

REVISED ADDENDUM #9 – OCTOBER 18, 2021

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 05 12 23 – Structural Steel for Buildings.
- .2 Section 07 84 00 – Firestopping.
- .3 Section 07 92 00 – Joint Sealants.

1.02 REFERENCE STANDARDS

- .1 ASTM International (ASTM)
 - .1 ASTM A 123/A 123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A 775/A 775M, Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
 - .3 ASTM D 412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.
 - .4 ASTM D 2240, Standard Test Method for Rubber Property - Durometer Hardness.
 - .5 ASTM C 494/C 494M, Standard Specification for Chemical Admixtures for Concrete.
- .2 CSA Group (CSA)
 - .1 CSA A23.1-14/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CSA A23.3, Design of Concrete Structures.
 - .3 CSA A23.4, Precast Concrete-Materials and Construction.
 - .4 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .5 CSA G40.20-13/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .6 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding.
 - .7 CSA W59, Welded Steel Construction (Metal Arc Welding).
 - .8 CSA W186-M1990(R2016), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .3 National Research Council Canada (NRC)
 - .1 National Building Code of Canada, 2015 (NBC).
- .4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2016, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .5 United States Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.03 DEFINITIONS

- .1 Application Specialist: An individual who performs surface preparation and application of protective coatings and linings to steel and concrete surfaces of complex industrial structures.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for concrete mixes and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Newfoundland and Labrador, Canada.
 - .2 Submit shop drawings to CSA A23.4 and CSA A23.3.
 - .3 Submit 2 copies of detailed calculations and design drawings for typical precast elements and connections for Departmental Representative approval 4 weeks prior to manufacture.
 - .4 Indicate on drawings:
 - .1 Design calculations for items designated by manufacturer.
 - .2 Tables and bending diagrams of reinforcing steel.
 - .3 Camber.
 - .4 Finishing schedules.
 - .5 Methods of handling and erection.
 - .6 Openings, sleeves, inserts and related reinforcement. Including embedded handling hardware.
- .4 Samples:
 - .1 Produce, deliver and erect where directed by Departmental Representative on project site, 1 full size sample of each type of precast concrete units showing details, colour, finish and quality for approval of Departmental Representative.
 - .1 Begin production of precast units after receipt of Departmental Representative written approval.
- .5 Submit evidence of welding certification including welding procedures before commencing work.
- .6 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Reduction/Diversion Workplan highlighting recycling and salvage requirements.
 - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 90% of construction wastes were recycled or salvaged.
 - .2 Recycled Content:
 - .1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
 - .2 Submit evidence, when Supplementary Cementing Materials (SCMs) are used, to certify reduction in cement from Base Mix to Actual SCMs Mix, as

- percentage.
- .3 Low-Emitting Materials:
 - .1 Submit listing of coatings and sealers used in building, showing compliance with VOC and chemical component limits or restriction requirements.

1.05 QUALITY ASSURANCE

- .1 Quality Control Plan: submit written report, to Departmental Representative verifying concrete provided meets performance requirements of concrete as established in PART 2 - PRODUCTS.
- .2 Precast concrete elements to be fabricated and erected by manufacturing plant certified by Canadian Standards Association in appropriate categories according to CSA A251. Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting tender and to specifically verify as part of tender that plant is currently certified in appropriate category, Architectural. Manufacturer must have 5 years experience production of similar type of units that are required for this project.
- .3 Only precast elements fabricated in such certified plants to be acceptable to Departmental Representative, and plant certification to be maintained for duration of fabrication, erection until warranty expires.

1.06 SOURCE QUALITY CONTROL

- .1 Provide Departmental Representative with certified copies of quality control tests related to this project as specified in CSA A23.4.
- .2 Inspect prestressed concrete tendons to CSA G279.
- .3 Provide records from in-house quality control program based upon plant certification requirements to Departmental Representative for inspection and review.
- .4 Upon request provide Departmental Representative with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.
- .5 Precast plants should keep complete records of supply source of concrete material, steel reinforcement, prestressing steel and provide to Departmental Representative for review upon request.

1.07 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect precast panels from damage.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Waste Reduction/Diversion Workplan related to Work of this Section and in accordance with Section 01 74 19 - Waste Management and Disposal.

- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Waste Reduction/Diversion Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.08 WARRANTY

- .1 For spalling and cracking of precast elements 12 months warranty period prescribed is extended to 60 months.
- .2 Contractor hereby warrants that precast architectural elements will not spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, for 5 years.

