

PART 1 - ADDENDUM

1.1 TITLE

- .1 This Addendum shall be known as:

Addendum 3
TFM-045-24 – VAR-502-23 Structural Concrete Repairs CP3

- .2 The Date of the Addendum is Tuesday, October 22, 2024

1.2 PRECEDENCE

- .1 This amendment to the bid documents is effective immediately.
- .2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.
- .3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

- .1 The General Conditions shall govern all phases of the Work covered by this Addendum.
- .2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

- .1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES TO TENDER CLOSING & OPEN DATE

- .1 The deadline for receipt of tenders has changed. The new tender closing date is **Thursday, October 31, 2024 at 3:00PM (NST)**
- .2 The new tender opening date is Thursday, October 31, 2024 at 3:30PM (NST). Attendance by WebEx conference call, information is as follows:
Conference Line: 1-416-915-6530 (toll free)
Access Code: 2774 211 4264
Attendee ID: Press pound (#)

1.6 CHANGES TO SPECIFICATION

- .1 ADD: Conditions report to Education beam and column repair Scope of work

END OF ADDENDUM

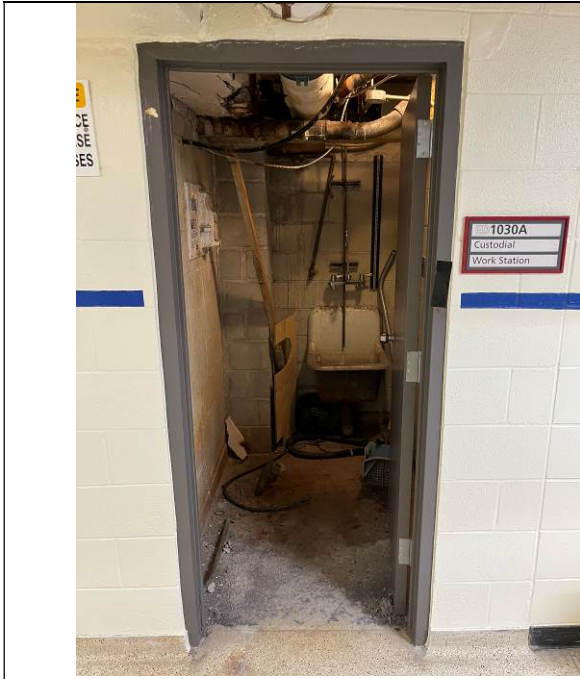


Photo 1: Room 1030A – Maintenance Closet housing beam in question.



Photo 2: Significant spalling of concrete, exposing corroded rebar within. Significant corrosion present on adjacent connections for existing pipe seat angle.



Photo 3: Further exposure of existing beam following loose portion of concrete being displaced.



Photo 4: Deterioration of face of concrete beam near back of room.



Photo 5: Deterioration of concrete on top face of beam near back of room.



Photo 6: Cracking and efflorescence present on face of concrete beam.



Photo 7: Sagging of concrete beam causing distortion of door frame.



Photo 8: Measurement showing portion of concrete that has fallen off due to spalling.



Photo 9: Measurement showing portion of concrete that has fallen off due to spalling.



Photo 10: Measurement showing portion of concrete that has fallen off due to spalling.



Photo 11: Width measurement and condition of beam from outside of closet.



Photo 12: Depth measurement and condition of beam from outside of closet.



Photo 13: Room opposite to Room 1030A, showing the other side of the wall and adjacent column (left).



Photo 14: Vertical crack propagating up length of column. This column is adjacent to Room 1030A and the beam in question.

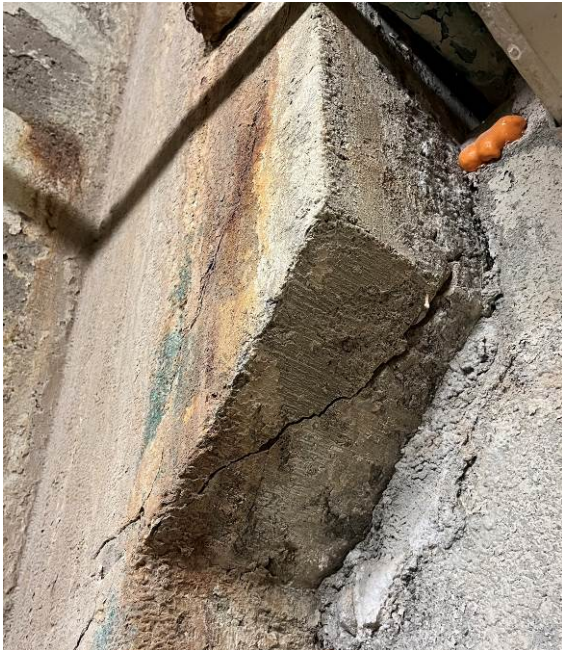


Photo 15: Vertical crack in column propagating through geometry change.

PART 1 - ADDENDUM

1.1 TITLE

- .1 This Addendum shall be known as:

Addendum 2
TFM-045-24 – VAR-502-23 Structural Concrete Repairs CP3

- .2 The Date of the Addendum is Friday, October 18, 2024

1.2 PRECEDENCE

- .1 This amendment to the bid documents is effective immediately.
- .2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.
- .3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

- .1 The General Conditions shall govern all phases of the Work covered by this Addendum.
- .2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

- .1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES TO SPECIFICATION

- .1 Section 03 40 00
- .1 Preapproved product to the list for Fiber Reinforced Polymer item 2.1.1 – SikaWrap Hex 103C.

END OF ADDENDUM

PART 1 - ADDENDUM

1.1 TITLE

- .1 This Addendum shall be known as:

Addendum 1
TFM-045-24 – VAR-502-23 Structural Concrete Repairs CP3

- .2 The Date of the Addendum is Wednesday, October 16, 2024

1.2 PRECEDENCE

- .1 This amendment to the bid documents is effective immediately.
- .2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.
- .3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

- .1 The General Conditions shall govern all phases of the Work covered by this Addendum.
- .2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

- .1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES TO SPECIFICATION

- .1 Section 03 30 00
- .1 Approved product for Spalling Repair Mortar item 2.1.10 – Mapei Planitop 23
 - .2 Approved product for Crack Epoxy Adhesives item 2.1.11 – Mapei Planibond Hi-Mod Gel
 - .3 Approved product for Crack Epoxy Adhesives item 2.1.11 – Mapei Planibond AE
 - .4 Approved product for Anti-Corrosion coating item 2.1.12 – Mapei Planibond 3C
 - .5 Approved product for Crack Sealant item 2.1.13 – Mapei Epojet SLV
 - .6 Approved product for Concrete Painting item 2.1.16 – Mapei Elastocolor Protective Coatings
- .2 Section 03 40 00
- .1 Approved product for Fiber Reinforced Polymer item 2.1.1 – Mapei Mapewrap 31 + Mapewrap C UNI AX 600

.2 Approved product for Fiber Reinforced Polymer item 2.1.1 – Strong-Tie CSS V-Wrap C220HM

.3 ADD: Scope of Work – Memorial University Education Building Concrete Beam and Column Repair to the scope under this project.

