested from 1 MHz through 100 MHz in maximum step size of 0.5 MHz (500 kHz). It is preferred to measure attenuation at the same frequency intervals as NEXT Loss in order to provide a more accurate calculation of Attenuation to Crosstalk ratio (ACR).
- .2 Minimum test results documentation: The test results for each wire pair that passes the test must show the highest attenuation value measured, the frequency at which this high value occurs, and the test limit value at this frequency.

.6 NEXT Loss as defined in TIA-568-A-5

- .1 Pair-to-pair near-end crosstalk loss (abbreviated as NEXT Loss) shall be tested for each wire pair combination from each end of the link (a total of 12 pair combinations). This parameter is to be measured from 1 through 100 MHz.
- .2 NEXT Loss measures the crosstalk disturbance on a wire pair at the end from which the disturbance signal is transmitted (near-end) on the disturbing pair. The maximum step size for NEXT Loss measurements shall not exceed the maximum step size defined in the standards as shown in Table 1, column 2.
- .3 Minimum test results documentation: For a pass condition, the worst case NEXT margin and the worst value of NEXT shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.

Table 1

Frequency Range (MHz)	Maximum Step size (MHz)	Fluke DSP-4000 Fluke DSP-4000
1 – 31.25	0.15	0.1
31.26 – 100	0.25	0.2

.7 PSNEXT Loss as defined in TIA-568-A-5

- .1 Power Sum NEXT Loss shall be evaluated and reported for each wire pair from both ends of the link-under-test (a total of 8 results).
- .2 PSNEXT Loss captures the combined near-end crosstalk effect on a wire pair when all other pairs actively transmit signals. Like NEXT this test parameter must be evaluated from 1 through 100 MHz and the step size may not exceed the maximum step size defined in the standards as shown in Table 1, column 2.
- .3 Minimum test results documentation: For a pass condition, the worst case PSNEXT margin and the worst PSNEXT value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.

.8 ELFEXT Loss as defined in TIA-568-A-5

- .1 Pair-to-pair FEXT Loss shall be measured for each wire-pair combination from both ends of the link-under-test.
- .2 FEXT Loss measures the crosstalk disturbance on a wire pair at the opposite end (far-end) from which the transmitter emits the disturbing signal on the disturbing pair. FEXT is measured to compute ELFEXT Loss that must be evaluated and reported in the test results. ELFEXT

- measures the relative strength of the far-end crosstalk disturbance relative to the attenuated signal that arrives at the end of the link. This test yields 24 wire-pair combinations. ELFEXT is to be measured from 1 through 100 MHz and the maximum step size for FEXT Loss measurements shall not exceed the maximum step size defined in the standards as shown in Table 1, column 2.
- .3 Minimum test results documentation: For a pass condition, the worst case ELFEXT margin and the worst ELFEXT value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.
- .9 PSELFEXT Loss as defined in TIA-568-A-5
- .1 Power Sum ELFEXT is a calculated parameter that combines the effect of the FEXT disturbance from three wire pairs on the fourth one. This test yields 8 wire-pair combinations. Each wire-pair is evaluated from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the standards as shown in Table 1, column 2.
 - .2 Minimum test results documentation: For a pass condition, the worst case PSELFEXT margin and the worst PSELFEXT value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.
- .10 Return Loss as defined in TIA-568-A-5
- .1 Return Loss (RL) measures the total energy reflected on each wire pair. Return Loss is to be measured from both ends of the link-under-test for each wire pair. This parameter is also to be measured from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the standards as shown in Table 1, column 2.
 - .2 Minimum test results documentation: For a pass condition, the worst case RL margin and the worst RL value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.
- .11 ACR (Attenuation to crosstalk ratio) (This parameter is not demanded by the standards but may be required in order to obtain the premise wiring vendor's warranty)
- .1 ACR provides an indication of bandwidth for the two wire-pair network applications. ACR is a computed parameter that is analogous to ELFEXT and expresses the signal to noise ratio for a two wire-pair system. This calculation yields 12 combinations – six from each end of the link.
 - .2 Minimum test results documentation: For a pass condition, the worst case ACR margin and the worst ACR value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.
- .12 PSACR (This parameter is not required by the standards but may be required in order to obtain the premise wiring vendor's warranty)
- .1 The Power Sum version of ACR is based on PSNEXT and takes into account the combined NEXT disturbance of all adjacent wire pairs on each individual pair. This calculation yields 8 combinations – one for each wire pair from both ends of the link.
 - .2 Minimum test results documentation: For a pass condition, the worst case PSACR margin and the worst PSACR value shall be recorded and for each case, the frequency at which it occurs as well as the test limit value at this frequency.