2 PRODUCTS

2.01 MATERIALS

REFER TO DRAWINGS FOR LOCATIONS OF PRECAST CONCRETE ELEMENTS.

- .1 Cement, white cement, aggregates, water, admixtures: to CSA A23.4 and CSA A23.1/A23.2. Portland cement to ASTM C 150 Type 1 or 11 White.
- .2 Use same brands and source of cement and aggregate for entire project to ensure uniformity of colouration and other mix characteristics.
- .3 Reinforcing steel: to CSA G30.16 and CSA G30.12.
- .4 Prestressing steel: to CSA S6 and CSA G279.
- .5 Welded wire fabric: to CSA G30.15.
- .6 Forms: to CSA A23.4.
- .7 Hardware and miscellaneous materials: to CSA A23.1/A23.2.
- .8 Anchors and supports: to CSA G40.20/G40.21, Type 300 W, hot dipped galvanized steel.
- .9 Welding materials: to CSA W48.
- .10 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m², to CSA G164
- .11 Steel primer: to CAN/CGBS 1.40.
- .12 Epoxy coating: to ASTM A 775/A 775M.
- .13 Air entrainment admixtures: CAN3-A266.1.
- .14 Bearing pads: neoprene, hardness to ASTM D 2240, and tensile strength to ASTM D 412, moulded to size or cut from moulded sheet.
- .15 Shims: plastic.
- .16 Zinc-rich primer: to CGSB 1-GP-181M.
- .17 Surface retardant: to CAN3-A266.2

- .18 Weep hole tubes: purpose made.

2.02 CONCRETE MIXTURES

- .1 Proportion high density concrete in accordance with CSA A23.1/A23.2, Alternative 1, to give following properties for all concrete as detailed in the drawings.
 - .1 Cement: use Portland cement Type 1 or 11 White or Grey.
 - .2 Minimum compressive strength at 28 days: 40 MPa.
 - .3 Nominal size of coarse aggregate: 10 mm.
 - .4 Water cement ratio: 0.40 at time of placement.
 - .5 Air content: to ACE 533 Requirements.
 - .6 Chemical admixtures: in accordance with CAN3-A266.4.
 - .7 Normal weight aggregate.

2.03 GROUT MIXES

- .1 Cement grout: Cement to ASTM C158 and Sand to ASTM C404.
- .2 Minimum compressive strength: 25 MPa.
- .3 Shrinkage compensating grout: to Section 03 30 00 - Cast-in-Place Concrete.

2.04 DESIGN REQUIREMENTS

- .1 Design precast elements to CSA A23.3, CSA A23.4 and to resist handling, stockpiling, shipping and erection stresses.
- .2 Design precast elements to carry loads as indicated, and in accordance with National Building Code of Canada (NBC), 2015.
 - .1 Design to include resistance to creep, shrinkage and temperature effects, and wind and earthquake loads.
- .3 Design connections and attachments of precast elements to load and forces as indicated, and in accordance with National Building Code of Canada (NBC), 2015.
 - .1 Connections to be designed to withstand long-term corrosion for exposed elements.
- .4 Tolerate structural deflection of span / 360 due to live load and distortion of structure, under design criteria conditions, without imposing load on panel assembly.

2.05 PERFORMANCE REQUIREMENTS

- .1 Tolerance of precast elements: to CSA A23.4, Section 10, except as noted herein.
- .2 Refer to related Sections of this Specification and fabricate work to accommodate specified tolerances.

2.06 TOLERANCES

- .1 Tolerance of precast elements to CSA-A23.4, Section 10.
- .2 Length of precast elements not to vary from design length by more than plus or minus 10 mm.
- .3 Cross sectional dimensions of precast elements not to vary from design dimensions by more than plus or minus 10 mm.

- .4 Deviations from straight lines not to exceed 1.0 mm in 1.0 m.
- .5 Precast elements not to vary by more than plus or minus 3.0 mm from true overall cross sectional shape as measured by difference in diagonal dimensions.

2.07 FABRICATION

- .1 Manufacture units to CSA A23.4.
- .2 Mark each precast unit to correspond to identification mark on shop drawings for location with date cast on part of unit which will not be exposed.
- .3 Design and attach anchors and inserts to precast concrete elements to carry design loads.
- .4 Shop prime anchors steel inserts after fabrication and touch up primer on anchors after welding. Do not apply primer to embedded portion of anchors or inserts.
- .5 Galvanize anchors steel embedments after fabrication and touch up with zinc-rich primer after welding.