1.6 CHANGES TO DRAWINGS

.1 ADD: Drawings ED-S0, S1, S2, S3: Education Building Concrete Column and Beam repair to the scope of work under this project.

1.7 QUESTIONS AND RESPONSES

Question: It would be ideal if the visit could be scheduled.

Answer: A non-mandatory site visit has been scheduled for Friday, October 18 at 2:30 pm. The meeting point will be at University Center, in front of the RBC Royal Bank campus branch.

Bidders may contact Hesham H. o 709 853 6507 for any difficulties finding the meeting point.

END OF ADDENDUM 1

Scope of Work

Memorial University
Education Building
Concrete Beam and Column Repair



Prepared by:

Tiller Engineering Inc.
Suite 403, 125-60 Hamlyn Road Plaza
St. John's, NL
A1E 5X7

Issue Date:	Status:	Project #:	Issued By:	Checked By:	Approved By:
September 20, 2024	R0-Issued for Review	2024-085	RT	SF/RT	RT

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1.0 Technical Information

2.0 Work Scope

3.0 General Conditions

Appendix A DRAWINGS

1.0 TECHNICAL INFORMATION

Owner: Memorial University of Newfoundland and Labrador
Facilities Management

Owners Contact: Hesham Hassanien
r24hoh@mun.ca

Consultant's Contact: Richard Tiller, M.Eng., P. Eng.
Tiller Engineering Inc.
Suite 403, 125-60 Hamlyn Road Plaza
St. John's, NL
A1E 5X7

Site: Memorial University of Newfoundland and Labrador
Education Building
Room 1030A Basement Level

2.0 WORK SCOPE

The work to be completed under this Scope of Work shall include all labor, materials and equipment necessary to complete the repair of one (1) concrete beam (approximately 600 mm wide x minimum of 900 deep) and one (1) concrete column (minimum of 600 x 600 mm x one storey high). Contractor to confirm all dimensions and extent on site COJ. The repair scope is for one (1) column and the one (1) beam span in the service rooms near 1030A in the basement level of Mun Education Building. The Beam is on Grid 12 Line G to H and the Column is at Line G (see Appendix).

The Contractor for this Scope of Work must be experienced and qualified in the specifics of this request. This specification is an execution-based specification with detailed execution of the project the responsibility of the Contractor.

GENERAL

PART 1 GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for the supply and installation of composite concrete Strengthening systems as indicated.

1.2 REFERENCES

- .1 Comply with the following reference standards, except where more stringent requirements are indicated on the drawings or specified herein:
 - American Concrete Institute ACI 440.2R-08, Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures.
 - American Concrete Institute ACI 440R-07, Report on Fiber-Reinforced Polymer (FRP) Reinforcement for Concrete Structures.
 - American Concrete Institute ACI 440R-96, State-of-the-Art Report on Fiber Reinforced Plastic (FRP) Reinforcement for Concrete Structures.
 - American Concrete Institute ACI 503R, Pull-off Test to Determine FRP Adhesion to Concrete Substrates.
 - International Concrete Repair Institute (ICRI) Guideline No. 03742, Guide for the Selection of Strengthening Systems for Concrete Structures.
 - International Concrete Repair Institute (ICRI) Guideline No. 03739, Guide to Using In-Situ Tensile Pull-off Tests to Evaluate Bond of Concrete Surface Materials.

1.3 QUALITY CONTROL

- .1 Quality Control procedures performed by the Manufacturer shall include, but not be limited to the following:
 - .1 Manufacturer shall have a nationally recognized program of contractor training, certification and technical support.
 - .2 The Manufacturer shall have minimum ten years' experience in FRP Reinforcement confirmed by actual field tests of minimum 100 successful installations.
 - .3 The Manufacturer shall be able to supply testing data to demonstrate system properties and durability of the actual FRP Reinforcement to be used.
- .2 Quality Control procedures performed by the Contractor shall include, but not be limited to the following:
 - .1 Repair materials, FRP reinforcement and coatings shall be sourced from a single manufacturer to prevent issues with product compatibility with regards to system performance, quality and warranty.
 - .2 The Contractor shall be trained by the Manufacturer and shall have completed a program of instruction in the use of FRP Reinforcement.
 - .3 The Contractor shall inspect all materials prior to application to assure that they meet specifications and have arrived to the job-site undamaged.
 - .4 After FRP Reinforcement has cured; the contractor shall inspect the all work to check for voids and or debonding. Repairs shall be made as per Par. 3.6 Repair of Defects, and noted in the Daily Construction Log.
 - .5 The FRP Reinforcement shall be completely inspected by the contractor during and immediately following application of the composite materials. Conformance with the design drawings, proper alignment of fibers and quality workmanship shall be assured. Entrapped air shall be released or rolled out before the epoxy sets. Defects shall be noted in the Daily Construction Log.

1.4 SUBMITTALS

- .1 Submit shop drawings
- .2 Submit product data indicating product standards, physical and chemical characteristics, environmental durability, technical specifications, limitations, installation instructions, and general recommendations regarding each material.
- .3 Submit for record, a qualification statement by the Contractor listing their completed FRP Reinforcement projects, including size, location, owner, engineer/architect and contact numbers.
- .4 Submit for record a complete description of the FRP Reinforcing system materials, surface preparation, application procedures, application rates, and cure times.
- .5 Submit for record copies of purchase order and packaging slips showing quantities and dates of primer and resin purchased.
- .6 Submit for review and approval shop drawings including, the following:
 - .1 Limits of FRP Reinforcing.
 - .2 Details of surface preparation and surface repairs.
 - .3 Complete system details including, but not limited to, FRP Reinforcement, primer, resin, and protective coating.
- .7 Submit for record test results of the Pull-off test to determine FRP adhesion to concrete substrate.
- .8 Submit for record Daily Construction Logs kept by the Contractor. These logs shall include the following information: Weather and temperature at application times; Amount of product used and square footage/linear footage of substrate covered; Batch numbers of all products used; Names of all crew members; Any bond-strength tests, noting location, quantity and who performed these tests.
- .9 Contractor shall submit any grout/concrete mix design intended for use in beam repair for review and approval prior to start of work.
- .10 Shrinkage compensating grout/concrete shall be strength tested for all pours/applications.