5.4 Test Result Documentation

- .1 The test results information for each link shall be recorded in the memory of the field tester upon completion of the test.
- .2 The test results records saved by the tester shall be transferred into a Windows™-based database utility that allows for the maintenance, inspection and archiving of these test records. A guarantee

must be made that these results are transferred to the PC unaltered, i.e., "as saved in the tester" at the end of each test.

- .3 The database for the completed job shall be stored and delivered on CD-ROM including the software tools required to view, inspect, and print any selection of test reports.
- .4 A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information
 - .1 The identification of the link in accordance with the naming convention defined in the overall system documentation
 - .2 The overall Pass/Fail evaluation of the link-under-test including the NEXT Headroom (overall worst case) number
 - .3 The date and time the test results were saved in the memory of the tester
- .5 General Information to be provided in the electronic data base with the test results information for each link:
 - .1 The identification of the customer site as specified by the end-user
 - .2 The identification of the link in accordance with the naming convention defined in the overall system documentation
 - .3 The overall Pass/Fail evaluation of the link-under-test
 - .4 The name of the standard selected to execute the stored test results
 - .5 The cable type and the value of NVP used for length calculations
 - .6 The date and time the test results were saved in the memory of the tester
 - .7 The brand name, model and serial number of the tester
 - .8 The identification of the tester interface
 - .9 The revision of the tester software and the revision of the test standards database in the tester
- .6 The test results information must contain information on each of the required test parameters that are listed and as further detailed below.
- .7 The detailed test results data to be provided in the electronic database for each tested link must contain the following information
- .8 For each of the frequency-dependent test parameters, the value measured at every frequency during the test is stored. In this case, the PC-resident database program must be able to process the stored results to display and print a color graph of the measured parameters. The PC-resident software must also provide a summary numeric format in which some critical information is provided numerically as outlined for each of the test parameters:
 - .1 Length: Identify the wire-pair with the shortest electrical length, the value of the length rounded to the nearest 0.5 m and the test limit value
 - .2 Propagation delay: Identify the pair with the shortest propagation delay, the value measured in nanoseconds (ns) and the test limit value
 - .3 Delay Skew: Identify the pair with the largest value for delay skew, the value calculated in nanoseconds (ns) and the test limit value
 - .4 Attenuation: Minimum test results documentation as explained in Section I.B for the worst pair
 - .5 Return Loss: Minimum test results documentation as explained in Section I.B for the worst pair as measured from each end of the link

- .6 NEXT, ELFEXT, ACR: Minimum test results documentation as explained in Section I.B for the worst pair combination as measured from each end of the link
- .7 PSNEXT, PSELFEXT, and PSACR: Minimum test results documentation as explained in Section I.B for the worst pair as measured from each end of the link
- .9 Attenuation testing for optical fibre shall be done after the fibre is installed. Optical time domain reflectometer (OTDR) testing of all optical fibre backbone cables is mandatory at installation. All Multi-mode Fibre Optics cables shall be tested on both direction at both wavelengths 850 and 1300 Φ m. All Single-mode Fibre Optic cables shall be tested on both directions at both wavelengths 1310 and 1550 Φ m. Localized attenuations such as splices, terminations, connectors, etc. shall be verified.
- .10 Verify labelling of all wiring at all termination points.
- .11 Provide written verification confirming that the testing and inspection has been completed and that all cable runs have passed. Also document that all defects have been identified, corrected, and retested successfully.
- .12 Contractor shall provide a 25 year Extended Product Warranty and System Assurance Warranty for this Structured Cabling System.
- .13 Provide "BELDEN" IBDN certification, certifying that the cabling system is Installed In accordance to manufacturer's Category 6 standards. The certification must include a minimum of 25 years application assurance warranty, which warranties that the installed cabling system is compliant with standard current network applications and emerging technologies such as TPPMD, 100 Mbps Ethernet, Gigabit Ethernet, UTP based ATM and other 100 + Mbps applications.