2.08 FINISHES

- .1 Finish and colour of precast units to match approved sample in Departmental Representative's office.
- .2 Smooth finish: as cast using smooth plastic or steel form liners.
 - .1 Leave surface finish uniformly smooth.
 - .2 Do not use mortar or grout in rubbing, other than cement paste drawn from green concrete by rubbing process.
 - .3 Rub exposed face surface of precast concrete panels with carbon dun bricks, water hollow lines form marks and surface materials have been removed.
 - .4 Clean panels.

2.09 ACCESSORIES

- .1 Two-part abrasive aluminum stair nosing cast into treads per Section 05 50 00 – Metal Fabrications.

3 EXECUTION

3.01 GENERAL

- .1 Do precast concrete work to CSA A23.4 and CSA A23.3/CSA S6.

3.02 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for precast concrete installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and

after receipt of written approval to proceed from Departmental Representative.

3.03 ERECTION

- .1 Erect precast elements within allowable tolerances as indicated.
- .2 Non-cumulative erection tolerances in accordance with CSA A23.4, Section 10.
- .3 Set elevations and alignment between units to within allowable tolerances before connecting units.
- .4 Bed pre-cast concrete units in mortar Type S in accordance with Section 04 05 13 - Masonry Mortaring and Grouting. Point joints with coloured mortar. Rake out joints 10 mm to receive sealant.
- .5 Grout underside of unit bearing plates with shrinkage compensating grout.
- .6 Fasten precast panels in place as indicated on reviewed shop drawings.
- .7 Secure bolts with lock washers or tack-weld nut to bolt.
- .8 Uniformly tighten bolted connections with torque indicated.
- .9 Do not weld or secure bearing plates at sliding joints.
- .10 Set units dry, without mortar, attaining specified joint dimension with plastic shims.
- .11 Clean field welds with wire brush and touch-up shop primer with primer galvanized finish with zinc-rich primer.
- .12 Remove shims and spacers from joints of non-load bearing panels after fastening but before sealant is applied.
- .13 Apply sealant to precast panels to manufacturer's recommendations unless specified otherwise.

3.04 WELDING

- .1 Weld to CSA W59 for welding to steel structures and to CSA W186 for welding of reinforcement.

3.05 CLEANING

- .1 Obtain approval of cleaning methods from Departmental Representative before cleaning soiled precast concrete surfaces.
- .2 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