1.5 JOB-SITE CONDITIONS

- .1 Do not apply FRP Reinforcement materials if environmental conditions, surface temperature or surface conditions are outside manufacturer's specifications.
- .2 The ambient temperature and temperature of the epoxy components shall be within the range specified by the Manufacturer at the time of mixing. See appropriate technical data sheets for more specific instructions.
- .3 Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.
- .4 The Contractor is solely responsible for fume control and shall take necessary precautions against injury to Installer personnel or adjacent building occupants during application of primer and resin, etc. Contractor personnel shall use protective equipment and area shall be well vented to the outside. As a minimum, Installer must take the following precautions:
 - .1 Contractor to locate and protect building air intake during application.
 - .2 Contractor to follow all provincial, federal, and local safety regulations.
 - .3 Contractor to follow all Manufacturers' safety requirements as indicated on appropriate MSDS sheets.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver primer, saturant and protective coating in original, unopened containers with the Manufacturer's name, labels, product identification, and batch numbers.
- .2 FRP Reinforcement shall be stored in a cool dry area away from direct sunlight, flame, moisture, or other hazards.
- .3 Store primer, saturant and protective coating under conditions as recommended by the Manufacturer in a cool dry place out of direct sunlight. Products that have exceeded their shelf life shall not be used.
- .4 Contractor is required to confirm that all materials used in accordance with this Section conform to local, provincial, and federal environmental and worker's safety laws and regulations.
- .5 During operations Contractor shall maintain barricades.
- .6 The Contractor shall properly dispose of empty containers in accordance with local regulations.

PART 2 PRODUCTS

2.1 ACCEPTED PRODUCTS

- .1 The following is a list of preapproved products:
 - .1 BASF Master Brace Composite Strengthening Systems
 - .2 Tyfo Fibrwrap Composite Systems
 - .3 Sikawrap FRP Systems
- .2 Alternate products shall be submitted to Owner's Representative for approval

PART 3 EXECUTION

3.1 GENERAL

- .1 Inspect surfaces to receive the work and report immediately in writing to the Engineer as required in the General Conditions any deficiencies in the surface that render it unsuitable for proper execution of this work.
- .2 Protect pedestrians, concrete, and other items surrounding work area from dust or damage due to Work of this Section.
- .3 Contractor to perform a mock up section consisting of one (1) repaired concrete beam prior to proceeding with further scope. The mock up area is to be inspected and approved by Consultant and Owner prior to proceeding with further work.

3.2 SURFACE PREPARATION

- .1 All concrete surfaces shall be dry and free of surface moisture and frost, and tested by the Contractor to evaluate moisture transmission in accordance with ASTM D4263 "Indicating Moisture in Concrete by the Plastic Sheet Method."
- .2 All concrete surfaces shall be sound. Remove deteriorated concrete, dust, laitance, grease, paint, curing compounds, waxes, impregnations, foreign particles, and other bond inhibiting materials from the surface by blast cleaning or equivalent mechanical means.
- .3 All concrete surfaces shall be air blasted and vacuumed clean to a dust free condition. Concrete surface irregularities shall be addressed as per manufacturers recommendations.
- .4 External concrete corners shall be rounded when perpendicular to fiber orientation and internal corners shall be smoothed by trowelling epoxy mortar into the corners.

- .5 Repair all cracks with Pressure Injected Crack Repair. Add new concrete mortar in any deteriorated locations to restore original geometry. Surface preparation may vary depending on suppliers. Contractor shall prepare surfaces with the most stringent of those listed or as per manufacturer's recommendations.
- .6 The adhesive strength of the concrete shall be verified after preparation by random pull-off testing (ACI 503R) at the direction of the Owner's Representative. Minimum tensile strength is 1.4 MPa (200 psi) with concrete substrate failure, or as specified by Manufacturer if it is more stringent.

3.3 MIXING PRIMER AND SATURANT

- .1 Mix components in accordance with Manufacturer's recommendations.
- .2 Diluting is not permitted. Pre-condition materials as indicated on technical data sheet.
- .3 Mix only that quantity which can be used within its pot life.
- .4 Do not batch delivered units into smaller quantities. Mix only full units.

3.4 PRIMER APPLICATION

- .1 Apply primer in accordance with Manufacturer's recommendations.
- .2 Primer may be applied with a brush or roller. Apply second coat as necessary after first coat has penetrated into concrete.
- .3 Surface depressions shall be filled with epoxy filler per manufacturers' instructions.
- .4 Primer must be covered with fiber within 24 hours of application, depending on temperature conditions. If 24-hour window is exceeded, the primed surfaces must be solvent wiped with a fast-flashing solvent (e.g. MEK) or roughened with sandpaper to break the amine blush.

3.5 CURING

- .1 Protect finished installation of FRP Reinforcement from rain, sand, dust, etc. using protective sheeting or other barriers. Do not allow protective sheeting to come in contact with finished application.

- .2 Curing of finished application shall be a minimum of 24 hours and in order to achieve full strength curing shall be extended for a period of time, and at an average ambient temperature, as specified by the Manufacturer.

3.6 REPAIR OF DEFECTS

- .1 Upon completion of the curing process, the installed system shall be checked for areas where saturant has not penetrated or where saturant has not completely cured. Such areas shall be epoxy injected to re-establish bond subject to the approval of the Project Engineer.