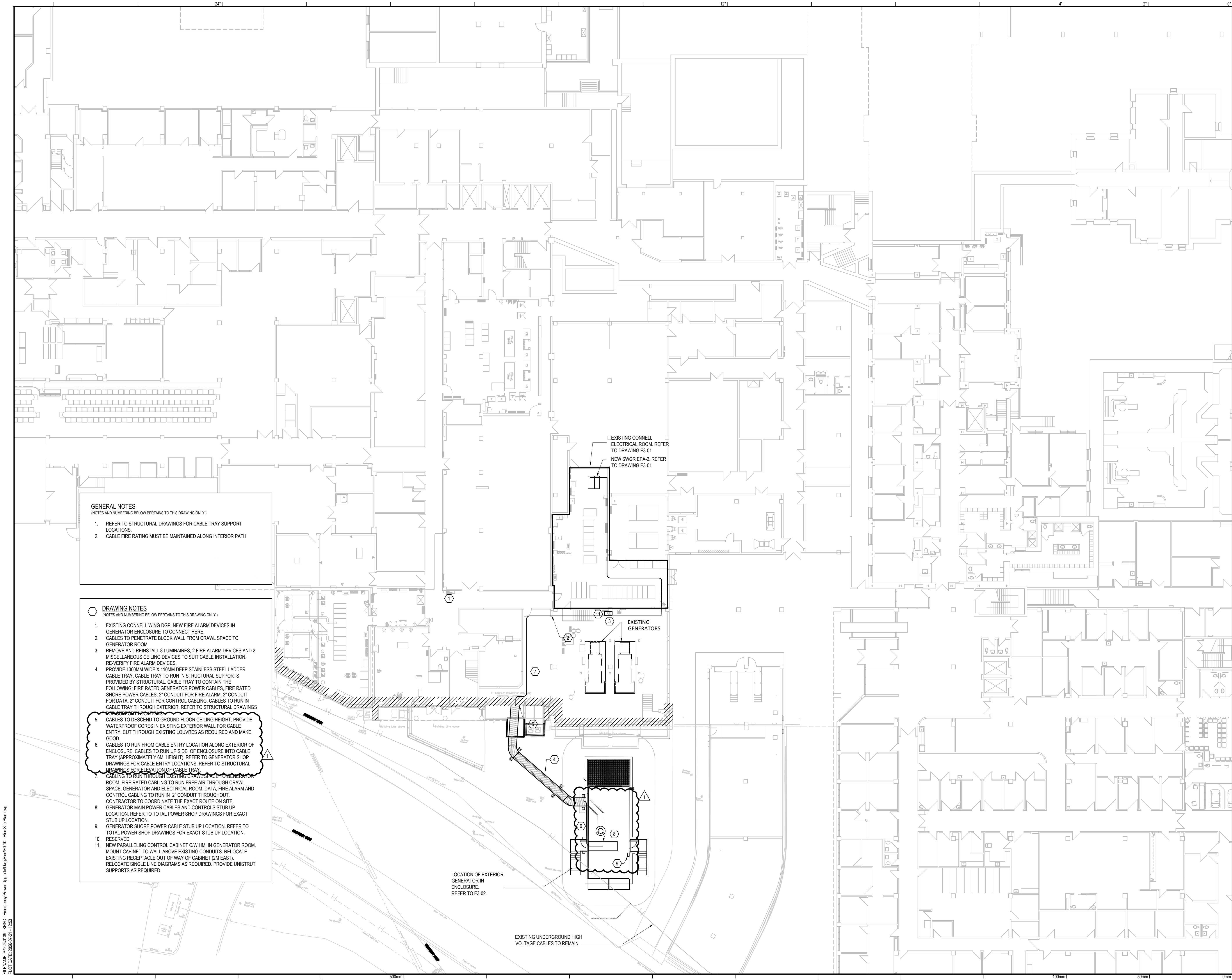
5.5 CLEAN-UP

- .1 Remove all redundant cables completely - both horizontal and vertical cable.

5.6 LABELLING

- .1 All cables and termination points in the communications rooms shall be labelled by the Contractor to match existing.

END OF SECTION



GENERAL NOTES
(NOTES AND NUMBERING BELOW PERTAINS TO THIS DRAWING ONLY.)

- REFER TO STRUCTURAL DRAWINGS FOR CABLE TRAY SUPPORT LOCATIONS
- CABLE FIRE RATING MUST BE MAINTAINED ALONG INTERIOR PATH.

DRAWING NOTES
(NOTES AND NUMBERING BELOW PERTAINS TO THIS DRAWING ONLY.)