R.106530.001
October 18,2021

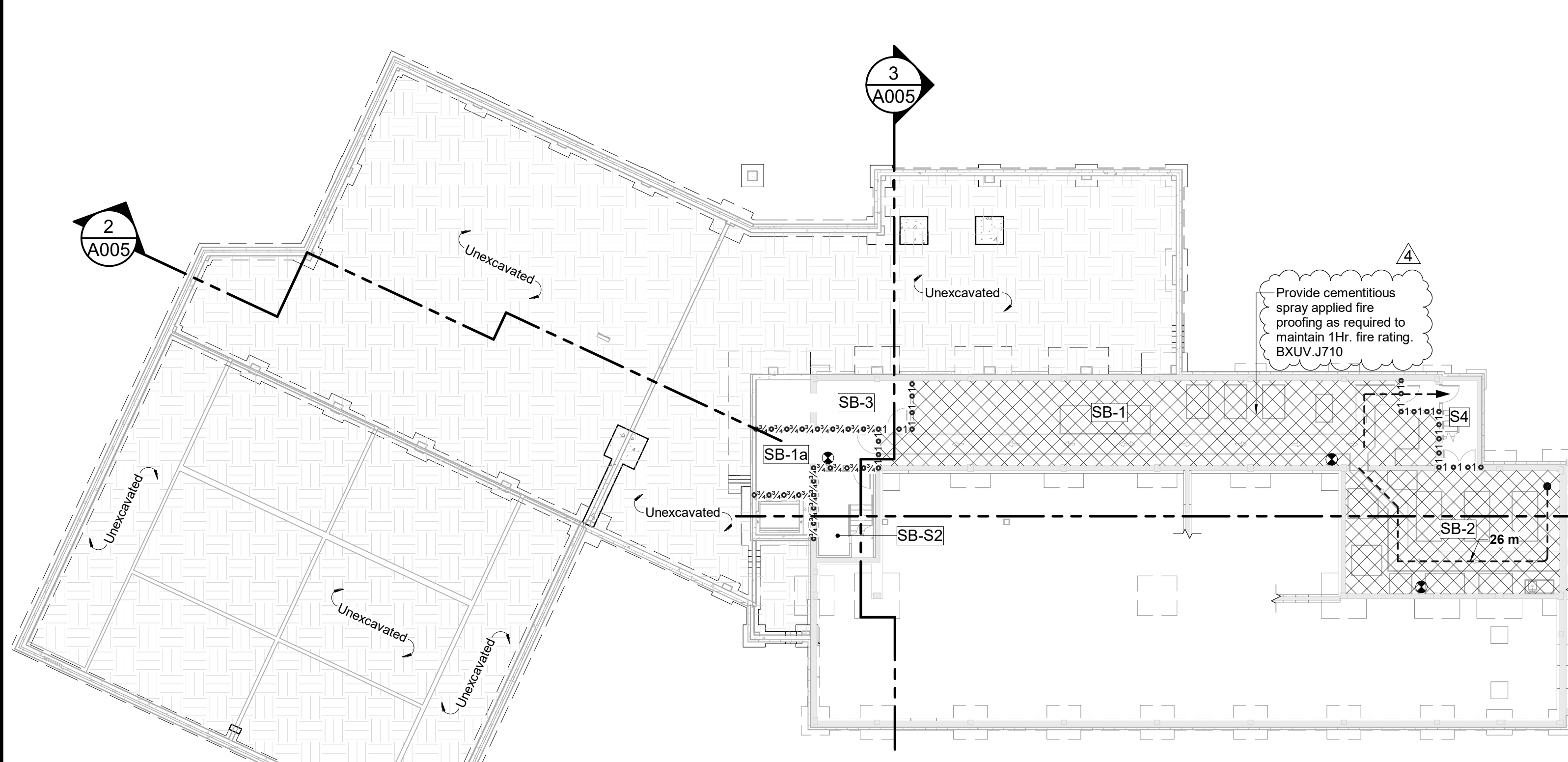
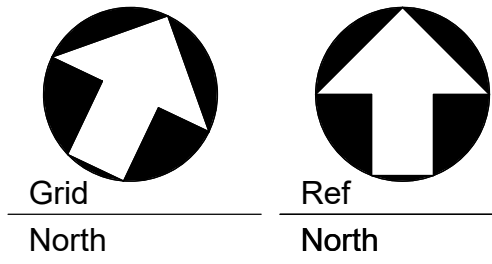
SECTION 03 45 00
PRECAST ARCHITECTURAL CONCRETE
PAGE 8 of 8

3.06 PROTECTION

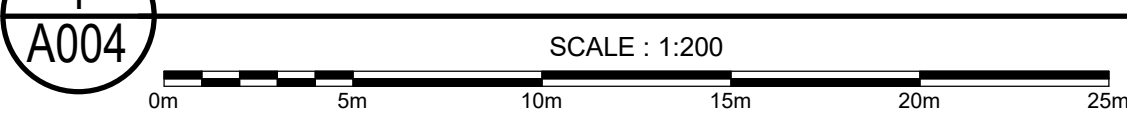
- .1 Protect installed products and components from damage during construction.
- .2 Protect finished surfaces from soiling or damaging
- .3 Repair damage to adjacent materials caused by precast concrete installation.

END OF SECTION

General Note: Mechanical & electrical equipment not shown for clarity.



1 Sub-Basement & Foundations



Room Legend	
Number	Name
Sub-Basement	
ELEV	Elevator
S4	Stair 4
SB-1	Sub-Basement
SB-1a	Vest.
SB-1b	Vest.
SB-2	Boiler Room
SB-3	Maintenance
SB-4	Workshop
SB-S2	Stair 2
Basement	
B-01	Lobby
B-02	Locker
B-03	Open Office
B-04	Office
B-05	Office
B-06	F.W.C
B-06a	F.W.C Vest.
B-07	Jan.
B-08	M.W.C
B-08a	M.W.C Vest.
B-09	Kitchenette
B-10	Focus Space
B-11	Copy / Mail
B-12	Admin. Storage
B-13	File Storage
B-14	LAN
B-15	Phone
B-16	Phone
B-17	Meeting Room
S1	Stair 1
S2	Stair 2
Ground Floor	
G-01	Vest.
G-02	Lobby
G-03	Reception
G-04	WC
G-05	WC
G-06	Multi-Purpose Room
G-07	Coats
G-08	Elevator Lobby
G-09	Corridor
G-10	Jan.
G-11	Cooler
G-12	Freezer
G-13	Cooler
G-14	Multi-Purpose Storage
G-15	Electrical
G-16	Lunch Room
G-17	Vestibule
G-18	Lockers
G-19	WC / SHW.
G-20	Growth Room
G-21	Common Work Space