END

3.0 GENERAL CONDITIONS

- 1.** The contractor will be responsible for the review and implementation of all owner Safety Regulations and those safety requirements of the Workers Compensation Commission, Canada Labor Code, CSA Standards, and other applicable Municipal, Provincial and Federal Regulations. Contractor shall be a qualified contractor with past experience related to this type of work scope. All aerial work shall be performed in a safe, quality manner using CSA approved safety equipment and resources. Contractor to provide for all traffic safety, and control required. Contractor is responsible for all City of St. John's construction permits.
- 2.** Contractor is to maintain a general liability insurance policy of no less than \$2 Million which specifically names the Owner and Consultants as the beneficiary and to save same and its agents harmless of liabilities with regards to work required or events resulting from the same.
- 3.** The contractor shall present a copy of their Safety Manual if requested by the Owner.
- 4.** The contractor shall be responsible for properly disposing of all excess materials in accordance with all applicable municipal and provincial regulations.

Additional Instructions:

1. Contractor is to perform field visit to verify information and all details pertaining to this Scope of Work.
2. On completion Tiller Engineering Inc. shall be contacted to facilitate a final inspection of the completed work.
3. The Contractor shall lay out and verify the locations of all elements, conduits and related items, and report errors or discrepancies to the Engineering Consultant as soon as discovered, as it is the responsibility of the Contractor to co-ordinate all building components (new and existing) within the parameters and intent of the drawings and schedules.

Health & Safety Plan.

END OF SECTION

APPENDIX A

DRAWINGS

EDUCATION BUILDING CONCRETE COLUMN AND BEAM REPAIR

Prepared by:

tiller

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www.tillerengineering.com

*A member firm of Association of Consulting
Engineering Companies NL (ACEC-NL)*



Prepared for:

MEMORIAL UNIVERSITY
DEPT. OF FACILITIES MANAGEMENT

Project No.: 2024-111

R0 - Issued for Tender

Date: October 02, 2024

DRAWING INDEX

SHEET #	SHEET TITLE	REV.
-	COVER SHEET	
ED-S0	NOTES	R0
ED-S1	PARTIAL PLAN VIEW COLUMN AND BEAM LOCATION	R0
ED-S2	PARTIAL PLAN VIEW AND DETAIL	R0
ED-S3	SECTION AND DETAIL	R0

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GENERAL NOTES:

- DO NOT SCALE DRAWINGS.
- ALL DIMENSIONS IN MILLIMETERS U/N.
- CHECK ALL STRUCTURAL, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS PRIOR TO STARTING ANY CONSTRUCTION. OWNER/CONTRACTOR TO COORDINATE ALL DETAILS AND DIMENSIONS WITH A/M/E DRAWINGS.
- CONTRACTOR TO VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THIS WORK.
- ALL WORK TO BE DONE IN A QUALITY SAFE MANNER IN ACCORDANCE WITH ALL FEDERAL, PROVINCIAL AND MUNICIPAL REGULATIONS.
- ALL THIRD PARTY PRODUCTS SHALL BE INSTALLED IN STRICT ADHERENCE TO MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO OBTAIN ANY TRAINING REQUIRED BY MANUFACTURER PRIOR TO INSTALLATION.

CONCRETE COLUMN AND BEAM REPAIR NOTES:

- REINSTATE ALL MECH/ELECTRICAL CONNECTORS TO MATCH EXISTING IF REMOVED.
- SEE SPECIFICATIONS FOR CONCRETE REPAIR AND FRP WRAP DETAILS

ABBREVIATIONS

AFF = ABOVE FINISHED FLOOR	N/A = NOT APPLICABLE
ARCH = ARCHITECTURAL	NBC = NATIONAL BUILDING CODE
B/B = BACK TO BACK	NIC = NOT IN CONTRACT
B/O = BOTTOM OF	NTS = NOT TO SCALE
B/S = BOTH SIDES	O/C = OUTSIDE TO CENTER
B/W = BOTH WAYS	OD = OUTSIDE DIAMETER
BOT = BOTTOM	O/F = OUTSIDE FACE
BLDG = BUILDING	O/O = OUTSIDE TO OUTSIDE
BU = BUILT UP	OPNG = OPENING
CL = CENTERLINE	OWSJ = OPEN WEB STEEL JOIST
C/C = CENTER TO CENTER	PT = PRESERVATIVE TREATED
C/W = COMPLETE WITH	P/W = PLYWOOD
CJ = CONTROL JOINT	RD = ROOF DRAIN
COJ = CONFIRM ON JOB	REINF = REINFORCING
COL = COLUMN	REQD = REQUIRED
CONC = CONCRETE	RO = ROUGH OPENING
CONT = CONTINUOUS	SIM = SIMILAR
DET = DETAIL	SPEC = SPECIFICATION
DIM = DIMENSION	SS = STAINLESS STEEL
DL = DEAD LOAD	STD = STANDARD
DWG = DRAWING	STRUCT = STRUCTURAL
EA = EACH	SWL = SAFE WORKING LOAD
ELEV = ELEVATION	T&G = TONGUE AND GROOVE
E/F = EACH FACE	T/O = TOP OF
EJ = EXPANSION JOINT	TOC = TOP OF CONCRETE
EQ = EQUAL	TOP = TOP OF PIER
E/S = EACH SIDE	TOS = TOP OF STEEL
E/W = EACH WAY	TOW = TOP OF WALL
EXIST = EXISTING	TYP = TYPICAL
EXT = EXTERIOR	U/N = UNLESS NOTED
FD = FLOOR DRAIN	UNO = UNLESS NOTED OTHERWISE
FDN = FOUNDATION	U/S = UNDERSIDE
FF = FINISH FLOOR	VB = VAPOUR BARRIER
FL = FLOOR	VERT = VERTICAL
F/O = FACE OF	WL = WIND LOAD
FMC = FULL MOMENT CONNECTION	WWF = WELDED WIRE FABRIC
FTG = FOOTING	WWM = WELDED WIRE MESH
GALV = GALVANIZED	
HDG = HOT DIP GALVANIZED	
HORIZ = HORIZONTAL	
I/F = INSIDE FACE	
INT = INTERIOR	
LL = LIVE LOAD	
LLH = LONG LEG HORIZONTAL	
LLV = LONG LEG VERTICAL	
MAX = MAXIMUM	
Mw = MOMENT CONNECTION	
MECH = MECHANICAL	
MIN = MINIMUM	

PROVINCE OF NEWFOUNDLAND AND LABRADOR



PERMIT HOLDER
This Permit Allows

TILLER ENGINEERING INC.