- EXISTING CONNELL WING DCP. NEW FIRE ALARM DEVICES IN GENERATOR ENCLOSURE TO CONNECT HERE.
- CABLES TO PENETRATE BLOCK WALL FROM CRAWL SPACE TO GENERATOR ROOM.
- REMOVE AND REINSTALL 8 LUMINAIRES, 2 FIRE ALARM DEVICES AND 2 MISCELLANEOUS CEILING DEVICES TO SUIT CABLE INSTALLATION. RE-VERIFY FIRE ALARM DEVICES.
- PROVIDE 1000MM WIDE X 110MM DEEP STAINLESS STEEL LADDER CABLE TRAY. CABLE TRAY TO RUN IN STRUCTURAL SUPPORTS PROVIDED BY STRUCTURAL. CABLE TRAY TO CONTAIN THE FOLLOWING: FIRE RATED GENERATOR POWER CABLES, FIRE RATED SHORE POWER CABLES, 2" CONDUIT FOR FIRE ALARM, 2" CONDUIT FOR DATA, 2" CONDUIT FOR CONTROL CABLING. CABLES TO RUN IN CABLE TRAY THROUGH EXTERIOR. REFER TO STRUCTURAL DRAWINGS FOR ELEVATION OF CABLE TRAY.
- CABLES TO DESCEND TO GROUND FLOOR CEILING HEIGHT. PROVIDE WATERPROOF CORES IN EXISTING EXTERIOR WALL FOR CABLE ENTRY. CUT THROUGH EXISTING LOUVRES AS REQUIRED AND MAKE GOOD.
- CABLES TO RUN FROM CABLE ENTRY LOCATION ALONG EXTERIOR OF ENCLOSURE. CABLES TO RUN UP SIDE OF ENCLOSURE INTO CABLE TRAY (APPROXIMATELY 6M HEIGHT). REFER TO GENERATOR SHOP DRAWINGS FOR CABLE ENTRY LOCATIONS. REFER TO STRUCTURAL DRAWINGS FOR ELEVATION OF CABLE TRAY.
- CABLES TO RUN THROUGH EXISTING CRAWL SPACE TO GENERATOR ROOM. FIRE RATED CABLES TO RUN FREE AIR THROUGH CRAWL SPACE. GENERATOR AND ELECTRICAL ROOM DATA, FIRE ALARM AND CONTROL CABLING TO RUN IN 2" CONDUIT THROUGHOUT. CONTRACTOR TO COORDINATE THE EXACT ROUTE ON SITE.
- GENERATOR MAIN POWER CABLES AND CONTROLS STUB UP LOCATION. REFER TO TOTAL POWER SHOP DRAWINGS FOR EXACT STUB UP LOCATION.
- GENERATOR SHORE POWER CABLE STUB UP LOCATION. REFER TO TOTAL POWER SHOP DRAWINGS FOR EXACT STUB UP LOCATION.
- RESERVED
- NEW PARALLELING CONTROL CABINET C/W HMI IN GENERATOR ROOM. MOUNT CABINET TO WALL ABOVE EXISTING CONDUITS. RELOCATE EXISTING RECEPTACLE OUT OF WAY OF CABINET (2M EAST). RELOCATE SINGLE LINE DIAGRAMS AS REQUIRED. PROVIDE UNISTRUT SUPPORTS AS REQUIRED.

EXISTING CONNELL ELECTRICAL ROOM. REFER TO DRAWING E3-01
NEW SWGR EPA-2. REFER TO DRAWING E3-01

EXISTING GENERATORS

LOCATION OF EXTERIOR GENERATOR IN ENCLOSURE. REFER TO E3-02.

EXISTING UNDERGROUND HIGH VOLTAGE CABLES TO REMAIN

Project Architect	HDR
Civil	HDR
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS

DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE CONSULTANT BEFORE PROCEEDING.
ONLY FIGURED DIMENSIONS ARE TO BE USED AND CONTRACTOR MUST CHECK ALL DIMENSIONS ON SITE.
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NO.	DATE (YYYY-MM-DD)	DESCRIPTION
DRAWING REVISIONS		