Room Legend	
Number	Name
G-22	Insect Storage
G-23	Soil Preparation
G-24	Oven Room
G-24a	Soil Processing
G-24b	Plant Grinding
G-24c	Dust Extractor
G-25	Soil & Grain Drying
G-27	Corridor
G-28	Greenhouse-1
G-29	Greenhouse-2
G-30	Greenhouse-3
G-31	Corridor
G-32	Greenhouse-4
G-33	Greenhouse-5
G-34	Greenhouse-6
S3	Stair 3
First Floor	
1-01	Lobby
1-02	Open Office
1-03	Lab 1 (Plant Ecophysiology)
1-04	Lab 2 (Soils)
1-05	Lab 3 (Entomology)
1-06	Lab 4 (Analytical multipurpose)
1-07	Lab 5 (Plant pathology)
1-08	Lab 6 (Molecular)
1-09	Autoclave
1-10	Light Lock
1-11	Dark Room
1-12	Balance Room
1-13	Lab 7 (Tissue culture)
1-14	Lab 8 (Agronomy)
1-15	Jan.
1-16	M.W.C
1-17	F.W.C
Second Floor	
2-01	Open Office
2-01a	Coffee
2-02	Office
2-03	Office
2-04	Office
2-05	Office
2-06	Office
2-07	Office
2-08	Informal Teaming
2-09	Office
2-10	Office
2-11	Office
2-12	Office
2-13	LAN
2-14	Focus Space / Phone
Penthouse	
P-01	Mechanical Penthouse
P-01a	Vest.