MIRC #02255

To practice Professional Engineering in Newfoundland and Labrador. Permit No. as Issued by PEG P0227 which is valid for the year 2024

STAMP



tiler

St. John's, NL
Tel. (709) 579-6700
Fax. (709) 579-6701
www.tillerengineering.com

A member firm of Association of Consulting Engineering Companies NL (ACEC-NL)



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RO	ISSUED FOR TENDER	02/10/24
NO.	REVISIONS	DATE

CLIENT
MEMORIAL UNIVERSITY
DEPT. OF FACILITIES
MANAGEMENT

PROJECT
EDUCATION BUILDING
CONCRETE BEAM REPAIR

TITLE
NOTES

DESIGNED	R.T.	APPROVED	R.T.
DRAWN	J.D.	CHECKED	R.T.
SCALE	AS SHOWN	DATED	02/10/24
PROJECT NO.	2024-111	DRAWING NO.	ED-S0

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To practice Professional Engineering
in Newfoundland and Labrador.
Permit No. as Issued by PEG P0227
which is valid for the year 2024

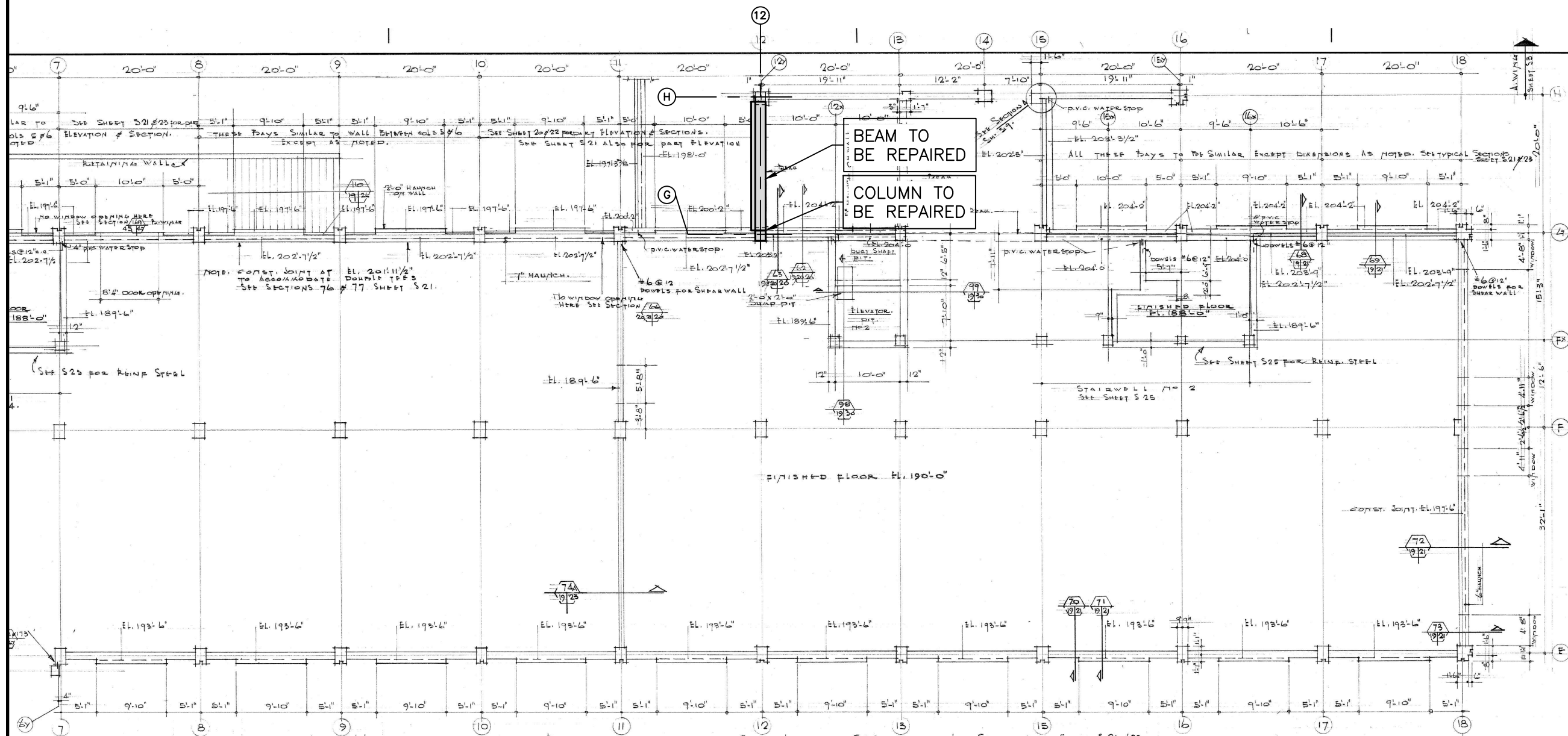
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THE COPYRIGHT HOLDER TILLER.



PARTIAL PLAN VIEW – EDUCATION BUILDING – BASEMENT LEVEL

1:200 (METRIC – APPROX.)