08	2025-07-15	ISSUED FOR 100% IFT
07	2025-07-03	ISSUED FOR 90% IFT
06	2025-06-26	ESA PLAN REVIEW
05	2025-06-20	ISSUED FOR 50% IFT
04	2025-03-06	ISSUED FOR INFORMATION
03	2025-11-07	ISSUED FOR 100% CONSTRUCTION DOCUMENTS
02	2025-10-17	ISSUED FOR CLASS A COST ESTIMATE
01	2025-09-22	ISSUED FOR 30% REVIEW
NO.	DATE (YYYY-MM-DD)	DESCRIPTION
DRAWING ISSUE		

KEYPLAN:

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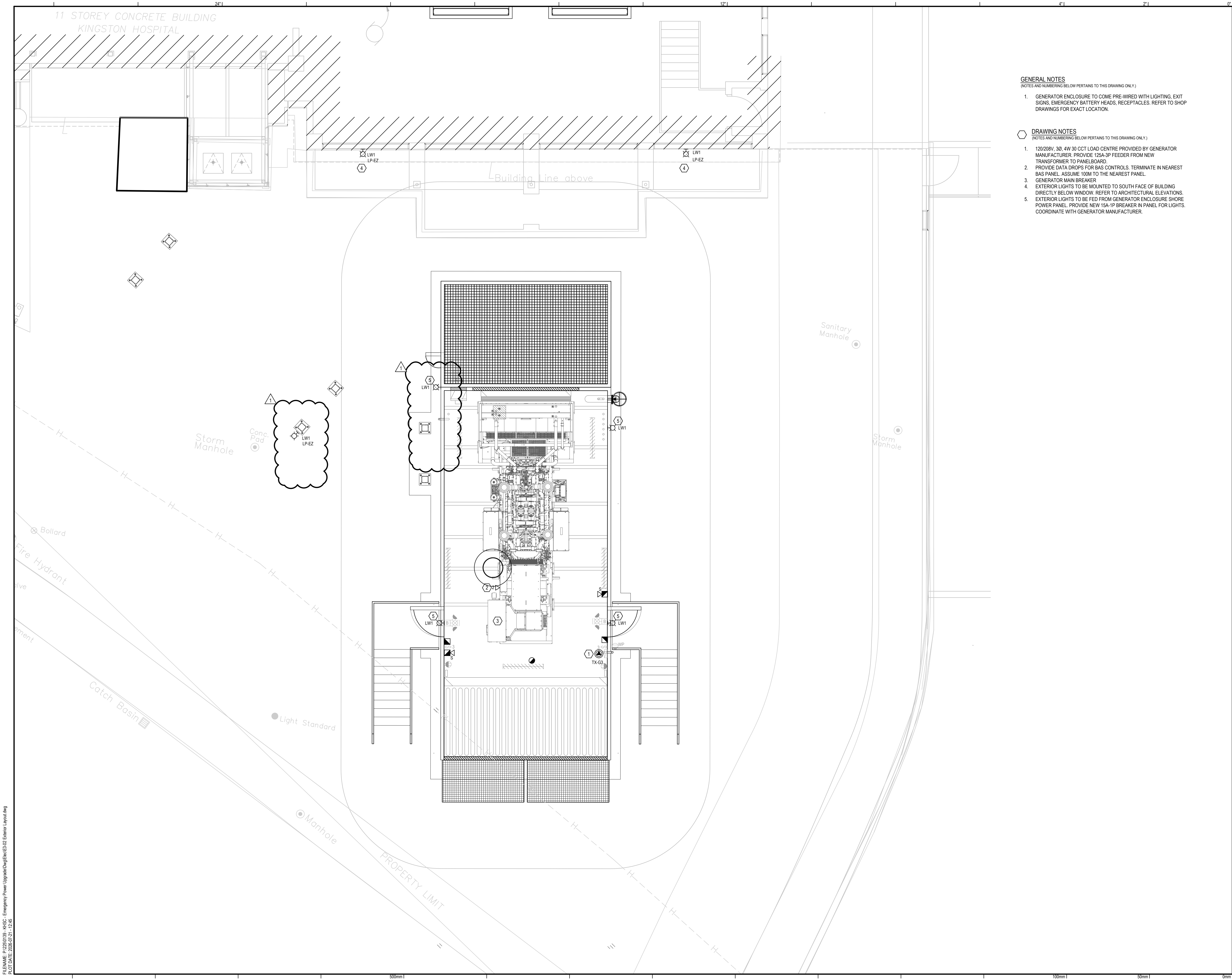
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PROJECT:
**KHSC KGH EMERGENCY POWER
SYSTEM CAPACITY &
INFRASTRUCTURE REMEDIATION**