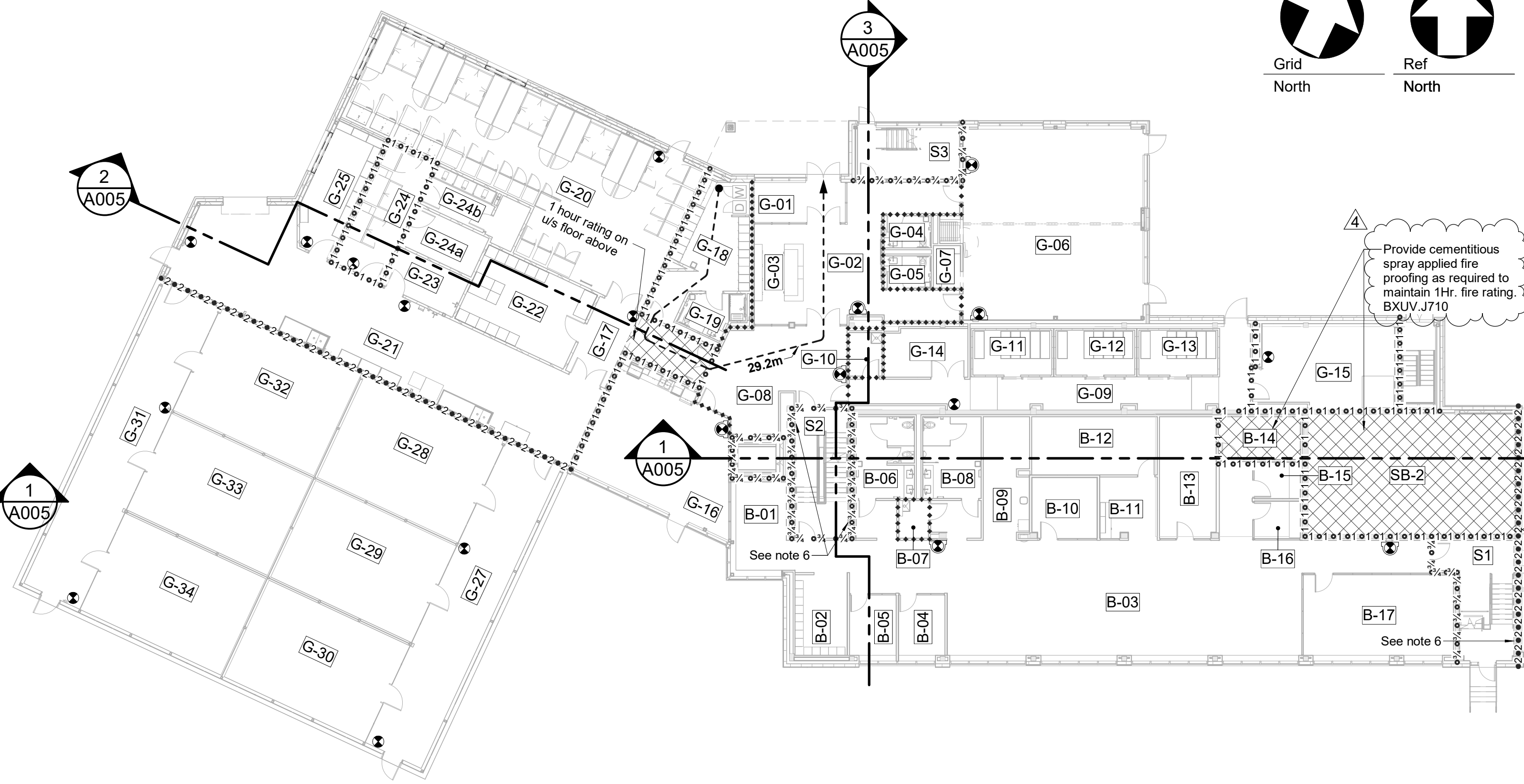
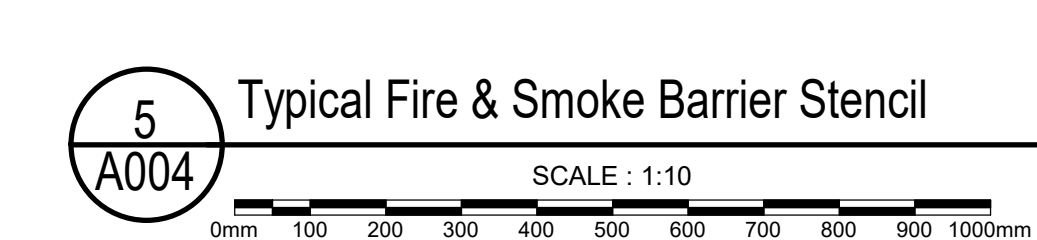
GENERAL NOTES:

- By nature of construction, wall assemblies may have fire resistance ratings greater than the ratings indicated on this plan. All fire stops and dampers through new and existing fire rated walls to have ratings not less than those indicated on plans.
- All fire rated elements (wall, columns, etc.) to have gypsum board cut, fit and sealed as per ULC approved tested assemblies.
- Fire separations penetrated by outlet boxes.**
Penetrations are acceptable but must be sealed by a fire stop unless:
A. Noncombustible box.
B. Less than 0.016m² area.
C. An aggregate area of 0.065m² in any 9.3m² of surface area, and
D. Space between outlet and gypsum does not exceed 3mm.
- In addition to the requirements of note 3, outlet boxes on opposite sides of a vertical fire separation shall be separated by a horizontal distance of not less than 600mm or the outlet on one side shall be protected with a ULC approved moldable putty pad.
- All rated & non-rated fire separations terminating at exterior walls shall extend to & be sealed to interior face of exterior sheathing or face of existing concrete / masonry.
- Provide signage at this location indicating "NO EXIT BELOW THIS LEVEL"