NO.	ISSUED FOR TENDER	02/10/24
NO.	REVISIONS	DATE

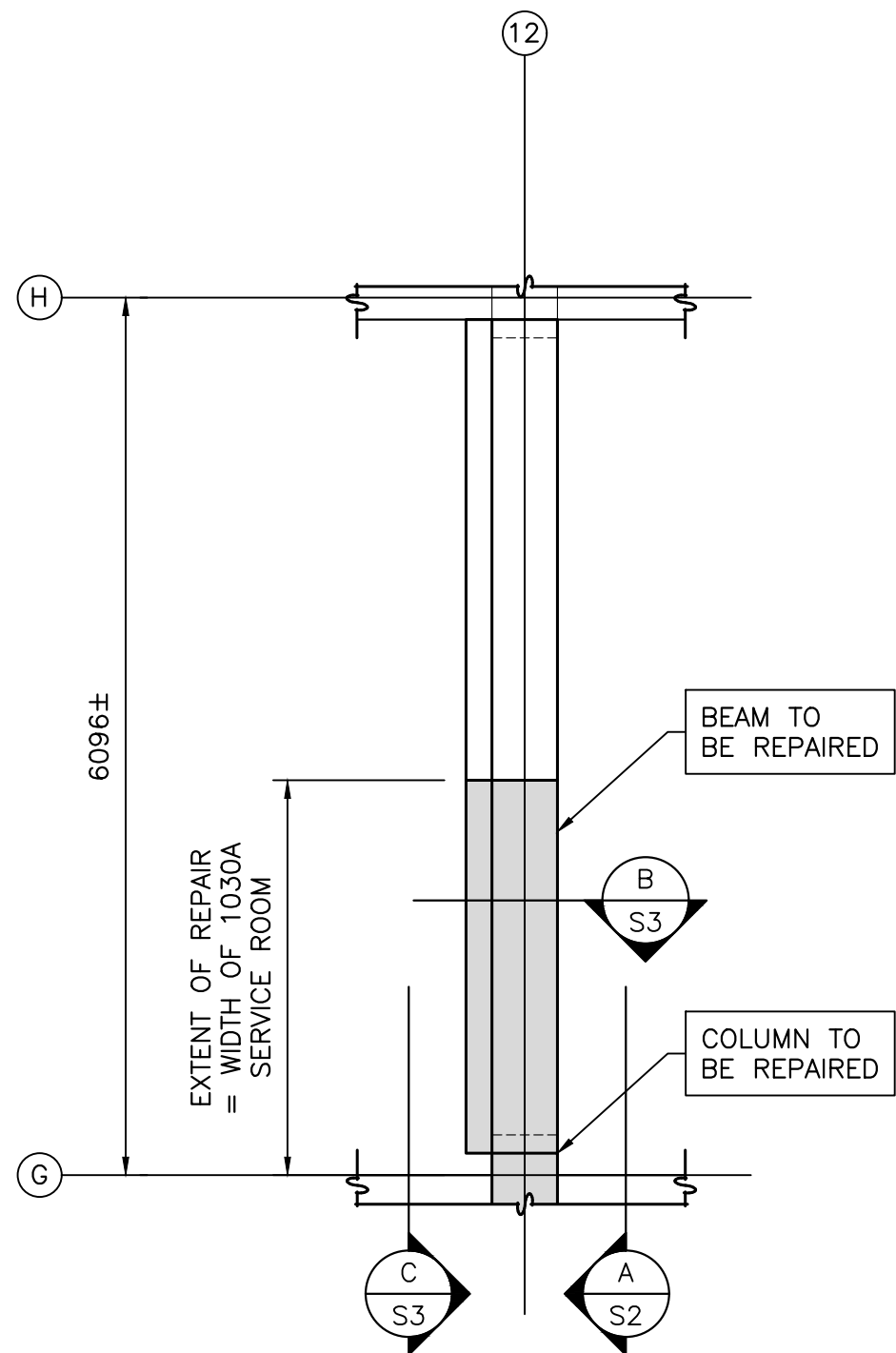
CLIENT
**MEMORIAL UNIVERSITY
DEPT. OF FACILITIES
MANAGEMENT**

PROJECT
**EDUCATION BUILDING
CONCRETE COLUMN
AND BEAM REPAIR**

TITLE
**PARTIAL PLAN VIEW
COLUMN AND BEAM
LOCATION**

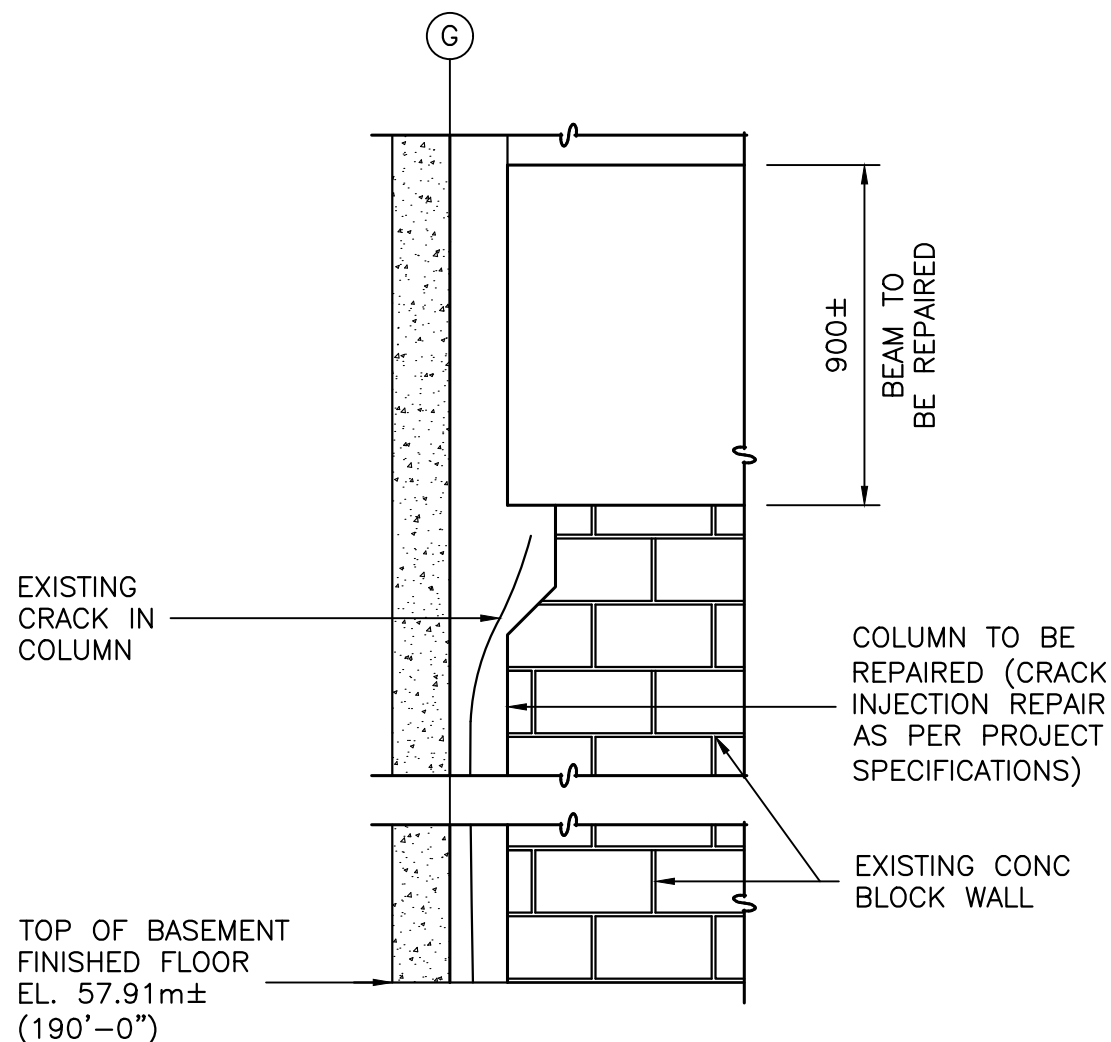
DESIGNED	R.T.	APPROVED	R.T.
DRAWN	J.D.	CHECKED	R.T.
SCALE	AS SHOWN	DATED	02/10/24
PROJECT NO.	2024-111	DRAWING NO.	ED-S1