HH PROJECT NUMBER: 2250139
DRAWING TITLE:
ELECTRICAL SITE PLAN

PAGE SIZE:	ARCH D	DRAWN BY:	A. B
SCALE:	1:200	CHECKED BY:	V. R
DRAWING NUMBER:			

E0-10

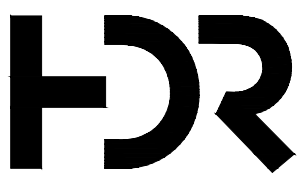


FILE NAME: P:\2025\103_48363_Emergency Power Upgrade\Drawings\E3-02 Exterior Layout.dwg
PLOT DATE: 2025-07-21 12:45

- GENERAL NOTES**
(NOTES AND NUMBERING BELOW PERTAINS TO THIS DRAWING ONLY.)
1. GENERATOR ENCLOSURE TO COME, PRE-WIRED WITH LIGHTING, EXIT SIGNS, EMERGENCY BATTERY HEADS, RECEPTACLES. REFER TO SHOP DRAWINGS FOR EXACT LOCATION.
- DRAWING NOTES**
(NOTES AND NUMBERING BELOW PERTAINS TO THIS DRAWING ONLY.)
1. 120/208V, 3Ø, 4W 3Ø CCT LOAD CENTRE PROVIDED BY GENERATOR MANUFACTURER. PROVIDE 125A-3P FEEDER FROM NEW TRANSFORMER TO PANELBOARD.
 2. PROVIDE DATA DROPS FOR BAS CONTROLS. TERMINATE IN NEAREST BAS PANEL. ASSUME 100M TO THE NEAREST PANEL.
 3. GENERATOR MAIN BREAKER
 4. EXTERIOR LIGHTS TO BE MOUNTED TO SOUTH FACE OF BUILDING DIRECTLY BELOW WINDOW. REFER TO ARCHITECTURAL ELEVATIONS.
 5. EXTERIOR LIGHTS TO BE FED FROM GENERATOR ENCLOSURE SHORE POWER PANEL. PROVIDE NEW 15A-1P BREAKER IN PANEL FOR LIGHTS. COORDINATE WITH GENERATOR MANUFACTURER.



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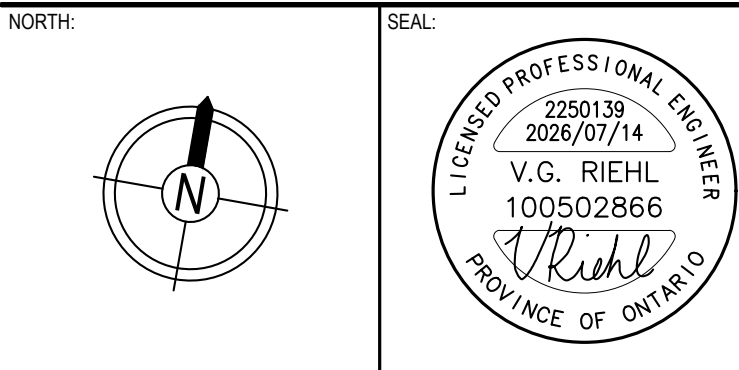
Project Architect	HDR
Civil	HDR
Structural Engineer	HDR
Mechanical Engineer	HH ANGUS
Electrical Engineer	HH ANGUS

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NO.	DATE (YYYY-MM-DD)	DESCRIPTION
1	2025-07-21	ISSUED FOR ADDENDUM E-1

NO.	DATE (YYYY-MM-DD)	DESCRIPTION
08	2025-07-15	ISSUED FOR 100% IFT
07	2025-07-03	ISSUED FOR 90% IFT
06	2025-06-26	ESA PLAN REVIEW
05	2025-06-20	ISSUED FOR 50% IFT
04	2025-03-06	ISSUED FOR INFORMATION
03	2025-11-07	ISSUED FOR 100% CONSTRUCTION DOCUMENTS
02	2025-10-17	ISSUED FOR CLASS A COST ESTIMATE
01	2025-09-22	ISSUED FOR 30% REVIEW

KEYPLAN:



PROJECT:
**KHSC KGH EMERGENCY POWER
SYSTEM CAPACITY &
INFRASTRUCTURE REMEDIATION**

HHA PROJECT NUMBER: 2250139
DRAWING TITLE:
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