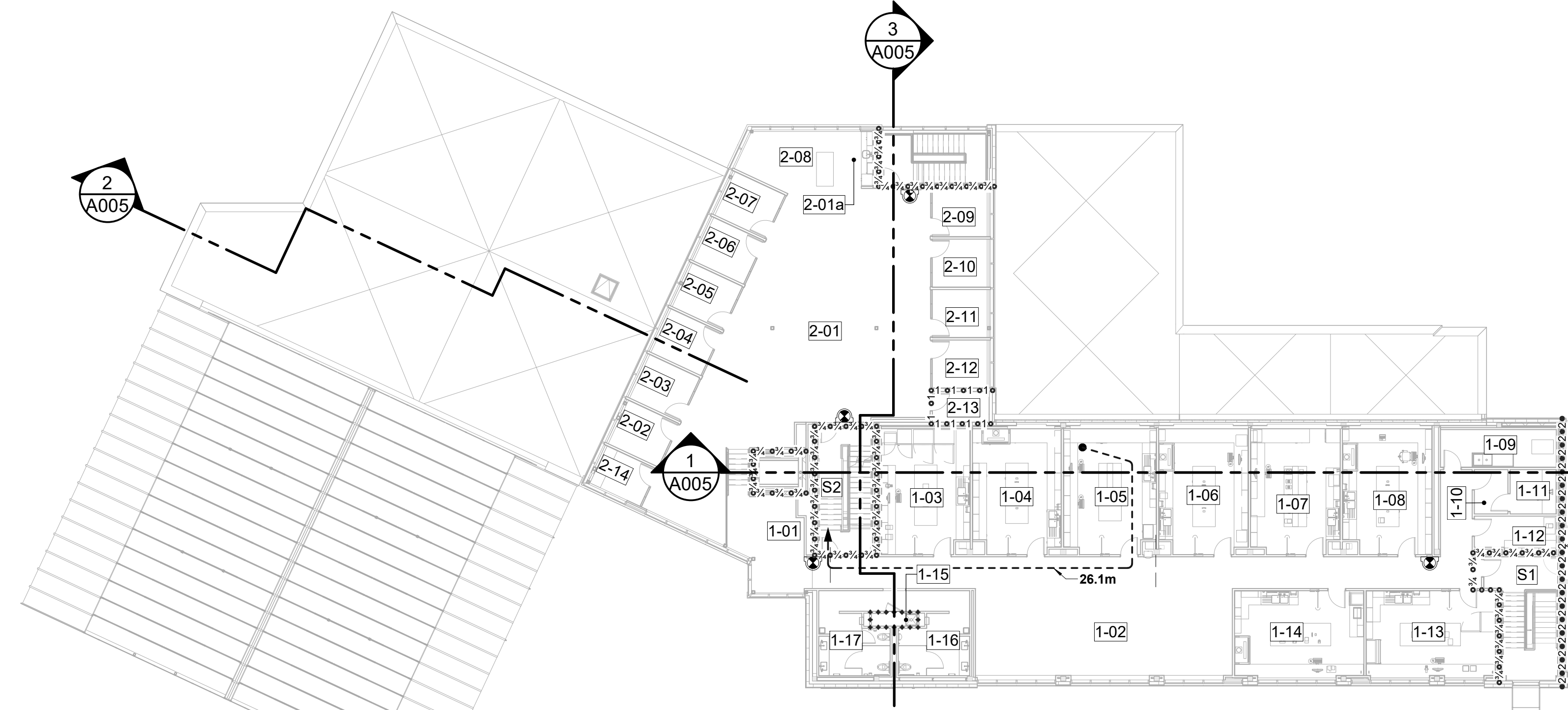
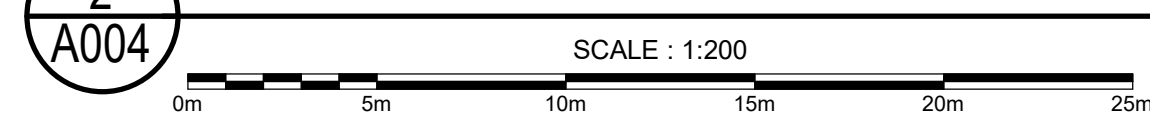
Indicate duration of rating as per ULC listing of wall assembly