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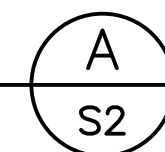
PARTIAL PLAN VIEW

1:50



DETAIL - COLUMN REPAIR

APPROX. 1:20



PROVINCE OF NEWFOUNDLAND AND LABRADOR

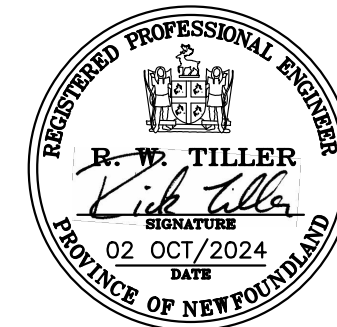


PERMIT HOLDER
This Permit Allows
TILLER ENGINEERING INC.

MIRC #02255

To practice Professional Engineering
in Newfoundland and Labrador.
Permit No. as Issued by PEG P0227
which is valid for the year 2024

STAMP



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www.tillerengineering.com

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RO	ISSUED FOR TENDER	02/10/24
NO.	REVISIONS	DATE

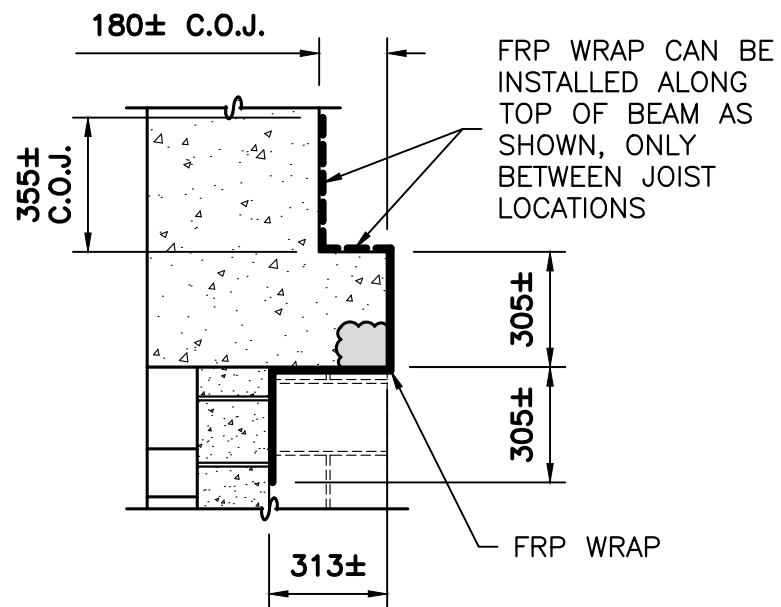
CLIENT
MEMORIAL UNIVERSITY
DEPT. OF FACILITIES
MANAGEMENT

PROJECT
EDUCATION BUILDING
CONCRETE COLUMN
AND BEAM REPAIR

TITLE
PARTIAL PLAN VIEW
AND DETAIL

DESIGNED	R.T.	APPROVED	R.T.
DRAWN	J.D.	CHECKED	R.T.
SCALE	AS SHOWN	DATED	02/10/24
PROJECT NO.	2024-111	DRAWING NO.	ED-S2

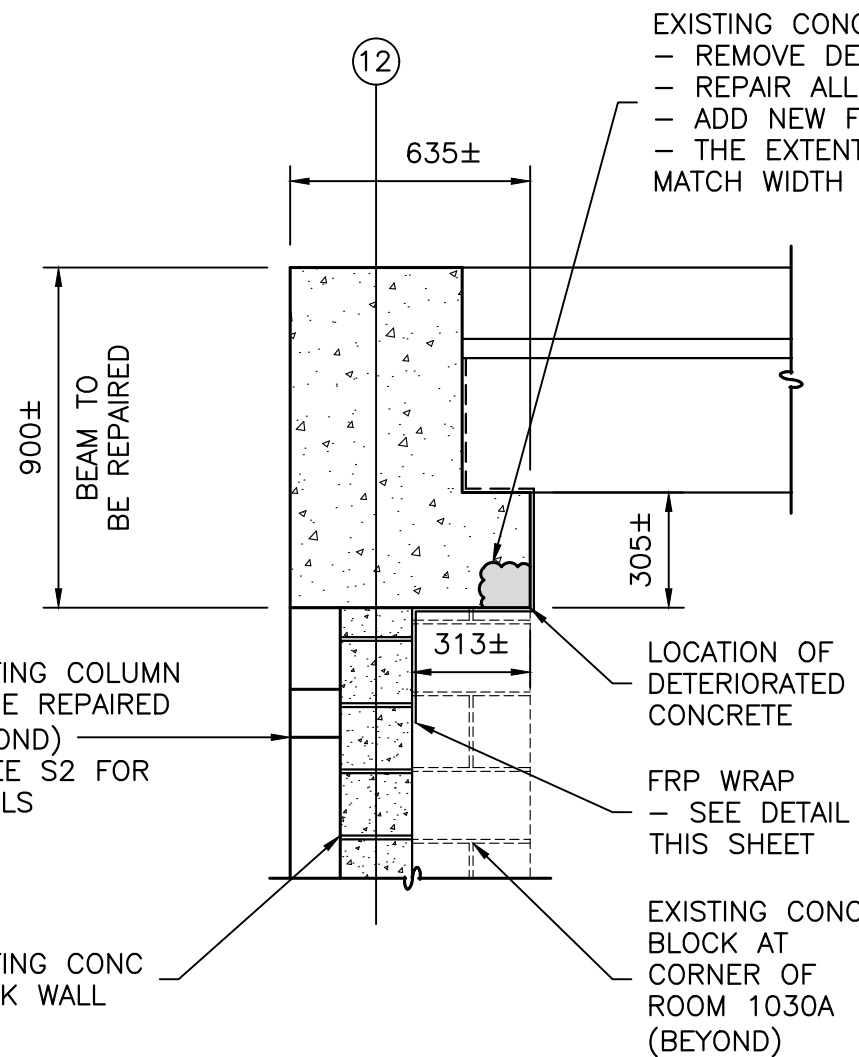
c:\Users\jdoyle\Desktop\PROJECTS\2024\111-AI-MUN-FM Education Building Concrete Beam Repair\Drawings\EducationBldgConcColumn&BeamRepair-2024-111-MUN-FT-R0