9.5mm (Min.) Stroke Width

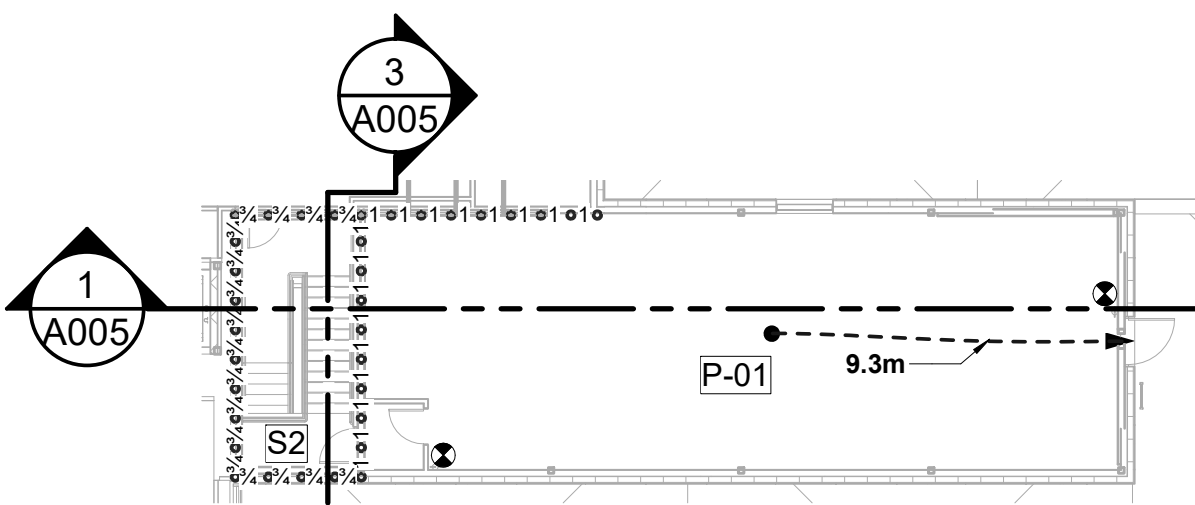
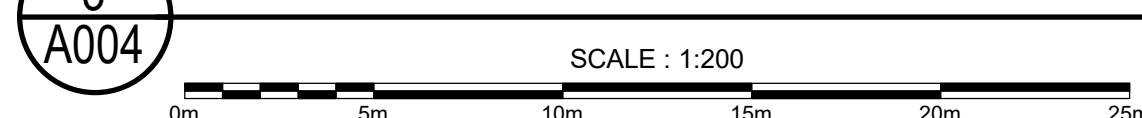
HR. FIRE / SMOKE BARRIER
PROTECT ALL OPENINGS
AND PENETRATIONS



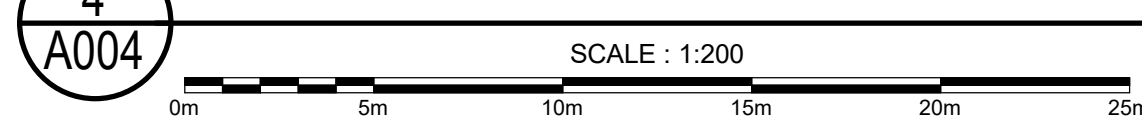
2 Basement & Ground Floor Plan



3 First & Second Floor Plan



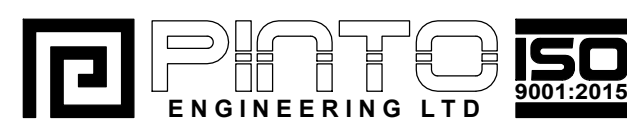
4 Penthouse Floor Plan



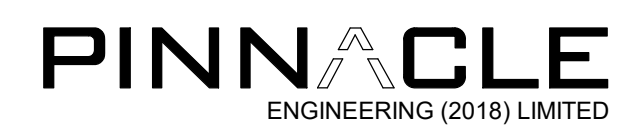
ARCHITECT:



STRUCTURAL:



CIVIL:



MECHANICAL / ELECTRICAL:



GREENHOUSE:



LANDSCAPE:



4	Issued for Addendum #9	2021/10/18
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project	project
AAFC NL RDC Retrofit and Expansion	
St. John's, NL	
Canada	

drawing	dessin
Building 25 - Fire Resistance Ratings	

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date 09/16/20	
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Tender	Soumission
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drawn GM	dessiné
date 09/16/20	
approved JB	approuvé
date 09/16/20	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
R.106530.001	
drawing no.	no. du dessin
A004	

designed MB	conçu
date 09/16/20	
drawn GM	dessiné
date 09/16/20	
approved JB	approuvé
date 09/16/20	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
R.106530.001	
drawing no.	no. du dessin
A004	

designed MB	conçu
date 09/16/20	
drawn GM	dessiné
date 09/16/20	
approved JB	approuvé
date 09/16/20	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
R.106530.001	
drawing no.	no. du dessin
A004	

designed MB	conçu
date 09/16/20	
drawn GM	dessiné
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approved JB	approuvé
date 09/16/20	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
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Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
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Tender	Soumission
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project number	no. du projet
R.106530.001	
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