FRP WRAP DETAIL

FRP WRAP CAN BE INSTALLED ALONG TOP OF BEAM AS SHOWN, ONLY BETWEEN JOIST LOCATIONS

FRP WRAP



EXISTING COLUMN TO BE REPAIRED (BEYOND) - SEE S2 FOR DETAILS

EXISTING CONC BLOCK WALL

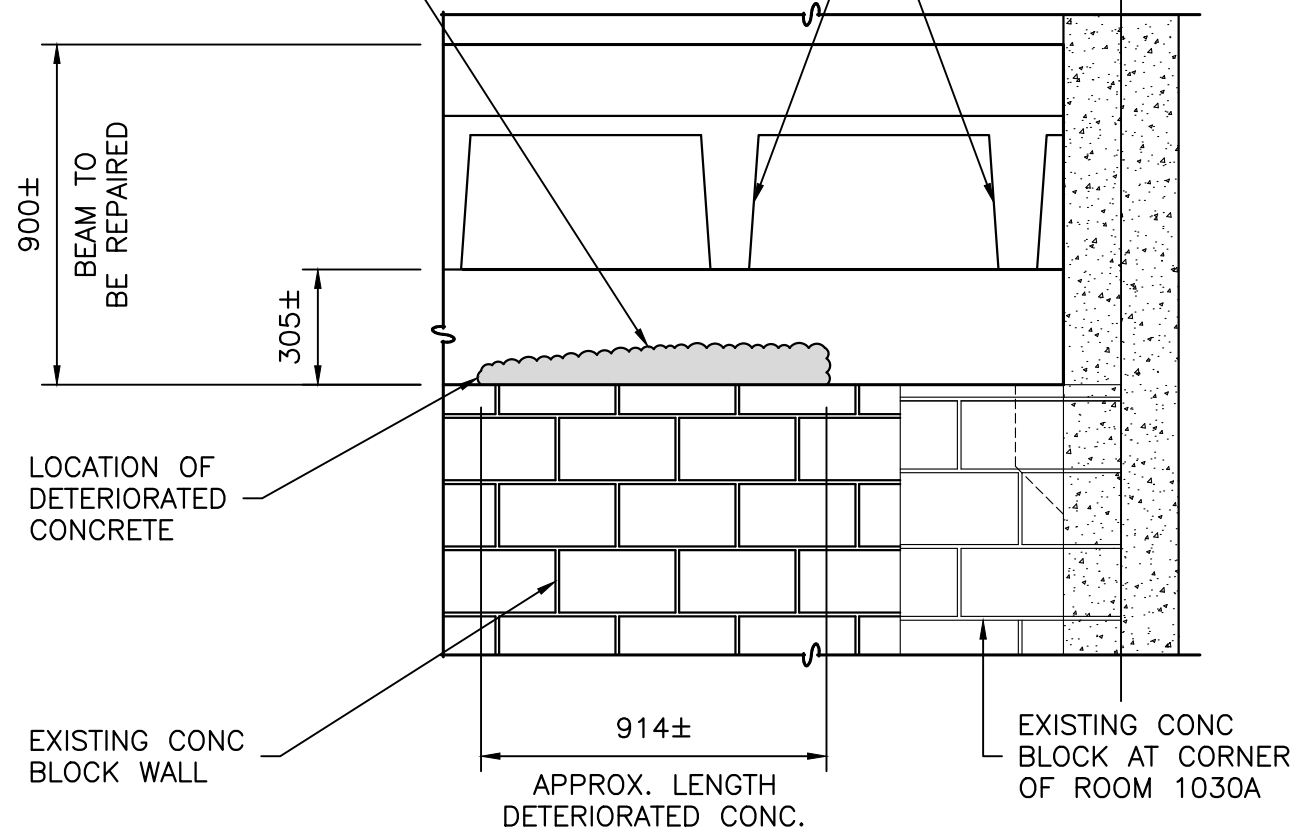
EXISTING CONC. BEAM TO BE REPAIRED
 - REMOVE DETERIORATED CONCRETE
 - REPAIR ALL DAMAGE CONC. WITH MORTAR
 - ADD NEW FRP WRAP AS PER SPECIFICATIONS
 - THE EXTENT OF REPAIR AND FRP WRAP TO MATCH WIDTH OF 1030A SERVICE ROOM

LOCATION OF DETERIORATED CONCRETE

FRP WRAP - SEE DETAIL THIS SHEET

EXISTING CONC BLOCK AT CORNER OF ROOM 1030A (BEYOND)

EXISTING CONC. JOIST ABOVE - EXACT JOIST SPACING UNKNOWN

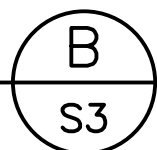


LOCATION OF DETERIORATED CONCRETE

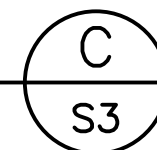
EXISTING CONC BLOCK WALL

EXISTING CONC BLOCK AT CORNER OF ROOM 1030A

SECTION - BEAM REPAIR
APPROX. 1:20



DETAIL - BEAM REPAIR
APPROX. 1:20



PROVINCE OF NEWFOUNDLAND AND LABRADOR



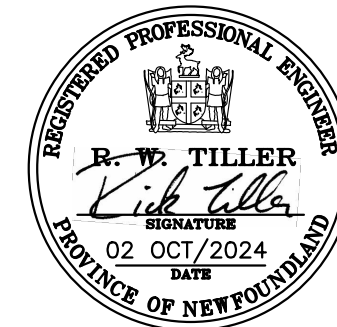
PERMIT HOLDER
This Permit Allows

TILLER ENGINEERING INC.

MIRC #02255

To practice Professional Engineering in Newfoundland and Labrador. Permit No. as Issued by PEG P0227 which is valid for the year 2024

STAMP



tiller

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